

THE CONCISE GLOBAL INDUSTRY GUIDE

INFANTRY EQUIPMENT HANDBOOK



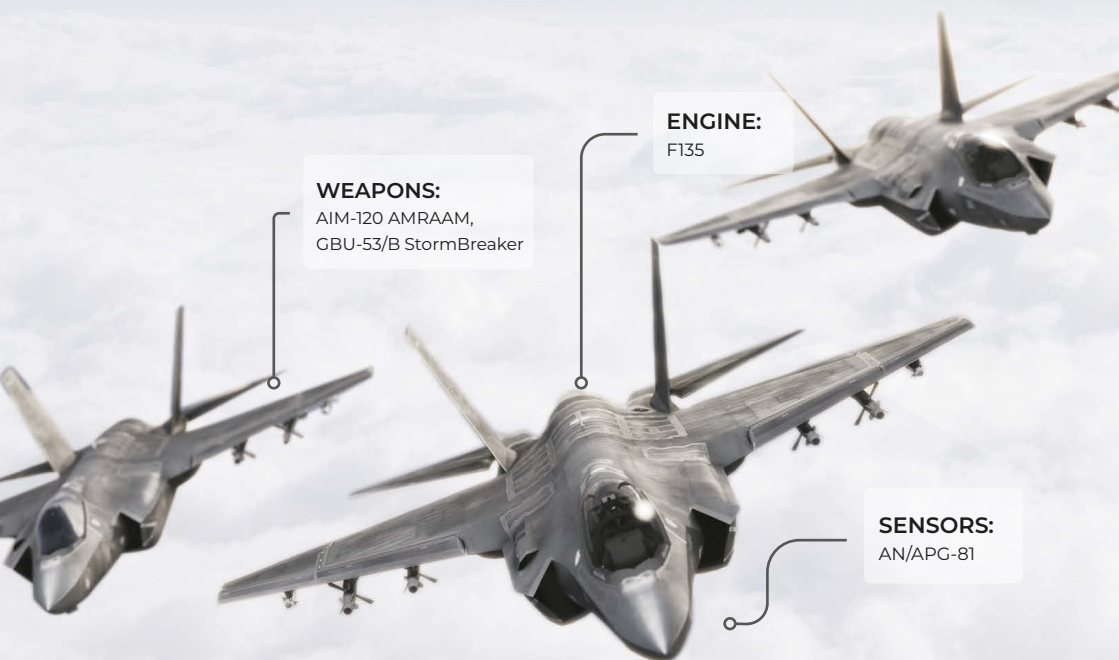
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Director of Analysis

Matthew Smith
matthew.s@shephardmedia.com

Manager – Defence Insight

Ilker Aktaşoğlu
ilker.a@shephardmedia.com

Market Analysts

Anna Crossland, Onur Kana, Giovanni Rasio, Matthew Todhunter

Managing Editor

David Hurst

Publishing Manager

Sirli Manitski

Publishing Assistant

Patrick Aquilina

Product Manager

Adam Wakeling

Advertising Sales

advertising@shephardmedia.com

Business Development Manager – Defence Insight

Ian Austin
ian.a@shephardmedia.com

Business Development Manager – Defence Insight

David Moniz
david.m@shephardmedia.com

Account Manager – Defence Insight

Paul Goldie-Jones
paul.gj@shephardmedia.com

Chief of Staff

Mike Wild

CEO

Darren Lake

ORDER ONLINE

shop.shephardmedia.com

Tel: +44 (0)20 3179 2592

subs@shephardmedia.com

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Shephard Media
33 St James's Square,
London, SW1Y 4JS, UK
Tel: +44 (0)20 3179 2592

2 Introduction

Land Reporter Flavia Camargos Pereira welcomes readers to Issue 11 of *Shephard Media's Infantry Equipment Handbook*.

4 Pistols

Technical data on pistols that are in production or in development around the world.

21 Submachine guns

A selection of submachine guns and personal defence weapons that are currently in production or in development.

31 Assault rifles and carbines

Descriptions of assault rifles and carbines that are currently in production or in development worldwide.

57 Sniper rifles

A range of sniper rifles, listed by manufacturer with concise descriptions.

77 Machine guns

Specifications for light machine guns, medium/general-purpose machine guns and heavy machine guns.

90 Grenade launchers

Specifications for both individual and crew-served grenade launchers.

104 Assault/antitank weapons

Descriptions of both individual and crew-served assault and antitank weapons.

119 Mortars

A selection of light and medium mortars.

128 Weapon attachments

Descriptions of sights, laser pointers and suppressors currently in production or in development.

154 Software-defined radios

A selection of the latest software-defined radio systems.

173 Guide to suppliers

A worldwide listing of companies in the infantry equipment industry, listed by product type. Suppliers from p181 are listed by company and details include website, e-mail and telephone.



COVER: Royal Marines equipped with Colt C8 carbines take part in Winter Deployment 22. (Photo: UK MoD/Crown Copyright)

ABOVE: A US Army sergeant fires an M17 9mm pistol at Fort Carson, Colorado. (Photo: US Army)

Infantry Equipment Handbook

Land Warfare

Shephard's Land Warfare magazine is a well-established information source for all aspects of frontline ground combat operations.

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Welcome

There have been numerous developments in the field of infantry equipment in the last 12 months. New systems with innovative features have been launched, small arms and accessories have been upgraded, and countries worldwide have progressed with their procurement programmes.

Global geopolitics have also impacted this area. The Russian invasion of Ukraine shed light on the relevance of having ground troops better equipped to fight in urban and contested environments. This conflict also reinforced the relative importance of operating certain types of weapon systems.

Donated to Ukraine by several international allies, shoulder-fired surface-to-air and surface-to-surface missiles, for instance, have played an important role, preventing Russia from gaining air superiority, hampering its progress on the ground.

Since the war started in February, images of these systems hitting helicopters, IFVs, MBTs and other platforms have captured people's attention in both traditional and social media.

In addition to its precision, this type of weapon provides other advantages such as firepower and low weight. It is also easy to operate, which enables armies to train soldiers faster.

Both enhanced versions and new shoulder-fired anti-aircraft and antitank systems are likely to be introduced in the short and medium term in the international market.

Christine Wormuth, US Secretary of the Army, has even claimed during Congressional hearings that the service intends to work on an upgraded version of the FIM-92 Stinger anti-aircraft system.

In terms of improvements, industry has been increasing efforts to develop and market better equipment and started this effort even before the war in Ukraine began. The use of new technologies, as well as non-traditional materials (such as polymers) and production methods (such as 3D printing), has enabled companies to manufacture small arms featuring modularity, better designs, ergonomics, balance and controllability, as well as lower weight.

In general, the new systems provide the shooter with more comfort by offering easy handling and a better fit. Some guns even allow the user to adjust the trigger as well as the pressure and travel.

Small arms are also becoming safer to operate, with new mechanisms that prevent accidental firing.

Additionally, attachments are being upgraded and are becoming lighter.

Enhancements to operational software used in sights and laser pointers have allowed the production of more precise, reliable and easy-handling devices.

With regard to procurement, the main announcement in the last 12 months was the selection of suppliers for the fire control, rifle and automatic rifle variants under the US Army's Next Generation Squad Weapon (NGSW) programme.

After a 27-month prototyping and testing phase, the army awarded SIG Sauer a ten-year contract for supply of the NGSW-Rifle and the NGSW-Automatic Rifle, with an initial delivery order value of \$20.4 million. The other contenders were Lonestar (previously General Dynamics Ordnance and Tactical Systems) and Textron Systems.

SIG Sauer will supply its SIG-LMG (XM250) light machine gun and SIG MCX-SPEAR (XM5) rifle, with SIG SLX suppressors as standard and SIG FURY hybrid ammunition. The weapons will replace the



A Soldier from 101st Airborne Division equipped with the Enhanced Night Vision Goggle, Nett Warrior, and Family of Weapons Sight. (Photo: US Army)

M4A1 and the M249 Squad Automatic Weapon and will equip close-combat units. The new systems will use a 6.8mm family of ammunition instead of the 5.56mm rounds fired by the M4/M16.

The US Army also selected Vortex Optics for the NGSW-Fire Control requirement. The company will produce and deliver up to 250,000 XM157 systems over ten years. The supplier was competing with L3Harris for a follow-on Other Transaction Agreement, with a maximum ceiling value of \$2.7 billion.

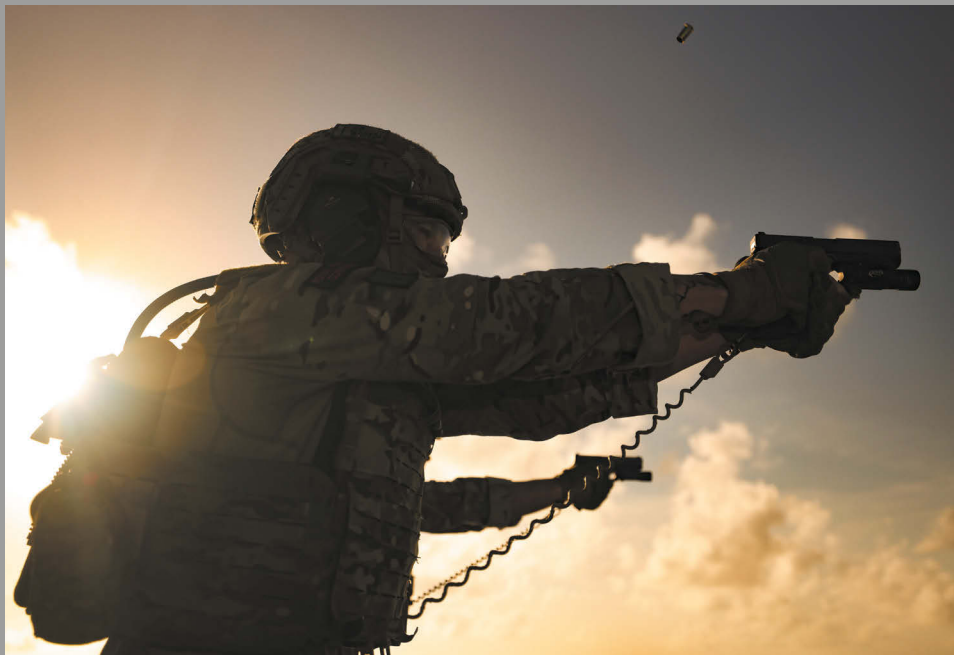
Additionally, the US Army awarded Saab a contract for Carl-Gustaf M4 recoilless rifles as part of the Multi-purpose Anti-armor Anti-personnel Weapon System programme. The order includes deliveries of the weapon to both the US Army and the USMC and has a value of \$16 million under

the current IDIQ agreement, although the total unit count has not been disclosed.

In future, battlefields will require deployment of very well-trained and equipped armies. Since the soldier forms the core of the ground force, small arms and accessories will remain relevant in the coming decades. In this sense, investments in innovative infantry equipment, both from industry and government, will be crucial.

Since tomorrow's battlefield is expected to be even more contested, providing troops with cutting-edge weapons and solutions will be decisive in order to defeat near-peer adversaries.

Flavia Camargos Pereira,
Land Reporter



SPECIFICATIONS

PISTOLS

This section covers military pistols that are currently in production or in development around the world.

Entries are arranged alphabetically by manufacturer and weapon name. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: Royal Marine Commandos conduct a 9mm shoot, using the Glock 17 on the flight deck of HMS Kent whilst in the Philippine Sea on 22 August 2021. (Photo: UK MoD)

Beretta ▶ 92A1

Introduced in 2010, the 9mm Beretta 92A1 is the latest model in the 92-pistol series, employed by military and law enforcement users worldwide, including the US DoD (see M9 entry). The 92A1 incorporates ambidextrous safety and reversible magazine release, an external hammer and a recoil buffer. The integral MIL-STD-1913 Picatinny rail situated in front of the trigger guard allows the attachment of lighting systems and laser aiming devices.

Length: 217mm **Barrel length:** 125mm **Width:** 38mm **Height:** 137mm
Calibre: 9mm **Weight:** 0.94kg



Beretta ▶ APX

Designed specifically for the military market, Beretta unveiled its modular APX pistol at the IDEX 2015 show and offered it for the US Army's Modular Handgun System. The APX is a striker-fired pistol built on a chassis system. The lightweight frame is made of fibreglass-reinforced technopolymer. To accommodate right- or left-handed users, the APX's magazine release button can be reversed. Interchangeable backstraps of different thicknesses and configurations can be fitted to suit the user. **Length:** 192mm **Barrel length:** 108mm **Calibre:** 9mm



Beretta ▶ M9

M9 is the US DoD designation for the military-specification 9mm Beretta 92FS, selected in 1985 to replace the 45cal M1911A1 in US service. Sales to the DoD, with more than 600,000 pistols delivered by mid-2012, and FMS customers make the M9 one of the most widely used military pistols in the world. In September 2012, Beretta USA received a five-year \$64 million firm-fixed-price contract from the DoD for up to 100,000 M9s. **Length:** 216mm **Barrel length:** 125mm **Width:** 38mm **Height:** 137mm **Calibre:** 9mm
Weight: 0.94kg **Effective range:** 50m



Beretta ▶ Px4 Storm Full

The Px4 Storm family is based on a modular design concept with interchangeable backstraps, which makes it adaptable to different hand sizes and shooting styles. The Px4 Storm Full is available in three calibres – 9x19mm, .40 S&W; and .45 ACP – while the Compact and Subcompact models are available in 9x19mm and .40 S&W. The pistol features a locked breech with a rotating barrel system. To reduce weight, the frame employs thermoplastic technology (technopolymer-reinforced fibreglass). **Length:** 195mm **Barrel length:** 105mm **Width:** 36mm **Height:** 140mm **Calibre:** 9mm
Weight: 0.81kg



Beretta ► Px4 Storm SD

The Px4 Storm SD (Special Duty) .45 ACP semi-automatic pistol was developed to meet the requirements issued by the US Special Operations Command for the planned Joint Combat Pistol project. These included weather resistance, three magazines (one nine-round flush and two ten-round extended), dark earth frame, extended barrel for threading, tactical case and additional accessories. It has been treated to withstand environmental factors such as salt spray, mud, ice, sand and underwater deployment.

Length: 210mm **Barrel length:** 115mm **Width:** 36mm **Height:** 145mm
Calibre: 11.43mm **Weight:** 0.8kg



CANiK ► Mete SFT

As a member of METE family pistols, designed specifically to meet the requirements of military and law enforcement forces, this ambidextrous, highly modular, striker fired, polymer framed full size model stands out with its exceptional durability, reliability, and accuracy (barrel life of 50,000 rounds with dispersion less than 10cm at 25m). With improved ergonomics and a new frame design allowing the user to totally disassemble and reassemble the pistol with the help of only one tool, it is developed to be the sidearm of choice of military and special forces. **Length:** 192mm **Barrel length:** 113.5mm **Width:** 36mm **Height:** 145mm **Calibre:** 9mm **Weight:** 789 g



CANiK ► METE SFx

With a barrel length of 132mm, this full-size long slide member of the METE series pistol is the new version of the TP9 SFx METE which has been selected as the service pistol of Turkish Police SWAT & Gendarmerie Spec. Ops. Forces. It has a new beavertail and trigger guard design for further improved ergonomics and a newly designed frame that allows the user to totally disassemble and reassemble the pistol with the help of only one tool. **Length:** 210.5mm **Barrel length:** 132mm **Width:** 36mm **Height:** 145mm **Calibre:** 9mm **Weight:** 832 g



Caracal ► Caracal C

The Caracal series of pistols is available in a full-size 18-round capacity and a compact 15-round capacity. They are built on a synthetic frame and have a short 8mm trigger pull, as well as a low-profile slide and bore axis, for reduced felt recoil. The compact 9mm Caracal C is a striker-fired pistol. **Length:** 167mm **Barrel length:** 90mm **Width:** 28mm **Height:** 122mm **Calibre:** 9mm **Weight:** 0.7kg



Caracal ► Caracal Enhanced F

Launched as a new product in 2015, the redesigned 9x19mm Caracal Enhanced F semi-automatic pistol replaces the previous Caracal F. The Enhanced F has a short trigger pull and reset while its low-profile slide gives less felt recoil to the operator. It has a high-capacity 18-round magazine and retains the low bore axis found on previous Caracal pistols. **Length:** 178mm **Barrel length:** 104mm **Width:** 28mm **Height:** 135mm **Calibre:** 9mm **Weight:** 0.75kg



Colt Defense ► M45A1 CQBP

The 45cal M45A1 Close Quarter Battle Pistol (CQBP) is the newest variant of the M1911 adapted to meet changing requirements of military customers. In July 2012, following a competitive selection process, the USMC awarded the company a five-year contract to supply up to 12,000 CQBPs to replace the 9mm pistols then in service. The M45A1 features a bottom MIL-STD-1913 Picatinny rail for tactical light and laser accessories and a Series 80 firing pin safety. **Length:** 215.9mm **Barrel length:** 127mm **Calibre:** 11.43mm **Weight:** 1.27kg



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Česká zbrojovka ► CZ P-07/Kadet/Shadow 2

The CZ P-07 is a polymer compact pistol designed primarily as a service weapon and for concealed carry. It is available in 9x19mm, 9x21mm and .40 S&W calibres. Compared to its predecessor CZ 75 P-07 Duty, it has a number of added features, including a nitrated slide finish that wears longer, better corrosion resistance, backstraps in three sizes and magazine extension, increasing capacity by two rounds. **Length:** 185mm **Barrel length:** 95mm **Width:** 38mm **Height:** 137mm **Calibre:** 9mm **Weight:** 0.69kg



Česká zbrojovka ► CZ P-09

The CZ P-09 high-capacity service pistol has a frame made of glassfibre-reinforced polymer and interchangeable backstraps that are available in three sizes. It is available in 9x19mm, 9x21mm and .40 S&W calibres. The CZ P-09 uses the Omega trigger mechanism, giving the user an option of interchangeable safeties – manual or decocking can be selected based on preference. **Length:** 208mm **Barrel length:** 115mm **Width:** 38mm **Height:** 148mm **Calibre:** 9mm **Weight:** 0.86kg



Česká zbrojovka ► CZ P-10 F

The CZ P-10 F is the full-size version of CZ's P-10 pistol range aimed at military customers. While it is chambered for the same NATO-standard 9x19mm cartridge as the compact CZ P-10 C, this larger, heavier pistol has an increased magazine capacity of 19 rounds. Like other members of the P-10 family, it incorporates CZ's DiFEND ergonomics and has a durable polymer frame, three interchangeable backstraps, an ambidextrous slide stop and a magazine release that can be fitted to either side of the pistol to suit individual preferences. **Length:** 203mm **Barrel length:** 114mm **Width:** 32mm **Height:** 150mm **Calibre:** 9mm **Weight:** 0.8kg



Detonics Defense Technologies ► STX

In 2014, Detonics introduced the 9mm STX and in June 2015 announced that it had signed an agreement with STI International to produce the pistol. **Length:** 178mm **Width:** 32mm **Height:** 135mm **Calibre:** 9mm **Weight:** 0.65kg



FN Herstal ► FN 509

FN Herstal launched its FN 509 pistol in 2018. The pistol was designed for commercial, law enforcement and military use. The semi-automatic FN 509 has a pre-loaded striker autoloader mechanism and a short recoil operating principle. It is made of polymer with a replaceable steel frame and grip texture. **Length:** 188mm **Barrel length:** 101.6mm **Weight:** 0.75kg



FN Herstal ► FN Five-seveN

FN Herstal developed the FN Five-seveN pistol in the 1990s to complement its FN P90 personal defence weapon – both fire a 5.7x28mm cartridge developed to provide a more efficient round than 9x19mm. The FN Five-seveN is used by military, police and security forces in more than 40 countries. Its polymer receiver is said to make the weapon 20% lighter than an equivalent steel 9mm handgun. **Length:** 208mm **Barrel length:** 122mm **Calibre:** 5.7mm **Weight:** 0.79kg **Effective range:** 50m



FN Herstal ► FNS-9

FN Herstal launched its 9mm FNS-9 pistol in mid-2010. It has been developed around a pre-loaded striker mechanism, designed to provide a short and light trigger pull identical for all shots. The polymer frame has a low bore axis for reduced felt recoil and better control. The FNS-9 has manual safety, trigger safety, firing pin safety, drop safety and out-of-battery safety. Ergonomic aspects include checked grips, front serrations for press check and three interchangeable backstrap inserts. The operating controls are ambidextrous. FNS-9 Training, FNS-9 Practice and FNS-9 Cutaway variants are available for training. **Length:** 184mm **Barrel length:** 102mm **Calibre:** 9mm **Weight:** 0.7kg



FNH USA ► FNX-45 Tactical

Introduced in January 2013, the .45 ACP FNX-45 Tactical builds on the FNP-45 Tactical developed for the US Joint Combat Pistol programme. The chequered polymer frame is offered in black and flat dark earth and has a low bore axis for reduced felt recoil and better operator control. The operating controls are ambidextrous. The cold hammer-forged, stainless-steel barrel has a threaded muzzle to accept sound suppressors, compensators and other accessories. **Length:** 201mm **Barrel length:** 135mm **Width:** 40mm **Height:** 165mm **Calibre:** 11.43mm **Weight:** 0.95kg



Glock ► G19X

Glock released its 9x19mm G19X, the company's first 'crossover' pistol combining the full-size G17 frame and the compact G19 slide, in 2017. The G19X is a further development of the company's unsuccessful bid for the US Army's Modular Handgun System and is being marketed to military, law enforcement and civilian customers. **Length:** 189mm **Barrel length:** 102mm **Width:** 33mm **Height:** 139mm **Calibre:** 9mm **Weight:** 0.62kg **Muzzle velocity:** 350m/s



Glock ► Glock Pistol

The Glock family of pistols have been in widespread service since the Glock 17 was selected for Austrian military and police service in 1982. The company's Safe Action Pistols have seen service with multiple military and law enforcement users, including over 25,000 bought for the UK armed forces.

Length: 174mm **Width:** 30mm **Height:** 127mm **Calibre:** 9mm **Weight:** 0.59kg



Heckler & Koch ► HK45

The .45 ACP HK45 was developed as an improvement of the USP45, first released in 1995. The pistol features changeable backstraps, a MIL-STD-1913 rail, revised ergonomics and more ambidextrous controls. An internal mechanical recoil reduction system reduces the forces imparted by as much as 30%, claims the company. **Length:** 204mm **Barrel length:** 113mm **Width:** 39mm **Height:** 144mm **Calibre:** 11.43mm **Weight:** 0.88kg



Heckler & Koch ► MK23

The MK23 .45 ACP pistol was developed to meet US Special Operations Command's Offensive Handgun Weapon System requirement. The MK23 Mod 0 has been in service since 1996. It is issued with a laser aiming module and suppressor. During testing, the pistols demonstrated a service life of over 30,000 rounds firing +P ammunition and exceeded 2,000 MRBS, with an average of 6,000 MRBS. The MK23 has an anti-corrosion fibre-reinforced polymer frame and universal mounting grooves for installing accessories. **Length:** 245mm **Barrel length:** 150mm **Width:** 39.1mm **Height:** 149.9mm **Calibre:** 11.43mm **Weight:** 1.2kg



Heckler & Koch ► P30

The P30 is available in 9x19mm and .40 S&W; calibres with six variants of each. The grip of the P30 has exchangeable backstrap and grip shells for different hand sizes. All variants in the P30 family have an automatic hammer and firing pin safety. It is fitted with an open square notch rear sight with luminous contrast points. The P30 is equipped with a MIL-STD-1913 Picatinny rail as standard. **Length:** 181mm **Barrel length:** 113mm **Width:** 34mm **Height:** 138mm **Calibre:** 9mm **Weight:** 0.74kg



Heckler & Koch ► SFP9-SF

The SFP9 striker-fired pistol is a fully pre-cocked system with a single-action trigger. The SFP9-SF is the SOF version with a short-trigger-travel of 6mm. Patented supports at the rear of the slide simplify and assist charging. The disassembly process requires no tools and the weapon cannot be disassembled unless the magazine has been removed. The trigger need not be pulled before disassembly. The SFP9 automatically de-cocks itself when disassembled. **Length:** 186mm **Barrel length:** 104mm **Width:** 33mm **Height:** 137mm **Calibre:** 9mm **Weight:** 0.71kg



Heckler & Koch ► USP

The Universal Service Pistol (USP) is available in nine trigger/firing mode configurations and three calibres: 9mm, .40 S&W; and .45 ACP. All USPs have a fibre-reinforced polymer frame stiffened by stainless-steel inserts. It uses a modified Browning-type action with a recoil reduction system. The USP can be converted to different trigger modes – double-action/single-action and double-action-only. The modular design of the USP's internal components allows switching for left-handed shooters. **Length:** 201mm **Barrel length:** 112mm **Width:** 32mm **Height:** 142mm **Calibre:** 9mm **Weight:** 0.89kg



Israel Weapon Industries (IWI) ► Jericho II Enhanced

The new Jericho II Enhanced pistol is based on the proven mechanism of the popular line of Jericho pistols. Jericho pistols have been used for over three decades by military and police units, including law-enforcement entities in Israel and worldwide. The new Jericho II, either in its standard or medium size, features a new polymer frame without finger grooves and adjustable backstrap sizes for a comfortable and strong grip. It also has a Mil-STD 1913 Picatinny front rail, new hammer profile and trigger profile while maintaining IWI's high standards for reliable performance, accuracy and quality construction. **Length:** 206mm **Barrel length:** 112mm **Calibre:** 9mm **Weight:** 0.76kg



Israel Weapon Industries (IWI) ► Jericho Polymer

Jericho pistols have been used for over three decades by military and police units, including law-enforcement entities in Israel and around the world. Designed for military and law enforcement users, the Jericho 9x19mm pistol in its polymer frame configuration is available in standard, short and compact models. These can be fitted with an ambidextrous slide- or frame-mounted safety, which acts as a decocking lever. **Length:** 207mm **Barrel length:** 112mm **Calibre:** 9mm **Weight:** 0.78kg



Israel Weapon Industries (IWI) ► Jericho Steel

Designed for military and law enforcement users, the Jericho pistol in steel frame configuration is available in 9x19mm and .45 ACP calibres and in standard and short models. These can be fitted with an ambidextrous slide- or frame-mounted safety, which also acts as a decocking lever. The pistol is in service with military and law enforcement users worldwide. **Length:** 207mm **Barrel length:** 112mm **Calibre:** 9mm **Weight:** 1.08kg



Israel Weapon Industries (IWI) ► Masada

The IWI MASADA is a 9mm polymer-framed, striker-fired pistol that features a low-profile barrel for reduced recoil and has ambidextrous controls and an ergonomic grip provided by its 3 interchangeable wrap-around backstraps. The pistol utilises a modular serialised high-grade steel trigger mechanism housing, allowing for low maintenance. With either combat-style sights or optional fixed three-dot tritium sights, it has a MIL-STD 1913 Picatinny rail for other accessories and is available in OPR (Optic Ready Platform) configuration as well. It is likely to be used by the elite Paratroopers Brigade of the IDF. **Length:** 189mm **Barrel length:** 104mm **Calibre:** 9mm **Weight:** 0.65kg



Kalashnikov Concern ► Makarov PM/PB/PMM

The Makarov PM is a compact service pistol, adapted for military and police use in 1951 and still widely used in Russia, former Soviet republics and other countries. The PB is an integrally suppressed variant, intended for use by SF. Originally designed in the early 1970s, it is still used by the Russian military and paramilitary SF. **Length:** 308mm **Barrel length:** 93mm **Calibre:** 9mm **Weight:** 0.98kg



Kalashnikov Concern ► PL-15

The PL-15 is a double-action-only pistol chambered for the ubiquitous 9x19mm parabellum cartridge. Developed by firearms designer and target shooter Dmitry Lebedev and manufactured by the Kalashnikov Concern, this pistol design prioritises ergonomics and reliability. By forcing the user to take a high grip on the gun, the PL-15 provides a low bore axis, thereby improving accuracy and controllability. **Length:** 207mm **Barrel length:** 120mm **Width:** 28mm **Height:** 138mm **Calibre:** 9mm **Weight:** 1kg



Kalashnikov Concern ► Yarygin PYa

The Yarygin PYa is a double-action, short-recoil, semi-automatic pistol developed during the 1990s as a replacement for the Makarov PM series in Russian military service. Adopted for Russian service in 2003, the pistol has been in mass production since 2011. The Yarygin PYa is chambered for the 9x19mm 7N21 cartridge, the Russian loading of the 9x19mm NATO pistol cartridge. **Length:** 198mm **Barrel length:** 113mm **Calibre:** 9mm **Weight:** 0.98kg



SIG Sauer ► 1911 Nitron Rail

The .45 ACP 1911 Nitron Rail pistol has a Nitron stainless-steel slide and frame, ambidextrous safety, beavertail grip safety, customisable rosewood grips, black controls and a MIL-STD-1913 accessory rail. **Length:** 221mm **Barrel length:** 127mm **Width:** 35.6mm **Height:** 139.7mm **Calibre:** 11.43mm **Weight:** 1.18kg



SIG Sauer ► M17 Modular Handgun System

It was announced on 19 January 2017 that the US Army had selected the SIG Sauer Model P320 for its XM17 Modular Handgun System to replace the Beretta M9 service pistol. The army will field the XM17 in 9mm. All pistols will be configurable to receive silencers and will include standard and extended-capacity magazines.



SIG Sauer ► P220 Combat

Developed to meet Swiss military requirements, the P220 series has been fielded by military and law enforcement users since the 9mm version was introduced in 1975. The .45 ACP P220 Combat and P220 Combat TB (Threaded Barrel) have a flat dark earth finish on an alloy frame and Nitron finish over a stainless-steel slide. **Length:** 196mm **Barrel length:** 111mm **Width:** 38mm **Height:** 139mm **Calibre:** 11.43mm **Weight:** 0.86kg



SIG Sauer ► P224 Nitron

Based on the P229, the P224 has the same lightweight all-metal frame in a subcompact package with standard controls. Available in three calibres – 9x19mm, .357 SIG, .40 S&W; – the P224 Nitron uses a double-stack magazine and has a Nitron stainless-steel slide, a black hard-coat anodised aluminium frame and one-piece ergonomic grips. **Length:** 170mm **Barrel length:** 89mm **Width:** 35.6mm **Height:** 114mm **Calibre:** 9mm **Weight:** 0.82kg



SIG Sauer ► P226

The P226 was developed in the late 1980s against a US military requirement for a 9x19mm pistol. It has since been fielded by the military, law enforcement and security forces in more than 26 countries. It is available in three calibres: 9x19mm, .357 SIG and .40 S&W; It is equipped with an integrated accessory rail and is available with contrast iron or SIGLITE night sights. Numerous variants are available, including Compact and Nitron models. **Length:** 196mm **Barrel length:** 112mm **Width:** 38.1mm **Height:** 140mm **Calibre:** 9mm **Weight:** 0.96kg



SIG Sauer ► P226 MK25

The 9mm P226 MK25 is in service with USN SEAL units, which had previously used the P226 Navy model. The most significant difference is that the MK25 is equipped with SIGLITE night sights. It has a Nitron stainless-steel slide, corrosion-resistant internal coating, a MIL-STD-1913 rail and polymer grips. **Length:** 195.6mm **Barrel length:** 111.8mm **Width:** 38.1mm **Height:** 139.7mm **Calibre:** 9mm **Weight:** 0.91kg



SIG Sauer ► P227 Nitron

The P227 Nitron combines a double-stack .45 ACP pistol mechanism with a 10+1-round capacity and a one-piece ergonomic grip designed to retain the feel of the P226. The P227 has a Nitron stainless-steel slide, a black hard-coat anodised aluminium frame and an accessory rail. **Length:** 195.6mm **Barrel length:** 111.7mm **Width:** 38.1mm **Height:** 139.7mm **Calibre:** 11.43mm **Weight:** 0.91kg



SIG Sauer ► P229 Combat

The 9mm P229 Combat is a variant of the P229 family optimised for military use. It features a flat dark earth finish on its alloy frame and a Nitron finish over the stainless-steel slide. Internal parts and controls are phosphated for corrosion resistance, and the barrel is hard-chromed and finished in Nitron to pass military accuracy requirements. The P229 Combat has also passed a 240h salt spray corrosion test. **Length:** 195.5mm **Barrel length:** 109mm **Width:** 38mm **Height:** 137mm **Calibre:** 9mm **Weight:** 0.96kg



SIG Sauer ► P250 Full-Size

The P250 Full-Size, available in four calibres, was the first modular pistol designed by SIG Sauer and is intended to meet the requirements of military, law enforcement and civilian users. It is built around a serialised modular frame and fire control assembly, allowing the user to change calibre, grip size, trigger and slide length. **Length:** 206mm **Barrel length:** 119mm **Width:** 35.6mm **Height:** 140mm **Calibre:** 9mm **Weight:** 0.83kg



SIG Sauer ► P320 Compact

The P320 Compact is a polymer-framed service pistol with a modular design, offering options to change calibres, size and fit. The pistol has a five-point safety system and a MIL-STD-1913 rail fitted at the six o'clock position. The P320 Compact does not require the user to pull the trigger or use a special tool to disassemble the weapon for cleaning. **Length:** 183mm **Barrel length:** 99mm **Width:** 35.5mm **Height:** 135mm **Calibre:** 9mm **Weight:** 0.74kg



SIG Sauer ► P320 Full-Size

The P320 Full-Size is a polymer-framed service pistol with a modular design, offering customisation to different hand sizes or duty requirements. It can be converted from a full-size to a carry pistol, while slide and barrel conversions allow it to change between four calibres and barrel lengths. **Length:** 203mm **Barrel length:** 119mm **Width:** 35.5mm **Height:** 140mm **Calibre:** 9mm **Weight:** 0.83kg



SIG Sauer ► SP2022

The SP2022 is the latest version of SIG Sauer's polymer-framed pistols and features a lightweight, wear-resistant frame with an integrated accessory rail. The slide is machined from a block of stainless steel and protected by a Nitron finish. Available in 9mm and .40 S&W; the SP2022 can be converted from double-action/single-action to double-action-only through an integral fire control unit. It also has a four-point safety system. **Length:** 187mm **Barrel length:** 98mm **Width:** 34mm **Height:** 144mm **Calibre:** 882mm **Weight:** 0.88kg



Smith & Wesson ► M&P45

The M&P; (Military and Police) series is designed for military and law enforcement users. Introduced in 2005, the M&P; has improved trigger and ergonomics that allow the customer to customise the pistol. The M&P45; like other models, features a Zytel polymer frame, stainless-steel barrel/slide and structural components. It is equipped with a MIL-STD-1913 rail. Other M&P; models are available in .357 SIG, .40 S&W; and .45 ACP calibres. **Length:** 204mm **Barrel length:** 114mm **Width:** 30.5mm **Height:** 139mm **Calibre:** 9mm **Weight:** 0.84kg



SNT Motiv ► K5/DP51 Series

The 9mm K5/DP51 pistol series was developed in 1984-88 for the Republic of Korea Army, which has used the weapon since 1989. The design uses the company's 'Fast Action', also known as double-action plus, trigger system. The K5/DP51 9mm pistol has an ambidextrous safety catch and magazine release button. The pistol can be supplied with 13- or 15-round magazines. It is equipped with Novak iron sights. The K5/DP51 has been exported to military users in at least four countries. **Length:** 190.5mm **Barrel length:** 104.14mm **Calibre:** 9mm **Weight:** 0.73kg



SO SIA 'Fort' ► Fort-9

The Fort-9 is a compact 9x17mm short pistol that is intended for concealed carry or as a backup weapon. **Length:** 147mm **Barrel length:** 77.3mm **Width:** 27mm **Height:** 114mm **Calibre:** 9mm **Weight:** 0.49kg **Effective range:** 10m



SO SIA 'Fort' ► Fort-12

The Fort-12, available in two calibres, was one of a series of weapons developed by Fort to replace Soviet-era small arms in service with Ukrainian forces. It has been in military and police service since 1998. The Fort-12 can be equipped with a sound suppressor, laser designator or tactical light. The pistol has a heavy metal construction to increase longevity and retain stability in operation. The Fort-12R and Fort-12RM models fire non-lethal rubber bullets. **Length:** 180mm **Barrel length:** 95mm **Width:** 33mm **Height:** 131mm **Calibre:** 9mm **Weight:** 0.83kg **Effective range:** 25m



SO SIA 'Fort' ► Fort-14PP

The 9x19mm Fort-14PP is one of a series of pistols developed by Fort to replace Soviet-era weapons, such as the Makarov pistol, in service with the Ukrainian military, police and security forces. A tactical light and sound suppressor can be fitted. **Length:** 218mm **Barrel length:** 116mm **Width:** 35mm **Height:** 140mm **Calibre:** 9mm **Weight:** 0.95kg **Effective range:** 25m



SO SIA 'Fort' ► Fort-14TP

Available in two calibres, the Fort-14TP is one of a series of weapons developed by Fort to replace Soviet-era small arms in service with Ukrainian military, police and security forces. The extended barrel of the Fort-14TP increases LoS and a barrel with a locking thread for a Fort-4 sound suppressor can be fitted. An LT6A tactical light can be fitted. An extended 24-round magazine is available. The Fort-14R model fires non-lethal rubber ammunition. **Length:** 210mm **Barrel length:** 123.5mm **Width:** 33mm **Height:** 140mm **Calibre:** 9mm **Weight:** 0.92kg **Muzzle velocity:** 335m/s **Effective range:** 25m



SO SIA 'Fort' ► Fort-17

The Fort-17 is available in two calibres and can be configured for left-handed users. The design uses durable polymers reinforced by steel to reduce weight. Interchangeable backstraps allow the grip to be adjusted to suit the size of the shooter's hand. An accessory rail enables a laser designator and tactical flashlight to be mounted. The Fort-17R model fires non-lethal rubber ammunition. **Length:** 180mm **Barrel length:** 95mm **Width:** 33mm **Height:** 130mm **Calibre:** 9mm **Weight:** 0.68kg **Muzzle velocity:** 320m/s



SO SIA 'Fort' ► Fort-19

The Fort-19 is a modified version of the 9x19mm Fort-14PP, made with polymer components to reduce weight. **Length:** 207mm **Barrel length:** 112mm **Width:** 35mm **Height:** 139mm **Calibre:** 9mm **Weight:** 0.82kg **Effective range:** 25m



Steyr Mannlicher ► C-A1

The C-A1 striker-fired pistol is a compact, semi-automatic, double-action handgun available as the C9-A1 chambered in 9x19mm or the C40-A1 chambered in .40 S&W. The C-A1 combines the length of the Steyr S-A1 pistol with the grip of the M-A1. The barrel of the C-A1 is 92mm long and provides a platform for self-defence by offering a short overall length while allowing optimal grip control. **Length:** 170mm **Barrel length:** 91mm **Width:** 32mm **Height:** 132mm **Calibre:** 9mm



Steyr Mannlicher ► L-A1

The Steyr L-A1 striker-fired pistol is a full-sized, semi-automatic, double-action handgun chambered in either 9x19mm or .40 S&W, designated as the L9-A1 and L40-A1. With a barrel length of 114mm, the L-A1 is the largest of the Steyr pistol line and is equipped with a MIL-STD-1913 Picatinny rail. As with each model in the Steyr A1 line, it has a low bore axis to minimise recoil and improve control. **Length:** 191mm **Barrel length:** 115mm **Width:** 30.5mm **Height:** 136mm **Calibre:** 9mm **Weight:** 0.81kg



Steyr Mannlicher ▶ M-A1

The Steyr M-A1 striker-fired pistol is a mid-sized, semi-automatic, double-action handgun chambered in either 9x19mm (M9-A1) or .40 S&W; (M40-A1). The M-A1 has a barrel length of 102mm. An integrated MIL-STD-1913 rail allows for mounting a light or laser, and slide-racking grooves at the rear of the slide allow for a firm grip when loading or clearing the chamber. **Length:** 178mm **Barrel length:** 102mm **Width:** 30.5mm **Height:** 136mm **Calibre:** 9mm **Weight:** 0.77kg



Steyr Mannlicher ▶ S-A1

The Steyr S-A1 striker-fired pistol is a subcompact, semi-automatic, double-action handgun available as the S9-A1 chambered in 9x19mm or the S40-A1 chambered in .40 S&W;. The smallest of Steyr's pistol line, the S-A1 has a 92mm barrel and the same overall length as the C-A1 but a shorter grip for concealment. **Length:** 175mm **Barrel length:** 96mm **Width:** 30.5mm **Height:** 123mm **Calibre:** 9mm **Weight:** 0.74kg



TsNIITochMash ▶ SR1MP

The SR1 semi-automatic pistol series fires the 9x21mm Gyurza round developed by TsNIITochMash to defeat body armour. Under the designation SPS, the pistol is in service with Russian military and security units. The SR1MP variant has MIL-STD-1913 rails at the three, six, nine and 12 o'clock positions and can be equipped with a silencer. **Length:** 404mm **Calibre:** 9mm **Weight:** 0.9kg **Muzzle velocity:** 440m/s **Effective range:** 100m







SPECIFICATIONS

SUBMACHINE GUNS

This section covers submachine guns (SMGs) and personal defence weapons (PDWs) that are currently in production or in development around the world.

Entries are arranged alphabetically by manufacturer and weapon name. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: A US soldier, assigned to the SACEUR Security Detachment, fires an MP5K submachine gun during personal security detail qualification on 9 May 2019. (Photo: US Army)

Beretta ► Mx4 Storm

Beretta's 9mm Mx4 Storm SMG is designed for military and law enforcement users and is made of technopolymers to reduce weight. The extractor, ejector, cocking handle, ejection port cover, magazine release button and fire selector button are reversible for right- or left-hand use. The Mx4 Storm features a MIL-STD-1913 rail at the 12 o'clock position, with optional rails available at the three, six and nine o'clock positions. **Length:** 647mm **Barrel length:** 312mm **Width:** 63mm **Height:** 262mm **Calibre:** 9mm **Weight:** 2.48kg



Beretta ► PMX

Beretta's 9x19mm PMX SMG, unveiled in 2017, has been developed to meet the needs of law enforcement and military users. It has been introduced as a replacement for Beretta's 9x19mm Model 12 series designed in the 1950s. Italy's Carabinieri General Command became the launch customer in January 2018 with an order for 1,000 SMGs worth €816,000 (\$1 million). **Length:** 640mm **Barrel length:** 175mm **Width:** 86mm **Height:** 250mm **Calibre:** 9mm **Weight:** 2.4kg



Česká zbrojovka ► CZ Scorpion Evo 3 A1

The 9mm CZ Scorpion Evo 3 A1 is the third-generation of Česká zbrojovka's vz.61 Škorpioň SMG series, which entered production in 1962. It is equipped with MIL-STD-1913 rails at the three, six, nine and 12 o'clock positions. The folding polymer buttstock can be adjusted for length and the cocking handle may be mounted on either side. The CZ Scorpion Evo 3 also has ambidextrous controls. **Length:** 675mm **Barrel length:** 196mm **Width:** 60mm **Height:** 240mm **Calibre:** 9mm **Weight:** 2.7kg **Effective range:** 180m



Emtan Karmiel ► MZ-4 7.5in

The MZ-4 7.5in is the shortest member of Emtan's 5.56x45mm MZ-4 family, based on the proven American M4 carbine/M16 rifle design. Equipped with a 7.5in barrel, it is intended for use in personal defence, special operations and similar roles. Emtan describes its MZ-4-series weapons as more reliable, more accurate and more ergonomic than competitors. Emtan MZ-4 parts are fully compatible with other M4 and M16 weapons. **Length:** 695mm **Barrel length:** 190.5mm **Calibre:** 5.56mm **Weight:** 2.8kg



FN Herstal ► FN P90

FN Herstal introduced the FN P90 PDW in 1990 to fire its 5.7x28mm cartridge. Both were developed with the aim of providing a more efficient alternative to 9x19mm weapons. The FN P90 has a compact bullpup configuration with a 50-round magazine mounted on top of the weapon. It is in service with military and law enforcement users in more than 40 countries. **Length:** 505mm **Barrel length:** 264mm **Calibre:** 5.7mm **Weight:** 3.1 kg **Muzzle velocity:** 715m/s **Effective range:** 200m



FN Herstal ► FN SCAR-SC

FN Herstal unveiled the 5.56mm FN SCAR-SC (Subcompact Carbine), the newest member of the SCAR (SOF Combat Assault Rifle) family originally developed for the US Special Operations Command, in November 2017. **Length:** 653mm **Barrel length:** 190.5mm **Weight:** 3.15kg



Forjas Taurus ► SMT9

Forjas Taurus unveiled the SMT SMG family at IDEX 2011. The SMT9 is chambered for 9x19mm ammunition and is intended primarily for military users. The upper receiver of the SMT9 is made of aluminium with a full-length MIL-STD-1913 rail, while the lower receiver is made of polymer reinforced with steel. The side-folding stock is adjustable for length, and the magazine well acts as a forward pistol grip. **Length:** 753mm **Barrel length:** 200mm **Width:** 75mm **Height:** 226mm **Calibre:** 9mm **Weight:** 3.2kg



Forjas Taurus ► SMT40

Forjas Taurus unveiled the SMT SMG family at IDEX 2011. The SMT40 is chambered for .40 S&W; ammunition and is intended primarily for law enforcement users. **Length:** 753mm **Barrel length:** 200mm **Width:** 75mm **Height:** 299mm **Calibre:** 9mm **Weight:** 3.2kg



Heckler & Koch ▶ MP5

The MP5 is one of the most prolific 9mm SMGs in production, with more than 100 variants developed to meet the requirements of military, paramilitary and law enforcement users. It was first fielded by the West German Federal Police in 1966. The MP5 is available with a selective fire capability, allowing single-shot, three-round burst and automatic fire. The MP5A2 has a fixed synthetic polymer stock, while the MP5A3 has a retractable metal stock.

Length: 690mm **Barrel length:** 225mm **Width:** 67mm **Height:** 230mm
Calibre: 9mm **Weight:** 3.1kg **Muzzle velocity:** 400m/s **Effective range:** 200m



Heckler & Koch ▶ MP5K

Introduced in 1976, the MP5K is the most compact member of the MP5 family, enabling it to be carried concealed. It has an integral forehand grip, and a folding buttstock is also available. **Length:** 320mm **Barrel length:** 115mm **Width:** 55mm **Height:** 230mm **Calibre:** 9mm **Weight:** 2kg **Muzzle velocity:** 375m/s **Effective range:** 200m



Heckler & Koch ▶ MP5SD

The silenced MP5SD was developed by Heckler & Koch to meet the requirements of SF users. With an integrated silencer, the MP5SD has the same length and shape as a standard MP5 and fires regular 9mm ammunition types. The silencer also suppresses muzzle flash. The MP5SD1A2 has a retractable metal stock, while the MP5SD2 has a fixed synthetic polymer stock. **Length:** 800mm **Barrel length:** 146mm **Width:** 67mm **Height:** 230mm **Calibre:** 9mm **Weight:** 3.4kg **Muzzle velocity:** 285m/s **Effective range:** 200m



Heckler & Koch ▶ MP7A1

Heckler & Koch developed the MP7 in parallel with a 4.6x30mm cartridge in the 1990s to provide a personal defence weapon that can fire a more lethal round than 9x19mm. The MP7 went into production in 2001 for the German Armed Forces and has been sold to military and law enforcement users in at least 23 countries. Extensive use is made of polymers. The magazine is loaded in the pistol grip. **Length:** 638mm **Barrel length:** 180mm **Calibre:** 4.6mm **Weight:** 1.9kg **Muzzle velocity:** 725m/s **Effective range:** 0.2m



Heckler & Koch ▶ UMP

Heckler & Koch developed the UMP (Universale Maschinenpistole) in the 1990s to provide an SMG in three calibres – 9x19mm, .40 S&W; and .45 ACP – to meet the requirements of military and law enforcement users. Conversion is accomplished by changing some assemblies. The design incorporates elements of the 5.56mm G36 assault rifle family. Different trigger groups allow combinations of single-shot, burst and fully automatic fire. **Length:** 695mm **Barrel length:** 200mm **Width:** 69mm **Height:** 280mm **Calibre:** 9mm **Weight:** 2.3kg



Israel Weapon Industries (IWI) ▶ Micro Uzi

The Micro Uzi is the smallest member of the 9mm Uzi SMG family. The Uzi is one of the most widely used SMGs, with more than two million produced over the past 50 years. The Micro Uzi was introduced in 1986. It can be fired in automatic or semi-automatic mode. The magazine housing is located in the pistol grip and the cocking handle is on the breech block. **Length:** 504mm **Barrel length:** 134mm **Calibre:** 9mm **Weight:** 2.2kg



Israel Weapon Industries (IWI) ▶ Mini Uzi

The 9mm Mini Uzi was introduced in 1980 to provide a more compact variant of the widely used Uzi SMG. It is available in standard configuration, with open- or closed-bolt firing, and SOF configuration. The Mini UZI can be fired in automatic or semi-automatic mode. The magazine housing is located in the pistol grip and the cocking handle is on the breech block. In current production weapons, a MIL-STD-1913 Picatinny rail is mounted at the six and 12 o'clock positions. Safety features include a manual safety, grip safety, a firing pin blocker and cocking ratchet mechanism to prevent accidental discharge. **Length:** 588mm **Barrel length:** 197mm **Calibre:** 9mm **Weight:** 2.8kg



Israel Weapon Industries (IWI) ▶ Uzi Pro

The 9x19mm Uzi Pro, unveiled in 2010, is the newest member of the Uzi SMG family. IWI designed the Uzi Pro to be lighter, more accurate and more ergonomic than earlier models, but still concealable. The Uzi Pro has a closed-bolt operation for maximum accuracy and features MIL-STD-1913 Picatinny rails at the three, six, nine and 12 o'clock positions. Its ergonomic foldable shoulder stock and a foldable handgrip make it easily concealable for special operations and it is designed to be easy to use by right or left-hand shooters. **Length:** 317mm **Barrel length:** 152mm **Calibre:** 9mm **Weight:** 0kg **Muzzle velocity:** 380m/s **Effective range:** 200m



Israel Weapon Industries (IWI) ► X95 Flattop SMG

IWI's X95 flattop SMG is a 9x19mm calibre bullpup submachine gun. The X95 incorporates advanced technology that allows the conversion from 9x19mm to 5.56x45mm within minutes. This makes it a versatile weapon system that can be modified for a variety of operations and scenarios. The X95 Flattop SMG is available with a pistol grip or with an X95 customised trigger guard, has 360° Picatinny rails and is fully ambidextrous. It is available in a semi-automatic version for the commercial market. **Length:** 580mm **Barrel length:** 279mm **Calibre:** 9mm **Weight:** 3.2kg **Muzzle velocity:** 860m/s



Israel Weapon Industries (IWI) ► X95-S Flattop SMG

The 9x19mm X95-S Flattop SMG is a variant of IWI's X95 bullpup assault rifle family which features an integral suppressor. The 5.56x45mm X95 variant is the standard assault rifle/carbine of the Israel Defense Forces (IDF). The X95 family has been successful on the export market and the selective-fire X95 Flattop SMG broadens the appeal by providing a 9mm SMG with a suppressor for SF operations. **Length:** 650mm **Barrel length:** 279mm **Calibre:** 9mm **Weight:** 3.6kg **Muzzle velocity:** 400m/s **Effective range:** 250m



Kalashnikov Concern ► Bizon-2-01

Kalashnikov developed the 9mm Bizon-2-01 to provide military and security force users with an SMG with a high-capacity magazine. The 53-round magazine is placed under the barrel and functions as a forestock for holding the weapon. The Bizon-2-01 is available with two buttstocks: a frame buttstock that folds or an upper buttstock folding on top of the receiver cover. A side-mounted rail accommodates various optical sights. **Length:** 690mm **Barrel length:** 225mm **Calibre:** 9mm **Weight:** 3kg **Muzzle velocity:** 380m/s **Effective range:** 200m



Kalashnikov Concern ► Vityaz-MO

The Vityaz-MO SMG, also known as the Kalashnikov PPK-20 9mm SMG, is designed and developed by Kalashnikov Concern, a Russian arms manufacturer. The weapon is based on Kalashnikov's PP-19-01 Vityaz-SN 9mm SMG that started being manufactured in the mid-2000s. It has a folding stock and a single grip under the barrel, weighs 2.85kg without the magazine and measures 700mm in length and 475mm in width. The magazine's capacity and rate of fire is 30 rounds and 800 rounds per minute respectively. The gun is accompanied by a camouflaged bag that can be used to carry accessories such as fastening devices, noiseless fire devices, an adapter, clips and a gun oiler. **Length:** 700mm **Width:** 475mm **Weight:** 2.85kg



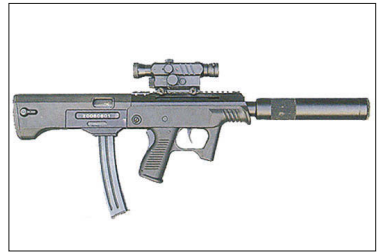
Kalashnikov Concern ► Vityaz-SN

Based on the AK-74 assault rifle, the 9mm Vityaz-SN was developed in 2004. Its handling and maintenance procedures are similar to the AK series. The Vityaz-SN has a side-folding skeletal buttstock and is available with either a MIL-STD-1913 Picatinny rail on the top of the receiver and/or a dovetail side rail on the left of the receiver. On the base of the front iron sight and foregrip, there are attachment points for a laser target designator. **Length:** 705mm **Barrel length:** 705mm **Calibre:** 9mm **Weight:** 2.9kg **Muzzle velocity:** 380m/s **Effective range:** 200m



Norinco ► CS/LS2

Norinco's CS/LS2 is a 9mm bullpup SMG designed for use with a suppressor. It has been in service with the People's Liberation Army since about 2005-6. **Calibre:** 9mm **Weight:** 2.2kg **Muzzle velocity:** 385m/s **Effective range:** 200m



Norinco ► Type 06

The Type 06 is a 9mm SMG with a 50-round magazine mounted above the receiver. It features an extending skeletal buttstock. An optical sight can be fitted, and there is a short rail for mounting a tactical light beneath the forestock. A suppressor can also be fitted. **Length:** 814mm **Width:** 814mm **Height:** 195mm **Calibre:** 9mm **Weight:** 2.3kg **Muzzle velocity:** 360m/s **Effective range:** 200m



Pindad (Persero) ► PM3

The PM3 9mm SMG is the successor to the PM2. Whereas the PM2 used a simple blowback mechanism, the PM3 employs a new gas-operated mechanism for ease of operation. **Length:** 720mm **Barrel length:** 210mm **Calibre:** 9mm **Weight:** 3.15kg **Muzzle velocity:** 380m/s **Effective range:** 75m



Sarsilmaz Fire Arms ► SAR 109T

The 9mm SAR 109 Tactical SMG is based on the AR-15 design. It features an adjustable telescopic stock and MIL-STD-1913 Picatinny rails at the three, six, nine and 12 o'clock positions. **Length:** 690mm **Barrel length:** 220mm **Width:** 52mm **Height:** 230mm **Calibre:** 9mm **Weight:** 2.5kg **Effective range:** 200m



SIG Sauer ► SIG MPX

Barrel length, calibre and stock configuration of the SIG MPX can be changed by the user in the field to meet changing mission requirements. The SIG MPX uses the company's gas-operated short-stroke piston system. It features AR-style controls, an integral MIL-STD-1913 rail, telescoping, folding or pistol configurations and a locked rotating bolt system. Variants include the compact SIG MPX-K, SIG MPX-P pistol, SIG MPX-SD integrally suppressed model and the SIG MPX-C carbine. **Length:** 609.6mm **Barrel length:** 165mm **Width:** 50.8mm **Height:** 264mm **Calibre:** 9mm **Weight:** 2.18kg



SNT Motiv ► K1A

The 5.56mm K1A is described by S&T: Motiv as an SMG because it was developed to meet a Republic of Korea Army (ROKA) requirement to replace the US-supplied 45cal M3 SMG, but it would generally be considered a carbine by most military users. The K1A can fire in semi-automatic, three-round burst and automatic modes. It is equipped with a telescopic buttstock and a short barrel. Approximately 180,000 K1As have been produced for the ROKA and several export customers, including Bangladesh, Papua New Guinea and Senegal. **Length:** 838mm **Barrel length:** 263mm **Calibre:** 5.56mm **Weight:** 2.87kg **Muzzle velocity:** 820m/s



SNT Motiv ► K7

The K7 is a silenced 9mm SMG based upon S&T: Motiv's K1A (see separate entry), but as it fires 9mm ammunition, it uses a blowback system instead of the gas impingement system in the K1A1. The K7 can be fired in semi-automatic, three-round burst and automatic mode. The K7 has been in the Republic of Korea Army service since 2001 and has been exported to Bangladesh and the Philippines. **Length:** 788mm **Barrel length:** 134mm **Calibre:** 9mm **Weight:** 3.4kg **Muzzle velocity:** 295m/s **Effective range:** 135m



SNT Motiv ► XK9/XK9C

Development of the 9mm XK9 was originally completed in 2003 as a replacement for the Heckler & Koch 9mm MP5 used by South Korean SF. Although the K9 did not enter service, S&T Motiv continues to market the XK9 with a 220mm barrel and the more compact XK9C with a 134mm barrel. Various extending buttstocks can be fitted to meet customer requirements. **Length:** 660mm **Barrel length:** 220mm **Calibre:** 9mm **Weight:** 2.9kg **Effective range:** 0.15m



ST Engineering Land Systems ► CPW

ST Engineering's CPW is a submachine gun made of strong yet light engineering plastic and aluminium alloy to make it more cost-effective and compact. Its unique cam recoil mitigation mechanism reduces recoil significantly with delayed blowback operation for accurate and controlled firing. The retractable buttstock allows the CPW to be handled and carried like a conventional pistol for easy concealment by law enforcement and security forces. **Length:** 393mm **Barrel length:** 178mm **Calibre:** 9mm **Weight:** 1.7kg **Effective range:** 100m



Steyr Mannlicher ► AUG A3 9mm XS

The Steyr AUG A3 9mm XS SMG is a member of the AUG A3 bullpup assault rifle family. It features a closed-bolt system and bolt release button for fast reloading. A MIL-STD-1913 Picatinny top rail and short rail on the right side permit the attachment of optical sights, red-dot sights, white lights and laser aiming devices. The muzzle device allows the use of quick attachable silencers. **Length:** 610mm **Barrel length:** 350mm **Height:** 215mm **Calibre:** 9mm **Weight:** 3.4kg



TsNIITochMash ► SR2M

The SR2 series fires the 9x21mm Gyrza round developed by TsNIITochMash in the 1990s to defeat body armour. The SR2 series fires SP10 AP, SP11 ball and 7BT3 AP tracer ammunition. The SR2M is equipped with a KP-SR2 reflex sight, marked for 100m and 200m, and a folding forward grip. The stock can be folded and extended when a reflex sight is in place. **Length:** 603mm **Calibre:** 9mm **Weight:** 1.65kg **Effective range:** 0.2m



TsNIITochMash ► SR3MP

The SR3MP, the most recent variant of the SR3 Vikhr, fires a 9x39mm subsonic round and was developed by the company in the early 1990s to provide SF units with more power, range and penetration than existing pistol/SMG cartridges. The SR3MP has a folding buttstock and a quad MIL-STD-1913 Picatinny rail system. It is normally fitted with a silencer, although this can be removed. **Length:** 790mm **Calibre:** 9mm **Weight:** 3.05kg **Muzzle velocity:** 295m/s **Effective range:** 400m



V.A. Degtyarev Plant ► Kashtan AEK 919K

The Kashtan 9x18mm AEK 919K SMG was developed in the early 1990s for use by SF, armoured fighting vehicle crews and other personnel who need a compact weapon with greater range than a pistol. The flip-type notch rear sight is graduated at 60m and 100m, but an attachment can be fitted for a collimator sight and laser target designator at customer request. A muzzle suppressor is also available. The Kashtan is equipped with a telescopic buttstock. **Length:** 500mm **Width:** 55mm **Height:** 240mm **Calibre:** 9mm **Weight:** 1.8kg **Muzzle velocity:** 325m/s





SPECIFICATIONS

ASSAULT RIFLES AND CARBINES

This section covers assault rifles and carbines that are currently in production or in development around the world.

Entries are arranged alphabetically by manufacturer and weapon name. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: A USMC sergeant sets security with an M27 Infantry Automatic Rifle during an amphibious assault demonstration in support of Marine Exercise Philippines (MAREX 22 PH) at Brooke's Point, Philippines, on 31 January 2022 (Photo: USMC)

Arsenal ▶ AR-M4SF

The AR-M4SF is a compact assault rifle with a short barrel and right-side folding metal buttstock. It can be chambered for the 5.56mm NATO or 7.62x39mm cartridge. The magazine, lower handguard, upper handguard and pistol grip are made from glass fibre-reinforced polycapromamide. **Length:** 760mm **Barrel length:** 215mm **Calibre:** 5.56mm **Weight:** 3.42kg **Muzzle velocity:** 750m/s **Effective range:** 300m



Arsenal ▶ AR-M7T

The AR-M7FT has a right-side folding telescoping buttstock. The magazine, lower handguard, upper handguard and pistol grip are made from glass fibre-reinforced polycapromamide. MIL-STD-1913 Picatinny rails are fitted at the three, six, nine and 12 o'clock positions. The AR-M7T can be fitted with a Tritium self-illuminated night sight (three-dot system). Arsenal's UBGL, UGBL-M6 and UGBL-M8 40mm grenade launchers can be attached to the AR-M7T. **Length:** 965mm **Barrel length:** 415mm **Calibre:** 5.56mm **Weight:** 4.2kg **Muzzle velocity:** 910m/s **Effective range:** 500m



Arsenal ▶ AR-M8FB

The AR-M8FB rifle has a right-side folding buttstock. The Arcuate staggered magazine, lower handguard, upper handguard and pistol grip are made from glass fibre-reinforced polycapromamide. MIL-STD-1913 rails are available as an option. Arsenal's UBGL, UGBL-M8, UGBL-1 40mm underbarrel grenade launchers can be attached. **Length:** 885mm **Barrel length:** 320mm **Calibre:** 5.56mm **Weight:** 3.75kg **Muzzle velocity:** 880m/s **Effective range:** 0.4m



Beretta ▶ ARX160

Beretta developed the 5.56x45mm ARX160 to meet the requirement for a new weapon for the Italian Army's Future Soldier project. The weapon features ambidextrous two-position safety, magazine release and cocking handle, and the user can change which side spent casings are ejected. Two quick-change barrels are available: 12in and 16in. The ARX160 has MIL-STD-1913 Picatinny rails at the three, six, nine and 12 o'clock positions and features a foldable telescopic stock. **Length:** 920mm **Width:** 80mm **Height:** 280mm **Weight:** 3.1kg **Effective range:** 0.6m



Benelli ► Benelli M3

The Benelli M3 is a unique dual mode semi-automatic and pump action 12-gauge shotgun that is reliable and versatile, selecting fast-cycling semiauto fire with conventional loads or choosing pump action for low-energy special purpose loads. The M3 metalwork is chrome-plated, anodized or coated with heavy phosphate and Cerakote. The upgraded version M3A1 has a rail under forearm, a telescopic stock 5-positions, magazine hosting seven of two 3/4in shells, oversized controls, QD sling swivels and fibre optic sights (tritium optional). Assembly/disassembly without tools. **Length:** 887mm/774mm (stock closed) **Barrel:** 470mm/368mm **Weight:** 3.43kg **Effective range:** 50.29m



Benelli ► Benelli M4

The Benelli M4, developed as the U.S. Joint Service Combat shotgun (M1014), is a gas operated semiautomatic 12-gauge shotgun with patented self-cleaning, auto-regulating gas operating system (A.R.G.O.). The M4 metalwork is chrome-plated, anodized or coated with heavy phosphate and Cerakote to prevent rust and corrosion. The upgraded version M4A1 mounts a Multi-rail system, a telescopic stock 5-positions, magazine hosting seven of two 3/4in shells, oversized controls, QD sling swivels and fibre optic sights (tritium optional). Assembly/disassembly without tools. **Length:** 887mm/774mm (stock closed) **Barrel:** 470mm/356mm **Weight:** 3.9kg **Effective range:** 50.29m



Benelli ► Benelli SuperNova

The Benelli SuperNova is the one and only "Polymer Frame" shotgun, with a modular construction: steel core over-moulded with high-tech polymer. This pump-action shotgun is super-light, super-strong and impervious to all conditions. It will reliably fire every kind of rounds, from light loads to Supermagnums. The newest versions have picatinny rails, phosphate barrels (Cerakote optional), a telescopic stock 5-positions. A patented and easily accessible mag-stop button allows to quickly remove a cartridge from chamber and load a different one without unloading magazine. **Length:** 887mm/774mm (stock closed) **Barrel:** 470mm/368mm **Weight:** 3.48kg **Effective range:** 50.29m



Beretta ► SCP 70/90

The SCP 70/90 is the current production model of the AR 70/90 which was developed by Beretta in the 1980s to meet an Italian military requirement for a 5.56mm assault rifle. The SCP version, with reduced dimensions, has a light alloy folding butt, an ambidextrous safety lever and a winter trigger guard. As well as single-shot and automatic fire, a three-round burst capability can be added on request. **Length:** 1,000mm **Barrel length:** 369mm **Width:** 80mm **Height:** 280mm **Calibre:** 5.56mm **Weight:** 4.1kg



Caracal ► CAR 814

The 5.56mm CAR 814 (Caracal Assault Rifle), based on the AR-15/M4 design, is designed for law enforcement and military operations. The weapon is available in semi-automatic and select-fire configurations with Compact (11.5in), Carbine (14.5in) and Infantry (16in) barrel lengths. A MIL-STD-1913 rail is fitted on the top receiver, with additional rails at the three, six and nine o'clock positions. **Length:** 907.5mm **Barrel length:** 406mm **Calibre:** 5.56mm **Weight:** 3.3kg



Caracal ► CAR 816

Caracal unveiled the 5.56mm CAR 816 (Combat Assault Rifle) – its first service rifle designed for 'high-end' use in law enforcement and military operations – in early 2013. Based on the AR15/M4 design, the weapon has a 'new short-stroke piston system' with three settings. The CAR 816 is available in semi-automatic and select-fire configurations with multiple barrel lengths: 7.5in Personal Defence Weapon, 10.5in Close-Quarters Battle, 14.5in Carbine and 16in Infantry Rifle. **Length:** 925mm **Barrel length:** 410mm **Calibre:** 5.56mm **Weight:** 3.4kg



CG Haenel ► MK 556

The 5.56x45mm MK 556 is a short-stroke piston-operated assault rifle developed for military requirements based on the proven AR-15 design. Fully ambidextrous, it is available in four different barrel lengths: 10.5in, 12.5in, 14.5in and 16in. The MK 556 has been selected by the German Armed Forces to replace the H&K G36 assault rifle. **Length:** 923mm **Barrel length:** 406.4mm **Calibre:** 5.56mm **Weight:** 3.6kg



Colt Canada ► C7A2

Colt Canada developed the 5.56mm C7 family of assault weapons based on the M16A2 to meet the requirements of the Canadian Army. The family includes the C7A1, C7A2, C7 Custom Tactical and C8 Light Support Weapon. An underbarrel 40mm grenade launcher can be fitted. The C7 series is the standard weapon in Canadian, Danish and Dutch military service and is also used by SF in Norway and the UK. **Length:** 1,000mm **Barrel length:** 510mm **Calibre:** 5.56mm **Weight:** 3.31kg **Effective range:** 0.6km



Colt Canada ▶ C8A3

The 5.56mm C8 carbine was developed in parallel with the C7 assault rifle to meet Canadian military requirements. The C8 family includes the C8A1, C8A3, C8 Close Quarter Battle, C8 Special Forces Weapon and C8 Integrated Upper Receiver. The Canadian Army is upgrading its C8A1 carbines to C8A3 configuration with a collapsible four-position buttstock, ambidextrous controls, tri-rail adapter, pistol grip battery compartment and camouflage colouring. An underbarrel 40mm grenade launcher can also be fitted. **Length:** 840mm **Barrel length:** 370mm **Calibre:** 5.56mm **Weight:** 2.81kg



Colt Canada ▶ MRR

Colt Canada's Modular Railed Rifle (MRR) family combines the core of the C8 carbine series with Magpul's M-LOK rail mounting system. The MRR is a modular weapon that is available in four calibres with different lengths: free-floating, cold hammer-forged barrels; and upper receivers. The .300 Blackout MRR has a 'sub-compact' 34.5cm upper receiver. The 5.56mm MRR is available with either a 'small' 42.4cm or 'medium' 50.2cm upper receiver. **Length:** 960mm **Barrel length:** 472mm **Weight:** 3.4kg



Colt Defense ▶ APC

The Advanced Piston Carbine (APC) is a modular 5.56mm piston-operated, lightweight, magazine-fed carbine with a one-piece upper receiver. It has an articulating link piston that reduces stress in the piston stroke by allowing for deflection and thermal expansion. It is designed to be cleaned, assembled and disassembled in a similar way to Colt's gas-operated weapons. **Length:** 838mm **Barrel length:** 356mm **Calibre:** 5.56mm **Weight:** 0.32kg **Effective range:** 600m



Colt Defense ▶ CM901

Colt initially developed the 7.62x51mm CM901 to exceed the US Special Operations Command SOF Combat Assault Rifle requirements for a multi-calibre, single-serial-number modular weapon system. Its free-floating barrel and one-piece monolithic upper receiver are designed for accuracy. The lower receiver and bolt carrier design enables the upper receiver group to be swapped out for any Colt mil-spec upper receiver chambered in 5.56x45mm, allowing the weapon to be reconfigured. Operating controls are ambidextrous. **Length:** 953mm **Barrel length:** 409mm **Calibre:** 7.62mm **Weight:** 4.3kg



Colt Defense ▶ IAR

Based on the M16/M4 series of rifles, the Infantry Automatic Rifle (IAR) has a heat sink system designed to reduce the risk of cook-offs during extended periods of firing. According to Colt, it also provides extended barrel life compared to existing lightweight automatic rifle designs. The weapon features an ambidextrous safety mechanism and a patented monolithic upper receiver. MIL-STD-1913 rails are located at the three, six, nine and 12 o'clock positions. **Length:** 933mm **Barrel length:** 409mm **Calibre:** 5.56mm **Weight:** 4.31kg **Effective range:** 600m



Colt Defense ▶ M4 ACC-M

The M4 Advanced Colt Carbine Monolithic (ACC-M) rifle has a one-piece upper receiver, resulting in a free-floating barrel. All variants have ambidextrous fire controls, selector levers and magazine releases, as well as repeatable zero retention for optics and other accessories. The weapon can fire three-round bursts or in automatic mode, and it accepts fixed or folding front sights. An underbarrel 40mm grenade launcher such as the M203 can be fitted. **Length:** 838mm **Barrel length:** 368mm **Calibre:** 5.56mm **Weight:** 3.2kg **Effective range:** 600m



Colt Defense ▶ M4/M4A1

The 5.56mm M4 carbine is a derivative of the M16 assault rifle, incorporating improvements based on operational feedback. It has a MIL-STD-1913 Picatinny rail on the upper receiver and is available with a forestock with Picatinny rails at the three, six, nine and 12 o'clock positions for mounting optics and other ancillary devices. An underbarrel 40mm grenade launcher such as the M203 can be fitted. **Length:** 838mm **Barrel length:** 368mm **Calibre:** 5.56mm **Weight:** 2.77kg **Muzzle velocity:** 905m/s **Effective range:** 500m



Colt Defense ▶ M5 Enhanced Carbine

The 5.56mm M5 Enhanced Carbine series builds on Colt's experience producing the M16 rifle and M4 carbine. The M5 uses a conventional short-stroke tappet piston system. The M5 features a lower receiver with fully ambidextrous controls, a six-position receiver extension and a free-float modular rail system. This allows accessories to be mounted at the three, six, nine and 12 o'clock positions. **Length:** 895mm **Barrel length:** 356mm **Calibre:** 5.56mm **Weight:** 3.17kg **Effective range:** 600m



Colt Defense ▶ M16A4

Since entering US military service in 1963, the M16 and its derivatives have become the most widely used 5.56mm assault rifle family in the world, incorporating improvements based on operational feedback. The current M16A4 is the fourth generation of the series. **Length:** 1,003mm **Barrel length:** 508mm **Calibre:** 5.56mm **Weight:** 3.26kg **Effective range:** 600m



Colt Defense ▶ SCW

The Sub Compact Weapon (SCW), the most compact of Colt's 5.56mm family, is designed for use in confined areas of operation. The SCW has a one-piece monolithic upper receiver and a collapsible folding buttstock. It is intended for use by vehicle and aircraft crews, joint forces, SOF and reconnaissance units. The SCW's lightweight compact design allows for transition from vehicles to aircraft, offering greater firepower and range than handguns. **Length:** 768mm **Barrel length:** 263mm **Calibre:** 5.56mm **Weight:** 2.95kg **Effective range:** 400m



Česká zbrojovka ▶ CZ 805 Bren A1/A2

Česká zbrojovka developed the CZ 805 Bren A1 assault rifle and A2 carbine in 2006 to provide the Czech Armed Forces with a new weapon family firing 5.56x45mm ammunition. Deliveries of the A1 began in mid-2011. Its controls are ambidextrous and the upper receiver is fitted with MIL-STD-1913 Picatinny rails at the three, six, nine and 12 o'clock positions. **Length:** 875mm **Barrel length:** 360mm **Width:** 113mm **Height:** 260mm **Calibre:** 5.56mm **Weight:** 3.49kg **Effective range:** 500m



Česká zbrojovka ▶ CZ 806 Bren 2

The 5.56mm CZ 806 Bren 2 is an improved version of the company's 5.56mm CZ 805 Bren assault rifle. Compared to the original rifle, it is lighter and features improved ergonomics. The design is based on proven tapping of the combustion gases from the barrel, with the option of a three-stage regulation of the piston mechanism. The fire mode selector is also fully ambidextrous, as are the other controls. **Length:** 877mm **Barrel length:** 357mm **Width:** 104mm **Height:** 234mm **Calibre:** 5.56mm **Weight:** 3.15kg



Daniel Defense ▶ M4 ISR 300

The M4 Integrally Suppressed Rifle (ISR) 300 is chambered for the 300 AAC Blackout round (7.62x35mm) introduced by Advanced Armament Corp in 2011 to provide a more effective bullet than the 5.56x45mm round for AR/M4-style weapons. The rifle's sound suppressor is threaded and welded to the integrated gas block, bringing the barrel length to 410mm. As well as a top rail, the system provides rails at the three, six and nine o'clock positions.

