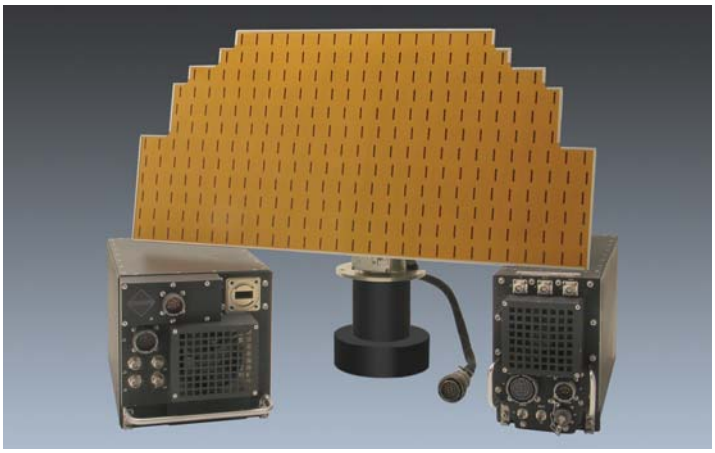
RDR-1700B

Search, Surveillance, Tracking, Imaging and Weather Avoidance Radar System



Telephonics RDR-1700B Maritime Surveillance and Imaging Radar is the ideal choice for manned and unmanned rotary and fixed-wing aircraft.

The RDR-1700B is a 1 kW X-Band, search radar delivering excellent performance and the ability to search, detect, and track multiple targets during over water surveillance.

RDR-1700B enables critical maritime missions including:

- Airborne Maritime Patrol
- Search and Rescue
- Maritime Interdiction
- EEZ (Economic Exclusion Zone) Patrol
- Contraband/Illegal Immigration Control
- Fisheries Protection
- Integrated AIS

Rugged and Lightweight

The RDR-1700B's three, primary Line Replaceable Units (LRUs) are ruggedly constructed to withstand the rigors of long surveillance missions on helicopter and fixed-wing maritime patrol aircraft. Lightweight, flat plate array, corporate fed antennas can be customized to suit any installation. All LRUs are tested to DO-160D environmental specifications. For a radar of its capability, it is extremely lightweight (<75 lbs/34 kg), low prime power (625 watts), highly reliable and cost effective.

Search, Track and Mapping

In the sea search mode, the radar will detect and display surface targets at various ranges. The system tracks 200 targets and displays the operator selected tracked targets data. The RDR-1700B provides terrain mapping to detect and display surface objects such as land masses, land/water transitions and large prominent objects.

Weather Avoidance

The RDR-1700B furnishes continuous weather information relative to rainfall rate, thunderstorms and other precipitation such as wet hail or wet snow. The 4-color display provides a means to determine the relative density of the rainfall areas.

SART Beacon

The RDR-1700B is capable of interrogating and receiving pulses from SART beacons that are in use by the USCG for private boating and commercial shipping. The system interrogates and receives pulses from SART beacons at up to 15 nm. Asynchronous replies can be received out to 60 nm.

Display Modes

The RDR-1700B provides two display stabilization modes: aircraft stabilized and ground stabilized. In all display modes, a radial strobe is output indicating the aircraft's heading.

SAR and ISAR Modes

The RDR-1700B provides three modes for imaging targets to aid in the identification of target types. Inverse Synthetic Aperture Radar (ISAR), stripmap and spotlight SAR modes provide high-resolution images of targets or terrain, in both range and cross-range, using pulse compressed waveforms and Doppler processing techniques. ISAR imaging uses target motion to provide the cross-range resolution and stretch-pulse compression to provide one meter range resolution.

Telephonics provides the best value solution for your lightweight, high performance detection requirements.

