Dear Customers,
Dear Partners,

Opticoelectron Group JSCo has more than 45 years long experience in production of optomechanical and optoelectronic devices and systems for military purposes.

Our focus has always been on providing you with high-quality products and solutions, and we work hard to ensure that our products and services have the features and functionality that best contribute to your success.

As always, customer service is our top priority. We appreciate your loyalty and look forward to serving you even better in the years to come.

Sincerely,

[Signatures]

dipl. eng. Ivan Garchev

dipl. eng. Nikodim Kazandzhiev

Executive Managers of Opticoelectron Group JSCo
Opticoelectron Group JSCo is one of the most advanced companies specialized in optomechanical, optoelectronic and laser devices and systems for defence and security, medicine, device-building, machine-building. The company has more than 45 years old history and traditions, and it is considered as a leader of optical devices production in Bulgaria, as well as an international market leader.

It has a closed cycle of production starting from research and development going through production process to marketing, promoting and trading finished products. The company head office and its premises are in the town of Panagyurishte which is 90 km. south-east of capital city Sofia and 80 km. north-west of Plovdiv (the second largest city in Bulgaria). It is located in an Industrial Park of 260 000 sq.m. where 106 000 sq.m. of the total area are production plots.

Over 97% of total production goes on export to EU countries, North America and the Middle East. Opticoelectron Group JSC is ISO 9001, ISO 14001, ISO 18001 and ISO 27001 certified. Our NATO Commercial and Governmental Entity code (NCAGE) is 000DU. Opticoelectron Group JSC has obtained a Certificate for Registry in the field of international relations “NATO-SECRET” and a Certificate for access to operate with state classified information. The company also has a statute of supplier for US Government - DUNS Registration.

Key defence products in our portfolio are as follows: anti-aircraft and ground artillery sights for firing in daytime and in nighttime; day, night and thermal optical sights, SWIR lenses, laser range finders, laser target designators, optical systems for armoured vehicles, video observation and surveillance systems.

**HI-TECH INDUSTRIAL PARK “OPTICOELECTRON”**

- Total site area: 260 000 m²
- Total building footprint: 50 100 m²
- Total building area: 106 500 m²
MNV-50
Night Vision Monocular
NSN 5855-50-001-1726

Description:
Designed to fit your specific night vision needs. The brightest and sharpest images available due to a High Resolution 3rd Generation or Super Gen Image Intensifier Tube. Compact yet rugged design.

Technical characteristics:
- Magnification: 1 x
- F-number: 1.2 f/#
- Focal length: 50 mm
- Adjustment range of the focal: 1 m to infinity
- Field of View: ≥ 19.85°
- Resolution with IIT 18 mm XD-4: ≥ 58 lp/mm
- Resolution with IIT 18 mm XR5: ≥ 62 lp/mm
- Diopter adjustment: -2 to +2 dptr
- Eye relief: 24 mm
- Length / Width / Height: 180 x 55 x 74 mm
- Weight without battery: 0.570 kg
- Power supply: 1x battery size AA
- Temperature ranges operation: -50°C to +50°C
- Storage: -35°C to +35°C
- Dimensions: 205 x 55 x 74 mm
NOS 4B
Night Vision Scope For SPG-9
NSN 1240-50-001-2541

Technical characteristics:
Magnification: 4 x
F-number: 1.41 f/#
Field of View: 2w = 11.1°
Eye relief: S'P' = 30 mm
Exit pupil diameter: Dp' = 4.5
Objective focus: From 25 mm to infinity
Diopter adjustment: Fixed, minus 0.75 dptr

Distance of detection (IIT XD-4, 60 lp/mm, 1 mlux, human figure): > 700 m
Distance of recognition (IIT XD-4, 60 lp/mm, 1 mlux, human figure): > 400 m

Power supply source: 1pc. 1.5V or 3.6V, AA type
Operation time with 1.5V battery: 12 h
Operation time with 3.6V battery: 50 h

Ballistic and long range reticle “KYM” or “OCK”:
Reticle, illumination LED: λ = 610 nm
Adjustment range: ± 1° elevation and direction
Adjustment accuracy: 1 MOA, with fixation
Housing: Aluminium alloy
Attachment mechanism: for SPG 9
Dimensions (LxBxH): 232 x 78 x 96 mm (without eyecup)
Weight: 1.200 kg (including battery)
NOS4D
Night Vision Scope

Description:
Designed for aiming at night using various weapons as assault rifles, snipers, hunting and sport rifles. Ballistic and a long range reticle.