Length: 794mm **Barrel length:** 410mm **Weight:** 3.45kg



Daniel Defense ▶ M4A1

The M4A1 incorporates the Rail Interface System II (RIS II) developed by Daniel Defense to meet US Special Operations Command requirements. The RIS II accommodates an M203 40mm underbarrel grenade launcher while allowing the barrel to free-float. The M4A1 has a 368mm cold hammer-forged barrel with an extended flash suppressor. **Length:** 800mm **Barrel length:** 368mm **Calibre:** 5.56mm **Weight:** 2.97kg



Daniel Defense ▶ M4V3

The M4V3 carbine combines features of the original M4V1 with a mid-length gas system. Built around a 406mm cold hammer-forged government-profile barrel, the M4V3 has a 9in free-floating rail and vertical foregrip. As well as a top rail, the system provides rails at the three, six and nine o'clock positions. **Length:** 819mm **Barrel length:** 406mm **Calibre:** 5.56mm **Weight:** 2.9kg



Daniel Defense ▶ M4V4

The M4V4 carbine is designed for users who want to mount red-dot, holographic or magnified optics on their weapon. It has a monolithic upper receiver with MIL-STD-1913 rails and an M4 Rail 9.0 system with rails at the three, six, nine and 12 o'clock positions. **Length:** 819mm **Barrel length:** 406mm **Calibre:** 5.56mm **Weight:** 2.9kg



Daniel Defense ▶ M4V5

The M4V5 carbine has an M4 Rail 12.0 system and a 16in cold hammer-forged barrel with a pinned low-profile gas block. The 12in top rail is designed to provide the accuracy of a rifle-length sight radius. The system also has rails at the three, six and nine o'clock positions. **Length:** 819mm **Barrel length:** 406mm **Calibre:** 5.56mm **Weight:** 2.88kg



Daniel Defense ▶ MK18 SBR

The M4 MK18 Short Barrel Rifle (SBR) carbine incorporates the Rail Interface System II (RIS II) developed by Daniel Defense to meet US Special Operations Command requirements. The RIS II accommodates an M203 40mm underbarrel grenade launcher while allowing the barrel to free-float. The weapon has a 261mm cold hammer-forged barrel. **Length:** 679.5mm **Barrel length:** 261mm **Calibre:** 5.56mm **Weight:** 2.59kg



Emtan Karmiel ▶ MZ-4 Carbine

Emtan's 5.56x45mm MZ-4 Carbine, equipped with a 14.5in barrel, is based on the proven American M4 carbine/M16 rifle design. Emtan describes its MZ-4-series weapons as more reliable, more accurate and more ergonomic than competitors' models. Emtan MZ-4 parts are fully compatible with other M4 and M16 weapons. **Length:** 1,000mm **Barrel length:** 368.3mm **Calibre:** 5.56mm **Weight:** 3.2kg



Emtan Karmiel ▶ MZ-4 Commando

Emtan's 5.56x45mm MZ-4 Commando, equipped with an 11.5in barrel, is based on the proven American M4 carbine/M16 rifle design and is intended for use by military and police SF units which require a compact weapon. Emtan describes its MZ-4-series family, which also includes the MZ-4 Carbine and MZ-4 Rifle, as more reliable, more accurate and more ergonomic than competitors' models. Emtan MZ-4 parts are fully compatible with other M4 and M16 weapons. **Length:** 795mm **Barrel length:** 292mm **Calibre:** 5.56mm **Weight:** 2.7kg



Emtan Karmiel ▶ MZ-4 Rifle

Emtan's 5.56x45mm MZ-4 Rifle is based on the proven American M4 carbine/M16 rifle design and its 20in barrel makes it suitable for use both as an assault rifle and a designated marksman rifle. Emtan describes its MZ-4-series weapons as more reliable, more accurate and more ergonomic than competitors' models. Emtan MZ-4 parts are fully compatible with other M4 and M16 weapons. **Length:** 1,000mm **Barrel length:** 508mm **Calibre:** 5.56mm **Weight:** 3.2kg



Emtan Karmiel ▶ MZ-4P Carbine

Emtan's 5.56x45mm MZ-4P family, which uses the company's Piston Operation System, was introduced in November 2017 and builds on the company's experience producing the MZ-4 family derived from the American M4 carbine/M16 rifle design. The MZ-4P is available in two barrel lengths: a Commando version with an 11.5in barrel and a Carbine version with a 14.5in barrel. **Length:** 875mm **Barrel length:** 785mm **Calibre:** 5.56mm **Weight:** 3.25kg



Emtan Karmiel ▶ MZ-4P Commando

Emtan's 5.56x45mm MZ-4P family, which uses the Piston Operation System, was introduced in November 2017 and builds on the company's experience producing the MZ-4 family derived from the American M4 carbine/M16 rifle design. The MZ-4P is available in two barrel lengths: a Commando version with an 11.5in barrel and a Carbine version with a 14.5in barrel. **Barrel length:** 292mm **Calibre:** 5.56mm **Weight:** 3.1kg



Emtan Karmiel ▶ MZ-47 Carbine

The selective-fire MZ-47 Carbine, launched in November 2017, is designed to combine the handling characteristics of the American 5.56mm M4 series with the firepower of the Russian 7.62x39mm round. The MZ-47 Carbine features a 14.5in barrel. Both the MZ-47 Carbine and the M-47 Commando model with an 11.5in barrel use standard 7.62mm AK magazines, which is intended to enable a cost-effective transition for customers equipped with 7.62mm AK-series weapons. **Length:** 875mm **Barrel length:** 368.3mm **Calibre:** 7.62mm **Weight:** 3.15kg



Emtan Karmiel ▶ MZ-47 Commando

The selective-fire MZ-47 Commando model, launched in November 2017, is designed to combine the handling characteristics of the American 5.56mm M4 series with the firepower of the Russian 7.62x39mm round. The MZ-47 Commando features an 11.5in barrel. Both the MZ-47 Commando and the M-47 Carbine model with a 14.5in barrel use standard 7.62mm AK magazines, which is intended to enable a cost-effective transition for customers equipped with 7.62mm AK-series weapons. **Length:** 795mm **Barrel length:** 292.1mm **Calibre:** 7.62mm **Weight:** 3.05kg



Emtan Karmiel ▶ MZ-47 Rifle

The selective-fire MZ-47 Rifle, launched in November 2017, is designed to combine the handling characteristics of the American 5.56mm M4 carbine/ M16 rifle series with the firepower of the Russian 7.62x39mm round. With a 16in barrel, the MZ-47 Rifle is the longest member of the MZ-47 family. It uses standard 7.62mm AK magazines, which is intended to enable a cost-effective transition for customers equipped with 7.62mm AK-series weapons. **Barrel length:** 406.4mm **Calibre:** 7.62mm



Emtan Karmiel ▶ MZ-300 Carbine

Emtan introduced the .300 AAC Blackout (7.62x35mm) MZ-300 assault rifle family in November 2017. The .300 AAC Blackout round provides superior performance than the standard 5.56x45mm NATO round and utilises 5.56x45mm standard bolts and magazines without any alterations. The MZ-300 Carbine is fitted with a 14.5in barrel. **Barrel length:** 368.3mm **Calibre:** 7.62mm



FN Herstal ▶ FN F2000

The bullpup 5.56x45mm FN F2000 assault rifle has a forward case ejection port, making the weapon suitable for both right- and left-handed users. When the port is closed, the FN F2000 is environmentally sealed. The FN F2000 Standard has a 1.6x optical sighting system, while the FN F2000 Tactical incorporates an integrated MIL-STD-1913 rail for customer-supplied day or night sights. **Length:** 690mm **Barrel length:** 400mm **Calibre:** 5.56mm **Weight:** 4kg



FN Herstal ► FN SCAR-H

The 7.62mm FN SCAR-Heavy (H) was developed to meet a US Special Operations Command (USSOCOM) requirement for a SOF Combat Assault Rifle (SCAR). The SCAR-H is in USSOCOM service as the MK17 Mod 0 and the SCAR family has been sold to more than 20 countries. **Length:** 969mm **Barrel length:** 406mm **Calibre:** 7.62mm **Weight:** 3.9kg **Effective range:** 500m



FN Herstal ► FN SCAR-L

The 5.56mm FN SCAR-Light (L) was developed in parallel with the 7.62mm FN SCAR-H to meet a US Special Operations Command (USSOCOM) requirement for a SOF Combat Assault Rifle (SCAR). The SCAR-L is in USSOCOM service as the MK16 Mod 0 and the SCAR family has been sold to more than 20 countries. The SCAR-L has a foldable buttstock adjustable to six lengths and two height positions. **Length:** 903mm **Barrel length:** 368.3mm **Calibre:** 5.56mm **Weight:** 3.5kg **Effective range:** 500m



Heckler & Koch ► G36

Developed in the 1990s to meet a German Armed Forces requirement for a 5.56mm assault rifle and entering service in 1997, the G36 is a modular weapon made almost entirely of carbon-reinforced polymer and uses a self-regulating operating rod gas system. Variants include the G36/G36V rifles and G36K/G36KV carbines for export and the G36C compact. **Length:** 999mm **Barrel length:** 480mm **Calibre:** 5.56mm **Weight:** 3.63kg **Muzzle velocity:** 920m/s **Effective range:** 800m



Heckler & Koch ► HK416 A5

Heckler & Koch (H&K) developed the 5.56mm HK416 for US SF as a product improvement over M4/M16-type weapons. Using the gas piston system from the company's G36 avoids introducing propellant gases and carbon fouling back into the HK416's interior. A free-floating four-quadrant rail system designed by H&K; allows accessories, sights, lights and aimers used on M4/M16/AR15-type weapons to be fitted. **Length:** 951mm **Barrel length:** 508mm **Calibre:** 5.56mm **Weight:** 3.57kg



Heckler & Koch ▶ HK417 A2

Heckler & Koch developed the 7.62mm HK417 in parallel with the HK416 to provide an infantry rifle with a fighting range of 500m and beyond. It has maximum component commonality with the HK416. The use of the proprietary gas piston system found on the HK G36 avoids introducing propellant gases and carbon fouling back into the weapon's interior. Three barrel lengths are available. **Barrel length:** 508mm **Calibre:** 7.62mm **Weight:** 4.74kg



Heckler & Koch ▶ HK433

In February 2017, Heckler & Koch released details of its new 5.56mm HK433, which it will offer to the German MoD to replace its own G36 as the German Armed Forces' new assault rifle. According to the company, the HK433 combines the best features of its G36 and HK416 assault rifles. The HK433 is an adjustable gas system, piston-driven rifle with ambidextrous controls. **Length:** 1,060mm **Barrel length:** 503mm **Calibre:** 5.56mm **Weight:** 3.65kg



Heckler & Koch ▶ L85A3

In February 2018, the UK MoD announced that it had awarded Hecker & Koch a £5.4 million (\$6.6 million) contract for the initial phase of the Mid-Life Improvement (MLI) of the 5.56x45mm SA80A2 family to the SA80A3 standard. The initial contract covers 5,000 weapons, with the first tranche delivered to the British Army in February 2018. The MLI will extend the life of the L85A3 Individual Weapon until 2025. **Length:** 785mm **Barrel length:** 518mm **Calibre:** 5.56mm **Weight:** 4.88kg **Effective range:** 400m



Heckler & Koch ▶ M27

The M27 is a variant of the HK416 family selected by the USMC to meet its requirement for a 5.56mm Infantry Automatic Rifle to replace the M249 SAW within fire teams. In November 2010, Heckler & Koch delivered approximately 500 low-rate initial production weapons for field assessment. A full-rate production contract was awarded in September 2011 for 3,638 weapons. **Length:** 953mm **Barrel length:** 419mm **Calibre:** 5.56mm **Weight:** 3.7kg **Effective range:** 1,000m



IMBEL ▶ IA2

The 5.56mm IA2 (IMBEL A2) assault rifle was designed by IMBEL to replace the FAL, M16A2 and HK33 weapons in service with the Brazilian Armed Forces. The design builds on IMBEL's experience producing the FN Herstal 7.62mm FAL under licence. In October 2013, following extensive trials, the army announced that the IA2 would be accepted into service and in December placed an initial order for 20,000 weapons. **Length:** 850mm **Barrel length:** 330mm **Calibre:** 5.56mm **Weight:** 3.38kg **Effective range:** 600m



Israel Weapon Industries (IWI) ▶ Arad

The IWI Arad is a lightweight, multi-calibre assault rifle based on the AR-15 platform with two variants: 5.56x45mm and 300 BLK, in 9.5", 11.5" and 14.5" barrel lengths. It features a two-stage trigger to allow for fast and accurate shooting, a hard-anodised monolithic aluminium MIL-STD 1913 accessory rail in the upper receiver, and an MLOK system on the three, six, and nine o'clock positions. The Picatinny rail is an integral part of the upper receiver of the rifle. It includes a telescopic buttstock which allows the users to adjust the length individually for their needs and is compatible with the IWI 40x46mm Under Barrel Grenade Launcher. **Length:** 720mm **Barrel length:** 292mm **Calibre:** 5.56mm **Weight:** 2.98kg



Israel Weapon Industries (IWI) ▶ Carmel

The IWI Carmel assault rifle is a combat-proven weapon system, built to be durable, accurate and robust. To ensure maximum safety for the user, the Carmel has a rotating bolt system. Available in 10.5", 12", 14.5" and 16" barrel lengths, the Carmel is a fully ambidextrous platform equipped with MIL-STD 1913 Picatinny rails on all sides. The Carmel has a short-stroke gas piston and is equipped with a significantly efficient jump compensator for better shooter stability and compatibility with the IWI 40x46mm Under Barrel Grenade Launcher. **Length:** 847mm **Barrel length:** 267mm **Calibre:** 5.56mm **Weight:** 3.27kg



Israel Weapon Industries (IWI) ▶ Galil 5.56mm

The 5.56mm Galil AR (Assault Rifle), Galil SAR (Short Assault Rifle) and Micro Galil are the legacy models of the Galil assault rifle family that entered IDF service in 1972. The Galil was exported worldwide to about 20 countries, including South Africa, where Denel produced a modified version as the R4 for military use. It forms the basis of the Galil ACE family of assault rifles. **Length:** 979mm **Barrel length:** 460mm **Calibre:** 5.56mm **Weight:** 3.8kg **Muzzle velocity:** 915m/s



Israel Weapon Industries (IWI) ► Galil ACE 31/32

The ACE 31 and 32 rifles are the 7.62x39mm members of IWI's modular ACE weapon family, based on the mechanism of the Galil assault rifle. One reason for the introduction of the ACE 31 and 32 was to provide customers with a modern weapon that would use existing stockpiles of 7.62x39mm ammunition. The ACE family of assault rifles has an adjustable, foldable telescopic buttstock and a 360° Picatinny rail to mount optical devices and accessories. It is also compatible with the IWI 40x46mm Under Barrel Grenade Launcher (UBGL). A semi-automatic version is available for the commercial market. **Length:** 927mm **Barrel length:** 406mm **Calibre:** 7.62mm **Weight:** 3.5kg **Muzzle velocity:** 680m/s



Israel Weapon Industries (IWI) ► Galil ACE Gen II

The new Galil ACE Gen II is an evolution of the Galil ACE family, which is based on the reliable mechanics of the original Galil rifle that has been continuously developed over a period of 50 years. The Galil ACE Gen II, available in 7.62x39mm and 5.56x45mm calibres, features a full-length, two-piece Picatinny style top rail; free Float MLOK rail forearm; an updated trigger profile; shorted safety profile; and a side-folding, adjustable, foldable, telescopic buttstock with M4 stock compatibility. It is also available in a semi-automatic version for the commercial market. **Length:** 914mm **Barrel length:** 406mm **Calibre:** 7.62mm **Weight:** 3.9kg



Israel Weapon Industries (IWI) ► Galil ACE-N 21/22

The ACE-N 21 and 22 assault rifles/carbines are the 5.56x45mm members of IWI's modular ACE weapon family, which is based on the mechanism of the Galil assault rifle. Compatible with NATO-standard magazines and the IWI 40x46mm Under Barrel Grenade Launcher, each variant is equipped with 360° Picatinny rails and a telescopic buttstock. It is also available in a semi-automatic version for the commercial market. **Length:** 847mm **Barrel length:** 335mm **Calibre:** 5.56mm **Weight:** 3.45kg



Israel Weapon Industries (IWI) ► Galil ACE-N 52

The ACE-N 52 rifle is the 7.62x51mm member of IWI's modular ACE weapon family, based on the mechanism of the Galil assault rifle. Compatible with NATO-standard magazines, it features a 360° Picatinny rail and an adjustable, foldable telescopic butt. It is also capable of mounting the IWI 40x46mm Under Barrel Grenade Launcher. A semi-automatic version is available for the commercial market. **Length:** 954mm **Barrel length:** 409mm **Calibre:** 7.62mm **Weight:** 3.6kg



Israel Weapon Industries (IWI) ► Tavor

The Tavor 5.56x45mm bullpup rifle family was developed in cooperation with the Israel Defense Forces (IDF). The Tavor is produced in two models: standard TAR (18" barrel) and compact CTAR (15" barrel) and is available with an integrated reflex sight attached directly onto the barrel as well. The Tavor has folding backup sights including tritium for night combat. It is fully ambidextrous and compatible with the IWI 40x46mm Under Barrel Grenade Launcher (UBGL). **Length:** 640mm **Barrel length:** 380mm **Calibre:** 5.56mm **Weight:** 3.5kg **Muzzle velocity:** 920m/s



Israel Weapon Industries (IWI) ► Tavor-7

IWI introduced the select-fire Tavor-7 in 2018 in response to demand from military and civilian customers for a 7.62x51mm member of the Tavor bullpup rifle family. The Tavor-7 is a fully ambidextrous platform and includes an MLOK forend (at 3 and 9 o'clock) as well as MIL-STD 1913 Picatinny rail at the 6 o'clock position. Additional features include a short-stroke gas piston with a four-position variable gas regulator (including an off position – a unique feature designed for special operation needs), a rotating bolt system that ensures maximum safety for the user, and a pistol grip that can be changed or modified. It is available in three lengths – 16.5in (419mm), 17in (432 mm) and 20in (508 mm) and a weight (without a magazine) of 4.4-4.5kg, depending on its configuration. **Length:** 730mm **Barrel length:** 430mm **Calibre:** 7.62mm



Israel Weapon Industries (IWI) ► X95 Flattop 330/419

IWI's 5.56x45mm X95 rifle (also known as the Micro-Tavor) is a further development of its Tavor bullpup rifle family that entered into service in 2006. The X95 Flattop rifle/carbine features either a 330mm barrel or a 419mm barrel that is compatible with the IWI 40x46mm Stand Alone Grenade Launcher. The IDF selected the X95 to replace its M16 rifles and M4 carbines in 2009 and began issuing the weapon in 2013. The X95 is available with either a pistol grip or with an X95 customized trigger guard, has 360° Picatinny rails and is fully ambidextrous. A semi-automatic version is also available for the commercial market. **Length:** 670mm **Barrel length:** 419mm **Calibre:** 5.56mm **Weight:** 3.4kg



Israel Weapon Industries (IWI) ► X95-R Flattop 330/419

The X95-R Flattop rifle/carbine is a member of IWI's X95 bullpup rifle family chambered to fire the Soviet-designed 5.56x39mm round. The IDF selected the 5.56x45mm X95 to replace its M16 rifles and M4 carbines in 2009. The X95 family has been successful on the export market and the X95-R Flattop 330 and 419 broadens the appeal for customers who either produce or have large stockpiles of 5.56x39mm ammunition. It is available with a pistol grip or with an X95 customized trigger guard, has 360° Picatinny rails and is fully ambidextrous. **Length:** 670mm **Barrel length:** 419mm **Calibre:** 5.56mm **Weight:** 3.4kg



Israel Weapon Industries (IWI) ► Zion

The IWI Zion is a variant of the M4 aimed at the commercial market by IWI. It can be fitted with either an 11.5in or 12.5in barrel with a free-float handguard, a B5 adjustable stock and a grip. A pistol configuration is also available. **Length:** 749mm **Barrel length:** 317mm **Calibre:** 5.56mm **Weight:** 2.94kg



Kalashnikov Concern ► AK-12

Kalashnikov publicly unveiled the AK-12 assault rifle in January 2012. The AK-12 uses the same gas-operated long-stroke piston system as previous Kalashnikov rifles. A 5.45x39mm AK-12 light variant can also be chambered for 5.56x45 and 7.62x39mm calibres. An AK-12 heavy model is chambered for 7.62x51mm. A GP-25 40mm underbarrel grenade launcher can be fitted. The AK-12 has been adopted by the Russian Army. **Length:** 945mm **Barrel length:** 415mm **Calibre:** 5.45mm **Weight:** 3.3kg



Kalashnikov Concern ► AK-15

Developed under the Ratnik modernisation programme, the AK-15 assault rifle was first unveiled in 2016. It is designed for elite units and law enforcement and is intended to replace the AK-103. The AK-15 is a version of the AK-12 – it is gas-operated and has selective fire options. The weapon features an adjustable telescopic buttstock and an ergonomic pistol grip. **Length:** 1,066mm **Barrel length:** 415mm **Calibre:** 7.62mm **Weight:** 3.74kg **Muzzle velocity:** 715m/s **Effective range:** 500m



Kalashnikov Concern ► AK-19

The Kalashnikov Concern unveiled its developmental AK-19 assault rifle in August 2020. Compared to the AK-12 assault rifle upon which it is based, the AK-19 is chambered for the 5.56x45mm NATO cartridge and introduces ergonomic improvements to its folding polymer stock, a new rear sight and a slotted flash suppressor capable of mounting a silencer. New proprietary polymer magazines have also been developed to accommodate the different cartridges. **Calibre:** 5.45mm



Lewis Machine & Tool Company ► CQB10.5-300

The .300 Whisper/Blackout CQB10.5-300 carbine incorporates LMT's Monolithic Rail Platform made from a single aluminium forging and incorporating a quad MIL-STD-1913 rail system. It is equipped with a SOPMOD buttstock with a six-position extension tube. The barrel can be changed by the user in the field. **Length:** 781mm **Barrel length:** 268mm **Weight:** 3.04kg



Lewis Machine & Tool Company ► CQB16-MARS

The CQB16-MARS (Modular Assault Rifle System) is an assault rifle chambered for the NATO 5.56x45mm cartridge. It features LMT's Modular Rail Platform, which allows the user to swap barrels of different calibre, materials and lengths into the same receiver. Sights and other accessories can be attached to sections of the Picatinny rail located around the upper receiver. **Length:** 914mm **Barrel length:** 406mm **Calibre:** 5.56mm **Weight:** 3.3kg



Lewis Machine & Tool Company ► CSW 300/CSW 556

The Confined Space Weapon (CSW) is an ambidextrous carbine designed for close-quarter combat operations. It is equipped as standard with an integral VBS300 suppressor and is capable of firing both subsonic and supersonic ammunition. LMT markets the CSW in two configurations: the CSW 300 chambered for .300 Blk and the CSW 556 chambered for 5.56x45mm. As a modular design, several different upper receivers and barrels can be easily integrated into the weapon, while sights and other accessories can be attached to its Picatinny rails. **Length:** 701mm **Barrel length:** 305mm **Calibre:** 7.62mm **Weight:** 3.32kg



Lewis Machine & Tool Company ► LM8MRP

The 5.56mm LM8MRP was designed to be a light, versatile weapon and retain the strength of LMT's machine gun-grade barrel. It incorporates the company's Monolithic Rail Platform made from a single aluminium forging and incorporating a quad MIL-STD-1913 rail system. The weapon is equipped with a SOPMOD buttstock with a six-position extension tube. In addition to the standard 16in barrel, barrels are available in 1.5in, 14.5in and 18in lengths. Barrels can be replaced in the field. **Length:** 914mm **Barrel length:** 406mm **Calibre:** 5.56mm **Weight:** 3.31kg



Lewis Machine & Tool Company ► MARS-L

The 5.56mm Modular Ambidextrous Rifle System – Light (MARS-L) is an LMT CQB16-derived direct gas impingement assault rifle developed to meet the requirements of the New Zealand Defence Force. In December 2015, New Zealand awarded LMT Defense a \$40 million contract to supply 8,800 rifles – and other ancillaries, support, simulation and training – for use by conventional forces and SF. **Barrel length:** 508mm



Lewis Machine & Tool Company ► MLR

Part of LMT's Modular Rail Platform family of small arms, the MLR is an assault rifle chambered for the 5.56x45mm NATO cartridge. Its octagonal upper receiver features an 18.5in uninterrupted section of Picatinny rail at the 12 o'clock position, as well as M-LOK attachment points on the remaining seven sides. The MRP system allows the user to fit barrels of different calibres, materials and lengths into the same receiver. **Barrel length:** 508mm



Lewis Machine & Tool Company ► PDW 300/PDW 556

The Professional Defense Weapon (PDW) is an ambidextrous carbine designed for close-quarter combat operations. It is available in two configurations: the PDW 300 chambered for .300 Blk and the PDW 556 chambered for 5.56x45mm. Both of these variants utilise LMT's Modular Rail Platform, which allows barrels of different lengths, calibres and materials to be rapidly swapped into the same receiver. Sights and other accessories can also be attached to sections of Picatinny rail. **Barrel length:** 266mm



Lewis Machine & Tool Company ► SPM10/14/16

The Standard Patrol Model (SPM) rifle is manufactured by Lewis Machine & Tool Company. The firearm comes in three different barrel sizes: 10.5in, 14.5in and 16in. The barrel is chrome moly vanadium with a 1:7in RH twist, and the gun is a 5.56x45mm calibre. **Barrel length:** 406.4mm **Calibre:** 5.56mm



MKEK ▶ MPT-76

The MPT-76 (7.62mm National Infantry Rifle) was developed to meet a Turkish Army requirement for a new 7.62mm assault rifle. Although MKEK has produced small arms under licence from Heckler & Koch, the MPT-76 is its first indigenously designed weapon. The rifle is of conventional layout, features a short-stroke gas piston system and can be fired in semi-automatic and automatic modes. **Length:** 1,000mm **Barrel length:** 406mm **Calibre:** 7.62mm **Weight:** 4.18kg **Effective range:** 600m



Norinco ▶ Type 03

The Type 03 is an export variant of Norinco's QBZ-03 assault rifle, which fires 5.56mm NATO ammunition instead of the Chinese 5.8x42mm DBP87 round. **Length:** 960mm **Calibre:** 5.56mm **Weight:** 3.8kg **Muzzle velocity:** 860m/s



Norinco ▶ Type 97A

The Type 97A, also known as the QBZ-97A, is a variant of Norinco's QBZ-95 bullpup rifle family developed for the export market. Unlike the People's Liberation Army's QBZ-95-series weapons which fire the indigenous 5.8x42mm round, the Type 97A uses 5.56mm NATO ammunition. The Type 97 Short Assault Rifle variant has a shorter barrel and is 620mm overall in length. **Length:** 760mm **Calibre:** 5.56mm **Weight:** 3.5kg **Effective range:** 400m



Pindad (Persero) ▶ SS2-V1

The 5.56mm SS2 family, launched in 2006, is a development of the SS1. Improvements include reduced shock when firing due to buffer in butt connection, cylindrical bolt for rigid locking and upper and lower receiver made of forged aluminium alloy to reduce weight. Variants include: SS2-V1 rifle with a 460mm barrel; SS2-V2 carbine with a 403mm barrel; SS2-V4 rifle with a 460mm barrel and carrying handle replaced by a MIL-STD-1913 Picatinny rail; and SS2-V5 compact variant with a 252mm barrel. **Length:** 985mm **Barrel length:** 460mm **Calibre:** 5.56mm **Weight:** 4.31kg **Effective range:** 0.4m



Pindad (Persero) ▶ SS3

The SS3 assault rifle is the successor to the earlier SS1 and SS2 versions that utilised 5.56mm-calibre ammunition. Designed as a sharpshooter's weapon, the SS3 uses 7.62mm ammunition at an effective range of 400m, further with optics. **Length:** 1,150mm **Barrel length:** 500mm **Calibre:** 7.62mm **Effective range:** 400m



Sarsilmaz Fire Arms ▶ SAR 223T

The 5.56mm SAR 223 Tactical assault rifle is similar in configuration to the AR-15 rifle series. It has a telescopic stock and MIL-STD-1913 rails at the three, six, nine and 12 o'clock positions. A 40mm underbarrel grenade launcher can be mounted. **Length:** 850mm **Barrel length:** 370mm **Width:** 52mm **Height:** 230mm **Calibre:** 5.56mm **Weight:** 3.1kg **Effective range:** 0.6m



SIG Sauer ▶ SIG516 Patrol

The SIG516 Patrol is a development of the AR-15/M16 design. It has a nitride-treated military-grade barrel and adjustable four-position gas regulator, 7075-T6 aircraft-grade aluminium upper and lower receiver as well as a hard-coat anodised finish. The SIG516 Patrol rifle is equipped with a MIL-STD-1913 Picatinny flat top receiver and a quad-rail handguard. Four barrel lengths are available so the weapon can be configured for different operational scenarios. **Length:** 820mm **Barrel length:** 406mm **Width:** 63.5mm **Height:** 195.6mm **Calibre:** 5.56mm



SIG Sauer ▶ SIG556xi

The SIG556xi builds on the previous SIG550 series. It can be configured to the needs of the operator with 5.56x45mm AR- or 7.62x39mm AK-style lower receivers. The SIG556xi has a three-position adjustable gas piston system, ambidextrous controls and a Swiss-style folding stock with a removable cheek riser. Three barrel lengths are available. **Length:** 978mm **Barrel length:** 406mm **Width:** 48.3mm **Height:** 267mm **Calibre:** 5.56mm **Weight:** 3.22kg



SIG Sauer ► SIG716 Patrol

The SIG716 Patrol is intended to combine the range and ballistic effect of a designated marksman rifle with the characteristics of an assault rifle. It uses a short-stroke pushrod gas system with a four-position gas valve, detachable ambidextrous sling mounts, flip-up front and rear iron sights and ambidextrous magazine release. The SIG716 has a MIL-STD-1913 Picatinny flat top receiver and a quad-rail handguard. **Length:** 980mm **Barrel length:** 406.4mm **Width:** 74mm **Height:** 201mm **Calibre:** 7.62mm



SIG Sauer ► SIG MCX

Introduced in 2014, the SIG MCX was designed specifically for the 300 AAC Blackout (7.62x35mm) cartridge, but a modular design allows the weapon to be converted to fire 5.56x45mm NATO or 7.62x39mm Soviet ammunition. The SIG MCX uses a short-stroke gas piston operating system. Users can change barrels (16in for carbine, 9in for Short Battle Rifle), calibres, stocks and handguards in the field. **Length:** 908mm **Barrel length:** 406mm **Width:** 73.6mm **Height:** 200mm **Weight:** 2.72kg



Silver Shadow Advanced Security Systems ► Gilboa DBR Snake

Silver Shadow's 5.56x45mm Gilboa DBR (Double Barrel Rifle) Snake is the newest member of the company's Gilboa rifle family. It is the only double-barrelled AR rifle in the world and is gas-operated. It is marketed to both military and law enforcement agencies. **Length:** 790mm **Barrel length:** 292mm **Width:** 92mm **Calibre:** 5.56mm **Weight:** 4.5kg **Effective range:** 400m



SNT Motiv ► K2 Rifle

The K2 5.56mm rifle was developed by South Korea's Agency for Defense Development to meet the requirements of the Republic of Korea Armed Forces, and the weapon was introduced into service in 1984 as a replacement for the licence-built M16A1. The K2 has an aluminium alloy receiver and a folding stock, and it features a rotating bolt locking system. **Length:** 980mm **Barrel length:** 980mm **Calibre:** 5.56mm **Weight:** 3.37kg **Muzzle velocity:** 960m/s **Effective range:** 600m



SNT Motiv ► K2C1

The 5.56mm K2C1 assault rifle is a further development of the K2 5.56mm rifle, which has been in service with the Republic of Korea Armed Forces since 1984. The K2C1 also has a rotating bolt locking system, an aluminium alloy receiver and a folding stock. It can be fired in three modes: semi-automatic, three-round burst and automatic. **Length:** 1,014mm **Barrel length:** 465mm **Weight:** 3.68kg **Effective range:** 600m



SNT Motiv ► K2C

The 5.56mm K2C carbine is a further development of the K2 5.56mm rifle, which has been the standard assault rifle of the Republic of Korea Armed Forces since 1984. The K2C is equipped with a 12in barrel. Like the K2, the K2C features a rotating bolt locking system and an aluminium alloy receiver. It can be fired in three modes: semi-automatic, three-round burst and automatic. **Length:** 875mm **Barrel length:** 310mm **Calibre:** 5.56mm **Weight:** 3.3kg **Muzzle velocity:** 825m/s **Effective range:** 500m



SNT Motiv ► K11

Similar in concept to the US Army's cancelled XM29 Objective Individual Combat Weapon, the dual-barrel K11 airburst weapon system combines a 5.56mm assault rifle with a 20mm grenade launcher in a single weapon and incorporates an automatic EO fire control system with an optical day sight, a thermal night sight, laser rangefinder and ballistic computer. **Length:** 860mm **Barrel length:** 405mm **Calibre:** 20mm **Weight:** 6.1kg **Effective range:** 500m



SNT Motiv ► XK8

The 5.56mm XK8, also known as the DAR-21 (Daewoo Assault Rifle for the 21st Century), is a bullpup assault rifle which the company designed to replace the 5.56mm K2 in service with the Republic of Korea Armed Forces. **Length:** 780mm **Barrel length:** 508mm **Calibre:** 5.56mm **Weight:** 3.5kg **Muzzle velocity:** 940m/s **Effective range:** 700m



ST Engineering Land Systems ▶ SAR21

The SAR21 bullpup assault rifle comes equipped with a low recoil mechanism and a built-in Laser Aiming Device (LAD) for instant target acquisition and high firing accuracy even in low light conditions. Lighter and more compact than an equivalent M16, the SAR21 provides more manoeuvrability in tight spaces. It is designed with minimal components for easy assembly, disassembly, cleaning and maintenance, with a factory-zeroed integrated 1.5x optical scope to minimise field zeroing. **Length:** 805mm

Barrel length: 508mm **Calibre:** 5.56mm **Weight:** 4kg



Steyr Mannlicher ▶ AUG A3

The A3 is the current production model of the 5.56mm AUG, one of the first bullpup rifle designs to enter production. Since 1979, the AUG has been fielded by more than 30 countries. Designed as a modular family, the AUG can be adapted for different roles by changing barrels. Variants include a heavy-barrel automatic rifle with a folding bipod and a submachine gun chambered for 9x19mm ammunition. **Length:** 715mm **Barrel length:** 508mm **Height:** 270mm **Calibre:** 5.56mm **Weight:** 4.34kg



Steyr Mannlicher ▶ RS556

In January 2017, Rheinmetall announced that it was cooperating with Steyr Mannlicher to offer the RS556 (Rheinmetall Steyr 5.56mm), based on the Austrian company's STM556, for the German Armed Forces Assault Rifle System project to replace the in-service Heckler & Koch 5.56mm G36 assault rifle. The RS556 has an adjustable short-stroke gas piston system and rotating bolt, based on Steyr's AUG. **Length:** 960mm **Barrel length:** 508mm **Calibre:** 5.56mm **Weight:** 4.2kg



Steyr Mannlicher ▶ STM556

Of conventional configuration, the 5.56mm STM556 assault rifle uses a short-stroke gas piston operating system. It features a monolithic upper and quad-railed handguard that supports a quick-change barrel system. Various barrel lengths enable the weapon to be configured as a compact personal defence weapon, assault rifle and designated marksman rifle. It is equipped with a six-position telescopic polymer skeleton buttstock. A 40mm underbarrel grenade launcher can be fitted. **Barrel length:** 508mm **Calibre:** 5.56mm **Weight:** 3.8kg



Swiss Arms ► SG 550

Developed for the Swiss Army, the SG 550 5.56mm assault rifle was introduced into service in 1990. It has evolved into a modular family and also includes the SG 551 carbine and SG 553 compact commando variants. The series uses an indirect gas operating system with a rotating bolt. All models have a folding stock and trigger guard, and the SG 550 can be fitted with a detachable folding bipod. **Length:** 998mm **Barrel length:** 528mm **Calibre:** 5.56mm **Weight:** 4.1kg



Swiss Arms ► SG 551

The SG 551 is the carbine variant of the modular SG 550 assault rifle family. The series uses an indirect gas operating system with a rotating bolt. The SG 551 is available in two barrel lengths. Features include a two-position adjustable gas valve (optional four-position), folding stock and folding trigger guard. Swiss Arms produces translucent polymer magazines which are claimed to be 30% lighter than metal. **Length:** 833mm **Barrel length:** 454mm **Calibre:** 5.56mm **Weight:** 3.4kg



Swiss Arms ► SG 553

The SG 553 is the compact commando variant of the SG 550 assault rifle family. The series uses an indirect gas operating system with a rotating bolt and two-position adjustable gas valve, with an optional four-position gas valve for the SG 553. Features include two barrel lengths, folding stock and folding trigger guard. The SG 553 is available in a lighter aluminium version, the SG 553 16 AL. **Length:** 733mm **Barrel length:** 347mm **Calibre:** 5.56mm **Weight:** 3.2kg



Swiss Arms ► SG 553 R

The most recent member of the SG 550 assault rifle family, the SG 553 R is chambered for 7.62x39mm ammunition and accepts the most common AK-47-series magazines. It has a folding stock and folding trigger guard. The SG 553 R is available in semi-automatic or selective-fire configurations. **Weight:** 3.08kg



Textron Systems ► 6.5mm CT Carbine

The 6.5mm Cased Telescoped (CT) Carbine is a closed-bolt, forward-feed, gas piston-operated weapon being developed as part of the US Army's Lightweight Small Arms Technology (LSAT) effort to field new weapons and ammunition which are both lighter and more effective than weapons now in service. It was first shown at the September 2017 Association of the US Army exhibition following successful firing trials earlier in the year. **Length:** 813mm **Barrel length:** 370mm **Calibre:** 6.5mm **Weight:** 3.95kg



Thales Australia ► EF88/F90 MBR

The Australian Defence Force is equipped with a domestically built version of the Steyr AUG bullpup assault rifle known as the F88, as well as its modernised F88SA1 and F88SA2 derivatives. The latest incarnation of this rifle is the Enhanced F88 (EF88). This is lighter than the F88 and features a redesigned buttstock, additional Picatinny rails and a new trigger guard allowing for the integration of a grenade launcher assembly. 38,500 EF88s have been ordered by the ADF. Thales Australia also markets an export version of the EF88, known as the F90 Modular Bullpup Rifle (MBR), but has yet to receive any orders for this version. The F90/EF88 is in production for the Australian Army, under a contract made in August 2015 for approximately 30,000 rifles. The weapon entered Australian service in late 2015 and by September 2017 about 15,000 had been delivered. **Length:** 700mm **Barrel length:** 508mm **Calibre:** 5.56mm **Weight:** 3.25kg



Thales Australia ► F90 MBR

At the September 2017 DSEI exhibition, Thales introduced the 5.56mm F90 MBR (Modular Bullpup Rifle), a further development of the F90 Assault Rifle (see separate entry) which the company developed for the Australian Defence Force (ADF). Whereas the F90 uses the ADF's legacy F88 Austeyr magazines, the F90 MBR uses standard M4/M16 magazines, which Thales believes will have more appeal for export customers, especially those that have M4/M16 weapons in their inventories. **Barrel length:** 457.2mm **Calibre:** 5.56mm **Weight:** 3.25kg **Effective range:** 600m



Zastava TERVO ► M19

The M19 is a modular assault rifle that can be equipped with barrels chambered for either the Soviet 7.62x39mm cartridge or a new 6.5x39mm cartridge produced by Serbia's Prvi Partizan company. Based on Zastava's previous AK assault rifle derivatives, the M19 features a folding collapsible stock and ambidextrous controls. It can be fitted with either daytime or thermal optical sights. Compared to the Soviet cartridge, the 6.5x39mm projectiles have improved aerodynamic performance, which enhances accuracy, range and penetration. **Calibre:** 6.5mm **Effective range:** 800m





SPECIFICATIONS

SNIPER RIFLES

This section covers sniper rifles and designated marksman rifles (DMR) that are currently in production or in development around the world.

Entries are arranged alphabetically by manufacturer and weapon name. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: A US Marine sights in with the Mk13 Mod 7 Sniper Rifle aboard Marine Corps Base Quantico, Virginia. (Photo: USMC)

Accuracy International ▶ AT308

The .308 Win (7.62x51mm) AT308 (Accuracy Tactical) builds on the L96A1 and AW308 sniper rifles. Features include a steel action with a Quickloc quick-release barrel system, 20 MOA NATO STANAG 4694/MIL-STD-1913 rail and a Quickloc match-grade stainless-steel barrel. The AT308 has a muzzle brake, a six-lug 60° bolt with a leaf spring extractor, a three-position safety, a two-stage trigger and right-folding stock with an adjustable cheekpiece and length of pull. Its configurable pistol grip is designed for ease of use. AI's KeySlot mounting system can attach accessory rails anywhere on the fore-end. The full-length top rail is matched on the angle of the action rail. The standard model has a fixed stock with a 24in, quick-change, plain barrel. There are options for colour, folding stock, barrels/suppressors and accessories.

Length: 965mm **Barrel length:** 610mm **Width:** 90mm **Height:** 180mm

Calibre: 7.62mm **Weight:** 6.3kg



Accuracy International ▶ AX50

The 50cal AX50 long-range anti-materiel rifle is based on the company's AW50. It has an external stock design with the aim of facilitating a secure, comfortable shooting position and improving the user's ability to carry and move with the rifle. The short-throw (60") handle lies close to the stock side, just above the trigger, to minimise movement of the user's hand. **Length:**

1,370mm **Barrel length:** 686mm **Calibre:** 12.7mm **Weight:** 12.5kg



Accuracy International ▶ AX308

The .308 Win (7.62x51mm) AX308 was introduced in early 2014 and has a steel action with a Quickloc quick-release barrel system, 20 MOA NATO STANAG 4694/MIL-STD-1913 rail and a Quickloc match-grade stainless-steel barrel. **Length:** 965mm **Barrel length:** 660mm **Width:** 90mm **Height:** 180mm **Calibre:** 7.62mm **Weight:** 6.3kg



Accuracy International ▶ AXMC

Introduced in early 2014 as a replacement for the AW338, the multi-calibre AXMC is a .338 Lapua Mag sniper rifle which can be reconfigured to .300 Win Mag or .308 Win by changing the barrel, bolt and magazine/insert. It has a steel action with a Quickloc quick-release barrel system, 20 MOA NATO STANAG 4694/MIL-STD-1913 rail and a Quickloc match-grade stainless-steel barrel. **Length:** 1,225mm **Barrel length:** 686mm **Width:** 90mm **Height:** 180mm **Calibre:** 8.6mm **Weight:** 6.6kg



Barrett ► M82A1

Since the semi-automatic 50cal M82A1 anti-materiel rifle was introduced in 1982, it has been acquired by military and security forces in around 70 countries, including the US which designates it the Special Applications Scoped Rifle (SASF). The US Army also employs the weapon as the M107 long-range sniper rifle. The M82A1 CQ has a short barrel. A barrel change enables the weapon to fire a 416cal Barrett cartridge with increased velocity.

Length: 1,450mm **Barrel length:** 737mm **Calibre:** 12.7mm **Weight:** 14.8kg
Effective range: 1.8m



Barrett ► M98B

The M98B is a bolt-action sniper rifle that has been in production since 2009. The original variant is chambered in .338 Lapua Mag and is available with three barrel lengths. The tactical rifle is available in .300 Win Mag and .308 Win, and the fieldcraft version is produced in .260 Rem, 6.5 Creed and 7mm Rem Mag. **Length:** 1,264mm **Barrel length:** 660mm **Calibre:** 8.6mm **Weight:** 6.12kg



Barrett ► M107A1

In January 2011, Barrett unveiled the 50cal M107A1, a version of the US Army's M107 long-range anti-materiel sniper rifle. The use of an aluminium upper receiver with an integrated, rigid 27-MOA optics rail, and some titanium components, make the A1 1.8kg lighter than the M107. **Length:** 1,450mm **Barrel length:** 737mm **Calibre:** 12.7mm **Weight:** 13kg



Barrett ► Model 95

The Model 95 is a bolt-action 50cal sniper rifle in a bullpup configuration, which entered production in 1995. Its buttplate, magazine well and trigger housing are unitised, helping to stiffen the steel lower receiver. The steel upper receiver is reinforced with a MIL-STD-1913 rail and supports the chrome-chambered fluted barrel. The two receivers can be assembled in less than one minute without the use of tools. **Length:** 1,143mm **Barrel length:** 736mm **Calibre:** 12.7mm **Weight:** 10.7kg



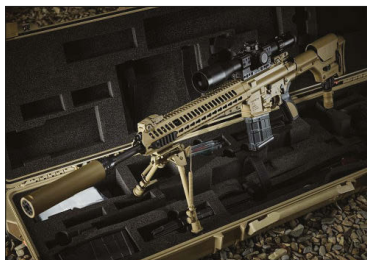
Barrett ► MRAD

The Multi-Role Adaptive Design (MRAD) sniper rifle, initially with a chamber for .388 Lapua Mag ammunition, has a user-changeable barrel system that can be removed by loosening two bolts, using a standard Torx wrench. The design accommodates future calibre interchangeability. It has a length of pull that can be set to five different positions and a consistent rifle-to-user interface is achieved with an adjustable cheekpiece. **Length:** 1,255mm **Calibre:** 8.6mm **Weight:** 5.94kg **Effective range:** 1,800m



Caracal ► CAR 817DMR

The CAR 817DMR is a semi-automatic, gas-operated, rotating bolt 7.62mm designated marksman rifle designed for military and law enforcement users. It is available with 16in and 18in barrels and a ten- or 20-round magazine. There is a full-length MIL-STD-1913 rail on the upper receiver, with shorter rails at the three, six and nine o'clock positions. A silencer can be fitted. **Length:** 1,050mm **Barrel length:** 457mm **Calibre:** 7.62mm **Weight:** 4.4kg **Effective range:** 800m



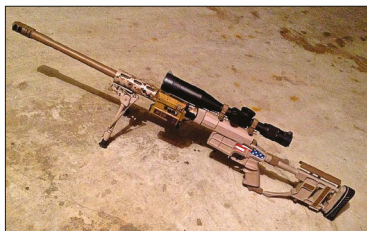
Caracal ► CSR 308

The Caracal Sniper Rifle (CSR) 308 is a heavy-barrel, manually operated, bolt-action 7.62mm NATO sniper rifle. It is manufactured from aircraft-grade aluminium, equipped with a detachable/adjustable buttstock and cheek rest. The system utilises a two-stage, fully adjustable trigger. It has a five-round (or optional ten-round) detachable magazine. All metal parts are finished with a matte corrosion-resistant coating. Various sights can be fitted on a MIL-STD-1913 rail. **Length:** 1,096mm **Barrel length:** 600mm **Height:** 210mm **Calibre:** 7.62mm **Weight:** 5.65kg **Effective range:** 800m



Caracal ► CSR 338

The Caracal Sniper Rifle (CSR) 338 is a heavy-barrel, manually operated, bolt-action .338 Lapua Magnum sniper rifle. It is manufactured from aerospace-grade aluminium and equipped with a foldable/adjustable buttstock with a shock absorber and cheek rest. The system utilises a two-stage, fully adjustable, hook-shaped trigger. It has a five- or an optional ten-round magazine. All metal parts are finished with a matte corrosion-resistant coating. **Length:** 1,275mm **Barrel length:** 690mm **Height:** 210mm **Calibre:** 8.6mm **Weight:** 7.5kg **Effective range:** 1,400m



CG Haenel ► RS9/G29

The RS9 is a variant of the bolt-action RS8 sniper rifle chambered for .338 Lapua Mag ammunition. In February 2016, CG Haenel received a contract to supply the German Armed Forces with 115 modified RS9s, designated the G29, to equip SF units with a medium-range sniper rifle. On the top receiver is a full-length STANAG 4694 NATO Accessory Rail, with shorter rails at the three, six and nine o'clock positions. **Length:** 1,300mm **Barrel length:** 685mm **Width:** 60mm **Height:** 220mm **Calibre:** 8.6mm **Weight:** 7.5kg **Effective range:** 1,500m



Česká zbrojovka ► CZ 750 S1M1

The CZ 750 S1M1 is a bolt-action 7.62mm sniper rifle. The free-floating barrel is 600mm long and has four RH grooves with a 10in twist rate. The stock is made of black polymer reinforced by fibreglass with a pistol grip and thumb hole. The adjustable cheekpiece can be reversed from the left to the right side. The buttplate offers adjustments in height and in length using three exchangeable spacers. **Length:** 1,220mm **Barrel length:** 660mm **Width:** 77mm **Height:** 175mm **Calibre:** 7.62mm **Weight:** 5.8kg



Denel Land Systems ► NTW-20

The NTW-20 is a large-calibre, bolt-action, anti-materiel sniper rifle developed by Denel in 1995 and fielded by the South African National Defence Force since 1998. The weapon is available in three calibres: 20x82mm (NTW-20), 20x110mm (NTW-20x110) and 14.5x114mm (NTW-14.5). Calibre switching between the NTW-20 and the NTW-14.5 can be accomplished without specialised tools by changing the bolt, barrel, sight system and magazine. The recoil force is dampened by a recoil management system, consisting of a muzzle brake, spring buffer and hydraulic damper. For dismounted operations, the NTW-20 can be dismantled and carried by two soldiers in backpacks. **Length:** 2,015mm **Barrel length:** 1,220mm **Calibre:** 20mm **Weight:** 33.8kg **Muzzle velocity:** 1,000m/s **Effective range:** 1,750m



Desert Tech ► HTI Sniper Rifle

Desert Tech developed the Hard Target Interdiction (HTI) sniper rifle at military customers' request. The bullpup HTI is a convertible multi-calibre design that includes .50 BMG, .416 Barrett, .408 Cheytac and .375 Cheytac. The monolithic receiver serves as a full-length mounting chassis, eliminating the need for a bedding interface. **Length:** 1,153mm **Barrel length:** 737mm **Calibre:** 12.7mm **Weight:** 9.1kg



Desert Tech ▶ SRS-A1

The bullpup design of the bolt-action Stealth Recon Scout (SRS)-A1 makes it significantly shorter than conventional sniper rifles. It can be converted in less than one minute to fire .308 Win, .300 Win Mag, .338 Lapua Mag, 6.5x47mm, 6.5 Creed, .260 Rem or 7mm WSM ammunition. The monolithic receiver serves as a full-length mounting chassis, eliminating the need for a bedding interface. **Length:** 973mm **Calibre:** 6.5mm **Weight:** 4.9kg



Desert Tech ▶ SRS-A1 Covert

The Stealth Recon Scout (SRS)-A1 Covert sniper rifle was designed for military snipers requiring a compact weapon with manoeuvrability that could be concealed. A patented quick calibre conversion system enables the weapon to be converted from .308 Win, .300 Win and .338 Lapua Mag calibre in less than one minute. The Covert is compatible with 660mm-barrel SRS conversion kits. The monolithic receiver serves as a full-length mounting chassis, eliminating the need for a bedding interface. **Length:** 737mm **Barrel length:** 457mm **Calibre:** 7.62mm **Weight:** 4.42kg



FN Herstal ▶ FN SCAR-H PR

Unveiled in October 2011, the 7.62mm FN SOF Combat Assault Rifle - Heavy Precision Rifle (SCAR-H PR) is part of the SCAR family, originally developed to meet US Special Operations Command requirements. It has been adapted for increased range and accuracy for sniper support or designated marksman roles. The weapon has a free-floating, 20in heavy barrel and a two-stage trigger module (match-type). **Length:** 1,071mm **Barrel length:** 660mm **Calibre:** 7.62mm **Weight:** 4.5kg **Effective range:** 800m



FN Herstal ▶ FN SCAR-H TPR

The FN SOF Combat Assault Rifle - Heavy Tactical Precision Rifle (SCAR-H TPR) is a variant of the SCAR-H PR. It has a fixed, sniper-type buttstock with adjustments for length (ten positions) and height (eight positions). The SCAR-H TPR has a free-floating 20in heavy barrel and two-stage trigger module (match-type). Like the FN SCAR-H PR, it has an extended 575mm upper MIL-STD-1913 Picatinny rail machined into a monolithic aluminium receiver that can accept in-line night and day sights. **Length:** 1,085mm **Barrel length:** 660mm **Calibre:** 7.62mm **Weight:** 5kg **Effective range:** 800m



FNH USA ► CSR-20

FNH USA is developing the 7.62mm CSR-20 Compact Sniper Rifle which builds on the SCAR family of weapons developed to meet US Special Operations Command requirements. The modular CSR-20 has a sub-MOA, 16in, cold hammer-forged, chrome-lined barrel, monolithic aluminium receiver and non-folding stock with an adjustable cheekpiece, MIL-STD-1913 accessory rails are fitted at the three, six, nine and 12 o'clock positions.

Length: 1,190mm **Calibre:** 7.62mm **Effective range:** 800m



Heckler & Koch ► G28

Developed for German Army use in Afghanistan, the 7.62mm G28 designated marksman rifle is a military version of Heckler & Koch's civilian MR308 semi-automatic competition rifle. Approximately 75% (120) of the parts are interchangeable with the HK417 assault rifle. There are two versions: the G28 E2 (Standard) with a Schmidt & Bender PMII 3-20x50 sight and the G28 E3 (Patrol) with a Schmidt & Bender PMII 1-8x24 sight. **Length:** 1,082mm **Calibre:** 7.62mm



Israel Weapon Industries (IWI) ► Dan.338

IWI launched the Dan.338, the first of a new family of bolt-action sniper rifles, at the Eurosatory 2014 exhibition. Chambered for .338 Lapua Mag ammunition, the Dan.338 is effective at up to 1,200m. Developed in cooperation with the IDF's SF, the Dan.338 has an adjustable, foldable handle and adjustable cheek rest and trigger. **Length:** 1,280mm **Barrel length:** 785mm **Calibre:** 8.6mm **Weight:** 6.9kg **Muzzle velocity:** 881 m/s **Effective range:** 1,200m



Israel Weapon Industries (IWI) ► Galil Sniper SA

The 7.62x51mm Galil Sniper Semi-Automatic (SA) is a derivative of the 5.56/7.62mm Galil assault rifle family. Features include: muzzle brake/jump compensator; foldable bipod; adjustable height; adjustable handgrip; adjustable monopod; foldable butt with an adjustable cheek rest; fixed-scope mount (no deviation after dismount and remounting); and a two-stage trigger. **Length:** 1,100mm **Barrel length:** 584mm **Calibre:** 7.62mm **Weight:** 5.46kg



Kalashnikov Concern ► SV-98

The SV-98 (Sniperskaya Vintovka Model 1998) is a bolt-action 7.62mmR sniper rifle, based on the Record 300 sporting rifle series, which has been in the Russian military and law enforcement service since about 2003. Early versions were made with wooden stocks; modern versions are offered with an adjustable chassis-type stock. It is equipped with a MIL-STD-1913 rail on the top. In Russian service, it is usually used with the 1P69 3-10x optical sight.

Length: 1,270mm **Barrel length:** 650mm **Calibre:** 7.62mm **Weight:** 5.7kg **Effective range:** 1,300m



Kalashnikov Concern ► SV-99

The SV-99 is a specialised close-range (up to 100m) sniper weapon, mostly for use in urban environments, based on the .22 Long Rifle rimfire (5.6x15mmR) Bi-7 Biathlon rifle. It has the same fast toggle-locking, straight-pull bolt-action system, enabling a very fast reload speed. The rifle has an ambidextrous stock, bipod and detachable buttstock, which has adjustable length, buttplate position and cheek rest height. A sound suppressor can be fitted. The rifle can be carried in a backpack when disassembled. **Length:** 1,030mm **Barrel length:** 350mm **Height:** 195mm **Calibre:** 0.22mm **Weight:** 3.4kg **Effective range:** 0.1m



Kalashnikov Concern ► SVD

Since being introduced into Soviet service in 1963, the Dragunov SVD 7.62x54mmR has become one of the most widely deployed sniper/ marksman rifles in the world, in service in more than 25 countries. The SVD is designed to equip marksmen within infantry platoons rather than snipers; it has a robust design and is used without a bipod. The semi-automatic gas-operated weapon uses a short-stroke gas piston system and features an adjustable cheek rest. **Length:** 1,230mm **Barrel length:** 620mm **Calibre:** 7.62mm **Weight:** 4.7kg **Effective range:** 1,300m



Kalashnikov Concern ► SVDM

The 7.62x54mmR SVDM is the latest development of the widely used Dragunov SVD sniper rifle and follows on from the SVDS. The SVDM has improved ergonomics, including a new folding stock with an adjustable cheek riser and butt pad, and is fitted with a detachable bipod. The weapon can be fired with the stock folded. A heavier barrel is intended to provide consistent accuracy during prolonged firing. **Length:** 1,135mm **Barrel length:** 565mm **Calibre:** 7.62mm **Weight:** 5kg **Effective range:** 1,300m



Kalashnikov Concern ▶ SVDS

The SVDS is a compact variant of the SVD with a folding buttstock, which was designed in the early 1990s primarily for use by Russian airborne forces. Modifications include a shortened barrel, strengthened housing receiver, gas cylinder block and a ported, conical flash hider. In other respects, it is similar to the SVD. **Length:** 1,135mm **Barrel length:** 565mm **Calibre:** 7.62mm **Weight:** 5kg **Effective range:** 1,300m



KBP Instrument Design Bureau ▶ MTs-116M

The bolt-action MTs-116M was developed from a sporting rifle design and is available in 7.62x54mmR or 7.62x51mm NATO calibres. The stock design allows the length of the butt, comb height and height of the sight backplate to be adjusted. The bipod can be adjusted and collapsed for transportation. The weapon is fitted with a MIL-STD-1913 Picatinny rail. **Length:** 1,250mm **Barrel length:** 660mm **Calibre:** 7.62mm **Weight:** 6.5kg **Effective range:** 700m



KBP Instrument Design Bureau ▶ OTs-03

The OTs-03 is based on the 7.62mm Dragunov SVD but uses a bullpup layout that reduces length while retaining ballistic performance. It is available in 7.62x54mmR and 7.62x51mm NATO calibres. It can be fitted with a barrel attachment which reduces noise and recoil levels and suppresses muzzle flash. The rifle is fitted with a bipod. **Length:** 980mm **Barrel length:** 620mm **Calibre:** 7.62mm **Weight:** 6.1kg **Effective range:** 800m



Knight's Armament Company ▶ M110 SASS

KAC developed the M110 Semi-Automatic Sniper System (SASS) to meet a US Army requirement for a 7.62mm sniper rifle with a high rate of fire and was awarded a competitive contract in September 2005. The M110 entered operational service in 2008. **Length:** 1,190mm **Calibre:** 7.62mm **Weight:** 7.3kg **Effective range:** 800m



Lewis Machine & Tool Company ► LM8MWS

The 7.62mm LM8 Modular Weapon System was designed to provide a compact and lighter alternative to Lewis Machine and Tool Company's 7.62mm LM308MWS while retaining the latter's higher accuracy and long-range knockdown power. The weapon incorporates the company's Monolithic Rail Platform made from a single aluminium forging and incorporating a quad MIL-STD-1913 rail system. Additional barrel options – 13.5in, 18in and 20in – to suit specific ammunition are available. The LM8MWS is equipped with a SOPMOD buttstock with a six-position extension tube.

Length: 959mm **Barrel length:** 406mm **Calibre:** 7.62mm **Weight:** 4.54kg



Lewis Machine & Tool Company ► LM308MWS

In 2009, LMT introduced the .308 Modular Weapon System, incorporating the company's Monolithic Rail Platform (MRP). Made from a single aluminium forging, the MRP features a quad MIL-STD-1913 rail system. That same year, the UK MoD selected the weapon to meet its requirement for a 7.62mm sharpshooter rifle for use in Afghanistan, and more than 3,000 rifles, designated the L129A1, have been fielded.

Length: 965mm **Barrel length:** 406mm **Calibre:** 7.62mm **Weight:** 4.62kg



Lewis Machine & Tool Company ► MLK MWS

The MLK Modular Weapon System (MWS) is a sniper rifle chambered for the 7.62x51mm cartridge. It uses a 20-round magazine and features a 19.25in section of Picatinny rail at the 12 o'clock position, as well as M-LOK attachment points around the seven remaining sides of the upper receiver. Users can also switch barrels of different calibres, materials and lengths into the same receiver. **Barrel length:** 508mm



Lewis Machine & Tool Company ► Sharpshooter 2

Released in 2019, the Sharpshooter 2 is a designated marksman rifle chambered for the 7.62x51mm cartridge. Part of LMT's Modular Weapon System (MWS) family of rifles, the Sharpshooter 2 incorporates the lessons gained from previous versions of the series, including the British Army's L129A1 rifle. Like other members of the MWS family, the Sharpshooter 2 receiver can accommodate barrels of different calibres, lengths and materials.

