





# **Multi-Technologies Detection and tracking** Unit

MTDU is a one unit, which has a wide range of mission capabilities with flexible, and high-performance multi-sensor technologies. Including 200/320 MP panoramic view with VCA detection, Land/sea Radar and thermal tracking technologies.

## MTDU unit boosting the following modules

Module	Coverage response
Ground-surveillance Radar	25 km
	Instrumental detection range
Long-range thermal camera with LRF	21 km
	Detection (DRI)
Long-range visible day/night camera	10 km
	Detection range
200 MP 180-degree panoramic camera	500 meter
	Detection range
320 MP 40-degree Panoramic Camera	2500 meter
(Option)	Detection range







#### The main functions of the MTDU are:

- Early warning
- Remote and on-border detection
- Identification of illegal activities
- Detection and situation assessment by transforming raw data into essential information.
- Allowing timely coordinated Interception of potential intruders.

#### The MTDU consists of the following early-warning modules

- Ground/Sea-surveillance electronic scan radar
- detection. Panoramic view with video content
- analysis. Thermal /day-night visual tracking.

#### **General Functions**

- The MTDU increases the probability of early detection with low false alarm and false negative rates under various environmental conditions.
- It supports and help everyday work of Land/Sea Border Security and any other public authorities may be engaged during abnormal events.
- The system performs continuous monitoring and surveillance of potential intrusion threats, within a given time frame, preventing their entry into the protected territory allowing the forces to intercept and capture the prospect intruders in a timelymanner.
- The system observes the object initially detected by seamlessly combined Doppler Escan radar technology and panoramic video content analytic to provide early warning of intruders over long rand short ranges and detect the target by assessing its key characteristics and provide automatic, semi-automatic and manually directing of the thermal tracking unit to observe the target.







- It detects moving targets under various environmental condition for 25 km range using E-scan radar, and slue to cue function to Visually track the detected target using the thermal, day/night vision.
- The panoramic features enable the system to view, monitor and track multiple target at the same time in addition to the ability to zoom in on covered area (180 degree/40 Degree) in both live and recorded mode thanks to 200/320 MP ultra-high resolution imaging.
- Using Zoning feature gives the ability to overlay different types of zones, with different priorities and to program the zones to be sensitive to target size and/or speed.

### **Alarm Response**

Upon receiving an alarm from MTDU the control center initiate audible and visual notification and display the following:

- Alarm area map showing the exact location detected target along with target information. Such as type, speed and direction.
- Large Panoramic View of the target area.
- Panoramic View zoomed-in on target.
- Visual tracking view.
- Show the nearest available patrolling unit with its current location.

All parts are designed to withstand harsh environments to meet Military application requirements for shock, vibration, temperature and dust/water ingression.





MTDU Modules Specification			
200 MP 18	200 MP 180 Degree Panoramic Camera Module		
Resolution	55040 (H) x 3648 (V)		
Frame rate	20 fps @ 200 MP		
Video compression	JPEG2000 - Wavelet		
Compression engine	MPX24 Signal Processor		
Sensitivity	0.02 lux F1.4 Day mode or 0.002 lux F1.4 Night mode		
Frame rate	20 fps at 200 MP		
lmage sensor	Each Image Sensor is 1" WDR color 20.48 Megapixel CMOS		
Auto focus	Motorized back focus adjustment		
Scanning system	Progressive, no interlaced scanning		
Sensitivity	0.02 lux F1.4 Day mode or 0.002 lux F1.4 Night mode		
Scanning system	Fix, auto, blur or noise priority		
Shutter Type	Electronic rolling shutter (ERS)		
Shutter Mode	1/10s – 1/50000 s, 1/1s in slow shutter mode		
Gain control	1 programmable IO connections		
Backlight compensation	Whole picture or any area selectable		
Cooling system	Active cooling system , Passive heat pipes		
Cleaning system	Wiper with washer, fluid pump and internal tank		
320 MP 40 degree Panoramic Camera Module (Option)			
Resolution	320 Megapixel		
lmage format	Equivalent resolution 600 Megapixel		
Frame rate	20 fps @ 320 MP		
Video compression	JPEG2000 - Wavelet		
Compression engine	MPX24 Signal Processor		
lmage sensor	1" WDR 20.48 Megapixel CMOS		
Auto focus	Motorized back focus adjustment		
Scanning system	Progressive, no interlaced scanning		
Shutter type	Electronic rolling shutter (ERS)		
Shutter mode	1/10 - 1/20 000 s, 1/1 s low shutter mode		
Sensitivity	0.02 lux F1.4 Day mode or 0.002 lux F1.4 Night mode		
Gain control	Fix, auto, blur or noise priority		
Backlight compensation	Whole picture or any area selectable		
Field of View	Horizontal: 40° Vertical: 24°		
Cooling system	Active cooling system , Passive heat pipes		
Cleaning system	Wiper with washer, fluid pump and internal tank		