RDR-1700B

System Features

Radar

- Multi-Mode Operation:
  - Surface Search
  - Terrain Mapping
  - SART/Beacon Detection
  - Weather Avoidance
- ISAR: 1 meter
- Stripmap SAR: 1, 2, 4 and 8 meter
- Spotlight SAR: 1, 2, 4 and 8 meter
- Programmable Digital Waveforms
- Digital Demodulation
- Digital Pulse Compression
- Target Tracking

Situation Display Capability

- Radar PPI Display
- Aircraft Heading Reference
- North Reference
- Fixed Ground Reference (True Motion)
- Variable Display Offset
- Range Rings
- Track Symbology
- Target Marker: Range Bearing or Latitude/ Longitude

Optional Features

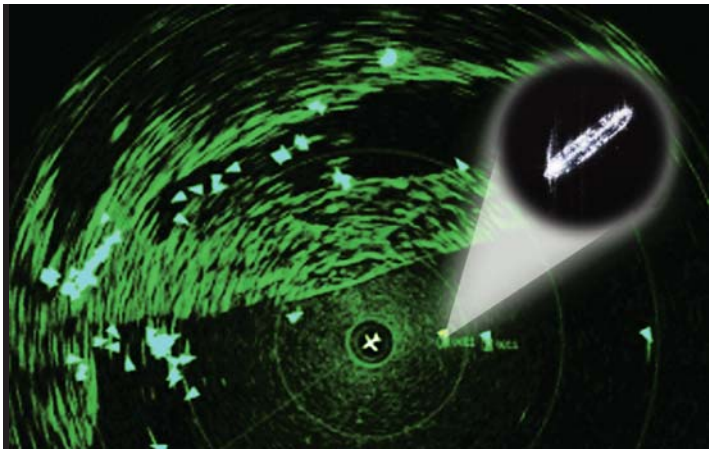
- Navigation Waypoint Overlay
- Ground Map Overlay
- Radar Data Recorder

Interface Capabilities

- Navigational:
  - ARINC 429
  - MIL-STD-1553B
- Output Video:
  - RGB, SXGA (1280x1024)
  - Other Formats Available
- Upgradable Firmware/ Software

Tactical Display Management System Features

- Graphical User Interface
- Trackball or Joystick Operation
- Radar Horizon Indicator
- Readouts of:
  - Target Track Data
  - Radar Status
  - Navigation Data
  - Built-In-Test



Typical RDR-1700B TDMS Display with AIS and ISAR

System Specifications

General System Description

- System weight: typically less than 75 lbs/34 kg
- Size: R/T – 3/4 short ATR; I/U 1/2 short ATR; antenna-radome dependent
- Power required: 28V@22A and 115V, 400 Hz@100 mA
- Special features: sector blanking, PRF jitter, frequency agility

Performance

- Detection: 1 sq. meter target beyond 15 nmi in sea state 3
- Maximum radar range: 120 nmi
- Display range resolution: 0.01 nmi (1 meter for imaging)
- Reliability: 2000 hour MTBF (Airborne Inhabited Cargo)
- DO-160D tested

Antenna

- Bandwidth: 300 MHz
- Gain: 26 - 31 dB (antenna dependent)
- Sector scan: 45° to 300° or continuous 360° scan (operator selectable) 28, 45, 90 deg/sec
- Stabilization: ±30°
- Searchlight for ISAR/SAR antenna steering

Transmitter

- Peak Power: 1 kW at MPM output
- PRF: multiple PRF up to 7000 Hz

Receiver

- Receiver noise figure: 2.0 dB max at the LNA
- Bandwidth: matched to pulse width
- Processing: STC at RF under operator control
- Automatic Gain Control (AGC) controls receiver gain over temperature

Display and Processing

- Track-While-Scan with automatic track initiate
- Range scales: short, 30, 60, 120 nmi
- Display Formats: 800 x 800 4-bit grayscale radar video and 1280 x 1024, 8-bit color graphics
- Weighted digital compressed pulse width
- Standard interfaces available to allow integration/ operation with onboard display and control systems
- Standalone consoles available using TDMS GUI with LCD color display

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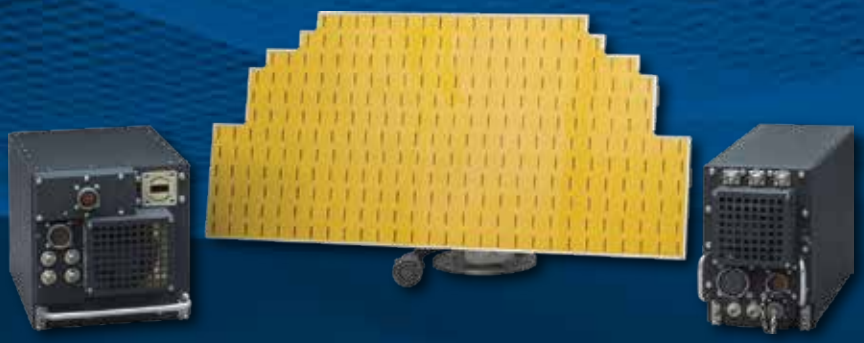
The RDR-1700B Radar Series

