

THE REFERENCE IN HAND-HELD BINOCULARS AND THERMAL IMAGER

- ▷ Day & night passive operation
- ▷ High resolution, 754 x 576 stabilised image
- ▷ Image capture, mission reporting
- ▷ Detection of camouflaged targets
- ▷ 8 - 12 μm spectral band, insensitive to solar dazzle and battlefield obscurants
- ▷ In service worldwide - combat proven



LONG RANGE HAND-HELD BINOCULARS/THERMAL IMAGER

SOPHIE-LR

DEFENCE
HOMELAND





LAND DEFENCE

SOPHIE-LR

Long Range Hand-Held Binoculars/Thermal Imager

CHARACTERISTICS

Spectral band: 8-12 μm

Field of view (FoV)

- Wide FoV: $8^\circ \times 6^\circ$
- Narrow FoV: $3.2^\circ \times 2.4^\circ$
- Electronic zoom (x2): $1.6^\circ \times 1.2^\circ$

Image resolution

- 754 x 576

Thermal sensitivity (NETp)

- < 50 mK

Boresighting

- Axis stability < 0.6 mrad

Weight

- 2.4 kg

Size

- 250 x 250 x 110 mm

Video standard

- 625 lines or 525 lines (SMPTE 170M)

Power supply

- Batteries or external power supply

Battery life

- > 5 hours with rechargeable battery

Remote control

- RS 422 serial datalink

Cooling

- Integrated micro-cooler, rotative Stirling type

Cooling down time

- < 5 min

Internal display

- OLED

Temperature range

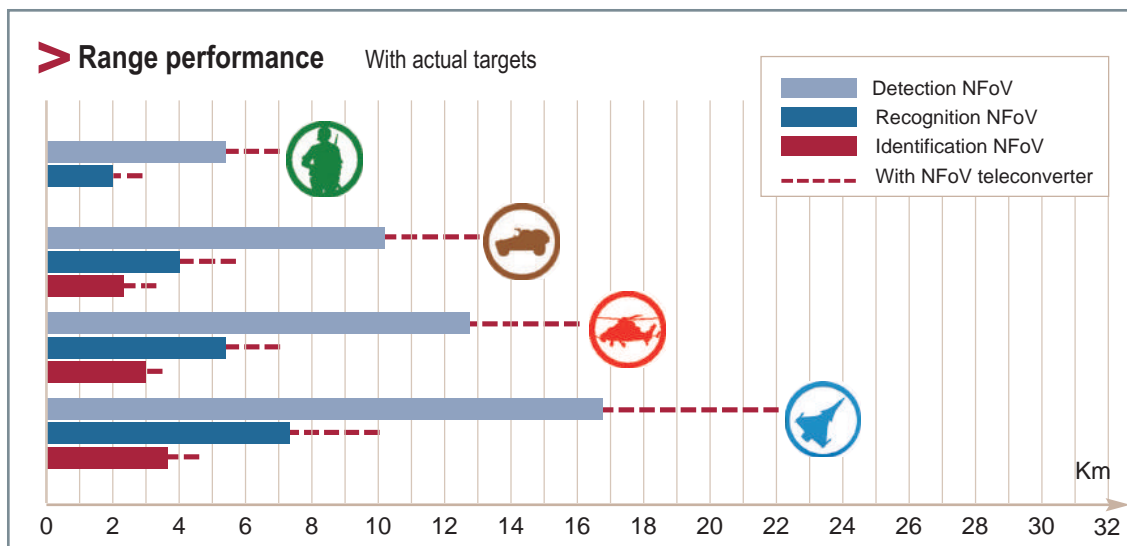
- Operating: -40°C to $+55^\circ\text{C}$

Environmental conditions

- Fully ruggedised / MIL STD 461 and MIL STD 810 - Military wheeled vehicles

ACCESSORIES

- Tripods, displays
- Rechargeable batteries
- Battery chargers
- AC or DC converters
- Narrow FoV (2°) tele-converter
- Wide FoV (20°) teleconverter for operation in urban area
- Transmission and tele-operation
- Integrated Hand-Held Display/remote control box (POP6)



FULL HAND-HELD SURVEILLANCE & TARGET LOCALISATION SYSTEM

- ▷ Day & night, passive operation
- ▷ High resolution, 754 x 576 stabilised image
- ▷ Multi-function
 - Thermal Imager
 - Magnetic compass
 - Colour daylight camera
 - Laser Range Finder (Eye-Safe)
 - Internal GPS (+ external connection)
 - Laser pointer (Eye-Safe)
- ▷ Image capture, mission reporting
- ▷ Detection of camouflaged targets
- ▷ 8-12 μm spectral band, insensitive to solar dazzle and battlefield obscurants