# MTDU

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Thermal Camera Module		
Detector array resolution	1280 x 720 (HD)	
Detector pitch	10 μm (HD)	
FOV	0.61° (H) to 12.8° (H)	
Detector technology	InSb focal plane array	
Spectral range	3 to 5 μm	
optical zoom	57 – 1200 mm	
Continuous Zoom	Optical 21x, digital zoom 16x	
Detector NETD:	<25mK	
Frame rates	50/60Hz (100Hz with windowing)	
Communication	RS422 Ethernet	
Analogue video output	PAL (CCIR)	
Digital video output	Ethernet (H.264, ONVIF) ,RS-422	
Vehicle Detection (DRI)	21Km	
Human Detection (DRI)	16Km	
range enhancement	Dynamic Range Enhancement	
Image stabilization	Yes	
Turbulence mitigation	Yes	
`Focus	Focus Automatic or Manual / remote	
Defrost:	Automatic Window defrost	
Non-uniformity corrector	Built;-in reference and quadratic NUC	
	HD Day/Night Camera	
Sensor	Ultra high sensitivity 2/3" CMOS	
Pixels (H x V)	1920 (H) x 1080 (V)	
Focal Lens	16-1000mm (50X zoom) , (32-2000 mm) with x2 extender	
Field of view	Narrow: Hor5° (.25°)	
	Wide: Hor. 24.8° (12.4°)	
Digital output	H.264 (MPEG-4) , ONVIF.	
Resolution	1920 x 1080 HDTV - 1080 p	
	1280 x 720 HDTV - 720 p	
	640 x 480 VGA	
6	Color: 0.008 Lux @ (F2.8, AGC ON), B/W: 0.0008 Lux @ (F2.8, AGC	
Sensitivity	ON)	
Spectral response	Auto switch between DAY and NIGHT mode (IR cut filter)	
Image adjustment auto /manual :	Brightness , Saturation , B&W/Color or mode , BLC , HLC , AGC	
Scanning system	Up to 30 fps @ 1920 X 1080	
zoom	Continuous optical zoom	
Focus	manual / auto / remote	
Filter	De-Fog filter	
Wide dynamic range:	(DWDR)	
image stabilization:	EIS (electronic image stabilization)	