Search, Surveillance, Tracking, Imaging, and Weather Avoidance Radar Systems



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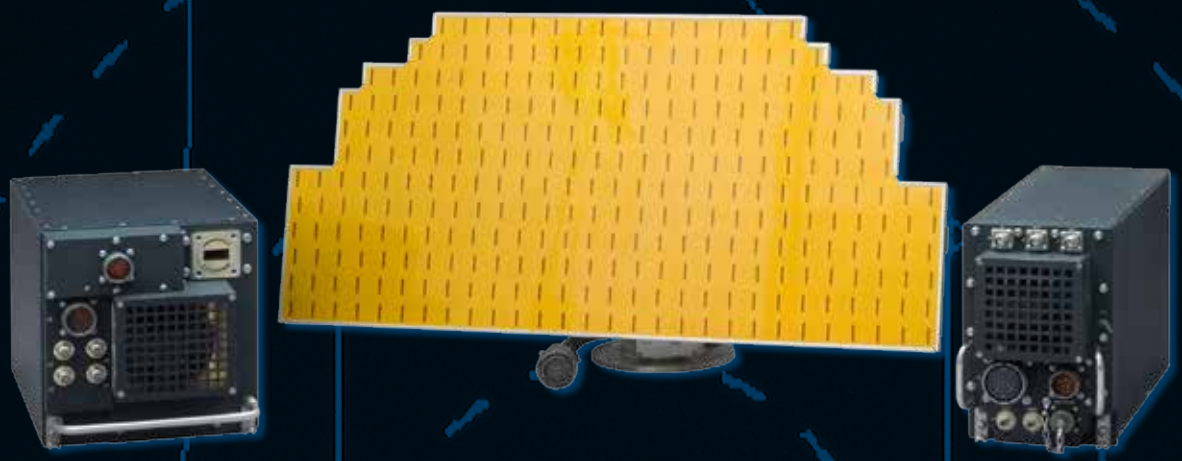
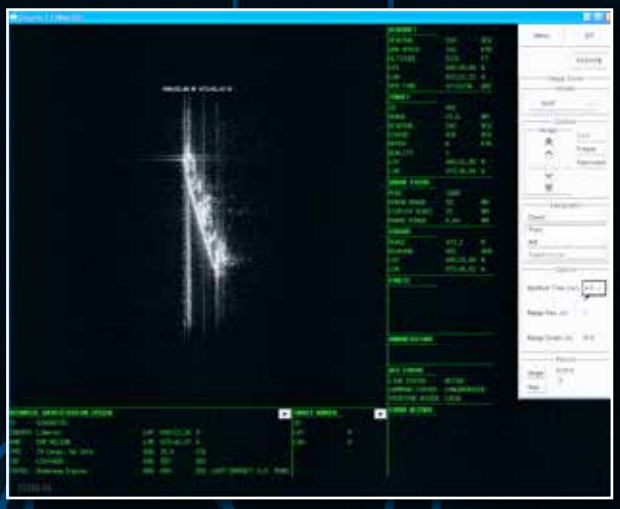


RDR-1700B



RDR-1700B ISAR Image

The RDR-1700B radar series has three capability tiers to satisfy diverse mission needs over land and sea. Our radar detect small maritime targets in high seas and provide superior sea-search mode performance, Inverse Synthetic Aperture Radar (ISAR) imaging of maritime targets, and a weather detection and avoidance mode.

RDR-1700B Series

Satisfying Diverse Mission Needs Over Sea and Land

Being on alert for unpredictable threats demands high performing surveillance systems that can deliver automated situational awareness at sea, in the littorals, and overland. Telephonics' RDR-1700B series has three capability tiers to satisfy diverse mission needs in any environment. Our radar detect small maritime targets in high seas and provide superior sea-search mode performance, ISAR and Synthetic Aperture Radar (SAR) imaging of maritime targets, SART beacon detection, Automatic Identification System (AIS), and a weather detection mode.

