

DMT'S IDAR IS SHOWN HERE PROTECTING WATERWAYS IN NORTHEASTERN USA. COUPLED WITH A THERMAL CAMERA, THE SECURITY SYSTEM IS A POWERFUL TOOL FOR RAPID DETECTION AND TRACKING OF WATER & LAND THREATS.

# IDAR

## Specification

### SPECIFICATIONS

The *IDAR* is DMT's most popular security radar system. It may be used to search and track threats from land and sea up to ranges of about 2 kilometers.

This radar is an X-Band, pulsed-Doppler system that operates in all types of weather and in all types of environments.

Solid-state power amplifiers, RF components, and power supplies, as well as onboard wide-temperature processors, brush-less motors & a Nomex radome yields a maintenance-free, high-performance radar.

The radar can be monitored from DMT's software and many other commercial software solutions.

The *IDAR* is perfect for Ports, Airports, and most wide area security applications.

## Description

The **IDAR** is a security radar produced by DMT. The system perfectly fits many wide area security applications and missions, such as:

- Airport Security
- Port Security
- Base Security
- Border Security
- Oil Platform Security
- Wide Area Security, and more

The radar is a pulsed-Doppler system, which enables a variety of algorithms to remove unwanted returns (clutter) from generating alarms, such as: windblown grasses and bushes, moving water, blowing trash and debris. Transmitting at 9.25 GHz (X-Band) and Doppler processing permits the radar to see through even severe weather. And the Nomex radome seals the radar from sand and moisture, while special coatings on the radome protect it from oil, gas, solvents, UV, saltwater and other hazardous chemicals. Onboard CPU's support detection and tracking, which reduces communication bandwidth to the command stations. And the CPU also acts as a server, so many command stations can log onto the same radar without the need of expensive outdoor cabinets and computer servers.

The **IDAR** has an instrumented range of 49 km, but the processing loads associated with Doppler and the 4-Watt solid-state amplifier limits the effective range to around 3 km when spinning 360 degrees. A walking person of average height and build would be detected at about 1.5 km depending on the severity of the weather, the terrain, and the mounting height of the radar. In average water conditions, a small boat would be seen up to about 2 km.

The **IDAR** radar comes with an outdoor enclosure that supplies conditioned DC power to the radar and includes weatherproof RJ/45, multimode, or single mode fiber ports. Cameras can also be powered from this device. Other add-ons are available, such as AIS and GPS Tracking (Blue Force Tracking).

The **IDAR** has 100% field replaceable assemblies, so the radar can be repaired at the installation site. The operating system on the radar is Windows 7 Embedded, so DMT's radar application can be easily updated using the drag-and-drop feature within Windows' Remote Desktop. The radar software has built-in test software and hardware for identifying problems with all aspects of the radar.

For longer range applications, use DMT's **Black Marlin** (Water or Land), **XRDS**, (Water or Land) **LDSR** (Land) and **Spearfish** (Water) radar systems.

# IDAR Specifications

Transmitted Frequency:	X-Band, 9.25 GHz
Radar Type	Pulsed Doppler
Peak Radiated Power:	4-Watts Amps are gated, solid-state GaN amplifiers Or 2-watts none-gated GaN or GaAs amps
Antenna Beamwidth:	Azimuth beamwidth 4 degrees, Elevation beamwidth 12 degrees, Gain: 24-25 dB
Polarization:	Horizontal Polarization for 4 x 12 degree antenna
Pulsewidth:	<50ns to > 500 nanoseconds (select from GUI)
PRF Rate:	4,8,12, and 16 kHz (selectable from GUI; others available on request)
Scanning:	<ul style="list-style-type: none"> <li>• Continuous 360 degrees rotation, or</li> <li>• Sector Scanning (scanning between two angles of 1 to 360 degrees)</li> </ul>
Range Gates:	1.5, 3, 6, or 12 meters (select from GUI)
Range Accuracy:	<< 10 meters
Maximum Range:	49 km (practical range limit is 3 km)
Doppler Resolution:	Nominal setting for most installations:< 3 cm/s
Radar Positioner:	<ul style="list-style-type: none"> <li>• Uses Greaseless motors with &gt; 15 year MTBF and Kevlar (or similar) belts for long life (&gt; 4 years for most sites)</li> <li>• Maximum rotation speed: 300 degrees per second</li> <li>• Variable Speed Motors, with two modes of operation: <ul style="list-style-type: none"> <li>○ Select from 1 to 300 degrees per second from GUI</li> <li>○ Select Autoscan, which sets the best motor speed dynamically based probability of detection and range for any given look direction</li> </ul> </li> </ul>
Minimum Doppler Detectable	0 m/s
Maximum Doppler Detectable:	Based on PRF selected from GUI Example: 7 kHz yields +/-127 mph (+/-204 km/h)
Speed Measurement Accuracy:	Dependent on settings for PRF and number of pulses integrated. Typically it is to within 0.25 mph (0.4 km/hr). Higher accuracy maybe set through the GUI.
Pulse Integration:	Coherent pulse integration of 64, 128, 256 (default setting), 512, or 1024 pulses.
Communications:	Weatherproof RJ/45 connector for TCP/IP network connections. (See External Enclosures)
Operating Temperature:	-40 to +65 degrees C
Operating Wind Speeds:	In excess of 300 kph sustained
Power Requirements:	110 and 220 VAC 50, 60 Hz (autosensing) when using the DCPM. Uses 24 VDC power and less than 100 Watts.
Size:	28 inches in diameter, 15 inches in height
Weight:	<70 lbs, varies depending on options
Modes of Operation:	<ul style="list-style-type: none"> <li>• Autonomous (continuous 360 degrees or between start and stop angles)</li> <li>• Search zones (defined by drawing on coverage area on a map using a mouse)</li> <li>• Point-to-Click (point on map to point radar)</li> </ul>
Tracking	Multiple track algorithms selectable from GUI
Internal Radar Operating System:	Windows 7 Embedded
User Interface Software:	<ul style="list-style-type: none"> <li>• Windows standard software interface (Windows 7, 8.1, 10 (32-bit or 64-bit)</li> <li>• Map, drawing or aerial image/photo overlay of data</li> <li>• Video from Cameras also can be displayed in interface</li> <li>• Slew-to-cue of cameras (automatic pointing of camera)</li> <li>• AIS Feeds can be viewed and are correlated with radar tracks</li> </ul>