MTDU

Radar type  Radar		Electronic Radar Module		
E-scan Frequency Modulated Continuous Wave (FMCW) Doppler Ground Surveillance Radar Frequency band Spectrum occupancy  Scan type  Fully electronic scanning in azimuth ("e-scan") using a Passive Electronically Scanned Array (PESA)  Transmitter power (nominal)  Multi-radar operation Embedded software and firmware  Crawling person (RCS 0.1 m2)  Walking person (RCS 0.1 m2)  Moving RIB (RCS 5 m2)  Moving RIB (RCS 5 m2)  Moving RIB (RCS 5 0.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Elevation beam Farset Output port Available for cueing of pan/tilt-mounted cameras and thermal Doppler audio modes  Maximur doll ether the result of pan, full the modes  Target Output & Software  Moving Pan (RCS 0.0 m2)  Large moving vehicle (RCS 100 m2)  Target Output & Goverage  Instrumented maximum range Instrumented minimum range  Azimuth scan angle  Po°, 180°, 270° or 360° horizontal e-scan  Target Output & Identification  Target Output & Identification  Target Output & Software  Main I/O interface  Maxiliary I/O interfaces  RE-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability				
Radar type Modulated Continuous Wave (FMCW) Doppler Ground Surveillance Radar  Frequency band				
Frequency band Ku band Spectrum occupancy - Wide-band (WB): 15.7 to 17.2 GHz - Narrow-band (NB): 15.7 to 17.2 GHz - Narrow-band (NB): 15.2 to 17.2 GHz - Narrow-band (NB): 15.2 to 17.2 GHz - Scan type fully electronic scanning in azimuth ('e-scan') using a Passive Electronically Scanned Array (PESA) - Watt - Watt - Watt (high power transmitter version) or - 4 Watt (high power transmitter version) or - 4 Watt (high power transmitter version) - Multi-radar operation supported and unlimited - Embedded software and firmware - Field upgradeable via network connection - Target Detection Performance - Maximum detection ranges  - Crawling person (RCS 0.1 m2) - Walking person (RCS 0.1 m2) - Walking person (RCS 1.0 m2) - Walking person (RCS 1.0 m2) - Moving RIB (RCS 5 m2) - Moving vehicle (RCS 30.0 m2) - Large moving vehicle (RCS 30.0 m2) - Large moving vehicle (RCS 100 m2) - Wasimum targets per scan - False Alarm Rate (FAR) - Maximum targets per scan - False Alarm Rate (FAR) - Minimum detectable target radial velocity - Coverage - Instrumented maximum range - Instrumented minimum range - Instrumented minimum range - Paximuth scan angle - 90°,180°, 270° or 360° horizontal e-scan - Elevation beam - Target Output Se Identification - Target Output port - available for cueing of pan/tilt-mounted cameras and thermal - Doppler audio modes - Onnectivity & Software - Main I/O interface (for radar control - Auxilliary I/O interfaces - RS-232 and RS-422 control lines, opto-isolated control/status - inputs and isolated switched contact outputs	Radar type	·		
Frequency band  Spectrum occupancy  Spectrum occupancy  Scan type  Fransmitter power (nominal)  Multi-radar operation  Embedded software and firmware  Crawling person (RCS 0.1 m2)  Moving RIB (RCS 5 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 10 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Instrumented maximum range Instrumented maximum range Instrumented minimum range Ilevation beam  Farset Soan type  Maximum detectable target radial relations and process of the first scan first scan and process of the first scan and process of the first scan first scan and process of the first scan and thermal Doppler audio modes  Maximum Juliary I/O interfaces  Res-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability  Reliability				
Spectrum occupancy  - Wide-band (WB): 15.7 to 17.2 GHz - Narrow-band (NB): 16.2 to 17.2 GHz - Rarrow-band (NB): 16.2 to 17.2 GHz  fully electronic scanning in azimuth ('e-scan') using a Passive Electronically Scanned Array (PESA)  1 Watt (standard power transmitter version) or 4 Watt (high power transmitter version) or 4 Watt (high power transmitter version)  Multi-radar operation Embedded software and firmware  Field upgradeable via network connection  Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2)  Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan  False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Instrumented minimum range Elevation beam  Target Output & Identification  Target output port Doppler audio modes  Connectivity & Software  Main I/O interface (for radar control Auxiliary I/O interfaces  RE-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs	Fraguency hand	···		
Spectrum occupancy Scan type    Fully electronic scanning in azimuth (*e-scan*) using a Passive Electronically Scanned Array (PESA)   1 Watt   1 Wa	Frequency band			
Scan type  fully electronic scanning in azimuth ("e-scan") using a Passive Electronically Scanned Array (PESA)  1 Watt  Transmitter power (nominal)  Multi-radar operation Embedded software and firmware  Field upgradeable via network connection  Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2)  Molving RIB (RCS 5 m2)  Moving RIB (RCS 5 m2)  Moving RIB (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan  False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Elevation beam Fastest scan time (for 90°)  Target Detection Performance  Maximum targets per scan  700  False Alarm Rate (FAR)  1 false alarm per day  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range  Instrumented m	Spectrum occupancy			