Barrel length: 508mm **Calibre:** 7.62mm



Lewis Machine & Tool Company ▶ Valkyrie

Aimed at marksmen, the Valkyrie is a rifle chambered in the .224 Valkyrie cartridge. It is available with three different upper receiver combinations, all of which use the Modular Rail Platform (MRP) designed by LMT. This allows the user to swap barrels of different calibres, lengths and materials into the same receiver. **Barrel length:** 508mm **Calibre:** 5.56mm



McMillan Group International ▶ ALIAS CS5

The ALIAS Concealable Subsonic/Supersonic Suppressed Sniper System (CS5) is designed for concealment in urban settings. With the buttstock and suppressor detached, the CS5 is 597mm long and can be carried in backpacks and other inconspicuous carriers. The bolt-action ALIAS CS5 is a tactical rifle with sub-MOA accuracy, using subsonic or full-power .308 Win ammunition. **Length:** 965mm **Barrel length:** 318mm **Calibre:** 7.62mm **Weight:** 5.57kg



McMillan Group International ▶ ALIAS STAR

The multi-calibre, bolt-action ALIAS STAR is the standard tactical configuration ALIAS rifle. With barrel options from 18.5-24in long, the ALIAS STAR can be optimised for different tactical applications. **Length:** 1,117mm **Calibre:** 7.62mm **Weight:** 5.26kg



McMillan Group International ▶ TAC-50

Designed as a long-range anti-materiel and anti-personnel sniper rifle, the TAC-50 is in service with armed forces of at least nine countries, including the Canadian Army with the designation C15 Long-Range Sniper Weapon and USN SEAL SF units as the MK 15 Mod 0 Special Applications Sniper Rifle, and has seen combat in various theatres. It is based on McMillan's 50cal action and has a match-grade barrel, tuned trigger and a hand-bedded fibreglass stock. **Length:** 1,448mm **Barrel length:** 736.6mm **Calibre:** 12.7mm **Weight:** 11.8kg **Effective range:** 2,000m



McMillan Group International ▶ TAC-50 A1

The TAC-50 A1 is an updated version of the TAC-50 .50 BMG sniper rifle. It features a takedown fibreglass stock with a fore-end that is 127mm longer, moving the balance point for the bipod forward. The A1 has an integral cheekpiece and a monopod on the buttstock with an option for vertical adjustment. The stock incorporates a smaller pistol grip to fit a wider range of hand shapes, with and without gloves. **Length:** 1,448mm **Barrel length:** 737mm **Calibre:** 12.7mm **Effective range:** 2,000,000m



McMillan Group International ▶ TAC-50 A1-R2

The TAC-50 A1-R2 introduces a hydraulic mitigation system to the 50cal TAC-50 series, which reduces peak recoil from the cartridge by approximately 90%. The system uses a hydraulic piston in the buttstock, which compresses as the rifle is fired, lowering peak force and spreading out recoil over several milliseconds. Additional recoil reduction is provided by the muzzle brake. **Length:** 1,448mm **Barrel length:** 736.6mm **Calibre:** 12.7mm **Effective range:** 2,000m



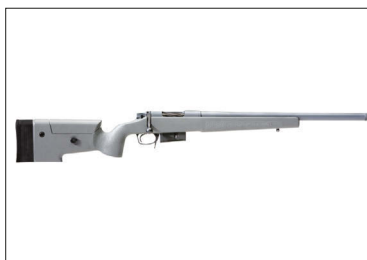
McMillan Group International ▶ TAC-300

The bolt-action .300 Win Mag TAC-300 is designed for long-range tactical scenarios. It has a heavy, match-grade 26in stainless-steel barrel with a threaded cap. The A-5 tactical stock has a spacer system, an integral adjustable cheekpiece and flush-mount swivel cups. **Length:** 1,194mm **Barrel length:** 660mm **Calibre:** 7.62mm **Weight:** 5kg



McMillan Group International ▶ TAC-308

The bolt-action TAC-308, chambered in .308 Win or 6.5mm Creed, is designed for urban tactical scenarios and has a heavy, match-grade stainless-steel barrel. The stock has a spacer system, flush-mount swivel cups and an integral adjustable cheekpiece. **Length:** 1,143mm **Barrel length:** 610mm **Calibre:** 7.62mm **Weight:** 4.3kg



McMillan Group International ▶ TAC-338

The bolt-action .338 Lapua Mag TAC-338 has a heavy, match-grade 26.5in barrel and includes a muzzle brake as standard. The A-5 tactical stock has a spacer system, an integral adjustable cheekpiece and flush-mount swivel cups. The TAC-338 includes a Jewell adjustable trigger set at 1.1kg. **Length:** 1,219mm **Barrel length:** 1,219mm **Calibre:** 8.6mm **Weight:** 5kg



Ministry of Defence Industry of Azerbaijan Republic ▶ Istigal IST-14.5

The Istigal IST-14.5 is a 14.5mm anti-materiel rifle in production since 2008. It has been exported to Pakistan and Turkey. The Istigal is equipped with an adjustable bipod and an adjustable monopod on the stock. The rifle is broken into two components – receiver and barrel assembly – for carriage by backpack. **Length:** 2,256mm **Calibre:** 14.5mm **Weight:** 28kg **Muzzle velocity:** 1,015m/s **Effective range:** 2,000m



Ministry of Defence Industry of Azerbaijan Republic ▶ Mubariz IST-12.7

The Mubariz IST-12.7 is a semi-automatic 12.7x108mm version of the 14.5mm Istigal IST-14.5 anti-materiel sniper rifle. It was developed to meet Azerbaijani MoD requirements and entered service in late 2010. At 16kg, the IST-12.7 is significantly lighter than the 28kg IST-14.5. The rifle has an adjustable bipod and monopod. The barrel has eight-groove rifling with a pitch of 381mm. **Length:** 1,800mm **Barrel length:** 1,100mm **Calibre:** 12.7mm **Weight:** 16kg **Effective range:** 2,000m



Ministry of Defence Industry of Azerbaijan Republic ▶ Yalguzag

Following the break-up of the Soviet Union, the Yalguzag sniper rifle was designed in Azerbaijan to replace Soviet-era weapons with a new sniper rifle in 7.62mm NATO calibre. Atop the receiver is a MIL-STD-1913 rail, with rails also fitted on both sides of the rifle, plus a short rail at the six o'clock position for the bipod. **Length:** 1,214mm **Barrel length:** 660mm **Width:** 85mm **Calibre:** 7.62mm **Weight:** 7.01kg **Effective range:** 1,000m



MKEK ▶ JNG-90

The JNG-90 (Bora-12) is a bolt-action 7.62mm sniper rifle that was developed in collaboration with the Turkish Armed Forces in 2004-08 to meet Turkish military requirements. It is equipped with a MIL-STD-1913 rail on the upper receiver and shorter rails at the three, six and nine o'clock positions. 3E EOS received a contract in 2013 to provide 1,000 Keskin 3-12x50 optical scopes for use with Turkish JNG-90s. **Length:** 1,265mm **Barrel length:** 660mm **Weight:** 6.5kg **Effective range:** 1,000m



PGW Defence ▶ Coyote

The Coyote sniper weapon system is designed to fire M852 7.62x51mm match-grade ammunition. However, in other respects, it is similar to the company's .338 Lapua Mag Timberwolf SWS. Various sights can be fitted on a MIL-STD-1913 rail on the receiver and additional rails are provided on the forestock. The weapon is also fitted with a folding, adjustable buttstock. **Length:** 1,149mm **Barrel length:** 610mm **Width:** 89mm **Calibre:** 7.62mm **Weight:** 6.15kg **Effective range:** 900m



PGW Defence ▶ LRT-3

The bolt-action 50cal LRT-3 sniper weapon system is designed for long-range anti-materiel and anti-personnel attack. Various sights can be fitted on a MIL-STD-1913 rail on the receiver, and additional rails are provided on the forestock. The weapon is fitted with a folding, adjustable buttstock and a sound suppressor can also be fitted. **Length:** 1,334mm **Barrel length:** 737mm **Width:** 127mm **Calibre:** 12.7mm **Weight:** 11.42kg **Effective range:** 1,800m



PGW Defence ▶ Timberwolf

PGW developed the bolt-action .338 Lapua Mag Timberwolf, on the basis of its Timberwolf hunting rifle, to meet the Canadian Army Medium-Range Sniper Weapon System (MRSWS) requirement. In 2005, PGW received a C\$4.5 million (\$3.5 million) contract to supply the newly designated C14 MRSWS to the army. Various sights can be fitted on a MIL-STD-1913 rail on the receiver, and additional rails are provided on the forestock. **Length:** 1,226mm **Barrel length:** 660mm **Width:** 89mm **Calibre:** 8.6mm **Weight:** 6.59kg **Effective range:** 1,500m



Remington Arms ▶ M24 SWS

The 7.62mm bolt-action M24 Sniper Weapon System (SWS), a military and police derivative of the Remington 700, entered service with the US Army in 1988 as a standard sniper weapon and has been used extensively on operations since. The M24 has been sold to military users in at least 12 other countries and more than 15,000 have been built. The US Army has also replaced the M24 with the M2010. **Length:** 1,092mm **Barrel length:** 685.8mm **Calibre:** 7.62mm **Weight:** 7.3kg **Effective range:** 800m



Remington Arms ▶ M2010 ESR

In September 2010, the US Army awarded Remington a competitive contract to supply up to 3,600 XM2010 (as it was then classified) Enhanced Sniper Rifles (ESRs), previously known as the M24 Reconfigured Sniper Weapon System, to replace the service's M24 Sniper Weapon System. Deliveries began in January 2011, and in April 2014, the 2,558th and final M2010 rifle which the US Army had purchased was delivered. **Length:** 1,092mm **Barrel length:** 660mm **Calibre:** 7.62mm **Weight:** 7.3kg **Effective range:** 1.2m



Remington Arms ▶ MSR

The Modular Sniper Rifle (MSR) can be configured by the operator for 7.62mm NATO, .300 Win Mag or .338 Lapua Magnum ammunition. It has a titanium receiver, and each calibre is supported by either a five- or ten-round magazine. The MSR uses a variation of the Remington Arms Chassis System for user adjustability and configuration. The barrels are designed to accept the AAC Titan sound suppressor. **Calibre:** 7.62mm **Weight:** 5.9kg



Sako ▶ TRG 22

In production since 1999, the .308 Win TRG 22 medium-range sniper rifle is available in six configurations: fixed stock versions with an integrated tactical rail system (ITRS); folding stock versions with an ITRS; and fixed stock versions with a monolithic modular rail system, all with either a 20in or 26in barrel. An optional ceramic coating can be applied to metal surfaces to match the stock colour. **Length:** 1,150mm **Barrel length:** 660mm **Calibre:** 7.62mm **Weight:** 4.9kg



Sako ▶ TRG 42

In production since 1999, the TRG 42 long-range sniper rifle is available in .338 Lapua Mag and .300 Win Mag configurations. Each is available with an integrated tactical rail system, providing MIL-STD-1913 rail interfaces at the three, nine and 12 o'clock positions, or with a MIL-STD-1913 monolithic modular rail system. Optional rails are also available at the six o'clock position.

Length: 1,200mm **Barrel length:** 690mm **Calibre:** 8.6mm **Weight:** 5.3kg
Effective range: 1,500m



Sako ▶ TRG M10

Sako introduced the TRG M10 multi-calibre configurable sniper rifle in September 2011. The bolt-action weapon is available in three calibres: .308 Win, .300 Win Mag and .338 Lapua Mag with a short or long forestock. The modular design allows the user to change the barrel and calibre in field conditions without special tools or equipment. Four MIL-STD-1913 rails are fitted. **Length:** 1,217mm **Barrel length:** 686mm **Calibre:** 7.62mm **Weight:** 6.5kg



SIG Sauer ▶ SIG716 DMR

The SIG716 Designated Marksman Rifle (DMR) puts the features of the 5.56mm SIG516 in an AR-based 7.62mm rifle. The SIG716 DMR has a short-stroke pushrod operating system, four-position adjustable gas valve, dual ejectors, match-grade trigger, heavy match-grade barrel with 1:10 twist, a MIL-STD-1913 rail, free-floating barrel, aluminium fore-end and an adjustable stock. **Length:** 968mm **Barrel length:** 457mm **Width:** 73.7mm **Height:** 193mm **Calibre:** 7.62mm **Weight:** 5kg



SIG Sauer ▶ SIG716 GEN2 DMR

The 7.62mm SIG716 GEN2 Designated Marksman Rifle (DMR) is based on the SIG716 DMR and has an improved two-position short-stroke pushrod gas system (suppressed and unsuppressed), a monolithic MIL-STD-1913 top rail and KeyMod aluminium handguard. The weapon is shorter than its predecessor and 900g lighter. The GEN2 DMR has a 16in match-grade, free-floating barrel with a 1:10 twist, six-position adjustable stock and a two-stage match trigger. **Length:** 927mm **Barrel length:** 406mm **Width:** 74mm **Height:** 206mm **Calibre:** 7.62mm **Weight:** 4.08kg



SIG Sauer ► SSG 3000

The SSG 3000 is a 60° short-throw bolt-action rifle. It has a receiver with an integral zero-MOA MIL-STD-1913 rail, sub-MOA accuracy and a stock with integral ambidextrous sling points, aluminium bedding and sloping fore-end. MIL-STD-1913 rail pockets are at the three and nine o'clock positions. In addition to the standard 24in barrel, an 18in option is available. **Length:** 1,143mm **Barrel length:** 610mm **Width:** 50.8mm **Height:** 152.4mm **Calibre:** 7.62mm **Weight:** 5.49kg



SIG Sauer ► TAC 2

The multi-calibre Tactical (TAC) 2 bolt-action rifle has a straight-pull action and can be converted for left- or right-hand shooters. Calibres can be changed by replacing the barrel and bolt head, without special tools. A MIL-STD-1913 Picatinny rail is fixed to the barrel, allowing compatibility with different optical sighting systems. The muzzle end is threaded for an optional muzzle brake. **Length:** 190mm **Width:** 67mm **Height:** 197mm **Calibre:** 5.56mm **Weight:** 5.8kg



SNT Motiv ► K-14

The K-14 is a bolt-action 7.62mm sniper rifle designed in 2011-12 to meet the requirements of the Republic of Korea Army, which began fielding the weapon in 2012. Features include a free-floating barrel, an adjustable buttstock and cheek rest, a folding bipod and a folding monopod attached to the stock. Various sights and accessories can be fitted on MIL-STD-1913 Picatinny rails at the three, six, nine and 12 o'clock positions. **Length:** 1,150mm **Barrel length:** 609mm **Calibre:** 7.62mm **Weight:** 7kg **Effective range:** 800m



SO SIA 'Fort' ► SKS-MF

The SKS-MF is a modernised version of the 7.62x39mm SKS-45 carbine which entered Soviet service in 1945 and was developed for use by sharpshooters. All wooden parts have been replaced with high-strength plastic. A pistol grip and an extending buttstock are fitted, and the weapon is equipped with MIL-STD-1913 rails at the three, six, nine and 12 o'clock positions. The SKS-MF can be fitted with a folding bipod and front grip. **Length:** 1,120mm **Barrel length:** 520mm **Width:** 75mm **Height:** 230mm **Calibre:** 7.62mm **Weight:** 4.5kg



Steyr Mannlicher ▶ HS .50 M1

The bolt-action HS .50 M1 is the most powerful sniper rifle produced by Steyr Mannlicher and is designed to meet military and law enforcement requirements. The rifle is equipped with a MIL-STD-1913 top rail, with shorter rails at the three and nine o'clock positions. Features include: an adjustable cheekpiece; adjustable buttplate; newly designed and fixable bipod; and an adjustable monopod at the buttstock. The side-loading magazine allows reloading without leaving the shooting position. **Length:** 1,508mm **Barrel length:** 900mm **Calibre:** 12.7mm **Weight:** 13.8kg



Steyr Mannlicher ▶ SSG 08

The Steyr SSG 08 is a bolt-action sniper rifle available in .308 Win, .300 Win Mag and .338 Lapua Mag calibres. The rifle has a folding aluminium stock. The cheekpiece and buttplate can be adjusted, and the ergonomic pistol grip can also be customised. The rifle is equipped with a bipod and telescopic butt spike. The receiver has an integrated MIL-STD-1913 Picatinny rail, with additional rails at the three and nine o'clock position. **Length:** 1,272mm **Barrel length:** 690mm **Calibre:** 7.62mm **Weight:** 6.7kg



Swiss Arms ▶ SG 751 SAPR

The 7.62mm SG 751 Swiss Arms Precision Rifle (SAPR) is based on the SIG 55X assault rifle family. The modular design allows the user to choose from five different barrel lengths, three pistol grips, three stocks and four foregrips, including one with four MIL-STD-1913 rails and another with the GL 5140 40mm underbarrel grenade launcher. Another option is a full-automatic capability. **Length:** 1,025mm **Barrel length:** 520mm **Calibre:** 7.62mm **Weight:** 3.96kg



Truvelo Armoury Manufacturers ▶ CMS 7.62x51mm

The bolt-action Counter Measure Sniper (CMS) 7.62x51mm was designed as an anti-personnel sniper rifle. The concept is based on an adjustable stock made from aircraft-grade aluminium, Truvelo action and a ten-round magazine. Design features include a foldable stock, fully adjustable recoil assembly, adjustable grip and cheekpiece, MIL-STD-1913 Picatinny rails and a foldaway adjustable bipod. Various fore-end lengths are available and a sound suppressor is optional. **Length:** 1,180mm **Barrel length:** 660mm **Width:** 60mm **Height:** 200mm **Calibre:** 7.62mm **Weight:** 6kg **Effective range:** 1,000m



Truvelo Armoury Manufacturers ► CMS 12.7x99mm

The bolt-action Counter Measure Sniper (CMS) 12.7x99mm (.50 BMG) is a specialised anti-materiel rifle. Design features include a foldable stock, fully adjustable recoil assembly, adjustable grip and cheekpiece, MIL-STD-1913 Picatinny rails and a removable bipod. **Length:** 1,450mm **Barrel length:** 710mm **Width:** 75mm **Height:** 220mm **Calibre:** 12.7mm **Weight:** 14kg **Effective range:** 1,800m



Truvelo Armoury Manufacturers ► CMS 14.5x114mm

The bolt-action Counter Measure Sniper (CMS) 14.5x114mm is primarily designed as an anti-materiel sniper rifle with high muzzle velocity and penetration power. A variety of ammunition is available that can engage medium to heavy armoured vehicles and communication and guidance systems. The three-chamber muzzle brake reduces recoil by 60%. Design features include a fully adjustable recoil assembly, adjustable grip and cheekpiece, MIL-STD-1913 top rail and a removable bipod. **Length:** 1,810mm **Barrel length:** 992mm **Width:** 85mm **Height:** 280mm **Calibre:** 14.5mm **Weight:** 22kg **Effective range:** 1,800m



Truvelo Armoury Manufacturers ► CMS .338 Lapua

The Counter Measure Sniper (CMS) .338 Lapua Mag is designed for long-range anti-personnel targeting at ranges of up to 1,800m. Design features include a foldable stock, fully adjustable recoil assembly, adjustable grip and cheekpiece, MIL-STD-1913 Picatinny rails and a foldaway adjustable bipod. Various fore-end lengths are available. **Length:** 1,265mm **Barrel length:** 660mm **Width:** 60mm **Height:** 200mm **Calibre:** 8.6mm **Weight:** 7kg **Effective range:** 1,800m



Truvelo Armoury Manufacturers ► SR 20x82mm

The bolt-action Sniper Rifle (SR) 20x82mm is an anti-materiel weapon able to engage targets, including armoured vehicles, at ranges up to 1,500m. A two-chamber muzzle brake reduces recoil by 60%. Design features include a fully adjustable recoil assembly, adjustable grip and cheekpiece, MIL-STD-1913 top rail and a removable bipod. **Length:** 1,820mm **Barrel length:** 1,000mm **Width:** 85mm **Height:** 280mm **Calibre:** 20mm **Weight:** 25kg **Effective range:** 1.5m



Truvelo Armoury Manufacturers ▶ SR 20x110mm

The bolt-action Sniper Rifle (SR) 20x110mm is the most recent addition to Truvelo's small arms range. This anti-materiel rifle is able to engage targets, including armoured vehicles, at ranges up to 2,000m. The muzzle brake provides a 60% reduction in recoil. The rifle can be mounted on an M2 HMG tripod or a cradle mount that weighs approximately 10kg. Design features include a fully adjustable recoil assembly, adjustable grip and cheekpiece, MIL-STD-1913 rail and an adjustable tripod. **Length:** 1,990mm **Barrel length:** 1,100mm **Width:** 80mm **Height:** 230mm **Calibre:** 20mm **Weight:** 25kg **Effective range:** 2m



Zakłady Mechaniczne Tarnów ▶ Alex-338

The .338 Lapua Mag Alex-338 semi-automatic sniper rifle is designed to engage point targets at ranges of up to 2,000m and lightly armoured vehicles at up to 1,000m. The bullpup rifle is fitted with a bipod and monopod. **Length:** 985mm **Calibre:** 8.6mm **Weight:** 6.1kg **Effective range:** 2,000m



Zakłady Mechaniczne Tarnów ▶ BOR-7.62

The bolt-action BOR bullpup sniper rifle fires 7.62x51 mm NATO ammunition. It is equipped with a MIL-STD-1913 Picatinny rail for optical sights and an additional fore-end set of rails for other devices. The weapon has a muzzle brake, folding bipod and rear support. It is designed to engage personnel and light armoured targets at ranges of up to 1,200m. **Length:** 980mm **Calibre:** 7.62mm **Weight:** 5.7kg **Effective range:** 1,600m



Zakłady Mechaniczne Tarnów ▶ WKW TOR-12.7

The WKW TOR-12.7 bolt-action, long-range, bullpup anti-materiel rifle fires .50 BMG cartridges to engage assets such as stationary aircraft, small watercraft, communications equipment, radar installations, crew-served weapons and similar targets, as well as enemy snipers, at ranges up to 2,200m. It is equipped with a MIL-STD-1913 top rail. **Length:** 1,350mm **Calibre:** 12.7mm **Weight:** 14.6kg **Effective range:** 2,200m





SPECIFICATIONS

MACHINE GUNS

This section covers machine guns that are currently in production or in development around the world. It is divided into the following categories:

- light machine guns (LMGs)
- medium/general-purpose machine guns (MMGs/GPMGs)
- heavy machine guns (HMGs)

Entries are arranged alphabetically by manufacturer and weapon designation. The specifications are those supplied by the OEMs. Further information can be obtained by contacting companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: A US marine fires an M2 machine gun out the rear of a CH-53E Super Stallion helicopter during a deployment for training exercise at Colorado Springs in January 2020. (Photo: USMC)

Light machine guns ▶ Arsenal ▶ LMG-M4F

Arsenal offers the LMG-M4F, a development of the Soviet RPK, in 5.56mm NATO and 7.62mm Russian calibres. The LMG-M4F has a metal right-side folding butt, luminous three-dot sight system and ambidextrous safety lever. The magazine, lower handguard, upper handguard and pistol grip are made from glass fibre-reinforced polycapromide. Options include translucent magazines. **Calibre:** 5.56mm

**Denel Dynamics** ▶ Mini SS

In 1994, Denel developed the Mini SS light machine guns chambered to fire 5.56mm ammunition. It can supply new-build weapons or kits, including new barrels, bolts, gas pistons and feed covers, to convert the SS77 to Mini SS configuration. The Mini SS has a folding bipod and fixed butt. It can be housed on a tripod and a variety of vehicle, helicopter and shipboard mounts.

Length: 1,000mm **Barrel length:** 513mm **Calibre:** 5.56mm **Weight:** 8.26kg **Effective range:** 800m

**Denel Dynamics** ▶ SS77

Denel developed the 7.62mm SS77 light machine gun to meet South African military requirements in 1977. The SS77 has been used by the South African National Defence Force since 1986, has been sold to at least two export customers and is actively marketed by Denel. The SS77 is gas-operated, firing from an open breech, with positive side-locking. The weapon has a quick-release barrel, folding bipod and butt. The SS77 can be mounted on a tripod and on a variety of vehicle, helicopter and shipboard mounts. To cope with extreme environmental conditions, the weapon is fitted with dust covers on the feed cover and ejection slot. **Length:** 1,170mm **Barrel length:** 585mm **Calibre:** 7.62mm **Weight:** 10.3kg **Effective range:** 1,800m

**Denel Land Systems** ▶ DMG-5

DLS unveiled its new 7.62mm DMG-5 (Denel Machine Gun) lightweight MG, developed as a successor to the company's 7.62mm SS77 and 5.56mm Mini SS, at the September 2016 Africa Aerospace and Defence exhibition. The DMG-5 weighs 8.4kg, which is 1.2kg lighter than the SS77 and also shorter. The DMG-5 replaces the folding stock of the SS77 with a lighter retractable stock. **Calibre:** 7.62mm **Weight:** 8.4kg **Effective range:** 1,500m



FN Herstal ► FN Minimi 5.56 Mk3

The original FN Minimi 5.56 was developed in the 1970s to meet the requirements of NATO nations for an LMG and is now in service with more than 45 countries. The US adopted it in 1984 as the M249 Squad Automatic Weapon. The weapon has continued to evolve, and the Mk 3 version was introduced in 2013. It integrates modifications based on feedback from users and has improved ergonomics and mobility. **Length:** 1,049mm **Barrel length:** 465mm **Width:** 133mm **Calibre:** 5.56mm **Weight:** 8.1kg **Effective range:** 1,000m



FN Herstal ► FN Minimi 7.62 Mk3

In the 1970s, the FN Minimi was developed in 5.56mm and 7.62mm variants before NATO standardised on 5.56mm for light weapons. In 2002, the 7.62mm design was revived to meet a US Special Operations Command requirement for a 7.62mm LMG. It entered US service in 2003 as the Mk 48 Mod 0. A 7.62mm Mk 3 version of the FN Minimi was introduced in 2013, with improved ergonomics and mobility. **Length:** 1,026mm **Barrel length:** 422mm **Width:** 128mm **Calibre:** 7.62mm **Weight:** 8.8kg **Effective range:** 1,000m



Heckler & Koch ► L86A2 LSW

The L86A2 Light Support Weapon (LSW) is the fire team support variant of the SA80 5.56x45mm bullpup small arms family originally designed by the Royal Small Arms Factory (now part of BAE Systems) and introduced into British Army service in 1985. Approximately 350,000 of all variants were built before production ended in 1994. **Length:** 900mm **Barrel length:** 646mm **Calibre:** 5.56mm **Weight:** 6.58kg **Muzzle velocity:** 970m/s **Effective range:** 800m



Heckler & Koch ► MG4

The 5.56mm MG4 has been in German Army service since 2005 and sold to at least five export customers, including the Spanish Army. The MG4 is an air-cooled, belt-fed, gas-operated weapon with a positively locked rotary bolt. The two infantry variants are the MG4E with a 450mm barrel and the MG4KE with a 370mm barrel. All variants have a folding buttstock. **Length:** 1,030mm **Barrel length:** 450mm **Calibre:** 5.56mm **Weight:** 7.9kg **Effective range:** 1,000m



Israel Weapon Industries (IWI) ► Negev LMG

Developed to meet IDF requirements, the Negev 5.56x45mm LMG has been in Israeli service since 1997 and has been sold worldwide to at least 13 customers. The Negev is an open-bolt light machine gun that can be fed by a belt, assault drum or NATO 5.56 magazine and can be fired in semi-automatic mode. There are four safety mechanisms. A shorter SF version is available and it can be fired from a variety of mounts, including special helicopter airborne mounts, vehicle and naval mounts. **Length:** 1,020mm **Barrel length:** 460mm **Calibre:** 5.56mm **Weight:** 7.65kg **Effective range:** 1,000m



Israel Weapon Industries (IWI) ► Negev NG7 LMG

The 7.62x51mm Negev NG7 is a further development of the Negev 5.56mm light machine gun and was adopted by the IDF in 2012. The NG7 can be fired in semi-automatic mode, allowing for safe use in close-quarters battle and has four safety mechanisms to minimise the risk of uncontrolled fire. As well as the standard version, a shorter SF version is available with 13in and 16.5in barrels. Tritium is applied to the iron sights for firing in low-light conditions. **Length:** 1,020mm **Barrel length:** 508mm **Calibre:** 7.62mm **Weight:** 8.2kg **Effective range:** 1,000m



Kalashnikov Concern ► RPK-16

Kalashnikov unveiled its 5.45x39mm RPK-16 light support weapon at the Army 2016 exhibition. Intended to supersede the RPK-74 light machine gun, the RPK-16 can be equipped with a 30-round box magazine or a 96-round drum. It is available with both a 370mm- and 550mm-long barrel and can be fitted with a suppressor. Although Kalashnikov announced in February 2018 that it had received an initial production order from the Russian MoD for an undisclosed number of weapons, state testing reportedly revealed several flaws with the weapon. This led Kalashnikov to develop the new RPL-20 light machine gun. **Length:** 1,076mm **Barrel length:** 550mm **Calibre:** 5.45mm **Weight:** 6kg **Effective range:** 800m



Kalashnikov Concern ► RPL-20

After testing with the RPK-16 light machine gun uncovered several issues with the design, Kalashnikov initiated development of the new RPL-20 light machine gun to meet the Russian military's revised requirements. Chambered for 5.45x39mm cartridges, the RPL-20 is belt-fed instead of magazine-fed. It features a folding, collapsible stock similar to that fitted to the redesigned AK-12 and AK-19 assault rifles. Two different-length barrels can be fitted to the RPL-20 and barrels can be rapidly swapped out with a quick-change barrel mechanism. When fitted with the shorter barrel, the gun weighs 5.2kg, whereas with the longer barrel it comes in at 5.5kg. **Calibre:** 5.45mm **Weight:** 5.5kg



Knight's Armament Company ► Stoner LMG

KAC announced at the January 2016 SHOT Show that the 5.56mm Stoner light machine gun (LMG) is ready for production. It describes the weapon as the 'world's most lightweight, simple, versatile and controllable light machine gun'. The Stoner LMG has a hybrid modular fore-end and an underslung mounting slot for 5.56mm belted ammunition containers. The weapon has a quick-change barrel and reduced-length feed cover design to accommodate loading and unloading without disturbing the zero of rearward mounted optics. **Length:** 895mm **Barrel length:** 368mm **Calibre:** 5.56mm **Weight:** 4.54kg



Ministry of Defence Industry of Azerbaijan Republic ► HP-7.62mm

Azerbaijan exhibited the 7.62x54mm HP-7.62 LMG to potential export customers for the first time at IDEF 2013, when the weapon was still undergoing testing. The HP-7.62 is described as a completely new design, which was developed to provide SF with a more compact belt-fed 7.62x54mm machine gun than the UP-7.62. The weapon is fitted with a MIL-STD-1913 rail on the receiver cover. Additional rails are provided at the three, six and nine o'clock positions. **Length:** 1,080mm **Barrel length:** 517mm **Calibre:** 7.62mm **Weight:** 8.2kg **Muzzle velocity:** 820m/s



Norinco ► Type 81

The 7.62mm Type 81 light machine gun (LMG) is the squad support variant of Norinco's 7.62mm Type 81 assault rifle that was introduced into the People's Liberation Army service from 1981. It is fitted with a folding bipod and can be fed from its own 75-round drum magazine or the standard 30-round box magazine used with the Type 81 assault rifle. **Length:** 1,024mm **Calibre:** 7.62mm **Weight:** 5.15kg **Effective range:** 600m



SNT Motiv ► K3/K3 Para

The K3 5.56mm light machine gun was developed to replace the 7.62mm M60 in service with Republic of Korea Army (ROKA) infantry squads. The K3 has been in ROKA service since 1991 and has been bought by Bangladesh, Colombia, Fiji, Guatemala, Indonesia and the Philippine Army which has acquired 6,540 weapons since 2008. The K3 can be fed from 200-round belts or 20/30-round magazines. **Length:** 1,046mm **Barrel length:** 483mm **Calibre:** 5.56mm **Effective range:** 800m



ST Engineering Land Systems ► Ultimax 100

The Ultimax 100 is claimed by St Engineering to be the world's lightest machine gun. Capable of being reloaded while on the move, it has a constant recoil system to make it more accurate and controllable. Featuring a foldable, retractable buttstock with adjustable height, an open-bolt system that prevents ammunition cook-off and a trigger safety mechanism, the Ultimax 100 Mk8 is compatible with various magazine types such as the M16 and SAR21 box magazines, the 100 round C-MAG and the Ultimax 100 drum magazine. **Length:** 980mm **Barrel length:** 457mm **Calibre:** 5.56mm **Weight:** 5kg **Effective range:** 800m



Textron Systems Unmanned Systems ► LSAT LMG

Textron Systems Unmanned Systems is developing and maturing a Lightweight Small Arms Technologies (LSAT) family of weapons and ammunition with the US Army that fires polymer-cased telescoped (CT) ammunition. Ten light machine guns were produced and over 120,000 rounds were fired. The project is informing ongoing development work which will feed into the army's emerging requirement for a Next Generation Squad Automatic Rifle to replace the M249 Squad Automatic Weapon. **Length:** 900mm **Barrel length:** 410mm **Calibre:** 5.56mm **Weight:** 4.26kg



Medium/general-purpose machine guns ► Arsenal ► MG-1M

Arsenal's MG-1-series belt-fed machine guns are derived from the Russian PK and PKM designs and are fitted with a synthetic buttstock and pistol grip. Variants are available in 7.62mm NATO and 7.62mm Russian calibres. According to Arsenal, the barrel life of the MG-1 is 30% greater than that of the PK series. The MG-1M variants are optimised for use in tropical and arid climates and have a redesigned barrel to improve cooling. **Length:** 1,160mm **Barrel length:** 605mm **Calibre:** 7.62mm **Weight:** 9kg **Effective range:** 1,000m



Arsenal ► MG-M2

The 7.62x51mm MG-M2, another variant of Arsenal's machine gun series, enables the user to select either semi-automatic or automatic fire. The receiver cover is fitted with a MIL-STD-1913 Picatinny rail. The weapon has a cold radial-forged chromium-plated barrel. **Length:** 1,200mm **Barrel length:** 545mm **Calibre:** 7.62mm **Weight:** 8.6kg **Muzzle velocity:** 850m/s **Effective range:** 1,000m



Barrett ► M240LW

Barrett developed its M240 Lightweight (LW) GPMG to provide a weapon that is both lighter than the standard 7.62mm M240 and cheaper to produce than the M240L now being fielded by the US Army. Weight and manufacturing costs have been reduced by replacing the M240's riveted receiver with a lighter one produced in two pieces that are welded together. It has 59 fewer parts than the standard M240. **Length:** 1,194mm **Barrel length:** 546mm **Height:** 330mm **Calibre:** 7.62mm **Weight:** 9.59kg **Effective range:** 1,500m



FN Herstal ► FN MAG

FN Herstal is the original designer and manufacturer of the 7.62mm FN MAG (General Support Machine Gun). More than 230,000 have been produced since 1958, and the FN MAG is used by over 90 countries, including the UK as the L7A2 and the US as the M240. **Length:** 1,260mm **Barrel length:** 630mm **Width:** 119mm **Height:** 263mm **Calibre:** 7.62mm **Weight:** 11.8kg **Effective range:** 1,500m



FNH UK ► GPMG

Designated the L7A2 in UK military service, Manroy's GPMG, based on the FN Herstal FN MAG, is gas-operated and belt-fed. It is designed to serve as either a light machine gun (LMG), be fired from a bipod or as a tripod-mounted sustained fire MG. An adjustable gas regulator compensates for adverse operating conditions and varies the rate of fire. The air-cooled barrel is chrome-plated and may be changed in seconds, says the company. **Length:** 1,231mm **Barrel length:** 679mm **Calibre:** 7.62mm **Weight:** 12.7kg



General Dynamics Ordnance and Tactical Systems ► LWMMG

General Dynamics (GD) unveiled the Lightweight Medium Machine Gun (LWMMG) in May 2012. Intended to eliminate the gap between 7.62mm and 50cal weapons, the LWMMG uses the .338 Norma Magnum cartridge to accurately engage targets at ranges up to 1,700m. Despite its more powerful cartridge, the LWMMG has a similar recoil profile to a 7.62mm machine gun thanks to a recoil mitigation system. **Length:** 1,244mm **Barrel length:** 609mm **Calibre:** 8.6mm **Weight:** 10.89kg **Muzzle velocity:** 808m/s **Effective range:** 1,700m



Heckler & Koch ► MG5

Heckler & Koch began the development of the 7.62mm MG5 (formerly designated HK121) in 2005 to provide a weapon to replace the German Armed Forces' 7.62mm MG3 medium machine gun. It is a modular design suitable for different roles. **Length:** 1,112mm **Barrel length:** 550mm **Calibre:** 7.62mm **Weight:** 11.6kg **Effective range:** 800,000m



Ministry of Defence Industry of Azerbaijan Republic ► UP-7.62mm

The UP-7.62 MG is used by the Azerbaijani armed forces and was first exhibited to potential export customers at IDEF 2011. It is an improved version of the PK 7.62x54mmR MG which was introduced into Soviet service in 1961. An optional rail is available for fitting day and night sights. **Length:** 1,160mm **Barrel length:** 605mm **Calibre:** 7.62mm **Weight:** 7.5kg **Muzzle velocity:** 825m/s



Norinco ► CQ 7.62mm GPMG

The CQ 7.62mm is a belt-fed GPMG firing the 7.62x51mm cartridge. It can be fired in the light role from its folding bipod or mounted on a tripod for use in the sustained fire role. The tripod can also be used in the air defence role. An optical day sight can be fitted. **Calibre:** 7.62mm **Weight:** 11kg **Effective range:** 1,200m



Norinco ► Type 80

Norinco's 7.62x54mmR Type 80 is essentially the same as the Russian PK belt-fed machine gun. The Type 80 can be fired in the light role from its folding bipod or mounted on a tripod for use in the sustained fire role. The tripod can also be used in the air defence role. The Type 80 entered the People's Liberation Army service in the mid-1980s and has been exported to a least five customers. **Length:** 1,192mm **Barrel length:** 675mm **Calibre:** 7.62mm **Weight:** 7.9kg **Effective range:** 1,000m



Profense ► Profense M134

The Profense M134 Gatling gun is an electrically driven, automatic machine gun with a sustained rate of fire in excess of 3,000 rounds per minute. The M134 fires the standard 7.62x51mm NATO cartridge and utilises M13 Link ammunition. The M134 can either be battery-powered or powered from the platform's electrical system. The Profense M134 is in service with several international customers on various types of boats, helicopters and vehicles.

Length: 802mm **Width:** 305mm **Calibre:** 7.62mm **Weight:** 30kg **Muzzle velocity:** 869m/s



Rheinmetall ► MG3 KWS

In 2013, Rheinmetall introduced a Combat Performance Upgrade (KWS) for the 7.62mm MG3 GPMG to improve its safety, handling and versatility when used in the infantry role. Introduced into German service in 1968, the MG3 is an evolution of the MG42 and has been exported, either directly or through local production, to many other forces. **Calibre:** 7.62mm



SNT Motiv ► K16

S&T; Motiv (now SNT Motiv) developed the K12 7.62mm machine gun in 2010-12 to enable the Republic of Korea Army (ROKA) to replace its US-supplied M60s in various roles where it wished to continue using a 7.62mm machine gun, such as the pintle-mounted weapons in the Korean Utility Helicopter. The infantry version of the weapon was subsequently renamed K16 in 2020 and is also available in the K16D vehicle-/helicopter-mounted and K16E coaxial versions. **Length:** 1,189mm **Barrel length:** 559mm **Calibre:** 7.62mm **Weight:** 10.4kg



Textron Systems Weapon & Sensor Systems ► 7.62mm CT MMG

Since June 2014, the US Army has awarded contracts totalling \$7.7 million to Textron Systems to develop a 7.62mm version of the 5.56mm light machine gun (LMG) and its associated polymer-cased telescoped (CT) ammunition developed through the US Army's Lightweight Small Arms Technology (LSAT) effort, which is now managed by the US Joint Service Small Arms Program. According to Textron, the 5.56mm CT LMG displayed improved short-range engagement times, more first-round hits at long range and increased accuracy due to recoil mitigation. A prototype 7.62mm CT MMG was shown at SOFIC 2015. The 7.62mm CT weapon and a standard combat load of 800 rounds weighs 37% less than the 7.62mm M240L – 6.57kg for the CT weapon and 13.97kg for the ammunition. Textron planned to have a firing prototype ready by Q3 2016. **Length:** 1,020mm **Barrel length:** 457mm **Calibre:** 7.62mm **Weight:** 6.57kg



TsNIITochMash ► Pecheneg

The 6P41 Pecheneg is the latest version of the PK series of 7.62x54mm GPMGs that were introduced into Soviet service in 1961, used by forces in more than 50 countries and produced locally in several. The Pecheneg has a heavy barrel and a revised bipod arrangement which, according to TsNIITochMash, improves grouping by a factor of two. The barrel does not have to be changed during firing and has a life of 30,000 rounds. **Length:** 1,155mm **Barrel length:** 658mm **Calibre:** 7.62mm **Weight:** 8.5kg **Muzzle velocity:** 820m/s



US Ordnance ► M60E6

The M60E6 GPMG is the latest improved version of the M60. USORD's M60E4/Mk 43 is in service in at least 15 countries and with US Special Operations Command. The M60E6 is a gas-operated, disintegrating-link, belt-fed and air-cooled weapon. It fires from an open bolt and has a quick-change barrel. The M60E6 has a machined-aluminium feed cover with an integrated MIL-STD-1913 rail. **Length:** 965mm **Width:** 120mm **Calibre:** 7.62mm **Weight:** 9.35kg **Muzzle velocity:** 853m/s **Effective range:** 1,100m



Zakłady Mechaniczne Tarnów ► UKM-2000

The UKM-2000, based on the PK design, was developed by ZMT to provide Polish forces with a GPMG firing 7.62mm NATO ammunition. The UKM-2000 is fitted with a quick-change barrel and is offered in four versions: the infantry UKM-2000P with fixed buttstock; the paratrooper UKM-2000D with folding buttstock; the coaxial UKM-2000C fed from the right-hand side; and the coaxial UKM-2000CL fed from the left-hand side. The UKM-2000P/D can be equipped with a MIL-STD-1913 rail. **Length:** 1,203mm **Barrel length:** 547mm **Calibre:** 7.62mm **Weight:** 8.96kg **Effective range:** 1.5m



Heavy machine guns ► CANiK ► CANiK M2 QCB

After an extensive R&D process, Canik has redesigned and developed the venerable Browning M2 HMG. The life span of the firing pin has been doubled and the most accurate barrel with the longest lifespan on the market has been developed (barrel life of 25000 rounds with less than 6 MOA). Along with its quick change barrel and marine coating that makes the gun highly resistant to corrosion, Canik M2 has the ability to accept a wide range optics and illumination tool. Canik also offers a new lightweight tripod for its M2 QCB. **Length:** 1665mm **Barrel length:** 1145mm **Calibre:** 12.7mm **Weight:** 38.5 kg **Muzzle velocity:** 900/s **Effective range:** 1.830m **Tripod's weight:** 9.5kg



FN Herstal ► FN M2HB-QCB

FN Herstal is the original designer and manufacturer of the Quick Change Barrel (QCB) version of the Browning M2HB 50cal HMG. FN Herstal has produced many different models of the weapon since the 1930s, with the current production standard being the FN M2HB-QCB, which eliminates the need for headspace adjustments. Manroy produces the M2HB QCB in the UK and can supply complete weapons or kits to upgrade existing M2HBs to the QCB standard. **Length:** 1,656mm **Barrel length:** 1,143mm **Height:** 193mm **Calibre:** 12.7mm **Weight:** 38.2kg **Effective range:** 2,000m



General Dynamics Ordnance and Tactical Systems ► GAU-19/B

The GAU-19/B is a lightweight Gatling gun that can be mounted on vehicles, helicopters, fixed-wing aircraft and patrol boats. It can fire up to 1,300 rounds per minute and is designed to be reliable, with a high 40,000-rounds-between-failure rate. Due to its lightweight construction, the system is comparable in weight to most other heavy machine guns. **Calibre:** 12.7mm **Weight:** 48kg



General Dynamics ► M2A1

The M2A1 is a 50cal (12.7mm) HMG that is capable of firing 600 rounds per minute out to a maximum range of 6,800m. It incorporates many improvements over the venerable M2 HMG including a quick-change barrel mechanism, fixed headspace and a new flash hider that reduces the weapon's flash signature by 95%. Like its predecessor, the M2A1 can be mounted on a tripod as well as a variety of other ground, aerial and naval platforms. General Dynamics has manufactured both new guns and upgrade kits for the US Army and foreign customers. **Length:** 1,721mm **Calibre:** 12.7mm **Weight:** 38.2kg **Effective range:** 1,830m



Norinco ► CS/LM6

Norinco developed the CS/LM6 50cal heavy machine gun (HMG) to provide export customers with a less expensive alternative to M2-series HMGs produced by other manufacturers. The tripod can also be used in the air defence role. **Length:** 1,660mm **Calibre:** 12.7mm **Weight:** 38kg **Effective range:** 1,600m



Norinco ► QJZ89

The 12.7x108mm QJZ89 is a multipurpose heavy machine gun derived from the earlier 12.7mm Type 85 – used primarily in the air defence role – mounted on a tripod. **Length:** 1,920mm **Calibre:** 12.7mm **Weight:** 17.8kg **Effective range:** 1,500m



Rheinmetall ► RMG.50

The 50cal Rheinmetall Machine Gun (RMG.50) is being developed as a replacement for the M2 series in German service. A primary objective is fielding a heavy machine gun better suited for integration in remote weapon stations. Externally powered, the RMG.50 can be equipped with a single or double ammunition feed. Adjustable rates of fire and burst lengths result in reduced recoil. **Calibre:** 12.7mm **Weight:** 32kg **Effective range:** 2,000m



SNT Motiv ► K6

The K6 is a locally-produced copy of the Browning M2HB 50cal heavy machine gun that is in service with South Korea's armed forces. The K6 features some improvements and standard M2HB HMGs can be converted to the K6 configuration by replacing a few parts. The weapon has a quick-change barrel. In the ground role, the K6 is mounted on an M3 tripod, and the weapon can be mounted on vehicles, helicopters or boats. **Length:** 1,654mm **Barrel length:** 1,143mm **Calibre:** 12.7mm **Weight:** 50.6kg **Muzzle velocity:** 930m/s **Effective range:** 1,830m



ST Engineering Land Systems ► 50MG

The 50MG quick-change barrel with fixed headspace can be changed in one action without any tools, in just seconds. It also has a left-/right-hand-feeding system for fast switching of ammunition types, an open-bolt mechanism, and semi-automatic and automatic firing modes. Multiple mounting options such as the M3 tripod, pedestal mount, 40/50 cupola weapon station, remote control weapon station and ring mount are also available. **Length:** 1,670mm **Barrel length:** 1,143mm **Calibre:** 12.7mm **Weight:** 30kg **Effective range:** 1,830m



US Ordnance ► M2A2

The US Ordnance 50cal M2A2 combines the performance of the venerable M2HB with upgrades such as fixed headspace and timing. This increases the level of safety for operating personnel and enables the barrel to be changed on crew-served or coaxial mounted weapons by one person in under 10s, according to the company. It is suitable for use on a wide variety of platforms other than tripods, including remote weapon stations, vehicle mounts, vessels and helicopters. **Length:** 1,654mm **Barrel length:** 1,143mm **Calibre:** 12.7mm **Weight:** 38kg **Effective range:** 2,000m



US Ordnance ► M2HB

US Ordnance is one of two US M2HB heavy machine gun manufacturers which has received multi-year contracts to supply weapons to the US DoD. The air-cooled, belt-fed weapon fires from a closed bolt and operates on the short recoil principle. It is capable of sustained automatic and accurate single-shot fire and fires all types of .50 BMG ammunition: ball, tracer, AP, API, APIT, AP hardcore and multipurpose. **Length:** 1,644mm **Barrel length:** 1,143mm **Width:** 228mm **Height:** 193mm **Calibre:** 12.7mm **Weight:** 38kg **Muzzle velocity:** 929m/s **Effective range:** 2,000m



V.A. Degtyarev Plant ► Kord

The Kord 12.7mm heavy machine gun (HMG) first entered service in 1998 to replace the 12.7mm NSV HMG. It can be used in various roles, including dismounted infantry, pintle-mounted on armoured fighting vehicles and helicopter- and boat-mounted. The Kord can be fired from a bipod and incorporates numerous improvements over the early NSV. The Kord is designed to use either 12.7x108mm Soviet/Russian or .50 BMG (12.7x99mm) NATO ammunition by changing the barrel and feed mechanism. **Length:** 1,980mm **Width:** 810mm **Calibre:** 12.7mm **Weight:** 25kg **Muzzle velocity:** 860m/s **Effective range:** 2,000m



Zakłady Mechaniczne Tarnów ► WKM-Bm/NSW UTIOS

The WKM-Bm HMG fires 12.7x99mm NATO-standard ammunition and the NSW-UTIOS version is adapted to fire the Russian 12.7x107mm round. Both variants can be mounted on a ground tripod, a pedestal, various vehicles and remote weapon stations. **Length:** 1,560mm **Barrel length:** 1,100mm **Calibre:** 12.7mm **Weight:** 25kg **Effective range:** 2,000m





SPECIFICATIONS

GRENADE LAUNCHERS

This section covers grenade launchers that are currently in production or in development around the world. It is divided into the following categories:

- individual grenade launchers
- crew-served grenade launchers

Entries are arranged alphabetically by manufacturer and weapon designation. The specifications are those supplied by the OEMs. Further information can be obtained by contacting companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: A USMC private aims an M320 Grenade Launcher on Camp Lejeune, North Carolina. (Photo: USMC)

Individual grenade launchers ▶ Abrams Airborne Manufacturing Inc. ▶ AV-140

The AV-140 is a handheld, gas plug-operating, semi-automatic, revolving-action, 40mm multi-shot grenade launcher. The AV-140 is qualified to fire all existing low- and medium-velocity 40mm ammunition. All six rounds can be fired in less than 3s with a sustainable rate and cover an area of at least 20x60m. The AV-140 can be mounted on patrol boats, helicopters and armoured vehicles. **Length:** 73.9cm **Width:** 16.5cm **Calibre:** 40mm **Weight:** 6.68kg **Effective range:** 800m

**Arsenal** ▶ 40mm UBGL

Arsenal's UBGL is a 40mm underbarrel single-shot grenade launcher intended for use with Arsenal and AK-series assault rifles. The launchers are designed for use with Arsenal's caseless muzzle-loading ammunition family. **Length:** 30cm **Width:** 7.5cm **Height:** 17cm **Calibre:** 40mm **Weight:** 0kg **Muzzle velocity:** 76m/s

**Arsenal** ▶ MSGL

Arsenal's MSGL is a shoulder-fired, six-shot, semi-automatic grenade launcher designed for use with 40mm low-velocity ammunition up to 105mm in length. The MSGL-L model fires grenades up to 135mm in length. Both models are available with a MIL-STD-1913 Picatinny rail. A chromium-plated barrel increases longevity. **Length:** 80cm **Calibre:** 40mm **Weight:** 7.56kg **Muzzle velocity:** 75m/s

**Arsenal** ▶ UBGL-M8

The UBGL-M8 is a single-shot 40mm low-velocity underbarrel grenade launcher designed for attaching to Arsenal's 5.45mm, 5.56mm and 7.62mm assault rifles, as well as various AK-series weapons from other manufacturers. It can be equipped with a MIL-STD-1913 rail that provides attachments of mechanical or collimator sights. **Length:** 37.5cm **Calibre:** 40mm **Weight:** 1.7kg **Muzzle velocity:** 76m/s



Arsenal ▶ UGGL-M1

The UGGL-M1 is a standalone, single-shot 40mm low-velocity grenade launcher with a telescopic folding butt. **Length:** 60.5cm **Width:** 6.5cm **Height:** 29cm **Calibre:** 40mm **Weight:** 2.85kg **Muzzle velocity:** 76m/s



Beretta ▶ GLX160 A1

The 40mm GLX160 A1 grenade launcher was designed to be integrated with the ARX160 rifle which Beretta developed for the Italian Army. The GLX160 A1 can also be mounted on any rifle with a suitable interface and used as a separate weapon when the standalone frame with a five-position telescopic stock, pistol grip and a MIL-STD-1913 rail is attached.



Colt Defense ▶ M203

Since entering US military service in 1968, the M203 40mm underbarrel grenade launcher (UGL) has been fielded by the armed forces of almost 50 countries, making it the most widely deployed UGL in the world. The M203 is produced by Colt Defense, Colt Canada, Knight's Armament and Lewis Machine & Tool Company among others in North America and is manufactured under licence, or as copies, in other countries. **Length:** 38cm **Width:** 8.4cm **Calibre:** 40mm **Weight:** 5.9kg



Česká zbrojovka ▶ CZ 805 G1

Česká zbrojovka developed the CZ 805 G1 shoulder-fired 40mm grenade launcher as part of a new generation of infantry weapons for the Czech Armed Forces. It can be mounted on the CZ 805 BREN A1 assault rifle and A2 carbine (see separate entry) or used separately, mounted on a carrier that is equipped with a pistol grip and a folding removable shoulder stock. **Length:** 62.4cm **Width:** 8.4cm **Height:** 18.4cm **Calibre:** 40mm **Weight:** 2.34kg



Denel Dynamics ▶ iNkunzi PAW 20

Denel's iNkunzi Personal Area Weapon (PAW) 20 is a semi-automatic, magazine-fed grenade launcher designed to fire 20x42mm ammunition. It is equipped with a ballistic compensator, which is marked in 50m increments from 100-1,000m, enabling the firer to engage point targets up to 500m away and area targets at up to 1,000m. Each 20mm explosive projectile delivers in excess of 100 lethal fragments in the vicinity of the target. The buttstock can be folded for easy carriage. **Length:** 84.5cm **Width:** 11.5cm **Height:** 18.5cm **Calibre:** 20mm **Weight:** 5.9kg **Muzzle velocity:** 310m/s **Effective range:** 1,000m



FN Herstal ▶ FN40GL

The FN40GL is designed to integrate under either the FN SCAR-L or FN SCAR-H assault rifles (see separate entries) or be used as a standalone grenade launcher using a buttstock assembly. The launcher attaches to the lower rail of the rifle or buttstock using a trigger adapter and dual-locking clamp levers, allowing fast assembly and disassembly. The FN40GL has a forward- and side-opening barrel system. **Length:** 68.5cm **Calibre:** 40mm **Weight:** 2.92kg **Muzzle velocity:** 76m/s



FN Herstal ▶ FN GL1

The 40mm low-velocity FN Herstal FN GL1 was designed to integrate under the FN F2000 Standard or Tactical assault rifle (see separate entry) as a replacement for the standard or triple-rail handguard. The launcher quickly attaches to the lower rail of the rifle. Integration retains the ergonomics, balance and contours of the rifle. The operator can pull either the rifle or grenade launcher trigger without changing hand position. **Calibre:** 40mm **Weight:** 1.2kg **Muzzle velocity:** 76m/s



Heckler & Koch ▶ AG36

H&K developed the AG36 40mm underbarrel grenade launcher in parallel with the G36 5.56mm assault rifle (see separate entry). The AG36 can also be used as a standalone grenade launcher with an optional buttstock. It was acquired by the UK for use on the L85A2 assault rifle. Specifications for AG36 standalone module. **Length:** 64cm **Width:** 7.8cm **Height:** 22.2cm **Calibre:** 40mm **Weight:** 3.83kg **Muzzle velocity:** 76m/s



Heckler & Koch ▶ HK269

The HK269 is a low-velocity enhanced development of the M320 GLM (see separate entry). It provides the option to unlock the barrel either to the left or right. The HK269 can be mounted on assault rifles or used as a standalone weapon. It is suitable for both lethal and non-lethal ammunition. **Length:** 28.5cm **Width:** 9.9cm **Height:** 21cm **Calibre:** 40mm **Weight:** 1.27kg **Muzzle velocity:** 75m/s **Effective range:** 150m



Heckler & Koch ▶ M320 GLM

The M320 Grenade Launcher Module (GLM) is a further development of the HK AG36 (see separate entry) to meet a US Army requirement. The M320 entered production in 2008 to replace the M203, and the US Army plans to continue production until FY2019. The M320 is mounted on M16-series rifles, while the M320A1 mounts on M4-series carbines. **Length:** 35cm **Width:** 7.8cm **Height:** 22.2cm **Calibre:** 40mm **Weight:** 1.5kg **Muzzle velocity:** 75m/s **Effective range:** 150m



Israel Weapon Industries (IWI) ▶ Stand-Alone Grenade Launcher and UBGL

The IWI 40 Stand-Alone Grenade Launcher is a single-shot 40x46mm grenade launcher ergonomically designed, available in two barrel lengths and compatible with low- and medium-velocity rounds. It is able to use various lengths of ammunition due to its forward- and side-opening barrel system. The forward movement allows a simple extraction and injection of the grenade and the side-opening enables the use of long grenades. It has upper and lower Picatinny rails. When the buttstock is removed from the IWI Stand-Alone Grenade Launcher, it can be attached to the lower Picatinny rail of a rifle as an Under-Barrel Grenade Launcher. **Length:** 60.6cm **Calibre:** 40mm **Weight:** 2kg



Kalashnikov Concern ▶ GP-34

Kalashnikov designed the single-shot GP-34 40mm underbarrel grenade launcher for use with the company's 5.45mm, 5.56mm and 7.62mm assault rifles. The sight allows the firer to launch grenades along a flat or curved trajectory at ranges from 100-400m. The GP-34 fires VOG-25 or VOG-25M fragmentation grenades, VOG-25P or VOG-25PM fragmentation bounding grenades and VOG-25 smoke grenades. **Calibre:** 40mm **Weight:** 1.4kg **Muzzle velocity:** 76.5m/s **Effective range:** 400m



KBP Instrument Design Bureau ► AGS-17

The AGS-17 30mm automatic grenade launcher is designed to defeat manpower and firing assets located outside shelters, in open trenches and behind natural obstacles. Also known as the AGS-17A, the system is used on armoured vehicles and helicopters. **Length:** 84cm **Calibre:** 30mm **Weight:** 31 kg **Muzzle velocity:** 185m/s **Effective range:** 1,700m



Lewis Machine & Tool Company ► L2B/L2D

The M203-2003 has an integrated MIL-STD-1913 rail which enables the grenade launcher to be fitted on 'virtually any modern rifle or carbine' by attachment of a suitable rail adaptor. The L2B model has a 9in barrel, while the L2D model has a 12in barrel. **Length:** 38.7cm **Calibre:** 40mm **Weight:** 1.1kg



Lewis Machine & Tool Company ► L2H

The L2H is LMT's M203 40mm single-shot grenade launcher assembly in a standalone configuration with an extending SOPMOD (Special Operations Peculiar Modification) buttstock. The L2F model has a 9in barrel, while the L2G model has a 12in barrel. **Length:** 79.4cm **Calibre:** 40mm **Weight:** 2.57kg **Effective range:** 400m



Lewis Machine & Tool Company ► Shorty 40

The M203 40mm Shorty 40 is a standalone grenade launcher pistol grip system. It is made of aerospace aluminium and has a 7in barrel with a 1:48in RH twist. The Shorty 40 has a pressure system operating method. **Calibre:** 40mm



Milkor USA ▶ M32A1

The M32A1 is a handheld, gas plug-operating, semi-automatic, revolving-action, 40mm multi-shot grenade launcher. It is the successor to the original M32 (MGL-140) adopted by the USMC in 2006. The M32A1 is tested and qualified to fire all existing low- and medium-velocity 40mm ammunition. All six rounds can be fired in less than 3s and cover an area of at least 20x60m. The M32A1 can also be mounted on patrol boats, helicopter gunships and armoured vehicles. **Length:** 73.9cm **Width:** 16.5cm **Height:** 29.2cm **Calibre:** 40mm **Effective range:** 375m



Milkor ▶ 40mm SuperSix MRGL

The Milkor 40mm SuperSix Multi-Range Grenade Launcher (MRGL) is a sixth-generation, six-shot, shoulder-fired launcher with different options of cylinder length. Capable of firing all existing low- and medium-velocity 40mm ammunition, the launcher can discharge six rounds in less than 3s and cover an area of at least 20x60m. Following a tender issued in November 2017, the SuperSix has entered service with the South African National Defence Force as the Y4. **Length:** 86cm **Width:** 16.3cm **Height:** 20.1cm **Calibre:** 40mm **Weight:** 5.96kg **Muzzle velocity:** 115m/s **Effective range:** 800m



Milkor ▶ MGL Mk 1L

The 40mm Multiple Grenade Launcher (MGL) Mk 1L is a shoulder-fired, six-shot, semi-automatic weapon that features a lengthened 140mm chamber compared to the standard 105mm chamber of the Mk 1S (see separate entry). **Length:** 86.5cm **Width:** 16.3cm **Height:** 20.7cm **Calibre:** 40mm **Weight:** 6.24kg **Effective range:** 375m



Milkor ▶ MGL Mk 1S

The 40mm Multiple Grenade Launcher (MGL) Mk 1S is a shoulder-fired, six-shot launcher. The Mk 1S is a standard 105mm chamber, third-generation launcher enhancing the capabilities of the original 40mm MGL/Milkor Y2 and the second-generation Mk 1. Optional attachments provide MIL-STD-1913 rails at the three, six, nine and 12 o'clock positions. Milkor has supplied over 50,000 MGLs to more than 40 countries worldwide. **Length:** 83cm **Width:** 16.3cm **Height:** 20.7cm **Calibre:** 40mm **Weight:** 5.71kg **Effective range:** 375m



Milkor ▶ Stopper Convertible

The Milkor 37/38 or 40mm Stopper Convertible is a lightweight, single-shot, break-open weapon that can use a variety of 37/38 less-lethal or 40mm less-lethal and lethal rounds. As a security or assault weapon, it can be fired from the shoulder or handheld. The weapon is described as simple to operate and all metal surfaces are treated with a coating for corrosion protection plus long-life dry film lubrication. **Length:** 66.9cm **Width:** 6.5cm **Height:** 16.5cm **Calibre:** 37mm **Weight:** 2kg **Effective range:** 375m



Milkor ▶ UBGL

The single-shot 40mm Under-Barrel Grenade Launcher (UBGL) can be attached to most modern assault weapons using a MIL-STD-1913 Picatinny rail system. The breech is swung open to the side for loading and unloading and does not interfere with the normal operation of the rifle. The firing mechanism is cocked by opening and closing the UBGL for loading, and there is a built-in safety lever. **Length:** 27.4cm **Width:** 6cm **Height:** 9cm **Calibre:** 40mm **Weight:** 1kg **Effective range:** 250m



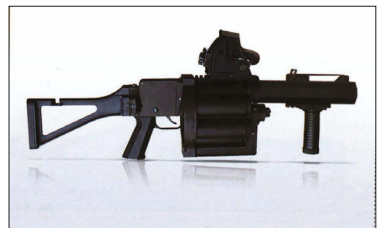
Norinco ▶ LG2

Norinco's LG2 is a single-shot 40x46mm underbarrel grenade launcher. **Length:** 38.3cm **Calibre:** 40mm **Weight:** 1.5kg **Muzzle velocity:** 75m/s



Norinco ▶ LG4

The LG4 is a six-chamber, revolving-cylinder, shoulder-fired, semi-automatic 40x46mm grenade launcher. It is fitted with a top rail for optical sights and a bottom rail for a pistol grip. The buttstock can be folded to reduce length. **Length:** 72.6cm **Calibre:** 40mm **Weight:** 5.8kg **Muzzle velocity:** 75m/s



Norinco ► LG5s

Norinco describes the LG5s, which it began marketing in 2014, as a precision grenade launcher 'mainly used to perform tactical sniping tasks' at ranges up to 1,000m. The company claims that it is the first shoulder-fired launcher capable of using 40x53mm high-velocity grenades. Developed for export, the LG5s fires Norinco BGJ540x53mm HEDP sniper grenades and standard 40x53mm grenades produced by other manufacturers. **Length:** 0.13cm
Calibre: 40mm **Weight:** 12.9kg



Northrop Grumman Innovation Systems ► XM25 CDTE

In March 2011, the US Army awarded ATK, teamed with Heckler & Koch, an initial engineering and manufacturing development contract for the 25mm XM25 Counter-Defilade Target Engagement (CDTE) system. In late 2010, the army deployed five weapons for a 14-month forward operational assessment in Afghanistan. Those who participated in the assessment reported good performance in tactical situations; however, a second assessment was halted due to a malfunction. **Length:** 74.9cm **Calibre:** 25mm **Weight:** 6.35kg
Effective range: 700m



Rheinmetall ► MFGL

According to Rheinmetall, the Magazine-Fed Grenade Launcher (MFGL), previously known as Hydra, is the world's first self-loading 40mm shoulder-fired GL. It is being developed for both home and export markets. The MFGL's bolt design allows it to fire 40mm low- and medium-velocity grenades. It is fed from a vertical box magazine containing three, six or ten rounds. **Calibre:** 40mm **Weight:** 4kg **Effective range:** 800m



Rippel Effect Systems ► MSGL40

The shoulder-fired Multi-Shot Grenade Launcher (MSGL) 40 is designed for use with standard 40mm low-velocity rounds and is certified to fire 40mm less-lethal ammunition. Six 40mm low-velocity grenades can be fired in less than 3s at ranges of up to 400m in a terminal area of 20x60m. The MSGL40 is qualified to NATO specifications.



Rippel Effect Systems ► RLL37/38

The RLL37/38 is a less-lethal, multi-shot launcher with a patent-pending, semi-automatic, mechanical advance mechanism. It has a fail-safe feature to prevent it being used with lethal ammunition. Grenades can be reverse- or forward-selected without opening the launcher. The six-shot cylinder cannot be over-tensioned when wound. A 40mm version is also available. **Length:** 70cm **Width:** 14.3cm **Height:** 22.5cm **Calibre:** 37mm **Weight:** 3.7kg



Rippel Effect Systems ► UBL40

The UBL40 is a single-shot 40mm grenade launcher designed for use with the Rippel Effect AK-47 Upgrade Rail System (see separate entry), but it can be mounted on any assault rifle fitted with a MIL-STD-1913 rail. The UBL40 fires standard 40x46mm low-velocity ammunition and is also certified to fire less-lethal/riot control rounds on the market. The UBL40 can accurately engage targets at ranges up to 250m. **Length:** 27.5cm **Width:** 6cm **Height:** 8cm **Calibre:** 40mm **Effective range:** 250m



SO SIA 'Fort' ► Fort-600

The Fort-600 is a standalone, shoulder-fired, single-shot 40mm grenade launcher. It is equipped with a folding buttstock and an accessory rail at the six and 12 o'clock positions. The Fort-600A model has a telescopic folding buttstock with an integrated damper which reduces the recoil force by more than half. **Length:** 67cm **Width:** 8.9cm **Height:** 19.6cm **Calibre:** 40mm **Weight:** 2.8kg **Effective range:** 50m



ST Engineering Land Systems ► 40GL

Designed to fire 40mm low-velocity and low-velocity extended-range grenades, ST Engineering's 40GL Mk1 features a patented drop-down barrel design for quick loading/unloading of ammunition, and a double-action trigger mechanism that activates and releases the hammer in a single trigger pull. 40GL Mk1 is lightweight and versatile – it can be easily configured as an under barrel or stand-alone grenade launcher without any tools, or fitted with a fire control system for airburst programming. **Length:** 31cm **Calibre:** 40mm **Weight:** 1.3kg



Steyr Mannlicher ▶ GL 40

The Steyr GL 40 is a lightweight grenade launcher (GL) for standard low-velocity ammunition. It has an ambidextrous safety and a double-action-only trigger. It can be used as an underbarrel launcher for the Steyr AUG (see separate entry). A version with a MIL-STD-1913 rail interface permits attachment on various other assault rifles. With an adjustable stock, the GL 40 can also be used as a standalone GL. **Length:** 28.4cm **Calibre:** 40mm **Weight:** 1.4kg



Swiss Arms ▶ GL 5040/5140

The single-shot 40mm GL 5040/5140 underbarrel grenade launcher can be attached to all Swiss Arms SG 550/551-series rifles (see separate entries). The GL 5040/5140 can fire all commercially available grenades in 40x46mm calibre with an overall length of 100-198mm. **Length:** 43.2cm **Calibre:** 40mm **Weight:** 1.7kg **Muzzle velocity:** 75m/s



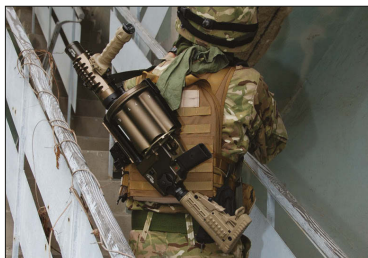
Swiss Arms ▶ GLG 40

The Grenade Launcher Gun (GLG) 40 is a lightweight, breech-loaded, standalone 40mm GL. It is equipped with a double-stage trigger featuring a swivelling trigger guard for firing with gloves or mittens, a folding buttstock, ambidextrous firing pin safety and flip-up front and rear sights. All commercially available 40x46mm grenades, with an overall length of 100-198mm, can be fired. **Length:** 71cm **Calibre:** 40mm **Muzzle velocity:** 75m/s **Effective range:** 200m



Zakłady Mechaniczne Tarnów ▶ RGP-40

The RGP-40 multi-shot grenade launcher is a semi-automatic, six-shot weapon chambered for 40x46mm NATO low-velocity grenades of Polish or foreign manufacture, including special-purpose rounds such as tear gas canisters and less-lethal. The RGP-40 is equipped with a spring-driven, revolver-style 140mm cylinder containing six chambers. The launcher can be reconfigured for right- or left-handed shooters. **Length:** 85cm **Calibre:** 40mm **Weight:** 6.5kg **Effective range:** 800m



Crew-served grenade launchers ▶ Denel Land Systems ▶ GLI-40

Denel's GLI-40 AGL entered service with the South African Army in 2003. The GLI-40 fires: HE grenades able to inflict casualties over a 5m radius; HE dual-purpose grenades able to penetrate 50mm of armour or 350mm of concrete; and practice, target practice tracer and target practice rounds. The GLI-40 can engage indirect targets with the use of an electronic indirect sight and forward observer. **Length:** 84.4cm **Width:** 28.1cm **Height:** 26.7cm **Calibre:** 40mm **Weight:** 32kg

**General Dynamics European Land Systems – Santa Bárbara Sistemas** ▶ SB40 LAG

General Dynamics European Land Systems – Santa Bárbara Sistemas developed the 40mm SB40 LAG AGL as a private venture in the late 1980s. The Spanish Army took delivery of a pre-production batch of 60 weapons in 1992 for trials in the infantry support role, and the service now employs the SB-40 both in the dismounted role and on armoured fighting vehicles. To facilitate various applications, the feed can be changed to right or left as required.

