

Thermal imaging cameras  
for security and surveillance applications



## HRC-25x320 MCT / HRC-36x460 MCT

Thermal imaging cameras with cooled MCT detector  
for long range security and surveillance applications.



Thermal imaging camera only



Multi-Sensor  
Including daylight camera, positioning unit  
and optional accessories



# HRC-25x320 MCT MS / HRC-36x460 MCT MS Multi-Sensor systems



Daylight / low light camera

Thermal imaging camera with triple field of view

Laser range finder: optional

Video tracker: optional

Pan & Tilt positioning unit



HRC-25x320 MCT

HRC-36x460 MCT MS  
Multi-Sensor

## HRC-25x320 MCT / HRC-36x460 MCT: Thermal imaging cameras for long range surveillance applications

*The HRC MCT-series are equipped with a mid-wave, cooled Mercury Cadmium Telluride (MCT) detector which offers extremely long range detection in all weather conditions. The camera head is equipped with switchable optics offering three different fields of view. This provides excellent situational awareness while also giving the possibility to have a closer look at suspect activities once they are detected.*

*The HRC-25x320 MCT and HRC-36x460 MCT offer extreme long range detection and excellent image quality, in the darkest of nights, through smoke and dust. Both systems are extremely suited for border and coastal surveillance but also for mid-range threat detection.*

*The HRC-25x320 MCT and HRC-36x460 MCT thermal imaging cameras are also available as a Multi-Sensor. In this configuration they are mounted on a Pan/Tilt and come with a daylight camera. Optionally a laser range finder and an automatic video tracker can be installed.*

### Cooled MCT detector

The HRC-25x320 MCT and HRC-36x460 MCT are equipped with a cooled Mercury Cadmium Telluride (MCT) detector operating in the 3.7 – 4.8  $\mu\text{m}$  waveband. MCT technology based detectors provide unrivalled thermal sensitivity compared with other materials based cooled detectors.

A thermal imaging camera with a cooled detector gives you the advantage that you can see and detect potential threats much further away than with an uncooled detector. But there is more. Objects which are at a close distance can be seen with much more detail. You can see what people are carrying. There is no need anymore to send someone out in the field to check things out since small details can clearly be seen on the thermal image.

### Choice of image quality:

#### 320 x 256 or 640 x 512 pixels

The HRC MCT-series are equipped with an MCT detector that produces ultra-sharp thermal images of 320 x 256 pixels. Users that want to see the smallest of detail and are demanding the best possible image quality can choose for a 640 x 512 pixels detector. This produces an image with a four times better quality than a 320 x 256 pixels detector. It allows seeing more detail and detecting more and smaller objects from a further distance.

### Triple field of view optics

The HRC MCT-series are equipped with triple field of view optics. The wide angle lens will give you excellent situational awareness. When a potential threat is detected you can easily switch to the medium field of view lens to have a closer look at the situation or even to the extremely narrow field of view lens so that

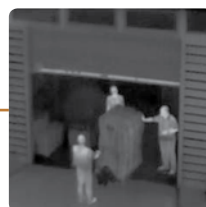
you can see the smallest of details. This way operators can see further, recognize more detail and react more quickly to security threats.

### Different versions available

The HRC-25x320 MCT is equipped with triple field of view optics. A 25 mm wide angle lens ( $21.7^\circ \times 17.5^\circ$ ), a 80 mm medium field of view lens ( $6.9^\circ \times 5.5^\circ$ ) and a 320 mm narrow field of view lens ( $1.7^\circ \times 1.4^\circ$ ).

For even longer range performance the user can choose for the HRC-36x460 MCT. Equipped with an extender lens, the camera has a 36 mm wide angle lens ( $15.3^\circ \times 12.5^\circ$ ), a 116 mm medium field of view lens ( $4.7^\circ \times 3.8^\circ$ ) and a 460 mm narrow field of view lens ( $1.2^\circ \times 0.95^\circ$ ).

For both lens versions the users can choose for a cooled MCT detector producing images of either 320 x 256 pixels or 640 x 512 pixels.



# HRC-25x320 MCT / HRC-36x460 MCT



## Advanced image processing

The HRC MCT-series contain powerful image processing algorithms which are embedded in the camera hardware and software.