Transmitter power (nominal)  Transmitter power (nominal)  Multi-radar operation Embedded software and firmware  Target Detection Performance Maximum detection ranges  Crawling person (RCS 0.1 m2)  Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Velocity  Coverage  Instrumented maximum range Instrumented minimum range  Best scan time (for 90°)  Fastest scan time (for 90°)  Target Output & Identification  Target Output port  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability				
Transmitter power (nominal)  Transmitter power (nominal)  Multi-radar operation Embedded software and firmware  Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2)  Walking person (RCS 0.1 m2)  Moving RIB (RCS 5 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan  False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range  Instrumented minimum range  Elevation beam  Elevation beam  Target Output & Identification  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Scan type			
Transmitter power (nominal)  Multi-radar operation Embedded software and firmware  Field upgradeable via network connection  Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2) Moving RIB (RCS 5 m2) Moving RIB (RCS 5 m2) Moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR) Minimum detectable target radial velocity  Instrumented maximum range  Instrumented maximum range  Elevation beam Elevation beam Elevation beam Target Output & Identification Target output port Doppler audio modes  Maximur Identificate  Auxiliary I/O interfaces  Reliability  Reliability  Reliability  Reliability  Reliability  Reliability  Italse alarm smitter version) Advinimited Aumilimited Supported and unlimited Supported and extext (6.8 mi.) Supported and unlimited Supported and unl				
Multi-radar operation supported and unlimited Embedded software and firmware field upgradeable via network connection  Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2)  Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Azimuth scan angle Pastest scan time (for 90°)  Target Output & Identification  Target output port Doppler audio modes  Connectivity & Software  Main I/O interfaces  Reliability  Reliability  Azimuth and unlimited  supported and unlimited field upgradeable via network connection  Target output port Auxiliary I/O interfaces  Auxiliary I/O interface (for radar control)  Reliability  Auxiliary I/O interface (for radar control)  Reliability  Auxiliary I/O interface (for radar control)  Reliability	Transmitter newer (neminal)			
Multi-radar operation Embedded software and firmware  Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2)  Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Azimuth scan angle Elevation beam Fastest scan time (for 90°)  Target Output & Identification  Target output port Doppler audio modes  Connectivity & Software  Maximur I/O interfaces  Reliability  Sea Maximum target oper scan False Alarm Rate (FAR)  1 false alarm per day  0.37 km/h (0.23 mph)  Coverage  1	Transmitter power (nominal)	·		
Embedded software and firmware  Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2)  Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Instrumented maximum range Instrumented minimum range Instrumented maximum range Instrumented maxim	Naviti na dan an anati na			
Target Detection Performance  Maximum detection ranges  Crawling person (RCS 0.1 m2)				
Crawling person (RCS 0.1 m2)  Walking person (RCS 1.0 m2)  Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan  False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range  Instrumented minimum range  Instrumented minimum range  Azimuth scan angle  Fastest scan time (for 90°)  Target Output & Identification  Target output port  Doppler audio modes  Maximum detection ranges  4.6 km (2.9 mi.)  4.6 km (2.9 mi.)  4.6 km (2.9 mi.)  4.6 km (2.9 mi.)  1.0 km (6.8 mi.)  1.0 km (6.8 mi.)  1.0 km (6.8 mi.)  1.0 km (9.9 mi.)  1.0 coverage  1.0		· -		
Crawling person (RCS 0.1 m2)  Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan  False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Instrumented minimum range Instrumented minimum range Iless than 10 m (33 ft.)  Azimuth scan angle Fastest scan time (for 90°)  Target Output & Identification  Target output port Doppler audio modes  Main I/O interface (for radar control Auxiliary I/O interfaces  Reliability  Alexan (2.9 mi.)  11.0 km (6.8 mi.)  16.0 km (9.9 mi.)  16.0 km (9.9 mi.)  16.0 km (9.9 mi.)  10.0 km (12.4 mi.	-			
Walking person (RCS 1.0 m2)  Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan  False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Instrumented minimum range Palarith scan angle Azimuth scan angle Elevation beam Target output port Target Output & Identification  Target output port Doppler audio modes  Main I/O interface (for radar control Auxiliary I/O interfaces  Reliability  16.0 km (9.9 mi.) 16.0 km (12.4 mi.) 16.0 km (12.4 mi.) 16.0 km (10.9 therm) 10.3 therm, on a start product of a sta		_		
Moving RIB (RCS 5 m2)  Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Instrumented maximum range Instrumented minimum range Instrumented maximum per day Instrumented alarm per day I				
Moving vehicle (RCS 30.0 m2)  Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Azimuth scan angle Elevation beam Fastest scan time (for 90°)  Target Output & Identification  Target output port Doppler audio modes  Main I/O interface (for radar control Auxiliary I/O interfaces  Reliability  25.0 km (15.5 mi.)  700  1 false alarm per day 0.37 km/h (0.23 mph) 0.38 km/h (0.23 mph) 0.38 km/h (0				
Large moving vehicle (RCS 100 m2)  Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Instrumented minimu	<del>-</del>			
Maximum targets per scan False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range	Moving vehicle (RCS 30.0 m2)	20.0 km (12.4 mi.)		
