



## **ST-CHD825-1000**

SensorTec Multi sensor  
system

## Product description

Multi sensor system (MS) is composed of a Day/Night Camera, Thermal Camera mounted on a pan-tilt unit. Day/Night and thermal cameras are installed on the same optical axis with a deviation of less than 0.05 dgr. The videos from both Day/Night and thermal cameras are available simultaneously as digital video MPEG4 or H.264. MS includes a built-in test and status mechanism. All video distribution to viewing workstations is done digitally. Both video digital streams have low latency.

## Functionality

Multi sensor system is equipped with day and night vision system and allows observation under all weather conditions even in fog, rain or snow. There is a thermal camera and a day-night high resolution camera with very high optical zoom placed on a movable pan & tilt platform. The platform will be able to turn the cameras in all directions, both in azimuth and elevation and controlled from the vehicle's operator place or remotely by the existing C&CC. The movable platform –pan tilt can accept different commands from the C&CC like home position, extremely slow

speed, high speed, variable speed in small steps-continuous, panoramic observation with constant speed, tour mode. A standard protocol is used. Day/Night and Thermal cameras have continuous optical zoom and continuous digital zoom. The System will provide stable picture in windy conditions with known - proven methods. The method chosen by the contractor will fulfil the end user expectations.

## **Construction and connection**

The operator at the C&CC will be able to monitor the status of this power supply system. All data signals output from the MS can be sent to C&CC over a single Ethernet connection

## **System configuration**

- Cooled MWIR Thermal camera
- Day/Night camera
- Pan-Tilt Locator
- Laser rangefinderVideo processing unit
- Video processing unit

# General features

- Simultaneous preview of day/night camera and thermal
- Continuous zoom on both payloads
- Radar connectivity (Slew to Cue)
- Radar tracking possibility
- Target acquisition and tracking (auto or remote triggering)
- Rigid system design
- Analytics board: video stabilization, multi object tracking
- CE marked
- Control and picture streaming via TCP/IP
- Gyro stabilized pan-tilt platform (Optional)
- Electronic image stabilization on both payloads
- Temperature range of the whole system: -32 to +65°C
- Maximum humidity of the whole system: 95%
- IP rating of the whole system: IP67

**Vibration test:** IEC 60068-2-64

**Shock test:** IEC 60068-2-27

**Icing test:** NEMA 250

**Salt fog test:** IEC 60068-2-52

**Standard compliance:** MIL-STD-810G,

MIL-HDBK-217-F

MIL-STD-461-F

MIL-STD-1275-D

## Cooled MWIR Thermal Camera


ST-C Series cameras are a range of cooled Medium Wave Infra-Red (MWIR) thermal imaging cameras. They employ the latest focal plane array technology to meet long-range surveillance and target identification requirements. ST-C Series have a very high life span (2 times higher than most cameras in this range) because they are fitted with long life cooler and use H0T detector type (XBn) that runs at higher temperatures than regular InSb detectors thus expanding the lifetime of the cooler.

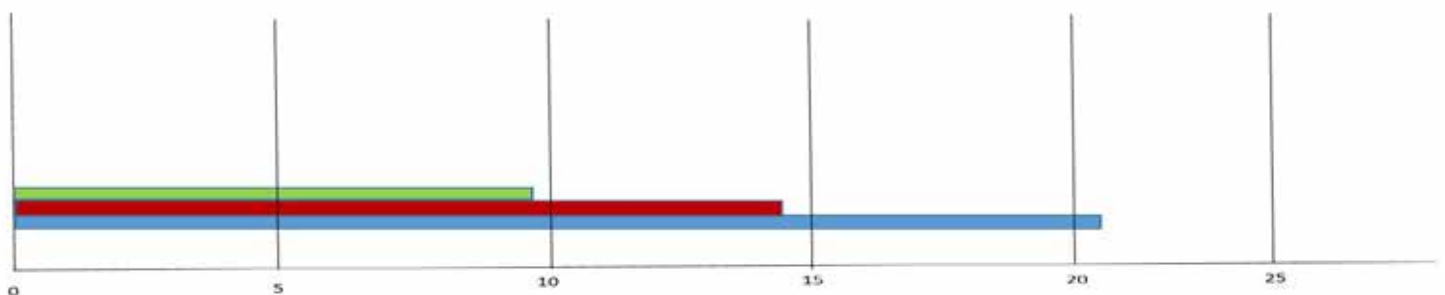
ST-C Series camera incorporate continuous zoom lenses with autofocus and F/4 to ensure high sensitivity even with high magnification. This makes ST-C Series camera an ideal tool for very long-range observation over sea and land.