LONG RANGE MULTI-FUNCTION BINOCULARS
THERMAL IMAGER

SOPHIE-MF

DEFENCE
HOMELAND





LAND DEFENCE

SOPHIE-MF

Long Range Multi-Function Binoculars/Thermal Imager

CHARACTERISTICS

Thermal imager

Spectral band: 8-12 μm

Field of view (FoV)

- Wide FoV: $8^\circ \times 6^\circ$
- Narrow FoV: $3.2^\circ \times 2.4^\circ$
- Electronic zoom (x2): $1.6^\circ \times 1.2^\circ$

Image resolution: 754 x 576

Thermal sensitivity (NETp): < 50 mK

Axis stability: < 0.6 mrad

Eye safe laser range-finder

- Range out to 10 km
- High performance single shot

Magnetic compass

- Elevation: 0.2°
- Azimuth: 0.5°

GPS receiver

- Integrated + external connection (PLGR)

Colour daylight camera (option)

- FoV: $3.7^\circ \times 2.8^\circ$

Laser pointer 830 nm (option)

- Eye safe

GENERAL CHARACTERISTICS

Weight: < 3.5 kg

Size: 310 x 250 x 110 mm

Video output

- 625 lines or 525 lines (SMPTE 170 m)

Power supply

- Battery or external power supply

Battery Life

- > 4 hours with rechargeable battery

Remote control

- RS 422 serial datalink

Cooling

- Integrated micro-cooler, rotative Stirling type

Cooling down time

- < 5 min

Internal display

- OLED

Temperature range

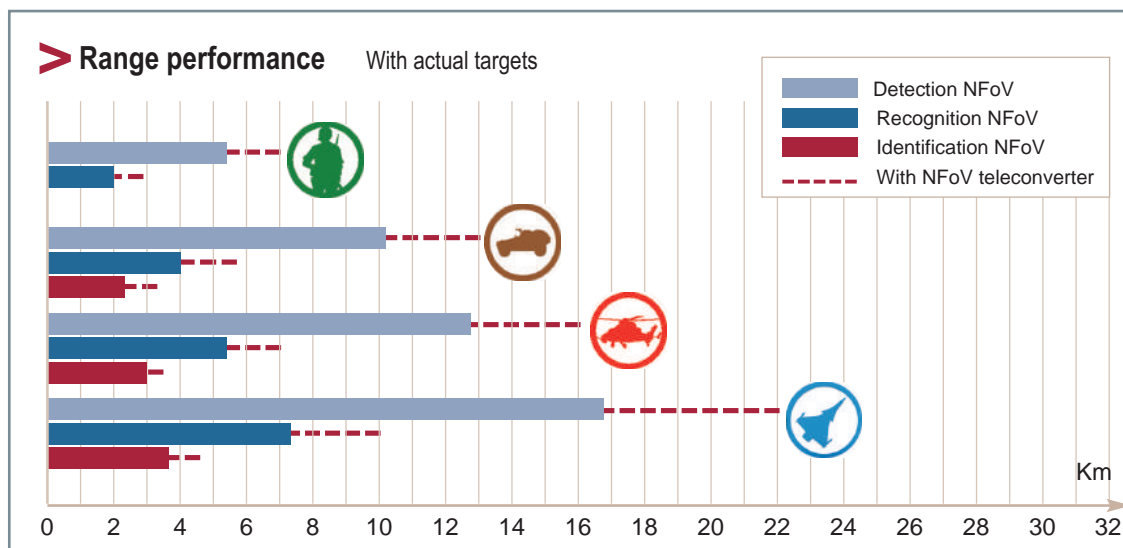
- Operating: -40°C to $+55^\circ\text{C}$

Environmental conditions

- Fully ruggedised / MIL STD 461 and MIL STD 810 - Military wheeled vehicles

ACCESSORIES

- Tripods, displays
- Rechargeable batteries
- Battery chargers
- AC or DC converters
- Narrow FoV (2°) tele-converter
- Wide FoV (20°) teleconverter for operation in urban area
- Transmission and tele-operation
- Integrated Hand-Held Display/remote control box (POP6)



