

Sagem's JIM LR Tactical Infrared Binoculars:

covering all observation and targeting requirements

France has produced a number of weapon systems that have gone down in history for their key roles in armed conflicts, including the 75 mm gun, Mirage III fighter, AMX 13 light tank and VBL armored vehicle. Sagem's JIM LR long-range infrared multifunction binoculars are in the process of joining this select club of emblematic military products "Made in France". Designed and built by Sagem (company of

Safran group), JIM LR (*Jumelle Infrarouge Multifonction - Long Range*) received a very warm welcome from NATO armies as soon as it hit the market. Its international success is also due to sustained support by the French Ministry of Defense, especially the defense procurement agency DGA. Optronic equipment by Sagem was chosen in two competitive tenders to outfit the entire French army, along with its air and naval commando units. ▶



A JIM LR used in a protection function by night by a Marines Paratroops of the French Army coming from the 8th RPIMA, during an exercise with the 5th Scots at Otterburn training range in the United Kingdom. Photo: © Philippe Wodka-Gallien - Sagem.



Sagem JIM LR thermal binocular can be used day or night with the new DHY-307 LW laser designator by Forward Air Controllers in "sensor to shooter" digitized loop for close-air-support missions. Photo: © Sagem.

More than 8,000 JIM LR units are now in service or on order, including 6,000 in international markets and 2,000 for French armed forces. In addition to France, the JIM LR is deployed by other NATO forces, including the United States, Denmark, Poland, the United Kingdom and the Czech Republic. All in all, JIM LR binoculars have already been chosen by some 30 countries. Since entering service, Sagem has continued to incorporate the latest technological innovations, plus feedback from units that have already deployed it in some of today's most demanding theaters of operation. Another major advantage of the JIM LR is its open, modular design, which means it can continually improve its intrinsic performance, while also integrating new ISR (intelligence, surveillance, reconnaissance) and targeting applications.

Innovations and operational revolution

Among armed forces, JIM LR equips all types of combat units: infantry platoon, anti-tanks and recce units mounted on light combat vehicles, protection units of critics infrastructures, forward observers of artillery units, special forces involved in CAS missions, combat SAR units, human intelligence in enemy territories, paratroops, protection

squads, short range anti-aircraft batteries. JIM LR is used in addition by navy and air special forces for protection, search mission or action.

Sagem's engineers designed the JIM LR in light of the operational constraints for an optronics unit deployed by front-line troops, with a specific user-friendly design. It also met weight specifications, coming in at less than 3 kilos. From the performance standpoint, Sagem integrated the latest optronic and optical advances, while drawing on its long experience in image processing, to ensure very high-quality vision. It is fully in line with today's digital battlefield concepts, shortening the "sensor to shooter" cycle. JIM LR enriches the multi-sensor intelligence chain in front-line units, by linking to other sources, human and machine. These rugged tactical binoculars are also designed to adapt to quick changes in temperature and pressure, and are compatible with high-altitude operations.

Intelligence and protection

A compact unit weighing just 3 kg, JIM LR integrates in a single portable equipment day vision, thermal vision, rangefinder, laser pointer, GPS, magnetic compass, inclinometer. The latest version adds additional functions:

- ▶ video recording, day-night image fusion to see through camouflage, anti-glare function in the infrared band, and a laser pointer. It offers run-time of 5 hours on a battery charge, and delivers enhanced reconnaissance and identification performance. JIM LR can be exploited remotely by tactical terminals, radio or filaire links. The sensors of JIM LR ensures detection of vehicles over 18 000 m and a soldier over 7 000 m.

Based on the standard JIM LR unit, Sagem is producing an uncooled version, the JIM UC. It is designed for front-line units that have to quickly power up their optronic devices, as well as units that have to operate in total silence. The JIM UC includes all functions offered by the JIM LR, but uses an uncooled infrared sensor, to do away with all cooling machinery. It allows advancing units to get a clear view of the threat environment almost instantaneously. Featuring sophisticated image processing, the JIM UC also offers very



Sagem JIM LR (Infrared Multifunction Binocular - Long Range) as the key component of a tactical targeting system which combines Delta Suite software (Impact company) and a DHY 307 LW laser designator by Cilas. The system is displayed at the last SOFINS 2015 special forces forum (Bordeaux, April 14-17 2015). Photo: © Sagem.

good resolution, with the ability to detect an armored vehicle at a range exceeding 5 km, or a soldier at more than 3 km.

All JIM binoculars, in LR or UC versions, can be remotely operated from tactical terminals, and are integrated in networked combat setups via their interfaces. On request, the JIM LR can also be fitted with image and video recording capability via a USB port, along with standardized connectors, or a Bluetooth link.

Integration in digital networks of special forces

The idea was also to combine the JIM LR's optronic performance with its ability to be integrated in tactical air-land digital networks. Addressing the requirement for close air support (CAS), Sagem combines the JIM LR with a "Delta Suite" terminal from the company Impact, featuring software that provides precise information to support units on identified and geo-located targets. The integrated JIM LR/Delta Suite system also offers a modular, user-friendly interface, adapted to the operating environment of special forces. The new configuration JIM LR / "Delta Suite" has been displayed at SOFINS special forces forum and exhibition held near Bordeaux, 14 to 16 April 2015.

Extracting target coordinates

The performances of JIM LR binoculars can be enhanced by being used in conjunction with innovative equipments, such as Sterna, a Sagem brand-new target location system and DHY-307 LW laser designator of Cilas company for precision air-to-ground weapons.

Developed jointly by Sagem and its Swiss subsidiary Vectronix, Sterna's performance is based on the innovative hemispherical resonator gyro (GRH), a technology patented by Sagem. Used in conjunction with the measurements by JIM LR or any other rangefinding binoculars, Sterna extracts precise target coordinates. Weighing less than 3 kg, Sterna was also designed with the special weight and energy requirements of forward observers in mind, since they operate in severe environments and can't count on much supply support. In series production, Sterna has been ordered by the armies of Canada and United States.

These new configurations and products reinforce Sagem offer in the domain of critical C4ISR loop connecting sensors to shooters. An essential part of the digital battlefield, the JIM LR is interoperable with integrated warfighter suites at group or platoon leader level. Its success is in large part due to Sagem's experience with the production and operation of the French soldier modernization program FELIN (Fantassin à Equipements et Liaisons Intégrés), the largest complete "infantry digitization" program to date in Europe. ■

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