Image edge enhancement filters, histogram equalization and other functions are guaranteeing high quality thermal images in any night or daytime environmental conditions.

## Auto focus

Both cameras contain an auto focus feature which delivers crisp, clear images at the press of a button. The system allows you to experience better situational awareness in the wide field of view, while maintaining detailed recognition and identification capabilities in the narrow field of view.

## Digital zoom

Equipped with a 2x digital zoom, the HRC MCT-series allow you to have an even closer look at suspect objects or activities.

## Easy and fast to install

The cameras incorporate easily with common power and video interfaces found in existing and new security systems. They can be easily integrated

into any existing infrastructure providing early detection and visibility 24/7 all the year round. The images from the 640 x 512 or 320 x 256 pixels detector can be displayed on virtually any existing display that accepts standard composite video.

## Portability

Both systems are configured to be either fixed mounted or field transportable for fast deployment. They can be mounted on a standard tripod. A single operator can set up the system in minutes, making it ideal for mobile operations and quick deployments. They can be easily deployed as a stand alone system, mounted on a vehicle, a tower or integrated into a larger surveillance system.

## Designed for use in harsh environments

The HRC-25x320 MCT and HRC-36x460 MCT are extremely rugged systems. Their vital core is well protected against humidity and water. They operate between -32°C and +55°C.

## Multiple installation options

Various options exist to connect the HRC MCT-series and integrate them into your existing systems. They can be configured for stand alone use or as part of a network.

## - Analog configuration:

Simply connect the HRC MCT-series over RS-232 or RS-422 to the remote control panel. A video cable can be connected to any existing display that accepts composite video.

## - TCP/IP configuration (optional):

The HRC MCT-series can be integrated in any existing TCP/IP network and controlled over a PC. Using this configuration, you can monitor all activity in a protected area over the internet. Even when you are thousands of kilometers away.

## Digital video output (optional)

Optionally the HRC MCT-series come with 14 bits, uncompressed digital video output. This allows for easy integration and powerful image post-processing capabilities in any third-party software platform. The digital output is only optionally available for the stand-alone version of the HRC-25x320 MCT and HRC-36x460 MCT and not for the Multi-Sensor systems.

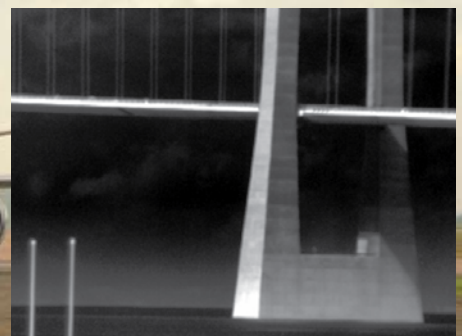
## Wide field of view



## Medium field of view



## Narrow field of view



The HRC-25x320 MCT / HRC-36x460 MCT change between three different fields of view immediately.



# HRC-25x320 MCT MS / HRC-36x460 MCT MS Multi-Sensors

The HRC-25x320 MCT MS and HRC-36x460 MCT MS are Multi-Sensor systems that integrate the long range, mid-wave thermal imaging cameras found in the HRC-25x320 MCT and HRC-36x460 MCT with a variety of powerful daylight sensors. Optionally a laser range finder and a video tracker can be installed. An array of advanced functions and options are available to meet the most demanding needs.

The thermal imaging camera integrated in the Multi-Sensor systems comes either with a 640 x 512 or 320 x 256 pixels MCT detector. The Multi-Sensor systems come with a robust Pan & Tilt system to increase situational awareness.



## Powerful daylight imaging camera

The Multi-Sensor systems feature a powerful, sensitive daylight camera with excellent zoom and color quality for additional target identification when conditions permit. Displaying both the thermal image and the daylight image at the same time is also possible.

## Touch screen

Optionally, a touch screen is available for the HRC MCT MS-series. It is an ideal option for local command and control. When there is for example only one control station at the bottom of a tower or for vehicle.

## Laser range finder

Optionally the Multi-Sensor systems can be equipped with an eye safe laser range finder. It will allow you to accurately determine how far a suspected object is away.