False Alarm Rate (FAR)  Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Instrumented instrum	Large moving vehicle (RCS 100 m2)	25.0 km (15.5 mi.)		
Minimum detectable target radial velocity  Coverage  Instrumented maximum range Instrumented minimum range Instrumented in 0 m (33 ft.) Instrumented minimum range Instrumented in 0 m (33 ft.) Instrumented minimum range Instrumented in 0 m (33 ft.) Instrumented minimum range Instrumented in 0 m (32 ft.) Instrumented minimum range Instrumented in 0 m (32 ft.) Instrumented in 0 m (33 ft.) Instrumented in 0 m (35 ft.	Maximum targets per scan	700		
Velocity  Coverage  Instrumented maximum range Instrumented minimum range Instrumented minimum range Instrumented minimum range Instrumented minimum range Iess than 10 m (33 ft.)  Azimuth scan angle 90°,180°, 270° or 360° horizontal e-scan Elevation beam 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification Target output port available for cueing of pan/tilt-mounted cameras and thermal Doppler audio modes Onnectivity & Software  Main I/O interface (for radar control Auxiliary I/O interfaces RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	False Alarm Rate (FAR)	1 false alarm per day		
Instrumented maximum range Instrumented minimum range Instrumented minimum range Instrumented minimum range Instrumented minimum range Iess than 10 m (33 ft.)  Azimuth scan angle 90°,180°, 270° or 360° horizontal e-scan  Elevation beam 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port available for cueing of pan/tilt-mounted cameras and thermal Doppler audio modes  Connectivity & Software  Main I/O interface (for radar control  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Minimum detectable target radial	0.27 km/h (0.22 mnh)		
Instrumented maximum range Instrumented minimum range Instrumented minimum range Iless than 10 m (33 ft.)  Azimuth scan angle 90°,180°, 270° or 360° horizontal e-scan Instrumented minimum range 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port 10° or 20° vertical beamwidth  10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification 1 s  Target Output & Identification 1 optional 1 optional 2 optional 2 optional 3 optional 3 optional 4 optional 4 optional 5 optional 6 optional 7 optional 8 op	velocity	0.57 Km/m (0.25 mpm)		
Instrumented minimum range less than 10 m (33 ft.)  Azimuth scan angle 90°,180°, 270° or 360° horizontal e-scan  Elevation beam 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port available for cueing of pan/tilt-mounted cameras and thermal Oppler audio modes optional  Connectivity & Software  Main I/O interface (for radar control 10/100 Ethernet network interface  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability		Coverage		
Azimuth scan angle 90°,180°, 270° or 360° horizontal e-scan  Elevation beam 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port available for cueing of pan/tilt-mounted cameras and thermal optional  Connectivity & Software  Main I/O interface (for radar control 10/100 Ethernet network interface  Auxiliary I/O interfaces RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Instrumented maximum range	2, 5, 8, 16 or 32 km		
Elevation beam 10° or 20° vertical beamwidth  Fastest scan time (for 90°) 1 s  Target Output & Identification  Target output port available for cueing of pan/tilt-mounted cameras and thermal optional  Connectivity & Software  Main I/O interface (for radar control 10/100 Ethernet network interface  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Instrumented minimum range	, ,		
Fastest scan time (for 90°)  Target Output & Identification  Target output port  Doppler audio modes  Connectivity & Software  Main I/O interface (for radar control  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Azimuth scan angle	90°,180°, 270° or 360° horizontal e-scan		
Target Output & Identification  Target output port available for cueing of pan/tilt-mounted cameras and thermal optional  Connectivity & Software  Main I/O interface (for radar control 10/100 Ethernet network interface  Auxiliary I/O interfaces RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Elevation beam	10° or 20° vertical beamwidth		
Target output port available for cueing of pan/tilt-mounted cameras and thermal optional  Connectivity & Software  Main I/O interface (for radar control 10/100 Ethernet network interface RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Fastest scan time (for 90°)	1 s		
Doppler audio modes  Connectivity & Software  Main I/O interface (for radar control  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability		Farget Output & Identification		
Connectivity & Software  Main I/O interface (for radar control  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Target output port	available for cueing of pan/tilt-mounted cameras and thermal		
Main I/O interface (for radar control  Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability	Doppler audio modes	optional		
Auxiliary I/O interfaces  RS-232 and RS-422 control lines, opto-isolated control/status inputs and isolated switched contact outputs  Reliability		Connectivity & Software		
inputs and isolated switched contact outputs  Reliability	Main I/O interface (for radar control	10/100 Ethernet network interface		
Reliability	Auxiliary I/O interfaces	RS-232 and RS-422 control lines, opto-isolated control/status		
	Auxiliary I/O Interraces	inputs and isolated switched contact outputs		
MTBF > 65,000 h (zero maintenance)	Reliability			
	MTBF	> 65,000 h (zero maintenance)		