**General Dynamics Ordnance and Tactical Systems** ▶ Striker 40/MK47

General Dynamics is systems integrator for the Striker 40 (MK47 AGL in US service). The complete system comprises the weapon, AN/PWG-1 Lightweight Video Sight and a family of programmable 40mm ammunition developed by Nammo. It is described as the first AGL to feature an integrated fire control system that calculates the ballistic solution and programmes the airbursting ammunition. **Length:** 94cm **Width:** 25.5cm **Height:** 20.5cm **Calibre:** 40mm **Weight:** 18kg **Effective range:** 2,000m

**General Dynamics/Northrop Grumman Innovation Systems** ▶ MK19 grenade machine gun

Originally developed to provide the USN with an effective weapon to arm riverine patrol craft during the Vietnam War, the MK19 grenade machine gun has been in production since 1968. It can be mounted on a tripod or multiple vehicle platforms and is the primary suppression weapon for US Army combat support and combat service support units. **Length:** 109.5cm **Width:** 34cm **Height:** 20.6cm **Calibre:** 40mm **Weight:** 35kg **Muzzle velocity:** 241m/s **Effective range:** 1,500m Crew: 1



Heckler & Koch ▶ GMG

Heckler & Koch developed the 40mm Grenade Machine Gun (GMG) to meet the requirements of the German Army. The GMG has been selected by users in 12 countries, including Canada, Finland, Germany, Greece, Ireland, Latvia, Lithuania, the Netherlands, Portugal, Slovenia, the UK and the US (US Special Operations Command). **Length:** 109cm **Width:** 22.6cm **Height:** 20.8cm **Calibre:** 40mm **Weight:** 28.8kg **Muzzle velocity:** 241m/s **Effective range:** 1,500m



KBP Instrument Design Bureau ▶ AGS-30

The 30mm AGS-30 AGL was developed as a replacement for the 1960s-vintage AGS-17 and entered Russian Army service in the mid-1990s. Although based on the earlier design, the AGS-30 is about 50% lighter and provides longer range, an increased rate of fire and better accuracy. The lower weight means that the launcher with the mount can be carried by one soldier with a second to carry the ammunition. **Length:** 116.5cm **Width:** 73.5cm **Height:** 49cm **Calibre:** 30mm **Weight:** 17kg **Muzzle velocity:** 185m/s **Effective range:** 2,100m



Norinco ▶ LG3

The LG3 is an air-cooled, blowback-type 40mm AGL that fires a variety of high-velocity 40mm ammunition, including the BLG3 HE round, the BGJ3 HE dual-purpose round and the BGS1 training round. It is able to fire 40x53mm ammunition produced by US and other Western manufacturers. A variety of sights and fire control systems, including the OS6 optical sight, ON2 night sight and OS7 automatic laser rangefinding sight, are available. **Calibre:** 40mm **Weight:** 27kg **Muzzle velocity:** 240m/s **Effective range:** 2,200m



Norinco ▶ LG3A

The LG3A is an improved variant of the LG3, with an added muzzle-setting device to fire Norinco's BGL3A airburst ammunition and similar rounds produced by other manufacturers. **Calibre:** 40mm **Weight:** 28kg **Muzzle velocity:** 240m/s **Effective range:** 2,200m



Norinco ► LG5

Norinco began marketing the crew-served LG5 semi-automatic grenade launcher (GL) in 2014 in parallel with the shoulder-fired LG5s 'high-precision' GL. The LG5 system combines the LG5s launcher with a tripod, an OS14 day sight and a 15-round drum magazine. Developed for export, the LG5 fires Norinco BGJ540x53mm HEDP sniper grenades and standard 40x53mm high-velocity grenades produced by other manufacturers. Mounting the LG5 on a tripod more than doubles the effective range of the weapon. **Calibre:** 40mm **Weight:** 23kg



Norinco ► QLZ87

The QLZ87 is a 35mm AGL that can be fired from its integral bipod or mounted on a tripod. It is designed to use Norinco's 35mm HE and HEAT ammunition. The HEAT round is capable of penetrating 35mm of steel RHA. The QLZ87 is equipped with an optical sight. **Length:** 72.6cm **Calibre:** 35mm **Weight:** 12kg **Muzzle velocity:** 190m/s **Effective range:** 600,000m



SNT Motiv ► K4

The K4 40mm AGL, similar in concept to the US MK19, was developed to meet the requirements of the Republic of Korea Army. As well as being used in the dismounted role on an M3A tripod, the K4 can be used pintle-mounted on vehicles or integrated in turrets and remote weapon stations. S&T; Motiv's HEDP round is able to penetrate 50mm of armour at ranges up to 2,000m. The K4 has been exported to Libya and Mexico. **Length:** 107.2cm **Calibre:** 40mm **Weight:** 34.4kg **Muzzle velocity:** 241m/s **Effective range:** 1,500m



ST Engineering Land Systems ► 40AGL Mk 2

Designed to fire 40mm high-velocity ammunition, ST Engineering's 40AGL Mk2 has a simple modular assembly for easy maintenance and multiple safety features such as a charging safety and bolt lock. It can be enhanced with various sight and mounting options, such as a reflex sight, lock and fire mount and softmount to meet different tactical applications. **Length:** 105.6cm **Calibre:** 40mm **Weight:** 30kg





SPECIFICATIONS

ASSAULT/ANTITANK WEAPONS

This section covers assault and antitank weapons that are currently in production or in development around the world. It is divided into the following categories:

- individual weapons
- crew-served weapons

Entries are arranged alphabetically by manufacturer and weapon designation. The specifications are those supplied by the OEMs. Further information can be obtained by contacting companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: A member of 2nd Battalion, The Parachute Regiment, fires a Next-generation Light Anti-tank Weapon. (Photo: UK MoD)

Individual weapons ► Arsenal ► ATGL-L

Arsenal's 40mm Anti-Tank Grenade Launcher-Light (ATGL-L) family is derived from the Russian RPG-7 series of unguided, shoulder-launched, antitank RPG launchers. The family consists of the ATGL-L, ATGL-L1, ATGL-L2, ATGL-L3, ATGL-L4 and ATGL-L5. At least 17 types of grenade are available for the ATGL-L5. Various sights can be fitted. **Length:** 95cm **Calibre:** 40mm **Weight:** 7.61kg



Bazalt ► RPG-27/RShG-1

The 105mm RPG-27 Tavolga shoulder-fired disposable rocket launcher was developed by Bazalt in the 1980s to meet a Soviet Army requirement for a weapon able to defeat modern main battle tanks with ERA and composite armour and field fortifications. According to Bazalt, the tandem-charge warhead of the spin-stabilised rocket can defeat more than 600mm of RHA after penetrating ERA, 1.5m of brick or concrete or 3.7m of earth. The RShG-1 is a variant of the RPG-27 equipped with a thermobaric warhead to defeat personnel. Both variants are in Russian service and offered for export. **Length:** 115cm **Calibre:** 105mm **Weight:** 8kg **Muzzle velocity:** 120m/s **Effective range:** 200m



Dynamit Nobel Defence ► Bkf

Developed from DND's Pzf 3, the Bunkerfaust (Bkf) is designed to enable troops to defeat targets behind cover. The Bkf uses the Pzf 3 launch system. The tandem warhead, with a penetrating charge and a follow-through grenade, can be used against a variety of structures ranging from reinforced concrete to infantry fighting vehicle armour. With a retracted spike, the Bkf's multipurpose warhead is effective against light armoured vehicles. It can be fired from an enclosure. **Length:** 127cm **Calibre:** 110mm **Weight:** 13.3kg **Effective range:** 400m



Dynamit Nobel Defence ► Pzf 3

The Panzerfaust (Pzf) 3 is a shoulder-fired anti-armour weapon developed from 1978-85. An extendable spike provides stand-off for the shaped charge to defeat main battle tank armour. With a retracted spike, the warhead is effective against light armoured vehicles, field fortifications and masonry. It can be fired from small enclosures. The reusable firing device is equipped with a high-resolution optical sight. **Length:** 130cm **Calibre:** 110mm **Weight:** 12.9kg **Effective range:** 600m



Dynamit Nobel Defence ▶ Pzf 3-IT

The Panzerfaust (Pzf) 3-IT (Improved Tandem) is the latest version of the Pzf 3 family of shoulder-launched weapons developed to defeat main battle tanks. Its tandem shaped-charge warhead has been designed to defeat all current types of ERA. The large amount of HE in the dual-mode warhead is effective against secondary targets such as field fortifications, concrete or brick buildings and sandbag walls. **Length:** 140cm **Calibre:** 110mm **Weight:** 14.3kg **Effective range:** 600m



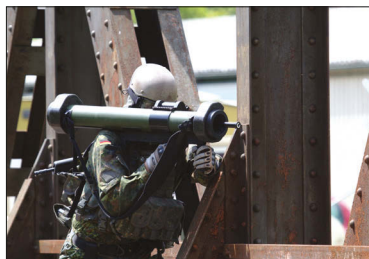
Dynamit Nobel Defence ▶ RGW 60

Dynamit Nobel developed the Recoilless Grenade Weapon 60mm (RGW 60) for special operations, airborne and other light forces which require a compact, lightweight assault weapon. It can be fired from within an enclosure. A high muzzle velocity provides a flat trajectory, low dispersion and 'good' hit probability. **Length:** 90cm **Calibre:** 60mm **Weight:** 5.8kg **Effective range:** 300m



Dynamit Nobel Defence ▶ RGW 90 HH

A member of DND's shoulder-fired RGW 90 family, the RGW 90 HH (HEAT-HESH) is a lightweight, multipurpose weapon, designed to engage armoured vehicles, including tanks, as well as bunkers, fortifications and other buildings. The disposable weapon can be fired safely from inside enclosed spaces. It can be equipped with a night vision sight or fire control system. **Length:** 115cm **Calibre:** 90mm **Weight:** 8.7kg **Effective range:** 500m



Dynamit Nobel Defence ▶ RGW 90 LRMP

The RGW 90 LRMP (Long Range Multi-Purpose) is a shoulder-launched individual weapon system which has a programmable warhead effective against targets up to 1,200m away. The warhead is effective against light armoured vehicles, field positions and targets behind shelter. The removable Dynahawk FCU, which among other functions measures the distance to the target, provides a high hit probability. **Length:** 99cm **Calibre:** 90mm **Weight:** 11 kg **Effective range:** 1,200m



Dynamit Nobel Defence ▶ RGW 90 WB

The RGW 90 WB (Wall Breacher), a member of the RGW 90 family, is optimised to knock through masonry and building walls. The warhead has an explosive shaped particle ring which pre-perforates the masonry structure to allow the pressure from the charge to push out the piece of wall. In this way, the risk of a building collapse is reduced. The RGW 90 WB can be fired safely from enclosed spaces. **Length:** 100cm **Calibre:** 174mm **Weight:** 13kg **Effective range:** 400m



Instalaza ▶ Alcotan-100

The Alcotan-100 is a recoilless, shoulder-launched, antitank rocket launcher developed to meet a Spanish Army requirement, entering service in 2008. In 2014, the Peruvian Army received the last of 660 rockets and 74 launchers ordered in 2012. MBDA teamed with Instalaza to offer the weapon as the Alcotan NG for the French Army's New-Generation Rocket requirement but was not selected.



Instalaza ▶ C90-CR (M3)

Instalaza's C90-CR (M3) is a series of shoulder-launched, disposable 90mm assault weapons. The C-90-CR (M3) is equipped with a hollow-charge warhead, able to penetrate 400mm of armour, while the warhead of the C-90-CR-RB (M3) can penetrate 480mm. The C-90-CR-AM (M3) is a dual-purpose warhead able to penetrate up to 200mm of armour or attack personnel at ranges up to 800m. **Length:** 98.3cm **Calibre:** 90mm **Weight:** 5.6kg



Instalaza ▶ C90-CS

The C90-CS is a series of shoulder-launched, disposable 90mm assault weapons based on the C90-CR (M3) and designed to be fired from confined spaces. The C90-RB-CS is equipped with a shaped-charge warhead designed to penetrate 400mm of armour. The C90-AM-CS is equipped with a tandem shaped-charge warhead designed to attack bunkers; a precursor warhead penetrates the wall, allowing a fragmentation warhead to explode inside the bunker. **Calibre:** 90mm



Jadara Equipment and Defence Systems ► RPG-32 Nash-Shab

The RPG-32 Nash-Shab (Archer) is produced under licence in Jordan by Jadara Equipment & Defence Systems. Originally developed by Russia's Bazalt, it is a reloadable rocket launcher capable of firing tandem high-explosive antitank and high-explosive warheads. Although it was not adopted by Russia, it has been produced in Jordan since 2013 and exported to the UAE, both of which have issued some of these launchers to troops fighting in Yemen. **Length:** 120cm **Calibre:** 105mm **Weight:** 11.5kg **Muzzle velocity:** 140m/s **Effective range:** 700m



MBDA ► MILAN ER

The Light Antitank Infantry Missile Extended Range (MILAN ER) is the latest version of the MILAN wire-guided SACLOS antitank missile series. More than 360,000 missiles and 10,000 firing posts from the MILAN family have been sold to customers in over 40 countries since service entry with the French and German armies in 1972. **Calibre:** 115mm **Weight:** 21kg **Range:** 3,000m **Effective range:** 3,000m **Crew:** 2



MBDA Deutschland ► Enforcer

MBDA has been developing the Enforcer since 2014 to provide a shoulder-launched precision missile system that is able to defeat lightly armoured and soft-skinned targets as well as targets behind cover at ranges up to 2,000m. **Calibre:** 89mm **Weight:** 9kg **Effective range:** 2,000m



Nammo ► M72 ASM RC

The M72 Anti-Structure Munition-Reduced Caliber (ASM RC) one-shot, unguided, short-range rocket is designed for use in urban operations to engage bunkers and targets behind walls. The enhanced blast warhead is designed to deliver maximum effect inside the target by keeping sufficient pressure level and time. The weapon can be supplied with a reflex sight for improved capability by day and night. **Length:** 78cm **Weight:** 3.7kg **Effective range:** 300m



Nammo ▶ M72 EC LAW

Since being fielded in 1963 to meet US Army and USMC requirements, the M72 Light Antitank Weapon (LAW) has become one of the most widely deployed weapons of its type. It is a one-shot, 66mm, unguided, short-range rocket in an extendable disposable launch tube. The development of new warheads and other improvements has extended the life of the M72. The M72 EC (Enhanced Capacity) LAW is capable of penetrating more than 450mm of RHA. **Length:** 78cm **Calibre:** 66mm **Weight:** 3.4kg **Effective range:** 300m



Nammo ▶ M72 LAW FFE

The M72 Light Assault Weapon Fire from Enclosure (M72 LAW FFE) was developed by Nammo to meet a USMC requirement for a version of the disposable M72 LAW that could be safely fired from within enclosed spaces, such as buildings. Compared to previous versions of the LAW, the FFE variant features a new propulsion system that eliminates most of the backblast and muzzle flash, as well as an inline trigger and improved sights. Two configurations of the M72 LAW FFE will be procured for the USMC: M72A8 anti-armour and M72A10 multipurpose. **Calibre:** 66mm



Nammo ▶ M72A7 LAW

Nammo produces the M72 Light Antitank Weapon (LAW) series for US military and FMS customers. The USN began fielding the improved M72A7 in 1999. The M72A7 offers better reliability and an insensitive munition warhead. It features a higher-velocity rocket motor and a more effective warhead than earlier models of M72. According to Nammo, it defeats light armour and retains a moderate capability against main battle tanks when engaged from top, side and rear angles. **Length:** 78cm **Calibre:** 66mm **Effective range:** 350m



Nammo ▶ M72A9 ASM

The M72A9 Anti-Structure Munition (ASM) is optimised for use on urban operations. A time-delayed, self-discriminating fuse allows the round to penetrate the target, placing the blast fragmentation warhead inside to maximise effectiveness. It has been designed to penetrate brick, adobe, concrete block and most common walls, doors and windows. **Length:** 78cm **Calibre:** 66mm **Effective range:** 200m



Nammo ▶ M141 BDM

Originally developed and fielded as the SMAW-D (Shoulder-launched Multipurpose Assault Weapon-Disposable) to meet the requirements of the US Army, the service redesignated the weapon the M141 Bunker Defeat Munition (BDM). The M141 has been in US Army service since 1999. The BDM uses an HE dual-purpose warhead, packaged in a lightweight disposable launcher. Each round has a fuse that automatically selects the proper detonation mode to maximise destructive effects. **Length:** 139.7cm **Calibre:** 83mm **Weight:** 7.2kg **Effective range:** 1,000m



Norinco ▶ Red Arrow 8

The Red Arrow 8 is a second-generation, tube-launched, optically tracked, wire-guided, antitank missile system that was developed to meet the requirements of China's PLA. It was designated locally as the HJ-8 and roughly equatable to the US BG-71 TOW and European MILAN and HOT antitank missiles. Various warheads are available and optimised for different target sets, including armoured vehicles, personnel, bunkers and ships with explosive reactive armour. **Length:** 156.6cm **Diameter:** 120mm **Weight:** 25kg **Range:** 4km



Planta Chemical Plant ▶ 6S20 Smes

Under its Sotnik soldier modernisation programme, the Russian Army plans to introduce the new 6S20 Smes rocket launcher into service with infantry units by 2023. The Smes consists of a disposable launcher and a reusable sight incorporating day and night sights as well as a laser rangefinder. It will be compatible with two types of 72.5mm projectiles: a tandem HEAT warhead for engaging armoured targets and a thermobaric warhead for use against structures. State testing with the Smes is scheduled to commence in autumn 2021. **Calibre:** 72.5mm



Rafael Advanced Defense Systems ▶ Simon/M100 GREM

Rafael developed the Simon rifle grenade to be fired from an M4 carbine and other 5.56mm weapons, to breach doors with no risk to the operator. The Simon consists of a bullet-trap tail section that slides over the rifle's muzzle, an explosive mid-section and a stand-off rod at the front. The grenade is propelled by standard ball or tracer ammunition to a maximum range of 30m. **Length:** 76.5cm **Weight:** 0.68kg **Effective range:** 30m



Rafael Advanced Defense Systems ▶ Spike SR

Part of Rafael's Spike missile family, the fire-and-forget, man-portable Spike Short Range (SR) EO-guided missile system has operational capabilities in all weather conditions. Although the original objective was to develop a missile with a range of 800m, Rafael announced in early 2016 that the missile has a maximum range of 1,500m. **Length:** 100cm **Weight:** 9.6kg **Effective range:** 1,500m



Saab ▶ AT4/M136

The AT4 is an 84mm shoulder-launched, disposable, preloaded, recoilless weapon, ballistically characterised by a combination of a flat trajectory and low dispersion, attained through high velocity. Its shaped-charge HEAT warhead combines the ability to penetrate the armour of modern light armoured vehicles with a behind-armour effect. Inside the target vehicle, the warhead produces a combination of high pressure, intense heat and blinding light. **Length:** 102cm **Calibre:** 84mm **Weight:** 6.7kg **Muzzle velocity:** 290m/s **Effective range:** 400m



Saab ▶ NLAW

The Next-Generation Light Antitank Weapon (NLAW) is a light, fire-and-forget, top-attack missile system that is designed to provide a single soldier with the capability of knocking out a heavily protected armoured vehicle with a single shot. NLAW can be fired from within confined spaces. A predicted line-of-sight capability allows the soldier to engage targets without having to judge and compensate for external factors such as speed, wind and range. **Calibre:** 150mm **Weight:** 12.5kg **Effective range:** 800m



State Kyiv Design Bureau Luch ▶ Baryer ATGM

The Baryer ATGM was developed by Kiev-based State Design Bureau Luch. The system's R-2 guided missile can defeat targets from 100-5,000m away. To aid detection, identification and engagement of targets, the Baryer missiles are also integrated with a day/thermal sight and a laser rangefinder. **Length:** 127cm **Calibre:** 130mm **Weight:** 16kg **Range:** 5km



Crew-served weapons ▶ ADS ▶ SMAW Mod 2

On 23 October 2015, the USMC awarded a five-year, indefinite delivery/indefinite quantity \$72 million contract for the production of up to 1,249 SMAW Mod 2 launchers to ADS, partnered with L3 Communications and Wegmann USA, to meet its Follow-On To SMAW requirement. **Calibre:** 83mm **Weight:** 5.9kg **Range:** 500m



Arsenal ▶ ATGL-H

Arsenal's Anti-Tank Guided Launcher-Heavy (ATGL-H) is an improved derivative of the Russian SPG-9 tripod-mounted, man-portable 73mm recoilless gun. It fires fin-stabilised, rocket-assisted HE and HEAT projectiles. The family includes the basic ATGL-H model, the ATGL-H1, ATGL-H2 and ATGL-H3. The H1 and H3 are mounted on wheels for mobility. Ammunition common to all models includes the RHEAT-9MA, PG-9V and PG-9VN antitank rounds as well as the RHEF-9MA, RHEF-9MA1, OG-9V and OG-9VM anti-personnel rounds. **Length:** 211cm **Width:** 105cm **Calibre:** 73mm **Weight:** 75kg



Bazalt ▶ RPG-29

The RPG-29 (NATO designation Vampir) is a shoulder-fired rocket launcher introduced into Soviet Army service in 1989. The PG-29V tandem-charge warhead is claimed to defeat both ERA and the composite armour typical of modern main battle tanks. The launcher breaks into two sections for carriage and a second crew member carries ammunition. The system can be assembled ready for firing in 35s. A folding bipod is fitted on the rear section for use in the prone position. **Length:** 185cm **Calibre:** 105mm **Weight:** 11.5kg **Range:** 300m



Beijing Zhongzi Yanjing Automobile Co., Ltd ▶ Yanjing Sabre-ER

Yanjing's Sabre-ER protective multipurpose missile launching vehicle (YJ2080C2) is capable of assault missions against tank, field fortifications, small warships and armed helicopters.



Bharat Dynamics ▶ Amogha-III

The Amogha-III is a man-portable ATGM produced by India's Bharat Dynamics Limited. It is the first version of the Amogha family which includes fire-and-forget capabilities. **Weight:** 18kg **Range:** 2,500m



Jadara Equipment and Defence Systems ▶ Terminator

The Terminator is a crew-served antitank missile launcher designed and manufactured in Jordan. It is capable of engaging both armoured vehicles and fortified structures with tandem HEAT and HE 107mm missiles. In addition to being installed on a tripod mount, the Terminator has also been demonstrated as part of a remote weapon station for installation on light armoured vehicles. **Warhead diameter:** 107mm **Weight:** 18.9kg **Range:** 2,500m



KBM ▶ 9M14 Malyutka

The 9M14 Malyutka (NATO reporting name: AT-3 Sagger) is a wire-guided antitank missile system that is equipped with a HEAT warhead. The 9M14 Malyutka entered service in the 1960s and has been integrated onto various armoured vehicles and military helicopters, including the Mi-8, Mi-24, BMP-1 and 3T Mosquito Omni-role Tracked Carrier. **Length:** 115cm **Warhead diameter:** 393mm **Calibre:** 125mm **Weight:** 13.5kg **Range:** 3,000m **Crew:** 3



KBP Instrument Design Bureau ▶ 9M113 Konkurs

The 9M113 Konkurs (NATO reporting name: AT-5 Spandrel) is an antitank missile system, which was designed in the late 1960s. The system was developed at the same time as the 9K111 Fagot and features a similar design. **Length:** 126cm **Calibre:** 135mm **Weight:** 22kg **Range:** 5,000m **Crew:** 3



KBP Instrument Design Bureau ► 9M117 Bastion

The 9M117 Bastion is an antitank missile used in a number of separate weapon systems, such as the 9K116-1 Bastion (NATO reporting name: AT-10 Stabber) and the 9K118 Sheksna (NATO reporting name: AT-12 Swinger).

Length: 123.9cm **Calibre:** 115mm **Range:** 4,000m



KBP Instrument Design Bureau ► 9M133 Kornet

Developed by the KBP Instrument Design Bureau, the Kornet ATGM was unveiled in October 1994 and entered Russian Army service in 1998. It has the Russian designation of 9M133, the NATO reporting name AT-14 Spriggan and the export designation Kornet-E. The Kornet-EM is a fire-and-forget variant with a longer range.

Length: 119.4cm **Calibre:** 152mm **Weight:** 29kg
Range: 10,000m **Crew:** 2



KBP Instrument Design Bureau ► Metis-M1

The modernised Metis-M1 is the current production standard of the 9M131 Metis (AT-13) wire-guided antitank missile, which has been in Russian service since 1992 and exported to at least 12 users. The system comprises a launcher, an ATGM with a shaped-charge warhead, a guided missile with an air-fuel explosive warhead and a TI sight.

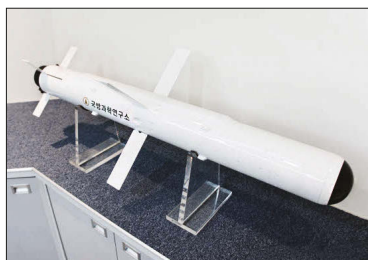
Calibre: 130mm **Weight:** 13,800kg
Range: 2,000m **Crew:** 3



LIG Nex1 ► Raybolt

The Raybolt (HyeonGung), originally known as the Medium Range Infantry Missile, is a medium-range fire-and-forget ATGM developed by LIG Nex1 to meet the requirements of the Republic of Korea Army. Full-scale development began in 2010. The Raybolt is a 20kg imaging IR-guided weapon with a tandem HEAT warhead which can be launched using a day/night-capable lightweight observation and launch unit in both direct-fire and top-attack modes.

Range: 3,000m



Lockheed Martin/Raytheon ► FGM-148 Javelin

The Lockheed Martin-Raytheon Javelin JV developed the FGM-148 Javelin for the US Army's requirement for an Advanced Anti-Tank Weapon System-Medium. Selected in 1989, the first Javelins were deployed in 1996 and have been regularly upgraded to keep up with emerging threats. Javelin was the first antitank and multi-target-capable weapon system to employ fire-and-forget imaging IR seeker technology. It consists of a reusable command launch unit and a missile in its sealed launch tube assembly. **Length:** 110cm **Calibre:** 127mm **Weight:** 11.8kg **Range:** 4,000m **Crew:** 2



MBDA ► MILAN ER

The Light Antitank Infantry Missile Extended Range (MILAN ER) is the latest version of the MILAN wire-guided SACLOS antitank missile series. More than 360,000 missiles and 10,000 firing posts from the MILAN family have been sold to customers in over 40 countries since service entry with the French and German armies in 1972. **Calibre:** 115mm **Weight:** 21kg **Range:** 3,000m **Effective range:** 3,000m **Crew:** 2



MBDA ► MMP

In 2010, MBDA started the development of the Medium-Range Missile (MMP) to meet the requirements of the French Army for an ATGM that could be deployed from a firing post by infantry or as a turret-mounted medium-range ATGM system. The MMP features fire-and-forget and man-in-the-loop guidance and a non-LoS attack capability. It is designed to achieve a range of 4,000m and be launched from enclosed spaces. Firing trials of complete systems began in early 2015, with final qualification scheduled for late 2016 and deliveries to the French Army expected to begin in mid-2017. **Length:** 130cm **Calibre:** 140mm **Weight:** 15kg **Range:** 4,000m **Crew:** 2



Mectron ► MSS 1.2

The MSS 1.2 medium-range ATGW was developed to meet the requirements of the Brazilian Army and Marine Corps for a missile that can defeat armoured vehicles, bunkers, infantry, small boats and helicopters. The MSS 1.2 launcher can be mounted on vehicles. The MSS 1.2 consists of the missile and launcher tube coupled to a firing unit. The lightweight system is easy to transport and its beam-rider-type guidance is highly immune to countermeasures, according to the company. The Brazilian Army ordered an initial batch of 48 firing posts, each with 12 missiles, while the Brazilian Marine Corps ordered 12 firing posts, with six missiles each. Deliveries began in 2012. The total Brazilian requirement could exceed 400 systems by the end of the decade. **Length:** 138cm **Height:** 86cm **Calibre:** 130mm **Weight:** 24kg **Range:** 3,200m **Crew:** 2



Nammo ▶ SMAW Mod 0

Developed to meet the requirements of the USMC, the Shoulder-Launched Multipurpose Assault Weapon (SMAW), introduced in 1984, is a development of the IMI B-300. Its primary function is as an assault weapon to destroy bunkers and other fortifications, with a secondary anti-armour role. **Length:** 137.2cm **Calibre:** 83mm **Weight:** 7.5kg **Range:** 500m



Poly Technologies ▶ TS-01 Sagittar

Poly's TS-01 Sagittar man-portable ATGW consists of a missile in a sealed launch tube and a command launch unit (CLU) which clips to the left side of the tube. The missile can be fired from the shoulder or the CLU can be mounted on a lightweight tripod. The solid propellant 130mm missile is equipped with a nose-mounted passive imaging IR seeker, while a soft launch capability enables the missile to be fired from within confined spaces. **Length:** 110cm **Calibre:** 130mm **Range:** 2,500m **Crew:** 2



Rafael Advanced Defense Systems ▶ Spike LR2

The Spike LR2 (NT-S) is Rafael's fifth generation of the Spike missile and is backwards-compatible with existing Spike launchers. Two warheads have been developed: a tandem HEAT warhead, which enhances armour penetration by more than 30%, and a new multipurpose blast warhead, which can be programmed by the gunner for impact or penetration detonation fusing. The first deliveries of the missile were expected to take place by Q4 2018. **Length:** 120cm **Warhead diameter:** 135mm **Weight:** 11kg **Range:** 10,000m



Rafael Advanced Defense Systems ▶ Spike MR/LR

The Spike MR and Spike LR share the same command launch unit, thermal sight, tripod and missile technology. The fire-and-forget missile is equipped with an EO charge coupled device/imaging infrared seeker and can be fired from an enclosure. It also features a tandem HEAT warhead. The Spike LR (Long Range) ATGW is able to destroy stationary and moving targets, including main battle tanks (MBTs), at ranges of up to 4,000m. The Spike MR (Medium Range) system is designed to provide dismounted forces with a man-portable ATGW capable of destroying MBTs. **Length:** 120cm **Warhead diameter:** 130mm **Calibre:** 170mm **Weight:** 31.7kg **Range:** 5,000m **Crew:** 2



Roketsan ► Mizrak-O OMTAS

Roketsan developed the Mizrak-O (Spear-O) OMTAS (Medium-range Antitank Weapon System) to meet a Turkish Army requirement for an ATGW that could be used in the dismounted role and also launched from a vehicle. **Length:** 180cm **Warhead diameter:** 160mm **Weight:** 35kg **Range:** 4,000m



Saab ► BILL 2

The RBS-56B BILL (Bofors, Infantry, Light and Lethal) 2 is a development of the RBS-56 BILL medium-range ATGW. It utilises overfly top-attack (OTA) technology to attack moving and stationary targets, including main battle tanks equipped with ERA, at ranges of up to 2,200m. **Length:** 90cm **Calibre:** 150mm **Weight:** 20kg **Range:** 2,200m **Crew:** 2



Saab ► Carl-Gustaf M3

The Carl-Gustaf M3 is the third generation of the 84mm shoulder-fired, recoilless antitank gun which was first fielded by the Swedish Army in 1946. Since then, the Carl-Gustaf has been acquired by the armed forces of more than 40 countries. The M3 version of the launcher, introduced in 1991, has reduced weight and improvements for urban operations. Designated the M3 Multi-role Anti-armour/Anti-personnel Weapon System (MAAWS), it is in service with US Special Operations Command. **Length:** 110cm **Calibre:** 84mm **Weight:** 9.3kg **Range:** 1,000m **Crew:** 2



Saab ► Carl-Gustaf M4

In September 2014, Saab Dynamics introduced the Carl-Gustaf M4, the fourth generation of the widely deployed shoulder-fired 84mm recoilless weapon system. It describes the new M4 as 'lighter, better and faster' than the previous M3. The M4 weighs under 7kg and measures less than 1,000mm, while the M3 weighs 10kg and is 1,065mm long. **Length:** 100cm **Warhead diameter:** 84mm **Calibre:** 84mm **Weight:** 7kg **Range:** 1,000m **Crew:** 2



State Kyiv Design Bureau Luch ▶ Stugna

The Stugna P is an antitank missile system that is designed for armoured vehicles such as main battle tanks and infantry fighting vehicles. It has been integrated on the T-55 and BMP-3. The Stugna P is able to destroy stationary and moving targets with composite, array or monolithic armour. **Length:** 119.6cm **Calibre:** 130mm **Weight:** 29.5kg **Range:** 5,000m



Ukroboronprom ▶ Corsar

The Corsar is a portable crew-served ATGW system that was designed to meet the increased demand for precision-guided weapons on the modern battlefield. Capable of firing either a tandem hollow-charge or a high-explosive fragmentation warhead, the Corsar can engage and eliminate multiple types of targets, including armoured vehicles, helicopters, boats and fixed emplacements. **Length:** 81cm **Warhead diameter:** 107mm **Calibre:** 107mm **Weight:** 30.9kg **Range:** 2,500m **Crew:** 3





SPECIFICATIONS

MORTARS

This section covers mortars that are currently in production or in development around the world. It is divided into the following categories:

- light mortars
- medium mortars

Entries are arranged alphabetically by manufacturer and weapon designation. The specifications are those supplied by the OEMs. Further information can be obtained by contacting companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: US Army Soldiers with the 1-114th Infantry Regiment fire the 120mm mortar weapon system during training. (Photo: US National Guard)

Light mortars ▶ Arsenal ▶ M60CMA

The M60CMA Commando Mortar is a handheld 60mm mortar operated by one soldier. **Length:** 0.81m **Calibre:** 60mm **Weight:** 5.7kg **Effective range:** 1,600m



Arsenal ▶ M60MA

The M60MA is a 60mm crew-served light mortar fired from a bipod. The mortar consists of the barrel, baseplate, bipod and sight unit. **Calibre:** 60mm **Weight:** 19.6kg **Effective range:** 4,060m



Denel Dynamics ▶ 60mm M4 Commando Mortar

Denel markets two variants of its M4 60mm Commando Mortar system: M4 Mk 1 and M4L3. Both are handheld mortars designed for use by one person. The M4 Mk 1 features a clamp-on sight unit, whereas the M4L3 is aimed by using an adjustable sight strap. The M4 series is in service with the South African National Defence Force and export customers. **Calibre:** 60mm **Weight:** 7.5kg **Effective range:** 2,050m



Denel Dynamics ▶ 60mm M6 Long-Range Mortar

The 60mm M6 long-range mortar is a further development of Denel's M3 81mm mortar. The M6 can fire standard 60mm mortar ammunition and long-range ammunition specifically developed by Denel. The M6 is in service with the South African National Defence Force. **Calibre:** 60mm **Weight:** 34kg **Effective range:** 6,000m



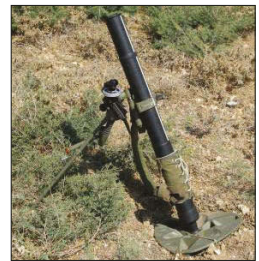
Elbit Systems ► Soltam C-03 60mm Commando Mortar

The C-03 60mm commando mortar, with a maximum range of 1,000m, has a trigger mechanism to enable flat-trajectory operation and is operated by one person. The mortar consists of two steel-made elements – a barrel with a range drum and a spade-type baseplate. The barrel is equipped with a trigger-operated striker. **Calibre:** 60mm **Weight:** 7.1kg **Effective range:** 1,000m



Elbit Systems ► Soltam C-06 60mm Long-Range Mortar

Operated by a one- or two-man crew, the C-06 long-range mortar achieves a maximum range of 4,000m. The mortar consists of three steel elements – a barrel, an 'A'-type bipod and a baseplate. The barrel is equipped with a fixed firing pin. The triangular-shaped baseplate provides 360° traversing. The sight unit enables traverse aiming via collimator and indicates the elevation directly according to the desired range. It also has a mils scale to enable the use of foreign ammunition types. **Calibre:** 60mm **Weight:** 18kg **Effective range:** 4,000m



Elbit Systems ► Soltam C-06A1 60mm Extended-Range Mortar

The C-06A1 extended-range mortar makes use of a split barrel that achieves a maximum range of 6,000m when firing with both sections and 4,000m when firing with its lower section. The C-06A1 is operated by two crew members. The mortar consists of three steel-made elements – a barrel in two sections, an 'A'-type bipod and a baseplate. The barrel is equipped with a fixed firing pin. **Calibre:** 60mm **Weight:** 25kg **Effective range:** 6,000m



Elbit Systems ► Soltam C-06A6 60mm Dual-Purpose Mortar

The C-06A6 can be operated conventionally with a ground baseplate, bipod and sight unit, or in handheld mode, ranging via the range drum, using a spade-shaped base for lightweight, carried firing missions and flat-trajectory firing. Switching mode is performed immediately by attaching the spade base to the breech ball. There are three steel elements – a barrel with a range drum, an 'A'-type bipod and a baseplate. The barrel is equipped with a three-position firing mechanism. **Calibre:** 60mm **Weight:** 20kg **Effective range:** 3,500m



Elbit Systems ► Soltam C-576 60mm Commando Mortar

With a maximum range of 1,600m, the C-576 Commando Mortar can be operated by one or two crew members. The C-576 mortar consists of two steel elements – a barrel with a range drum and a baseplate. The barrel is equipped with a fixed firing pin. The round baseplate provides 360° traversing.

Weight: 6.8kg **Effective range:** 1,600m



EXPAL ► 60mm CX Commando Mortar

The Expal 60mm CX Commando Mortar is designed for use by one person. The handle is designed to be ergonomic and make the carriage and aiming of the weapon easier. The barrel retaining system is a collar that allows the gunner to place the sight unit in the most convenient position along the barrel. The handle includes an LED diode for night operations.

Calibre: 60mm **Weight:** 8kg



EXPAL ► 60MX Mortar Series

Expal's 60mm 60MX1 and 60MX2 mortars are designed to be used with a bipod or in handheld mode using a commando kit, which consists of a baseplate and handle with a graduated scale and level. Both models can be provided in different configurations: symmetric or asymmetric bipods; and breeches with three-position mechanism (safety-trigger-fixed pin) or breeches with fixed pin for firing by gravity. **Calibre:** 60mm **Weight:** 20kg **Effective range:** 5,000m



Hirtenberger Defence Systems ► M6 60mm Commando Mortar

The M6 Commando is a handheld 60mm mortar that can be carried and operated by one person. Based on the standard M6 60mm mortar design, it has a different trigger, handgrip, baseplate, aiming device and carrying belt. A square-form baseplate is also available for use on soft ground, which can be changed in less than 10s on the Mk 1 version. **Length:** 1.09m **Calibre:** 60mm **Effective range:** 2,401m



Hirtenberger Defence Systems ► M6 60mm Mortar

The M6 60mm mortar was developed by Hirtenberger to provide embedded fire support for infantry units. Marketed in several different barrel lengths, the system is equipped with a digital fire control system and an R08 sight. A kit is available to convert the standard mortar into the lighter commando version in less than two minutes. **Length:** 1.09m **Calibre:** 60mm **Weight:** 23.5kg **Effective range:** 3,933m



Hyundai WIA ► KM181

Hyundai's KM181 60mm mortar is capable of firing all current or improved ammunition to ranges of up to 3,590m. The weapon consists of four components – barrel, baseplate, bipod and sight – and is operated by a crew of two. **Calibre:** 60mm **Weight:** 18kg **Effective range:** 3,590m



Jordan Design and Development Bureau (JODDB) ► 60mm Mortar

The King Abdullah II Design and Development Bureau (KADDB) has developed, manufactured and tested a 60mm mortar. It was designed to be light, simple, portable and capable of reliable operation in all climactic conditions. Examples of this drop-fed mortar have been acquired by the Jordanian Armed Forces. **Calibre:** 60mm **Weight:** 14.9kg **Effective range:** 2,600m



Norinco ► QLT89

Norinco's QLT89 Silent Grenade Launcher is a handheld 50mm smoothbore light mortar in service with People's Liberation Army infantry platoons. No noise, smoke or flash is generated when the QLT89 is fired. According to Norinco, the 50mm anti-personnel 'grenade' produces 800 fragments in a 16m radius. The round weighs 700g and is 330mm long. Smoke, incendiary and illumination bombs are also available. **Length:** 0.6m **Calibre:** 50mm **Weight:** 4.1kg **Effective range:** 800m



Norinco ► WW90

Norinco's WW90 crew-served 60mm light mortar is offered to export customers with a choice of two barrel lengths: the WW90-60L with a 1.3m barrel and the WW90-60M with a 1.08m barrel. The use of the longer barrel extends the maximum range from 5,000 to 6,000m. **Calibre:** 60mm **Weight:** 21.5kg



VOP-CZ ► Antos Ultralight Commando Mortar

The Antos Ultralight Commando Mortar is a lightweight, handheld 60mm mortar designed for use by airborne, SF and other light forces. Most weapon components are made of aluminium alloys or plastic. The handgrip, with an integral trigger, allows easy carrying and firing in oval and flat trajectories. It also incorporates a liquid level sight. The Antos uses NATO-standard 60mm ammunition. **Length:** 0.91m **Calibre:** 60mm **Weight:** 5.3kg **Effective range:** 1,230m



VOP-CZ ► Antos-LR

The Antos-Long Range (LR) is a crew-served 60mm mortar fired from a bipod. The Antos-LR fires standard NATO 60mm ammunition. **Calibre:** 60mm **Weight:** 15.6kg **Effective range:** 2,930m



Watervliet Arsenal ► M224A1 Mortar

In mid-2011, the US Army began fielding the M224A1 lightweight company mortar system to replace its 1,550 M224s which had been used extensively in Afghanistan and Iraq. The weapon consists of an M225A1 tube, M170A1 bipod, M7A1 baseplate for use with bipod, an M8 baseplate for use in handheld-mode firing and an M67 sight unit. **Calibre:** 60mm **Weight:** 21.1kg



Zakłady Mechaniczne Tarnów ► LM-60D

The LM-60D light mortar is designed to be easy to carry and maintain, for use in light infantry, air assault and airborne units. It is equipped with control threading mechanism protection. An optional optical sight is available for targeting and rapid firing. The LM-60D is typically operated by a crew of three. **Calibre:** 60mm **Weight:** 19.3kg **Effective range:** 2,330m



Zakłady Mechaniczne Tarnów ► LM-60K Commando

The LM-60K Commando mortar is a handheld 60mm weapon aimed by eye for direct or indirect fire at very short ranges. The mortar is equipped with a breech block for fixed- or free-firing pin modes. It can be operated by one person. **Calibre:** 60mm **Weight:** 7.8kg **Effective range:** 1,300m



Medium mortars ► Arsenal ► M81MA

The M81MA is a crew-served 81mm mortar that divides into three components for manpacking. **Calibre:** 81mm **Weight:** 48kg



Denel Dynamics ► 81mm M8 Long-Range Mortar

The M8 is a development of Denel's M3 81mm mortar, featuring a heavier barrel to fire long-range 81mm ammunition.



EXPAL ► 81mm MX Mortar Series

The 81 mm MX mortar series includes two different barrels for different operational scenarios: 1.15m (81MX1) and 1.45m (81MX2). Both can be transported in three backpack loads. The mortar is interoperable with all NATO smoothbore mortar ammunition. Both variants can be integrated in the EXPAL Integrated Mortar System (EIMOS), which enables them to be fired from a 4x4 light vehicle – EIMOS includes an automatic aiming and fire control system, enabling rapid engagements. **Calibre:** 81 mm **Weight:** 46kg **Effective range:** 7,000m



Hirtenberger Defence Systems ► M8 81mm Mortar

Hirtenberger developed the M8 to meet the requirements of the Austrian Army. Available in different barrel lengths, the system is equipped with a digital fire control system and an asymmetric bipod that is more ergonomic and easier to employ on difficult terrain than conventional bipods. Custom backpacks are available that allow the M8 to be manpacked in three loads. **Length:** 1.48m **Calibre:** 81mm **Weight:** 40.2kg **Effective range:** 6,669m



Hyundai WIA ► KM187

Hyundai's KM187 81mm mortar was developed to use both new and US standard ammunition. It features aluminium alloy components and a high-tensile, stainless-steel, welded baseplate. The weapon is typically operated by a crew of three. **Calibre:** 81mm **Weight:** 42kg **Effective range:** 6,325m



Norinco ► W87 81mm Mortar

In service with the People's Liberation Army since the early 1980s to replace older 82mm mortars, the W87 was the first 81mm mortar to enter Chinese service and has been exported to various customers. The mortar fires Chinese 81mm ammunition as well as NATO-standard 81mm ammunition. It can achieve a maximum range of 6,000m using extended-range ammunition. **Calibre:** 81 mm **Weight:** 15.5kg



Norinco ► W91 81mm Long-Range Mortar

The W91 is a long-range variant of Norinco's W87 81mm mortar, which can achieve a range of 8,000m using extended-range ammunition. The W91 has a longer barrel and recoil buffer around the barrel. The W87's triangular baseplate is replaced by a round baseplate. A self-locking device is used to maintain elevation during prolonged firing. **Calibre:** 81mm **Weight:** 26.7kg



UralVagonZavod ► 2B24

The 2B24 82mm smoothbore, muzzle-loading mortar is produced by UVZ's CRI Burevestnik subsidiary. It fires all types of Russian 82mm mortar ammunition, including HE, smoke, illumination and leaflet bombs. The 2B24 mortar provides a higher rate of fire, greater range and improved portability to the 2B14-1 82mm mortar that it is now replacing in Russian Army service. The 2B24 is operated by a crew of five and is divided into three loads – barrel, baseplate, and bipod and sight – for carriage. The mortar can be assembled and ready for action within 30s. The 2B24 can be mounted on various wheeled and tracked chassis. **Calibre:** 82mm **Weight:** 45kg **Effective range:** 6,000m



UralVagonZavod ► 2B25

The lightweight 2B25 82mm mortar is produced by UVZ's CRI Burevestnik subsidiary and was unveiled in 2011. It is designed for use by SF which require a compact weapon with a minimal noise, smoke and flame signature. It is operated by two crew members – one who carries the weapon in a backpack and a second who carries the ammunition. The 3VO35 HE bomb is equipped with a propelling charge designed to reduce noise. The manufacturer is working to increase the firing range of the ammunition. **Calibre:** 82mm **Weight:** 13kg **Effective range:** 1,200m



Watervliet Arsenal ► M252A1 Lightweight 81mm Mortar System

Canada and the UK jointly developed the L16 81mm smoothbore, muzzle-loaded mortar in the 1960s. It was introduced into US service in 1984 as the M252. In December 2014, the US Army began fielding the M252A1 Lightweight 81mm Mortar System to replace the original M252. Compared to its predecessor, this mortar features a higher rate of fire, extended range and a lighter overall weight. **Calibre:** 81mm **Weight:** 35.8kg **Effective range:** 5,935m





EQUIPMENT

WEAPON ATTACHMENTS

This section covers individual weapon attachments that are currently in production or in development around the world. It is divided into the following categories:

- day sights
- night sights (image intensifiers)
- night sights (thermal imagers)
- laser pointers
- suppressors

Entries are arranged alphabetically by manufacturer and system designation. The specifications are those supplied by the OEMs. Further information can be obtained by contacting these companies directly.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: Royal Marines give a boarding demonstration while HMS Defender hosts a defence engagement evening whilst alongside at Jeddah, Saudi Arabia. (Photo: UK MoD)

DAY SIGHTS

AIMPOINT AB

3XMag-1

The 3XMag-1 magnifying module is designed for use with Aimpoint sights and offers the shooter the ability to engage targets at extended ranges. Combined with a TwistMount, the 3XMag-1 gives the shooter the ability to switch from CQB to semi-sniping and back. The 3XMag-1 is also suitable for perimeter security and sniper support missions. Additionally, it can be used as a handheld magnifying monocular for discreet observation and target identification. Length: 11cm Width: 4.4cm Height: 4.1cm Weight: 0.2kg

6XMag-1

The 6XMag-1 magnifying module is designed for use with the Micro T-2 red dot sight. This module allows users to engage targets at extended ranges while using a red dot sight and has a variable (± 3) dioptic setting. Combined with a TwistMount or FlipMount, the 6XMag-1 gives the shooter the ability to switch from close-quarters battle to semi-sniping and back quickly. Length: 15.1cm Weight: 0.25kg

ACRO P-1

Aimpoint introduced the ACRO (Advance Compact Reflex Optic) P-1, the first of a new series of red-dot sights, for pistols at the June 2018 Eurosatory exhibition. The ACRO P-1 offers an enclosed system that is more durable than open systems. Designed for direct integration onto pistol slides, the ACRO P-1 sight can also be used as a backup sight for magnifying scopes, personal defense weapons, and on any system where a small red dot is applicable. Length: 4.7cm Width: 3cm Height: 3cm Weight: 0.06kg

CEU

The Concealed Engagement Unit (CEU) is incorporated into Aimpoint's system-of-systems approach. It gives the user the ability to observe and/or engage a threat from a concealed or covered position. The CEU rotates from side to side, so an operator can look around either right- or left-hand corners, over barricades and under vehicles. It can also be removed in order to return to direct engagement. Length: 9cm Width: 11.5cm Height: 4cm Weight: 0.13kg

CompM3

The CompM3 allows five years of constant-on power from one battery, NV device (NVD) compatibility and ruggedness. It utilises a standard 30mm ring mount. The CompM3 is compatible with all generations of NVDs and comes with a replaceable outer black rubber armour cover, which protects the sight during transport and operations. This cover is also available as an accessory in a dark earth brown colour. Length: 11.5cm Width: 6.2cm Height: 5.5cm Weight: 0.22kg

CompM4/M4s

The US DoD has bought over one million Aimpoint sights since 1997. The US Army is now fielding the CompM4s as the latest version of its M68 Close-

Combat Optic. The CompM4 has a top-mounted battery compartment, whereas the CompM4s has a low battery compartment allowing a more streamlined profile. Both are non-magnifying sights with unlimited eye relief. Length: 12cm Width: 7.2cm Height: 6cm Weight: 0.27kg

CompM5

Aimpoint unveiled the CompM5 red dot sight, developed to meet the requirements of an unspecified customer, at the September 2017 DSEI exhibition. It features a 2 MOA dot for close combat and long-distance engagement, four NV device settings and six daylight settings. Powered by a single AAA battery and weighing 147g, the CompM5 is the most compact optic in the Comp series. A version with a lower battery compartment, the CompM5s, was displayed for the first time in the US at AUSA 2018. Length: 8.5cm Width: 4cm Height: 7.1cm Weight: 0.24kg

FCS12

The FCS12 is a fire control system designed for use with crew-served weapons such as the Carl-Gustaf, MK19 and GMG. It consists of an eye-safe 1,550nm laser rangefinder, a ballistic computer with the capability to store more than 50 different ballistic algorithms and a parallax-free optical channel with unlimited eye relief. The FCS12 compensates for the ballistic drop of projectiles at measured distances, factoring in variables such as rotational drift, propellant temperature and terrain angle.

Micro T-1

Launched in 2007, the Micro T-1 is an aiming system that can perform under extreme conditions. It is designed as a standalone sight, and due to its light weight, it can be 'piggybacked' on top of larger magnifying scopes, NV or thermal imaging optics. The standard configuration of the Micro T-1 contains the sight, a MIL-STD-1913 Picatinny mount and rubber bikini lens covers. It has four NV-compatible settings and eight daylight settings. Length: 6.2cm Width: 4.1cm Height: 3.6cm Weight: 0.1kg

Micro T-2

In 2014, Aimpoint began producing its Micro T-2 red dot sight which incorporates a number of enhancements identified by military and law enforcement users. A redesigned front lens provides an increase in clarity and performance properties. Other changes include a sight housing which allows the addition of front and rear protective flip covers and an anti-reflective device, additional physical protection for the sight's adjustment turrets and increased ruggedness for the sight's internal electronic components. Length: 6.8cm Width: 4.1cm Height: 3.6cm Weight: 0.13kg

MPS3

The Aimpoint MPS3 is a passive electronic reflex collimator sight designed for medium or heavy weapons. Developed primarily for mounted operations, MPS3 can be used on land vehicles, helicopters or fast attack boats and ships. It uses the one-function principle, allowing the user to concentrate on the target, aim the weapon with a single red dot and operate the sight controls as when using a standard sight. Length: 17.5cm Width: 8.4cm Height: 8.1cm Weight: 0.74kg



Hensoldt developed the 3-12x56 long-range telescopic sight to deliver performance while maintaining a short optical system. (Photo: Hensoldt Optonics)

PRO

The Patrol Rifle Optic (PRO) is sold as a 'ready-to-go' kit. A hard-anodised 30mm tube is utilised, enclosing a circuit that allows the sight to be turned on and left on for up to three years using a single battery. The sight can be used with all generations of NV devices. Length: 11.5cm Width: 5.5cm Height: 5.5cm Weight: 0.22kg

System-of-Systems

In Aimpoint's System-of-Systems, the TwistMount enables accessories such as the 3XMag and CEU to be fixed behind weapon sights – NV devices of different types and generations can be added. Since the accessories are placed behind the red dot sight, they do not affect the point of impact.

ELBIT SYSTEMS – ITL

MARS

The MARS (Multi-purpose Aiming Reflex Sight) family combines a reflex sight with a single or dual-wavelength laser pointer (visible red and/or IR). It has several modes of indication, such as a red reflex pattern or a centre aiming dot, to meet operational requirements. An automatic brightness control mechanism enables the user to change combat scenes without the need to manually adjust the system. Length: 48cm Width: 7.5cm Height: 13.2cm

Trisight

The Trisight is a lightweight 3x telescopic sight designed to extend shooting ranges under daylight conditions. The device supports reticle patterns and non-reticle configurations. As a reticle pattern aiming sight, it is used in a standalone configuration. When mounted in series with reflex sights, the Trisight magnifies the target scene without the need to boresight. Length: 11cm Width: 3.3cm Height: 6.5cm Weight: 0.18kg

HARTMAN

MH1

The MH1 is an advanced tactical red dot reflex sight with a large FOV. It features an ambidextrous wireless IR push-to-transmit button that controls the activation and

brightness of the reticle. Its dual 30° motion sensors only activate the sight from sleep mode when a shooting movement takes place. The activation buttons can be used even when an NV device or magnifier are mounted behind the reflex sight. Weight: 0.37kg

HENSOLDT OPTONICS GMBH

Hensoldt 3-12x56

Hensoldt developed the 3-12x56 long-range telescopic sight to deliver performance while maintaining a short optical system, to allow the attachment of an NV device. Length: 32.5cm Width: 9.4cm Height: 7.7cm Weight: 0.8kg

Hensoldt 3.5-26x56 FF

The 3.5-26x56 long-range telescopic sight has a wide magnification range for use at short and long ranges. The adjustment range, which also enables ballistic compensation at maximum range, is 'unique', according to Hensoldt. The elevation turret provides 18mrad (180 clicks) over two noticeable rotations. To simplify use in all climate zones, the turret does not stop at 0, but continues to -5, resulting in a total of 365 clicks. Length: 36cm Width: 11cm Height: 9.5cm Weight: 1.3kg

Hensoldt 4-16x56 FF LT

The 4-16x56 FF LT is an improved version of the 4-16x56 FF long-range telescopic sight. The LT variant maintains the compact and short design but has redesigned self-locking turrets. The elevation turret provides ballistic compensation of 14.5mrad (145 clicks) in one revolution. With a total adjustment range of 22mrad, the user has sufficient reserves for zeroing. Length: 33.4cm Width: 9.4cm Height: 7.7cm Weight: 0.9kg

Hensoldt 4x30i

The Hensoldt 4x30i is an intermediate-range scope with an illuminated reticle, suited for use at twilight. Combined with the Hensoldt NSV 600, the 4x30i provides users with an FOV of 140m at 1,000m, including at night. It has six day- and three night-brightness levels. This scope is available in a 4x30 variant without reticle illumination and a 4x30rd variant with an illuminated red dot. Length: 13.9cm Width: 6.5cm Height: 7.65cm Weight: 0.6kg

Hensoldt 6-24x72 SAM

The 6-24x72 SAM is a long-range telescopic scope in the Hensoldt product line. It allows the user to see the click values of the top and side turrets, as well as relevant environmental conditions such as air pressure and temperature, digitally displayed in the FOV. The integrated ballistic calculator determines the required elevation and azimuth correction based on the given ammunition, range to the target and current environmental data. Length: 38cm Width: 9.4cm Height: 9.4cm Weight: 1.1kg

Hensoldt 6x36i

The 6x36i is an enhancement of the Hensoldt 4x30, optimised for intermediate range. The targeting optic features higher magnification and longer ranges. It also sits low on the weapon and is possible to use with a red dot sight on the close-quarters battle rail. Length: 18cm Width: 6.7cm Height: 7.65cm Weight: 697kg

Hensoldt RSA-S Reflex Sight

The RSA-S is a compact collimator reflex sight designed for fast reaction and close-quarters combat at short ranges. It is watertight and resistant to jolts and vibrations. The RSA-S is designed for two-eye operation and is controlled via one button. The hybrid power supply incorporates a solar panel and automatically switches to battery operation if there is insufficient light to power the sight. Length: 6.35cm Weight: 0.1kg

Hensoldt Spotter 45/60

The Spotter 60 has a Mil-dot reticle with continuously adjustable illumination, which is congruent with the high magnification level. The Spotter 45 has a lower variable magnification range for a wider range of applications. The Hensoldt line of spotting scopes has rubber armouring and a compact design for concealed observation. The automatic brightness memory permits fast selection of the already stored reticle brightness level. Length: 35cm Width: 9cm Height: 16.5cm Weight: 1.77kg

L3HARRIS TECHNOLOGIES

EXPS3 Holographic Weapon Sight

The EXPS3 Holographic Weapon Sight offers true two eyes open shooting for fast target acquisition, night vision compatible settings, and a 7 mm raised base for lower iron sight access. It also has side buttons and an adjustable, locking, quick-detach lever for easy installation and removal. Length: 9.65cm Width: 5.84cm Height: 7.37cm Weight: 0.32kg

G33.STS Magnifier

The G33 magnifier is shorter and lighter than previous models. The mount provides faster transitioning from 3X to 1X and the optic offers tool-free vertical and horizontal adjustments, a larger FOV and an adjustable diopter for improved, precise focusing. Length: 9.91cm Width: 5.59cm Height: 8.38cm Weight: 0.32kg

LEUPOLD & STEVENS

Mark 4 ER/T

The Mark 4 Extended Range/Tactical (ER/T) series is built for sharpshooters, designed to provide accuracy at long distances. The M1 and M5 front focal riflescopes provide a range of windage and elevation adjustments and are waterproof. The Mark 4 ER/T 6.5-20x50mm M5A2 (M5 Autolocking Adjustment) riflescope includes locking turret knobs for adjustment, a 34mm main tube for elevation and windage travel and 0.1mrad adjustments for shot correction. Length: 36.8cm Weight: 0.62kg

Mark 4 HAMR

The Mark 4 4x42mm High Accuracy Multi-Range Riflescope (HAMR) is a compact sight designed for mid-range distance marksmanship and fast target acquisition in bright daylight, low light and at night. The Mark 4 HAMR uses the Xtended Twilight Lens System for transmission of the blue/violet spectrum, DiamondCoat for abrasion resistance and light transmission, and a lockable fast-focus eyepiece. Leupold tactical scopes are waterproof, fogproof and shockproof. Length: 14.5cm Weight: 0.38kg

Mark 4 LR/T M2

The Mark 4 3.5-10x40mm Long Range/Tactical (LR/T) M2 front-focal line of riflescopes is part of the M10 Semi-Automatic Sniper System in service with the US Army and the US Special Operations Command. With clear images to 1,000m, this riflescope features a choice of finger-adjustable knurled knobs for windage and elevation. The scope includes turret-mounted parallax adjustment control and eight intensity levels for the illuminated reticles. Length: 34.3cm Weight: 0.55kg

Mark 4 LR/T M3

Designed for the US Army, the Mark 4 10x40mm Long Range/Tactical (LR/T) M3 riflescope is part of the M24 Sniper Weapon System. The scope features interchangeable bullet drop compensation elevation adjustment dials, which are calibrated and interchangeable to allow for .223 Rem (55g, 3,200fps), .308 Win (16g, 2,650fps) and .300 Win Mag (190g, 2,900fps) rounds. Length: 33.3cm Weight: 0.59kg

Mark 6 Front Focal Riflescope

The Mark 6 3-18x44mm Front Focal Riflescope is designed to provide a compact package for military and law enforcement operators. It was selected in 2013 by the USN to be the optic used in the Enhanced Combat Optic System – Optimized. The Mark 6's 6x zoom range offers a wide FOV and target acquisition at lower magnifications and long-range target engagement at higher powers. Length: 30.2cm Height: 30.5cm Weight: 0.67kg

Mark 8 CQBSS

In service with US forces, the Mark 8 1.1-8x24mm Close Quarters Battle Sniper Scope (CQBSS) has an illuminated front focal reticle. Eight illumination settings provide dot contrast with or without NV, and an 'off' position between intensity settings makes returning to the desired illumination level 'nearly immediate'. The focal plane is described as accurate at all magnification settings and is combined with a five-MOA holographic half-circle. Length: 30.5cm Weight: 0.67kg

LITEYE SYSTEMS

LZAD

The LZAD thermal overlay display is an augmented sight that allows the user to overlay a video or computer signal over the real-world view. It can be set in front of such products as a Trijicon, EOTech or any other scope. The LZAD allows the end-user to access data or an image from a thermal camera while utilising the red dot sight or scope, or other types of devices. It can be used in various configurations.

MEPROLIGHT

Mepro 4X

The Mepro 4X is a fixed-magnification, compact, lightweight telescopic day sight, designed to meet the requirements of sharpshooters. The sight features optics for distortion-free aiming in tactical conditions, a large FOV and long eye relief. The sight's reticle has ballistic compensation markings for bullet drop offset. For low-light and night operations, the Mepro 4X reticle has battery-powered red-colour illumination with user-selectable brightness levels.

Mepro GLS

The Mepro GLS is a self-illuminated optical sight for 40mm grenade launchers mounted on assault rifles. It provides a 'both-eyes-open' capability and operates in all lighting and weather conditions for five to eight years without batteries or an external source of power. The lightweight, compact unit fits with three different mounting adapters to standard top and side rails. The sight is adjustable for windage and elevation. Length: 6.2cm

Mepro M5

The Mepro M5 red dot sight is a compact sight with an integral Picatinny rail adapter and low-battery indicator. Featuring LED technology and a MIL-STD design, the sight is intended to be reliable under harsh environmental conditions. With its large display window and clearly defined red dot, the M5 allows target acquisition with both eyes open. It has four switchable reticle brightness intensities for different tactical scenarios.

Mepro M21

The Mepro M21 dual-illuminated, red dot reflex sight allows the user to select various optional reticles – dot, triangle, an open-x shape and bullseye. The sight provides a 'both-eyes-open' capability for targeting and shooting. Originally developed for the Israel Defense Forces (IDF), the Mepro M21 provides all-light aiming without batteries.

Mepro Meslas

The Mepro Meslas is a 10x40 fire control riflescope aimed at automating part of snipers' tasks. It is designed to withstand shock, vibration and harsh environmental conditions. The device incorporates a single-pulse eye-safe laser rangefinder, a telescope and a fire control computer. Additionally, when measuring distance, the Mepro Meslas automatically calculates the ranged target and displays the aiming point in the scope's FOV.

Mepro microRDS

The Mepro microRDS is designed to offer the advantages of a full-size rifle optic in a compact pistol sight. Thanks to its quick-detach (QD) adaptor kit, the sight can be mounted and dismounted without the need for re-zeroing. It is available in three configurations: Full Kit, Optics Ready Kit featuring the QD adaptor mountings and Picatinny Adaptor. In addition to being used on pistols, the sight can function as a backup sight for rifles and shotguns.

Mepro MOR

The Mepro MOR is a multipurpose red dot reflex sight with two laser pointers, described as an 'all-in-one' sight by Meprolight. It was designed according to the requirements of the Israel Defense Forces (IDF) and includes four options: passive reflex sight; active reflex sight; and two laser pointers, visible and IR. The Mepro MOR is a passive self-illuminated system which saves energy and enables storage for long periods, while being able to be used when needed. Weight: 0.45kg

Mepro MX3

The Mepro MX3 is a lightweight, compact magnifying scope. It is designed to be operated in tandem with a

reflex sight, attaching behind the sight by means of a quick-release adapter. The scope extends the shooting range of reflex sights without re-zeroing and its wide FOV allows the user to get into the firing position quickly.

NEWCON OPTIK**HDS 3AA**

The HDS 3AA is a red dot sight for tactical law enforcement and military close-quarters battle applications. The sight allows target acquisition and enables operators to maintain situational awareness with both eyes open. The HDS 3AA is built with a durable single-piece frame. Compatible with NV devices, the HDS 3AA can also be used with optional attachment lenses that provide flip-away 3x or 5x magnification for longer-range engagement.

NC 1x21

The NC 1x21 red dot sight is designed for tactical law enforcement and military applications. It allows target acquisition for close-quarters battle (CQB) and is built with durable single-piece frames. The NC 1x21 is intended for short-range CQB engagements. It also has a range of brightness settings and is compatible with NV devices.

NC 3-12x56

The NC 3-12x56 is a daytime riflescope with variable magnification, designed for use on a variety of weapon platforms. The riflescope has a Mil-dot reticle positioned in the second focal plane of the eyepiece, ensuring permanent sizing of the reticle regardless of the variable magnification setting being utilised. Additionally, the reticle is LED-lit with seven adjustable brightness levels.

NC 4x32/NC 6x50

The NC 4x32 and NC 6x50 weapon-mounted tactical day optics have 4x and 6x fixed magnification respectively for short- to medium-range target acquisition. Both have an LED-lit Mil-dot ranging reticle with multiple green and red brightness settings. These units can be used in conjunction with NV devices and are compatible with many assault rifles. The NC 4x32 and NC 6x50 are ruggedised and have been battle-tested in a variety of environmental conditions.

NOVOSIBIRSK INSTRUMENT-MAKING PLANT**1P29**

The 1P29 is a universal sight designed for use with the AK-74 assault rifle and RPK74 and PKM machine guns in daylight and at night against illuminated targets. It features aiming angle, elevation and windage adjustment. Power supply for aiming mark illumination includes tritium. Dimensions: 203x80x178mm Weight: 0.8kg

1P63

The 1P63 is a collimator sight for small arms intended for aimed fire in daylight, twilight conditions and at night at illuminated targets. The sight is used within the temperature range of -50/+50°C and relative humidity up to 100% at 25°C. Dimensions: 133x152x68mm Weight: 0.6kg

1P76

The 1P76 is a rakurs optical sight designed for use in daylight, twilight conditions and at night at illuminated targets. The sight is used within the temperature range of -50/+50°C and relative humidity up to 100% at the ambient temperature of 25°C. Power supply for aiming mark illumination: tritium. Dimensions: 110x68x165mm Weight: 0.5kg

1P77

The 1P77 is a rifle sight designed for use with Russian-built machine guns in daylight, twilight conditions and at night at illuminated targets. The sight is used within the temperature range of -50/+50°C and relative humidity up to 100% at the ambient temperature of 25°C. Dimensions: 205x95x171mm Weight: 0.95kg

1PN91-2

The 1PN91-2 tripod-mounted, long-range night reconnaissance device features a Gen 2+ I2 and is intended for area surveillance, reconnaissance and artillery fire spotting. It is also equipped with the elevation mechanisms and scales, compass, level and carrying handle containing the illuminator for reciprocal orientation of the devices. Weight: 3kg

1PN101

The 1PN101 night sight is designed for use with the SVDK sniper rifle. The sight operates in an ambient temperature range of -50/+50°C and relative humidity up to 100% at 25°C. Recognition range of a man-sized target: 600m. Weight: 3kg

PSO-1M2/1M2-1

The PSO-1M2 optical sight is designed for the 7.62mm SVD Dragunov sniper rifle. The reticle is graduated up to 1,300m and is illuminated for use in twilight and overcast conditions. Additionally, the PSO-1M2-1 is designed for use with the VSS silenced sniper rifle and AS 9mm silenced sniper rifle, and it is graduated up to 400m. Length: 37.5cm Width: 7cm Height: 13.2cm

The Specter DR 1.5-6x dual-role, dual-FOV weapon sight provides close-quarters and ranged capability. (Photo: Raytheon ELCAN Optical Technologies)

**SPP**

The SSP is a machine gun optical sight designed to allow accurate use of the NSV 12.7mm HMG out to 2,000m by daylight and at dusk with the reticle illumination. The sight can operate within the temperature range of -50/+50°C and relative humidity of 93-97%. Dimensions: 365x96x178mm Length: 36.5cm Width: 9.6cm Height: 17.8cm Weight: 1.7kg

PYSER SCI**PDS4.5 Optical Day Sight**

The PDS4.5 combat optical day sight has a rubber-armoured aluminium body suitable for mounting on an assault rifle or submachine gun fitted with a Picatinny rail. The large-diameter coated optics, for both the objective and eyepiece lens, give a bright, sharp image with long eye relief. The 4.5x magnification is used for longer-distance sharpshooting as well as close-quarters battle burst fire. Length: 14.3cm Width: 6.3cm Height: 7cm Weight: 0.74kg

RAYTHEON ELCAN OPTICAL TECHNOLOGIES**Specter DR 1.5-6x Sight**

The Specter DR 1.5-6x dual-role, dual-FOV weapon sight provides close-quarters and ranged capability. The sight switches instantly between 1.5x magnification in red dot mode and 6x magnification with a range-compensating reticle, allowing the user to transition from a sweeping view for target acquisition to long-range precision fire and suppression without changing sights. Eye relief and boresighting remain constant between magnifications. Additionally, the wide viewing angle provides a 'both-eyes-open' target acquisition capability. Length: 18.4cm Width: 7.6cm Height: 7.6cm Weight: 0.7kg

Specter OS 4x

The Specter OS 4x optical sight is a simplified version of the Specter DR 1-4x dual-role sight, which provides fixed 4x magnification and mounts on a MIL-STD-1913 Picatinny rail. The external adjustment mount, lens size and illumination system of the main optic are the same as the Specter DR. The UK acquired the Specter OS 4x as the ELCAN Lightweight Day Sight (LDS) in 2009 to replace the original SUSAT sight on the 5.56mm L85A2 Individual Weapon. Length: 15.3cm Width: 6.2cm Height: 6.9cm Weight: 0.53kg

SpecterDR 1-4x Sight

The Specter DR 1-4x dual-role, dual-FoV weapon sight provides close-quarter and ranged capability. The sight switches between 1x magnification in red dot mode and 4x magnification with a range-compensating reticle. This allows the user to transition in and out of buildings from close quarters to extended range without changing sights. Eye relief and boresighting remain constant between magnifications. Length: 15.3cm Width: 7.6cm Height: 7.6cm Weight: 0.64kg

SpecterDR 1-6x Sight

The SpecterDR 1-6x dual-role weapon sight is a dual-FOV sight providing both close-quarter and precision fire ranged capability in a single package. Whether

utilising the red dot in 1x magnification or the ranging reticle in 6x mode, the SpecterDR provides ultra-wide viewing angles for improved situational awareness and low-light performance. It also allows the user to safely and effectively transition in and out of buildings for close-quarter to extended range without changing sights.