Technical characteristics:
Magnification: 4 x
Objective focus: from 25 m to infinity
 Diopter adjustment: from +2 to -6 dptr
Distance of detection (for IIT XD-4, 60lp/mm, 1mlux, human figure): > 700 m
Distance of recognition (for IIT XD-4, 60lp/mm, 1mlux, human figure): > 400 m
Power supply source: 1 pc 1.5V or 3.6V “AA” battery
Operational time with 1.5 V battery: 12 h
Operational time with 3.6 V battery: 50 h
Attachment: Picatinny rail
Operational temperature range: from -50° C to +50° C (from -35° C to -50° C no more than 4h)
Overall dimensions: 236 x 75 x 102 mm (without eyecup)
Weight with mounting adaptor: ≤ 940 g (without battery)
Designed for work with an IIT: MIL-I-49428 (ER)
Effective focal length: f/# = 90 mm
f/number: f/# = 1.61
Field of View: 2w = 11°
Distortion: < -0.25%
Resolution in the center of field: > 300 lp/mm
Resolution in the end of field: > 150 lp/mm
Spectral range: 450... 950 nm
Coating for spectral range: 450... 950 nm
Transmission: > 75%
Focal range: f = 22.5 mm
Distortion: < -4%
Eye relief: S/P’ = 30 mm
Exit pupil diameter: Dp” = 4.5 mm
Spectral range: 500... 620 nm
Ballistic and long range reticle
Reticle illumination, LED:
Adjustment range: ± 1° in elevation and direction
Adjustment accuracy: IMOA, with fixation
Image Intensifier Tube - 18 mm:
λ = 810 mm
All type 18 mm, Auto Gating
**OENAG**

**Night Vision Goggles**

NSN 5855-50-001-4060

---

**Description:**
The „OENAG“ are self-contained, helmet-mounted passive night vision goggles, that provides the capability for pilots to fly in terrain flight modes at night. The system amplifies ambient light from sources such as the moon, stars and sky glow, so the viewed scene becomes clearly visible to the operator. The „OENAG“ has the following important features: Powered by batteries and board power; Low-battery indicators on the helmet mount and power pack lights, if the battery power is low level; Eye-span, vertical distance, tilt, eye relief, diopter adjustable.

---

**Technical characteristics:**

**Operational adjustment limits**

<table>
<thead>
<tr>
<th>Item</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical</td>
<td>18 mm total travel</td>
</tr>
<tr>
<td>Fore and aft</td>
<td>27 mm total travel</td>
</tr>
<tr>
<td>Eye span</td>
<td>51 mm to 72 mm</td>
</tr>
<tr>
<td>Tilt</td>
<td>10° total travel</td>
</tr>
<tr>
<td>Diopter adjustment</td>
<td>from -5 to +5 dptr</td>
</tr>
<tr>
<td>Objective focus</td>
<td>fixed</td>
</tr>
</tbody>
</table>

**Electrical data**

| Voltage/battery power supply | 2.2 ± 3.6 VDC              |
| Voltage/on-board power supply| 9 ± 32 VDC                 |
| Current/ battery power supply| 100 mA, maximum           |
| Current/ board power supply  | 30 mA, maximum            |
| Batteries life at 20°C alkaline | 20 hours (minimum/one container) |

**Optical data**

| Magnification | Unity (1x) |
| Field of view | 42°         |

**Environmental Data**

- Operating temperature: -32°C to +52°C
- Storage temperature: -35°C to +65°C
- Encapsulation rating: IP65
- Illumination required: Overcast starlight to moonlight

**Mechanical data**

- Goggles breakaway force: 10 G
- Goggles weight: 0.660 kg
- Mount assembly weight: 0.180 kg
- Power pack weight (without batteries): 0.380 kg
OENG-E
Night Vision Goggles
NSN 5855-50-001-2544

Description:
Provide night fighters with the ability to see, maneuver and shoot at night or during periods of reduced visibility. Applications: night surveillance, police, law enforcement, hunting, patrol, rescue etc.