THIRD GENERATION MID WAVE INFRARED THERMAL IMAGER WITH CONTINUOUS OPTICAL ZOOM AND TARGET LOCATOR

Main features

- ▷ Day & night, passive operation
- ▷ Optical zoom 2.5° / 15° autofocus
- ▷ Image stabilisation
- ▷ Full Integrated (LRF, GPS, DMC)
- ▷ High performance LRF (single shot) in stabilized mode
- ▷ Fall of shot correction
- ▷ Image storage & and video capture

Applications

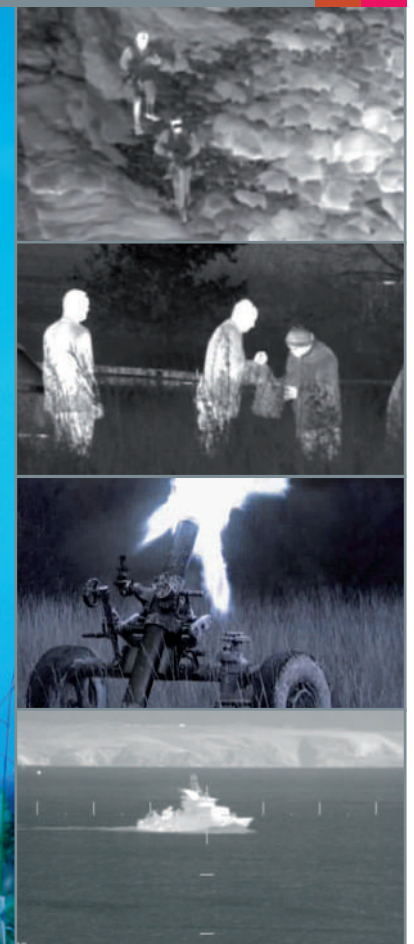
- ▷ Border & Coastal Surveillance
- ▷ Critical infrastructures
- ▷ Law Enforcement, Police
- ▷ Anti-terrorism
- ▷ Special operations
- ▷ Dismounted soldier (platoon leaders)
- ▷ Fire Support (FAC & FOB)
- ▷ Search & rescue



DEFENCE
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MULTIFUNCTION HAND-HELD THERMAL IMAGER WITH CONTINUOUS OPTICAL ZOOM

SOPHIE-XF





LAND DEFENCE

SOPHIE-XF

Hand-Held Thermal Imager with Continuous Optical Zoom

With more than 12 000 SOPHIE in operation in 55 countries, SOPHIE family is now growing once more with a new fully integrated thermal imager dedicated to long range target location and surveillance. This camera has all the functions of SOPHIE mono-function and is also able to locate a target in daylight and at night. It has a high performance laser range finder that ensures accurate location of moving targets, even in poor weather conditions.

As a world leader in the design of thermal imagers, Thales has incorporated in this camera most recent infrared and optical technologies to deliver the optimum solution for target location and surveillance applications.

TECHNICAL CHARACTERISTICS

Spectral band: MWIR (3 - 5 μm)

Field of view (FoV):

- WFoV: 15° x 11,2°
- NFOV: 2.5° x 1.9°
- Continuous zoom: x6
- Magnification x 2.1 to 12.8
- Electronic zoom: x2

Image resolution: 384 x 288

Thermal sensitivity (NETD): Typical 30 mK

Axis stability: < 0.6 mrad

Eye safe laser range-finder:

- Range above 10 km

Magnetic compass:

- Elevation: 0.2°
- Azimuth: 0.5°

GPS receiver:

Integrated + external connection

General Characteristics

Weight: 3.5 kg

Size: 310 mm x 250 mm x 110 mm

Images and Video capture: 1000 photos, 2 Go

Video outputs: Analogic, HDMI

Power supply: 9 VDC

Battery life

- Typical 6 to 7 hours with a single battery

Remote control

- RS 422 serial datalink and ethernet / USB

Cooling

- Integrated micro-cooler, rotative stirling

Cooling down time

- Typical 3'30"