## Video tracker

When equipped with a video tracker, the user can select a given target that can be automatically proposed by the video tracker. Selecting and engaging in tracking mode is easily done by the touch of a button. Once the tracker is engaged, the Multi-Sensor systems will follow the object as long as it can be seen.

## Pan & Tilt

The Multi-Sensor systems are mounted on a rugged Pan & Tilt mechanism. They can be slaved to a RADAR in a "slew to cue" configuration.

## Programmable search

The Multi-Sensor systems can be programmed to scan an entire area automatically. Different spots that need to be monitored periodically can be preset. The system will scan the predefined areas automatically. This not only ensures that the entire area is being monitored but also reduces operator workload.

## Tailored to all needs

The Multi-Sensor systems are optionally available with different versions of a daylight camera, a laser range finder, a video tracker, a wiper, etc. The user has the possibility to define his preferred configuration.



Equipped with a video tracker, the Multi-Sensor systems can follow an object as long as it can be seen.



Optionally a touch screen is available for the Multi-Sensor systems. Ideal for local command and control.



## HRC-25x320 MCT and HRC-36x460 MCT: the perfect tools for border security and other surveillance applications.

### *In complete darkness, in the most diverse weather conditions*

The HRC-25x320 MCT and HRC-36x460 MCT create a virtual security fence and are finding their way into many security and surveillance applications.



Thanks to their ability to detect man-sized targets several kilometers away, they are extremely suited for border surveillance and protection. Protecting a country's borders is vital to its national security. It is however very challenging to detect potential intruders or smugglers in total darkness, in the most diverse weather conditions. Thermal imaging cameras can help border control professionals to meet the demands they face at night and in other low-light situations.



But also ports and airports, nuclear plants, petrochemical installations, warehouses... are vulnerable to theft, or even worse terrorist attacks, and can be protected by using thermal imaging cameras like the HRC MCT-series.



Terrorism, vandalism, and random violence threaten the safety of personnel and the integrity of public and private facilities. A comprehensive security program utilizing thermal imaging cameras like the HRC MCT-series is the key to asset protection and risk mitigation. They expose threats hidden in the darkness, concealed by adverse weather, and veiled by obscurants like dust, fog, and smoke.

The HRC-25x320 MCT and HRC-36x460 MCT are new weapons for intrusion detection. They detect intruders sooner, provide more time to react and protect people, assets, and infrastructures. They are operational 24 hours a day even in the darkest of nights, dense fog, snow, smoke, ...



### *Protect your borders and assets also in broad daylight*

The HRC MCT-series will not only protect borders and assets against intruders during the darkest of nights. The cameras are also perfectly suited to complement existing surveillance cameras during daytime. The HRC-25x320 MCT and HRC-36x460 MCT will detect objects that remain invisible to the naked eye. For example people hiding in the shadows or in bushes, will be seamlessly detected.



# HRC-25x320 MCT / HRC-36x460 MCT

## Thermal imaging camera only

### Technical specifications

#### IMAGING PERFORMANCE

Detector type  
Spectral range  
Field of View (FOV) / Spatial resolution (IFOV)

Mercury Cadmium Telluride (MCT) 640 x 512 pixels or 320 x 256 pixels  
3.7 to 4.8  $\mu\text{m}$

HRC-25x320 MCT	25 mm lens	80 mm lens	320 mm lens
FOV	21.7° (H) x 17.5° (V)	6.9° (H) x 5.5° (V)	1.7° (H) x 1.4° (V)
IFOV for 320 x 256 pixels version	1.2 mrad	0.38 mrad	0.09 mrad
IFOV for 640 x 512 pixels version	0.6 mrad	0.19 mrad	0.05 mrad

HRC-36x460 MCT	36 mm lens	116 mm lens	460 mm lens
FOV	15.3° (H) x 12.5° (V)	4.7° (H) x 3.8° (V)	1.2° (H) x 0.95° (V)
IFOV for 320 x 256 pixels version	0.8 mrad	0.25 mrad	0.06 mrad
IFOV for 640 x 512 pixels version	0.4 mrad	0.13 mrad	0.03 mrad