SpecterDR 1.5-6x Sight

The Specter DR 1.5-6x dual-role, dual-FOV weapon sight provides close-quarter and ranged capability. The sight switches instantly between 1.5x magnification in red dot mode and 6x magnification with a range-compensating reticle, allowing the user to transition from a sweeping view for target acquisition to long-range precision fire and suppression without changing sights. Eye relief and boresighting remain constant between magnifications. The wide viewing angle provides a 'both eyes open' target acquisition capability. Length: 18.4cm Width: 7.6cm Height: 7.6cm Weight: 0.7kg

SpecterHR

The SpecterHR crew-served weapon sight, designated the Enhanced Combat Optical Sight – Heavy in US service, is a sealed, rugged, large-window biocular weapon sight with fast near-target performance (suitable for use against pop-up threats) and an uncluttered IMOA accurate two-dot reticle for both near and far target engagements.

SpecterOZ

The SpecterOZ variable optical zoom combat sighting system consists of two subsystems – a combat scope with a 5-20x variable zoom magnification and an integrated and enclosed close-quarters battle (CQB) 1x unity sight. The SpecterOZ sighting system aids CQB target engagement while enhancing long-range target engagement and observation capabilities. Each of the two subsystems can be used as standalone devices or integrated onto the host weapon system.

SpecterTR

In January 2014, ELCAN introduced the Specter TR 1-3-9x tri-FOV military combat weapon sight which it claims is 'the world's first' three-FOV optical weapon sight. The design is intended to provide close-quarter, mid-range and long-range engagement capability. The 1x FOV provides a wide viewing angle for a 'both-eyes-open' target acquisition capability maximised by a red aiming dot. Length: 26.4cm Weight: 0.83kg

RIPPEL EFFECT SYSTEMS

CRAR-32

The CRAR-32 lightweight, compact, all-weather reflex sighting system was developed for close-quarters battle. This sight, fitted with a universal elevation mechanism, can be used on platforms from assault rifles (with or without under-barrel grenade launchers) to machine guns and 40mm multi-shot grenade launchers. The parallax-free, reflex collimator system features an illuminated reticle. Length: 11cm Width: 5.9cm Height: 7.1cm Weight: 0.28kg

GR40 Reflex Sight

The GR40 is a lightweight reflex sight developed for use with Rippel Effect's XRGL40 extended-range 40mm

multi-shot grenade launcher. This all-weather, multi-velocity programmable sight enables the soldier to use 40mm ammunition with up to 16 ballistic profiles from the same weapon. The GR40 allows for target acquisition and shot correction. Its elevation mechanism automatically compensates for the drift caused by the yaw of the projectile. Length: 11cm Width: 7cm Height: 9.5cm Weight: 0.46kg

SCHMIDT & BENDER

1-8x24 PM II ShortDot

The 1-8x24 PM ShortDot is a development of the 1.1-4x20 PM II ShortDot sight. The high magnification range has expanded the scope's range of applications. The fine reticle in the first focal plane permits firing up to 800m. The new CC mode provides for parallax-free use of the scope like a red dot sight at short distances/with a 1x magnification. When turned off, the illuminated dot vanishes, leaving the user with a normal reticle. Length: 29.3cm Weight: 0.62kg

1.1-4x20 PM II ShortDot

The 1.1-4x20 PM II ShortDot is a combination of a red dot sight and a scope developed for use at short and medium distances. With a low magnification, the ShortDot may be used like a red dot sight. The red dot is mirrored in the centre of the reticle. Turned off, the illuminated dot vanishes, leaving the user with a normal reticle. The illuminating unit offers five illumination stages for use in broad daylight. Length: 26.9cm Weight: 0.57kg

1.1-8x24 PM II High Power

The 1.1-8x24 PM II High Power is a member of the High Power line of scopes with large zoom factors. With a ballistic horseshoe reticle in the first focal plane, the scope is optimised for use on assault rifles and fast shooting at a close distance. The small lower magnification enables a target to be acquired with both eyes open, while the 8x magnification allows target identification and shooting at longer ranges. Length: 29.3cm Weight: 0.65kg

1.5-6x20 PM II ShortDot

The 1.5-6x20 PM II sight is a combination of a red dot sight and a scope. The 1.5x magnification permits the shooter to keep both eyes open when aiming. Length: 31.6cm Weight: 0.57kg

1.5-8x26 PM II ShortDot

The 1.5-8x26 PM II ShortDot is the newest scope in the ShortDot range and the first to be equipped with a 34mm tube. It was developed to equip the German Army's G28 Designated Marksman Rifle. This configuration was selected with the objective of providing a good elevation and side adjustment range even with 8x magnification. Length: 31.6cm Weight: 0.65kg

3-12x50 PM II

The 3-12x50 PM II is a scope for engaging targets up to 1,500m. The reticle is located in the first focal plane, permitting a distance evaluation in all magnifications. It has been in use on the German Army's G28 since 2011. The 3-12x50 PM II P model has parallax compensation.

The parallax can be adjusted from 50m up to infinity, while the 3-12x50 PM II LP model has parallax compensation and illumination. Length: 34.3cm Weight: 0.86kg

3-12x54 PM II Ultra Bright

The 3-12x54 PM II Ultra Bright is the first scope within Schmidt & Bender's new PM II Ultra Bright line. With a transmission of 96%, the scope allows shooting particularly under low-light conditions at medium and long distances. The Ultra Bright line has a revised design with more rounded shapes and flat turrets. The sight is available with various illuminated reticles. Length: 35.1cm Weight: 0.92kg

3-20x50 PM II LP

The variable magnification from 3x to 20x of the 3-20x50 PM II LP permits the scope to be used on a multitude of rifles, with many different calibres and at very large distances. On request, the reticle may be included in the first or second focal plane. The scope also has parallax compensation from 25m to infinity. Reticle illumination ranges from NVG through dusk to broad daylight. Length: 38.5cm Weight: 0.93kg

3-20x50 PM II Ultra Short

The 3-20x50 PM II Ultra Short is a shortened version of the standard 3-20x50 PM developed for use with attachments on short rifles. It can be used with a front-mounted NV device. The elevation turret is designed as a double turn and can be used with a red dot sight that is installed on the back mounting ring to bridge close distances. The side turret has a cap to prevent unintentional adjustment. Length: 34cm Weight: 0.9kg

3-27x56 PM II High Power

The 9x zoom factor 3-27x56 PM II High Power day scope is the first model of Schmidt & Bender's PM II High Power series. It was developed as part of a US Special Operations Command request for shooting at extreme ranges and is suitable for ultra-long distances and five reticles are available. Weight: 1.13kg

3-27x56 PM II High Power Digital

The PM II Digital line of scopes have a modified scope head and can be used with or without compatible devices. The information from compatible external devices such as laser distance measuring units and ballistics calculators can be displayed in the FOV of the marksman. It is possible to exchange data via a cable or Bluetooth interface. Development of the digital scopes was funded by the US Special Operations Command. Length: 40.7cm Weight: 1.24kg

4-16x42 PM II LP

To meet US military requirements, the 4-16x42 PM II LP was developed with 4x to 16x magnification and a 42mm lens on the basis of the 4-16x50 PM II LP model. The lower lens diameter enables the scope to be mounted at a lower height on the weapon. The reticle is located in the first focal plane permitting a distance evaluation in all magnifications. Length: 39.3cm Weight: 0.88kg

4-16x50 PM II

With magnification of up to 16x, the 4-16x50 PM II P scope can be used from short ranges to up to 1,000m.

The 50mm lens is designed to provide imaging features even under poor lighting conditions. The 4-16x50 PM II P includes a parallax compensation function from 50m to infinity. The 4-16x50 PM II LP model has parallax compensation and an illuminated graticule. Additionally, the parallax compensation and illumination adjusting turrets are clearly separated. Length: 39.4cm

4-16x56 PM II Ultra Bright

The 4-16x56 PM II Ultra Bright is the second scope within Schmidt & Bender's new PM II Ultra Bright line. With a transmission of 96%, the scope allows precise shooting particularly under low-light conditions at medium and long distances. The Ultra Bright line has a revised design with more rounded shapes and flat turrets. The sight is available with various illuminated reticles. Length: 38.6cm Weight: 0.96kg

5-20x50 PM II Ultra Short

The 5-20x50 PM II Ultra Short, measuring less than 300mm in length, is optimised for use with short and light weapon systems and can be combined with a front-mounted NV device. The compact elevation turret – available as single or double turn – can be used with a red dot sight that is installed on the back mounting ring to bridge close distances. The 5-20x50 PM II Ultra Short riflescope is available with three reticles and the illumination of the reticle in the first focal plane is optional. Length: 29.9cm Height: 5.95cm Weight: 0.83kg

5-25x56 PM II Digital

The PM II Digital line of scopes have a modified scope head and can be used with or without compatible devices. The information from compatible external devices, such as laser distance measuring units and ballistics calculators, can be displayed in the FOV. It is also possible to exchange data via a cable or Bluetooth interface. Length: 42.5cm Weight: 0.13kg

5-25x56 PM II LP

The 5-25x56 PM II LP scope is designed for use at ranges of up to 2,000m. It is equipped with an illuminated reticle and parallax compensation from 10m to infinity. The scope can be supplied with the reticle in the first or second focal plane. The 'more tactile clicks' function (MTC) is available to make it easier for the shooter to count the necessary clicks during reticle adjustment. Length: 41.7cm Weight: 1.129kg

5-25x56 PM II/LP

The 5-25x56 PM II LP scope is designed for use at ranges of up to 2,000m. It is equipped with an illuminated reticle and parallax compensation from 10m to infinity. The scope can be supplied with the reticle in the first or second focal plane. The 'more tactile clicks' function (MTC) is also available to make it easier for the shooter to count the necessary clicks during reticle adjustment. Length: 41.7cm Weight: 1.13kg

5-45x56 PM II High Power

The 5-45x56 PM II High Power scope is the latest addition to Schmidt & Bender's High Power range and was developed at the request of the US Special Operations Command, which was seeking a new riflescope for shooting at long range. It has 'ultra-slim' and functional turrets. Length: 43.4cm Weight: 1.1kg

12-50x56 PM II

The 12-50x56 PM II scope is designed for engaging targets at longer distances. The parallax compensation permits the user to focus on targets at a distance between 10m and infinity. The large reticle adjustment range, either as double turn or in the new multi-turn version, enables the firer to perform a trajectory compensation for longer ranges without any problems. Optionally, the scope is available with reticles in the first or second focal plane. Length: 41.7cm Weight: 1.11kg

12-50x56 PM II/P

The 12-50x56 PM II scope is designed for engaging targets at longer distances. The parallax compensation permits the user to focus on targets at a distance between 10m and infinity. The large reticle adjustment range, either as double turn or in the new multi-turn version, enables the firer to perform a trajectory compensation for longer ranges without any problems. Optionally the scope is available with reticles in the first or second focal plane. Length: 41.7cm Weight: 1.1kg

SIG SAUER**Bravo4 Battle Sight**

The 4x30mm Bravo4 prism-powered battle sight has a MegaView aspherical lens eyepiece for large FoV and awareness of objects in the shooter's periphery. The sight features MOTAC motion-activated illumination to provide operational safety and enhanced battery life. It also has an integrated MIL-STD-1913 Picatinny top rail for additional accessories. Length: 15.9cm Weight: 0.42kg

CP2 MIL Prismatic

The CP2 MIL Prismatic Rifle Scope is a lightweight sight for target acquisition. It has a 3x fixed magnification, duplex crosshair ranging reticle. It has three reticle modes – non-illuminated black, illuminated green and illuminated red – with each illuminated mode offering five brightness settings. The CP2 MIL Prismatic has anodised aluminium construction.

Romeo Red Dot Sights

The Romeo line of red dot sights are parallax-free and feature (MOTAC) motion-activated illuminated glass reticles. The dual reticle option, on select models, toggles between 2 MOA red dot or circle dot. The 1x20mm Romeo4 red dot sight is available in four models: Romeo4A; Romeo4B; Romeo4C with a solar power system; and Romeo4M. The 1x20mm Romeo5 is a compact version of the red dot sight. Length: 6.7cm Width: 4.1cm Height: 410cm Weight: 0.14kg

Romeo Reflex Sights

The open reflex Romeo sight features TruHold twin adjustment springs, which provide a lockless zeroing system. The moulded aspherical lens is bright and distortion free. The sight features manual brightness controls and a MOTAC motion-activated illumination system for operational safety and enhanced battery life. The sight is powered by a top-loading battery. There are two models: 1x30mm Romeo1 and 1x25mm Romeo3.

STS-081 MIL Mini Red Dot Sight

The STS-081 MIL Mini Red Dot Sight is a lightweight sight for handguns, rifles and shotguns. It has a parallax-free

1x red dot with a 4 MOA reticle, coated glass lenses and anodised aluminium construction. A removable honeycomb filter reduces glare and prevents lens reflection during bright sunlight applications.

Tango4 Tactical Riflescopes

Tango4 riflescopes are suitable for mid- to long-range engagements. They feature a 4:1 zoom first focal plane design and motion-activated illuminated glass reticles. The LockDown Zero system is a stop-locking turret that allows a rapid return to zero. The Tango4 riflescope is available in four models with varying magnification levels: 1-4x24mm; 3-12x42mm; 4-16x44mm; and 6-24x50mm. Length: 39.7cm Weight: 0.76kg

Tango6 Tactical Riflescopes

Tango6 riflescopes are suitable for both close-quarters battle operations and long-range shooting. The scopes have HellFire fibre-optic and glass-etched illuminated reticles with varied light intensity of the central aiming point from IR dim to daylight bright. The HDX optical system comprises high-definition and high-transmittance glass for optical performance and light transmission. Length: 39cm Weight: 1.2kg

TELEDYNE FLIR**Armasight MCS**

The Armasight MCS (Miniature Collimating Sight) is a micro LED collimating sight for both-eyes-open rapid target acquisition. The MCS is rugged, lightweight and designed to mount onto many existing optics as well as MIL-STD-1913 Picatinny and Weaver-style rails. The Armasight MCS features a dual reticle pattern: a 3.5 MOA Dot reticle or 20 MOA Ring reticle. Length: 4.8cm Width: 4.4cm Height: 5.2cm Weight: 0.07kg

TRANSVARO ELEKTRON**TV/KND Series**

The TV/KND Series of compact day sights feature an illuminated reticle with ballistic correction scale for use on a range of weapons. Reticules with pre-defined ballistic parameters can be integrated on customer request. The TV/KND-4 provides 4x magnification while the TV/KND-6 provides 6x. Length: 19cm Width: 7.2cm Height: 6.2cm Weight: 0.53kg

TRIJICON**AccuPoint**

The AccuPoint riflescope line has an all-weather, hard-anodised aluminium body, dual illumination through the use of fibre optics and tritium phosphor lamps, battery-free operation, waterproofing up to 3m and a choice of several post and crosshair reticle options. AccuPoint riflescopes include multi-layer coated lenses for light transmission with no distortion, a quick-focus eyepiece, extensive eye relief and windage and elevation adjustments. Length: 26.2cm Width: 5cm Height: 5cm Weight: 0.76kg

AccuPower

In 2015, Trijicon introduced the AccuPower riflescope series, designed for versatility with power offerings

of 1-4x24 (RS24 series), 2.5-10x56 (RS22 series), 3-9x40 (RS20 series) and 4-16x50 (RS29 series). The line has anti-reflective multi-coated lenses for clarity and light gathering. Adjustable reticle brightness settings offer eleven adjustments with an 'off' feature between each setting. The AccuPower series incorporates a hybrid black chrome/etch and fill illuminated-reticle system available in red or green, with four reticle options. All reticles are located in the second focal plane, meaning their size and appearance remain constant as magnification increases. This provides a more exact aiming point at higher magnifications and is faster to use in low-light situations, claims the company.

ACOG

The Advanced Combat Optical Gunsight (ACOG) is a fixed-power, compact riflescope with an illuminated reticle pattern for use in bright to low/no light. The ACOG is designed to be durable and reliable. It is waterproof, shock-resistant and dry-nitrogen filled to eliminate fogging. The sight features adjustable brightness control with six settings. Some variants include a bullet drop-compensated reticle. The ACOG can be used as a close-quarters battle sight when shooting with both eyes open. Length: 30.5cm Width: 7.4cm Height: 8.6cm Weight: 0.14kg

MGRS

Trijicon's Machine Gun Reflex Sight (MGRS), developed to compete for the US Army's Mounted Machine Gun Optic (MMO) project, was launched in October 2016 at AUSA. It is designed to give gunners better accuracy and reliability when operating pintle-mounted weapons, such as the M2 50cal and M240 7.62mm machine guns, on armoured vehicles, patrol boats and other platforms. Length: 22.4cm Width: 10.7cm Height: 13.2cm Weight: 1.9kg

MRO

The Miniature Rifle Optic (MRO), launched in August 2015, is a sealed miniature red dot reflex sight intended for use on rifles, carbines and shotguns with the objective of providing fast target acquisition. The large aperture and tapered light path maximise the viewing area and allow for better situational awareness and fast target engagement, especially from what are described as non-standard shooting positions. The 2-MOA dot is also sized for fast target acquisition from CQB distance to extended ranges. Length: 6.6cm Width: 4.3cm Height: 5.1cm Weight: 0.12kg

Night Sights

Bright & Tough and HD night sights are intended as a self-luminous three-dot alternative to conventional iron sights. The HD night sights have a front sight that features a photoluminescent paint outline. The rear sight is angled and serrated to reduce glare and aid front-sight focus.

Reflex

The Reflex is a robust, battery-free, illuminated sight intended for close-quarters battle use. With both eyes open, it allows shooters to maintain situational awareness. Several adapters are available to enable the sight to be mounted on rifles, carbines and shotguns.

RMR

The Ruggedized Miniature Reflex (RMR) sight has multiple applications, including rifle, carbine, pistol and shotgun. Optionally, it can be used as a secondary sight with a magnified optic. It is made from 7075-T6 aluminium to Mil-Spec standards and has a patented shape designed to absorb impacts and divert stresses away from the lens. The RMR is available in LED, adjustable LED or dual-illuminated (fibre-optic/tritium) versions and with dot sizes ranging from 3.25 to 13 MOA.

SRS

The Sealed Reflex Sight (SRS) is a rugged, parallax-free sight that incorporates a large aperture for better situational awareness in a short body. The illuminated 1.75 MOA red dot with ten brightness settings – three NVG-compatible – is powered by a solar cell plus one AA battery. Button pads are also designed to make brightness adjustments easier when wearing gloves.

TARS

The Tactical Advanced Riflescope (TARS) is a variable-power riflescope designed for long-range shooting. It features a first focal plane reticle with ten illumination settings, including two for NV. Target adjusters feature a large adjustment range as well as a mechanism to prevent unintentional rotation, combined with an elevation return-to-zero feature. Length: 35.3cm Width: 9.7cm Height: 8.9cm Weight: 1.33kg

VCOG

The Variable Combat Optical Gunsight (VCOG) is a rugged, variable-power riflescope with an LED-illuminated, first focal plane, bullet drop-compensated reticle. The VCOG is designed for durability and has six brightness settings powered by one AA battery. Additionally, an integrated dial fin allows rotation through the entire magnification range.

NIGHT SIGHTS (IMAGE INTENSIFIERS)

ASELSAN

A341/A361

The A341 and A361 NV sights are lightweight and compact, functioning at low light levels. Various reticle and reticle adjustment system options include duplex/Mil-dot and custom design. Weight: 1,350g

A600

The A600 NV attachment clips onto the objective of a day sight, with no effect on zeroing. The lightweight device is compatible with 3-12x magnification day sights and standard mounting adapters, but can also be used with a custom mounting solution. Weight: 700g

FOCUSOPTECH

ROD-54

The ROD-54 is a weapon sight equipped with a Gen III EO I2 tube with maximum FOM 1600. The sight



The Mepro Minimon (L) is a multifunctional, lightweight mini-monocular designed for the diverse requirements characterising night operations. (Photo: Meprolight)

withstands large calibre recoil and has a waterproof design, low power consumption and includes a low-battery indicator. Length: 18cm Width: 7.4cm Height: 6.2cm Weight: 650g

HENSOLDT OPTRONICS GMBH

Hensoldt NSV 600

The NSV 600 medium-range NV scope is a light intensifier used together with day optics. These do not have to be removed when vision is limited. This clip-on attachment includes an integrated maintenance management system to enable the export of information such as service hours, on/off cycles or installation date. Length: 20.5cm Width: 9.1cm Height: 7.8cm Weight: 870,000g Range: 590m

Hensoldt NSV 1000

The NSV 1000 NV scope is a light intensifier used together with day optics, which do not have to be removed when vision is limited. This clip-on attachment includes an integrated maintenance management system to enable the export of information such as service hours, on/off cycles or installation date. The NSV 1000 features gain control, manual brightness control and optional remote control. Length: 20.5cm Width: 11.2cm Height: 9.9cm Weight: 1,200g Range: 750m

NSV LL

The NSV LL (Low Light) is a clip-on long-range night sight that is optimised for use with sniper rifles up to 50cal. The adjustment to even low-mounted scopes allows it to be attached to a large variety of weapons. Positioning of elements such as the on/off knob and focus enables right- and left-hand use. Length: 23.5cm Width: 11.3cm Height: 11.5cm Weight: 1,450g Range: 1,050m

NSV LR

The NSV Long-Range (LR) is a night sight clip-on device optimised for use with sniper rifles. The adjustment to even low-mounted scopes allows it to be attached to a large variety of weapons. Positioning of elements such as the on/off knob and focus enables right- and left-hand

use. Length: 23.5cm Width: 11.3cm Height: 11.5cm Weight: 1,500g Range: 1,050m

L3HARRIS TECHNOLOGIES

AN/PVS-24

The AN/PVS-24 is a rugged, clip-on NVD and is used by US Special Operations Command. The design of the PVS-24 eliminates the typical requirement of removing a primary (day) sighting system since the device mounts in line with a standard day optical sight. Combining day and NV sights eliminates the need to re-zero since the primary sight remains undisturbed. The locking quick-disconnect, single-throw lever mounting system provided is also able to attach to a MIL-STD-1913 rail interface system. Length: 13.7cm Width: 9.7cm Height: 7.7cm Weight: 771g Range: 500m

MEPROLIGHT

Mepro Hunter 4X/6X

Mepro Hunter NV weapon sights are based on Gen II or Gen III I2 tubes. Developed for SF, the Mepro Hunter 4X is designed for short to medium ranges, while the 6X variant is intended for longer ranges and sniper operations. Additionally, both models have illuminated reticles and adjustable brightness for contrast against light and dark targets. Length: 33cm Width: 11.2cm Height: 11cm Weight: 2,000g

Mepro Mini-Hunter

The Mepro Mini-Hunter is a compact lightweight NV weapon sight based on Gen II or Gen III I2 tubes. With a durable design, it is intended to fit various weapon types, such as assault rifles, rocket launchers and machine guns. The Mepro Mini-Hunter offers a passive ballistic reticle with an external boresighting mechanism incorporated in a MIL-STD-1913 rail adapter. This allows dismounting and mounting without the need for re-zeroing. Length: 15cm Width: 5cm Height: 7cm Weight: 390g

Mepro Minimon - L

The Mepro Minimon (L) is a multifunctional, lightweight mini-monocular designed for the diverse requirements characterising night operations in harsh tactical and environmental conditions. This includes special naval operations requiring submersion to a depth of up to 20m. The Mepro Minimon (L) is equipped with a 40° FOV and a large eye-relief and utilises a standard high-quality 18mm image intensifying tube featuring a modular design. It can be used in head-mounted, helmet-mounted, weapon-mounted or handheld configurations and is compatible with all IR illumination and laser pointers. Length: 12cm Width: 4.3cm Height: 6.6cm Weight: 245g

NEWCON OPTIK

DN 463

The DN 463 is a military-grade NV riflescope designed for tactical operators, requiring a night-time close-quarters battle and/or medium-range target engagement capability. The fully weatherproofed DN 463, with a nitrogen-filled optical channel, can be used in a range of combat environments. The unit is available with XT,

AG and AGBW series Gen III I2 tubes with automatic brightness control, bright source protection and minimum exportable FOM >1,600. Length: 31cm Width: 9.5cm Height: 10.3cm Weight: 1,000g

DN 493_6x Series

The DN 493_6x NV riflescope has manual gain control adjustment. It has an adjustable brightness reticle and a Gen III I2 tube with a minimum FOM >1600 (fully exportable). The scope is designed to be easy to service and maintain. With 6x magnification, the DN 493_6x is suitable for medium- to long-range target engagement, for deployment in combat, peacekeeping, public and private infrastructure security. Length: 31cm Width: 9.8cm Height: 9cm Weight: 1,050g

NVS 27 Series

The NVS 27 high-resolution NV clip-on is designed to mount in front of most daytime riflescopes. It enables NV imaging on magnifications between 1x and 20x, has an extra-wide FoV, extended target detection range, as well as an in-built IR illuminator and manual gain control. The unit uses a Gen III I2 tube with minimum exportable FOM >1,600.

NIVISYS

MUM-14

The Multi-Use Mini-Monocular (MUM-14) is a modular, passive NVD designed to maintain situation awareness in a range of low-light conditions, utilising a single Gen III I2 tube. It can be head/helmet- or weapon-mounted, as well as handheld. The MUM-14 can be coupled with 3x, 4x or 5x afocal objective lenses for extended range. Additionally, this unit can be configured with a dual-carriage mount, allowing two MUM-14s to become one binocular system. Length: 10.75cm Width: 6.85cm Height: 4.95cm Weight: 260g

Night Hawk

The Night Hawk NV weapon sight is designed for long-range medium and heavy weapon applications, using Gen III I2 technology. The sight can be mounted on a variety of individual and crew-served weapons. It has a variable-brightness reticle that can be boresighted to the weapon using the independent windage and elevation adjusters. The Night Hawk is available in 4x and 6x magnification configurations. Length: 42cm Width: 13cm Height: 14cm Weight: 2,100g

NOVOSIBIRSK INSTRUMENT-MAKING PLANT

1N10

The 1N10 is a monocular for observation at up to 6km with 4-20x zoom magnification. There is a removable light filter for contrast increasing in reduced illumination or fog conditions. The reticle also has range and angle-measure scales. Additionally, the 1N10 is equipped with a holder for mounting on a suitable support. Exit pupil: 1.4-7mm Dimensions: 190x265x42mm Length: 25.5cm Width: 4.2cm Height: 19cm Weight: 0.45kg

1N11

The 1N11 is an artillery reconnaissance device intended for area surveillance, reconnaissance and artillery

fire spotting. The tripod-mounted device is built as a binocular periscope with two magnifications (ten and 20x). There are laying mechanisms, angular scales for azimuth and elevation, level, diopter and interpupillary adjustments. The device is equipped with a set of light filters for contrast increasing and protection against laser irradiation 1.06µm. Periscope height: 385mm Dimensions: 300x210x690mm Length: 30cm Width: 1cm Height: 9cm Weight: 23kg

1PN92-2

The 1PN92-2 is a long-range night observation device equipped with a Gen II I2 tube and intended for area surveillance, reconnaissance and artillery fire spotting. The tripod-mounted device is also equipped with elevation mechanisms and scales, compass, level, holder for a 1D13 laser rangefinder and carrying handle containing the illuminator for the reciprocal survey of spotters by triangulation. Length: 0.47m Width: 0.26m Height: 0.36m Weight: 11kg

1PN93-1

The 1PN93-1 is a modular Gen II+ night sight designed for use with VSS, AS (1PN93-1AS version), AK-74M and AN-94 (1PN93-1AK-74 version) assault rifles. The sight operates in a temperature range from -50/+50°C and relative humidity up to 100% at 25°C. Dimensions: 207x79x176mm. Weight: 1,000g

1PN93-2

The 1PN93-2 modular Gen II+ night sight is designed for use with AK-47 and AKM (1PN93-2 AK) assault rifles or RPG-7V grenade launchers. The sight operates in an ambient temperature range from -50/+50°C and relative humidity up to 100% at 25°C. Dimensions: 250x81x82mm. Length: 25cm Width: 8.1cm Height: 18.2cm Weight: 1,500g

1PN93-3

The 1PN93-3 modular Gen II+ night sight is designed for use with SVD and SVDS sniper rifles and the PKM light machine gun. The sight operates in an ambient temperature range from -50/+50°C and relative humidity up to 100% at 25°C. Dimensions: 226x100x198mm. Length: 22.6cm Width: 10cm Height: 19.8cm Weight: 1,500g

1PN93-4

The 1PN93-4 is a modular Gen III night sight designed for use with SVD or SVDS sniper rifles. The sight operates in an ambient temperature range from -50/+50°C and relative humidity up to 100% at 25°C. Dimensions: 250x81x82mm. Weight: 1,500g

1PN101

The 1PN101 night sight is designed for use with the SVDK sniper rifle. The sight operates in an ambient temperature range of -50/+50°C and relative humidity up to 100% at 25°C. Recognition range of a man-sized target: 600m. Weight: 3kg

1PN114/1PN100

The 1PN114/1PN100 Gen III day/night sight is designed for use with SVD and SVDS sniper and AK-series assault rifles. Switching the sights from day to night position can be performed without shifting the sightline. The

1PN114/IPN100 operates at ambient temperatures from +50/-50°C and relative humidity up to 100% at 25°C. Identification range of man-sized target: 450m. Length: 32.1cm Width: 9.1cm Height: 20cm Weight: 1,700g

OIP SENSOR SYSTEMS

Irbis 4x/6x

The Irbis night weapon sight is rugged and lightweight, featuring 4x or 6x magnification for medium- and long-range applications. Both models have an integrated weapon adapter, rubber cover and red electronically adjustable reticle. Weight: 1,270g Range: 25m

OPTIX

NVA-10/75

NVA-10 and NVA-75 are attachment devices that enable snipers to effectively use their rifles at night. They may become part of an existing riflescope system, which enables the equipment to be used in a range of tactical applications, from standard assault rifles to long-range, large-calibre rifles. Each device can also be configured with different Gen II or Gen III I2 tubes.

ONS-3/-6

ONS-3 and -6 NV weapon sights are engineered in accordance with MIL standards. They are configurable with different reticles and 18mm Gen II or Gen III I2 tubes. The sights can be mounted on a Picatinny rail on various types of assault or sniper rifles and are suitable for different military and law enforcement applications.

ONS-4V

The ONS-4V sight is used for observation, sighting and distance-measuring during the night, and at dusk and dawn. The design makes it suitable for night combat operations. The sight is configurable with different reticles and 18mm Gen II or Gen III I2 tubes. It is compatible with various assault rifles, sniper rifles, light machine guns and submachine guns equipped with a Picatinny rail.

PCO

PCS-5/M GABRO

The PCS-5/PCS-5M passive NVD is a lightweight telescopic sight designed for use on portable weapons. It can be used for battlefield observation, detection and target recognition in natural night-light conditions. The PCS-5 can be used on various types of guns and grenade launchers with a side-mounting dovetail system. The PCS-5M version is also designed for weapons with a MIL-STD-1913 Picatinny rail.

PYSER SGI

PNP-M

Designed and built in the UK, the PNP-M lightweight I2 monocular can be handheld, helmet- and head-mounted or weapon-mounted on a MIL-STD-1913 rail using an interface kit. The PNP-M works with a range of day sights, offering NV capability in conjunction with existing sighting systems. The device can also be removed with one hand from the weapon and used in

surveillance mode. Length: 10.7cm Width: 4.2cm Height: 6.7cm Weight: 288g

PNP-MS

The PNP-MS standalone miniature I2 NV weapon sight is based on the PNP-M monocular. It incorporates an illuminated red-dot aiming mark for target acquisition with an on/off switch for the choice of low and high red-dot brightness levels. The superimposition of the red dot on the green or white I2 picture is intended to aid the speed and clarity of aiming as a result of the colour difference.

PNP-MUNS Universal Night Sights

The PNP-MUNS Universal Night Sights are in-line I2 lightweight, compact weapon sights designed to be used in front of day scopes from 1-16x magnification and higher with front lenses up to 60mm diameter. The in-line optical design, with no prisms, does not affect the zero of the weapon or the user's normal firing position. It also does not create parallax errors. Length: 20.8cm Width: 9cm Height: 8.7cm Weight: 1,006g

QIOPTIQ

Kite

Kite is a lightweight night sight designed to meet military specifications for weapon aiming. More than 65,000 have been sold to over 56 countries. Additionally, the UK MoD has selected Kite as its standard night sight. From the basic design, a family of equipment can be fitted to light support weapons or heavy machine guns (MaxiKite-2) or used for surveillance (BinoKite and MaxbinoKite) purposes.

Kite-in-Line

The Kite-in-Line is a night sight designed to meet military specifications. Incorporating an image intensifier, it can provide a 24h night vision capability for short- and medium-range surveillance and target engagement. As an in-line sight, it can also be attached to Picatinny and NATO-standard rails in front of an existing day sight without needing to remove or re-zero it. More than 65,000 units of all members of the Kite range have been sold to over 56 countries. Length: 21cm Width: 10.5cm Height: 8cm Weight: 1,000g Range: 2,230m

Merlin

Merlin SR, MR and LR inline sights are aimed at the assault rifle, sharpshooter rifle and sniper rifle end user. They provide different size/weight/performance trade-offs with a man-machine interface, common accessories and a power supply of one standard AA battery.

Talon

The Talon is a dual-channel optically fused weapon sight that combines an image intensifier and an uncooled thermal imager into a single 650g package. Optimised for short-range and medium-range engagements, the sight allows its user to detect, recognise and identify targets in night conditions. It can also be quickly attached to Picatinny or NATO-standard rails using a quick release lever without the need to remove or re-zero the weapon's day sight. Length: 12.3cm Width: 8cm Height: 7.2cm Weight: 650g Range: 1,000m

RAYTHEON ELCAN OPTICAL TECHNOLOGIES

Sighting Systems

Raytheon Elcan Optical Technologies offers a range of sighting systems, including thermal imaging (IR), digital and multirole optical rifle sights. Hundreds of thousands of optical sights by Elcan are also deployed with forces around the world as a standard-issue sight for small arms.

RHEINMETALL

KN200/250

Rheinmetall's clip-on I2 units provide night capability to optical day sights. The NV image is viewed through the eyepiece of the day sight, allowing the user to retain the same eye position, aiming reticle and magnification. Both sights can be used on sniper rifles, anti-tank weapons and binoculars, while the KN200 adds a laser rangefinder for use with medium-range infantry weapons. The KN250 is also suitable for assault rifles. Length: 22cm Width: 12.7cm Height: 19.2cm Weight: 1,560g Range: 25,000m

SAFRAN VECTRONIX

NiteSpot50

The NiteSpot50 clip-on sight is an I2 with a low profile that adds NV capability to sighting and observation systems. Designed to be quickly fitted and removed in front of the day sight objective, the NiteSpot50 does not affect optical alignment and therefore no adjustment or fresh boresighting is required between day and night use. With a Picatinny rail adapter, the NiteSpot50 can also be attached to most weapons. Length: 27.2cm Width: 10cm Height: 10cm Weight: 1.25g

NiteSpotMR

The NiteSpotMR medium-range clip-on night sight adds NV capability to a variety of rifles. It attaches to the

front of a day sight objective and can be removed when not in use. The NiteSpotMR does not affect the optical alignment of the day sight, eliminating the need for re-adjustment/boresighting when changing between daytime and night-time operations. The sight can also be used with any rifle up to .50cal. Length: 27cm Width: 8cm Height: 8cm Weight: 920g

TELEDYNE FLIR

Armasight Drone Pro 10x/15x

The high-performance charge-coupled device imaging system of the Armasight Drone Pro 10x and 15x digital night vision riflescopes is sensitive to both near-IR and visible light and provides round-the-clock and all-weather target detection and discrimination. Length: 29cm Width: 9.1cm Height: 10.7cm Weight: 1,300g

Armasight Nemesis

The Armasight Nemesis 4X and 6X night vision rifle scopes can be equipped with high-performance Green phosphor Gen 2+ image intensification tubes or Armasight's Gen 2 Quick Silver. This provides users with natural B&W displays. The scopes have internal windage and elevation adjustments and simple push-button controls. According to Armasight, no other night vision riflescope on the market provides such well-defined crosshairs. Length: 30.5cm Width: 10.2cm Height: 7.1cm Weight: 1,200g

MilSight S135 MUNS

The MilSight S135 Magnum Universal Night Sight (MUNS) AN/PVS-27 is a high-resolution clip-on weapon sight that mounts forward of an existing scope, adding NV capabilities to daytime target acquisition platforms. The S135 has patented permanent boresight alignment technology; it is installed, operated and removed without tools and without affecting boresight. The unit can be mounted on a spotting scope for long-range reconnaissance or handheld. The sight includes FLIR's shock mitigation system. Length: 22cm Height: 9.5cm

MilSight T90 TaNS

The MilSight T90 Tactical Night Sight (TaNS) is a high-resolution clip-on NVD that mounts forward of an existing scope, adding night vision capabilities to daytime target acquisition systems. The T90 features patent-permanent boresight alignment technology. It is installed, operated and removed without tools and without affecting boresight. The sight includes FLIR's shock mitigation system and the Modular Utilitarian Power-Pack System (MUPPS), a detachable, field-replaceable battery compartment. Length: 14.2cm Weight: 680g

T105 UNS AN/PVS-22

The FLIR T105 Universal Night Sight (UNS) AN/PVS-22 is a mid-range I2 weapon sight designed to mount on a MIL-STD-1913 rail interface forward of an existing scope. This adds NV capabilities to target acquisition platforms. This also presents the shooter with the same FOV while preserving reticle calibration and foresight. The T105 UNS includes a proprietary Shock Mitigation System allowing the unit to be used on weapons up to and including 50cal bolt-action rifles. Length: 18.5cm Height: 7.8cm



The Armasight Nemesis 4X and 6X night vision rifle scopes (pictured below is the 6X) can be equipped with high-performance Green phosphor Gen 2+ image intensification tubes or Armasight's Gen 2 Quick Silver. (Photo: Teledyne FLIR)

THEON SENSORS

Artemis

The Artemis family of standalone NV sights provide 3x, 4x, and 6x magnification for infantry weapons. According to the company, the small, lightweight sights are designed to have good boresight retention and use US or European I2 tubes for performance in all light conditions. The kinematic bracket assembly allows direct mounting of the sights on MIL-STD-1913 Picatinny rails, adjustment in elevation and azimuth and retention of boresighting under harsh conditions. Length: 30.4cm Width: 11.4cm Height: 14.7cm Weight: 1,500g

DamQn

The DamQn night sight is designed to be mounted in front of magnified day optical sights to provide NV capabilities and target acquisition. It can also be used as a handheld observation device. Its optical design was optimised for close-combat weapon applications with a claimed best performance/weight ratio available.

Erebus

The Erebus NV clip-on afocal sight is designed for mounting on top of optical day sights and LRF without affecting boresighting. Its FOV is closer to the narrow FOV of most large magnification sights and matches the FOV of most LRFs. Reticule readings, eye relief distances and shooting/observation practices remain the same as in the daytime. Length: 22cm Width: 11.6cm Height: 20.7cm

TRANSVARO ELEKTRON

TV/NWS-3

The single-tube TV/Night Vision Weapon Sight (TV/NWS)-3 is designed for medium- to long-range surveillance and targeting. It has an integrated power supply that provides automatic brightness control and bright source protection to guard against exposure to high levels of light. The NWS-3 is lightweight and incorporates an illuminated reticule with windage and elevation adjustments. Length: 19cm Width: 7.7cm Height: 9.1cm

TROYA TECH DEFENSE

Falco

Designed for use with marksman and sniper rifles, the Falco sight is available in 2x, 4x and 6x magnifications and has an I2 tube. The Falco is equipped with a cross-hair aiming reticle and has a low battery indicator. The sight comes with a soft carrying pouch, weapon mount, batteries, user manual and cleaning microfibre cloth. Length: 36cm Width: 12cm Height: 14cm Weight: 2.4g

NIGHT SIGHTS (THERMAL IMAGERS)

AIM INFRAROT-MODULE

HuntIR Mk 2

The HuntIR Mk 2 thermal weapon and reconnaissance sight is designed for clip-on use on mid- and long-

range small arms. The standalone weapon sight has an optional biocular eyepiece. Length: 18cm Weight: 2,000g

HuntIR/RangIR

HuntIR sight was designed to combine day/night surveillance and targeting. With two FOVs, 2.3x3.0° for range performance and 6.8x9.1° for panoramic view, it provides an identification range of 1,700m as required for long-range sniper rifles or crew-served support weapons like the 40mm automatic grenade launcher. Since 2004, HuntIR has been in German Army service. Weight: 3kg

ASELSAN

Boa

The Boa thermal weapon sight is compatible with sniper weapons and heavy machine guns. It can operate in darkness and does not shut down or bloom in case of a direct light hit. Additionally, the Boa has reticles developed for long-range weapons and provides target detection at long ranges. Weight: 2,100g

Mini-TWS

The Mini-Thermal Weapon Sight (TWS) family provides imaging during day/night and adverse weather and environment conditions such as fog, haze, smoke, sand and dust. Imaging capabilities include automatic optimisation, image freeze, polarity selection, brightness/contrast and focus adjustment. The Mini-TWS supports image transfer to a HUD and has a shuttered eyecup and battery level indicator. It can be used handheld or weapon-mounted. The Mini-TWS is available in multiple configurations with varying FOVs, magnification and weights. Weight: 1,030g

Python

The Python thermal sight enables the user to detect threats beyond the weapon's effective range. The unit can be mounted on different types of weapons or used as a handheld system for surveillance. It does not shut down or bloom in case of a direct light hit and can also operate in total darkness, as well as daytime. Weight: 1,700g

BAE SYSTEMS OASYS

SkeetIRx

The SkeetIRx thermal weapon sight is a credit card-sized thermal monocular that displays a 640x480 (detector) resolution using a CR 123 battery. It is described as optically and electronically optimised, with an operational runtime of more than two hours. The SkeetIRx sight is operated by a menu function featuring a single button press, eliminating the need to remember locations on the device for different functions while operating the system in darkness. Features such as inherent weapon use and user-selectable electronic reticles support a range of missions. Length: 10.2cm Width: 6.1cm Height: 4.4cm

UTCx

The UTCx (Universal Thermal Clip-on) sight is a universal thermal clip-on to existing weapon sights, currently fielded by the US military and supporting long-range sniper and surveillance missions. The UTCx sight complements existing day sights and unity systems, as

well as day sights in excess of 10x magnification when used as a pass-through sighting device. Length: 17.3cm Width: 8.4cm Height: 8.4cm

UTCxii

The UTCxii sight is a universal thermal clip-on to existing optical scopes, supporting long-range sniper and surveillance missions. It complements existing unity day sight systems, as well as day sights in excess of 10x magnification when used as a pass-through sighting device. Length: 15.8cm Width: 8.2cm Height: 7.9cm Weight: 580g

UTMx

The UTMx thermal weapon sight is claimed to be the first palm-sized 640x480 hybrid thermal mono-sight. It has dual-band pointing/aiming lasers and thermal sensitivity. The UTMx utilises a simple menu function featuring a single button press, eliminating the need to remember locations on the device for different functions while operating the system in darkness. Length: 14.8cm Width: 8.2cm Height: 5.4cm Weight: 520g

BRITANNIA 2000

Firefly

Britannia's Firefly thermal weapon sights utilise FLIR Systems' Tau-2 thermal camera to provide imaging at extended ranges. The sights enable target identification in environments including fog, smoke and darkness. The all-weather Firefly sights also have integrated video and image capture capability and can be used on weapons up to and including 7.62mm calibre.

ELBIT SYSTEMS INTELLIGENCE AND ELECTRO-OPTICS – ELOP

A-Tim

A-TIM is an advanced clip-on thermal imaging sight for ATGM launchers. Main features: full operability in day/night and poor visibility conditions; boresight free – quick installation on standard launcher day sight; uses existing eyepiece for both standard and thermal sight; lightweight compact system, including battery. Applications: applicable for any ATGM launcher; already operational with Fagot, Flame and Konkurs/AT-5 Spandrel. Weight: 7,700g

Artim-LR

The Artim-LR is a battery-operated 8-12µm TI camera/sight. Features: high image quality; dual FOV; integral CRT display and eyepiece; remote-control operation capability; communication interfaces to external LRF and angulation head; external video output; designed and qualified in accordance with MIL-STD-810; field proven.

Lily-L

The Lily-L clip-on thermal sight for long-range sniper weapons can be mounted on a Picatinny rail in front of a day scope. It is designed for weapons of 0.308in, 0.338in and 0.5in calibre and no re-zeroing or realignment of the weapon is required. The Lily-L sight also has day/night operational capability and dual FOV, enabling surveillance of the target area (wide) and

the engagement of targets to effective weapon range (narrow).

LIZ

The LIZ, or ELOP LIZ, is a multi-sensor day/night EO sight for remote operations. Manufactured by Elbit Systems, the thermal imaging system features grounded thermal imaging technology, a high-resolution detector, an IR optical zoom, a telescope magnifier, a colour day camera with continuous zoom and an integral eye-safe LRF. The sight is lightweight and ruggedised to allow it to be used in harsh environments. It can be operated from any remote console via standard communication and video transmission. Weight: 9,000g

ELBIT SYSTEMS

XACT th family

The XACT thermal weapon sight product family includes: the XACT th64 short/medium-range weapon-mounted or handheld sight; the XACT th65 clip-on marksman sight; and the XACT th100 heavy machine gun sight. The products also allow engagement from short ranges up to 2km. Weight: 450g Range: 1,500m

HENSOLDT OPTRONICS GMBH

Hensoldt IRV 600

The IRV 600 long-range TI NVD was developed for use with assault rifles and light machine guns. The attachment can be added and removed without adjustment and delivers an image that can be magnified by the targeting optics on the weapon. The IRV 600 has an external video port, central control panel and additional Picatinny rail for optional accessories. It is also noiseless and ready to use in five seconds, according to the company. Length: 17cm Width: 10.3cm Height: 13.25cm Weight: 1,100g

Hensoldt IRV 600/A1

The IRV 600 long-range TI NVD was developed for use with assault rifles and light machine guns. The attachment can be added and removed without adjustment and delivers an image that can be magnified by the targeting optics on the weapon. The IRV 600 features an external video port, central control panel and additional Picatinny rail for optional accessories. It is noiseless and ready to use in five seconds, according to the company. Additionally, the thermal sight attachment IRV 600 A1 is the enhancement of the well-tried IRV 600 – developed for assault rifles or light machine guns. The IRV 600 A1 can be either used as a clip-on system with 1x magnification or as a stand-alone aiming optic with digital zoom. Length: 15cm Width: 10.8cm Height: 8.3cm Weight: 895g Range: 500m

Hensoldt IRV 900

The IRV 900 very long-range TI NVD was developed for use on sniper weapons. The detector offers the highest geometric resolution available on uncooled devices, according to Hensoldt. Length: 20.2cm Width: 10.8cm Height: 8.9cm Weight: 996g Range: 760m

KNIGHT'S ARMAMENT COMPANY

AN/PVS-30

The AN/PVS-30 is a long-range thermal clip-on sniper night sight. The sight is able to extend the range of engagement by up to 1,000m and has an integrated adapter that interfaces directly to the MIL-STD-1913 rail for mounting/dismounting from the weapon. The AN/PVS-30 operates on a single AA or DL123 battery.

L3HARRIS TECHNOLOGIES

AN/PAS-13G(V)1 LWTS

The AN/PAS-13G(V)1 Light Weapon Thermal Sight (LWTS) is a handheld or weapon-mounted thermal sight. The TI capability of the LWTS allows for longwave infrared observation and target identification under adverse conditions including light rain, smoke, light snow and low light to total darkness. Length: 23.37cm Width: 9.25cm Height: 11.43cm Weight: 1,134g

CRATOS

The Clip-On Ruggedized Advanced Thermal Optical Sight (CRATOS) is a miniaturised all-in-one thermal weapon sight designed for handheld, clip-on or stand-alone use. Length: 11.56cm Width: 7.62cm Height: 6.6cm Weight: 595g

LEONARDO DRS

IWS

DRS's family of Individual Weapon Sights (IWS) are clip-on IR sights based on equipment developed by DRS for the US Army. With a lightweight and modular construction, the IWS provides a thermal image of target information during day and night and through dust, smoke, light fog and darkness. The IR FPA requires no visible light to operate and will not shut down or bloom when hit by direct light. Length: 25.5cm Width: 8.1cm Height: 9.6cm Weight: 837g

SPARTN

The Sniper Precision Acquisition Rifle Thermal Night Sight (SPARTN) provides day/night and degraded battlefield or weather condition visibility. Its clip-on configuration allows the operator to maintain the existing day scope zero. It also provides bullet trajectory observation. The SPARTN has a hot-swap battery capability and external power feature. The rear-facing focus knob and control are optimised for sniper use. Length: 24.5cm Width: 8.9cm Height: 10.5cm Weight: 1,586g Range: 20m

MEPROLIGHT

Mepro NOA 4x

The Mepro NOA 4X is an uncooled thermal weapon sight designed for shooting at ranges between 50 and 800m by sharpshooters or snipers. The lightweight sight provides medium- to long-range detection and firing capabilities with the operational features of the NOA series: digital zoom, FCS, LRF, automatic ballistic compensation, image capturing and storing and level indication

Mepro NOA 7x

The Mepro NOA 7X is designed for snipers who need to detect and engage targets at ranges beyond 1,000m in variable weather conditions and limited light or darkness. Mepro NOA sights, with high resolution and digital zoom, detect targets in urban or densely vegetated areas, including camouflaged people or targets behind camouflage nets. The Mepro NOA 7X features an electronic level indicator and is able to withstand heavy weapon recoil.

Mepro NOA Dual Field

The Mepro NOA Dual Field is an uncooled thermal weapon sight, designed for long-range sniper rifles operating in harsh environments. The sight functions as a target acquisition system, incorporating an integrated ballistic computer. Its configuration allows transition from a wide FOV for observation to a narrow FOV for target recognition and engagement. The sight is also effective at over 1,000m in all weather conditions and in limited or no light.

Mepro NOA NYX 2X/3X

The Mepro NOA NYX 2X/3X uncooled thermal weapon sights are designed for use with 5.56mm and 7.62mm weapons. Featuring high-resolution microbolometer technology, they provide vision in various scenarios: day, night, fog, snow and low-contrast situations. With its wide FOV and image quality, the Mepro NOA NYX is intended for short and medium ranges, used mainly by sharpshooters or small-calibre snipers. The sight also meets Mil-Spec requirements and has power-saving capabilities based on a motion sensor.

Mepro NOA XT4

The Mepro NOA XT4 is an uncooled thermal dual-use weapon/surveillance device. It clips in-line on a 4x magnifier scope, thus enhancing observation capability and target engagement. Featuring a high-resolution microbolometer, the MIL-STD NOA XT4 enables day and night operations in low-light conditions, dust and smoke scenarios and in darkness. The sight also functions as a handheld thermal viewer for surveillance and covert operations. Weight: 700g

N-VISION OPTICS

TWS-13 Thermal Weapon Sights

The TWS-13 thermal weapon sight provides soldiers with the ability to detect, observe and engage targets in all conditions, day or night. Combining a lightweight housing made out of aircraft-grade 6061-T6 aluminium, with thermal imaging technology the TWS-13 generates IR images and ensures target acquisition at the maximum possible range. The TWS-13 is also designed to be easy to operate with clearly marked digital controls.

NEWCON OPTIK

TVC 60

The TVC 60 is a clip-on thermal weapon sight designed to be used in conjunction with a magnified day optic. The shooter relies on the zeroing of the day optic and does not need to re-zero when attaching or detaching the unit. The TVC 60 utilises an uncooled thermal sensor that allows for the detection of camouflaged targets at long range.

TVS 13M Series

The TVS 13M thermal sight functions in close-quarters battle, medium- and long-range target engagement applications. In-built ballistics software allows for firing on various weapon platforms, and a video output port and internal storage capability enable capture of video and still images. The TVS 13M also has a MIL-STD-1913 quick-release mount and can also be used as a handheld observation tool.

NIGHTLINE

NLT-WS(H)

The heavy variant of NLT's thermal weapon sight family (NLT-WS(H)) is built to US military specifications for use with medium machine guns and high-calibre rifles. It is composed of a FLIR sensor located behind a 100mm lens. The NLT-WS(H) features VOx detection, video output, digital imaging and a digital reticle system. Images are displayed in eight colour modes and an icon-based menu. The system is also fixed in place using an ARMS weapon mount. Length: 26.2cm Width: 9.4cm Height: 7cm Weight: 1,420g

NLT-WS(L)

The NLT-WS(L) thermal sight is designed for use on small-calibre weapons and can also be used handheld. It includes digital imaging and brightness control, black/white polarity and an 800x600 OLED display. Further features include an adjustable digital reticle, display colours and patterns and integral VOx detectors. The compact and lightweight device is mounted on quick-release attachments. Additionally, the battery compartment and six-button keypad are designed for easy use. Length: 17.2cm Width: 7.4cm Height: 7cm Weight: 785g

NLT-WS(M)

The NLT-WS(M) is a large-calibre weapon TI sight and can be used as a handheld system. It includes digital imaging and brightness control, black/white polarity and an 800x600 OLED display. The compact lightweight device also has an adjustable digital reticle, display colours and patterns and integral VOx detectors. Length: 19.8cm Width: 7.6cm Height: 7cm Weight: 926g

NIVISYS

Scorpion

The Scorpion thermal sight combines the attributes of a handheld unit and a weapon mounting. The Scorpion has withstood drop and environmental testing to include immersion tests to 3m. The 12° FOV provides mid-range detection. The Scorpion has been discontinued. However, Nivisys will support the product in the field until December 2016. Length: 28cm Width: 6.9cm Height: 6.9cm Weight: 964g

TACS-M

The miniature Thermal Acquisition Clip-On System (TACS-M) is rugged and waterproof for use in harsh environments and features a red display for visual security. When added to a standard I2 system, TACS-M provides a second channel with LWIR capability, extending engagement capabilities through obscurants. Length: 3.8cm Width: 6.4cm Height: 8.9cm Weight: 166g

TAWS Series

The Nivisys Thermal Acquisition Weapon Sights (TAWS) series provides LW uncooled imaging for surveillance and targeting capabilities during the night and adverse weather conditions. The TAWS Series is lightweight and ergonomically designed. Each sight can be used as a handheld unit or mounted and detached from a Picatinny rail system using the double throw lever mount.

UTAC Series

The Nivisys Universal Thermal Acquisition Clip-on Sights (UTAC) family of longwave uncooled weapon sights provide surveillance and targeting capability during the night and adverse weather conditions. They are available in 160x120, 320x240 and 640x480 VOx formats for use with magnified day optics and sniper scopes. Additionally, the UTAC series, with remote switching capability, allows the operator to control functions from a variety of positions.

UTAM Series

The UTAM Universal Thermal Monocular sight series is designed to be handheld but can be attached to a light machine gun with a MIL-STD-1913 Picatinny rail system. User selectable reticles, digital windage and elevation adjustments are readily available through the onboard software. The monocular can also be easily bore-sighted to any weapon. Additionally, an included remote-control switch provides increased flexibility for the user, integrating the sight and the weapon.

OPTIX

IdentifieR-60/100+LRF

IdentifieR scopes are based on uncooled microbolometer thermal imaging technology and offer various features for ballistic correction, exchangeable reticle patterns, Wi-Fi video transmission and range-finding. IdentifieR-60/100 thermal sights operate in rain, fog and darkness in a passive mode without additional backlight. The design of the sights allows them to be used as portable cameras. Manipulation is made through buttons and a graphical interface organised as an onscreen display.

PAGOT

The PAGOT is an all-weather thermal sight designed for use with RPG launchers such as the RPG-7 series. It is based on microbolometer uncooled TI technology. Enclosed in a durable magnesium housing, the thermal sight features up to 4x digital magnification, several built-in software ballistic reticles to be used with a variety of rocket types and picture enhancement settings for different weather conditions.

ZiR-60

The ZiR-60 thermal imaging attachment is designed to be used with day optical sights mounted on sniper weapons, to convert them into functional thermal sights without the need for further adjustments. Based on uncooled microbolometer TI technology, this attachment allows variable-distance targeting by using just the optical magnification of the day sight and keeps its zeroing centre.



Dragon C (Compact), SR (Short Range), MR (Medium Range) and LR (Long Range) thermal weapon sights (pictured above is the MR version) can be adapted for use on a variety of weapons. (Photo: Qloptiq)

PCO

SCT Rubin

The SCT thermal sight is designed for observation and firing using small arms. The thermal image is displayed in the embedded eyepiece, which automatically shuts off after the shooter takes their eye away, eliminating face illumination. The SCT sight is equipped with an external on-helmet display giving the shooter flexibility in operating the sight at a certain distance from the eyes, for observation and shooting around corners. Additionally, the sight has an energy-saving function. Length: 30.9cm Width: 8.7cm Height: 11.1cm Weight: 1,300g

PYSER SGI

MUNSTI

The MUNSTI uncooled thermal imaging clip-on sight is compact and lightweight, designed for use in front of a day optical sight. It is suitable for sniper weapons, anti-materiel weapons and any weapon where the user wishes to leave the day sight in place. With detection ranges up to 2,760m (man) and 7,000m (vehicle), it attaches by its over-centre throw lever shock absorber base onto a MIL-STD-1913 rail, without affecting the zero of the day sight.

PNP-MTHDS

The PNP-MTHDS Miniature Thermal Imaging Weapon Sight is lightweight and designed in the UK to ISO-9001 quality levels. Available in three models, the PNP-MTHDS offers high-resolution 640x480 images (non-ITAR) with a choice of three lenses, 17mm, 25mm and 35mm, 7 reticules (or no reticule), 2x and 4x electronic zoom. It has a detection distance of over 1,200m. It also attaches via a small MIL-STD-1913 rail adapter with over-centre throw lever. Weight: 335g

TISI

The TISI lightweight uncooled thermal weapon sight is designed for assault and sharpshooter rifles, SMGs and machine guns. It is available with thermal detectors of either 640x480 or 384x288 resolutions and with a choice of optics giving either 3x or 5x basic magnification,

horizontal angles of view of either 7° or 12° and detection ranges of up to 2,760m (man) and 7,000m (vehicle).

TISI-M

Designed for assault and sharpshooter rifles, SMGs and machine guns, the TISI-M is a lightweight uncooled thermal day and night weapon sight which can be used in standalone mode with reticule on and in-line with reticule off. The TISI-M is available with thermal detectors of either 640x480 HD or 384x288 SD resolution with 25 or 45mm optics. This gives detection ranges of up to 1,650m (man) and 4,200m (vehicle) depending on the required choice of model.

QIOPTIQ

Dragon-C 640

The Dragon-C 640 is a lightweight multi-purpose thermal weapon sight developed for military small arms. As an inline scope, it can be attached to Picatinny or NATO-standard rails in front of other sights with a 1x-4x optical magnification. It is also possible to use the scope for surveillance and as a stand-alone device. Length: 15cm Width: 7.5cm Height: 9cm Weight: 453g Range: 1,900m

Dragon-C/SR/MR/LR

Dragon C (Compact), SR (Short Range), MR (Medium Range) and LR (Long Range) thermal weapon sights can be adapted for use on a variety of weapons, mounting to a number of rails. Dragon sights deliver 24/7 man and vehicle detection capability, even in poor visibility, in darkness and through battlefield obscurants. Designed to be low power and rugged, all variants feature an uncooled thermal camera with electronics and optical technologies.

Dragon-S12

The Dragon-S12 is thermal imaging sight developed for use on military and law enforcement sniper rifles. Incorporating an uncooled thermal imager, it aids in the detection, recognition and identification of potential targets in both day and night, as well as in conditions of poor visibility or total darkness. As an inline sight, it can be attached to Picatinny and NATO-standard rails in front of an existing day sight without the need to remove or re-zero the day sight. Length: 19.1cm Width: 8.8cm Height: 10.3cm Weight: 850g Range: 3,000m

Dragon-S

The Dragon-S (Sniper) thermal weapon sight attachment is designed for use with a range of optical day scopes and provides snipers with a 24hr surveillance and target engagement capability. The Dragon-S is factory-set to eliminate the need for re-zeroing when used in conjunction with a day scope, and can be adapted for use on a variety of weapons, mounting to a variety of rails. Length: 23.8cm Width: 8.5cm Height: 8.7cm Weight: 930g

Phoenix-S

The Phoenix-S is a sighting device developed specifically for sniper rifles that incorporates a MWIR thermal imager. It is designed to assist in the detection, recognition and identification of vehicles and personnel at long ranges in low or zero light conditions. As an in

line sight, it can be attached to Picatinny or NATO-standard accessory rails in front of a conventional day sight of up to 25x magnification. This avoids the need for the operator to remove or re-zero existing sights. Length: 28.5cm Width: 8cm Height: 9.5cm Weight: 1,600g Range: 8,800m

Saker

Saker is an ITAR-free fused weapon sight that incorporates both an uncooled thermal imager and an image intensifier. Designed for medium-range surveillance and target engagement, it allows dismounted soldiers to detect, recognise and identify targets in all light conditions, including low light. As an in-line sight, the Saker can be attached to a Picatinny or NATO-standard rail in front of an existing daysight without the need to remove or re-zero it. Length: 18.9cm Width: 8.4cm Height: 7.5cm Weight: 890g Range: 1,500m

Talon

The Talon is a dual-channel optically fused weapon sight that combines an image intensifier and an uncooled thermal imager into a single 650g package. Optimised for short-range and medium-range engagements, the sight allows its user to detect, recognise and identify targets in night conditions. It can also be quickly attached to Picatinny or NATO-standard rails using a quick release lever without the need to remove or re-zero the weapon's day sight. Length: 12.3cm Width: 8cm Height: 7.2cm Weight: 650g Range: 1,000m

RAYTHEON EO INNOVATIONS

Thermal Weapon Sights

The short, medium and long-range Thermal Weapon Sights (TWS) combine rugged, lightweight and modular construction with TI technology, says the company. Raytheon's TWS is an all-weather IR imaging device that is designed to cut through battlefield obscuration to deliver clear surveillance imagery and effective fire control day and night. Since 2000, Raytheon has provided more than 65,000 AN/PAS-13 series TWS to the US Army under various contracts.

RAYTHEON

AN/PAS-13

Currently under contract with the US Army, Raytheon introduced the AN/PAS-13 clip-on thermal weapon sight at the 2013 IDEX event. The AN/PAS-13 family combines rugged lightweight modular construction with thermal imaging technology. They require no visible light to operate and will not shut down or 'bloom' when hit by direct light. The company claims their use cannot be detected since they operate silently and emit no heat or RF energy. Weight: 2,500g

TOW ITAS

The Improved Target Acquisition System (ITAS) for the TOW long-range anti-tank missile provides mobile capability for early-entry forces to destroy advanced threat armour at stand-off ranges in adverse weather, day and night. The ITAS increases target detection, acquisition, recognition and engagement ranges. It also fires all versions of the TOW missile from the M41 ground launcher and M1121 HMMWV platform. Weight: 113,000g

W1000-9

Compatible with a broad range of weapons, the W1000-9 uncooled thermal weapon sight uses IR technology to sense differences in heat emitted by objects in its FOV. It is also able to separate people and objects from cluttered backgrounds, either in daylight or at night, and can cut through dust, smoke, fog and haze. Additionally, it can detect a man at 1km and a vehicle at 2.4km. Magnification: 3.1x Detector: 320x240 staring BST FPA (76,800px) Weight: 1,700g

SAFRAN ELECTRONICS & DEFENSE

IR Sight for Eryx

Safran produces an uncooled IR technology for the Eryx ATGM. It is compact, light and silent – since it does not require cooling – and is attached directly to the firing station's day sight. The sight was developed through advances in optronics achieved in the FELIN soldier system programme for the French Army.

IR Sight for Eryx Anti-Tank Missile Station

Using uncooled IR technology, this sight will be used on Eryx firing stations for night-time combat. It is claimed to be silent since it does not require cooling, and is attached directly to the firing station's day sight. The sight was developed through advances in optronics achieved in the FELIN programme.

Matis Man-Portable

Developed for integration with antitank or anti-aircraft guns and missile systems, this biocular thermal imager can have a micro-scanning device to boost detection and identification performance. Claimed to detect a tank at 10km, a fast jet at 13km and a warship at 22km. Respective recognition ranges are 4.5, 5.9 and 22km. Detector: 3-5µm staring array, inaudible at 50m. Focus range: 50m to infinity. Weight: 6,500g

Milis

Based on the Matis thermal imager, Milis has been designed in cooperation with Euromissile for the MILAN antitank missile system. Detector type: cooled FPA working in the 3-5µm waveband

Odin

Odin is a modular, day/night, round-the-corner, all-thermal sighting system for 12.7mm machine guns and 20mm cannons. Odin capitalises on the advanced technologies in the FELIN soldier modernisation system. It provides better protection for gunners operating crewed weapons from light vehicles or helicopters. Additionally, it enhances firing accuracy, which makes ammunition management more efficient. Weight: 1,300g

Sword Light/Medium

Sword thermal weapon sights are lightweight, compact and designed for use on rifles and machine guns. They have an uncooled IR sensor and an IR channel with digital zoom and an optional red dot sight. Functions of the Sword sight include digital boresighting, optional remote control and optional multimedia functions for use as a portable IR observation system. Weight: 1,000g

Sword T&D

The Sword Thermal and Day weapon sight (Sword T&D) is designed for use on assault rifles, machine guns and rocket launchers. It has digital day and thermal channels with uncooled IR technology. The Sword T&D; sight has digital boresighting and a choice of reticles. Additionally options include a control handle and communications capabilities, including remote observation/firing and image/video capture. Weight: 1,500g

SAFRAN VECTRONIX

TACS-M/-LR

The Thermal Acquisition Clip-on System (TACS)-M attaches to existing NVDs to add additional capabilities. The TACS-LR attaches to the Moskito (see separate entry). The devices are designed to have low power consumption and thus extended operation time. Since TACS-M mounts on currently existing devices with a bracket, the clip-on technology allows increased capabilities without the need to refit helmets for special equipment. Length: 14cm Width: 3.8cm Height: 7.6cm Weight: 150g

SHIBLI

Tarsier

The Tarsier thermal weapon sight is designed to enhance operational awareness through surveillance and target acquisition in day and night conditions. It has an uncooled thermal core and is mountable on a range of weapons. The lightweight sight has ergonomic controls, digital boresighting and a built-in inclinometer. Weight: 1,700g

SIG SAUER

Echo1 Reflex Sight

The Echo1 digital thermal imaging reflex sight features precision-moulded aspheric lens technology, which virtually eliminates aberration and helps to focus the projected image for low-distortion optical performance, according to the company. The sight also features five default reticles and the ability to design new reticles. Length: 11cm Width: 6.5cm Height: 6.8cm Weight: 417g

TELEDYNE FLIR

Armasight Vampire

The Armasight Vampire rifle scope is built with a CORE (Ceramic Optical Ruggedized Engine) image tube, doubling the resolution of Gen I devices. The body of the unit is made from aluminium, with the O-ring sealed and rubber-coated. The Vampire has multicoated all-glass lenses and a manually-adjustable fine reticle for shot placement. It is also water, dust and sand-proof. It comes with tactical rails for lasers or illuminators and has an IR illuminator. Length: 27.5cm Width: 8.7cm Height: 9.5cm Weight: 1,300g

ThermoSight HISS

The ThermoSight HISS S100 and S150 are detachable thermal weapon sights that mount in line with standard optical scopes, which serve as the eyepiece. The HISS provides imaging in darkness and through smoke, fog

and other obscurants. The long-range sights have also been successfully tested on weapons including 50cal sniper rifles. Length: 29cm Width: 10.7cm Height: 9.1cm Weight: 1,700g

ThermoSight HISS-XLR

The HISS extended long-range (XLR) clip-on thermal weapon sight allows snipers to detect and recognise man-sized targets at up to 2,000m, offering a 25% increase compared to previous models. The sight has been tested on weapons up to 50cal. The HISS-XLR also has a built-in ballistics mode that is designed to give an instantaneous target solution when integrated with an LRF and ballistics computer. Length: 29.2cm Width: 11cm Height: 7.6cm Weight: 1,800g

ThermoSight T50 ACTS

The ThermoSight T50 Advanced Combat Thermal Sight (ACTS) is a longwave thermal imaging weapon sight designed to interface with standard day optics. This provides the shooter with the same FOV while preserving reticle calibration and boresight. The periscope unit clears the fixed iron sight to prevent image distortion during sustained fire. Length: 13.5cm Width: 8.9cm Height: 10.2cm Weight: 680g

ThermoSight T70 SU-271/PAS

The T70 SU-271/PAS is a longwave thermal imaging weapon sight that can be clipped on or rail-mounted in front of day optics. The T70 is rugged, small and lightweight, designed for challenging operating environments and tested to withstand 'thousands of rounds' of rapid-fire gun shock. The T70 provides imagery through darkness, fog, smoke, dust and other obscurants. Its low profile allows in-line configuration, minimising height above the rail and reducing interference with other devices. Length: 17.3cm Width: 8.6cm Height: 8.1cm Weight: 700g

ThermoSight T75

The ThermoSight T75 is a longwave thermal imaging weapon sight that can be clipped on or rail-mounted in front of day optics. The T75 is rugged, small and lightweight, designed for challenging operating environments and tested to withstand 'thousands of rounds' of rapid-fire gun shock. The T75 provides imagery through the darkness, fog, smoke, dust and other obscurants. Its low profile also allows in-line configuration, minimising the height above the rail and reducing interference with other devices. Length: 18.8cm Width: 8.6cm Height: 8.1cm Weight: 800g

THEON SENSORS

Thermis

The Thermis family of uncooled thermal sights comprises three variants – light, medium and heavy. The clip-on in-line afocal is designed for use in tandem with medium-range day sights while maintaining the day optic's ballistic zeroing. All three Thermis variants incorporate an IR sensor, electronics and optical technologies to generate IR imagery and ensure target recognition at the maximum possible range.