Features:
- Adjustable interpupillary distance
- Built-in IR illuminator
- Illuminator indication
- Battery state indication
- Flipping-up headmount

Technical characteristics:
<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnification</td>
<td>1 x</td>
</tr>
<tr>
<td>Image Intensifier Tube</td>
<td>XD - 4</td>
</tr>
<tr>
<td>Field of view</td>
<td>40°</td>
</tr>
<tr>
<td>Objective</td>
<td>26 mm</td>
</tr>
<tr>
<td>Diopter adjustment</td>
<td>+4 to -4 dptr</td>
</tr>
<tr>
<td>Interpupillary adjustment</td>
<td>58 to 72 mm</td>
</tr>
<tr>
<td>Overall dimensions without mask</td>
<td>123 x 150 x 61 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>0.44 kg</td>
</tr>
<tr>
<td>Power supply-battery of type &quot;AA&quot;</td>
<td>2 pcs</td>
</tr>
<tr>
<td>Feed voltage</td>
<td>3 V</td>
</tr>
<tr>
<td>Operational temperature range</td>
<td>-40°C to +50°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>up to 98%</td>
</tr>
</tbody>
</table>

*Note: The low operating temperature depends on the power supply source.*
EVEN NIGHT IS A NEW DAY!

NIRECON®

**Description:**
The OE NIRECON Night Vision Goggles are among the smallest and lightest night vision goggles ever produced. Their unique design makes them comfortable and easy to use, whilst retaining a high performance night vision capability.

<table>
<thead>
<tr>
<th><strong>Technical characteristics:</strong></th>
<th><strong>Features</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Image intensifier tube:</em></td>
<td>- Build-in IR illuminator;</td>
</tr>
<tr>
<td>Magnification*:*</td>
<td>- Indication of work illuminator;</td>
</tr>
<tr>
<td>1 x</td>
<td>- Low voltage battery indicator;</td>
</tr>
<tr>
<td>40°</td>
<td>- Head gear;</td>
</tr>
<tr>
<td><strong>Field of View:</strong></td>
<td>- Extremely low weight;</td>
</tr>
<tr>
<td>26 mm</td>
<td>- Color - Matt black;</td>
</tr>
<tr>
<td><strong>Objective foveal length:</strong></td>
<td>- Reverse polarity protection for the batteries;</td>
</tr>
<tr>
<td><strong>Objective relative aperture:</strong></td>
<td>- Automatic brightness control;</td>
</tr>
<tr>
<td>f/1</td>
<td>- Automatic shut-off system;</td>
</tr>
<tr>
<td><strong>Focus range:</strong></td>
<td>- 9 mm exit pupil diameter;</td>
</tr>
<tr>
<td>0.2 m to infinity</td>
<td>- not “remember” images from high intensity light sources</td>
</tr>
<tr>
<td><strong>Dioptr adjustment:</strong></td>
<td></td>
</tr>
<tr>
<td>+2 to -6 dptr</td>
<td></td>
</tr>
<tr>
<td><strong>Eye relief distance:</strong></td>
<td></td>
</tr>
<tr>
<td>&gt; 20 mm</td>
<td></td>
</tr>
<tr>
<td><strong>High contrast resolution:</strong></td>
<td></td>
</tr>
<tr>
<td>1.5 mrad</td>
<td></td>
</tr>
<tr>
<td><strong>Interpupillary adjustment:</strong></td>
<td></td>
</tr>
<tr>
<td>55 - 73 mm</td>
<td></td>
</tr>
<tr>
<td><strong>Exit pupil diameter:</strong></td>
<td></td>
</tr>
<tr>
<td>9 mm</td>
<td></td>
</tr>
<tr>
<td><strong>Center resolution:</strong></td>
<td></td>
</tr>
<tr>
<td>&gt; 64 lp/mm (with Gen 3)</td>
<td></td>
</tr>
<tr>
<td><strong>SNR:</strong></td>
<td></td>
</tr>
<tr>
<td>25 (with Gen 3)</td>
<td></td>
</tr>
<tr>
<td><strong>Battery:</strong></td>
<td></td>
</tr>
<tr>
<td>2 pcs. of type AA</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply:</strong></td>
<td></td>
</tr>
<tr>
<td>from 2V to 3.5V</td>
<td></td>
</tr>
<tr>
<td><strong>Battery life:</strong></td>
<td></td>
</tr>
<tr>
<td>&gt; 20 h at 20°C</td>
<td></td>
</tr>
<tr>
<td><strong>IR source on:</strong></td>
<td></td>
</tr>
<tr>
<td>&gt; 12 h at 20°C</td>
<td></td>
</tr>
<tr>
<td><strong>IR source:</strong></td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td></td>
</tr>
<tr>
<td><strong>Weight without battery:</strong></td>
<td></td>
</tr>
<tr>
<td>0.350 kg</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions without mask (w x h x l):</strong></td>
<td></td>
</tr>
<tr>
<td>155 x 73 x 58 mm</td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature:</strong></td>
<td></td>
</tr>
<tr>
<td>-40°C to +55°C</td>
<td></td>
</tr>
<tr>
<td><strong>Storing temperature:</strong></td>
<td></td>
</tr>
<tr>
<td>-40°C to +65°C</td>
<td></td>
</tr>
<tr>
<td><strong>Relative humidity:</strong></td>
<td></td>
</tr>
<tr>
<td>95% at 35°C</td>
<td></td>
</tr>
<tr>
<td><strong>Encapsulation rating:</strong></td>
<td></td>
</tr>
<tr>
<td>IP 67</td>
<td></td>
</tr>
</tbody>
</table>