Temperature range

- Operating: -32°C to +55°C

LOGISTIC SUPPORT

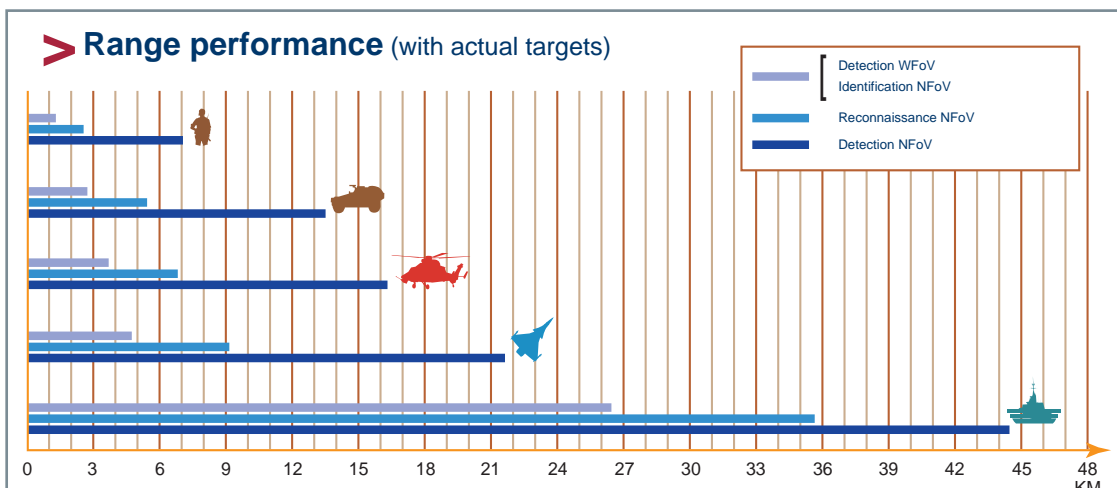
- On-line embeded maintenance
- RFID management capability
- Integrated webserver / http protocol
- Passive RFID Tag

ACCESSORIES

- Tactical bag, logistic container Tripod (Pan-and-Tilt)
- Rechargeable batteries
- Battery chargers
- AC or DC converters
- Data and video cables
- Integrated hand held display / remote control box (POP 6)

OPTIONS

- Daylight camera
- Laser pointer (Eye-safe)



THE FARVIEW HAND-HELD THERMAL IMAGER

- ▷ Day & night passive operation
- ▷ Optical zoom 2.5°/15° autofocus
- ▷ Image stabilisation
- ▷ Image and video capture, mission reporting
- ▷ 3 - 5 μm spectral band

Applications

- ▷ Border & Coastal Surveillance
- ▷ Critical infrastructures
- ▷ Law Enforcement, Police
- ▷ Anti-terrorism
- ▷ Special operations
- ▷ Dismounted soldier (section leaders)
- ▷ Search & rescue



DEFENCE
HOMELAND

HAND-HELD THERMAL IMAGER
WITH CONTINUOUS OPTICAL ZOOM

SOPHIE-ZS





LAND DEFENCE

SOPHIE-ZS

**Hand-Held Thermal Imager
with Continuous Optical Zoom**

With more than 12 000 SOPHIE cameras in operation in 55 countries, Thales is extending the capability of the SOPHIE family with a new thermal imager dedicated to long range surveillance.

A high quality optical zoom provides a wide field of view allowing detection in urban environments or at a short range through to identification at long range with precise image continuity. In addition, it integrates an ergonomic Human-Machine Interface (HMI) and new communications which facilitate mission reporting.

As a world leader in the design of thermal imagers, Thales has incorporated in this camera most recent infrared and optical technologies to deliver the optimum solution for surveillance applications.

TECHNICAL CHARACTERISTICS

Spectral band: MWIR (3 - 5 μ m)

Field of View (FoV):

- Wide FoV: 15° x 11.2°
- Narrow FoV: 2.5° x 1.9°
- Continuous zoom: x6
- Magnification: x 2.1 to 12.8
- Electronic zoom: x2

Image resolution: 384 x 288

Thermal sensitivity (NETD): Typical 30 mK

Weight: 2.4 kg

Size: 310 mm x 250 mm x 110 mm

Video output: HDMI

Power supply: 9 VDC

Battery life

- Typical 7 to 8 hours with a single battery

Images and Video capture

- 1 000 photos, 2 Go

Remote control

- RS 422 serial datalink / ethernet datalink / USB

Cooling

- Integrated micro-cooler, rotative stirling

Cooling down time

- Typical 3'30"

