

LONG-RANGE THERMAL IMAGING

The Night Navigator™ 3025HD is a bridge controlled camera system integrating a cooled long range thermal imager and a high definition (HD) day camera in a gyro-stabilized sensor platform. It is designed for installation on the mast of a ship or a tower in a harbor and is controlled remotely by a dedicated controller on the bridge of a ship or through IP network in a control room.

APPLICATIONS

- Long Range Surveillance
- Search and Rescue
- Navigation up to complete darkness, bad visibility conditions
- Safety and security at anchor and in harbor
- Tracking of potential threat or man overboard

Long Range Cooled Thermal Imager

- 640x512 pixel resolution
- 36° to 1.7° field of view
- 22x continuous zoom
- 4x digital zoom

High-Definition Day Camera

- 63° to 2.3° field of view
- 1080i or 720p selectable
- 30x optical zoom
- 12x digital zoom

3-Axis Gyro Stabilization

- Resolved through 2-axis positioning

Hardware and IP Based Controls

- Panel Mount Controller

SYSTEM FEATURES

LONG RANGE COOLED THERMAL CAMERA

| | |
|-------------------|---|
| Pixel Resolution: | 640x512 (InSb FPA) |
| Spectral Range: | 3 – 5 µm |
| Field of View: | 36° to 1.7° Continuous FoV |
| Detector Pitch: | 15 µm InSb |
| NETD: | <15 mK |
| MTBF | ~10,000 hours standard. 20,000 hours + available |
| Optical zoom: | 22x continuous, auto-focus |
| Digital Zoom: | 4x |
| Focal length: | 15mm - 330mm |
| Frame Rate: | 30fps |
| Window Coating: | Hard Carbon Protective |
| Video Format: | NTSC/PAL |
| Detection Range: | NATO Target (2.3m x 2.3m) Detection 33.7km; Recognition 8.4km Human Target (1.8m x 0.5m) Detection 13.9km; Recognition 3.5km |