Thermal sensitivity  
Image frequency  
Focus  
Electronic zoom  
Image processing

<25 mK (18 mK typical)  
50 Hz (PAL), 60 Hz (NTSC)  
Automatic or manual  
2x  
Histogram Equalization, Edge Enhancement Filter

#### SYSTEM FEATURES

Remote Control  
Automatic heater  
Built-in Test (BIT)

By Serial link or optionally over TCP/IP  
Yes  
Yes

#### IMAGE PRESENTATION

Video output

NTSC or PAL composite video  
14-bit non compressed digital image: optional  
BNC (x2)

Connector types

#### POWER

Requirements  
Consumption

20-32VDC (24VDC typ.)  
70W max, 35W Typ

#### ENVIRONMENTAL SPECIFICATION

Operating temperature range  
Storage temperature range  
Automatic Window defrost  
Humidity  
IP rate  
Rain  
Shock  
Vibration

-32°C to +55°C  
-40°C to +70°C  
Yes  
MIL STD 810F Method 507.4  
IP66  
MIL STD 810F Method 506.4 Proc. II  
MIL STD 810F Method 516.5 Proc. I  
MIL STD 810F Method 514.5

#### PHYSICAL CHARACTERISTICS

##### HRC-25x320 MCT

Camera Weight 9.3 kg  
Camera Size 381.5 x 196 x 162 mm; 450 x 226 x 175 mm with solar cap  
Shipping weight (camera + packaging) w/o accessories 17 kg  
Shipping size 650 x 510 x 242mm  
Shipping weight (camera + packaging) with Solar cover, cables, breakout box, remote control 30 kg  
Shipping size 860 x 350 x 580mm

#### INTERFACES

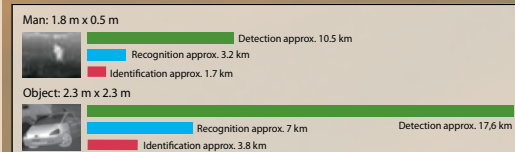
TCP/IP  
RS-232/422

Optional: command and control all functions  
Command and control all functions

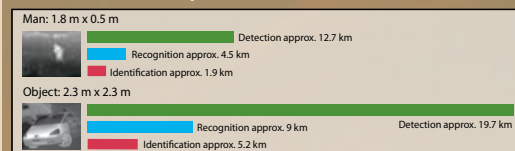
#### Standard Package

HRC-25x320 MCT / HRC-36x460 MCT: Thermal imaging camera, power supply and main power cable, breakout cable (1m) to power/analogue video/serial control, operator manual, shipping case (x1) Optional: Solar cover, breakout box and 5m main cable from camera, remote control, GigE output

#### HRC-25x320 MCT performance 320 mm lens



#### HRC-36x460 MCT performance 460 mm lens



Actual range may vary depending on camera set-up, environmental conditions, user experience and type of monitor or display used.

#### Assumptions:

50 % probability of achieving objective at specified distance given 2°C temperature difference and 0.85 / km atmospheric attenuation factor.



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# HRC-25x320 MCT MS / HRC-36x460 MCT MS Multi-Sensor systems



## Technical specifications

### IMAGING PERFORMANCE

**Thermal:**  
Detector type  
Spectral range  
Field of View (FOV) / Spatial resolution (IFOV)

Mercury Cadmium Telluride (MCT) 640 x 512 pixels or 320 x 256 pixels  
3.7 to 4.8  $\mu$ m

HRC-25x320 MCT MS	25 mm lens	80 mm lens	320 mm lens
FOV	21.7° (H) x 17.5° (V)	6.9° (H) x 5.5° (V)	1.7° (H) x 1.4° (V)
IFOV for 320 x 256 pixels version	1.2 mrad	0.38 mrad	0.09 mrad
IFOV for 640 x 512 pixels version	0.6 mrad	0.19 mrad	0.05 mrad

HRC-36x460 MCT MS	36 mm lens	116 mm lens	460 mm lens
FOV	15.3° (H) x 12.5° (V)	4.7° (H) x 3.8° (V)	1.2° (H) x 0.95° (V)
IFOV for 320 x 256 pixels version	0.8 mrad	0.25 mrad	0.06 mrad
IFOV for 640 x 512 pixels version	0.4 mrad	0.13 mrad	0.03 mrad