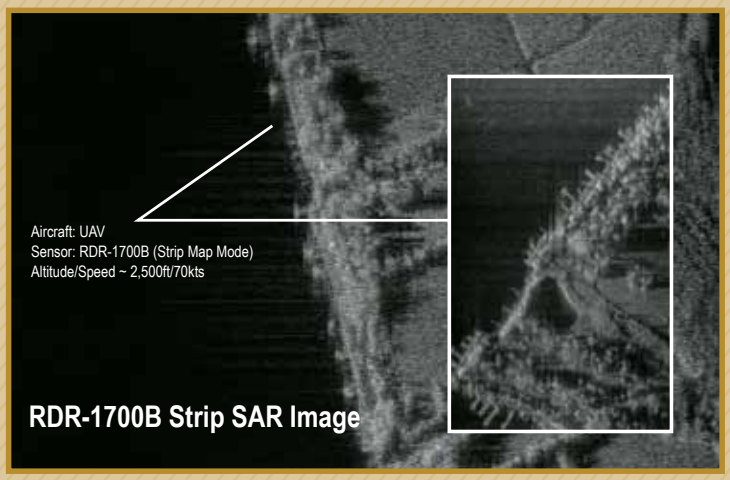
A solid-state transmitter has been introduced into the radar system providing higher power output and reliability at a small fraction of the cost of competing technologies. On our RDR-1700B and RDR-1700B(V)1 models our solid-state transmitters also offers markedly lower weight and higher power conversion efficiency over other technologies. As a result, the systems require less than 1 kW of electrical power from the platform.

These systems perform critical missions overland with SAR imaging and Ground Moving Target Indicator (GMTI) mode which greatly enhance operational flexibility and enable seamless operation. Our all-weather radar perform by operating in X-Band, a superior weather penetration system that delivers detection and imaging ranges far in excess of systems operating in K-Band, while still delivering high image resolution.

Telephonics' maritime and overland surveillance radar are operational on six continents and provide detection and imaging capabilities for over 30 countries around the world.

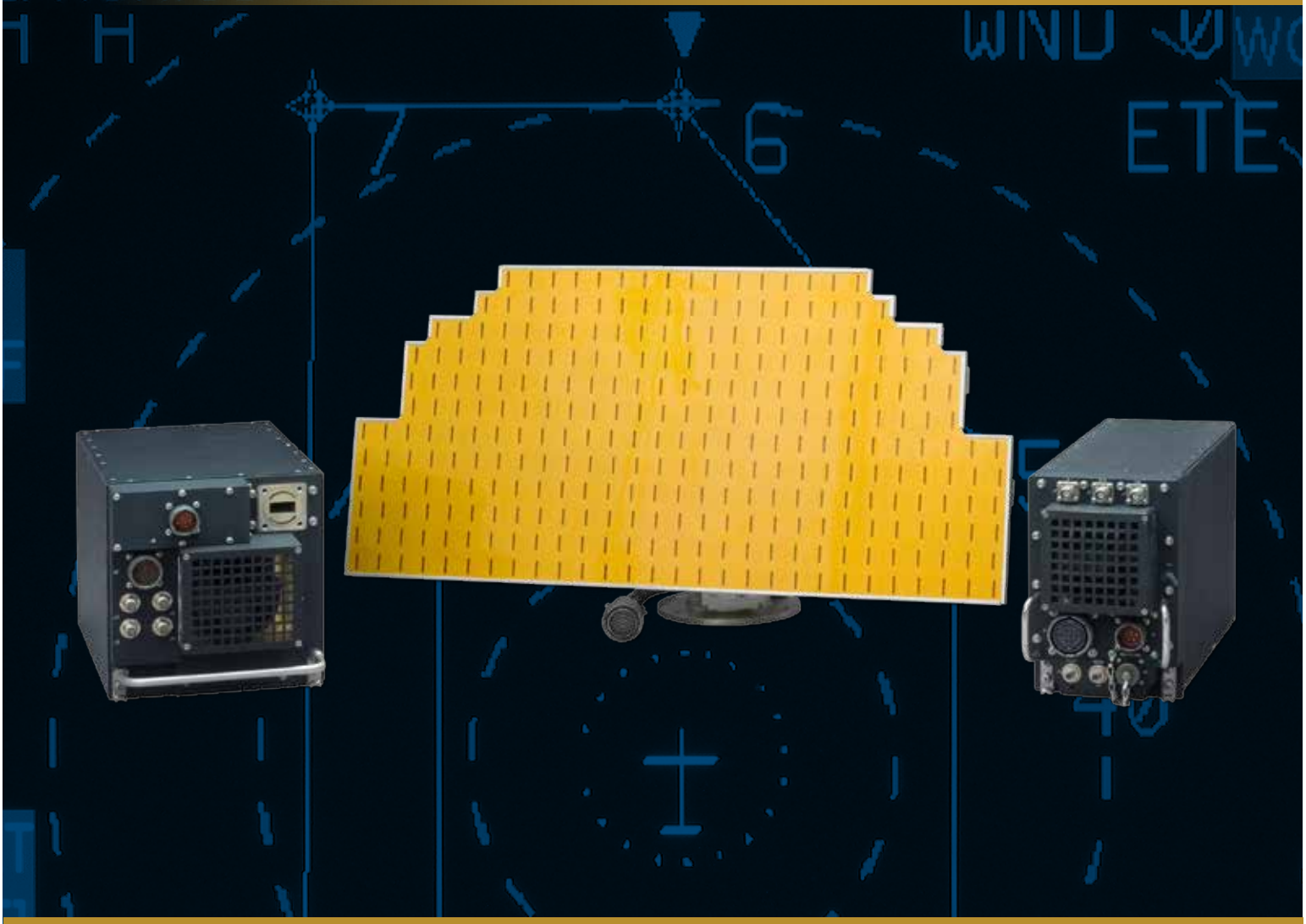
Maritime and Overland Surveillance Capability