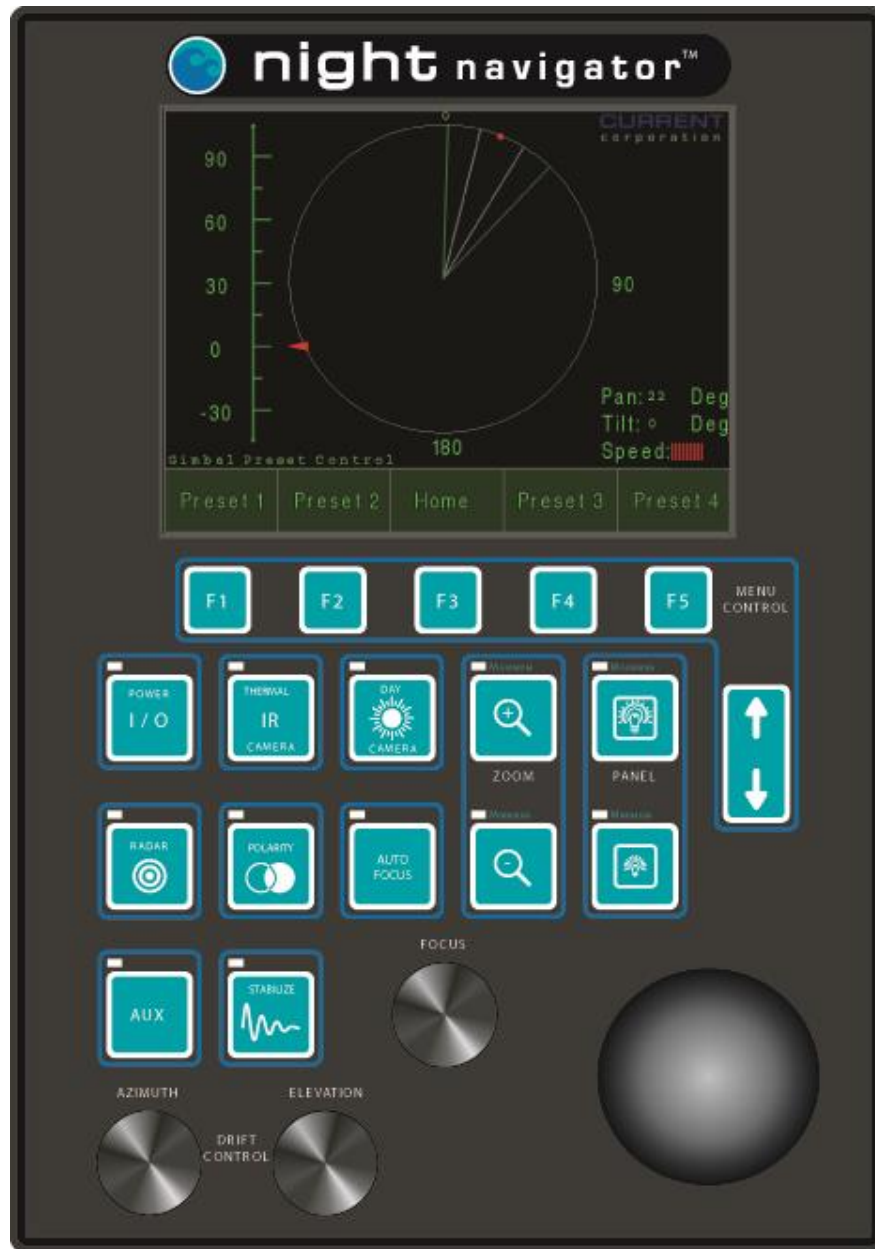
HIGH DEFINITION COLOUR DAY CAMERA

| | |
|------------------|--|
| Field of View: | 63° to 2.3° |
| Sensor Type: | 1 /2.8" CMOS |
| HD Format: | 1080i / 720p selectable |
| Sensitivity: | 0.013 lux |
| Focus: | Auto / Manual |
| Iris: | Auto / Manual |
| Optical Zoom: | 30x continuous |
| Digital Zoom: | 12x continuous |
| Focal Length: | 4.3mm – 129mm |
| Frame Rate: | 30fps |
| Window Coating: | Hydrophobic |
| Detection Range: | NATO Target (2.3m x 2.3m) Detection 71.9km; Recognition 18km Human Target (1.8m x 0.5m) Detection 29.7km; Recognition 7.4km |

PAYLOAD SPECIFICATIONS

| | |
|-----------------------------|---|
| Dome color: | Matterhorn White (custom colours available) |
| Configuration | Dome up (dome down optional) |
| Peak power | < 300 W |
| Pan Range | 360° slip ring AZ |
| Tilt range | -30° to +90° Dome up |
| Diameter | 38 cm (15 in) |
| Height | 47cm (18.5 in) |
| Weight | 37 kg (81 lbs.) |
| Operating Temperature | -20°C to +50°C |
| Environmental Rating | IP67 – fully weatherized for the marine environment |
| Maximum Angular Velocity | 50°/second in AZ and EL |
| Position Accuracy | 0.0064° |
| Gyro | 3 axis Gyro resolved through 2 axis positioning |
| Line of Sight Stabilization | < 2mrad RMS with an input perturbation of 20° at 0.25Hz |

CONTROLLER QUICK REFERENCE GUIDE



HARDWARE AND IP-BASED CONTROLS

- Panel mount controller (English standard; other languages optional)
- Touchscreen control via iNightNav App for iPod/iPad
- GUI control via ship and LAN



Panel-Mount Hardware Controller



Software IP Controller



iPod/iPad App Controller

RADAR TRACKING

Cursor Slaving and ARPA Target Slaving with data display as video overlay

Protocol: NMEA0183 (RS422/RS232)

Range of target from the ship

Bearing of the target

IP NETWORK CONTROLLABLE


The Night Navigator 3025HD is Network ready for control via PC or other LAN device. Contact Current Corporation for a list of available options to view the video over IP and or interface the Night Navigator 3025HD system with existing LAN hardware configurations.