*Note: This product can be produced with 3x or 5x magnification*
HURECON 50 / TERECON 50
Thermal Sight
NSN 5855-50-001-2545

Description:
The Thermal sight HURECON50 / TERECON 50 are designed for weapons up to 50 caliber (12.7 mm) with interface MIL-STD-1913 and battlefield monitoring. Both sights are devices suitable to be used by the Special Forces, Army and Police. The sights provides clear and sharp picture of the battlefield regardless of the weather, thereby increasing the operational efficiency and precision of the staff as its security.

They are designed to exceed expectations with the following tasks:
- Target acquisition and target fire;
- Fire control, tactical and strategically surveillance;
- Field reconnaissance.

Technical characteristics:

Field of view with zoom 1X:
6.5° x 5° / 12.4° x 9.9°
Length/ Aperture, F/#:
50 mm / 1.2
Lens focusing range:
From 10m to infinity
Exit pupil distance:
43.8 mm
Exit pupil diameter:
4 mm
Diopter adjustment:
± 2 dptr
Power supply:
4 pcs batteries, type AA, 3.7V, rechargeable
Continuous operation with one set of batteries:
> 6hrs
Dimensions LxWxH (approximately):
294 x 100 x 60 mm
Weight without batteries:
< 0.360 kg
Operating temperature range:
-40°C to +50°C
Non-operating temperature range:
-55°C to +70°C
Thermal imager:
Uncooled VOx Microbolometer
PFA / Digital video display formats:
336 x 256 / 640 x 480
Analog video display formats:
640 x 512 (PAL)
Display:
17 μm
Spectral band:
7.5 - 13.5 μm
HURECON 50 / TERECON 50 full frame rates:
9 Hz / 25 Hz (PAL)
Sensitivity (NEdT):
< 50 mK at fr 1.0
Time to image:
~ 3.5 sec
Image optimization:
Yes
Digital detail enhancement:
Yes
Polarity control (black hot/white hot):
Yes
Color & monochrome palettes (LUTs):
Yes
Digital zoom:
2 x
Flat-field correction (FFC) duration:
< 0.5 sec
AMOLED SVGA display:
Format:
800 x (3) x 600 pixels
Color pixel arrangement:
R, G, B Vertical Stripe
Contrast ratio:
> 1000:1
Analog/Digital video interface:
PAL, NTSC, BT601, 656
DRI characteristics:
Human (1.8mx0.5m)
Vehicle (2.3mx2.3m)
Detection:
1500 m
Recognition:
380 m
Identification:
190 m
3800 m
1060 m
540 m
Description:
The TERECON 75 Clip-On Device is rugged uncooled thermal weapon sight providing clear day/night imagery through various obscurants like dust, smoke, haze, fog and many others. The TERECON 75 incorporates in itself the latest uncooled VOx microbolometer sensor technology providing unmatched sensitivity of the system.