Pan/Tilt System Module		
Max load (kg)	30kg + 30kg / 60Nm	
Height/width /length (mm)	412 X 735 X 302 mm	
Pan angle	n X 360°	
Tilt angle	± 90°	
Pan movement speed	0.001 ° to 90°/sec	
Tilt movement speed	0.001 ° to 90°/sec	
Accuracy	0.05° / 0.9 mRad	
Resolution	.1 mRad	
Park/ Home position	Yes	
Backlash	None	
Gyro Stabilization	±300 µrad	
Communication	R-232, R-4B5, RS-422, Ethernet	
Control protocol	ST-PT protocol , PelcoD (optional)	
Material	Aluminum	
Laser Range Finder Module		
Laser type	Erbium glass	
Wavelength	1,54 μm	
Safety	Class 1 IEC 60825-1 ED 2 of 2007-3	
Measuring range	80m to 20,000m	
Range resolution	±5m	
Range accuracy	±10 m	
Extinction	37db	
Measuring rate	6 ppm continuous	
Navitain In Annuar	First as a said and last to said	
Multiple targets	First, second and last target	
Multiple target resolution  Nominal ocular hazard distance	50m	
	0 m	
(NDHD)	Fancisansantal	
Eenvironmantal (2005 to 46505)		
Working Temperature	(-30°C to +65°C) IP 67	
IP rating		
Compliance	Comply with MIL STD 810 F	
Weight	110 Kg	