	<ul style="list-style-type: none"> <li>GPS Tracking Devices can be viewed and are correlated with radar tracks</li> </ul>
<b>Mission Option Buttons</b>	Customer can construct any number of missions, which may be assigned to mission option buttons. When selected by the operator, the missions automatically sets radar parameters, search areas, motor speeds and tracker settings.
<b>Compliance:</b>	<ul style="list-style-type: none"> <li>TACCS Priority 5</li> <li>Mariner CommandBridge</li> <li>Boeing VSOC</li> <li>Harris C4ISR</li> <li>ICD-0100, ICD-0101</li> <li>NMEA 0183</li> <li>DMT Open Format</li> <li>REST web service (request data endpoints)</li> </ul>
<b>Data Recording:</b>	<p>Available recording:</p> <ul style="list-style-type: none"> <li>Raw I, Q Data (on radar only)</li> <li>Detections</li> <li>Tracks</li> <li>Post Processed Data (tracks and detections) can be saved to any available network location</li> </ul>
<b>Alarm logs:</b>	Date, time, position, bearing, range, strength, speed, track maturity
<b>Doppler Signatures:</b>	Radar is capable of generating the full Doppler Signature of detected objects in real time.
<b>Scheduling:</b>	Event scheduler, which includes weeks, weekends, daily, start/stop time, sweep patterns, blanking zones, radar setup. This should be part of the software interface.
<b>Brackets:</b>	A Rohn 2 G 45G (default), 55 G or 65G tower bracket should be included with pricing. Schedule 80 8-inch pipe mounts, trailer mounts, wall mounts and telephone pole mounts available. Custom mount on request.
<b>Radomes:</b>	<p>Material: NOMEX.</p> <p>Coatings: Coatings to protect against wind, oil, gas, solvents and abrasion</p> <p>Colors: White, Sand, Gray (default), Green (extra cost).</p> <p>Sheen: Gloss or Satin sheen</p> <p>Camera Mounts: radome has a threaded hole pattern on top for mounting cameras. Additional mounts available for heavier, long-range cameras.</p>
<b>Connectors:</b>	Twist-on style connectors that feed power and all signals (including network).
<b>MTBF:</b>	Designed to be years of operation at 24 hours/day, 7 days a week. MTBF: > 2 years.
<b>IP Rating</b>	IP66
<b>Required Maintenance:</b>	No required maintenance for 2 years with the exception of periodic radome cleaning and inspection.
<b>Other Standard Items</b>	<ul style="list-style-type: none"> <li>GPS for monitoring position on earth and altitude</li> <li>BITE/BIT for motors, RF transceiver, communication, and electronics</li> </ul>
<b>External Enclosures</b>	<p>DCPM provides conditioned DC power to the XRDS and any other camera accepting 24VDC. It also acts as the communication hub. The DCPM includes::</p> <ul style="list-style-type: none"> <li>AC/DC power supplies</li> <li>4-port video server, multi-port Ethernet switch, conditioned autosensing AC-DC solid –state power supplies should be included.</li> <li>Fiber adapter for either multimode or single mode fiber (select on order).</li> <li>External power switch bank for DCPM, radar, associated cameras, Accessory Boxes</li> <li>Circuit breakers inside DCPM for radar, associated cameras, equipment inside DCPM</li> <li>Remote power toggle for radar and cameras (controlled via DMT software)</li> <li>Available in a matching radar color (powder coat) or stainless steel (additional cost).</li> </ul> 
<b>Accessory Enclosures</b>	Accessory Enclosures can be connected to the DCPM or purchased with external power and communications. Accessory enclosures are used for AIS and GPS Tracking receivers. The DCPM has an Accessory port, which supplies power and network communications to the Accessory Enclosure. The Accessory Enclosure can be purchased for other types of hardware that needs 24 VDC, 12 VDC, and Network communications.