TRANSVARO ELEKTRON

Engerek-3

The Engerek-3 thermal weapon sight utilises low-power uncooled IR camera technology and is designed for medium-range surveillance and target engagement. The sight has a low battery indicator, auto and manual image optimisation and electronic aiming mark selection and adjustment. Weight: 1,700g

MULTI

The multi-role MULTI TI device from Transvaro is designed for clip-on use on light weapons, and can also be helmet- or head-mounted. The MULTI includes an 850nm IR laser. Weight: 450g

TROYA TECH DEFENSE

Condor

The Condor uncooled thermal sight series is designed for use on marksman and sniper rifles. Lightweight and compact, the Condor utilises an IR detector with high-resolution output. The sight is equipped with a soft carrying pouch, weapon mount, rechargeable batteries, user manual and cleaning microfibre cloth. Weight: 900g Range: 0.15m

LASER POINTERS

BE MEYERS

AN/PEQ-11A

The AN/PEQ-11A (DIAL-100G) is a multifunction aiming laser combining an IR pointer/illuminator and visible green laser. It is in service with US military forces. The laser device is designed to meet the ruggedness and range performance needs of both personal and crew-served weapons, including the M4/M16, M249, M240, M2 and XM312. Weight: 0.38kg Illumination range: 69,000m

The LA-5/PEQ ATPIAL-HP (Advanced Target Pointer Illuminator Aiming Laser - High Power) is a more powerful version of the standard AN/PEQ-15 laser pointer. (Photo: L3Harris Technologies)



L3HARRIS TECHNOLOGIES

AN/PEQ-15 ATPIAL

The AN/PEQ-15 ATPIAL (Advanced Target Pointer Illuminator Aiming Laser) is an infantry laser pointer designed to assist in engagements with enemy forces at night. It consists of both integrated infrared and visible aim lasers, as well as an IR illuminator. Length: 11.7cm Width: 7.1cm Height: 4.1cm Weight: 0.21kg Illumination range: 2,000m

AN/PEQ-16 MIPIM

The AN/PEQ-16 MIPIM (Mini Integrated Pointer Illuminator Module) is a multi-function laser pointer that incorporates an IR laser pointer, an IR illuminator, a visible red laser and a visible LED white light into a single system. Length: 10.41cm Width: 8.13cm Height: 4.32cm Weight: 0.28kg Illumination range: 2,000m

LA-5/PEQ ATPIAL-HP

The LA-5/PEQ ATPIAL-HP (Advanced Target Pointer Illuminator Aiming Laser - High Power) is a more powerful version of the standard AN/PEQ-15 laser pointer. Like the AN/PEQ-15, the LA-5/PEQ consists of both integrated infrared and visible aim lasers, as well as an IR illuminator. However, the power of the visible laser and the infrared illuminator has been updated to provide greater range and better performance in direct sunlight. Length: 11.94cm Width: 7.11cm Height: 4.06cm Weight: 0.21kg Illumination range: 4,000m

NGAL

L3's Next-Generation Aiming Laser (NGAL) is a rugged, compact and lightweight system designed to be compatible with all generations of night vision devices. NGAL uses an illuminator design to achieve a more uniform near-IR illuminator beam for increased situation awareness. It has independent aim and illuminator boresight adjusters, co-aligned aiming beams with boresight retention of 0.5mrad and has adjustable power levels.

LEWIS MACHINE & TOOL COMPANY

LMT-PAL

The LMT-PAL (Precision Aimed Laser) is a compact and lightweight laser pointer, with a focused precision beam profile. It has a quick-disconnect mount, precision windage and elevation control. It has a smooth dial switch operation and is designed to have an enhanced battery life. Weight: 0.15kg

MEPROLIGHT

Sting

The Meprolight Sting is a dual-wavelength laser pointer designed for CQB and covert night operations. The pointer emits a visible or IR laser beam that projects a dot onto the target. Switching between visible and IR modes is controlled by the shooter. There is a single zeroing process for both lasers. There are low and high power options for each of the lasers, and momentary and constant lasing modes.

NEWCON OPTIK

IRIL 1000M

The IRIL 1000M IR laser illuminator complements those wearing I2 night vision devices. It is designed to reach out to far distances to aid in target identification and engagement from ground- and air-based platforms. Equipped with a MIL-STD-1913 quick-release mount, the IRIL series of illuminators can be mounted on virtually any rifle platform or crew-served weapon system. Illumination range: 40,000m

LAM 3G

The LAM 3G three-channel device has a green visible-laser aimer for improved contrast, an IR-laser aimer and an IR illuminator to meet tactical requirements. The LAM 3G has an audible/tactile step adjustment mechanism that holds its positions after multiple discharges. With a low-power training mode and a high-power in-field mode, the unit can be utilised among friendly forces and quickly powered up for real-world target engagements. Illumination range: 2,000m

LAM 10D

The LAM 10D is a single channel IR laser aimer designed to reach out to 1,000m. For night operations, this lightweight device provides high performance and reliability. The unit is constructed of high strength aluminium and can withstand rigors of tactical life on most weapon platforms. Illumination range: 1,000m

NCFL 9 Series

The NCFL 9 series is comprised of compact, mountable illumination/aiming systems that can be used on a wide variety of weapons including handguns and assault rifles. Each model in this series has a unique feature set, ensuring there is an NCFL 9 suited to every application. The NCFL 9 model has an ultra-bright visible light illuminator and an IR laser for use with night vision dev

SEEKER Series

The SEEKER S and SEEKER M represent Newcon Optik's next-generation laser rangefinders. Both of these devices are mountable LRFs that can be boresighted to any optical system. Whether mounted on a rifle, spotting scope, binoculars or thermal imager, these devices provide long rangefinding capability in a compact, lightweight package.

RHEINMETALL

LLM01

The Laser Light Module 01 (LLM01) target marker and target illuminator operates in the visible and IR spectrums. It features a high-intensity white-light lamp, a red-light laser marker and IR laser marker - both of which can be adjusted independently vertically and horizontally - an IR LED close-in illuminator and a turn-switch for selecting the light source. Length: 8.6cm Width: 4.6cm Height: 4.7cm Weight: 0.19kg

LLM Vario-Ray

The Laser Light Module (LLM) Vario-Ray is the successor of the LLM01. The system comprises a high-intensity white light lamp, a red light target market, IR target maker and an integrated electronically fusable IR

illuminator. All of the light sources are infinitely variable and there is a turn-switch to select the light source. Options include an LRF, green laser target marker and SWIR target marker. Length: 10.9cm Width: 6.4cm Height: 4.3cm Weight: 0.24kg

LLM Vario-Ray Compact

The Laser Light Module (LLM) Vario-Ray Compact model is lighter and more compact than the previous model, due to the integration of a fixed LED white light instead of an exchangeable one. All other effectors including the red or green target marker, IR target marker and electronically fusable IR illuminator are the same. All light sources are infinitely variable. Length: 11.2cm Width: 6.4cm Height: 3.5cm Weight: 0.23kg

TAC-Ray 1500

The TAC-Ray 1500 includes the full laser functionality of the LLM Vario-Ray with an integrated LRF. In addition to the electronically focusable IR illuminator, options include a red or green light target marker, IR target marker, a dismounted soldier identification laser interrogator and a SWIR laser target marker. The luminosity of the individual marker or illuminator can be individually altered by the operator. There is an OLED display with automatic brightness control for range information. Length: 12.5cm Width: 3.4cm Height: 7.7cm Weight: 0.3kg

SIG SAUER

Lima Laser Sights

Lima red and green laser fore grips are low-profile rail-mounted laser sights. The laser operates in momentary-on mode, with an additional continuous mode on the Lima1. The centrally located finger-actuated switch supports ambidextrous use. The forward portion of the grip doubles as a hand stop. Lima laser sights are available in three models: Lima7, Lima1 for handguns with rails; and Lima5 for P320 and P250 pistols. Weight: 0.11kg

STEINER DEFENSE

DBAL-A2

The Dual Beam Aiming Laser - Advanced (DBAL-A) 2 is equipped with an IR-laser pointer, an adjustable IR-laser illuminator and a choice of a visible red or green laser pointer. It features high- and low-power modes of operation, co-aligned visible and IR-laser pointers, and remote cable switch and integrated momentary activation switches with a double tap feature - single tap for momentary activation and double tap for five-minute continuous 'On' mode. Length: 8.9cm Width: 7cm Height: 4cm Weight: 0.23kg Illumination range: 1,000m

DBAL-A3

The Dual Beam Aiming Laser - Advanced (DBAL-A) 3 is equipped with an IR laser pointer, an adjustable IR laser illuminator and a choice of a visible red or green laser pointer. It includes high- and low-power modes of operation, co-aligned visible and IR laser pointers and a remote cable switch and integrated momentary activation switches with a double tap feature - single tap for momentary activation and double tap for five-minute continuous 'On' mode.

DBAL-A4 v2

The DBAL-A4 v2 is a new rifle-mounted laser aiming solution which combines visible and IR laser pointers with both long and short range IR illuminators in an all-aluminium package. Operators can choose from either a red visible laser or a green visible laser. Other features include fully adjustable windage and elevation as well as integrated push-button switch and remote cable pressure-pad switch activation. Weight: 0.34kg Illumination range: 3,600m

DBAL-PL

The Dual Beam Aiming Laser - Pistol Light (DBAL-PL) has two operational modes: visible (400lm white light LED and <5mW visible laser simultaneously); or IR (≤0.74mW IR pointer and <600mW IR LED Illuminator simultaneously). Discrete push buttons located on the back of the housing provide momentary activation (single tap) or five-minute continuous 'On' mode (double tap). Co-aligned visible and IR aiming lasers permit a quick zero. Length: 8.8cm Width: 4.1cm Height: 3.4cm Weight: 0.15kg Illumination range: 750,000m

SBAL-PL

In January 2015, Steiner eOptics announced the launch of the SBAL-PL, a pistol-mounted laser-aiming and white-light illuminating system. It combines a battlefield-proven green laser aiming module with a high output and a white-light illuminator for rapid target acquisition and aiming. The SBAL-PL's low parallax allows the operator to minimise the differential between point-of-aim and point-of-impact for increased accuracy at varying ranges. Weight: 0.13kg

SPIR

The Special Purpose IR (SPIR) LED Illuminator is equipped with HD aspherical telescopic lens technology. It is designed for use in conjunction with NVDs and can be paired with a tactical laser to provide increased illumination. The SPIR is equipped with an eye-safe IR LED illuminator and can be handheld or mounted to a MIL-STD-1913 rail using the self-adjusting, Quick Release HT Mount. Weight: 0.18kg Illumination range: 1,000m

TELEDYNE FLIR**Armasight Drakos, Drakos 1/2**

The Armasight Drakos is a series of a multi-spectral Class 1 near IR and visible/near-IR laser aiming device designed to mount via a locking quick-release rail grabber. The Drakos comes equipped with a wireless remote control. The laser operates on a battery which provides more than two thousand two-second activations of the lasers. The series is designed to withstand kinetic recoil of 0.50cal and .338cal Lapua ammunition. Weight: 0.22kg Illumination range: 800m

TRANSVARO ELEKTRON**TV/DLP-2**

The TV/Dual-beam Laser Pointer (TV/DLP)-2 is designed for use on all small arms and crew-served weapons. The IR and visible lasers can be adjusted in the X- and Y-axis independently. Length: 10cm Width: 7cm Height: 4cm Weight: 0.2kg Illumination range: 1,000m

TV/HN-06

The 850nm IR laser-target pointer can be used with different types of weapons and is compatible with NVGs. Standard accessories include a remote control cable, carrying pouch, transport case, lens tissue and brush and operator manual. Length: 11cm Width: 5.5cm Height: 5cm Weight: 175kg Illumination range: 1,000m

TV/MPL

The multipurpose laser pointer (TV/MPL) can be used with different types of weapons and is compatible with NVGs. Length: 21cm Width: 4cm Height: 4cm Weight: 185kg Illumination range: 15,000m

SUPPRESSORS

BARRETT**QDL Suppressor**

The QDL suppressor is designed for use with the Barrett M107A1 anti-materiel rifle and the Model 99 and Model 95 rifles when used with Barrett's muzzle-brake suppressor adapter. The QDL suppressor has its own auxiliary two-port muzzle brake, which reduces the recoil of suppressed fire. When minimal visible signature is required, the bolted-on auxiliary muzzle brake can be easily removed. The QDL's dual-layered tube is also constructed of heat-treated, high-strength alloys. Length: 43.5cm Weight: 0kg

BE MEYERS**240F**

The 240F was developed for use with crew-served weapons, such as the M240 machine gun, in low-light watercraft operations. The 240F is currently in US service. Length: 10.2cm Weight: 0.2kg

249F

The 249F flash suppressor was developed for use with the US Army's M249 Squad Automatic Weapon. According to a US Army evaluation, the 249F suppresses 96% of visible muzzle flash. The 249F can also be mounted on other 5.56mm weapons. Length: 7cm Weight: 0.1kg

2300F

Developed for use with the 50cal M2 heavy machine gun, the 2300F flash hider has been in US service for more than 20 years. Length: 22.2cm Weight: 1kg

DELTA P DESIGN**Brevis II**

The Brevis II line of suppressors comprises 'true' flash hiders and sound suppressors that perform as part of the host system, according to the company. The entire suppressor is constructed as a single homogeneous part without welds, threaded connections, seams or other traditional failure points. Additionally, the lifespan of each suppressor is similar to the barrel life of the host weapon. Length: 14cm Weight: 0.45kg

GEMTECH

Dagger

The Dagger is an all-titanium suppressor designed for semi-automatic .300 Win Mag precision rifles with 18in barrels. It can be used on all smaller calibres and its 'extreme' strength lends itself to use on 12in 308cal short-barrelled rifles. The Dagger has been tested to US Special Operations Command standards. Length: 22.4cm Weight: 0.43kg

GMT-Halo

The titanium GMT-Halo is Gemtech's shortest and lightest Halo suppressor to date. It is designed for use with weapons with 10.3in barrels or longer. The closer mechanism is improved for use on the standard A2 birdcage-style flash hider blank-firing adapter groove. It is also compatible with the Primary Weapon Systems KAC556 mount. The GMT-Halo is made from titanium and Inconel. Length: 34.6cm

One

The One suppressor is the newest addition to Gemtech's Extreme Duty line. It is rated for weapons from fully automatic 5.56mm to .300 Win Mag. To reduce weight, the One is made from titanium and Inconel. It has also been tested to US Special Operations Command standards. Weight: 0.46kg

Patrolman

The Patrolman is part of Gemtech's line of Extreme Duty suppressors and is optimised for use on short-barrelled (10.3in or longer), fully automatic firearms. The baffle stack has been constructed differently from past suppressors and an increase in Inconel gives this suppressor its 'hardcore' properties. It also ensures that it meets US Special Operations Command standards. Length: 14.5cm Weight: 0.35kg

Shield

The Shield is the titanium quickmount variant of Gemtech's Extreme Duty line of suppressors. The Shield features an upgraded baffle stack with an Inconel blast baffle for increased durability on short-barrelled, fully automatic rifles. This enhancement allows the suppressor to pass US Special Operations Command standards. Length: 17.8cm Weight: 0.46kg

SIG SAUER

SRD338Ti-QD

The SRD338Ti-QD is a Grade 5 Titanium silencer that uses fast-attach muzzle devices for mounting. The rear mount has wrench flats to torque the silencer to the barrel. There is a secondary retention latch that is depressed to remove the silencer from the mount. It is rated up to the .338 Lapua Mag and any other rifle cartridges that are of equal or less projectile diameter, pressure and case capacity. The SRD338Ti-QD comes with one 5/8in-24tpi Taper-Lok muzzle brake. Weight: 0.54kg

SRD556

The SRD556 is an Inconel 718 direct-thread silencer for 5.56mm rifles. Inconel 718, a nickel alloy stainless steel, provides a high level of durability. The rear mount has

wrench flats to torque the silencer to the barrel. These wrench flats can be used as a location to 'pin and weld' the silencer to make a shorter barrel over 16in in total length. Length: 15.7cm Weight: 0.42kg

SRD556-QD

The SRD556-QD is an Inconel 718 silencer that uses fast-attach muzzle devices to mount to 5.56mm rifles. Inconel 718, a nickel alloy stainless steel, provides a high level of durability. The rear mount has wrench flats to torque the silencer to the barrel. Additionally, there is a secondary retention latch that is depressed to remove the silencer from the fast-attach mount. The SRD556-QD comes with one 1/2in-28tpi Taper-Lok muzzle brake. Weight: 0.4kg

SRD556Ti

The SRD556Ti is a Grade 5 Titanium direct-thread rifle silencer. The rear mount has wrench flats to torque the silencer to the barrel. These wrench flats can be used as a location to 'pin and weld' the silencer to make a shorter barrel over 16in in total length. Length: 16.3cm Weight: 0.36kg

SRD556Ti-QD

The SRD556Ti-QD is a Grade 5 Titanium silencer which uses fast-attach muzzle devices to mount to a rifle. The rear mount has wrench flats to torque the silencer to the barrel. There is a secondary retention latch that is depressed to remove the silencer from the mount. Additionally, the SRD556Ti-QD is rated up to .300 Win Mag and any other rifle cartridges that are of equal or less projectile diameter, pressure and case capacity. Weight: 0.33kg

SRD762

The SRD762 is an Inconel direct-thread rifle silencer. The rear mount has wrench flats to torque the silencer to the barrel. These wrench flats can be used as a location to 'pin and weld' the silencer to make a shorter barrel over 16in in total length. The SRD762 is rated up to .300 Win Mag and any other rifle cartridges that are of equal or less projectile diameter, pressure and case capacity. Length: 18.3cm Weight: 0.49kg

SRD762-QD

The SRD762-QD is an Inconel 718 silencer which uses muzzle devices to attach to rifles. Inconel 718, a nickel alloy stainless steel, provides durability. The rear mount has wrench flats to torque the silencer to the barrel. There is also a secondary retention latch that is depressed to remove the silencer from the mount. The SRD762-QD is rated up to .300 Win Mag and any other rifle cartridges that are of equal or less projectile diameter, pressure and case capacity. The SRD762-QD comes with one 5/8in-24tpi Taper-Lok muzzle brake. Weight: 0.48kg

SRD762Ti

The SRD762Ti is a Grade 5 Titanium direct-thread rifle silencer. The rear mount has wrench flats to torque the silencer to the barrel. These wrench flats can be used as a location to 'pin and weld' the silencer to make a shorter barrel over 16in in total length. The SRD762Ti is rated up to .300 Win Mag and any other rifle cartridges that are of equal or less projectile diameter, pressure and case capacity. Weight: 0.5kg

SRD762Ti-QD

The SRD762Ti-QD is a Grade 5 Titanium silencer which uses fast-attach muzzle devices for mounting. The rear mount has wrench flats to torque the silencer to the barrel. There is a secondary retention latch that is depressed to remove the silencer from the mount. It is rated up to .300 Win Mag and any other rifle cartridges that are of equal or less projectile diameter, pressure and case capacity. Length: 21.3cm Weight: 0.48kg

SILENCERCO**5.56 Saker**

The 5.56 Saker rifle suppressor has an interchangeable front cap feature for different purposes such as a flash hider. The baffles are made from a material which is approximately 30% stronger than Inconel, according to the company. Additionally, the multiple accessory attachment device allows the Saker to attach to pre-existing quick-detach mounts. Length: 17.1cm Weight: 0.51kg

9mm Osprey

The Osprey sound suppressor has a multi-calibre design for use on modern combat handguns. Designed with the bore not running down the middle of the tube means that most of the baffles and internal volume is beneath the centre line of the bore and out of the way of the weapon's sights. This gives the shooter the ability to use factory sights with little or no sight or target obstruction. Length: 20.5cm Width: 3.3cm Height: 4.4cm

Specwar 556/762

The Specwar 556 and Specwar 762 suppressors are designed for use with automatic rifles. They feature the company's Active Spring Retention mounting system. According to the company, its installation and removal takes seconds. Length: 22.9cm Weight: 0.68kg

SUREFIRE**FA338SS**

The Fast Attach 338cal Sound Suppressor (FA338SS) is designed for use on the Accuracy International AWM, Sako TRG-42, Armalite AR-30 or other semi-automatic or bolt-action .338 Lapua Magnum rifles. The overlap design requires at least 69.85mm of clear barrel, measured from the muzzle rearward. All SureFire sound suppressors require an adapter for attachment to a firearm. Additionally, SureFire's Total Signature Reduction cuts sound, flash and dust signature. Length: 27.9cm Weight: 0.65kg

FA556-212

The Fast Attach 5.56mm (FA556)-212 sound suppressor is designed for use on the AR-15, C8 SFW, HK416, M4, M16 and SA-80. Firearms with 266.7mm barrels using standard M855 ammunition have their average maximum sound pressure level reduced to below the OSHA 140dB safe level. All SureFire sound suppressors require an adapter for attachment to a firearm. Additionally, SureFire's Total Signature Reduction cuts sound, flash and dust signature. Length: 15.2cm Weight: 0.45kg

FA556MG

The Fast Attach 5.56mm Machine Gun sound suppressor (FA556MG) is designed for use on the M249, MK46 or

Para versions of the Minimi M249 SAW. All SureFire sound suppressors require an adapter for attachment to a firearm. SureFire's Total Signature Reduction cuts sound, flash and dust signature. The FA556MG has an alloy construction for resistance to gas and particle erosion, necessary for use on an automatic weapon. Length: 17.1cm Weight: 0.59kg

FA762K

The Fast Attach 7.62mm sound suppressor (FA762K) is designed for use on the Armalite AR-10, Knight SR-25 Battle Rifle, Bushmaster BAR-10, DPMS LR308, M1A, M14, Mk14 EBR, Springfield Scout, HK 417 or other 7.62mm-calibre rifles. The FA762K will also fit bolt-action rifles, such as the Remington 700P, that are threaded to accept a compatible SureFire suppressor adapter. SureFire's Total Signature Reduction cuts sound, flash and dust signature. Length: 21.3cm Weight: 0.54kg

FA762MG

The Fast Attach 7.62mm Machine Gun sound suppressor (FA762MG) is designed for use on the M240B, D, G or Mk48 7.62mm MG, while providing sound suppression. The overlap design requires at least 69.85mm of clear barrel, measured from the muzzle rearward, so the front sight must be moved back slightly on M240s. The FA762MG features alloy construction, providing the high durability and resistance to gas and particle erosion necessary for a fully automatic weapon. Length: 27.9cm Weight: 0.82kg

FA762SS

The Fast Attach 7.62mm Sound Suppressor (FA762SS) is designed to attach to the AR-10, Bushmaster A2 and A3, M1A, M14 or other semi-automatic or bolt-action rifles. The tight suppressor bore is also suited for sniper rifles. The barrel overlap design requires at least 69.85mm of clear barrel with a maximum diameter of 19.68mm. All SureFire sound suppressors require an adapter for attachment to a firearm. SureFire's Total Signature Reduction cuts sound, flash and dust signature. The heat-resistant FA762SS features minimal and consistent zero shift regardless of attach/detach cycles and fail-safe baffles to prevent bullet side-exit. Additionally, the suppressor is designed to outlast the weapon's barrel life. Length: 24.9cm Weight: 0.54kg

MINI

The MINI adds 70mm to a weapon's length. Its light weight adds minimal change to the portability, stowability and manoeuvrability of an AR-15, M4, M16, C8 SFW or another rifle. The MINI reduces the average maximum sound pressure level below the OSHA 140dB safe level. SureFire's Total Signature Reduction also cuts sound, flash and dust signature. Length: 12.7cm Weight: 0.4kg



EQUIPMENT

SOFTWARE-DEFINED RADIOS

A selection of the latest software-defined radio (SDR) systems. The flexibility and programmability of these radios are essential to network-centric operations.

Entries are arranged alphabetically by manufacturer.

If you think your product should be listed, please contact the team at insight@shephardmedia.com to ensure it appears in the *Shephard Defence Insight* online database (plus.shephardmedia.com) and is included in the next handbook edition.

ABOVE: A 3rd Regiment Royal Horse Artillery lance bombardier calls in artillery fire from Enhanced Forward Presence Battlegroup Poland during Exercise Cougar Crawl. (Photo: UK MoD/Crown Copyright)

AIRBUS DEFENCE & SPACE (GERMANY)

TPH900

The TPH900 Tetrapol is a hand-portable radio for voice and data communications. The TPH900 is also the latest generation of Tetrapol, following the TPH700 and P2G. The design is compact and large keys contribute to handling, while the welcome screen provides access to communications with a display of key information. An additional feature includes the radio having integrated GPS and can automatically transmit its location in the event of an emergency call, or on end-user request through a dedicated shortcut key.

ASELSAN

Meerkat

At IDEF 2017, Aselsan presented the Meerkat handheld communication monitoring receiver. Meerkat was in development for two years, built on Aselsan's experience in receiver technology. The system has an instantaneous bandwidth of 80MHz for detecting, monitoring and demodulating RF communication signals. Meerkat is a compact system of RF tuners/synthesisers and digital processing unit in one small package and can be powered using one battery pack for 2 hours. Length: 6.5cm Width: 10cm Height: 2.2cm Weight: 0.5kg

PRC-5712 Soldier Radio

The PRC-5712 offers full duplex communications that meet operational requirements, allowing conferencing and VOX operation. Priority-based voice conferencing allows up to five simultaneous speakers on the net, while other users can monitor the conference call. Digital voice coding and TDMA techniques are employed to achieve full-duplex voice and data communications. The Soldier Radio can communicate up to 1km in rural terrain. VOX operation with standard headset also enable hands-free communications. Length: 4.2cm Width: 4.2cm Height: 12cm Weight: 0.36kg Range: 1km

SDR Family

Designed to provide high-speed data and voice communications to support land, maritime and air platform applications on the digital battlefield. The family of SDRs consists of handheld, manpack, vehicular and base station radios that are able to provide seamless communications among tactical users through secure voice, data and video.

ATLAS ELEKTRONIK

TX 310K

The TX 310K software-based transmitter is rated at 10kW PEP/average output in the 1.5-30MHz HF band, and shares the performance characteristics of the HF Series 3000 family. Designed for fixed military and land-based stations, it provides tactical and strategic HF communication of both voice and data, and is compatible with all military-standard waveforms applicable to these radios. Length: 75cm Width: 230cm Height: 210cm Weight: 1,450kg

TX 3500

The TX 3500 is a 5kW software-based transmitter derived from the 10kW TX 310K and featuring the

same performance characteristics. The transmitter is designed for use in fixed military and land-based stations, providing tactical and strategic HF voice and data communications and is compatible with all military standard waveforms applicable to the HF 3000 family. Length: 75cm Width: 110cm Height: 210cm Weight: 732kg

BITTIUM

Bittium TAC WIN

Bittium Tactical Wireless IP Network (TAC WIN) is a high-data-rate system designed to create battleground IP networks as a backbone to support data and voice transmissions during operations. The design meets MIL specifications, enabling vehicle and cabin installations in harsh environments. IP-compatible, Bittium TAC WIN can be used in high-data-rate MANET, link and connection network configurations with one waveform. Length: 40cm Width: 36cm Height: 23cm Weight: 18kg

Bittium Tough SDR

The Bittium Tough SDR is the latest member of Bittium's product range and was launched in August 2017. The Bittium SDR family includes the handheld radio for individual soldiers and the Bittium Tough SDR Vehicular tactical radio for vehicle installations. The radios are also designed to endure harsh conditions and can be installed in different surroundings. Length: 23.6cm Width: 7.3cm Height: 4.5cm Weight: 0.95kg

Bittium Tough VoIP

The Bittium product family includes Bittium Tough VoIP Field Phone, Tough VoIP Terminal, Gigabit PoE+ Injector and Network Extender. In 2016 Bittium introduced the Tough VoIP Service software product, which allows for fixed data and wireless tactical data network users to be connected to the same voice service network. The other products in the family are VoIP clients and network extension units. These are intended to provide broadband connectivity and reliability of services regardless of the availability of network services such as SIP or DHCP. Bittium products can also interoperate with commercial equipment and infrastructure. Length: 29cm Width: 20cm Height: 5cm Weight: 1.65kg

Tough Comnode

Exhibited at DSEI 2017, the Bittium Tough Comnode is a rugged terminal and IP communication device for tactical networks. The device addresses the data transfer needs for mobile troops, for example as a SIP/VoIP phone, IP router or symmetrical high-speed digital subscriber line repeater/modem. Bittium Tough Comnode is compatible with Bittium TAC WIN system, Tough SDR tactical radio and Tough VoIP products, as well as other third party equipment and systems. Weight: 0.58kg

BOEING DEFENSE, SPACE & SECURITY

CSEL

The Combat Survivor Evader Locator (CSEL) is a military search and rescue (SAR) system providing multi-satellite, over the horizon (OTH) communications and military GPS in a small, rugged, lightweight handheld radio. It provides geopositioning information and secure two-way data communications capability that enables joint SAR



The AN/ARC-210 is a software-programmable V/UHF radio system. (Photo: Collins Aerospace)

centres and recovery forces to locate, authenticate and communicate with isolated personnel in near-real time. Weight: 1kg

COBHAM AEROSPACE COMMUNICATIONS

RT-7000

The RT-7000 PMR (Panel Mount Radio) is a panel mount, tactical radio that has been designed for public safety and parapublic voice communication needs. The RT-7000 has a length of 11.43cm, a width of 14.48cm and weighs 3.85kg. The radio supports 29.7 to 960MHz communication with up to three embedded and individual channels, providing the equivalent of three individual radios. In addition, the system also supports up to two external handheld radios. Length: 11.43cm Width: 14.48cm Weight: 3.85kg

RT-7000RCDU

On 15 December 2017, Cobham Aerospace Communications announced it has begun production of a remote controller for their RT-7000PMR. Part of the Flexcomm family of airborne tactical radios, the new RT-7000RCDU (Remote Control Display Unit) connects to an RT-7000PMR and replicates the radio's primary control and display in every way.

CODAN COMMUNICATIONS

2110M

The 2110M Manpack Transceiver is a portable SDR that can deliver secure HF voice and data communications. Designed for use in difficult terrain and weather conditions, the radio and battery compartment are waterproof and can be fully immersed. Able to transmit in 1.6MHz to 30MHz frequency range and receive in the 250KHz to 30MHz range, the radio is fitted with internal frequency hopping and voice encryptor options for added security. Length: 35cm Width: 24.5cm Height: 9cm Weight: 5.3kg

Sentry-H 6110-MP

The Sentry-H 6110-MP is a rugged man-portable Software-Defined Radio (SDR) designed to provide

secure voice and data communications while on the move. Able to transmit in the frequency ranges of 1.6MHz-30MHz and receive in the range of 250KHz-30MHz, the radio has an overall weight of less than 5kg and a running time of up to 55 hours on a single battery. Equipped with a flexible architecture, the system to be customised to meet different customer requirements. Length: 28.4cm Width: 24.6cm Height: 9.6cm Weight: 5kg

Sentry-V

The Sentry-V is a digital handheld radio that has backwards compatibility with analogue systems. Able to operate in several frequency bands, the radio can store 1,024 channels and 64 zones. In order to provide greater situational awareness for its user, it can be configured with on-screen mapping. Length: 4.5cm Width: 6.8cm Height: 16.7cm Weight: 0.58kg

COLLINS AEROSPACE

AN/ARC-210 Gen5

The AN/ARC-210 is a software-programmable V/UHF radio system. It features a multi-mode integrated communications system, which provides two-way multi-mode voice and data communications in either normal, secure or jam-resistant modes, via LoS or SATCOM (Dedicated, DAMA, IW). The ARC-210 family of equipment comprises several variants of the receiver-transmitter and associated ancillary products. They each provide a specific combination of functionality to meet user platform requirements. Length: 25cm Width: 12.7cm Height: 14.2cm Weight: 6kg

AN/PRC-162

The AN/PRC-162 is a two-channel software-defined radio that has been selected for the US Army's Handheld, Manpack and Small Form Fit programme. The SDR is also available in both narrowband and wideband waveforms. Length: 33.02cm Width: 21.6cm Height: 8.6cm Weight: 6.03kg

HF-9500

The HF-9500 HF radio system software can be updated through the radio's MIL-STD-1553B serial control interface, allowing a renewable growth path to add emerging STANAG waveforms such as STANAG 4444, STANAG 4538, STANAG 5511 and ARINC 635/HFDL. The HF-9500 receiver/transmitter internal control software uses the Ada programming language and is contained in Flash reprogrammable memory, facilitating software field upgrades. Software updates can be accomplished via the MIL-STD-1553B bus utilising the MIL-STD-2217 protocol. Weight: 39kg

MDM-HF

The MDM-3001, MDM-2201 and MDM-2501 multi-mode HF data modems provide single-tone (serial) HF data communications capability in accordance with the requirements of MIL-STD-188-110A (para 5.3). In addition to this mode, the modems provide up to 13 additional waveforms, including STANAG 4285 single-tone.

MDM-Q9604

Collins Aerospace's MDM-Q9604 high-speed, high-data-rate HF modem is capable of transmitting data over a

standard 3kHz single sideband at 9,600b/s or a 6kHz ISB at 19,200b/s. The MDM-Q9604 features three-channel (9kHz bandwidth) and four-channel (12kHz bandwidth) operation providing data rates up to 64,000b/s in the latter mode. The modem provides a waveform selection that includes V/UHF autobaud and configurable system parameters enabling data transmission even in distressed channel conditions. Length: 40.6cm Width: 40.6cm Height: 4.4cm Weight: 3.9kg

RT-1851C

The RT-1851C digital transceiver provides data, voice and imagery transfer. It will support Bandwidth Efficient Advanced Modulation (BEAM) technology, which offers data transfer rates up to 100kb/s LoS and 80kb/s SATCOM in a 25kHz channel. The highest data rates over such channels without BEAM has been 56kb/s using MIL-STD-188-181B, which requires more than three times the signal power of BEAM. Length: 25cm Width: 13cm Height: 14cm Weight: 5.5kg

Talon V/UHF Radios

The Talon V/UHF is an international version of the ARC-210 family of radios. The software defined radio (SDR) allows users to upgrade their V/UHF capabilities via software reload for future growth. The Talon waveform allows the integration of the Rijndael encryption capability and the country-unique identification code. The SINCGARS software waveform is only available via country-to-country FMS case. All other waveforms can be exported after obtaining export authorisation from the US Department of State.

TruNet

TruNet is a software-defined network communications system including ground, airborne and handheld radios. It features networking waveforms, apps, ancillaries and services. It is designed to provide secure connectivity between ground and airborne elements. The system gives ground and airborne forces the ability to share secure images, voice and video communications in real time.

COMMTACT

Argus Digital Modems

Commact's line of digital transmitters is designed for UAV applications. Using the technology of its Argus family of digital modems the company can tailor wireless solutions, while having flexibility regarding the overall data link configuration and performance. Length: 17cm Width: 10cm

COMTECH TCS

Lynx

Lynx routers support extended LTE broadband, mobile networking and application needs for a range of mobile platforms, for remote field location missions and across large geographic areas. This allows the user to connect devices using LTE, MANET, Wi-Fi and Bluetooth; aggregate data from sensors, smart devices and cameras; and perform real-time analysis.

Ultra Trilos radio

The Warfighter Information Network (WIN-T) TCS Ultra Trilos radio offers point-to-point and point-to-multipoint

radio communications up to 200Mb/s aggregate. The radio is software-defined and has flexibility to operate in NATO bands 3, 3+ and 4. Additionally, the Trilos Universal Networking Waveform (UNW) by Ultra Electronics TCS enables end-to-end connection across multi-tier operational and hierarchal networks. The high-band, high-capacity, adaptive waveform is powered by the Tactical MIMO Engine. Length: 9cm Width: 20cm Height: 23.5cm

CUBIC MISSION SOLUTIONS

AN/ARS-6(V12) PLS

The new AN/ARS-6 (V12) Personnel Locator System (PLS) Receiver/Transmitter (R/T) is a functional replacement for the old AN/ARS-6. These systems are used to locate missing personnel by monitoring radio channels used by US survival radios. Compared to the AN/ARS-6, the (V12) variant adds several capabilities such as extended coverage and a greater degree of interoperability. Length: 37cm Width: 13cm Height: 16cm Weight: 6kg

Atlas Baseband Kit

Atlas kits are high-data-rate, ruggedised full-motion-video (FMV) baseband kits that support the backhaul, storage, reception, transrating/transcoding and overall management of real-time FMV from the enterprise to the edge. The system provides access to secure (red) and non-secure (black) networks and integrates with the US DoD's enterprise video dissemination system to manage real-time video with Unified Video software. Height: 64cm Weight: 31kg

Elite Access

Elite Access is a portable device that provides secure team communications. The device connects classified devices such as laptops to public networks through integrated Wi-Fi, cellular and cabled network ports. It is also capable of satellite connectivity and operates by switching between available connections to maintain connectivity. Additionally, the Elite supports voice, video and data connectivity. Length: 16.1cm Width: 17.6cm Weight: 0.9kg

Elite Fusion

Elite Fusion provides secure portable team communications over public networks including cellular, satellite and fixed-line networks. The device features smart network switching that constantly checks network availability and in the case of a link failure will automatically switch onto another network. Length: 32.2cm Width: 17.6cm Height: 3.2cm Weight: 1.6kg

GATR 950 Outdoor Modem

The GATR 950 is a rugged, outdoor modem based on iDirect Velocity technology that optimises the data transfer rate with emerging high-throughput satellite constellations. Features of the GATR 950 include a built-in digital signal strength metre, embedded spectrum analyser, web-based graphical user interface and direct current power injection unit.

GATR 1050TS Outdoor Modem

The GATR 1050TS is a ruggedised, outdoor modem based on Comtech EF Data-1050TS technology. The Frequency Division Multiple Access (FDMA) satellite modem is

compatible with current US DoD FDMA teleports. Features of the GATR 1050TS include two LAN ports for flexible networking; an embedded spectrum analyser; web-based user interface for real-time configuration; commissioning and monitoring of the satellite router; waterproof enclosure and operational temperature of -32 to +55°C.

GATR e850 Outdoor Modem

Cubic's GATR e850 is a rugged broadband outdoor modem ideal for mobile/transportable communications, based on the iDirect e850 board set. Features include a waterproof enclosure (MIL810G, Method 506.5, procedure1); two LAN ports for flexible network configuration; -32 to +55°C operating temperature range; DC injected on IFL to power the LNB (18V, 0.75A Max); 10MHz reference for LNB and BUC; and switchable DC power (24V, 5A max) on IFL to power low power HPA.

GATR Inflatable Tropo SATCOM Terminal

The portable and inflatable Ground Antenna Transmit and Receive (GATR) Tropo can be packed into five cases weighing less than 281kg. It is also 50% to 80% less in volume and weight than current rigid troposcatter antennas, according to the company. The GATR Tropo is available in 1.2m, 2.4m and 4m sizes and can operate in extreme environments as they are able to receive tropo signals over diverse terrains when the antennas are elevated to 4m.

GATR-FLEX Foldable SATCOM Terminal

GATR-Flex antenna is a foldable, parabolic reflector designed to enable efficient signal transfer. The design of the dish enables it to maximise bandwidth with emerging high-throughput satellites and existing constellations. The antenna can be assembled in less than three minutes and is airline carry-on compliant. The system comes in a manual point configuration for azimuth and elevation control. Weight: 9kg

Inflatable Portable SATCOM Terminals

Cubic's Ground Antenna Transmit and Receive (GATR) provides portable, inflatable SATCOM terminals that provide comparable performance to rigid deployable antennas, but with up to 90% reduction in size/weight. The GATR inflatable SATCOM terminals and accessories include stationary 1.2m, 2.4m and 4m terminals, a tracking terminal, as well as non-SATCOM troposcatter solutions.

Small UAS CISR

Cubic's Secure ISR Radio (SCISR) for small unmanned aerial systems is a rugged common data link (CDL) multi-band (L, S, and C) full-duplex transceiver for secure communication of video and other information. Designed and built for SWAP-constrained applications that require waveform interoperability, the common ground data (CGD) terminal is under 0.5kg. Its programmable architecture can also support multiple waveform types, particularly those described by US government standard specifications (such as BE-CDL).

Vocality Basics Series

The Basics family of Cubic products provide a range of connectivity options while remaining the smallest and lightest of Cubic's products. The Basics range has

been designed for remote locations in which small form factor and high port density is critical. The products offer connectivity options including telephones, radios, IP and serial that enable the user to create a single unified network regardless of remote device technology. Length: 123cm Width: 136.5cm Height: 26.5cm Weight: 0.31kg

Vocality OPUS RoIP

The OPUS Radio over IP (RoIP) is a small form factor radio gateway that supports connection to a wide range of push-to-talk (PTT) radio manufacturers' equipment. It also offers a range of connectivity including 4G LTE, Wi-Fi and satellite.

Vocality OPUS SD20

The OPUS SD20 is a network optimising unit that is pre-installed and ready to use straight out of the box. The system is designed to transmit data efficiently and ensure that voice calls are clear and video transmissions remain smooth and jitter free. OPS SD20 unifies PACE+ voice optimisation and TCP acceleration technologies as a single unit. The system is capable of optimising up to 20 voice calls and accelerating up to 1000 TCP sessions. Length: 11.6cm Width: 11cm Height: 4.9cm

Vocality OPUS Suite

OPUS Suite is a family of software products designed to offer network enhancement technologies. It allows users to achieve network acceleration and optimisation from a single software solution, straight from the box. The technology is designed to ensure that data is transmitted efficiently, voice calls are clear and video transmission remains smooth and jitter free. By using web and DNS caching, OPUS Enhance avoids duplicate data transfers, saving bandwidth and improving response times.

Vocality Pro Series

The Pro Series includes the V25, V50, V150 and V20. These are designed to be used in a central communications hub or as part of a rapid deployment flyaway communication kit. The rackmount units provide a wide

The Diamond Wireless Intercom System is the wireless variant of Drumrange's Diamond digital intercom and radio combiner. (Photo: Drumrange)



range of connectivity via a modular card-based system and offer redundant power supply options. The V25 is a small, powerful multiplexer and router device delivering voice and data with low overhead costs, space and bandwidth.

DATA LINK SOLUTIONS

MIDS JTRS

Data Link Solutions (DLS) and Thales signed an agreement to co-operatively produce and sell Multi-functional Information Distribution System (MIDS) terminals for the American military's Joint Tactical Radio System (JTRS) requirement. DLS lead the development effort on MIDS JTRS under an \$82 million product improvement programme contract. The MIDS JTRS is a four-channel radio designed to run the Link 16 waveform and up to three additional communication protocols, including the Airborne Networking Waveform. Length: 34cm Width: 19cm Height: 19cm Weight: 23kg

DATRON WORLD COMMUNICATIONS

PRC1099A

The PRC1099A is a rugged and lightweight HF tactical manpack transceiver. It features an internal antenna tuner and memory mode where it stores the tuned configuration of up to 100 channels for scan mode operation and silent tuning when necessary. The channels on the radio can be programmed from either the front panel of the radio or remotely from a computer. Width: 10.5cm Height: 28.2cm Weight: 4.4kg

DOMO TACTICAL COMMUNICATIONS (DTC)

IP Mesh Radios. SOLO8SDR

DTC's NETNode IP mesh radios are tactical communications and surveillance solutions that are combined in a self-forming, self-healing mesh radio network. NETNode radios use the DTC COFDM modulation scheme and offer RF penetration, range and optional network security using AES128 or AES256 data encryption. By utilising multiple mesh networks aggregated in a single system, using DTC Mission Commander Software, DTC can provide situational awareness to central control facilities from body-worn, vehicle and fixed-location video transmitters.

Special Role Radio

In February 2018, Domo Tactical Communications (DTC) announced the development of a new Special Role Radio (SRR), designed for tactical and special operations. The SRR is designed to meet the requirements of operations where robust, encrypted, tactical mobile communication links are needed to provide enhanced situational awareness. Length: 14.6cm Width: 7.1cm Height: 3.8cm Weight: 0.65kg

DRUMGRANGE

Diamond

Diamond is a digital intercom and radio combiner system for use on land and maritime platforms, including high speed patrol craft. Diamond has been

designed to provide crew members with independent access to secure and non-secure communication networks, uninterrupted intercom facilities and full control of voice activated communication at any time. The radio system can accommodate up to eight users and six radios with an additional two configurable digital outputs. Width: 22cm Height: 7.5cm Weight: 3kg

Diamond Wireless Intercom System

The Diamond Wireless Intercom System is the wireless variant of Drumgrange's Diamond digital intercom and radio combiner system and has been designed for use on maritime craft and in small vehicles. The system is able to provide communication between eight users wirelessly via a push-to-talk button connected to lightweight, portable body worn devices. Additional hubs can also be added to increase the number of users. Length: 20.5cm Width: 18.5cm Height: 4cm Weight: 1kg Range: 0.1km

ELBIT SYSTEMS

GRC-408E

The GRC-408E is described as a high-capacity, multi-interface IP and time division multiplexing (TDM) radio relay. It is the latest generation of LoS broadband radio relays developed by Elbit Systems. Designed to meet present and future tactical communications needs, the SDR relay supports IP and legacy communication protocols (G703, EUROCOM and others). This ECCM-capable relay is battle-proven and in use with the USN, the IDF and other armed forces. Length: 27cm Width: 44cm Height: 40cm Weight: 33kg

GRC-2000C

The GRC-2000C is a military LoS frequency-hopping multi-channel HF radio relay designed to have resistance to jamming and interference. It features Band four orthogonal fast frequency hopping for simultaneous, interference-free communications, and built-in error correction and interleaving. The system also features a GPS receiver and supports an optional antenna positioner unit for tactical deployment and automatic link establishment. Length: 28cm Width: 44cm Height: 39cm Weight: 33kg

MCTR-7200

Part of the E-LynX family, the field-proven MCTR-7200 is a tactical software-defined radio with software communications architecture, an intuitive user interface and multiple configuration options. That includes handheld, vehicular, maritime and airborne configurations. The system supports continuous frequency coverage of 30-512MHz with multiple waveforms. Additionally, the MCTR-7200 family contains powerful programmable hardware that offers reliable triple-play services.

Micom-3

The Micom-3 family of HF radios is designed for long-range, independent communications in fixed or mobile configurations. Providing 125W PEEP and a VG power output with high-RF performance, Micom-3 supports data rates of up to 19.2Kb/s using its ISB operation mode and an internal/external high-speed ISB modem. Micom-3 products meet a range of operational needs by

complying with international standards, including FCC, CE and various military standards.

MIPR

The Military IP Radio (MIPR) is described as a next-generation tactical IP radio designed to deliver high-speed broadband data communication to the battlefield. Modular and configurable, MIPR is designed for a variety of missions. Providing connectivity for 'dozens' of members per network, MIPR supports various configurations, including point-to-point, point-to-multipoint and MANET. Additionally, MIPR is designed to support bandwidth of up to 13.3Mb/s for the transmission of high-resolution video and images. Length: 21cm Width: 25cm Height: 8cm

PRC-149 PLBVT/URT-140

The AN/URT-140 emergency locator transmitter (ELT) and AN/PRC-149 personal locator radio and voice transceiver (PLBVT) are LoS Cospas-Sarsat beacon SAR locators. The radio sets, intended for use in non-CSAR missions when training or flying over friendly territory, are designed for a variety of mission types. Mounted in a small package in the pilot's ejection seat, the AN/URT-140 is automatically activated upon ejection, transmitting a unique, programmable ID number. Length: 5cm Width: 9cm Height: 19cm Weight: 0.85kg

PRC-434G/CS

The PRC-434G/CS personal survival radio is a handheld, lightweight transceiver that is capable of responding to interrogations transmitted by the airborne location system. Short-burst transmissions are used to minimise the risk of interception and detection. Voice communications, messaging, GPS data reception/transmission and beacon transmissions are also available. Additionally the transponder responds to selective call interrogations and enables the searching subsystem to determine range and direction to the survivor. Length: 5cm Width: 9cm Height: 15cm Weight: 0.87kg

PRC-434G/SV

The PRC-434G/SV software-programmable digital personal survival radio provides GPS location response to airborne interrogators, another PSR on the ground, or manually initiated and received from the ARS-700 Airborne Interrogator and Guidance System and/or the PSR. The transponder operates in response to interrogation with a selective code (one million possible codes). The radio operates at two emergency frequencies (121.5 and 243MHz), and 243 channels can be selected and programmed at squadron level. Length: 5cm Width: 9cm Height: 15cm Weight: 0.85kg

PRC-434P/CS

The PRC-434P/CS personal emergency locator beacon is a handheld, lightweight radio transceiver. Voice communications, GPS data transmission and beacon transmissions are also available. An embedded GPS receiver provides global geolocation capabilities. Additionally, add-on Cospas-Sarsat circuitry provides transmission of Cospas-Sarsat data messages. Length: 5cm Width: 8.5cm Height: 15cm Weight: 0.87kg

PRC-710

The PRC-710 is a VHF/FM voice and data handheld radio with COMSEC and ECCM capabilities. Designed in response to emerging combat requirements, the PRC-710 is compatible with the frequency-hopping CNR-900 and CNR-9000 systems. It completes the families of manpack, vehicular and fixed station radios. As well as ECCM and security, the system features error detection and correction codes along with automatic data-rate adaptation and man-machine interface. Weight: 0.75kg

PRC-710MB

The PRC-710MB was developed to meet the growing demand for military voice and data communications in operations involving multiple forces. Providing ground-to-ground, ground-to-air and ground-to-sea communications, the radio offers wide frequency-band coverage and waveforms to enable radio communications with a range of forces, units and stations, by means of a single radio unit. Length: 6cm Width: 8cm Height: 18cm Weight: 0.8kg

SDR-7200

The SDR-7200 is an SDR designed to improve battle group C4I functions through a range of capabilities within one radio, designed to meet the need for information transfer across army, navy and air force networks. Using error-correction algorithms that reduce the possibility of loss of data packets, the radio also has a self-healing ad-hoc networking capability that allows robust communication of data at several Mb/s with adaptable bandwidths. Weight: 0.65kg

Tadiran CNR-9000

The Tadiran CNR-9000 is described as a multi-mode VHF/FM COMSEC/ECCM radio for voice and data communications. The mature, third-generation frequency-hopping radio was developed from the earlier CNR-900 and incorporates lessons from combat experience. Types available include the PRC-930 (5W) manportable, PRC-930HP (20W) backpack, VRC-950 (50W) fixed or vehicle, VRC-980 (50/5W) fixed or vehicle, and VRC-990 (50/50W) fixed or vehicle radios.

Tadiran CNR-9000HDR/IP Radio

The Tadiran CNR-9000HDR IP Radio is a VHF/FM combat IP radio system with COMSEC and ECCM capabilities for voice and data communications. In addition to the features of the basic CNR-9000 radio, the CNR-9000 HDR provides 115kb/s data speed with IP connectivity and control to allow real data communications over the military 25kHz narrowband, VHF/FM channels.

Tadiran HF-6000

Operating over the 1.5-30MHz frequency range, the Tadiran HF-6000 is an adaptive, combat-proven, secure ECCM voice and data radio with analogue and digital encryption. It also features built-in low-rate vocoders, high-speed data communication, proprietary antennas, MIL-STD ALE and data protocols. The PRC-6020 (20W) manpack is claimed to be one of the lightest in its class.

Tadiran HF-8000

The Tadiran HF-8000 is described as a multi-adaptive tactical HF single-side band (SSB)/2-1SB radio system.

The system automatically selects the channel frequency in real time, using 3G and 2G ALE according to STANAG 4538 and MIL-STD-188-141B, easing interoperability. The adaptive, high-speed internal modem enables data transfer rates of up to 19.2kb/s. STANAG 5066 PC application offers Internet connectivity, email and message routing.

Tadiran PNR-500

The UHF Personal Network Radio (PNR)-500 is a personal radio designed to provide conference capabilities. It is a rugged device suitable for use in demanding operational environments, such as urban warfare, low-intensity conflict, and ambush scenarios. The full-duplex conference communication capability enables three to six PNR-500 users to simultaneously confer and coordinate operations, with an unlimited number of users able to listen in. Length: 5cm Width: 7cm Height: 13cm Weight: 0.43kg Range: 1.5km

TCC-110E

The TCC-110E is a four-logical-channel front-end communication controller for data transmission and reception over tactical networks. It provides on-the-move data communication and connectivity between C4I users in the battlefield. The system is also suitable for message routing between local application and tactical networks operating under harsh conditions, automatic Internet and intranet message relaying as well as routing capabilities under changing topology and dynamic connectivity.

TMR

The Tactical Multimedia Router (TMR) is described as a military-grade, triple-play, IP routing system designed for armoured command vehicles, deployed and mobile command posts. Designed as an all-in-one middleware system, the TMR disseminates multimedia information – real-time video, audio and data – over MANET with rapidly changing network topology.

VIC-500

The VIC-500 is a wireless digital vehicle intercom system that provides inter/intra-team communications. This enables vehicle crew members to communicate with mounted and dismounted soldiers by the local intercom system, as well as distant units and stations such as other vehicles, division and battalion HQs via the CU-500 central unit and the vehicle's VHF/HF/UHF transceivers. Additionally, the VIC-500 has an interface for six user terminals and HF/VHF/UHF radios. Range: 2km

ELBIT SYSTEMS EW & SIGINT – ELISRA

AN/URT-44

The AN/URT-44 is a PLB designed as a form-and-fit replacement for the older-generation AN/URT-33A and C/M, exceeding their capabilities. It has been developed and produced by Elisra as a member of the Signal Team, together with Signal Engineering of San Diego. Length: 3cm Width: 7cm Height: 12cm Weight: 0.54kg

ELBIT SYSTEMS LAND AND C4I

PNR-1000

Part of the E-LynX family, the SDR PNR-1000 IP radio supports up to 64-member ad-hoc networking

including full-duplex voice conferencing, data and video simultaneously. As the newest generation of PNR at the full NATO RF spectrum of 225-512MHz, the PNR-1000 is claimed to be the lightest of its kind on the market.

ELTA SYSTEMS

ARC-840D

The ARC-840D is a multi-band, multi-channel SDR featuring SCA. The system is designed for simultaneous transmission and reception of voice and data, either by LoS or SATCOM. By implementing a common platform the system can enclose various communication plug-in units which operate at once. Length: 32cm Width: 19cm Height: 19cm Weight: 14kg

ELK-1882 NC2

The ELK-1882 NC2 is a secure SDR communications solution for network-centric operations that supports multiple networks simultaneously. It is designed with a flexible and modular architecture that provides data connectivity to airborne, seaborne and land forces.

GENERAL DYNAMICS LAND SYSTEMS

MAPS

General Dynamics' Mounted Assured Positioning, Navigation and Timing System (MAPS) is being deployed across the force's 2nd Cavalry Regiment's (2CR) General Dynamics Stryker family infantry fighting vehicles and support vehicles to provide these platforms with resistance to GNSS (Global Navigation Satellite System) jamming. Jamming of the 1.1GHz to 1.6GHz waveband has been witnessed since 2012 and 2014 during respective Russian deployments to Syria and Ukraine. The MAPS is designed to provide an alternative means of navigation to vehicles should GNSS jamming be experienced on the battlefield. As of 2019 MAPS has commenced its initial deployment to the circa 300 Stryker vehicles of the US Army's 2nd Cavalry Regiment (2CR) based in Germany. It is expected that additional deployments could follow to other Stryker units in the coming five years.

GENERAL DYNAMICS MISSION SYSTEMS

AN/PRC-112G CSAR Transceiver

The software-defined, upgradeable AN/PRC-112G Combat Search and Rescue (CSAR) Transceiver sends encrypted global positioning, two-way messages and identification, providing location and rescue information. The single, short burst to CSAR aircraft supports a low probability of detection and interception. Two-way SATCOM and 406 SARSAT beacon modes enable real-time, direct, OTH communications paths between survivor and rescue personnel. Multiple LoS communications paths including terminal area communications and terminal area guidance provide more angles to the survivor. Length: 5cm Width: 10cm Height: 20cm Weight: 0.68kg

AN/PRC-155 Two-Channel Manpack Radio

The AN/PRC-155 Manpack Radio provides two channels in the same size and weight of current one-channel manpacks. Capable of network-centric connectivity

and legacy interoperability, the AN/PRC-155 supports advanced (SRW, WNW, MUOS) and current-force (SINCGARS, SATCOM, HF, EPLRS etc) waveforms. Length: 37cm Width: 27cm Height: 7cm Weight: 7kg

Digital Modular Radio (DMR)

As part of the USN's Digital Modular Radio programme, General Dynamics is delivering platforms capable of interoperability with tactical systems such as DAMA SATCOM, Have Quick, SINCGARS, UHF, VHF, as well as HF and data link coverage for Link 4A and Link 11. These are fully programmable and include embedded software-programmable cryptography. On-site or remote programming is also possible via dedicated LAN or WAN. Length: 56cm Width: 44cm Height: 49cm

HOOK2

Comprising the software-defined, upgradeable AN/PRC-112G transceiver, a handheld GPS Quickdraw2 Interrogator and the SATCOM Base Station, the HOOK2 GPS Combat Search and Rescue radio system includes encrypted two-way messaging and GPS positioning data for location. The system also provides operators with LoS and OTH voice and data communications, with no other hand-offs required. Length: 19.56cm Width: 9.83cm Height: 5.33cm Weight: 0.78kg

Hook3

General Dynamics Hook3 Combat Survival Radio (CSR) is designed to provide direct line-of-sight voice and two-way data communications to help combat search and rescue teams quickly. It will also accurately locate and rescue downed military pilots, air crew and isolated personnel. The Hook3 radio automatically activates and securely transmits location data when specific G-Force or the presence of salt water is detected. Width: 7.4cm Height: 4cm Weight: 0.62kg

Quickdraw2 Interrogator

Part of the HOOK2 family, this handheld unit can be carried onto most aircraft and used to interrogate an AN/PRC-112B, AN/PRC-112B1 or software-defined AN/PRC-112G radios. An aircraft is turned into a CSAR platform by plugging the Quickdraw2 into the intercom. The interrogator also provides direct, two-way communications between the rescue aircraft cockpit and the survivors on the ground for terminal area communications. Weight: 0.68kg

URC-200(V2)

The URC-200(V2) LoS transceiver is a rugged multi-band/multi-mode radio that operates in the UHF/VHF spectrum and AM/FM bands. Available in manpack, mobile, rack-mount, airframe or shipboard pre-configured systems, the URC-200(V2) can function as an Air Traffic Controller (ATC), naval ship-to-shore, drug interdiction and portable emergency radio. Remote-control access to the radio allows operators to use the radio from a distance. Length: 39cm Width: 27cm Height: 8cm Weight: 4.5kg

GOTENNA

goTenna Pro

goTenna unveiled the goTenna Pro at DSEI 2017 and describes the system as the only off-grid, long-

range mobile communications enabler for regular smartphones, regardless of network coverage, Wi-Fi, satellites or base stations. The goTenna Pro is a professional-grade, mesh-networking tactical radio, that comes in a candy-bar form factor and at a price-point most comparable to the cost of a single replacement battery for legacy systems. Weight: 0.08kg

HANWHA SYSTEMS

SpiderNet-SDR

The SpiderNet-SDR is a family of tactical software defined radios that provides warfighters with optimised situational awareness of the battlefield. Its multiband, multirole feature enables multi-mission combat power in all operational scenarios. It features VHF/UHF frequency range, MANET (Mobile Ad-hoc Networking) that guarantees a reliable communications in hostile battlefield and range extension. Length: 40.8cm Weight: 40kg

HYPRES

RF Digital Linearisation Circuits

Using superconducting micro-electronics technology, RF linearisation is designed to improve high-power amplifier efficiency, resulting in improved range and link closure with reduced power in multi-channel and wideband signal transmissions. This includes the JTRS wideband networking waveform and Link 16. RF linearisation, also referred to as pre-distortion, uses the speed of superconducting digital electronics to remove unwanted noise (commonly referred to as distortion) from wireless high-power transmit signals.

IDC EUROPE

Iridium Extreme

The Iridium Extreme Push-to-Talk (PTT) enables one of the most rapid, simple and secure forms of group communication available on a robust satellite phone. Designed for team communications, the Iridium Extreme PTT is engineered to support high intensity users in hostile environments. It has a high audio loudspeaker, reinforced PTT button and extended battery. Additionally, coverage areas, device security and talkgroup configuration can all be adjusted over-the-air by administrators using the web-based Command Centre tool. Length: 14cm Width: 6cm Height: 3.2cm Weight: 0.27kg

KONGSBERG DEFENCE & AEROSPACE

TacLAN Radios

TacLAN high-capacity radios are designed for the use on the move, whether vehicle-based or dismounts. TacLAN products can be used as IP radios (through an Ethernet interface) or in combination with audio systems (through two audio interfaces). TacLAN radios also have embedded AES256 encryption, are interoperable and offer the same functionality. Output power, power source and installation vary across different models.

L3HARRIS TECHNOLOGIES

ADR+ Bowman VHF/Centaur

The ADR+ is the VHF vehicle and manpack radio member of the ADR family of VHF radios developed initially for the UK Bowman programme. The ADR+ is compatible with the ADRP VHF portable radio and the ADRA VHF airborne radio. The ADR family shares common RF, baseband circuitry and software to support mixed secure voice/data RF nets, IP networking and GPS position reporting. The radios are also equipped with embedded IP routers and GPS. Length: 19cm Width: 23cm Height: 9cm Weight: 3.4kg

ADRA Bowman VHF/Centaur

The Advanced Digital Radio Airborne (ADRA) provides a Bowman VHF radio capability to helicopters and fixed-wing aircraft. It is fully compatible with the Bowman VHF ground radio (advanced digital radio ADR+) and the Bowman VHF portable transceiver. The system also provides secure anti-jam voice and data facilities, as well as operating in a shared voice/data environment using carrier sense multiple access techniques. Length: 10cm Width: 30cm Height: 14cm Weight: 3.2kg

ADRP Bowman VHF/Centaur

The Advanced Digital Radio Portable (ADRP) is the lightweight VHF portable radio member of the ADR family of VHF radios developed initially for the UK Bowman programme. The ADRP features a remote MMI for improved flexibility. It is fully compatible with the ADR+ VHF radio for vehicular and manpack operations as well as with the ADRA VHF airborne radio. Length: 4cm Width: 9cm Height: 19cm Weight: 1.2kg

AN/ARC-201

The SINCGARS airborne AN/ARC-201 radio is a voice and data communications system that provides anti-jam voice/data communication, error correction, data modes and GPS capabilities, allowing the unit to assume a number of roles. The integration of COMSEC and the data-rate adaptor combines three LRUs into one and reduces the overall weight of the aircraft. Additionally, the radio is backwards-compatible with existing SINCGARS data modes.

AN/PRC-117G(V)1(C)

The AN/PRC-117G(V)1(C) is a CNR-sized Type 1 multi-band, multi-mission radio with US/NATO standardised waveforms and wideband data capabilities. A member of the Falcon III family, it is a manpack tactical SDR that provides wideband data capabilities and interoperability with fielded waveforms. The single-channel radio covers 30MHz-2GHz and is said to be 30% smaller and 35% lighter than currently fielded multi-band manpack radios. Length: 34cm Width: 19cm Height: 9cm Weight: 6kg

AN/PRC-152 Falcon III

The Falcon III AN/PRC-152 single-channel, multi-band, multi-mission handheld radio provides a transition to JTRS technology. The radio covers the 30-512MHz frequency range with adjustable transmit output power up to 5W. With its JTRS-approved SCA operating environment and the embedded Sierra II module, the AN/PRC-152 delivers programmable encryption in an SCA-compliant radio. Length: 6cm Width: 7cm Height: 24cm Weight: 1.3kg

AN/PRC-158

The L3Harris Falcon III AN/PRC-158 is a modular multi-channel manpack (MCMP) radio that is 30% smaller than other two-channel manpacks. The AN/PRC-158 covers the 30-2,500MHz frequency range and can run both narrowband and wideband waveforms. The MCMP is NSA certified for voice and data communications. It also meets all JTRS COMSEC and TRANSEC requirements and features Harris Sierra II software-programmable encryption. Length: 18.7cm Width: 8.89cm Height: 36.2cm Weight: 5.77kg

AN/PRC-163

The AN/PRC-163, formerly known as the RF-335M-STC, is a multi-channel, handheld SDR. Selected by USSOCOM for its Special Operations Forces in 2015, the radio completed its Critical Design Review in October 2016. The AN/PRC-163 provides secure two-channel connectivity in a lightweight, handheld, rugged form factor. The radio can simultaneously transmit voice, data and situational awareness through mobile ad-hoc networking applications, VHF/UHF line-of-sight and legacy SATCOM.

AN/VRC-110

The AN/VRC-110 is described as an integrated multi-band vehicle radio system with architecture that ensures performance comparable to existing SINCGARS systems, according to the company. The system has 50W output power in the 30-90MHz band and also includes multiple power output options for the 90-512MHz band. Separate VHF and UHF antenna ports, as well as automatic port switching on each amplifier, provides the AN/VRC-110 with a multi-mission capability. Length: 34cm Width: 40cm Height: 26cm Weight: 11kg

AN/VRC-118(V)1

The AN/VRC-118(V)1 is a Mid-tier Networking Vehicular Radio (MNVR) which provides warfighters with the ability to share situational awareness. The MNVR utilises two joint tactical high-bandwidth waveforms, the Soldier Radio Waveform and the Wideband Networking Waveform, to increase overall connectivity and network capability by operating as a node. Soldiers at all levels are able to connect to the Global Information Grid using wireless, secure, and real-time voice and data. Length: 22.4cm Width: 18.77cm Height: 9.3cm

INC

The L3Harris Internet Controller (INC) supports the horizontal and vertical flow of C2 information across the battlefield. It provides a programmable interface for protocol conversions between different data systems. The INC's packet routing algorithms are based on modelling, traffic analysis and systems development for the US Tactical Internet and UK Bowman programme. Additionally, the INC can act as an enhanced Internet point router when configured with two RT-1702 VHF radios.

MarCom IVCS

The MarCom Integrated Voice Communications Systems (IVCS) is a tactical communications switching system supporting the demands of modern C2 systems. It integrates intercom, tactical net and administrative phone networks into one system accessing various types



The RO handheld tactical radio provides on-the-move, Over The Horizon (OTH) secure voice and data communications as well as location services. (Photo: L3Harris)

of communications terminals throughout the ship.
Length: 58cm Width: 48cm Height: 53cm Weight: 63kg

PRD-13(V)3 Tactical SIGINT System

The PRD-13(V)3 tactical SIGINT system can scan large segments of bandwidth and quickly characterise the RF environment. It also provides increased situational awareness and the ability to search the RF spectrum on a continuous basis without placing added burden on SIGINT operators. Length: 33cm Width: 23.6cm Height: 9.4cm

RF-300H

The RF-300H is Harris's next-generation Falcon radio. The manpack solution was first presented at the AFCEA West conference on 21 February 2017. The HF radio system has been designed to provide size and weight savings of approximately 20% over legacy solutions.