The TERECON 75 is designed to interface with day scopes but also can be used as a portable reconnaissance system. The TERECON 75 has the ability to record videos with optional Digital Video Recorder and is also equipped with a video-out capability. The TERECON 75 is easy to use, accepts standard AA batteries, has full metal aircraft grade aluminium housing and is protected by superior wear and corrosion resistant, chemically stable ceramic coating.

Technical characteristics:

<table>
<thead>
<tr>
<th>Optical Specification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor:</td>
<td>640 x 480 17μ Microbolometer</td>
</tr>
<tr>
<td>Spectral range, μm:</td>
<td>8 - 12 (LWIR)</td>
</tr>
<tr>
<td>Field of view:</td>
<td>8,30° (H) x 6,23° (V)</td>
</tr>
<tr>
<td>Focal length, mm:</td>
<td>75</td>
</tr>
<tr>
<td>Focus:</td>
<td>Manual</td>
</tr>
<tr>
<td>F-Number:</td>
<td>1.2</td>
</tr>
<tr>
<td>Sensor sensitivity, mK:</td>
<td>&lt; 35 mK at F/1.0</td>
</tr>
<tr>
<td>Digital zoom:</td>
<td>1x, 2x, 4x</td>
</tr>
<tr>
<td>Magnification:</td>
<td>Unity</td>
</tr>
<tr>
<td>Human target detection / recognition, km:</td>
<td>2.5 / 0.7</td>
</tr>
<tr>
<td>NATO target detection / recognition, km:</td>
<td>3.3 / 1</td>
</tr>
</tbody>
</table>

Power Supply

| Internal AA batteries: | 3 |
| Run time, h:           | > 4 |

Dimensions, Connectors, Weight and Mounting

| Length x Width x Height: | 196 x 75 x 94 mm |
| Attachment:              | Picatinny Rail |
| Weight (without batteries): | 0.800 kg |
| Connectors:              | CVBS Analog Video Out; Remote Control Pad. |
HURECON 100 / TERECON 100
Thermal Sight

Description:
The Thermal sight TERECON TS 100 is designed for weapons up to 50 caliber (12, 7 mm) with interface picatinny rail and battlefield monitoring. The Thermal Sight TERECON TS 100 is device suitable to be used by the Special Forces, Army and Police. The sight provide clear and sharp picture of the battlefield regardless of the weather, thereby increasing the operational efficiency and precision of the staff as its security. Terecon 100 is designed to exceed expectations with the following tasks:
- Target acquisition and target fire
- Fire control and tactical and strategically surveillance
- Field reconnaissance.

Technical characteristics:
Field of view with zoom 1x: 3.3° x 2.5° / 6.2° x 5°
Length/ Aperture, F/#: 100 mm/ 1.6
Lens focusing range: From 10 m to infinity
Exit pupil distance: 43.8 mm
Exit pupil diameter: 4 mm
Eyepiece diopter adjustment: ± 2dptr
Power supply: 4 pcs batteries, type AA, 3.7V, rechargeable
Continuous operation with one set of batteries: > 6hrs
Dimensions LxWxH (approximately): 270 x 115 x 155 mm
Weight without batteries: <20 kg

Environmental
Operating Temperature Range: -40°C to +50°C
Non-Operating Temperature Range: -55°C to +70°C