Thermal sensitivity  
Image frequency  
Focus  
Electronic zoom  
Image processing  
Daylight CCD  
Built-in digital video

<25 mK (18 mK typical)  
50 Hz (PAL), 60 Hz (NTSC)  
Automatic or manual  
2x  
Histogram Equalization, Edge Enhancement Filter

Effective pixels  
Low light option  
Image stabilization  
Optical zoom  
Electronic zoom

Sony FCB-EX-980 S Color block Camera (NTSC)  
Sony FCB-EX-980 SP Color block Camera (PAL)  
Other daylight CCD's available  
Approx. 630,000 pixels NTSC - approx. 740,000 pixels PAL  
Yes  
Yes  
26x, 42° to 1.6° continuous  
12x continuous

### PAN & TILT

Az Range; Az velocity  
El Range; El velocity  
Accuracy  
Resolution

+/- 200° (optional n x 360° with slip ring); 0.01° - 50°/sec continuous  
+/- 45°; 0.01° - 50°/sec  
1 mrad (1 Sigma)  
0.0056°

### LASER RANGE FINDER (optional)

Type/Range

Erbium glass, eye safe / 80 m - 20 km

### VIDEO TRACKER (optional)

Type

Built-in video tracker using correlation or scene-based modes

### SYSTEM FEATURES

Programmable Search  
Remote Control  
Automatic heater  
Built-in Test (BIT)

Program multiple preset scene locations  
By Serial link or optionally over TCP/IP or touchscreen control panel  
Yes  
Yes

### IMAGE PRESENTATION

Video output  
Connector types

NTSC or PAL composite video  
BNC (x2) provides thermal and daylight video simultaneously

### POWER

Requirements  
Consumption

20-28 VDC (24 VDC typ.)  
300W max, 60W Typ.

### ENVIRONMENTAL SPECIFICATION

Operating temperature range  
Storage temperature range  
Automatic Window defrost  
Humidity  
IP rate  
Rain  
Shock  
Vibration

-32°C to +55°C  
-40°C to +70°C  
Yes  
MIL STD 810F Method 507.4  
IP65  
MIL STD 810F Method 506.4 Proc. II  
MIL STD 810F Method 516.5 Proc.I  
MIL STD 810F Method 514.5

### PHYSICAL CHARACTERISTICS

HRC-25x320 MCT / 36x460 MCT Multi-sensor  
MS Weight  
MS required space  
Shipping weight (MS + packaging)  
Shipping size

39 kg Max  
Dia. 750 X 650 mm  
61 kg (total for 2 cases)  
2 cases 682 X 510 X 355 mm each

### INTERFACES

TCP/IP  
RS-232/422  
RS-485

Optional: command and control all functions  
Command and control all functions  
Command and control all functions

### TYPICAL CONFIGURATION PACKAGE

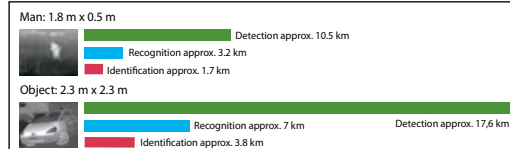
HRC-25x320 MCT MS / HRC-36x460 MCT MS:  
Thermal imaging camera, daylight camera, Pan & Tilt, power supply box with cables, operator manual, shipping cases (x2).

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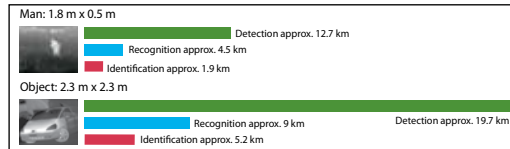
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### HRC-25x320 MCT MS performance 320 mm lens



### HRC-36x460 MCT MS performance 460 mm lens



Actual range may vary depending on camera set-up, environmental conditions, user experience and type of monitor or display used.

#### Assumptions:

50% probability of achieving objective at specified distance given 2°C temperature difference and 0.85 / km atmospheric attenuation factor.

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