RF-5800M-HH

The RF-5800M-HH, a handheld companion to the RF-5800M-MP radio, provides interoperable, multi-band, multi-mission, secure voice and data communications to lower echelons and dismounted troops. With built-in Citadel digital encryption and Quicklook 1A frequency hopping, the RF-5800M-HH extends tactical communications to the squad level. Optional customer-unique algorithms can also be provided. Covering the 30-512MHz frequency range, the RF-5800M-HH offers a suite of ECCM capabilities, now including the Talon waveform for secure ground-to-air communications. Length: 6cm Width: 7cm Height: 23cm Weight: 1kg

RF-7800-V51x

The RF-7800-V51x is a vehicle/base VHF radio in the Harris Falcon III family. Ready for integration into vehicle communication systems, the IC-three interface is provided for incorporation with legacy systems. In addition, the RF-7800-V51x is fully interoperable with Harris's Falcon III digital vehicular intercom system, the RF-7800 I, plus a variety of personal audio products. Software-Defined Radio (SDR) architecture enables planned product improvements to be implemented as software-only upgrades in most cases. Length: 34cm Width: 19cm Height: 20cm Weight: 11.3kg

RF-7800B-VU104

This land mobile broadband global area network (BGAN) SATCOM terminal provides a tactical radio network capability within the Falcon III multi-band radio family. The RF-7800B-VU104 is a Class 10 E and SATCOM on-the-move terminal that provides data rates of up to 492Kb/s while on the move. Additionally, the RF-7800B-VU104 antenna may be permanently mounted on a vehicle and continuously tracks the Inmarsat satellite. Length: 51cm Width: 51cm Height: 20cm Weight: 12.6kg

RF-7800M-MP

The RF-7800M-MP high-capacity data radio provides secure voice and high-speed networked data, supporting both narrowband and wideband waveforms of 30MHz-2GHz with 20W transmit power. An embedded 12-channel GPS receiver supplies local position and automatic position, and all transmissions are secured via the built-in Advanced Encryption Standard (AES) with 256-bit key. Able to store multiple-mission fill files, the radio is suitable for fixed-site, vehicular or man-portable applications. Length: 35cm Width: 19cm Height: 9cm Weight: 3.6kg

RF-7800V-HH

The RF-7800 V-HH handheld VHF radio provides continuous coverage in the 30-108MHz frequency band at 5W of power and up to 10W with a boost mode capability. Built-in transmission and communications security includes Harris's Quicklook waveforms and embedded Citadel 2 cryptographic technology. This provides 256-bit military-grade and Advanced Encryption Standard (AES) for voice and data transmissions, in addition to encryption algorithms, customer-modified algorithms and customer-defined keys. Length: 6cm Width: 7cm Height: 25cm Weight: 1kg

RF-7800W

The RF-7800W-OU440 high-capacity LoS radio has an IP design that operates from 4.4-5GHz. This provides connectivity at distances over 50km and extending WANs and LANs at Ethernet rates of over 80Mb/s. The radio supports up to three different channel sizes in point-to-point mode, two different channel sizes in point-to-multi-point mode and centre frequency specification in 1MHz increments. Its low latency also allows bandwidth-intensive transmissions such as VoIP, real-time video, teleconferencing and C4I. Weight: 2.5kg Range: 90km

RO Tactical SATCOM Radio

The RO handheld tactical radio provides on-the-move, Over The Horizon (OTH) secure voice and data communications as well as location services in bandwidth-austere environments. It utilises the Distributed Tactical Communications System provided by the DISA Enhanced Mobile Satellite Service office. The user can reach thousands of other RO tactical radios within a 160-400km range. Communication occurs over a distribution of secure nets. Each radio may also be a registered member of up to ten nets.

SINCGARS

Developed by Exelis (now Harris) and the US Army to meet warfighter needs for a flexible and secure Combat Net Radio (CNR), SINCGARS and its associated router

are in use by the US Army for its tactical Internet. The SINCGARS system, which was once a voice-only radio that broadcast messages up and down the chain of command, has evolved into an open-architecture system with networking capabilities. At the heart of the system is the RT-1523 VHF radio.

SINCGARS RBCI

Radio Based Combat ID (RBCI) is described as a fratricide-avoidance system based on combat identification using the SINCGARS tactical radio system. RBCI is a software product, supporting the ASIP, Airborne and Spearhead platforms. On ground or airborne platforms, RBCI-equipped SINCGARS radios can correlate their location with that of interrogators to identify themselves as 'friendly' in the target zone.

SINCGARS RBSA

Radio-Based Situational Awareness (RBSA) is a software capability within SINCGARS RT-1523 and Spearhead radios and RBCI boxes that enable them to automatically broadcast position location information to other radios when connected to a GPS device. Each radio acts as a beacon and can send situational awareness periodically, based on time distances travelled with each Push-To-Talk (PTT) transmission.

SINCGARS S-TBMS

The Tactical Battlefield Management System (TBMS) provides a common picture of the battlefield to provide comprehensive, real-time situational awareness and command messaging facilities. The S-TBMS software application integrates the capabilities of the SINCGARS system with computing and GPS technologies.

LEONARDO DRS

Picoceptor

The Picoceptor is an SDR that can be scaled to meet customers' specific mission criteria. A range of Picoceptor types suite low-power, single-channel tactical uses to networked battlefield use. The software-definable architecture means that the system can be deployed for a signal intercept/analysis application, then re-deployed for threat warning and again re-deployed to other applications, such as geolocation. Software and firmware loads are also available for further customisation.

PicoFlexor

PicoFlexor is a miniature tactical SDR designed for both application development and deployment in the field. It has the RF performance of the Picoceptor's digital processing and is designed to have a simple development interface. The system is intended to leverage power reduction and performance gains of next-generation digital technology. The architecture can also integrate with open SDR standards such as RedHawk and GNURadio.

LEONARDO ELECTRONICS

FSR

The Frontline Soldier Radio (FSR) is a next-generation platoon and section-level radio for soldier modernisation programmes. In addition to encrypted voice

communications, it provides the communications and computing backbone for C2 systems. The FSR has a modular architecture that enables customisation and upgrades to support an extended service life, and it can be equipped with up to two RF transceivers.

ISSAT

The Infantry Soldier Situational Awareness Tool (ISSAT) consists of an Enhanced Encrypted Personal Role Radio (EZPRR), which is a modified version of the current in-service UK Bowman, location devices such as GPS and inertial navigation sensors, a display device and a command application. Every radio is designed to provide situational awareness functions for the commander or rifleman and a normal section or platoon voice net. The system also delivers blue force tracking.

PRR

The Personal Role Radio (PRR) uses 2.4GHz direct-sequence, spread-spectrum modulation technology. PRR's 50mW transmit power provides a typical operating range of 500m in open terrain and through up to three floors of a building. The wireless PTT facility is effective over a range of up to two metres so that the button can be mounted on a weapon for example. The radio also offers 256 channels, of which 16 are directly available to the user. Range: 0.5km

SDR Swave HH-E

SWave Enhanced HandHeld (HH-E) is a body-worn radio for soldier and commander use at either platoon or section level. It offers simultaneous secure voice/data services for current and future tactical communication needs. Compliant with SCA/JTNEC architecture, SWave HH-E supports both national/NATO standards and modern IP networking waveforms, thus providing interoperability with fielded radios and new generation C4ISR systems. It operates in the 30MHz to 512MHz frequency range with five-watt peak RF output power.

SSR Plus

The Soldier System Radio (SSR) Plus is aimed at soldier system modernisation programmes, providing more capability than the PRR. SSR Plus supports both section- and platoon-level communications, providing both voice communications and situational awareness capability through support to a networked data service. The radio can operate on two nets simultaneously, enabling the infantry soldier to communicate on his main operational net while monitoring a second, switching between nets as necessary with the controls. Length: 4cm Width: 7cm Height: 16cm Weight: 0.3kg Range: 2km

SWave HH

The SWave Handheld radio (HH) SDR SCA-compliant system is an evolution of Leonardo's PRR family, with an extended battery life through efficient power management. It works in the 30-2,000MHz frequency band with 2.4GHz extension to permit interoperability with PRR systems. The SWave HH embeds a commercial-grade GPS receiver and can be interfaced to an external GPS receiver. The HMI, with backlit graphic display and keyboard, provides control for operational and system administration duties. Length: 6cm Width: 8cm Height: 22cm Weight: 1kg

NORTHROP GRUMMAN MISSION SYSTEMS

AN/TYQ-69 FMSS

The Fly-Away Message Switch System (FMSS) is a small, lightweight rugged multi-function system with the ability to perform split-based operations at collateral security levels. It interoperates with networks such as the Mobile Subscriber Equipment Tactical Packet Network and the X.25 DISNET 1 and 3 Networks. In addition, FMSS allows a KY-68 dial-up capability on a public network or the Defense Switched Network. It provides secure connectivity between C2 elements at all echelons.

STAMPS

The Stand Alone Message Processing System (STAMPS) is a modular communications system designed to bridge the gap between dissimilar networks and provides the mechanism for transferring information between these networks. STAMPS provides additional interfaces using LAN repeaters and packet radio devices. It consists of eight modules that comprise a communications system with an open hardware and software architecture. It also interoperates with multiple communications and C2 systems.

PER VICES CORPORATION

Crimson TNG

Crimson The Next Generation (Crimson TNG) is a wideband transceiver and signal-processing platform. Crimson TNG operates within a DC to 6GHz frequency with four receive and four transmit radio chains. Each has 325MHz of RF bandwidth and enabling deterministic phase coherency and latency. Weight: 5.4kg

PERSISTENT SYSTEMS

MPU5

The MPU5 has been described as a smart MANET radio, designed for connectivity, interchangeable frequency module, stream HD video and integrated Radio over IP functionality. MPU5's radio system has been built on 3x3 Multiple Input Multiple Output technology. This allows for extended range and increased throughput in complex urban, subterranean and maritime environments - both LoS and non-LoS. Length: 3.8cm Width: 6.7cm Height: 11.7cm Weight: 0.37kg

POLE/ZERO

Agile Filter Components

The customisable 0-57dBm RF agile filters have fast tuning speeds and high selectivity, according to the company. Suitable for use in radio front ends, radars, SIGINT/COMINT systems and amplifiers. The components are designed to improve SNR, range and performance. Additionally, narrowband and wideband ranging is from 1MHz to microwave bands. Products included in the range are Micro-Pole, Mini-Pole, Maxi-Pole, Nano-Pole, Power-Pole, the extended range ERF series and microwave filters.

ICE

Cosite Mitigation Systems (ICE) products are agile filter/amplifier cascades which clean impure spectrums on

transmit and receive, improving range, throughput and overall link performance. The systems alleviate such co-site problems as receiver de-sense, intermod products, cross modulation and broadband noise. With an output power of up to 100W and built-in 'ultra-clean PAs', the company's ICE filters/LNA cascades support most frequency agile/hopping waveforms and interface directly with many modern transceivers.

RADMOR

Comp@n

Comp@n software-defined radios were displayed at the MSPO exhibition in Poland in September 2016. Comp@n can be customised to the user's requirements and features advanced encryption and voice protection. Different software can be implemented on the same platform without the need to change the hardware. Length: 22cm Width: 8.6cm Height: 4.4cm Weight: 1kg

R35010 personal role radio

The Radmor R35010 personal role radio is a handheld, lightweight radio, intended to operate in a small radio network between combat team members. The R35010 radio operates in a range between 2405 to 2480MHz using direct sequence spread spectrum with impulse transmission and reception of digital voice and data. The spread spectrum operation significantly decreases the risk of detection and interception. Length: 11.5cm Width: 6.9cm Height: 2.5cm Weight: 0.27kg Range: 0.5km

RAFAEL ADVANCED DEFENSE SYSTEMS

BNET

BNET (Broadband MANET IP Software Defined Radio) is a dual-band SDR designed for tactical operations. The system provides jam-resistant, high-speed data and voice (analogue and VoIP) for use in combat communications. BNET technology is available in several configurations which make up the BNET Family: BNET Hand Held for soldiers in the field; BNET Vehicular for operation on combat vehicles; and BNET Airborne for airborne platforms.

RAYTHEON

AN/PSC-5D

The AN/PSC-5D is a multi-band, multi-mission communication terminal with capabilities for UHF/VHF manpack LoS and SATCOM/demand assigned multiple access. It supports the DoD requirement for a lightweight, secure, network-capable, multi-band/multi-mission, anti-jam, voice/imagery/data communications capability in a single package. Weight: 8.2kg

KG-350

The KG-350 encryptor for network communications was granted Type 1 certification by the US National Security Agency (NSA) in 2016. Multiple-speed Ethernet encryption is available in a single unit to accommodate current network requirements.

ROHDE & SCHWARZ**R&S M3SR**

The R&S; M3SR SDR family is designed for stationary, civil and military secure voice and data communications. It provides a frequency range from 1.5MHz to 30MHz (high frequency) and 100MHz to 512MHz (very high frequency/ ultra-high frequency) for coverage of various civil and military communications modes. The SDR supports power classes of 30W/100W (ultra-high frequency) and 150W/500W/1,000W (high frequency). Furthermore, the R&S; M3SR Series4100 radio family supports IP-based split-site operation and a broadband system is available.

R&S M3TR

The R&S; M3TR SDR family is a family of digital radios. The core of the integrated communications system is the lightweight R&S; MR3000 H/U manpack radio. A lightweight handheld version is also available (R&S; MR3000P). Like the manpack radios, the R&S; MR3000P supports both open and secure communications modes. Additionally, the R&S; M3TR covers the entire spectrum from HF via VHF to UHF, allowing interoperability as well as uniform and reduced inter-service logistics.

R&S M3xR

The R&S; M3xR family of radios is a generation of digital radios that can be used in mobile (manpack and vehicular form factor), stationary/shipborne (19in form factor) and airborne (ARC-164 and ARINC 600 form factor) applications.

R&S SDTR

The software communications architecture (SCA)-based R&S; SDTR allows legacy and new high data rate waveforms to be ported to the radio system, maintaining interoperability with allied forces. The R&S; HDR waveform family supports dynamic IP routing protocols. The R&S; SDTR covers the VHF/UHF range and has an output power of 50W. It was designed for use in vehicles with requirements regarding vibration, size, weight, ventilation and power consumption.

SVFuA

The SVFuA (Streitkräftegemeinsame Verbundfähige Funkgeräte-Ausstattung) is a software defined radio (SDR) that provides communications up to the classification level SECRET and is contracted as the German Armed Forces' future joint radio system. The radios have been ordered as part of Germany's Mobile Tactical Communications programme - known as MoTaKo - to digitise tactical communications.

ROSTEC**R-430**

The R-430 radio relay system consists of several types of cross-country communication vehicles that

support protected networking and communications in dense electronic threat and jamming environments. The system provides simultaneous operation in two frequency ranges and uses a quick erect antenna mast. Each station comprises satellite navigation equipment (GLONASS and GPS) and a VHF radio transceiver for service communications. Range: 1,500km

SIERRA NEVADA CORPORATION**SKL**

The AN/PYQ-10 Simple Key Loader (SKL) is a fill device which replaces the Data Transfer Device (DTD) AN/CYZ-10 and Secure DTD2000 System (SDS) KIK-200. The latest version of the SKL is called the SKL v3.1 which meets the National Security Agency security requirements, with upgraded software and hardware components. The SKL is fitted with a Li-Ion battery pack and has a runtime of up to 15 hours, depending on the variant of the battery. Length: 0.02cm Width: 0.01cm Height: 0.01cm Weight: 0.97kg

SPECTRA GROUP**SlingShot**

SlingShot is a lightweight unit that converts existing tactical radios to L-Band SATCOM, to extend secure tactical C2 COTM for UHF and VHF radios over thousands of kilometres. By using Inmarsat's L-TAC I-4 global constellation of geostationary satellites, SlingShot removes the need to rely on limited TacSat bandwidths for secure communications. Additionally, the system is transparent to crypto, so training is minimal and radio life is extended, according to the company. Length: 17cm Width: 0.75cm Height: 2.9cm Weight: 0.49kg

THALES**AN/PRC-148 JEM**

The AN/PRC-148 Joint Tactical Radio System (JTRS) Enhanced Multiband Inter/Intra Team Radio - known as JEM - is an evolution of the AN/PRC-148 MBITR. It is

SlingShot is a lightweight unit that converts existing tactical radios to L-Band SATCOM. (Photo: Spectra Group)



designed to be a small, light, power-efficient multi-band, tactical, handheld radio covering the 30-512MHz frequency range. This software communications architecture-compliant platform hosts contemporary core waveforms. Length: 21cm Width: 7cm Height: 4cm Weight: 0.87kg

AN/PRC-148B MBITR2

The AN/PRC-148B MBITR2 is a next-generation multi-band inter/intra-team radio, building on the legacy of the narrowband AN/PRC-148 tactical handheld radio and the wideband AN/PRC-154. The AN/PRC-148B MBITR2 provides the dismounted warfighter with the ability to integrate into the wideband tactical IP and voice network via the SRW wideband channel, while simultaneously maintaining legacy reachback via the narrowband channel. The AN/PRC-148B MBITR2 retains interoperability with existing fielded radios. Length: 21cm Width: 7cm Height: 4cm Weight: 1kg

AN/PRC-154A Rifleman Radio

The AN/PRC-154 Rifleman Radio is a lightweight, rugged, body-worn radio that transmits voice and data simultaneously using the Soldier Radio Waveform. It is designed to bring secure inter-squad networked communications to the soldier at the tactical edge of the battlefield network. The radio allows self-forming, ad-hoc voice and data networks. Additionally, the unit supports a range of interfaces including USB, six-pin headset/speaker microphone and RS-232. Length: 4cm Width: 6cm Height: 19cm Weight: 0.8kg Range: 2km

AN/VRC-111 20W VAA

The AN/VRC-111 20W Vehicle Adapter Amplifier (VAA) consists of two Thales AN/PRC-148 Multi-band Inter/Intra-Team Radios (MBITR or JTRS Enhanced MBITR - JEM - configuration), two vehicle adapters (VA) and an interface tray that directly mounts with a standard SINCGARS mounting tray. The system maintains all of the functionality of the AN/PRC-148 handheld radio and VA and installs onto an existing MT6352 mounting tray. Weight: 19kg

AN/VRC-111 50W VAA

The AN/VRC-111 Vehicle Adapter Amplifier (VAA) is a COTS/NDI electrical and mechanical fixture featuring the functionality of the AN/PRC-148 Multiband Inter/Intra-Team Radio (all MBITR and JEM configurations). It is designed to offer an alternative to existing SINCGARS vehicular installations. Weight: 27.2kg

AN/VRC-113 50W CVA

The rugged AN/VRC-113 50W Cradle Vehicle Adapter (CVA) for the AN/PRC-148 family of multi-band inter/intra team radios provides 50W of RF power amplification from 30-88MHz, as well as 20W of RF power amplification from 89-512MHz. With a low profile and weighing 7.26kg with the radio installed, the CVA can be integrated into air, land and sea-based platforms. The CVA chassis also provides interfaces for power sources, antennas, intercoms and data devices. Weight: 7.2kg

Base Station for AN/PRC-148

The power-boosting Base Station for the AN/PRC-148 family of radios provides a fixed site configuration. It provides 20W of RF power amplification across the full

30-512MHz frequency band, while allowing a range of AC and DC input power sources. Packaged in a rugged transportable transit case weighing less than 27kg, the Base Station leverages the handheld radio and vehicular AN/PRC-148 products to provide a solution designed for command post and base operations communications requirements. Length: 38cm Width: 21cm Height: 21cm Weight: 12.7kg

Cougar Radios

The Cougar range of compact, covert personal and vehicle-based radios provide secure communication between users and across infrastructures such as TETRA and IP networks. With an extended range capability, situational awareness functionality and the ability to maintain interoperability with existing platforms, Cougar is a next-generation software-defined radio. It offers programmable security up to 'high grade' level. Additionally, encryption is provided using the programmable infosec module (PIM). Weight: 0.12kg

FlexNet

FlexNet is an SDR V/UHF communication system designed to be the 'building blocks' of network-enabled capability, developed by Thales and Rockwell Collins Government Systems. The system is based on an open SDR architecture, ready for ESSOR standards, and with a 'future-proof' programmable hardware platform, according to Thales.

FlexNet Waveform

The FlexNet Waveform is a high data-rate, ad-hoc networking waveform designed to support 150 mobile nodes in a secure MANET. It offers communications up to 6Mb/s and is compliant with SCA 2.2. Real-time management of network topology, link quality, available bandwidth and dynamic rating functions enable automatic relaying of data packets between mobile nodes. The FlexNet waveform's ability to support net emerging and splitting in adverse conditions is designed to ease network management.

FlexNet-Four

FlexNet-Four is a multi-channel vehicle SDR. By integrating the FlexNet waveform (see separate entry), it offers high data rate transmission on the move, transverse communications and mobility management to improve communication between HQ and small mobile units. FlexNet-Four features services including voice (digital or VoIP), data (short messages, formatted messages, file transfer), image and video transmission. With a scalable capacity for simultaneous channels and embedded routing, it can act as a communications node.

FlexNet-One

FlexNet-One is described as a compact vehicular wideband V/UHF SDR. By integrating the FlexNet waveform (see separate entry), the radio offers high data rate transmission on the move, transverse communications and mobility management. This improves the communication between users from HQ to small mobile units. The system offers services such as voice (digital or VoIP), data (short messages, formatted messages, file transfer), image and video transmission. Length: 34cm Width: 28cm Height: 14cm

FMV Mission Module

In conjunction with L3, Thales developed the FMV Mission Module concept for the AN/PRC-148 JEM handheld radio. As an 'add-on' module to the radio, the device provides the ability to receive FMV from ISR assets on the fly as the mission dictates and reduces the size and weight burden on the warfighter. The module also provides simultaneous FMV and TX/RX combat net operations in one system. Weight: 1.1kg

HF 3000 Skyf@st

The HF 3000 Skyf@st family of HF transceivers is in service with the French Army under the Melchior programme. They are designed to cover all operational situations in fixed and on-the-move communications. The Skyf@st offers secure voice, data and messaging services over IP, fast automatic link establishment (3G ALE) and secure EPM protections, while interoperability is provided with MIL and NATO standards.

Improved Multiband Inter-Intra Team Radio (IMBITR)

The AN/PRC-148C Improved Multiband Inter-Intra Team Radio (IMBITR) is a dual-channel, certified networking radio, designed to enhance communications. The IMBITR is a variant of the Multiband Inter-Intra Team Radio and the world's first two channel handheld networking radio embedding the Tactical Scalable MANET waveform.

LMAR

The Lightweight, Multiband Airborne Radio (LMAR) is a repackaged PRC6809 Multiband Inter/Intra-Team Radio with the proper power conditioning and filtering for airborne applications. The LMAR was developed primarily for UAV applications. It supports all functionality of the PRC6809 MBITR and covers a frequency band of 30-512MHz with 5W RF output. The LMAR also supports AM, FM and clear Have Quick I/II waveforms. Length: 10cm Width: 16cm Height: 10cm Weight: 1.4kg

LPVA

The rugged Low Profile Vehicle Adapter (LPVA) for the AN/PRC-148 family of multi-band inter/intra-team radios provides 50W of RF power amplification from 30-88MHz and 20W of RF power amplification from 89-512MHz. The LPVA can be integrated into air, land and sea-based platforms. The chassis provides interfaces for power sources, antennas, intercoms and data devices. The removable control head with LCD display provides remote control of radio functions. Weight: 7kg

Man Portable System for the AN/PRC-148 MBITR

The Man Portable System is a rugged amplification system that expands the capabilities of the Thales AN/PRC-148 multi-band inter/intra-team radios (both MBITR and JTRS enhanced MBITR or JEM configurations). The system operates on a 30-512MHz frequency range with 20W RF output. It is battery operated (single- or dual-battery configurations) and is environmentally rugged with integrated tunable harmonic filters. Other waveforms and encryption capabilities are also available. Additionally, the system secures a reliable communications link over greater distances. Length: 18cm Width: 25cm Height: 33cm Weight: 7.25kg

MARS

The Thales Multi-channel Airborne Radio with SRW (MARS) is a low-cost, low-SWaP solution for airborne platforms. It repackages two radio channels – one narrowband AN/PRC-148 JEM radio board set and one wideband AN/PRC-154A Rifleman Radio board set – into an airborne-qualified air transport rack enclosure to provide what is claimed to be the smallest and lightest two-channel airborne radio on the market. The MARS is designed for airborne VHF/UHF/L-band communications and relay applications. Length: 24cm Width: 14cm Height: 13cm Weight: 0kg

MMAR

The Multichannel, Multiband Airborne Radio (MMAR) repackages two AN/PRC-148 JTRS Enhanced Multiband Inter/Intra-Team Radios (JEMs) into an airborne-qualified air transport rack-style enclosure targeted at airborne VHF/UHF communications/relay payload applications. The system supports dual-independent radios or retransmission with cross-banding configuration. With integrated co-site filtering, the MMAR is suited to reduce interference from other emitters on the platform. Length: 24cm Width: 12cm Height: 14cm Weight: 3.5kg

MSN 8100-H Naval SDR

The MSN 8100-H is an HF naval SDR. The radio offers multi-channel, multi-mode operation and features an embedded modem that is designed to support current and future waveforms and services. Among these are high data rate and networking waveforms, enabling naval Intranet over HF. The software-configurable radio is ready for in-service upgrade and features standard interfaces to support integration of legacy systems. Additionally, it has an open menu-driven GUI. Length: 29cm Width: 48cm Height: 17cm Weight: 17kg

MSN 8200-H Naval SDR

The MSN 8200 is a naval HF SDR that offers a programmable and configurable radio for HF communication systems in all types of naval platforms. It is compatible with 3G Automatic Link Establishment systems. It is also retro-compatible with MSN 8100 and TMR 6200 radios. The MSN 8200 can be operated within an integrated naval communications system offering voice, data, messaging and e-mail services or independently as a standalone radio via the control panel. Length: 46cm Width: 48cm Height: 18cm Weight: 19kg

MUBC

The Modular Universal Battery Charger (MUBC) is a scalable charging system for a range of military and commercial batteries. It provides for the addition of new batteries through software upgradability and a modular design. The base unit can be carried in a rucksack and is rugged enough to be vehicle-mounted. Multiple MUBC charging systems can also be cascaded without requiring any tools. Length: 20cm Width: 22cm Height: 13cm Weight: 2.72kg

NextW@ve

NextW@ve is the latest evolution of the Thales aeronautical V/UHF radio family and marks the

migration of this family towards SDR technology. The family comprises an airborne version fitted on board a range of aircraft (fighters, helicopters, transport/tankers, AEW and MPA), as well as a 19in rack version for infra/shelter and naval applications.

PR4G F@stnet

The PR4G F@stnet is the latest generation of VHF multirole software from Thales. More than 150,000 radios have been sold to customers in over 40 countries. The PR4G F@stnet is designed to meet the demands of modern BMS, including multiple modes: combat net radio mode for voice or data; multiplex modes for simultaneous transmission of voice and data; as well as GeoMux mode for blue force tracking services. Weight: 3.4kg

PRC6809 MBITR

The PRC6809 Multiband Inter/Intra-Team Radio (MBITR) is part of the AN/PRC-148 family of radios. Based on the AN/PRC-148 MBITR, the PRC6809 MBITR provides interoperability with existing military and commercial legacy radio systems, according to Thales. With software upgradeability, future operation with the next generation of communications equipment is possible. Additionally, the multi-processor architecture of the PRC6809 MBITR creates a software-based, handheld radio. Length: 21cm Width: 7cm Height: 4cm Weight: 0.86kg

RCU for AN/PRC-148

The Remote Control Unit (RCU) with GPS is an active extension of the front panel controls of AN/PRC-148 radios with the addition of an embedded commercial GPS receiver with an integrated GPS antenna. The GPS receiver facilitates the introduction of force-tracking capabilities to the radio. The knob operation and menu structure of the RCU replicate the front panel of the radio, increasing ease of use and reducing training requirements. Length: 12cm Width: 6cm Height: 3cm Weight: 0.12kg

Synaps-A

The Synaps-A, a multi-channel V/UHF communication system, is designed for installation within aircraft. Capable of performing ground-ground, ground-air, special forces and border surveillance missions, the system is compatible with most legacy coalition, NATO and US radios. Weight: 7.5kg

Synaps-H

The Synaps-H, a multi-band V/UHF handheld terminal, is designed for platoon and squad leaders. Capable of performing ground-ground, ground-air, special forces and border surveillance missions, the system is compatible with most legacy coalition, NATO and US radios. Weight: 1.2kg

Synaps-T

Thales has developed the Synaps family of broadband tactical software defined radios (SDRs) to support the creation of NATO-compliant C4I networks. The Synaps-T is a V/UHF 50W radio designed for installation in vehicles. It has a high level of resistance to jamming and an open architecture that allows for easy integration into existing networks. Like other members of the Synaps family, it is interoperable with most legacy, coalition and NATO

radios. Length: 38cm Width: 22.1cm Height: 14.8cm Weight: 15kg

Synaps-V

The Synaps-V, a two-channel V/UHF tactical radio node, is the land component of this series. Capable of performing ground-ground, ground-air and border surveillance missions, the system is compatible with most legacy coalition and US radios. Length: 39cm Width: 30cm Height: 13.8cm Weight: 20kg

Synaps-X

Thales has developed the Synaps family of broadband tactical software defined radios (SDRs) to support the creation of NATO-compliant C4I networks. The Synaps-X is a small computing platform designed to transform an existing F@stnet VHF station into a Maneuver capable radio without the need to retrofit the vehicle.

Tactical Repeater for AN/PRC-148 MBITR

The Tactical Repeater is a suitcase configuration that houses two vehicle adapters functioning together as a repeater. It integrates AN/PRC-148 (both MBITR and JEM) and Vehicle Adapter designs, increasing the range performance of VHF/UHF radio net operations when extended radio linkage is required or where obstacles are present that normally preclude LoS communications. Length: 50cm Width: 62cm Height: 30cm Weight: 37kg

VA for AN/PRC-148

The rugged Vehicle Adapter (VA) provides 20W of RF power amplification across the full 30-512MHz frequency band of the AN/PRC-148 multi-band inter/intra team radios (both MBITR and JTRS enhanced MBITR or JEM, configurations). The system also has a 12-32V DC input power range; integrated tunable harmonic filters; integrated tunable co-site filters; two-second cable-free radio rapid dismount capability; and an integrated radio battery charger.

ULTRA ELECTRONICS TCS

AN/GRC-245(V)

The AN/GRC-245(V) is a high-capacity LoS (HCLoS) radio that is designed to provide a high-speed digital backbone for tactical area communications systems worldwide. Ultra Electronics TCS is under contract to supply the AN/TRC-190 transmission shelters and the AN/GRC-245A SDR for the US Army WIN-T programme. Range: 55km

HCR

The High Capacity Radio (HCR) is a point-to-point SDR that uses the Software Communications Architecture (SCA) open framework. The HCR provides both a hardware- and software-scalable architecture that supports the Common Operating Environment (COE), new technology introductions and Everything Over IP networks.

Ultra Orion

The Ultra Orion is a family of point-to-point (PTP) and point-to-multipoint (PMP) radio system providing On The Move (OTM) access capabilities for lower echelons. It provides for mast-mounted and vehicular at-the-halt and at-the-quick-halt communications.

UNITED STATES DEPARTMENT OF DEFENSE

JTRS Completed Waveforms

A number of waveforms have been implemented in JTRS so far: single-channel ground-to-air radio system; collection of broadcasts from remote assets; and VHF/UHF LoS.

JTRS Domains

The former JTRS 'clusters', that had become separate disjointed programmes, have been replaced with centrally managed domain programme management offices. The construct comprises four JTRS domains. Ground domain: ground mobile radios for vehicles; handheld, manpack radios and small form fit radios.

JTRS Increment 1 Waveforms

A number of waveforms are set to be implemented under JTRS Increment 1: WNW with OFDM and anti-jam; SRW (ground domain); joint airborne network-tactical edge (JAN-TE); EPLRS; UHF SATCOM demand assigned multiple access; HF; SINCGARS INC6.2 and end of message scheme; Have Quick II; Link 16 multi-function information distribution system-JTRS (MIDS-J); and multi-user objective system.

JTRS Later Increment Waveforms

A number of waveforms are scheduled for implementation in later JTRS increments: WNW with low probability of intercept/detection and bandwidth-efficient advanced modulation; SRW with LPI/LPD; JAN-TE enhancements; integrated broadcast service; defence wide transmission systems; Link 22; mobile satellite services; Saturn; ATC; association of public safety communications officials-25 (APCO-25); networked data link above 2GHz; and IP version 6.

JTRS SCA

Through interface definitions, the Software Communications Architecture (SCA) does three important things: it defines a framework under which software applications are developed for SDRs; it provides a standardised way to load, deploy, configure and remove applications from an SDR; and it defines the structure for a minimum SDR operating environment along with a minimal set of required implementations.

VIASAT

BATS-D AN/PRC-161

The ViaSat Battlefield Awareness and Targeting System - Dismounted (BATS-D) AN/PRC-161 radio fuses air and ground situational awareness in the palm of your hand. The ruggedised handheld radio delivers real-time Link 16 communications to dismounted and mobile warfighters at the tactical edge. The terminal offers edge users access to both air and ground (friendly and enemy) situational data and can provide secure target data and position location, identification and status information to the network. Length: 4.3cm Width: 6.6cm Height: 21.3cm Weight: 1kg

CBM 400

The ViaSat Commercial Broadband Modem 400 (CBM-400) is an adaptable SATCOM modem platform able to deliver more bandwidth efficiency, interoperability

and security to mobile, on-the-pause and fixed communications. The CBM-400 is designed to combine the power of high-speed connectivity with the flexibility of waveform switching to meet the needs of any mission or application, according to the company. Length: 35.6cm Width: 43.2cm Height: 8.3cm

IPS-250X

The IPS-250X is an inline network encryptor that creates secure IP connections with US warfighters and government agencies, without the deployment limitations, logistics and lifecycle costs associated with Controlled Cryptographic Items (CCI). Supporting the secure exchange of classified information up to Secret level, the IPS-250X is appropriate for government agencies and first responders with users in their networks who may not have COMSEC accounts or want to minimise COMSEC logistics. Length: 20cm Width: 11cm Height: 4cm Weight: 1.3kg

KG-250 FI NE

The AltaSec KG-250 is an NSA-certified foreign interoperable HAIPE high-speed IP inline network encryptor (INE), featuring Suite A, B and A/B capability. With a small, light, low-power design, the 100Mb/s INE is suitable for US military, coalition and homeland security applications. Based on ViaSat's PSIAM cryptosystem, the KG-250 features field-programmable and scalable information assurance capabilities that can adapt to changes in the network. Length: 30cm Width: 19cm Height: 4cm Weight: 2.95kg

KG-250XS

Delivering 20Mb/s (aggregate) speeds, the ViaSat KG-250XS is a Type 1 inline network encryptor (INE) designed for telecommuting, flyaway kits, small UAVs and other dismounted or field applications. The ViaSat KG-250XS allows operators to remotely re-key a network of HAIPE devices from a physically secure location with HAIPE-to-HAIPE over-the-air/net keying. This device leverages a software-upgradable design. The -250XS also provides IP encryption on the go for TS/SCI communications with a ruggedised form factor. Length: 7.7cm Width: 9.4cm Height: 2.7cm Weight: 0.29kg

KG-255 INE

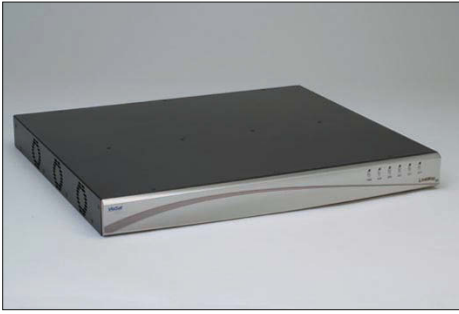
The AltaSec KG-255 is an NSA-certified Type 1 inline network encryptor (INE) that supports the secure exchange of classified information, up to the Top Secret level, at full duplex speeds of 1Gb/s over commercial IP WANs.

KG-255 X

The NSA-certified ViaSat KG-255X combines Type 1 High Assurance Internet Protocol Encryptor (HAIPE) with the latest cyber defence technologies and visualisation software to allow secure communication over IP and gain actionable intelligence. The ViaSat KG-255X is designed to immediately identify and respond to cyber threats throughout the network, via integrated visualisation software, to allow operators to respond with a few clicks. Length: 31.7cm Width: 20cm Height: 3.8cm Weight: 4.1kg

LinkWayS2

LinkWayS2 is a hubless MF-TDMA modem that enables users to integrate a variety of applications into a single



LinkWayS2 is a MF-TDMA modem that enables users to integrate a variety of applications into a single platform. (Photo: Viasat)

platform in any network topology – mesh, star or hybrid. Adaptive on-demand bandwidth allocation, bandwidth-efficient coding and modulation are engineered into the LinkWayS2 system to provide broadband connections between any LinkWay-equipped sites. Additionally, features such as turbo coding and 8PSK modulation provide bandwidth savings, reducing transponder costs. Length: 40cm Width: 43cm Height: 4.5cm Weight: 3.4kg

MD-1366

The US government selected the MD-1366 Enhanced Bandwidth Efficient Modem (EBEM) from ViaSat to

set the DoD standard for high speed, high performance, flexibility and compatibility in a wideband Single Channel Per Carrier (SCPC) modem. The EBEM provides backwards interoperability with the majority of existing SCPC modems. The modem offers power and bandwidth efficiency with 16-array modulation and turbo coding. Additionally, It supports a range of user data rates, from 64Kb/s up to 155Mb/s. Length: 43cm Width: 48cm Height: 4.5cm Weight: 5.5kg

MD-1377 JIPM

The MD-1377 Joint Internet Protocol Modem (JIPM) combines flexible satellite networking with information assurance capabilities to deliver secure, high-speed IP communications to military and government agencies. Featuring a DVB standards-based waveform with encryption and government-specified TRANSSEC, JIPM is the DoD satellite modem standard connecting all US forces, according to the company.

WB GROUP

Perad

The Perad 4010 is an SDR with a long operational battery life, designed to enable communications in adverse weather conditions. Each radio serves as a network node or a miniature base station supporting other nodes within the interactive network. Width: 7.9cm Height: 18cm Weight: 1.05kg



PRODUCTS

GUIDE TO SUPPLIERS

This section lists key companies supplying goods, services and equipment to the infantry equipment sector worldwide.

The section is separated into two listings, by product then by supplier.

Products are listed alphabetically with suppliers and their location under each.

Supplier listings from p181 are shown alphabetically and include:

- Company address
- Email and website addresses
- Telephone numbers

Highlighted listings also include the company's logo and a summary of activity.

To update a listing or submit new information, please contact the team at reference@shephardmedia.com.

ABOVE: An Italian Army gunner mans the M134 Gatling gun on board an NH90 helicopter (Photo: Italian Army)

PRODUCTS

Armour – body armour, plates

3M Advanced Materials (USA)
Åkers Krutbruk Protection (SWEDEN)
Allen-Vanguard Canada (CANADA)
Allen-Vanguard UK (UK)
Alpha Design Technologies (INDIA)
ArmorWorks (USA)
Armour of America (USA)
BCA Ballistic Protection (BRAZIL)
BCB International (UK)
Blackhawk (USA)
Body Armour Recycler (FRANCE)
Bullet Proofing Technology (SOUTH AFRICA)
CeramTec-ETEC (GERMANY)
CoorsTek (USA)
Crye Precision (USA)
Daniel Technologies (IRELAND)
DSM Dyneema (NETHERLANDS)
DuPont Protection Technologies (USA)
Elbit Systems Land (ISRAEL)
EnGarde Body Armor (NETHERLANDS)
Enhanced Protection Systems (UK)
FMS Enterprises Migun (ISRAEL)
Garanti Giyim (TURKEY)
GEIM (FRANCE)
GK Pro (FRANCE)
Glággio do Brasil (BRAZIL)
Global Industrial & Defence Solutions (GIDS) (PAKISTAN)
Ideal Innovations (USA)
IMI Rocket Systems Division (RSD) (ISRAEL)
Imperial Armour (SOUTH AFRICA)
Intelligent Armour (UK)
J-Forces (INDONESIA)
Jack Ellis Body Protection (UK)
KDH Defense Systems (USA)
Kintex (BULGARIA)
Leison (CHINA)
Lior Textile Industries (ISRAEL)
MAE Group International (USA)
Marom Dolphin (ISRAEL)
MARS Armor (BULGARIA)
MKU (INDIA)

Morgan Advanced Materials Composites and Defence Systems (UK)
Point Blank Enterprises (USA)
Rafael Advanced Defense Systems (ISRAEL)
Rheinmetall (GERMANY)
Rontan (BRAZIL)
Skydex Technologies (USA)
Stimpex (ROMANIA)
TAR Ideal Concepts (ISRAEL)
Teijin Aramid (NETHERLANDS)
TenCate Advanced Armor (USA)
Thorax (SOUTH AFRICA)
TYR Tactical (USA)
US Cavalry (USA)
Verseidag Ballistic Protection (FINLAND)
VestGuard UK (UK)
YF Protector (CHINA)
Zebra Armour (SOUTH AFRICA)

Associations

ABIMDE – Associação Brasileira das Indústrias de Materiais de Defesa e Segurança (BRAZIL)
ADS Group (UK)
Canadian Association of Defence & Security Industries (CANADA)
GICAT – French Land Defence Manufacturers Association (FRANCE)
National Defense Industrial Association (USA)

Camouflage

Ametrine (USA)
BCB International (UK)
Camouflage Store (UK)
GMA Cover Corp (USA)
Marom Dolphin (ISRAEL)
MMI Outdoor (USA)
TAR Ideal Concepts (ISRAEL)

CBRN protection

Allen-Vanguard Canada (CANADA)
Allen-Vanguard UK (UK)
Alpha Design Technologies (INDIA)
Avon Protection (UK)
Battelle Memorial Institute (USA)
CamelBak Products (USA)
CANVS (USA)
Daniel Technologies (IRELAND)
Garanti Giyim (TURKEY)
General Dynamics UK (UK)
Gentex (USA)
HDT Global (USA)

J. Blaschke Wehrtechnik (AUSTRIA)
Kärcher Futuretech (GERMANY)
Lior Textile Industries (ISRAEL)
MKEK (TURKEY)
Ordnance Factory Board (INDIA)
Rheinmetall (GERMANY)
Sanmina (USA)
Smiths Detection (USA)
TAR Ideal Concepts (ISRAEL)

Clothing – protective clothing, uniforms

ADS (USA)
Allen-Vanguard Canada (CANADA)
Allen-Vanguard UK (UK)
Armadillo Merino (UK)
Aspen International (UK)
BCB International (UK)
Beechwood Equipment (UK)
Blackhawk (USA)
Condor Outdoor Products (USA)
Crye Precision (USA)
Daniel Technologies (IRELAND)
Eagle Industries Unlimited (USA)
Elite Defense (USA)
Elite Survival Systems (USA)
GK Pro (FRANCE)
Intelligent Armour (UK)
Kärcher Futuretech (GERMANY)
Leison (CHINA)
Lior Textile Industries (ISRAEL)
MAE Group International (USA)
Marck (FRANCE)
Marom Dolphin (ISRAEL)
Med-Eng (CANADA)
Milliken & Company (USA)
MMI Outdoor (USA)
Ordnance Factory Board (INDIA)
Polartec (USA)
TAR Ideal Concepts (ISRAEL)
Thorax (SOUTH AFRICA)
Umarex (GERMANY)
US Cavalry (USA)
VestGuard UK (UK)
W.L. Gore & Associates (USA)

Consultancy/support

CACI International (USA)
CANVS (USA)
Concurrent Technologies Corporation (USA)
Ideal Innovations (USA)
Janus Global Operations (USA)

Leidos (USA)
SRI International (USA)
Tekever (PORTUGAL)
Whitney, Bradley & Brown (USA)

Containers, rucksacks, bags

Aspen International (UK)
BCB International (UK)
Blackhawk (USA)
CamelBak Products (USA)
Colt Canada (CANADA)
Condor Outdoor Products (USA)
Daniel Technologies (IRELAND)
Eagle Industries Unlimited (USA)
Elite Defense (USA)
Elite Survival Systems (USA)
Intelligent Armour (UK)
LV Equipment (NETHERLANDS)
MAE Group International (USA)
Marom Dolphin (ISRAEL)
MMI Outdoor (USA)
Mystery Ranch (USA)
Pelican Products (USA)
Skedco (USA)
TAR Ideal Concepts (ISRAEL)
TYR Tactical (USA)
US Cavalry (USA)
Zero Manufacturing (USA)

EOD equipment

Allen-Vanguard Canada (CANADA)
Allen-Vanguard UK (UK)
Armour of America (USA)
EXPAL (SPAIN)
Hensoldt Sensors (GERMANY)
Med-Eng (CANADA)
Morgan Advanced Materials Composites and Defence Systems (UK)
TAR Ideal Concepts (ISRAEL)
Verseidag Ballistic Protection (FINLAND)

Eyewear/goggles

Alpha Design Technologies (INDIA)
Aspen International (UK)
BCB International (UK)
Enhanced Protection Systems (UK)
ESS (USA)
Gentex (USA)
Intelligent Armour (UK)
MAE Group International (USA)
Oakley (USA)
Radar Leather Division (ITALY)
Revision Military (USA)

Smith Optics (USA)
Tactical-Trading (UAE)
TAR Ideal Concepts
(ISRAEL)
US Cavalry (USA)
Wiley X (USA)

Footwear

ADS (USA)
Arroyo (BRAZIL)
Bates Footwear (USA)
Blackhawk (USA)
Condor Outdoor Products
(USA)
Danner (USA)
Elite Survival Systems (USA)
GK Pro (FRANCE)
HAIX North America (USA)
Imperial Armour (SOUTH
AFRICA)
Intelligent Armour (UK)
Leison (CHINA)
Oakley (USA)
Tactical-Trading (UAE)
TAR Ideal Concepts
(ISRAEL)
Thorax (SOUTH AFRICA)
Umarex (GERMANY)
US Cavalry (USA)
W.L. Gore & Associates
(USA)
YDS Boots (TURKEY)

Gloves

Aspen International (UK)
BCB International (UK)
CamelBak Products (USA)
DSM Dyneema
(NETHERLANDS)
GK Pro (FRANCE)
Leison (CHINA)
MKU (INDIA)
Oakley (USA)
Surrey Hi-Tech (CHINA)
TAR Ideal Concepts
(ISRAEL)
VestGuard UK (UK)
W.L. Gore & Associates
(USA)
Wiley X (USA)
YF Protector (CHINA)

Helmets

3M Advanced Materials
(USA)
Aero Innovations
(PHILIPPINES)
Allen-Vanguard Canada
(CANADA)
Allen-Vanguard UK (UK)
ArmorSource (USA)
Beechwood Equipment
(UK)
BJTYZ (CHINA)
Civil Defence Supply (UK)
Crye Precision (USA)
EnGarde Body Armor
(NETHERLANDS)
FMS Enterprises Migun
(ISRAEL)

Garanti Giyim (TURKEY)
Gentex (USA)
Glágio do Brasil (BRAZIL)
Global Industrial &
Defence Solutions (GIDS)
(PAKISTAN)
Glomex Military Supplies
(CZECH REPUBLIC)
Harsh Environmental
Applied Technologies
(USA)
Imperial Armour (SOUTH
AFRICA)
J-Forces (INDONESIA)
Leison (CHINA)
MARS Armor (BULGARIA)
Micaply (ITALY)
MKU (INDIA)
Morgan Advanced
Materials Composites and
Defence Systems (UK)
MSA France (FRANCE)
Ops-Core (USA)
Revision Military (USA)
Savox (FINLAND)
Šestan-Busch (CROATIA)
Stimpex (ROMANIA)
Surrey Hi-Tech (CHINA)
Tactical-Trading (UAE)
TAR Ideal Concepts
(ISRAEL)
VestGuard UK (UK)
YF Protector (CHINA)
Zebra Armour (SOUTH
AFRICA)

Inspection/detection

Allen-Vanguard Canada
(CANADA)
Allen-Vanguard UK (UK)
Civil Defence Supply (UK)
Daniel Technologies
(IRELAND)
General Dynamics UK (UK)
McQ (USA)
POC - Physical Optics (USA)
QinetiQ North America
(USA)
Raytheon BBN
Technologies (USA)
Safran Vectronix
(SWITZERLAND)
Smiths Detection (USA)
Teledyne FLIR (USA)
Teledyne FLIR (UK) (UK)
ULIS (FRANCE)

Knives

Benchmade Knife (USA)
Beretta (ITALY)
Blackhawk (USA)
Browning (USA)
Colt Canada (CANADA)
Daniel Technologies
(IRELAND)
Elite Survival Systems
(USA)
Gerber Gear (USA)
GK Pro (FRANCE)
Glock (AUSTRIA)

Kalashnikov Concern
(RUSSIA)
Leatherman Tool Group
(USA)
MAE Group International
(USA)
McMillan Group
International (USA)
Ontario Knife Company
(USA)
Remington Arms (USA)
Skedco (USA)
Spyderco (USA)
SureFire (USA)
Tactical-Trading (UAE)
TAR Ideal Concepts
(ISRAEL)
US Cavalry (USA)

Laser pointers/ rangefinders

Adams Industries (USA)
Advanced Defense
Systems, Inc (ADS) (USA)
Armasight (USA)
Aspen International (UK)
ATN (USA)
Aurora Tactical (USA)
Battelle Memorial Institute
(USA)
BE Meyers (USA)
CTC Defense (USA)
FN Herstal (BELGIUM)
Fotona (SLOVENIA)
Ge-Ha (GERMANY)
GEIM (FRANCE)
Hensoldt Optronics (Pty)
Ltd (SOUTH AFRICA)
Instro Precision (UK)
Jenoptik Advanced
Systems (USA)
L3 Advanced Laser Systems
Technology (USA)
L3Harris Technologies
(USA)
LaRue Tactical (USA)
Leonardo Land & Naval
Defence Electronics
(ITALY)
MAE Group International
(USA)
N-Vision Optics (USA)
Newcon Optik (CANADA)
Night Optics USA (USA)
Night Vision Experts (USA)
Nightline (USA)
Nivisys (USA)
Optics 1 (USA)
Rheinmetall (GERMANY)
Rheinmetall Nordic
(NORWAY)
Rheinmetall Soldier
Electronics (GERMANY)
Safran Electronics &
Defense (FRANCE)
Safran Vectronix
(SWITZERLAND)
SIG Sauer (USA)
Steiner Defense (USA)
Tactical-Trading (UAE)

Thermal Beacon (ISRAEL)
Thomas Jacks (UK)
Transvaro Elektron
(TURKEY)
US Night Vision (USA)

Lights

Adams Industries (USA)
ADS (USA)
Adventure Lights
(CANADA)
Aeronautical & General
Instruments (UK)
Aspen International (UK)
BCB International (UK)
Blackhawk (USA)
Browning (USA)
CAA Industries (ISRAEL)
Civil Defence Supply (UK)
Consolid Technology (UK)
Cyalume Technologies Inc
(USA)
Cyalume Technologies SAS
(FRANCE)
Daniel Technologies
(IRELAND)
Elite Defense (USA)
Emissive Energy (USA)
Energizer Hard Case
Tactical (USA)
Gerber Gear (USA)
GK Pro (FRANCE)
Hoffman Engineering
(USA)
LaRue Tactical (USA)
Leupold & Stevens (USA)
MAE Group International
(USA)
Meprolight (ISRAEL)
Night Optics USA (USA)
Night Vision Experts (USA)
Own the Night (Lceo LLC)
(USA)
Pelican Products (USA)
Phantom Products (USA)
Rheinmetall (GERMANY)
SCHOTT UK (UK)
Seitz Scientific Industries
(USA)
SIG Sauer (USA)
Streamlight (USA)
SureFire (USA)
Tactical-Trading (UAE)
TAR Ideal Concepts
(ISRAEL)
Thomas Jacks (UK)
Umarex (GERMANY)
US Cavalry (USA)

Medical supplies/ equipment

ADS (USA)
BCB International (UK)
HDT Global (USA)
MAE Group International
(USA)
Meridian Medical
Technologies (USA)
North American Rescue
(USA)

Rheinmetall (GERMANY)
Sawyer Products (USA)
Skedco (USA)
SP Services (UK)
TAR Ideal Concepts
(ISRAEL)
US Cavalry (USA)

Optics – EO, night vision

Acal BFI UK (UK)
Adams Industries (USA)
Allen-Vanguard UK (UK)
Armasight (USA)
Artemis Optical (UK)
Aselsan (TURKEY)
Aspect Technology &
Equipment (USA)
ATN (USA)
Aurora Tactical (USA)
BAE Systems (UK)
BAE Systems Electronic
Systems (USA)
BCB International (UK)
BE Meyers (USA)
Beechwood Equipment
(UK)
BelOMA – Belarusian
Optical & Mechanical
Association (BELARUS)
Bertin Technologies
(FRANCE)
Bharat Electronics (INDIA)
Britannia 2000 (UK)
CANVS (USA)
Consolite Technology (UK)
Defence Vision Systems
(UK)
DO Systems (UK)
Elbit Systems Intelligence
and Electro-optics – Elop
(ISRAEL)
EMX (USA)
Ge-Ha (GERMANY)
General Dynamics Mission
Systems (USA)
Glomex Military Supplies
(CZECH REPUBLIC)
GMK Tactical Products (UK)
Harris Communication
Systems (USA)
Hensoldt Optonics (Pty)
Ltd (SOUTH AFRICA)
Hoffman Engineering
(USA)
IAI Israel Aerospace
Industries (ISRAEL)
IAI Tamam (ISRAEL)
Kalinka Optics (USA)
Knight's Armament
Company (USA)
L3 Brashear (USA)
L3 Infrared Products
(USA)
L3Harris Technologies
(USA)
LaRue Tactical (USA)
Leonardo DRS (USA)
Leonardo Land & Naval
Defence Electronics
(ITALY)

Meopta – optika (CZECH
REPUBLIC)
Meprolight (ISRAEL)
Military & Law Enforcement
Technologies (AUSTRALIA)
MKU (INDIA)
MOHOC (USA)
N-Vision Optics (USA)
New Infrared Technologies
(SPAIN)
Newcon Optik (CANADA)
Night Optics USA (USA)
Night Vision Experts (USA)
Night Vision Store (USA)
Nivisys (USA)
Northrop Grumman (USA)
Novosibirsk Instrument-
Making Plant (RUSSIA)
OIP Sensor Systems
(BELGIUM)
Optix (BULGARIA)
Ordnance Factory Board
(INDIA)
Own the Night (Lceco LLC)
(USA)
PCO (POLAND)
Pyser SGI (UK)
QinetiQ (UK)
Qioptiq (UK)
Raytheon (USA)
Raytheon EO Innovations
(USA)
Rheinmetall (GERMANY)
Rheinmetall Defence
Electronics (GERMANY)
Rheinmetall Nordic
(NORWAY)
Safran Electronics &
Defense (FRANCE)
Safran Vectronix
(SWITZERLAND)
SCHOTT AG (GERMANY)
SCHOTT UK (UK)
Seiler Instrument &
Manufacturing (USA)
Shibli (PAKISTAN)
Starlight NV (UK)
Steiner Defense (USA)
TAR Ideal Concepts
(ISRAEL)
Technical Consultants
International (ISRAEL)
Teledyne FLIR (USA)
Teledyne FLIR (UK) (UK)
Thales (FRANCE)
Thales Angenieux
(FRANCE)
Thales Australia
(AUSTRALIA)
Thales UK (UK)
Theon Sensors (GREECE)
Thermal Beacon (ISRAEL)
Thermoteknix Systems
(UK)
Thomas Jacks (UK)
Transvaro Elektron
(TURKEY)
ULIS (FRANCE)
Umarex (GERMANY)
US Night Vision (USA)

Yunnan Olightek Opto-
Electronic Technology
(CHINA)

Optics – observation, binoculars

Acal BFI UK (UK)
Aero Innovations
(PHILIPPINES)
BCB International (UK)
Bertin Technologies
(FRANCE)
Bharat Electronics (INDIA)
Cheltek Defence (UK)
Dat Con Defence
(SLOVENIA)
Elbit Systems Intelligence
and Electro-optics – Elop
(ISRAEL)
Fraser Optics (USA)
Glomex Military Supplies
(CZECH REPUBLIC)
GMK Tactical Products (UK)
Harsh Environmental
Applied Technologies
(USA)
Hensoldt Optonics (Pty)
Ltd (SOUTH AFRICA)
IMEC Integration (SOUTH
AFRICA)
Instro Precision (UK)
L3 Infrared Products (USA)
Leupold & Stevens (USA)
MKU (INDIA)
Newcon Optik (CANADA)
Night Optics USA (USA)
Night Vision Devices (USA)
Night Vision Experts (USA)
Night Vision Store (USA)
Nightline (USA)
Northrop Grumman
(USA)
Northrop Grumman UK
(UK)
Novosibirsk Instrument-
Making Plant (RUSSIA)
Ordnance Factory Board
(INDIA)
PCO (POLAND)
Pyser SGI (UK)
Raytheon (USA)
Rheinmetall Nordic
(NORWAY)
Safran Electronics &
Defense (FRANCE)
Safran Vectronix
(SWITZERLAND)
Starlight NV (UK)
Synectics (UK)
TAR Ideal Concepts
(ISRAEL)
Teledyne FLIR (USA)
Teledyne FLIR (UK) (UK)
Thermoteknix Systems (UK)
Thomas Jacks (UK)

Alpha Design Technologies
(INDIA)
Armasight (USA)
Aselsan (TURKEY)
ATN (USA)
Aurora Tactical (USA)
BAE Systems (UK)
BAE Systems Electronic
Systems (USA)
BAE Systems Oasys (USA)
Barrett (USA)
BE Meyers (USA)
Beechwood Equipment
(UK)
BelOMA – Belarusian
Optical & Mechanical
Association (BELARUS)
Bharat Electronics (INDIA)
Britannia 2000 (UK)
CAA Industries (ISRAEL)
CANVS (USA)
Colt Canada (CANADA)
Colt Defense (USA)
Crimson Trace (USA)
Daniel Technologies
(IRELAND)
Elbit Systems Intelligence
and Electro-optics – Elop
(ISRAEL)
Elite Defense (USA)
EMX (USA)
FocusOptech (SOUTH
KOREA)
Ge-Ha (GERMANY)
General Dynamics Mission
Systems (USA)
Glomex Military Supplies
(CZECH REPUBLIC)
GMK Tactical Products (UK)
Graflex (USA)
Hartman (ISRAEL)
Hensoldt Optonics GmbH
(GERMANY)
IMEC Integration (SOUTH
AFRICA)
Instro Precision (UK)
Istec Services (UK)
Kalinka Optics (USA)
Knight's Armament
Company (USA)
L3 Space & Sensors (USA)
L3Harris Technologies
(USA)
LaRue Tactical (USA)
Lestech (CHINA)
Leonardo Land & Naval
Defence Electronics
(ITALY)
Leupold & Stevens (USA)
Liteye Systems (USA)
Lucid (USA)
Magpul Industries (USA)
Meopta – optika (CZECH
REPUBLIC)
Meprolight (ISRAEL)
Military & Law Enforcement
Technologies (AUSTRALIA)
MKU (INDIA)
N-Vision Optics (USA)
Night Optics USA (USA)

Optics – weapon sights, scopes

Aimpoint AB (SWEDEN)
Aimpoint Inc (USA)

Night Vision Devices (USA)
 Night Vision Experts (USA)
 Night Vision Store (USA)
 Nightforce Optics (USA)
 Nightline (USA)
 Nivisys (USA)
 Northrop Grumman (USA)
 Novosibirsk Instrument-
 Making Plant (RUSSIA)
 Optix (BULGARIA)
 Ordnance Factory Board
 (INDIA)
 PCO (POLAND)
 Pyser SGI (UK)
 Qioptiq (UK)
 Raytheon (USA)
 Raytheon ELCAN Optical
 Technologies (CANADA)
 Raytheon EO Innovations
 (USA)
 Rheinmetall (GERMANY)
 Ring Sights (UK)
 Rippel Effect Systems
 (SOUTH AFRICA)
 Safran Vectronix
 (SWITZERLAND)
 Schmidt & Bender
 (GERMANY)
 Seiler Instrument &
 Manufacturing (USA)
 Senop Optronics
 (FINLAND)
 Shibli (PAKISTAN)
 Shield Sights (UK)
 SIG Sauer (USA)
 Smart Shooter (ISRAEL)
 Starlight NV (UK)
 Steiner Defense (USA)
 TAR Ideal Concepts
 (ISRAEL)
 Technical Consultants
 International (ISRAEL)
 Teledyne FLIR (USA)
 Teledyne FLIR (UK) (UK)
 Theon Sensors (GREECE)
 Thomas Jacks (UK)
 Transvaro Elektron
 (TURKEY)
 Trijicon (USA)
 Trijicon (USA)
 Umarex (GERMANY)

Power, portable power, batteries

Arotech (USA)
 Bren-Tronics (USA)
 Denchi Power (UK)
 Energizer (USA)
 GMK Tactical Products
 (UK)
 Protonex Technology (USA)
 SAFT (FRANCE)
 SFC Energy (GERMANY)
 Steatite Batteries (UK)
 SureFire (USA)
 Utralife (USA)

Research and development

CSIR (SOUTH AFRICA)

Hohenstein Institute
 (GERMANY)
 Knight's Armament
 Company (USA)
 QinetiQ (UK)
 ST Engineering Land
 Systems (SINGAPORE)
 Thales Australia
 (AUSTRALIA)
 Thales UK (UK)
 TNO (NETHERLANDS)

Safety, survival equipment

Airborne Systems North
 America (USA)
 Aspen International (UK)
 Avon Protection (UK)
 BCB International (UK)
 Blackhawk (USA)
 Emergency Beacon (USA)
 Kärcher Futuretech
 (GERMANY)
 MAE Group International
 (USA)
 Micaply (ITALY)
 Sawyer Products (USA)
 Skedco (USA)
 US Cavalry (USA)

Signalling

Adams Industries (USA)
 Adventure Lights
 (CANADA)
 BE Meyers (USA)
 Lacroix (FRANCE)
 Meprolight (ISRAEL)
 MKEK (TURKEY)
 Phantom Products (USA)
 Rheinmetall (GERMANY)
 SM Creative Electronics
 (INDIA)
 SME Ordnance
 (MALAYSIA)
 TAR Ideal Concepts
 (ISRAEL)
 Thomas Jacks (UK)

Tools

Colt Canada (CANADA)
 Daniel Technologies
 (IRELAND)
 Elite Survival Systems
 (USA)
 Gerber Gear (USA)
 Kipper Tool (USA)
 Leatherman Tool Group
 (USA)
 Milkor (SOUTH AFRICA)
 Otis Technology (USA)
 US Cavalry (USA)

Torches

Aspen International (UK)
 Blackhawk (USA)
 Intelligent Armour (UK)
 Pelican Products (USA)
 Streamlight (USA)
 SureFire (USA)
 US Cavalry (USA)

Tracking/GPS/RFID

Alpha Design Technologies
 (INDIA)
 Emergency Beacon (USA)
 Glomex Military Supplies
 (CZECH REPUBLIC)
 IAI Israel Aerospace
 Industries (ISRAEL)
 L3 Brashear (USA)
 Leonardo Land & Naval
 Defence Electronics
 (ITALY)
 New Infrared Technologies
 (SPAIN)
 RedWeb Trackers (UK)
 Rheinmetall (GERMANY)
 Steiner Defense (USA)
 Trex Enterprises (USA)

Training

Action Target (USA)
 Air Target Sweden
 (SWEDEN)
 Alion Science and
 Technology (USA)
 Allen-Vanguard Canada
 (CANADA)
 Allen-Vanguard UK (UK)
 Archer – Radom Arms
 Factory LLC (POLAND)
 Arotech (USA)
 Barrett (USA)
 Battlefield Sim (UK)
 Bohemia Interactive
 Simulations (CZECH
 REPUBLIC)
 Boston Dynamics (USA)
 CACI International (USA)
 CAE (CANADA)
 Caracal (UAE)
 Česká zbrojovka (CZECH
 REPUBLIC)
 Chemring Defence UK (UK)
 CHI Systems (USA)
 Cubic Global Defense (USA)
 Cubic Range Design
 Solutions (UK)
 Cyalume Technologies Inc
 (USA)
 Cyalume Technologies SAS
 (FRANCE)
 Daniel Technologies
 (IRELAND)
 Desert Tech (USA)
 Diehl Defence (GERMANY)
 Drumgrange (UK)
 DTM Global (UK)
 E-COM (CZECH REPUBLIC)
 Elbit Systems (ISRAEL)
 Elbit Systems Land
 (ISRAEL)
 Emirates Shooting
 Equipment (UAE)
 Explosive Learning
 Solutions (UK)
 Fidelity Technologies (USA)
 GDI Simulation (FRANCE)
 General Dynamics (USA)
 General Dynamics Mission
 Systems (USA)

Glomex Military Supplies
 (CZECH REPUBLIC)
 IAI Israel Aerospace
 Industries (ISRAEL)
 Inovex Simulation &
 Training (SWITZERLAND)
 Kongsberg Defence &
 Aerospace (NORWAY)
 Krauss-Maffei Wegmann
 (GERMANY)
 Laser Shot (USA)
 MAK Technologies (USA)
 McMillan Group
 International (USA)
 MGM Targets (USA)
 Milo Range (USA)
 MS Instruments (UK)
 National Defense Industrial
 Association (USA)
 Newman & Spurr
 Consultancy (NSC) (UK)
 Night Readiness (USA)
 Noptel (FINLAND)
 Northrop Grumman
 Innovation Systems (USA)
 Presagis (CANADA)
 QinetiQ (UK)
 QinetiQ Target Systems
 (UK)
 Rafael Advanced Defense
 Systems (ISRAEL)
 Raydon (USA)
 Rheinmetall (GERMANY)
 Rheinmetall Defence
 Electronics (GERMANY)
 RUAG Defence
 (SWITZERLAND)
 Saab (SWEDEN)
 SimiCon Inc (USA)
 Smart Solutions (UK)
 Smith & Wesson (USA)
 STM Savunma Teknolojileri
 Muhendislik ve Ticaret
 (TURKEY)
 Sykes Global Services (UK)
 Tactical-Trading (UAE)
 TAR Ideal Concepts
 (ISRAEL)
 Thales Australia
 (AUSTRALIA)
 Thales UK (UK)
 The Tatitlek Corporation
 (USA)
 TNO (NETHERLANDS)
 Truvelo Armoury
 Manufacturers (SOUTH
 AFRICA)
 TTS Theissen Training
 System (GERMANY)
 UTC Aerospace Systems –
 ISR Systems (USA)
 VirTra (USA)
 Whitney, Bradley & Brown
 (USA)

Water/hydration

BCB International (UK)
 CamelBak Products (USA)
 Eagle Industries Unlimited
 (USA)

Elite Survival Systems (USA)
Kärcher Futuretech
(GERMANY)
Marom Dolphin (ISRAEL)
MMI Outdoor (USA)
TYR Tactical (USA)

Weapon-mounted fire control

Adams Industries (USA)
Advanced Defense
Systems, Inc (ADS) (USA)
Corner Shot (ISRAEL)
Elbit Systems of America
(USA)
FN Herstal (BELGIUM)
Instro Precision (UK)
L3 Brashear (USA)
Rheinmetall (GERMANY)
Safran Electronics &
Defense (FRANCE)
ST Engineering Land
Systems (SINGAPORE)
Yugoimport-SDPR J.P
(SERBIA)

Weapons – accessories

Accuracy International (UK)
Adams Industries (USA)
Ase Ultra (FINLAND)
Aspen International (UK)
Aurora Tactical (USA)
Barrett (USA)
BCB International (UK)
BelOMA – Belarusian
Optical & Mechanical
Association (BELARUS)
Beretta (ITALY)
Beretta USA (USA)
Blackhawk (USA)
Browning (USA)
CAA Industries (ISRAEL)
Capco (USA)
Colt Canada (CANADA)
Colt Defense (USA)
Crimson Trace (USA)
Daniel Defense (USA)
Daniel Technologies
(IRELAND)
Delta P Design (USA)
Desert Tech (USA)
Eagle Industries Unlimited
(USA)
Elite Defense (USA)
Elite Survival Systems (USA)
Enhanced Protection
Systems (UK)
FNH USA (USA)
Gemtech (USA)
GK Pro (FRANCE)
Glock (AUSTRIA)
Graflex (USA)
Heckler & Koch (GERMANY)
Heckler & Koch Defense
(USA)
Israel Weapon Industries
(IWI) (ISRAEL)
IWI US (USA)
Kalashnikov Concern
(RUSSIA)

Kalinka Optics (USA)
Knight's Armament
Company (USA)
LaRue Tactical (USA)
Leupold & Stevens (USA)
Lewis Machine & Tool
Company (USA)
Lucid (USA)
Marom Dolphin (ISRAEL)
McMillan Group
International (USA)
Milkor (SOUTH AFRICA)
N-Vision Optics (USA)
Nightforce Optics (USA)
Otis Technology (USA)
Own the Night (Lceo LLC)
(USA)
Radar Leather Division
(ITALY)
Radetec Technology (USA)
Remington Arms (USA)
Rheinmetall (GERMANY)
Rippel Effect Systems
(SOUTH AFRICA)
Romarm (ROMANIA)
SIG Sauer (USA)
SilencerCo (USA)
SO SIA 'Fort' (UKRAINE)
TAR Ideal Concepts
(ISRAEL)
TISAŞ – Trabzon Gun
Industry (TURKEY)
Trijicon (USA)
Trijicon (USA)
Umarex (GERMANY)
US Cavalry (USA)
W&E Platt (AUSTRALIA)
Wilcox Industries (USA)

Weapons – ammunition

Archer – Radom Arms
Factory LLC (POLAND)
Arex (SLOVENIA)
Australian Munitions
(AUSTRALIA)
Barrett (USA)
CBC (BRAZIL)
Century Arms (USA)
Compel Industries
(SLOVAKIA)
Cyalume Technologies Inc
(USA)
Cyalume Technologies SAS
(FRANCE)
D Dupleks (LATVIA)
Daniel Technologies
(IRELAND)
Day & Zimmermann (USA)
DefendTex (AUSTRALIA)
Denel Dynamics (SOUTH
AFRICA)
Desert Tech (USA)
Diehl Defence (GERMANY)
Elbit Systems Land
(ISRAEL)
EXPAL (SPAIN)
FN Herstal (BELGIUM)
General Dynamics
Ordnance and Tactical
Systems (USA)