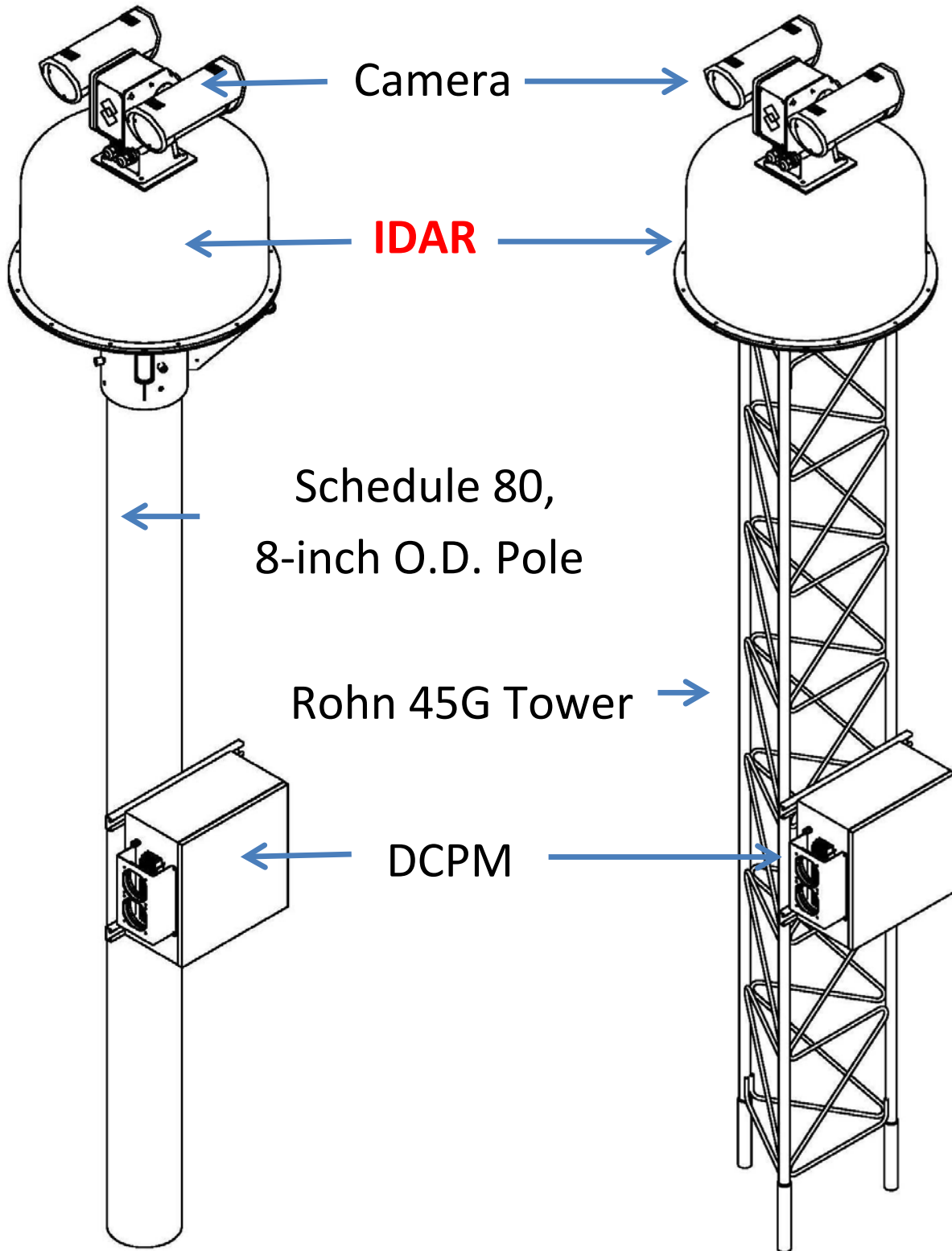


Figure 1. This is the IDAR mounted on a pole to the left and a section of Rohn 45G tower to the right.



*Figure 2. IDAR and thermal camera protecting waters in Louisiana*

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