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
**CHARACTERISTICS**

Spectral band: 8-12 µm

Field of view (FoV)
- Wide FoV: 8° x 6°
- Narrow FoV: 3.2° x 2.4°
- Electronic zoom (x2): 1.6° x 1.2°

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°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 areas
- Transmission and tele-operation
- Integrated Hand-Held Display/remote control box (POP6)

---

**Range performance**

With actual targets

<table>
<thead>
<tr>
<th>Detection NFoV</th>
<th>Recognition NFoV</th>
<th>Identification NFoV</th>
<th>With NFoV teleconverter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Km
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
SOPHIE-MF
Long Range Multi-Function Binoculars/Thermal Imager

CHARACTERISTICS

Thermal imager
Spectral band: 8-12 µm
Field of view (FoV)
• Wide FoV: 8° x 6°
• Narrow FoV: 3.2° x 2.4°
• Electronic zoom (x2): 1.6° x 1.2°
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° x 2.8°
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° 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)

Range performance
With actual targets

<table>
<thead>
<tr>
<th>Detection NFoV</th>
<th>Recognition NFoV</th>
<th>Identification NFoV</th>
<th>With NFoV teleconverter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
<tr>
<td>Detection NFoV</td>
<td>Recognition NFoV</td>
<td>Identification NFoV</td>
<td>With NFoV teleconverter</td>
</tr>
</tbody>
</table>

THALES - Ref B6.6 - May 2013 Technical characteristics and data given for information and subject to change without prior notice.
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 & 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

MULTIFUNCTION HAND-HELD THERMAL IMAGER
WITH CONTINUOUS OPTICAL ZOOM

SOPHIE-XF
**TECHNICAL CHARACTERISTICS**

**Spectral band:** MWIR (3 - 5 µm)

<table>
<thead>
<tr>
<th>Field of view (FoV):</th>
</tr>
</thead>
<tbody>
<tr>
<td>WFoV: 15° x 11.2°</td>
</tr>
<tr>
<td>NFoV: 2.5° x 1.9°</td>
</tr>
<tr>
<td>Continuous zoom: x6</td>
</tr>
<tr>
<td>Magnification x 2.1 to 12.8</td>
</tr>
<tr>
<td>Electronic zoom: x2</td>
</tr>
</tbody>
</table>

**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 embedded 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)

---

**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.

---

**Range performance (with actual targets)**

![Range performance graph](image-url)
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

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 µm)

Field of View (FoV):
- Wide FoV: 15° x 11.2°
- Narrow FoV: 2.5° x 1.9°
- Continuous zoom: x6
- Magnification: x2.1 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 embedded 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

THALES OPTRONIQUE - 2, avenue Gay-Lussac - CS 90502 - 78995 Elancourt Cedex - France
Tel: +33 (0)1 30 96 70 00 - Fax: +33 (0)1 30 96 75 50 - e-mail: info.optro@fr.thalesgroup.com
SOPHIE LITE
Lightweight Multifunction Surveillance & Target Locator

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.
TECHNICAL SPECIFICATION

THERMAL IMAGER (UNCOOLED)
- Sensor Type: 640 x 480
- Spectral Band: 8-12μm
- 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° (1σ)
- Inclinometer Type: Gravity Sensor 0.1° (1σ)

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)
- >24hrs BB2590, BA5590
- External Battery

OUTPUTS
- Display: 800x600 OLED
- PAL, HDMI
- PWR, RS232/422, USB
- External interfaces
- 100 images, 1hr record save

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

ACOUSTIC NOISE
- Aural Non Detectable: 10m
SOPIE-TAS/C
Compact accurate target acquisition system

“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 (8-12µm), 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

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 min) 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
  - Eyesafe, 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

THALES – April 2014 Technical characteristics are given for information and subject to change without prior notice.
Design and production © THALES Optronique - Photos: © THALES 6 Bernard Rousseau