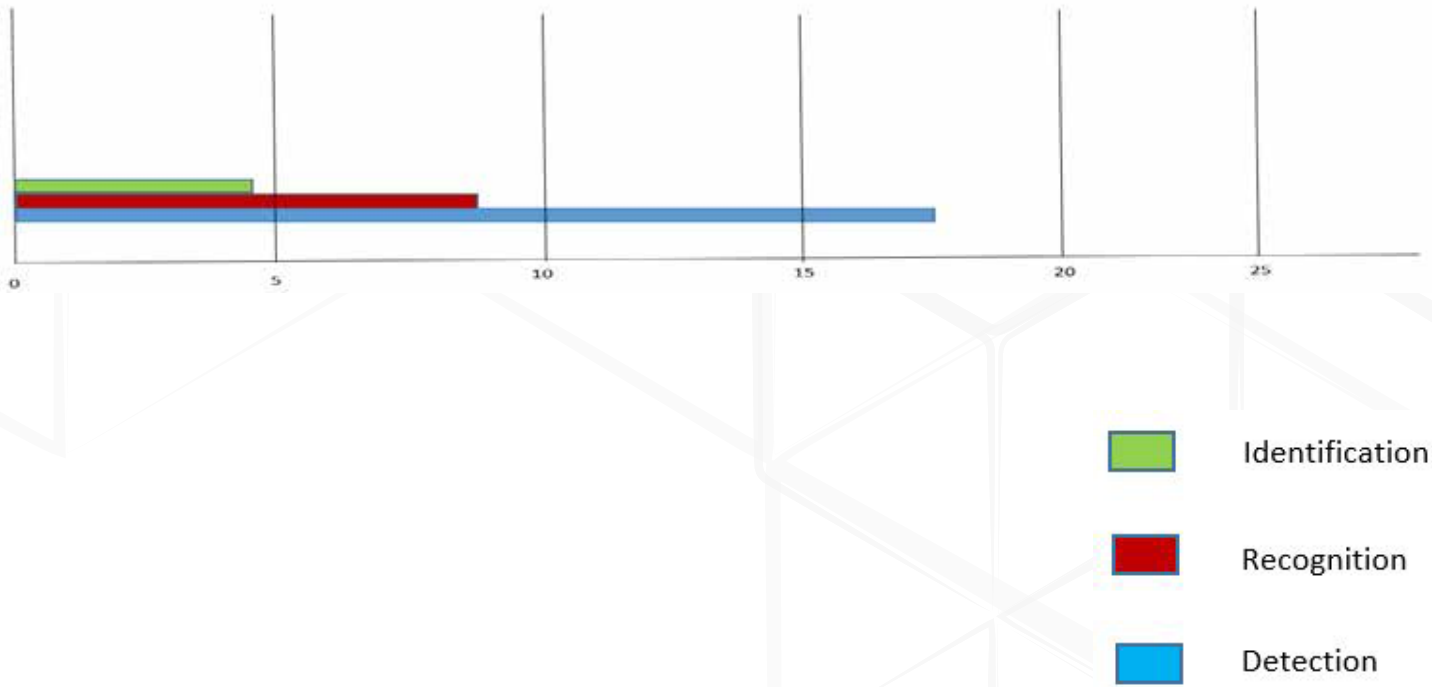


## Technical Specification

Detector type	MWIR 640 X 512 XBn (HOT InSb)
Detector pitch	15 $\mu\text{m}$
Thermal Sensitivity	25mK
Spectral range	3.4 to 5.1 $\mu\text{m}$
Band	3.6 to 4.2 $\mu\text{m}$
Lens	40 – 825 mm
Field of View	13.7° to 0.66° (H)
Spatial resolution (IFOV)	0.0180 to 0.37 mrad
Continuous Optical Zoom	20x
Continuous Digital Zoom	16x
Focus	Automatic or Manual (remote)
Image stabilization	Yes
Video output	SDI or analog, H.264 RTSP stream
Control interface	Serial, Ethernet
IP rating	IP67, built according to MIL-810
Operating voltage	18-48Vdc
Consumption	35 W typical, <120 W max. w/heaters
Operating temperature	-32°C + 65°C
Dimensions	572 x 247 x 242 mm
Weight	16,5 kg

Detection, Recognition, Identification of a Vehicle with 2.3 m critical dimension 





## Day / Night Camera

The Day/Night Camera is an integrated unit, based on a highly sensitive CMOS megapixel camera module with sensitivity combined with powerful zoom lens. It is ideal for day/night surveillance of military camp, homeland security (border protection), and critical infrastructure protection (CIP) applications. It is designed to deliver high- performance images, even under the harshest conditions, in temperatures ranging from  $-32^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$  with IP67 protection, built according to MIL-810 standards.