Hellenic Defence Systems
(EBO-PYRKAL) (GREECE)
Hirtenberger Defence
Systems (AUSTRIA)
Kalashnikov Concern
(RUSSIA)
Kintex (BULGARIA)
Lacroix (FRANCE)
McMillan Group
International (USA)
MKEK (TURKEY)
Nammo (NORWAY)
Nammo Lapua (FINLAND)
Nioa (AUSTRALIA)
Northrop Grumman
Innovation Systems (USA)
Ordnance Factory Board
(INDIA)
Poongsan (SOUTH KOREA)
Remington Arms (USA)
Rheinmetall (GERMANY)
Rheinmetall Waffe
Munition Arges (AUSTRIA)
Romarm (ROMANIA)
RUAG Ammotec
(SWITZERLAND)
Sako (FINLAND)
SME Ordnance (MALAYSIA)
SO SIA 'Fort' (UKRAINE)
ST Engineering Land
Systems (SINGAPORE)
Stiletto Systems (UKRAINE)
TAR Ideal Concepts
(ISRAEL)
Thales Australia
(AUSTRALIA)
Umarex (GERMANY)
Winchester Ammunition
(USA)
Yugoimport-SDPR J.P
(SERBIA)

Weapons – assault rifles and carbines

Accuracy International (UK)
Agencija Alan (CROATIA)
Archer – Radom Arms
Factory LLC (POLAND)
Arsenal (BULGARIA)
Barrett (USA)
Beretta (ITALY)
Beretta USA (USA)
Browning (USA)
Caracal (UAE)
CBC (BRAZIL)
Century Arms (USA)
CG Haenel (GERMANY)
Colt Canada (CANADA)
Colt Defense (USA)
Compel Industries
(SLOVAKIA)
Daniel Defense (USA)
DefendTex (AUSTRALIA)
Denel Dynamics (SOUTH
AFRICA)
Desert Tech (USA)
Emtan Karmiel (ISRAEL)
FN Herstal (BELGIUM)
Heckler & Koch
(GERMANY)

Heckler & Koch Defense
(USA)
IMBEL (BRAZIL)
IWI US (USA)
Kalashnikov Concern
(RUSSIA)
KBP Instrument Design
Bureau (RUSSIA)
Knight's Armament
Company (USA)
KRISS USA (USA)
LaRue Tactical (USA)
Lewis Machine & Tool
Company (USA)
Magnum Research (USA)
McMillan Group
International (USA)
MKEK (TURKEY)
Norinco (CHINA)
Ordnance Factory Board
(INDIA)
Pindad (Persero)
(INDONESIA)
Remington Arms (USA)
Romarm (ROMANIA)
Rosoboronexport (RUSSIA)
Sako (FINLAND)
Sarsilmaz Fire Arms
(TURKEY)
Schmeisser (GERMANY)
SIG Sauer (USA)
Silver Shadow Advanced
Security Systems (ISRAEL)
Smith & Wesson (USA)
SNT Motiv (SOUTH KOREA)
SO SIA 'Fort' (UKRAINE)
ST Engineering Land
Systems (SINGAPORE)
Steyr Mannlicher (AUSTRIA)
Stoeger Industries (USA)
Swiss Arms
(SWITZERLAND)
TAR Ideal Concepts
(ISRAEL)
Thales Australia
(AUSTRALIA)
TsNIITochMash (RUSSIA)
US Ordnance (USA)
Yugoimport-SDPR J.P
(SERBIA)

Weapons – assault/ antitank

Arsenal (BULGARIA)
Bazalt (RUSSIA)
Compel Industries
(SLOVAKIA)
Dynamit Nobel Defence
(GERMANY)
Instalaza (SPAIN)
Jadara Equipment
and Defence Systems
(JORDAN)
Jordan Design and
Development Bureau
(JODDB) (JORDAN)
KBP Instrument Design
Bureau (RUSSIA)
LIG Nex1 (SOUTH KOREA)
Lockheed Martin (USA)

Lockheed Martin Missiles
and Fire Control (USA)
MBDA (FRANCE)
Mectron (BRAZIL)
Nammo (NORWAY)
Planta Chemical Plant
(RUSSIA)
Poly Technologies (CHINA)
Rafael Advanced Defense
Systems (ISRAEL)
Raytheon (USA)
Rosoboronexport (RUSSIA)
Saab (SWEDEN)
Ukrspesexport (UKRAINE)
V.A. Degtyarev Plant
(RUSSIA)

Weapons – explosives

Australian Munitions
(AUSTRALIA)
Ensign-Bickford Aerospace
& Defense (USA)
Eureco (FRANCE)
EXPAL (SPAIN)
Hellenic Defence Systems
(EBO-PYRKAL) (GREECE)
MKEK (TURKEY)
Ordnance Factory Board
(INDIA)
Romarm (ROMANIA)
Rosoboronexport (RUSSIA)
ST Engineering Land
Systems (SINGAPORE)
Yugoimport-SDPR J.P.
(SERBIA)

Weapons – hand grenades

Australian Munitions
(AUSTRALIA)
Denel Aviation (SOUTH
AFRICA)
EXPAL (SPAIN)
Hellenic Defence Systems
(EBO-PYRKAL) (GREECE)
Lacroix (FRANCE)
MKEK (TURKEY)
Rheinmetall (GERMANY)
Rheinmetall Waffe
Munition Arges (AUSTRIA)
Romarm (ROMANIA)
Rosoboronexport (RUSSIA)
SME Ordnance (MALAYSIA)
ST Engineering Land
Systems (SINGAPORE)
TAR Ideal Concepts
(ISRAEL)
Thales Australia
(AUSTRALIA)

Weapons – individual grenade launchers

Abrams Airborne
Manufacturing Inc.
(USA)
Arsenal (BULGARIA)
Beretta (ITALY)
Česká zbrojovka (CZECH
REPUBLIC)
Colt Defense (USA)

Daniel Technologies
(IRELAND)
Elbit Systems Land
(ISRAEL)
FN Herstal (BELGIUM)
Heckler & Koch (GERMANY)
Heckler & Koch Defense
(USA)
KBP Instrument Design
Bureau (RUSSIA)
Kintex (BULGARIA)
Lewis Machine & Tool
Company (USA)
MBDA (FRANCE)
Milkor (SOUTH AFRICA)
Milkor (USA)
MKEK (TURKEY)
Norinco (CHINA)
Northrop Grumman
Innovation Systems (USA)
NTGS (SPAIN)
OBRUM (POLAND)
Ordnance Factory Board
(INDIA)
Rheinmetall (GERMANY)
Rippel Effect Systems
(SOUTH AFRICA)
Romarm (ROMANIA)
Rosoboronexport (RUSSIA)
SO SIA 'Fort' (UKRAINE)
ST Engineering Land
Systems (SINGAPORE)
Swiss Arms
(SWITZERLAND)
TAR Ideal Concepts
(ISRAEL)
US Ordnance (USA)
Zakłady Mechaniczne
Tarnów (POLAND)

Weapons – less-lethal, non-lethal

Axon (USA)
FN Herstal (BELGIUM)
CK Pro (FRANCE)
Milkor (SOUTH AFRICA)
MKEK (TURKEY)
Rheinmetall (GERMANY)
Rippel Effect Systems
(SOUTH AFRICA)
Romarm (ROMANIA)
SO SIA 'Fort' (UKRAINE)
ST Engineering Land
Systems (SINGAPORE)
Umarex (GERMANY)
UMO (POLAND)

Weapons – machine guns

Archer – Radom Arms
Factory LLC (POLAND)
Arsenal (BULGARIA)
Central Design and
Research Bureau of
Sporting and Hunting
Weapons (TsKIB SOO)
(RUSSIA)
Century Arms (USA)
Česká zbrojovka (CZECH
REPUBLIC)

Colt Canada (CANADA)
Colt Defense (USA)
Compel Industries
(SLOVAKIA)
Daniel Technologies
(IRELAND)
Denel Dynamics (SOUTH
AFRICA)
FN Herstal (BELGIUM)
FNH UK (UK)
FNH USA (USA)
Forjas Taurus (BRAZIL)
General Dynamics
European Land Systems
– Santa Bárbara Sistemas
(SPAIN)
General Dynamics
Ordnance and Tactical
Systems (USA)
Hellenic Defence Systems
(EBO-PYRKAL) (GREECE)
Israel Weapon Industries
(IWI) (ISRAEL)
IWI US (USA)
KBP Instrument Design
Bureau (RUSSIA)
Kintex (BULGARIA)
Knight's Armament
Company (USA)
KRISS USA (USA)
Lewis Machine & Tool
Company (USA)
Ministry of Defence
Industry of Azerbaijan
Republic (AZERBAIJAN)
MKEK (TURKEY)
Norinco (CHINA)
Northrop Grumman
Innovation Systems (USA)
OBRUM (POLAND)
Ordnance Factory Board
(INDIA)
Rheinmetall (GERMANY)
Rheinmetall Waffe
Munition Arges (AUSTRIA)
Romarm (ROMANIA)
Rosoboronexport (RUSSIA)
Sarsilmaz Fire Arms
(TURKEY)
SNT Motiv (SOUTH KOREA)
SO SIA 'Fort' (UKRAINE)
ST Engineering Land
Systems (SINGAPORE)
TAR Ideal Concepts
(ISRAEL)
Textron Systems
Unmanned Systems
(USA)
TsNIITochMash (RUSSIA)
US Ordnance (USA)
V.A. Degtyarev Plant
(RUSSIA)
Yugoimport-SDPR J.P.
(SERBIA)
Zakłady Mechaniczne
Tarnów (POLAND)

Weapons – mortars

Arsenal (BULGARIA)
Burevestnik (RUSSIA)

Denel Dynamics (SOUTH
AFRICA)
EFW Inc (USA)
Elbit Systems (ISRAEL)
Elbit Systems Land
(ISRAEL)
Excalibur Army (CZECH
REPUBLIC)
EXPAL (SPAIN)
General Dynamics (USA)
Hellenic Defence Systems
(EBO-PYRKAL) (GREECE)
Hirttenberger Defence
Systems (AUSTRIA)
Hyundai WIA (SOUTH
KOREA)
Jordan Design and
Development Bureau
(JODDDB) (JORDAN)
Kintex (BULGARIA)
MKEK (TURKEY)
Motovilikhinskiye zavody
(RUSSIA)
Norinco (CHINA)
OBRUM (POLAND)
Ordnance Factory Board
(INDIA)
Rheinmetall (GERMANY)
Rosoboronexport (RUSSIA)
ST Engineering Land
Systems (SINGAPORE)
TAR Ideal Concepts
(ISRAEL)
TBR – Tehnični biro Ravne
(SLOVENIA)
TDA Armements (FRANCE)
UralVagonZavod (RUSSIA)
VOP-CZ (CZECH
REPUBLIC)
Watervliet Arsenal (USA)
Zakłady Mechaniczne
Tarnów (POLAND)

Weapons – pistols

Archer – Radom Arms
Factory LLC (POLAND)
Arex (SLOVENIA)
Beretta (ITALY)
Beretta USA (USA)
Browning (USA)
CAA Industries (ISRAEL)
Canik (TURKEY)
Caracal (UAE)
Century Arms (USA)
Česká zbrojovka (CZECH
REPUBLIC)
CG Haenel (GERMANY)
Colt Defense (USA)
Compel Industries
(SLOVAKIA)
Daniel Technologies
(IRELAND)
FN Herstal (BELGIUM)
FNH USA (USA)
Glock (AUSTRIA)
Grand Power (SLOVAKIA)
Heckler & Koch
(GERMANY)
Heckler & Koch Defense
(USA)

Israel Weapon Industries (IWI) (ISRAEL)
 IWI US (USA)
 KBP Instrument Design Bureau (RUSSIA)
 Kintex (BULGARIA)
 KRISS USA (USA)
 Magnum Research (USA)
 MKEK (TURKEY)
 Ordnance Factory Board (INDIA)
 Romarm (ROMANIA)
 Rosoboronexport (RUSSIA)
 Sarsilmaz Fire Arms (TURKEY)
 SIG Sauer (USA)
 Smith & Wesson (USA)
 SNT Motiv (SOUTH KOREA)
 SO SIA 'Fort' (UKRAINE)
 ST Engineering Land Systems (SINGAPORE)
 Steyr Mannlicher (AUSTRIA)
 Stiletto Systems (UKRAINE)
 Stoeger Industries (USA)
 Tactical-Trading (UAE)
 TAR Ideal Concepts (ISRAEL)
 Taurus International Manufacturing (USA)
 TISAŞ – Trabzon Gun Industry (TURKEY)

TsNIITochMash (RUSSIA)
 Umarex (GERMANY)
 Walther (GERMANY)
 Walther America (USA)

Weapons – rockets/ launchers

Compel Industries (SLOVAKIA)
 Elbit Systems Land (ISRAEL)
 MBDA (FRANCE)
 MKEK (TURKEY)
 Northrop Grumman Innovation Systems (USA)
 Ordnance Factory Board (INDIA)
 Rosoboronexport (RUSSIA)
 Roxel (FRANCE)
 TAR Ideal Concepts (ISRAEL)
 Ukrspecexport (UKRAINE)
 Yugoimport-SDPR J.P (SERBIA)

Weapons – shotguns

Benelli (USA)
 Benelli (ITALY)
 CBC (BRAZIL)
 DefendTex (AUSTRALIA)

Emtan Karmiel (ISRAEL)
 Gibraltar Arms (USA)
 Kalashnikov Concern (RUSSIA)
 UTC Aerospace Systems – ISR Systems (USA)

Weapons – sniper rifles

Accuracy International (UK)
 Aurora Tactical (USA)
 Barrett (USA)
 Caracal (UAE)
 Česká zbrojovka (CZECH REPUBLIC)
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Reconnaissance Marine assigned to the All Domain Reconnaissance Detachment sights in with an M4A1 carbine during a live-fire range at the Udari Range Complex. (Photo: USMC)

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Tel: +1 801 377 8033

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www.adamsindustries.com
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ADS

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Parkway, Suite 400, Virginia
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<https://adsinc.com>
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ADS Group

Salamanca Square, 9 Albert
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Tel: +44 1344 636200

Aero Innovations

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Agencija Alan

Nike Crškovića 15, 10000 Zagreb,
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export.dep1@aalan.hr
www.aalan.hr
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www.aim-ir.com
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Jägershillgatan 15, 213 75 Malmö,
SWEDEN
info@aimpoint.se
www.aimpoint.com
Tel: +46 40 671 5020

Aimpoint Inc

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20109, USA
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jamie.pindard@artemis-optical.
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www.aseutra.fi
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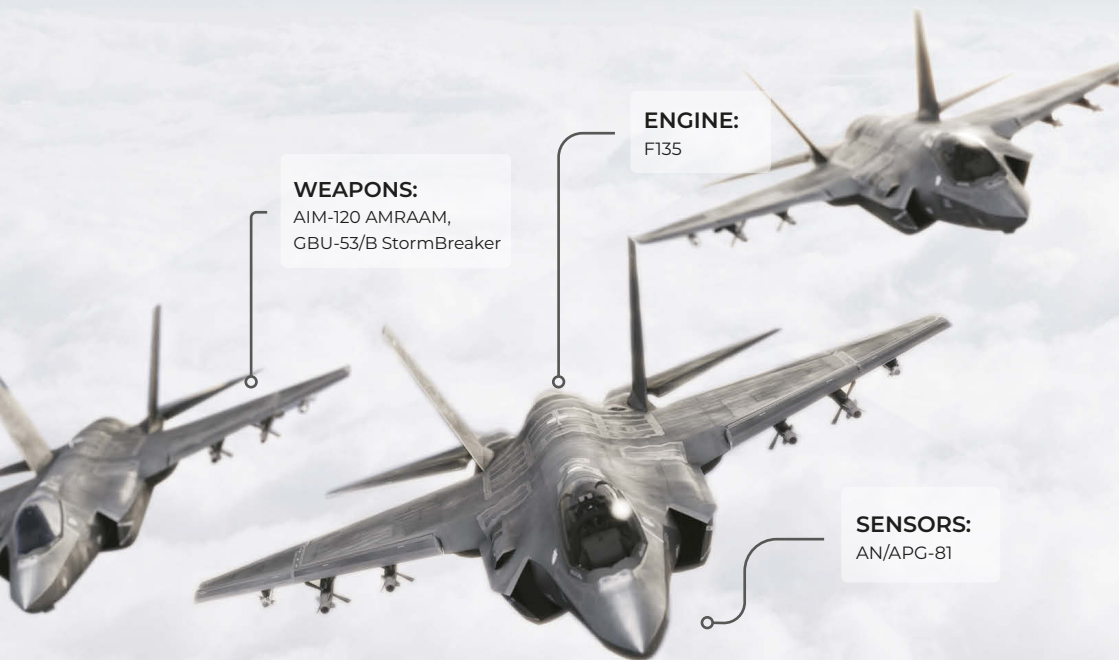
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Svatopluka Čecha 1283, 688 27
Uherský Brod, CZECH REPUBLIC
info@czub.cz
www.czub.cz
Tel: +420 572 651 111

CG Haenel

Schützenstrasse 26,
98527 Suhl, GERMANY
info@cg-haenel.de
www.cg-haenel.de
Tel: +49 3681 854 0

Cheltek Defence

Mythe Farm Business Centre,
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sales@cheltek.co.uk
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AFRICA
enquiries@csir.co.za
www.csir.co.za
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UK
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Cyalume Technologies Inc

910 SE 17th Street, 3rd Floor, Fort
Lauderdale, FL 33316, USA
info@cyalume.com
www.cyalume.com
Tel: +1 888 858 7881

Cyalume Technologies SAS

295 rue Mayor de Montricher, ZI
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info-europe@cyalume.com
www.cyalume.eu
Tel: +33 4 4237 1780

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info@ddupleks.lv
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GA 31308, USA
www.danieldefense.com
Tel: +1 866 554 4867

Daniel Technologies

19E Rosemount Business Park
Drive, Rosemount Business Park,
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info@danieltechnologies.ie
www.danieltechnologies.ie
Tel: +353 1 866 5691

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www.danner.com
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Dat Con Defence

Cvetlična ulica 52, 3313 Polzela,
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defence@dat-con.si
www.dat-con-defence.com
Tel: +386 37033 300

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Denel Dynamics

PO Box 7412, Centurion, 0046,
SOUTH AFRICA
communications@
deneldynamics.co.za
www.deneldynamics.co.za
Tel: +27 12 671 1911

Denel Land Systems

PO Box 7710, Pretoria, 0001,
SOUTH AFRICA
marketing@dlsys.co.za
www.denellandsystems.co.za
Tel: +27 12 620 9111

Desert Tech

PO Box 65816,
Salt Lake City, UT 84165, USA
international.sales@deserttech.com
http://deserttech.com
Tel: +1 801 975 7272

Detonics Defense Technologies

609 S. Breese Street 101, Millstadt,
IL 62260, USA
contact@detonicsdefense.com
http://detonicsdefense.com
Tel: +1 314 325 4790

DGIM

Av. Industria Militar No. 1111,
Naucalpan Edo. de Mex, CP 53950,
MEXICO
dcam.dgim@mail.sedena.gob.mx
www.gob.mx/sedena/acciones-y-
programas/contacto
Tel: 01 (800) 8383925

Diehl Defence

Alte Nussdorfer Str. 13, 88662
Überlingen, GERMANY
pr@diehl-defence.com
www.diehl.com/defence
Tel: +49 7551 89 01

Dillon Aero

8009 E. Dillons Way, Scottsdale,
AZ 85260, USA
alan@dillonaero.com
https://dillonaero.com
Tel: +1 480 333 5450

DO Systems

Hanger 62, Aviation Park
East, Bournemouth Airport,
Christchurch, Dorset, BH23 6NE,
UK
admin@dosystems.com
www.dosystems.co.uk
Tel: +44 1202 570 164

Drumgrange

Unit A, The Forum, Hanworth
Lane, Chertsey, Surrey, KT16 9JX,
UK
info@drumgrange.co.uk
www.drumgrange.com
Tel: +44 1932 581 100

DSM Dyneema

Urmonderbaan 22, 6167 RD
Geleen, NETHERLANDS
www.dyneema.com
Tel: +31 46 750 65 55

DTM Global

Dart Marine Park, Steamer Quay
Road, Totnes, Devon, TQ9 5AL, UK
sales@dtmglobal.com
www.dtmglobal.com
Tel: +44 1803 867 500

DuPont Protection Technologies

5401 Jefferson Davis Highway,
Richmond, VA 23234, USA
www.dupont.com
Tel: +1 800 931 3456

Dynamit Nobel Defence

Dr.-Hermann-Fleck-Allee 8, 57299
Burbach, GERMANY
info@dn-defence.com
www.dn-defence.com
Tel: +49 2736 46 2014

Dynasystems

Unit 8, New Forest Enterprise
Centre, Rushington Business
Park, Chapel Lane, Totton, SO40
9LA, UK
sales@dynasystems.co.uk
www.dynasystems.co.uk
Tel: +44 20 7384 2700

E-COM

Americka 3, CZ12000 Praha 2,
CZECH REPUBLIC
info@ecomso.cz
www.ecomso.com
Tel: +420 221 511 310

Eagle Industries Unlimited

2645 International Parkway, Suite
102, Virginia Beach, VA 23452, USA
eagle.cs@vistaoutdoor.com
www.eagleindustries.com
Tel: +1 888 343 7547

Elbit Systems

Advanced Technology Center, PO
Box 539, Haifa, 31053, ISRAEL
aerospace@elbitsystems.com
www.elbitsystems.com
Tel: +972 4 831 5315

Elbit Systems Intelligence and Electro-optics - Elop

Advanced Technology Park, PO
Box 1165, Rehovot, 761101, ISRAEL
thermalimaging@elbitsystems.
com
www.elbitsystems.com
Tel: +972 8 938 6211

Elbit Systems Land

P.O.B 1044, Ramat Hasharon,
4711001, ISRAEL
imimrktg@imisystems.com
www.imisystems.com
Tel: +972 3 548 5222

Elbit Systems Land and C4I

2 Ha'machshev Street, Netanya,
42507, ISRAEL
landc4i@elbitsystems.com
http://elbitsystems.com
Tel: +972 9 889 8194

Elbit Systems of America

220 Daniel Webster Highway,
Merrimack, NH 03054, USA
www.elbitsystems-us.com
Tel: +1 603 889 2500

Elite Defence

18600 West Old US Highway 12,
Chelsea, MI 48118, USA
www.elitedefense.com
Tel: +1 734 562 2153

Elite Survival Systems

310 West 12th Street, Washington,
MO 63090, USA
sales@elitesurvival.com
www.elitesurvival.com
Tel: +1 636 390 8360

Emergency Beacon

15 River Street, New Rochelle, NY
10801-4351, USA
patwyllie@yahoo.com
www.emergencybeaconcorp.com
Tel: +1 914 235 9400

Emirates Defence Industries Co

Al Raha Beach, HQ Building, Abu
Dhabi, UAE
info@edic.ae
http://edic.ae
Tel: +971 2 2056666

Emirates Shooting Equipment

Al Bakhit Center, Al Muraqqabat,
Deira, Dubai, UAE
emshoot@emirates.net.ae
www.emshoot.com
Tel: +971 4 266 6959

Emissive Energy

135 Circuit Drive, North Kingstown,
RI 02852, USA
info@inforce-mil.com
www.inforce-mil.com
Tel: +1 401 294 2030

Emtan Karmiel

POB 273

EMX

4200 Dow Road, Suite C,
Melbourne, FL 32934, USA
information@emxintl.com
www.emxinternational.com
Tel: +1 321 751 0111

Energizer

533 Maryville University Drive, St
Louis, MO 63141, USA
www.energizer.com
Tel: +1 314 985 2000

Energizer Hard Case Tactical

ReMAPP International, Eastport
North Business Park, 8 Vista Drive,
Building 8, Old Lyme, CT 06371,
USA
customerservice@remapp.com
www.hardcasetactical.com
Tel: +1 888 722 2460

EnGarde Body Armor

P.O. Box 17636, Amsterdam, 1001
JM, NETHERLANDS
www.engagebodyarmor.com
Tel: +31 255 517 381

Enhanced Protection Systems

Unit 1, Machine House, Newfields,
Moira, DE12 6EG, UK
info@enhancedpro.com
www.enhancedpro.com
Tel: +44 1283 224 999

Ensign-Bickford Aerospace & Defense

640 Hopmeadow Street, P.O. Box 429, Simsbury, CT 06070, USA
www.eba-d.com
 Tel: +1 860 843 2289

ESS

PO Box 1017, Sun Valley, ID 83353, USA
ess@esseyepro.com
www.esseyepro.com
 Tel: +1 208 726 4072

Eurencos

30 avenue Carnot, 91300 Massy, FRANCE
eurencos@eurencos.com
www.eurencos.com
 Tel: +33 1 80 00 21 90

Excalibur Army

Kodaňská ul 521, 101 00 Praha 10, CZECH REPUBLIC
info@excaliburarmy.cz
www.excaliburarmy.com
 Tel: +420 585 083 111

EXPAL

Avenida del Partenón, 16, 28042 Madrid, SPAIN
www.maxam.net/es/expal
 Tel: +34 91 722 0235

Explorer Cases

Via del Lavoro, 9, Loc. Crespellano, 40053 Valsamoggia (Bologna), ITALY
sales@explorercases.com
www.explorercases.com
 Tel: +39 051 65041

Explosive Learning Solutions

4 The Terraces, Library Avenue, Harwell Science & Innovation Campus, Harwell, Oxfordshire, OX11 0SG, UK
info@explosivelearningsolutions.com
www.explosivelearningsolutions.com
 Tel: +44 1235 861805

Fidelity Technologies

2501 Kutztown Road, Reading, PA 19605, USA
SimulationTraining@fidelitytech.com
www.fidelitytech.com
 Tel: +1 610 929 3330

Fiocchi

Via S. Barbara, 4, 23900 Lecco (LC), ITALY
info@fiocchi.com
www.fiocchigl.it
 Tel: +39 0341 473111

FirstSpear

2015 Corporate 44 Dr, Fenton, MO 63026, USA
sales@first-spear.com
www.first-spear.com
 Tel: +1 636 349 3820

FMS Enterprises Migun

Imber 27, Petah Tikva, ISRAEL
fms3@fms.co.il
<http://fms.co.il>
 Tel: +972 3 9223206

FN Herstal

Voie de Liege 33, 4040 Herstal, BELGIUM
info@fnherstal.com
www.fnherstal.com
 Tel: +32 4 240 81 11

FNH UK

Unit 1, Power Works, Slade Green Rd, Erith, DA8 2HU, UK
info@fnhuk.com
www.fnherstal.com
 Tel: +44 1322 338 052

FNH USA

PO Box 9424, McLean, VA 22102, USA
<https://fnamerica.com>
 Tel: +1 703 288 3500

FocusOptech

58, Gahyeon-ro, Tongjin, Gimpo, Gyeonggi, 10038, SOUTH KOREA
info@focusoptech.com
<http://focusoptech.com>
 Tel: +82 31 987 0945

Forcetek

Contrada San Salvatore, 63086 Force (AP), ITALY
sales@forcetek.it
www.forcetek.it
 Tel: +39 0736 373621

Forjas Taurus

Avenida do Forte, 511, Vila Ipiranga, Porto Alegre - RS, 91360-000, BRAZIL
sac@taurus.com.br
www.taurus.com.br
 Tel: +55 51 3021 3000

Fotona

Stegne 7, 1000 Ljubljana, SLOVENIA
www.fotona.com/en
 Tel: +386 1 500 91 00

Fraser Optics

210 Andrews Road, Trevose, PA 19053, USA
info@fraseroptics.com
<http://fraseroptics.com>
 Tel: +1 215 443 5240

Garanti Giyim

Organised Industrial Zone, Yerköy, Yozgat, TURKEY
info@garantigiym.com
www.garantigiym.com
 Tel: +90 354 558 71 07

GDI Simulation

MetaPole Elancourt, 1 boulevard Jean Moulin, CS40001, 78996 Elancourt Cedex, FRANCE
www.gdi-simulation.fr
 Tel: +33 1 6138 5000

Ge-Ha

Joh.-Müller-Str.10, 56068 Koblenz, GERMANY
info@pooth.net
www.ge-ha-tec.com
 Tel: +49 261 97385590

GEIM

Parc Technologique de Soye, 4, rue Galilée, 56270 PLOEMEUR, FRANCE
<http://geim.fr/en>
 Tel: +33 2 97 86 58 35

Gemtech

3750 E. Pewter Falls Street, Suite 100, Meridian, ID 83642, USA
www.gem-tech.com
 Tel: +1 833 350 9517

General Dynamics

2941 Fairview Park Drive, Suite 100, Falls Church, VA 22042-4513, USA
www.generaldynamics.com
 Tel: +1 703 876 3000

General Dynamics European Land Systems - Santa Bárbara Sistemas

P.E. Cristalia Edificio 7/8, C/Vía de los Poblados, 3, 28033 Madrid, SPAIN
info.sbs@gdels.com
www.gdels.com
 Tel: +34 91 585 01 10

General Dynamics Mission Systems

12450 Fair Lakes Circle, Fairfax, VA 22033, USA
info@gd-ms.com
<https://gdmissionsystems.com>
 Tel: +1 877 449 0600

General Dynamics Ordnance and Tactical Systems

11399 16th Court North, Suite 200, Saint Petersburg, FL 32716, USA
www.gd-ots.com
 Tel: +1 727 578 8100

General Dynamics UK

3, Bryn Brithdir, Blackwood,
Gwent, NP12 4AA, UK
enquiries@generaldynamics.
uk.com
www.generaldynamics.uk.com
Tel: +44 1495 236 300

Gentex

324 Main Street, Carbondale, PA
18407, USA
www.gentexcorp.com
Tel: +1 570 282 3550

Gerber Gear

14200 SW 72nd Ave, Portland, OR
97224, USA
info@gerbergear.com
www.gerbergear.com
Tel: +1 800 950 6161

Gibraltar Arms

55 W Willowbrook Drive, Meridian,
ID 83646, USA
www.gibraltar-arms.com
Tel: +1 877 664 5654

**GICAT - French Land Defence
Manufacturers Association**

3 Avenue Hoche, Hall 3 - 7ème
étage, 75008 Paris, FRANCE
www.gicat.com
Tel: +33 1 44 14 58 20

GK Pro

159 avenue Galliéni, 93177
Bagnolet, FRANCE
gk@gkpro.fr
www.gkpro.fr
Tel: +33 1 55 82 15 00

Glágio do Brasil

Rua dos Pampas, 332 - Prado, Belo
Horizonte, MG, 30410-580, BRAZIL
http://glagio.com.br
Tel: +55 31 3295 4843

**Global Industrial & Defence
Solutions (GIDS)**

Complex-II, Chaklala Garrison,
Rawalpindi, PAKISTAN
info@gids.com.pk
www.gids.com.pk
Tel: +92 51 928 0061

Glock

P.O. Box 9, A-2232 Deutsch-
Wagram, AUSTRIA
www.glock.com
Tel: +43 2247 90300 0

Glomex Military Supplies

Pomnenskova 61, 106 00 Prague 10,
CZECH REPUBLIC
info@glomex-ms.com
www.glomex-ms.com
Tel: +420 222 541 719

GMA Cover Corp

2440 20th Street, Port Huron, MI
48060, USA
Tel: +1 810 966 8916

GMK Tactical Products

Bear House, Concord Way,
Fareham, Hampshire, PO15 5RL,
UK
www.gmkt.co.uk
Tel: +44 1489 579999

Graflex

15855 Assembly Loop, Suite 100,
Jupiter, FL 33478, USA
sales@graflex.com
https://graflex.com
Tel: +1 561 691 5959

Grand Power

Priboj 558, 976 13 Slovenská Ľupča,
SLOVAKIA
sale@grandpower.eu
www.grandpower.eu
Tel: +421 48 472 85 00

HAIX North America

2320 Fortune Drive, Suite 120,
Lexington, KY 40509, USA
www.haix.com
Tel: +1 866 344 4249

**HAIX shoes Produktions &
Vertriebs**

Auhofstraße 10, 84048 Mainburg,
GERMANY
info@haix.de
www.haix.de
Tel: +49 8751 8625 888

Harris Communication Systems

1680 University Avenue, Rochester,
NY 14610, USA
http://harris.com
Tel: +1 585 244 5830

Hartman

Hartman Ltd, ISRAEL
info@hartman-il.com
http://hartman-il.com

HDT Global

30500 Aurora Road, Suite 100,
Solon, OH 44139, USA
info@hdtglobal.com
www.hdtglobal.com
Tel: +1 216 438 6111

Heckler & Koch

Heckler & Koch-Str. 1, 78727
Oberndorf a.N, GERMANY
hkinfoboard@heckler-koch-de.
com
www.heckler-koch.com
Tel: +49 7423 79 0

Heckler & Koch Defense

19980 Highland Vista Drive, Suite
190, Ashburn, VA 20147, USA
info@heckler-koch-us.com
www.heckler-koch.com
Tel: +1 703 450 1900

**Hellenic Defence Systems (EBO-
PYRKAL)**

1, Ilioupoleos Ave., Attica, 172 36 -
Hymettus, GREECE
info@eas.gr
www.eas.gr
Tel: +30 2109 799 000

Hensoldt Optonics (Pty) Ltd

Nellmapius Drive, Irene, 0046,
SOUTH AFRICA
www.hensoldt.net
Tel: +27 12 674 0215

Hensoldt Optonics GmbH

Carl-Zeiss-Straße 22, 73446
Oberkochen, GERMANY
www.hensoldt.net
Tel: +49 7364 9557 0

Hensoldt Sensors

Willy-Messerschmitt-Straße 3,
82024 Taufkirchen, GERMANY
www.hensoldt.net
Tel: +49 89 51518 0

Hirtenberger Defence Systems

Leobersdorfer Straße 31-33, 2552
Hirtenberg, AUSTRIA
hde@hirtenberger.com
https://hds.hirtenberger.com
Tel: +43 2256 811 84 234

Hoffman Engineering

8 Riverbend Drive, PO Box 4430,
Stamford, CT 06907-0430, USA
sales@hoffmanEngineering.com
www.hoffmanengineering.com
Tel: +1 203 425 8900

Hohenstein Institute

Schlosssteige 1, 74357
Bönnigheim, GERMANY
www.hohenstein.com
Tel: +49 7143 271 0

**Honeywell Safety & Productivity
Solutions**

9680 Old Bailes Road,
Fort Mill, SC 29707, USA
www.honeywellsafety.com/
quietpro
Tel: +1 800 430 5490

Honeywell Spectra

15801 Woods Edge Road, Colonial
Heights, VA 23834, USA
www.packagingcomposites-
honeywell.com/spectra
Tel: +1 800 695 5969

Hyundai WIA

153, Jeongdong-ro, Seongsan-gu,
Changwon, Gyeongnam, SOUTH
KOREA
www.hyundai-wia.com
Tel: +82 55 280 9114

IAI Israel Aerospace Industries

Ben Gurion International Airport,
70100, ISRAEL
corp.mkg@iai.co.il
www.iai.co.il
Tel: +972 3 935 3111

IAI Tamam

P.O. Box 75 I.Z., Yehud, 56100,
ISRAEL
jgalili@iai.co.il
www.iai.co.il
Tel: +972 3 531 5205

IBCOL

ul. Łowicka 35, Warsaw, 02-502,
POLAND
info@ibcol.pl
www.ibcol.pl
Tel: +48 22 853 57 53

Ideal Innovations

950 N. Glebe Rd., Suite 800,
Arlington, VA 22203, USA
info@idealinnovations.com
www.idealinnovations.com
Tel: +1 703 528 9101

IMBEL

Ordnance Industry of Brazil, Army
headquarters - Block H - 3rd Floor,
Urban Military Sector, SMU - CEP
70630-901, BRAZIL
www.imbel.gov.br
Tel: +55 61 3415 4547

IMEC Integration

Unit 6, 14th Avenue Centre, No.
42 Kessel Street, Johannesburg,
Fairland 2170, SOUTH AFRICA
dave.brownhill@wol.co.za
www.imecintegration.co.za
Tel: +27 11 431 0806

IMI Rocket Systems Division (RSD)

P.O. Box 1044, Ramat Hasharon,
4711001, ISRAEL
www.imisystems.com
Tel: +972 3 5485222

Imperial Armour

3 Clark Road, Westmead, Durban,
Kwa-Zulu Natal, 3610, SOUTH
AFRICA
sales@imperial-armour.com
www.imperial-armour.com
Tel: +27 31 700 2650

Inovex Simulation & Training

Grabenstrasse 25, 6340 Baar,
SWITZERLAND
info@inovex.ch
www.inovex.ch
Tel: +41 43 255 5700

Instalaza

Calle Monreal, 27, 50002 Zaragoza,
SPAIN
instalaza@instalaza.es
www.instalaza.es
Tel: +34 976 293 422

Instro Precision

Hornet Close, Pysons Road,
Industrial Estate Broadstairs, Kent,
CT10 2YD, UK
www.instro.com
Tel: +44 1843 604 455

Intelligent Armour

Operations Centre, Eastington
Bridge, Stonehouse,
Gloucestershire, GL10 3SQ, UK
info@intelligent-armour.co.uk
www.body-armour-protection.
co.uk
Tel: +44 1453 700574

Invisio Communications

Stamholmen 157, 2650 Hvidovre,
DENMARK
info@invisio.com
www.invisio.com
Tel: +45 7240 5500

IrvinGQ

Bettws Road, Llangeinor,
Bridgend, CF32 8PL, UK
www.irvingq.com
Tel: +44 1656 727 000

Israel Weapon Industries (IWI)

P.O. Box 63, Ramat Hashron, 47100,
ISRAEL
info@iwi.net
https://iwi.net
Tel: +972 3 7606000

Istec Services

PO Box 367, Hertford, SG13 9HN,
UK
info@istec.co.uk
www.istec.co.uk
Tel: +44 1992 517 000

IWI US

1441 Stoneridge Dr., Middletown,
PA 17057, USA
Info@IWI.US
https://iwi.us
Tel: +1 717 695 2081

J-Forces

Jl. Indriloka I No.49 Jelambar,
Jakarta Barat, 11460, INDONESIA
www.j-forces.co.id
Tel: +62 21 564 9603

J. Blaschke Wehrtechnik

Wienerbergstrasse 42-44, 1120
Vienna, AUSTRIA
office@blaschke.com
www.blaschke.com
Tel: +43 1 810 09 09

Jack Ellis Body Protection

Marywell Works, Marywell Brae,
Kirriemuir, Angus, Scotland, DD8
4BJ, UK
sales@jackellis.co.uk
www.jackellis.co.uk
Tel: +44 1575 570 222

Jadara Equipment and Defence Systems

P.O. Box 2100, Khaw, Al Zarqa,
Amman, 11181, JORDAN
info@jadara.jo
www.jadara.jo
Tel: +962 6 401 66 44

Janus Global Operations

2229 Old Highway 95, Lenoir City,
TN 37771, USA
www.janusgo.com
Tel: +1 865 988 6063

Jenoptik Advanced Systems

16490 Innovation Drive, Jupiter, FL
33478, USA
jdi.sales@jenoptik-inc.com
www.jenoptik.com
Tel: +1 561 881 7400

JJ Tactical

Office 4, 219 Kensington High
Street, Kensington, London, W8
6BD, UK
sales@jjtactical-gov.co
www.jjtactical-gov.co

Jordan Design and Development Bureau (JODDB)

P.O. Box 928125, Amman, 11190,
JORDAN
info@joddb.com
www.joddb.com
Tel: +962 (06) 460 3230

Kalashnikov Concern

Deryabina Pr, 3, Izhevsk,
Udmurtskaya respublika, 426006,
RUSSIA
info@kalashnikovconcern.ru
www.kalashnikovconcern.com
Tel: +7 3412 43 47 47

Kalinka Optics

4705 Southport Supply Road,
Suite 208, Southport, NC 28461,
USA
info@kalinkaoptics.com
www.kalinkaoptics.com
Tel: +1 910 202 4019

Kärcher Futuretech

Alfred-Schefenacker-Str 1, 71409
Schwaikheim, GERMANY
www.karcher-futuretech.com
Tel: +49 71 95 14 0

KBP Instrument Design Bureau

ul Shcheglovskaya Zaseka, 59,
Tula, 300001, RUSSIA
kbkedr@tula.net
www.kbptula.ru
Tel: +7 4872 41 00 68

KDH Defense Systems

750A Fieldcrest Road, Eden, NC
27288, USA
www.kdhdefensesystems.com
Tel: +1 336 635 4158

Kintex

66 James Baucher blvd, 1407
Sofia, BULGARIA
minkin@mbox.contact.bg
www.kintex.bg
Tel: +359 2 866 23 11

Kipper Tool

2375 Murphy Blvd, Gainesville, GA
30504, USA
info@kippertool.com
www.kippertool.com
Tel: +1 800 295 9595

Knight's Armament Company

701 Columbia Blvd, Titusville, FL
32780, USA
info@knightarmco.com
www.knightarmco.com
Tel: +1 321 607 9900

Kongsberg Defence & Aerospace

PO Box 1003, 3601 Kongsberg,
NORWAY
office.kda@kongsberg.com
www.kongsberg.com
Tel: +47 3228 82 00

Krauss-Maffei Wegmann

Krauss-Maffei-Str 11, 80997
München, GERMANY
info@kmweg.de
www.kmweg.de
Tel: +49 89 8140 50

KRISS USA

912 Corporate Lane, Chesapeake,
VA 23320, USA
https://kriss-usa.com
Tel: +1 855 574 7787

L3 Advanced Laser Systems Technology

2500 North Orange Blossom Trail,
Orlando, FL 32804, USA
marketing.alst@l3t.com
www.l3t.com/alst
Tel: +1 407 295 5878

L3 Brashear

615 Epsilon Drive, Pittsburgh, PA
15238, USA
Sales.IOS@L3t.com
www.l3t.com/brashear
Tel: +1 412 967 7700

L3 Electron Tube Operations

1215 S 52nd Street, Tempe, AZ
85281, USA
www.insighttechnology.com/ETO/
electron-tube-operations-eto
Tel: +1 480 968 4471

L3 EOTech

1201 E. Ellsworth, Ann Arbor, MI
48108, USA
support.eotech@l-3.com
www.eotechinc.com
Tel: +1 734 741 8868

L3 Infrared Products

3414 Herrmann Drive, Garland, TX
75041, USA
IRP@L3T.com
www.insighttechnology.com/IRP/
irp-home
Tel: +1 972 840 5600

L3 Space & Sensors

7500 Innovation Way, Mason, OH
45040, USA
www.l3t.com/ce
Tel: +1 513 573 6100

L3Harris Technologies

9 Akira Way, Londonderry, NH
03053, USA
Quote.Insight@L3T.com
www.l3harris.com
Tel: +1 866 509 2040

Lacroix

6 Boulevard de Joffrey, CS 30213,
31605 Muret, FRANCE
www.lacroix-defense.com
Tel: +33 5 61 566 500

LaRue Tactical

850 County Road 177, Leander, TX
78641, USA
www.larue.com
Tel: +1 512 259 1585

Laser Shot

4214 Bluebonnet Dr., Stafford, TX
77477, USA
www.lasershot.com
Tel: +1 281 240 1122

Leatherman Tool Group

P.O. Box 20595, Portland, OR
97294, USA
info@leatherman.com
www.leatherman.com
Tel: +1 503 253 7826

Leidos

11955 Freedom Drive, Reston, VA
20190, USA
www.leidos.com
Tel: +1 571 526 6000

Leison

NO.2 Yanxiu Rd., Yanjiang
Industrial Area, WZ, ZJ, CHINA
info@leison911.com
www.leison911.com
Tel: +86 577 8837 1288

Leonardo

Piazza Monte Grappa, 4, 00195
Roma, ITALY
info@leonardocompany.com
www.leonardocompany.com
Tel: +39 06 324731

Leonardo DRS

2345 Crystal Drive, Suite 1000,
Arlington, VA 22202, USA
www.leonardodrs.com
Tel: +1 703 416 8000

Leupold & Stevens

14400 NW Greenbrier Parkway,
Beaverton, OR 97006-5790, USA
tacticaloptics@leupold.com
www.leupold.com
Tel: +1 800 538 7653

Lewis Machine & Tool Company

1305 11th Street West, Milan, IL
61264, USA
https://lmtdefense.com
Tel: +1 309 787 7151

Life Safety Systems

343 Soquel Avenue, Santa Cruz,
CA 95062, USA
info@lifesafetysys.com
www.lifesafetysys.com
Tel: +1 831 426 9090

LIG Nex1

207, Mabuk-ro, Giheung-gu,
Yongin-si, Gyeonggi-do, SOUTH
KOREA
www.lignex1.com
Tel: +82 2 1644 2005

Lior Textile Industries

P.O. Box 11, Dora Ind. Zone, Shlomi
22832, ISRAEL
info@lior-protective.com
https://lior-protective.com
Tel: +972 4 9808815

Liteye Systems

7060 S Tucson Way A, Centennial,
CO 80112, USA
http://liteye.com
Tel: +1 720 974 1766

Lockheed Martin

6801 Rockledge Drive, Bethesda,
MD 20817, USA
www.lockheedmartin.com
Tel: +1 301 897 6000

Lockheed Martin Missiles and Fire Control

5600 Sand Lake Road, Orlando, FL
32819, USA
https://lockheedmartin.com
Tel: +1 407 356 2000

Lucid

824 E Lincoln Ave, Riverton, WY
8501, USA
info@mylucidgear.com
www.mylucidgear.com
Tel: +1 307 840 2160

LV Equipment

Westpoort 67, 4695 ED St.
Maartensdijk, NETHERLANDS
info@lvequipment.nl
www.lvequipment.nl
Tel: +31 166 66 20 45

MAE Group International

1529 West 13th Street, Suite F,
Upland, CA 91786, USA
info@maegroupint.com
www.maegroupint.com
Tel: +1 909 466 7577

maglula

P.O. Box 302 Rosh, Ha'ayin, 48103,
ISRAEL
guy@maglula.com
www.maglula.com
Tel: +972 8 648 8001

Magnum Research

12602 33rd Avenue SW, Pillager,
MN 56473, USA
info@magnumresearch.com
www.magnumresearch.com
Tel: +1 218 746 4597

Magpul Industries

8226 Bee Caves Road, Austin, TX
78746, USA
dliptak@magpul.com
www.magpul.com
Tel: +1 303 828 3460

MAK Technologies

150 Cambridge Park Drive, 3rd
Floor, Cambridge, MA 02140, USA
info@mak.com
www.mak.com
Tel: +1 617 876 8085

Marck

145, rue Michel Carré, Z.I des
Algorithmes - Bât. Euclide - BP
9006, 95812 Argenteuil Cedex,
FRANCE
www.marck.fr
Tel: +33 1 34 26 52 52

Marom Dolphin

Alon Tavor Industrial Zone, P.O.B
1126, Afula 18000, ISRAEL
md@marom-dolphin.com
www.marom-dolphin.com
Tel: +972 4 6400797

MARS Armor

2 Poletto, Industrial Zone, 2230
Konstnbrod, BULGARIA
www.marsarmor.com
Tel: +359 2 4399088

MBDA

1 avenue Réaumur, 92350 Le
Plessis-Robinson, FRANCE
www.mbda-systems.com
Tel: +33 1 7154 1000

MBDA UK

Six Hills Way, Stevenage,
Hertfordshire, SG1 2DA, UK
www.mbda-systems.com
Tel: +44 1438 752000

McMillan Group International

1638 W. Knudsen Drive, Suite 101,
Phoenix, AZ 85027, USA
stocks@mcmillanusa.com
https://mcmillanusa.com
Tel: +1 623 582 9674

McQ

1551 Forbes Street, Fredericksburg,
VA 22405, USA
info@mcqinc.com
www.mcqinc.com
Tel: +1 540 373 2374

Mectron

AV. Brigadeiro Faria Lima, 1399,
Parque Flamboyant, São José
dos Campos – SP, CEP 12227-000,
BRAZIL
comunic.empresarial@mectron.
com.br
Tel: +55 12 3925 3500

Med-Eng

2400 St. Laurent Boulevard,
Ottawa, Ont, K1G 6C4, CANADA
med-engsales@safariland.com
www.med-eng.com
Tel: +1 613 482 8835

Meopta - optika

Kabelíkova 1, 750 02 Prerov, CZECH
REPUBLIC
meopta@meopta.com
www.meopta.com
Tel: +420 581 241 111

Meprolight

PO Box 26, 4 Hahadas Street,
Or-Akiva Industrial Park, Or-Akiva
3065001, ISRAEL
sales@meprolight.com
www.meprolight.com
Tel: +972 4 624 4111

Meridian Medical Technologies

6350 Stevens Forest Road,
Columbia, MD 21046, USA
www.meridianmeds.com
Tel: +1 443 259 7800

MGM Targets

17891 Karcher Rd, Caldwell, ID
83607, USA
sales@mgmtargets.com
www.mgmtargets.com
Tel: +1 888 767 7371

Micaply

Via per Cantu, 23, 22060 Cucciago,
ITALY
ernestorulli@micaply.com
www.micaply.com
Tel: +39 335 7429949

Military & Law Enforcement Technologies

GPO Box 3366, Melbourne, 3001,
AUSTRALIA
info@militaryandlaw.com.au
www.militaryandlaw.com.au
Tel: +61 411 244 969

Military Industries Corporation (MIC)

PO Box 3637, Riyadh, 11481, SAUDI
ARABIA
Info@mic.gov.sa
http://mic.gov.sa
Tel: 00966114058487

Milkor

Unit 18 & 20, Diamond Park, 70
Jakaranda street, Hennopspark,
Centurion, SOUTH AFRICA
info@milkor.com
https://milkor.com
Tel: +27 12 333 3134

Milkor USA

3735 N. Romero Road, Ste. 2M,
Tuscon, AZ 85705, USA
info@milkorusainc.com
http://milkorusa.com
Tel: +1 520 888 0203

Milliken & Company

PO Box 1926, Spartanburg, SC
29304, USA
brand@milliken.com
www.milliken.com
Tel: +1 864 503 2020

Milo Range

1195 Oak Valley Dr, Ann Arbor, MI
48108, USA
www.faac.com/milo-range
Tel: +1 866 878 8239

**Ministry of Defence Industry of
Azerbaijan Republic**

40, Metbuat Ave, Baku, AZ 1141,
AZERBAIJAN
info@mdi.gov.az
www.mdi.gov.az
Tel: +994 12 539 24 53

MKEK

Döğöl Cad. No:4 Anadolu
Meydanı, 06330 Ankara, TURKEY
mkek@mkek.gov.tr
www.mkek.gov.tr
Tel: +90 312 296 10 00

MKU

13, Gandhi Gram, G T Road,
Kanpur, Uttar Pradesh 208007,
INDIA
anurag.tripathi@mku.com
www.mku.com
Tel: +91 512 302 6700

MMI Outdoor

P.O. Box 241367, Montgomery, AL
36124-1367, USA
www.mmioutdoor.net
Tel: +1 334 286 0700

MOHOC

USA, USA
info@mohoc.com
www.mohoc.com
Tel: +1 208 806 1391

**Morgan Advanced Materials
Composites and Defence Systems**

473 Foleshill Road, Coventry, CV6
5AQ, UK
www.morgandefencesystems.
com
Tel: +44 24 7670 2

Motovilikhinskiye zavody

ul 1905 goda, 35, Perm, 61401,
RUSSIA
mzl@mz.perm.ru
http://mz.perm.ru

MS Instruments

Unit 4, Ravensquay Business
Centre, Cray Avenue, Orpington,
Kent, BR5 4BQ, UK
contact@msinstruments.co.uk
www.msinstruments.co.uk
Tel: +44 1689 883 020

MSA France

Zone Industrielle Sud, 01400
Châtillon sur Chalaronne, FRANCE
message@msasafety.com
www.msasafety.com
Tel: +33 474 55 01 55

Mystery Ranch

1750 Evergreen Drive, Bozeman,
MT 59715, USA
www.mysteryranch.com
Tel: +1 406 585 1428

N-Vision Optics

220 Reservoir Street, Suite 26,
Needham, MA 02494, USA
info@nvisionoptics.com
www.nvisionoptics.com
Tel: +1 781 505 8360

Nammo

P.O. Box 142, 2831 Raufoss,
NORWAY
info@nammo.com
www.nammo.com
Tel: +47 61 15 36 00

Nammo Lapua

Patruunatehtaan tie 15, 62100
Lapua, FINLAND
info@nordis.fi
www.lapua.com
Tel: +358 10 5233 600

**National Defense Industrial
Association**

2101 Wilson Boulevard, Suite 700,
Arlington, VA 22201-3060, USA
www.ndia.org
Tel: +1 703 522 1820

New Infrared Technologies

Calle Vidrieros, 30 - Nave 2,
Boadilla del Monte, 28660 Madrid,
SPAIN
sales@niteurope.com
www.niteurope.com
Tel: +34 91 632 43 63

Newcon Optik

105 Sparks Avenue, Toronto, ON,
M2H 2S5, CANADA
newconsales@newcon-optik.com
www.newcon-optik.com
Tel: +1 416 663 6963

**Newman & Spurr Consultancy
(NSC)**

River View, 2 Meadows Business
Park, Camberley, Surrey, GU17
9AB, UK
message@nsc.co.uk
www.nsc.co.uk
Tel: +44 1276 678 867

Night Optics USA

605 Oro Dam Blvd E, Oroville, CA
95965, USA
info@nightoptics.com
www.nightoptics.com
Tel: +1 800 306 4448

Night Readiness

10201 S 51st Street, Building A,
Suite 275, Phoenix, AZ 85004, USA
info@nightreadiness.com
www.nightreadiness.com
Tel: +1 480 821 6700

Night Vision Devices

PO Box 3415, Allentown, PA 18106,
USA
sales@nvdevices.com
http://nvdevices.com
Tel: +1 610 395 9743

Night Vision Experts

1207 Delaware Avenue, Suite 474,
Buffalo, NY 14209, USA
sales@nightvisionexperts.com
www.nightvisionexperts.com
Tel: +1 877 212 7102

Night Vision Store

2422 Lilyfield Drive, Trophy Club,
TX 76262-3414, USA
nightvisionstore@gmail.com
www.nightvisionstore.com
Tel: +1 817 800 1640

Nightforce Optics

336 Hazen Lane, Orofino, ID
83544, USA
info@nightforceoptics.com
www.nightforceoptics.com
Tel: +1 208 476 9814

Nightline

PO Box 16-0819, Miami, FL 33116-0819, USA
info@nightline-inc.com
www.nightline-inc.com
 Tel: +1 305 598 5357

Nioa

PO Box 191, Pinkenba Qld, 4008, AUSTRALIA
govtsales@nioa.com.au
www.nioa.com.au
 Tel: +61 7 3621 9955

Nivisys

1465 Henry Brennan, El Paso, TX 79936, USA
services@nivisys.com
www.nivisys.com
 Tel: +1 480 970 3222

Noptel

Teknologiantie 2, 90590 Oulu, FINLAND
info@noptel.fi
www.noptel.fi
 Tel: +358 40 181 4351

Norinco

12A Guang An Men Nan Jie, Beijing, 100053, CHINA
norinco@norinco.cn
www.norinco.com
 Tel: +86 10 6352 9988

North American Rescue

35 Tedwall Court, Greer, SC 29650, USA
info@narescue.com
www.narescue.com
 Tel: +1 864 675 9800

Northrop Grumman

2980 Fairview Park Drive, Falls Church, VA 22042, USA
www.northropgrumman.com
 Tel: +1 703 280 2700

Northrop Grumman Innovation Systems

45101 Warp Drive, Dulles, VA 20166, USA
www.northropgrumman.com
 Tel: +1 703 406 5000

Northrop Grumman UK

Clareville House, Oxendon Street, London, SW1Y 4EL, UK
ken.beedle@euro.ngc.com
www.northropgrumman.co.uk
 Tel: +44 207 930 4173

Novosibirsk Instrument-Making Plant

ul Dusi Kovalchuk, 179/2, Novosibirsk, 630049, RUSSIA
sales@npzoptics.ru
www.npzoptics.com
 Tel: +7 383 226 0876

NTGS

Calle Anastasio Nieto, 3 (Pol. Industrial P5), 28400 Collado Villalba, SPAIN
info@ntgs.es
www.ntgs.es
 Tel: +34 91 710 54 89

Oakley

1 Icon, Foothill Ranch, CA 92610, USA
standardissue@oakley.com
www.oakleysi.com
 Tel: +1 800 525 4334

OBRUM

ul Toszecka 102, 44-117 Gliwice, POLAND
info@obrum.gliwice.pl
www.obrum.gliwice.pl
 Tel: +48 32 301 92 05

OIP Sensor Systems

Westerring 21, 9700 Oudenaarde, BELGIUM
sales@oip.be
www.oip.be
 Tel: +32 55 33 38 11

Ontario Knife Company

26 Empire Street, Franklinville, NY 14737, USA
<http://ontarioknife.com>
 Tel: +1 716 676 5527

Ops-Core

319R A Street, Suite 1, Boston, MA 02210, USA
<https://gentexcorp.com/ops-core>
 Tel: +1 617 670 3547

Optics 1

2 Cooper Lane, Bedford, NH 03110, USA
www.optics1.com
 Tel: +1 603 296 0469

Optix

65 Zahari Stoyanov Str., 4500 Panagyurishte, BULGARIA
optix@optixco.com
www.optixco.com
 Tel: +359 357 6 4125

Ordnance Factory Board

Ayudh Bhawan, 10-A S. K. Bose Road, Kolkata, 700001, INDIA
sec.ofb@nic.in
<http://ofb.gov.in>
 Tel: +91 33 2243 0472

Otis Technology

PO Box 582, Lyons Falls, NY 13368, USA
www.otistec.com

Own the Night (Lceo LLC)

30 Mountainview Dr, Waterford, NY 12188, USA
customerservice@ownthenight.com
www.ownthenight.com
 Tel: +1 518 235 9436

PCO

ul Jana Nowaka-Jeziorańskiego 28, 03-982 Warszawa, POLAND
pco@pcosa.com.pl
www.pcosa.com.pl
 Tel: +48 22 515 75 01

Pelican Products

23215 Early Avenue, Torrance, CA 90505, USA
www.pelican.com
 Tel: +1 310 326 4700

PGW Defence

761 Marion Street, Winnipeg, MB, R2J 0K6, CANADA
steve@pgwdti.com
www.pgwdti.com
 Tel: +1 204 231 2976

Phantom Products

474 Barnes Blvd, Rockledge, FL 32955, USA
<https://phantomlights.com>
 Tel: +1 888 533 4968

Pindad (Persero)

Jl Gatot Subroto No 517, Bandung, 40284, INDONESIA
info@pindad.com
www.pindad.com
 Tel: +62 22 731 2073

Planta Chemical Plant

3 Postal st., Nizhny Tagil, Sverdlovsk, 622012, RUSSIA
info@ntplanta.ru
www.plantantr.ru
 Tel: +8 (3435) 377-625

POC - Physical Optics

1845 W. 205th Street, Torrance, CA 90501, USA
www.poc.com
 Tel: +1 310 320 3088

Point Blank Enterprises

2102 SW 2nd Street, Pompano Beach, FL 33069, USA
www.pointblankenterprises.com
 Tel: +1 800 413 5155

Polartec

46 Stafford Street, Lawrence, MA 01842, USA
www.polartec.com
 Tel: +1 978 685 6341

Poly Technologies

28 F New Poly Plaza, No 1 Chaoyangmen Beidajie, Dongcheng District, Beijing, 100010, CHINA
www.poly.com.cn
 Tel: +86 10 6408 2288

Poongsan

Poongsan Bldg., 23, Chungjeong-ro, Seodaemun-gu, Seoul, 120-837, SOUTH KOREA
www.poongsan.co.kr
 Tel: +82 2 3406 5114

Presagis

4700 Rue de la Savane, Suite 300, Montreal, QC, H4P 1T7, CANADA
www.presagis.com
 Tel: +1 514 341 3874

Protonex Technology

153 Northboro Road, Southborough, MA 01772-1034, USA
www.protonex.com
 Tel: +1 508 490 9960

Pyser SGI

Fircroft Way, Edenbridge, Kent, TN8 6HA, UK
sales@pyser-sgi.com
www.pyser-sgi.com
 Tel: +44 1732 864111

QinetiQ

Cody Technology Park, Ively Road, Farnborough, GU14 0LX, UK
www.qinetiq.com
 Tel: +44 1252 392 000

QinetiQ North America

350 Second Avenue, Building 1, Waltham, MA 02451, USA
media@qinetiq-na.com
www.qinetiq-na.com
 Tel: +1 781 684 4000

QinetiQ Target Systems

The Boulevard, Orbital Park, Ashford, TN24 0GA, UK
<http://targetsystems.qinetiq.com/en-ca>
 Tel: +44 1233 505 600

Qioptiq

Glascoed Road, St Asaph, Denbighshire, LL17 0LL, UK
sales@uk.qioptiq.com
www.qioptiq.com
 Tel: +44 1745 588000

Qioptiq Singapore

8 Tractor Road, Singapore 627969, SINGAPORE
customer.service@sg.qioptiq.com
www.qioptiq.com
 Tel: +65 6499 7777

Radar Leather Division

Via Giovanni Falcone, 19, 50054 Fucecchio FI, ITALY
www.radar1957.com

Radetec Technology

1510 Valley Center Pkwy, Suite 160, Bethlehem, PA 18017, USA
info@radetec.com
www.radetec.com
 Tel: +1 786 360 5846

Rafael Advanced Defense Systems

PO Box 2250, Haifa, 31021, ISRAEL
intl-mkt@rafael.co.il
www.rafael.co.il
 Tel: +972 4 879 4714

Raydon

1420 Hockney Court, Port Orange, FL 32128, USA
info@raydon.com
www.raydon.com
 Tel: +1 386 267 2936

Raytheon

870 Winter Street, Waltham, MA 02451-1449, USA
idspr@raytheon.com
www.raytheon.com
 Tel: +1 781 522 3000

Raytheon BBN Technologies

10 Moulton Street, Cambridge, MA 02138-1119, USA
technology@bbn.com
www.raytheon.com
 Tel: +1 617 873 8000

Raytheon ELCAN Optical Technologies

450 Leitz Rd, Midland, ON, L4R 5B8, CANADA
dpetry@raytheon.com
www.raytheon.com
 Tel: +1 705 526 5401

Raytheon EO Innovations

1601 North Plano Road, Richardson, TX 75081, USA
www.raytheon.com
 Tel: +1 877 893 5226

RedWeb Trackers

Dragon Hall Barn, Whitchurch Road, Tattenhall, Chester, CH3 9DU, UK
sales@redwebtrackers.com
www.redwebtrackers.com
 Tel: +44 1829 770 693

Remington Arms

870 Remington Drive, P.O. Box 700, Madison, NC 27025-0700, USA
info@remington.com
www.remingtonmilitary.com
 Tel: +1 800 243 9700

Revision Military

7 Corporate Drive, Essex, VT 05452, USA
info@revisionmilitary.com
www.revisionmilitary.com
 Tel: +1 802 879 7002

Rheinmetall

Corporate Sector Defence, Rheinmetall Platz 1, 40476 Düsseldorf, GERMANY
oliver.hoffmann@rheinmetall.com
www.rheinmetall-defence.com
 Tel: +49 211 473 01

Rheinmetall Defence Electronics

Brüggeweg 54, 28309 Bremen, GERMANY
info-rme@rheinmetall.com
www.rheinmetall-defence.com
 Tel: +49 421 1080 0

Rheinmetall Nordic

P.O. Box 143, 3106 Nøtterøy, NORWAY
mail@rheinmetall.no
www.rheinmetall-defence.com
 Tel: +47 3338 2350

Rheinmetall Protection Systems

Pützchens Chaussee 58 a, Bonn, 53227, GERMANY
info-rps@rheinmetall.com
https://rheinmetall-defence.com/en/rheinmetall_defence/systems_and_products/protection_systems/index.php
 Tel: +49 228 9750-3

Rheinmetall Soldier Electronics

Bodenseeallee 3, 78333 Stockach, GERMANY
sales.rse@rheinmetall.com
www.rheinmetall-defence.com
 Tel: +49 7771 81 0

**Rheinmetall Waffe Munition
Arges**

Kaufing 31, 4690 Rüstorf/
Schwanenstadt, AUSTRIA
info-wm@rheinmetall.com
www.rheinmetall-defence.com
Tel: +43 7673 805 10 0

Ring Sights

Harbour Road, Rye, East Sussex,
TN31 7TE, UK
info@ringsights.com
www.ringsights.com
Tel: +44 8700 422260

Rippel Effect Systems

PO Box 12434, Hatfield, 0028
Pretoria, SOUTH AFRICA
xrgl40@rippeleffect.co.za
http://rippeleffect.co.za
Tel: +27 12 803 4346

Ritter & Stark

Bären Industriepark 12, 9181
Feistritz, AUSTRIA
info@ritterstark.com
www.ritterstark.com
Tel: +43 4228 20512

ROFI

Gammelseterlia 23, 6422 Molde,
NORWAY
sales@rofi.com
www.rofi.no
Tel: +47 7120 3333

Romarm

Bd. Timisoara, no. 5B, sector 6,
Bucharest, 061301, ROMANIA
office@romarm.ro
http://romarm.ro
Tel: +40 21 317 1971

Rontan

Av. Professor Manuel José Chaves,
231 - Alto de Pinheiros, São Paulo,
BRAZIL
comercial@rontan.com.br
www.rontan.com.br
Tel: +55 11 3093 7088

Rosoboronexport

27, Stromynka Street, Moscow,
107076, RUSSIA
roe@roe.ru
http://roe.ru
Tel: +7 495 739 60 17

Roxel

La Boursidière, 92357 Le Plessis-
Robinson, FRANCE
www.roxelgroup.com
Tel: +33 1 4107 8295

RUAG Ammotec

Uttigenstrasse 67, 3602 Thun,
SWITZERLAND
info.ammotec@ruag.com
www.ruag.com
Tel: +41 33 228 2220

RUAG Defence

Allmendstraße 86, 3602 Thun,
SWITZERLAND
info.defence@ruag.com
www.ruag.com
Tel: +41 33 827 64 00

Saab

PO Box 12062, 102 22 Stockholm,
SWEDEN
info@saab.com
www.saab.com
Tel: +46 8 463 0000

Safran Electronics & Defense

Arcs de Seine, 18/20 quai du
Point du Jour, 92659 Boulogne-
Billancourt Cedex, FRANCE
www.safran-electronics-defense.
com
Tel: +33 1 55 60 38 00

Safran Vectronix

Max-Schmidheiny-Strasse 202,
9435 Heerbrugg, SWITZERLAND
vectronix@safrangroup.com
www.safran-vectronix.com
Tel: +41 71 726 7200

SAFT

26, quai Charles Pasqua, 92300
Levallois-Perret, France, FRANCE
saftpress.contact@saftbatteries.
com
www.saftbatteries.com
Tel: +33 1 5863 1600

Sako

PO Box 149, 11101 RIIHIMAKI,
FINLAND
www.sako.fi
Tel: +358 10 830 5200

Sanmina

2700 North First Street, San Jose,
CA 95134, USA
www.sanmina.com
Tel: +1 408 964 3500

Santista Work Solution

Avenida Maria Coelho Aguiar, n
215, Bloco A, 2 andar, Jardim Sao
Luis, São Paulo, Santo Amaro, São
Paulo, SP 05804-900, BRAZIL
www.santistaworksolution.com.br
Tel: +55 11 5502 5451

Sarsilmaz Fire Arms

İnönü Cd. No: 34, Gümüşsuyu-
İstanbul, TURKEY
sarsilmaz@sarsilmaz.com
www.sarsilmaz.com
Tel: +90 216 244 00 00

Savox

Keilaranta 15 B, 02150 Espoo,
FINLAND
sales.emea@savox.com
www.savox.com
Tel: +358 9 417 411 00

Sawyer Products

P.O. Box 188, Safety Harbor, FL
34695, USA
https://sawyer.com
Tel: +1 800 356 7811

Schmeisser

Adolf-Dembach-Straße 4, 47829
Krefeld, GERMANY
info@schmeisser-germany.de
www.schmeisser-germany.de
Tel: +49 2151 45781 0

Schmidt & Bender

Am Grossacker 42, 35444
Biebertal, GERMANY
info@schmidt-bender.de
www.schmidt-bender.com
Tel: +49 6 40 9 81 15 0

SCHOTT AG

Hattenbergstrasse 10, Mainz,
D-55122, GERMANY
www.schott.com
Tel: +49 6131 7833

SCHOTT UK

Drummond Road, Astonfields
Industrial Estate, Stafford, ST16
3EL, UK
www.schott.com/uk
Tel: +44 1785 223166

**Science & Technology Research
Institute for Defence (STRIDE)**

Kompleks Master STRIDE, Taman
Bukit Mewah Phase 9, Selangor
Darul Ehsan, 43000 Kajang,
MALAYSIA
info@stride.gov.my
www.stride.gov.my
Tel: +603 8732 4400

**Seiler Instrument &
Manufacturing**

3433 Tree Court Industrial Blvd, St.
Louis, MO 63122, USA
www.seilerinst.com
Tel: +1 314 968 2282

Seitz Scientific Industries

1931 E Park Ave, Enterprise, AL
36330-4281, USA
www.seitzinc.com
Tel: +1 334 347 9713

Senop Optronics

LIEVESTUORE, Varikontie 90,
41400 Lievestuore, FINLAND
mika.raty@senop.fi
http://senop.fi

Šestan-Busch

Industrijska zona 3, 40323 Prelog,
CROATIA
sestan-busch@ck.htnet.hr
www.sestan-busch.hr
Tel: +385 40 646 330

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A Marine prepares an M40A6 sniper rifle for a full mission profile defence aboard the USS America (LHA 6). (Photo: USMC)

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