Thermal Imager:
Thermal imager: Uncooled VOx Microbolometer
FPA/ Digital Video Display Formats: 336 x 256 / 640 x 480
Analog Video Display Formats: 640 x 512 (PAL)
Pixel Pitch: 17 μm
Spectral Band: 7.5 – 13.5μm
HURECON 100 / TERECON 100 full frame rates: 9 Hz / 25 Hz (PAL) 30Hz (NTSC)
Sensitivity (NEdT): < 50mK at f/1.0
Time to Image: ~3.5sec

Image Processing
Image Optimization: Yes
Digital Detail Enhancement: Yes
Polarity Control (black hot/white hot): Yes
Color & Monochrome Palettes (LUTs): Yes
Digital Zoom: 2 x
Flat-Field Correction (FFC) Duration: < 0.5 sec

AMOLED SVGA Display
Format: 800 x (3) x 600 pixels
Color Pixel Arrangement: R, G, B Vertical Stripe
Contrast Ratio: > 1000:1
Analog/Digital Video Interface: PAL, NTSC / BT601,656
TEREOS 50 / TEREOS 500M
Clip-On Thermal Scope

Description:
Tereos 50 and Tereos 500M have been developed as a Clip-On Thermal Scopes for use with RGW90, which comes with optical sight EOS1.5x. The products work by overlaying LWIR thermal image over VIS image, in front of optical sight. Overlaying is done by beam splitter. They have optical magnification 1x.

Tereos 50 can be used as an independent device. In this case, it can be used with zoom up to 2x. Tereos 500M can be used as an independent device. In this case, it can be used with digital zoom.

Technical characteristics:

<table>
<thead>
<tr>
<th>Tereos 50</th>
<th>Tereos 500M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field of view with zoom 1x:</td>
<td>6.5° x 5°</td>
</tr>
<tr>
<td>Length / Aperture, F/#:</td>
<td>50 mm/1.2</td>
</tr>
<tr>
<td>Lens focusing range:</td>
<td>From 30 m to infinity</td>
</tr>
<tr>
<td>Exit pupil distance:</td>
<td>24 mm</td>
</tr>
<tr>
<td>Exit pupil diameter:</td>
<td>7 mm</td>
</tr>
<tr>
<td>Power supply:</td>
<td>4 pcs batteries, type AA, 3.7V, rechargeable</td>
</tr>
<tr>
<td>Continuous operation with one set of batteries:</td>
<td>&gt; 6 hrs</td>
</tr>
<tr>
<td>Dimensions LxWxH (approximately):</td>
<td>165.8 x 166.3 x 122.8 mm</td>
</tr>
<tr>
<td>Weight without batteries:</td>
<td>&lt; 1.1 kg</td>
</tr>
<tr>
<td>Operating temperature range:</td>
<td>-40°C to +50°C</td>
</tr>
<tr>
<td>Non-operating temperature range:</td>
<td>-55°C to +60°C</td>
</tr>
<tr>
<td>FPA / Digital video display formats:</td>
<td>Uncooled VOx Microbolometer</td>
</tr>
<tr>
<td>Analog video display formats:</td>
<td>336 x 256</td>
</tr>
<tr>
<td>Pixel pitch:</td>
<td>640 x 512 (PAL)</td>
</tr>
<tr>
<td>Full frame rates:</td>
<td>17 μm</td>
</tr>
<tr>
<td>Sensitivity (NEdT):</td>
<td>25 Hz (PAL) / 30 Hz (NTSC)</td>
</tr>
<tr>
<td>Time to image:</td>
<td>&lt; 50 mK at f/1.0</td>
</tr>
<tr>
<td>Analog video output:</td>
<td>~ 3.5sec</td>
</tr>
<tr>
<td>Control operation:</td>
<td>CCIR or RS-170</td>
</tr>
<tr>
<td>Display type:</td>
<td>DDE, Polarity Control (back hot/white hot), Control&amp;Monochrome Palletes</td>
</tr>
<tr>
<td>Resolution:</td>
<td>Digital Zoom, FFC</td>
</tr>
<tr>
<td>Color pixel arrangement:</td>
<td>Color AMOLED SVG</td>
</tr>
<tr>
<td>Contrast ratio:</td>
<td>800 x (3) x 600 pixels</td>
</tr>
<tr>
<td>DRI characteristics:</td>
<td>&gt; 1000:1</td>
</tr>
<tr>
<td>Detection:</td>
<td>PAL, NTSC/BT601,656</td>
</tr>
<tr>
<td>Recognition:</td>
<td>Human (1.8mx0.5m)</td>
</tr>
<tr>
<td>Identification:</td>
<td>Vehicle (2.3mx2.3m)</td>
</tr>
<tr>
<td>1500 m</td>
<td>1500 m</td>
</tr>
<tr>
<td>3900 m</td>
<td>3900 m</td>
</tr>
<tr>
<td>1060 m</td>
<td>1060 m</td>
</tr>
<tr>
<td>540 m</td>
<td>540 m</td>
</tr>
</tbody>
</table>
Description:
The OETHERMO 35FVA family is a line of thermal security cameras used for twenty-four hour observing and monitoring sensitive sites in total darkness, light fog, smoke or day light conditions. OETHERMO cameras have the widest variety of lens options on the market and can be configured with IP video and control or integrated with a pan/tilt unit.