## Technical Specification

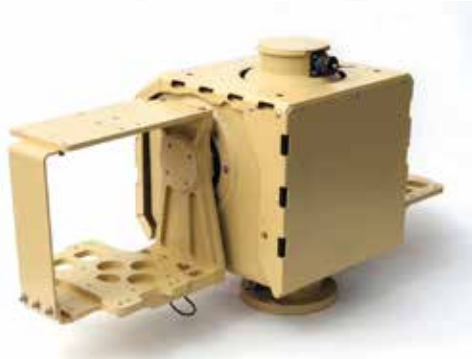
Focal length	12,5-1000 mm / optical zoom 80x
Field of view	29°-0.35°
Sensor	1/2.8"
Pixels (H x V)	1920 (H) x 1080 (V)
Automatic window defrost	Yes
Digital zoom	16x continuous
Sensitivity	Color 0.02 Lux @ (F2.1, 25 fps); B&W 0.001 Lux @ (F2.1, 25 fps)
Day/Night	Yes, mechanical IR cut filter
Defog filter	Yes, optical and digital
Focus	Automatic or Manual (remote)
Image stabilization	Yes
Video outputs	1920x1080p25 HD-SDI, H.264 RTSP stream
Control interface	Serial, Ethernet
Operating voltage	18-48Vdc
Consumption	15 W typical, <65 W max. w/heaters
Operating temperature	-32°C + 65°C
IP rating	IP67, built according to MIL-810
Dimensions	677 x 216 x 206 mm
Weight	18 kg

## Pan-Tilt

This premium hi-end unit has it all. A perfectly finished machined aluminum body with a classic L shape design useful for various applications. Inside are two high performance drives powered by



advanced motion control board which results in a vast speed range from 0.001 deg/s up to 125 deg/s. This covers ultra-slow movements of the unit when observing a distant object as well as fast accelerations and movements needed for stabilization and tracking applications.



## Technical Specification

Load capacity / Torque	50 kg / 60 Nm
Weight	30 kg
Dimensions (H x W x L)	552 x 754 x 172 mm
Materials	Aluminium
Protection / IP rating	IP 67
Operating temperature	-32°C to +65°C
Pan axis range / angle	n x 360°
Pan axis speed	0.001°/s - 125 °/s
Tilt axis range / angle	± 90°
Tilt axis speed	0.001°/s - 125 °/s
Accuracy	0.02°
Backlash	None
Operating voltage	24 - 48 VDC
Maximum power	120 W
Communication to the unit	Eth 10/100 Base-T, RS-232, RS-485/422(optional)
Control protocol	DC-PT protocol, PelcoD (optional)

# External video processing unit

Video processing unit is a hardware processing unit that is the “brains” of the multi sensor system. It combines all the payloads and Pan-Tilt unit into a single unit for the external observer and enable a single Ethernet connection to the whole unit including access to video streams and control of the entire system. External video processing unit enables dedicated advanced protocol that includes video as well as status and control. It has a powerful built in processor, that enables functions like video stabilization, H.264 encoding, video tracking.

- Power control and communication with each device
- Built in test for each device (BIT)
- Integrated Ethernet switch
- Communication interfaces: Ethernet (UDP), Serial
- H.264 Video encoding for all video payloads
- Two separated output video streams



- Control and video interface through Ethernet and serial (control only)
- Wide variety of video processing:
  - \* Video stabilization with roll correction
  - \* Advanced hardware scene and object video tracking
  - \* On Screen Display (OSD)
- Connectivity: four military standard connectors; 3 x input / 1 output
- Power: 18 – 48 Vdc; 30 W max.
- Environmental: IP 67, build with accordance to MIL-810
- Operating temperature range: -32 to 65°C
- Dimensions: 261 x 185 x 73 mm
- Weight: 3000 g

## Laser rangefinder

LRF represents the ultimate long-distance laser rangefinder. It is light weight and features ranging capability beyond 20 km with high 5 m precision. With reduced measurement ranges LRF meets high continuous measurement rates up to 200 Hz.



## Technical Specification

Measurement range	50m – 20 000m
Measurement range (Standard target):	10 000m – Target size 2.3 x 2.3 m, visibility 15 km, target reflectivity 30%, detection probability >90%
Precision	0.5 – 1.5 m depending on the distance and target reflectivity
Beam divergence	0.35 mrad
Wave length	1.5 $\mu$ m
Measurement rates	0.2 – 200 meas. per sec
Interface	RS422 / RS232 / UART 3.3V CMOS
Consumption	< 4 W @measurement, < 0.2 W @standby
Eye safety	Laser Class 1 (EN 60825-1:2014) (IEC 60825-1:2014DATA RECORDER)
Operating temperature	-32°C + 65°C
Storage temperature	-40°C + 71°C



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