DETECTION RANGE CHART

| Description | Human Target (1.8m x 0.5m) | | NATO Target (2.3m x 2.3m) | |
|---|----------------------------|-------------|---------------------------|-------------|
| | Detection | Recognition | Detection | Recognition |
| Thermal Imager 640 x 512 = 327,680 pixels FoV 36° to 1.7° | 13.9 km | 3.5 km | 33.7 km | 8.4 km |
| HD Day Camera 1920 x 1080 = 2.1 megapixels FoV 63.7° to 2.3° | 29.7 km | 7.4 km | 71.9 km | 18.0 km |

*Theoretical calculation using Johnson's criteria and not accounting for atmospheric conditions

VIDEO OVERLAY MENU



Gimbal azimuth and elevation position

AZ: 44
EL: 8

Camera Zoom position

ZOOM

GPS Longitude and Latitude data
 34.52.820°N
 128.41.869°E

Heading and Speed Over Ground data
 HDG: 315.2
 SOG: 7.6 kts

Selected Radar target data
 01 RNG: 1.019NM
 BRG: 020.7 T

Date and Time
 2010/02/19
 12:35:57

All the data above is available on the video, if the operator chooses in the menu to display the data on the screen, it will also record on the DVR. The data on target and camera location come from the GPS and radar.

Radar (ARPA) target:

01 RNG: distance to target #1 in Nautical Miles

BRG: Bearing: location of the target

GPS location of the vessel:

Longitude

Latitude

Date & Time

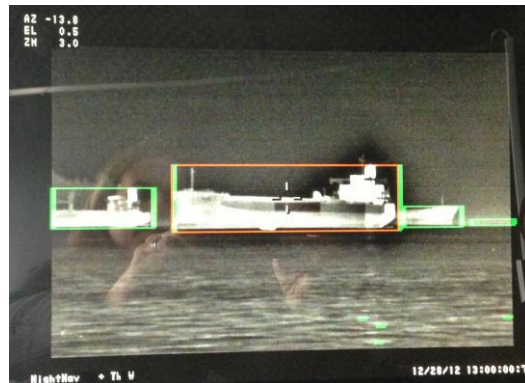
- HDG: Heading: Direction of the ship
- SOG: Speed over ground
- Gimbal azimuth (AZ) and elevation (EL) position: direction the camera is looking at relative to the 0° bow of the ship

OPTIONAL FEATURES AND ACCESSORIES AVAILABLE WITH THE 3025HD

VIDEO TRACKING MODULE



Video Tracking Module Box



Automatic object detection mode

Video Tracking greatly adds value to both sensors, allowing the Patrol Vessel officer to track potential targets directly from the video display. This option requires the installation on the vessel of a Video Tracking Module, between the Sensor platform and the controller. The additional box does not need to be visible on the bridge but needs to be accessible for service.

- ◆ Allows the user to track a target that is not detectable on the radar cursor nor as ARPA target. The target is selected by the operator on the video screen.
- ◆ Allows the user to set the camera to automatically detect moving objects in the scene.
- ◆ Offers a Navigation Stabilization mode to mechanically stabilize only the vertical axis.



Tracking of high speed small motorboat with Day camera



Tracking of fishing boat with thermal camera



Tracking of floatplane with Day camera



Tracking of floatplane with thermal camera

CONTINUED...

DIGITAL VIDEO RECORDER

The DVR is a commercial off the shelf (COTS) rugged digital video recording system. Standard configuration provides H.264 compression and recording of 2 analogue video channels at full D1 resolution and frame rate. The unit can be controlled over a TCP/IP network.

- 2 channel full frame rate NTSC/PAL simultaneous recording
- H.264 recording
- Internal shock mounted 500GB HDD
- Control and Playback via Ethernet connection
- Power: 20V to 30V DC, <15W
- Operating Temp: 0 to +55degC
- Weight: 2.1kg
- Dimensions: 180 x 220 x 50mm

HIGH DEFINITION (HD) IMAGE INTENSIFIED NIGHT VISION

| | |
|----------------|--------------------------------|
| Field of View | 20° Fixed |
| Sensor Type | Super Gen II+ |
| Video Format | 1080i/720p/NTSC/PAL selectable |
| Sensitivity | 1 microlux |
| Spectral Range | 450 to 950 nm |
| Focus | Motorized Manual |
| Iris | Motorized Manual |
| Frame Rate | 30fps |