Temperature range

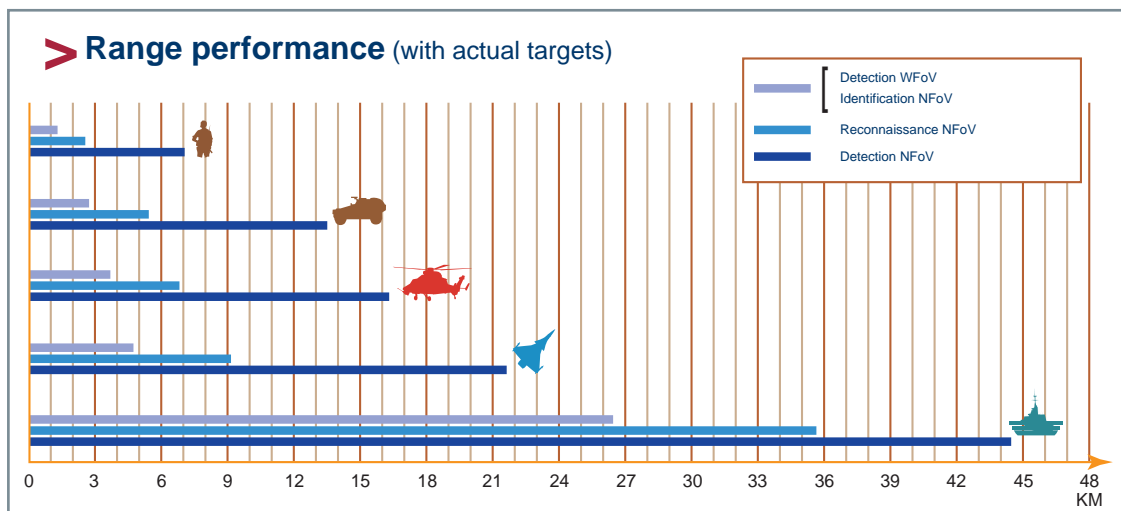
- Operating: -32°C to +55°C

LOGISTIC SUPPORT

- On-line embeded maintenance
- RFID management capability
- Integrated webserver / http protocol
- Passive RFID Tag

ACCESSORIES

- Tactical bag
- Logistic container
- Tripod (Pan & Tilt)
- Integrated hand held display / remote control box (POP 6)
- Data and video cables
- Rechargeable batteries
- Battery chargers
- AC or DC converters



DAY & NIGHT OBSERVATION CAPABILITY

- ☛ Sophie Lite is a hand held, lightweight, fully integrated multifunction system which allows the user to detect, recognise, identify & locate targets. It can be used stand alone to provide all necessary target location data or easily integrated into a separate battlefield management system.
- ☛ The state-of-the-art design and low power processing architecture adopted by Sophie Lite has resulted in the product weight being a class leading 1.5kg. Sophie Lite utilises a Visual/NIR TV camera and TI camera that provide a 24 hour capability and target discrimination, combined with GPS, LRF and orientation sensors to provide a multifunction capability.

OPTRONICS

SOPHIE LITE

Lightweight Multifunction Surveillance & Target Locator





OPTRONICS

SOPHIE LITE

Lightweight Multifunction Surveillance & Target Locator

APPLICATIONS

- Indirect Fire Control (Mortar, Artillery, Air)
- Reconnaissance
- Surveillance
- Force protection
- Homeland security

FEATURES & BENEFITS

- High Resolution Thermal Imager (8-12 μ m) & TV/NIR sensors delivering high performance & image quality for day & night observation.
- Lightweight (1.5kg + 80g batteries) for hand held use.
- Advanced Target Management, Classification & Image Storage which can be exported via communication channels.
- Video recording & image storage within an intuitive user friendly interface maximising operator effectiveness in battlefield situations.
- Silent operation & fast start up time facilitating high tempo & covert operations.
- ITAR free.
- Accessories: Soft tactical bags, hard logistics containers, external cables, remote control unit & tripod with pan & tilt head.

TECHNICAL SPECIFICATION

THERMAL IMAGER (UNCOOLED)

- Sensor Type 640 x 480
- Spectral Band 8-12 μ m
- Field of View 7°
- Image Stabilisation Yes
- Autofocus Yes
- E Zoom x3

TV & NIR Sensor

- Field of View 6° and 3°
- Image Stabilisation Yes
- Autofocus Yes
- E Zoom Yes

LASER RANGEFINDER

- Laser type Diode laser
- Wavelength 1550nm
- Range up to 4km
- Accuracy <5m
- Eye Safety Class 1

GPS

- Internal: Internal is C/A code, with optional P(Y)code
- External: Supports DAGR/PLGR plug-in

DIGITAL MAGNETIC COMPASS

- DMC Type: Gyrocompass 0.5° (1 σ)
- Inclinator Type: Gravity Sensor 0.1° (1 σ)