Technical characteristics:
- **Thermal imager:** a-Si Uncooled Microbolometer
- **UFPA:** 384 x 288 pixels
- **Spectral band:** 7.5 - 14 μm
- **Pixel pitch:** 25 μm
- **Sensitivity (NEDT):** < 45 mK
- **Objective, athermalized / Aperture, F/#:** 35 mm/ 1.2
- **Field of view:** 15°(H) x 11°(V)
- **Time to image:** ~3 sec
- **Analog video interface 1V p-p:** PAL (CCIR) or NTSC (RS170)
- **Digital video interface:** BT601, BT656, camera link
- **Communication interface:** RS232, PELCO D
- **Remote control:** Video polarity, NUC, Digital zoom
- **Power supply:** 12 - 36 VDC
- **Dimensions L x W x H:** 127 x 80 x 75 mm
- **Weight with 35 mm lenses:** 0.820 kg
- **Operating temperature range:** from -40°C to +60°C
- **Non-operating temperature range:** from -40°C to +70°C
- **Encapsulation:** IP65

Human DRI characteristics:
- **Detection:** 660 m
- **Recognition:** 235 m
- **Identification:** 115 m

*With special order*
**OE THERMO IP**

**IP Imager Series**

**Description:**
The IP-series cameras are controlled by free CMS VSTPro 3.0, 1.7 software for monitoring, data storage, data transfer, manage/control. The software supports 1/A/9/16/36/8 display, OSD setting, talk-back, recod playback, alarm control and motion detection (MD).

The interface is friendly and easy for use, it can help to control more than one device in the same time and main functions below:
- Real-time monitor and talk-back function;
- Support alarm /MD/time/ manual trigger record;
- Support MD (area/sensitivity optional) / private mask / picture snap;
- Support SMTP, send picture to mail box when alarm;
- Support DONG / RTSP;
- Support long distance online upgrade;