LASER RANGE FINDER

| | |
|------------------|--------|
| Wavelength | 1,54µm |
| Measuring range | 12km |
| Range resolution | 5m |
| Range accuracy | ±10m |

INVERTED MOUNTING

Dome down mounting for better visibility in the direct vicinity of the vessel: tilt range +30° to -90°

CUSTOM COLOUR

Dome colour can be matched to customer specifications

COLD WEATHER PACKAGE

Standard operating temperatures are -20°C to +50°C. The cold weather package allows a lower operating temperature; down to -40°C for operations in the Arctic and Antarctic regions and includes;

- Special heating modules in the base can and payload housing, with automatic thermostatic control,
- Lens defrosting system
- Insulation at critical locations to conserve heat
- Hydrophobic / anti-icing coating on the gimbal.

TRAINING AND SERVICE (TCCT)

Onsite termination, calibration, commissioning, and training not included. Current Corp technicians can travel to the location of the vessel for installation. We organize regular training sessions at Current Corporation for installation and training.

APPLICATIONS

MAN OVERBOARD



Quickly locating and keeping an eye on man overboard while maneuvering to rescue him, night and day. In rough seas, the 3 axis gyro-stabilization keeps the camera on the man overboard.

SITUATIONAL AWARENESS



Helps to identify potential threats.

BERGY BITS DETECTION



2 blocks of ice of each 1.2m x 0.6m x 0.6m attached to a float
Distance 200m

SMALL UNIDENTIFIED VESSEL



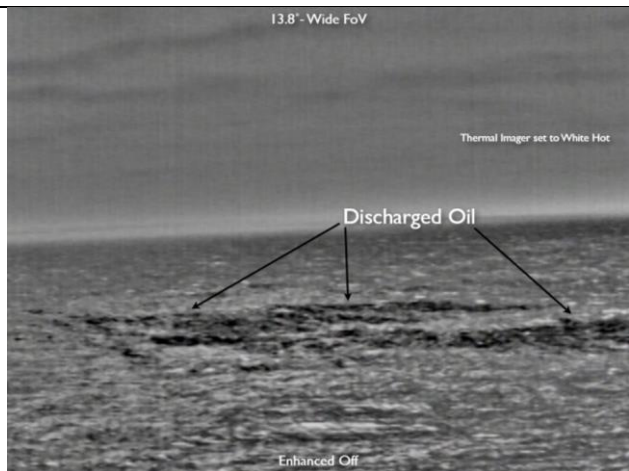
The camera system allows detection of small floats, unidentified on radar and with no AIS identification.

MARINE MAMMALS DETECTION



The Night Navigator helps with early detection of marine mammals crossing navigation paths night and day. This is essential when navigating in known marine mammal habitat. Night and day detection also helps operation of Seismic vessels in critical operation with marine mammal observers on board, to avoid the operation to harm local marine habitat.

OIL SPILL DETECTION



The Night Navigator can detect oil patches night and day, helping faster clean up operations.

BENEFITS

1. Controller specifically designed for paramilitary

- a. Easy to mount on the bridge
- b. Customization of your video and control needs throughout the vessel for remote monitoring
- c. HD and thermal image connectable in security room and other monitors on vessel.

2. Thermal imager

- a. Best MTBF of its category: ~ 10,000 hours standard, 20,000 hours+ available, latest technology
- b. Highest resolution 640x512 = 327,680 pixels
- c. Technical specifications and field of view as per spec

3. Best distance of detection

4. High Definition Day Camera

- a. 1080i / 720p selectable
- b. Best image quality, amazing resolution even in full digital zoom after full optical zoom.
- c. Technical specifications and field of view as per quote or better

5. Radar slaving:

- a. When plotting a target on radar, the camera can slave to 1 to 99 targets

6. Video tracking module

- a. Target tracking

7. Gyro stabilization

8. Flexible export license from Canada:

- a. Fast issuance of license
- b. License not required for export within Canada or to the USA

FOR FURTHER QUESTIONS, PLEASE CONTACT:

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