PHYSICAL

- Dimensions 181 x 190 x 87 mm
- Weight 1.5 kg (w/o batteries)
1.58 kg (inc. batteries)

POWER / LIFE

- Internal AAs >6 hours (TV mode)
>4hrs (TI mode)
- External Battery >24hrs BB2590,
BA5590

OUTPUTS

- Display 800x600 OLED
- External Video PAL, HDMI
- Image/video 100 images, 1hr record save
- External interfaces PWR, RS232/422, Ethernet, USB

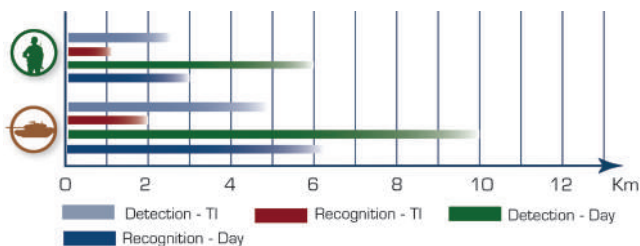
ENVIRONMENTAL

- Operating Temp. -32°C to +55°C
- Qualification MIL STD 810G
MIL STD 461F

ACOUSTIC NOISE

- Aural Non Detectable 10m

Range Performance



"METRE ACCURACY" EVEN WHEN TRADITIONAL LANDMARKS ARE MISSING

- ▷ Day/night target location
- ▷ "Metre accuracy" with landmarks and celestial north finding
- ▷ Hand-Held "one click" target location (Sophie-MF stand-alone)
- ▷ LWIR (8-12 μ m), the proven spectral band for the "dirty" battlefield
- ▷ Compact and lightweight
- ▷ Easy installation and operation
- ▷ Ready for C2 connexion



SOPHIE-TAS/C

Compact accurate target acquisition system





SOPHIE-TAS/C

Compact accurate target acquisition system

Overview

SOPHIE-TAS/C is a compact and lightweight Target Acquisition System for Artillery providing "metre accuracy" even when traditional landmarks are missing.

SOPHIE TAS/C combines:

- Sophie-MF hand-held target locator for hand-held operation,
- A goniometer for high precision angular measurements,
- A direct view optic for accurate day operation,
- A PDA for easy to use Man-Machine Interface and interface to C2,
- A tripod,
- A carrying bag

Applications

- Artillery Forward Observers

Features and benefits

- "Metre accuracy" when operated on tripod
- **Celestial North-Finding** allowing precise target location using sun or moon as "landmarks"
- **Very simple "one click" hand-held operation** when "metre accuracy" is not needed
- **Compact and lightweight**, transported in a single backpack
- **Quickly deployable (5 mn) and simply operated** through high brightness PDA
- **Easy interfacing to most C2** (like Thales AS4000 or ATLAS, and others) through a PDA

Technical Characteristics

- **Range**
 - Typical tank recognition > 4km
- **Night Channel**
 - Spectral band LWIR (8-12µm)
 - Wide FoV: 8°x6° (magnification 4x)
 - Narrow FoV: 3.2°x2.4° (magnification 10x)
 - Elect. Zoom x 2: 1.6°x1.2° (magnification 20x)
- **Day channel**
 - Direct view optic: 8x40, field of view 2.5° (45 mils)
 - TV channel: field of view 3.7° x 2.8° (mag. 8.6x)
- **Laser Range Finder**
 - Eye-safe, range > 10 km
 - Accuracy ±5m
- **GPS positioning**
 - Integrated C/A GPS + external NMEA connection
 - Accuracy ±3m
- **Northing accuracy**
 - With landmarks 1 mils class
 - With celestial bodies 2 mils class
 - With Digital Magnetic Compass 10 mils class
 - Sophie-MF hand-held 10 mils class
- **Angle measurement**
 - Azimuth movement: unrestricted, 360° (6400 mils)
 - Elevation movement: ± 45° (±800 mils)
 - Accuracy 1 mil
- **Fall of shot correction**
 - Precise, 1 mil class fall of shot correction
- **Mission reporting**
 - Pictures (with metadata) storage and download
- **Payload interface:** Quick release interface
- **Weight:** < 20 kg (including carrying bag)
- **Battery life:** 2h30 (24/24 operation with battery expander + charger)
- **Interfacing:**
 - RS-232 serial link to C2 (AS4000, ATLAS...)
 - USB to download pictures + data