**Technical characteristics:**

<table>
<thead>
<tr>
<th>IP</th>
<th>IP13</th>
<th>IP18</th>
<th>IP25</th>
<th>IP35</th>
<th>IP50</th>
<th>IP60</th>
<th>IP100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focal Length</td>
<td>9 mm</td>
<td>13 mm</td>
<td>19 mm</td>
<td>25 mm</td>
<td>35 mm</td>
<td>50 mm</td>
<td>60 mm</td>
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<tr>
<td>Field of view with zoom</td>
<td>35°x27°</td>
<td>25°x19°</td>
<td>17°x13°</td>
<td>13°x10°</td>
<td>9.3°x7.1°</td>
<td>6.5°x5°</td>
<td>5.5°x4.2°</td>
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<tr>
<td>Aperture, F/</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.1</td>
<td>1.2</td>
<td>1.2</td>
<td>1.25</td>
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<tr>
<td>Weight</td>
<td>2.172</td>
<td>2.170</td>
<td>2.170</td>
<td>2.212</td>
<td>2.250</td>
<td>2.180</td>
<td>2.340</td>
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<tr>
<td>Human detection</td>
<td>250</td>
<td>390</td>
<td>570</td>
<td>820</td>
<td>1140</td>
<td>1500</td>
<td>1750</td>
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<tr>
<td>Vehicle detection</td>
<td>720</td>
<td>1080</td>
<td>1550</td>
<td>2200</td>
<td>3000</td>
<td>3900</td>
<td>4500</td>
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<tr>
<td>Human recognition</td>
<td>95</td>
<td>144</td>
<td>210</td>
<td>280</td>
<td>380</td>
<td>450</td>
<td>650</td>
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<tr>
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<td>2.3mm</td>
<td>1.75</td>
<td>2.75</td>
<td>4.00</td>
<td>5.80</td>
<td>8.00</td>
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<tr>
<td>Human identification</td>
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<td>2.3mm</td>
<td>3.1mm</td>
<td>4.7</td>
<td>72</td>
<td>104</td>
<td>142</td>
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<tr>
<td>Vehicle identification</td>
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<td>2.3mm</td>
<td>3.8</td>
<td>140</td>
<td>200</td>
<td>290</td>
<td>400</td>
</tr>
</tbody>
</table>

**Technical characteristics for the entire product series:**

- Uncooled VOx Microbolometer

- Resolution: 336 x 226
- Video display formats: 640 x 512
- Pixel pitch: 17 μm
- Spectral band: 7.5 - 135 μm
- Full frame rate: 9 Hz / 25 Hz*
- Sensitivity (NEAT): < 50 nW at f/1.0
- Time to image: ~ 3.5 sec.
- Image optimization: Yes
- Digital detail enhancement: Yes
- Polarity control (black hot / white hot): Yes
- Color & Monochrome Palettes (LUTs): Yes
- Digital zoom: 2 x and 4 x
- Flat field correction (FFC) duration: < 0.5 sec
- Analog/Digital camera thermometer: Yes
- Software license: Yes, Free

- Processor: H3507 SoC ARM 926 + H 264 Codec
- Operating system: Linux 2.6.14
- Video compression: H264 Main profile at Level 3.0
- Video Resolution: Full D1 (704 x 576 at PAL, 704 x 480 at HTSC); Half D1 (704 x 288 at PAL, 704 x 240 at HTSC); CIF (352 x 288 at PAL, 352 x 240 at HTSC); QCIF (176 x 144 at PAL, 160 x 112 at HTSC)
- Bit rate: 16 - 4M bps
- Video Input: CVBS, 1.0 Vp-p with 75Ω loading BT666 optional
- Audio compression: G.722
- Audio Input: MIC In or Line input Unbalanced, 1.4Vp-p, 1Vrms
- Audio Output: Unbalanced 1.4Vp-p, 1Vrms
- Alarm Input: 1 External alarm input
- Alarm Output: 1 relay output (NO) 120VAC 1A/24VDC 1A
- Storage: Support SD card local storage
- Ethernet: RJ-45 (10/100BASE-T)
- Protocol: TCP, UDP, IP, HTTP, DHCP, UPnP
- Power supply: 220VAC (12VDC/24V/DC optional)
- Consumption: < 1A
- Dimensions (LxWxH): 380x151x145 mm
- Operational temperature range: -50°C to +65°C
- Storage temperature range: -50°C to +75°C
- Humidity (non-condensing between 5% and 85%): Yes
- Encapsulation rating: IP66
SWIRECON SWIR Series

**SWIRECON 100**
HIGH PERFORMANCE SHORT WAVE INFRARED
SWIR f = 100 x 1.5 AT

**SWIRECON 50**
HIGH PERFORMANCE SHORT WAVE INFRARED
SWIR f = 50 x 1.5 AT

**SWIRECON 25**
HIGH PERFORMANCE SHORT WAVE INFRARED
SWIR f = 25 x 1.8 AT

**SWIRECON 14**
HIGH PERFORMANCE SHORT WAVE INFRARED
SWIR f = 14 x 1.8 AT

**SWIRECON 12.5**
HIGH PERFORMANCE SHORT WAVE INFRARED
SWIR f = 12.5 x 1.2 AT