Programmability Allows Tailoring for the Required Maritime Surveillance Mission



RDR-1700B Strip SAR Image

RDR-1700B Series



Fully Customizable to Meet Your Platform Requirements

RDR-1700B

- Maritime surveillance
- SAR/ISAR imaging (1 meter)
- Weather detection
- SART beacon detection
- Unsurpassed ease of integration
- AIS Overlay Capability

RDR-1700B(V)1

- All RDR-1700B capabilities
- More powerful, solid-state transmitter
- SHARC™ (Scalable Hierarchy for Advanced Radar Control) software displays and tracks six types of embedded, moving maps
- Laptop, mission computer, or remote UAV command interfaces
- Web-browser interface

RDR-1700G(V)2

- All RDR-1700B(V)1 capabilities
- GMTI mode for overland moving target detection and tracking
- Optional advanced maritime classification aids

Managing Unpredictable Threats in Complex Environments

RDR-1700B(V)1 SHARC Search Display

RDR-1700B(V)1 SHARC display during ISAR collection

Wide Base of Deployed Systems

Rapidly identifying and managing unpredictable threats in complex environments demands next-generation situational awareness tools, which are available on the RDR-1700B(V)1 and RDR-1700G(V)2 radar models with Telephonics' SHARC software. Building on the broad-area detection capabilities of the RDR-1700B series, the SHARC software fulfills a critical need in real-world surveillance missions to sort, filter, label, and archive target tracks, rapidly identify threats for imaging and classification, and provide situational context with high resolution surface and bathymetric map underlay. In addition, the SHARC software aligns a ships' AIS and radar information into the background.

Capabilities of the SHARC radar target management tools include:

- Auto track initiate up to 1,000 targets/land mass rejection with integrated underlay of six selectable map types
- High level of track management, like track histories and multi-criteria track filtering
- Radar image scheduling
- ISAR mensuration tools
- Operator ship classification aids
- Callable image database archiving

RDR-1700B Series

Being on alert for unpredictable threats demands extraordinarily diverse radar, signal processing, and information management capabilities to be effective across mission types and against constantly changing threats.

RDR-1700B Systems Key Features

		RDR-1700B	RDR-1700B(V)1	RDR-1700G(V)2
Maritime	Maritime Surveillance Modes	X	X	X
	ISAR Imaging of Vessels (resolution)	1 meter	1 meter 0.3 meter optional	1 meter 0.3 meter optional
	AIS Contact Data Ingest/Display	X	X	X
	Maritime Classification - Basic		X	X
	Maritime Classification - Advanced			Optional
Overland	SAR Imaging - Spot Mode (resolution)	1 meter	1 meter 0.3 meter optional	1 meter 0.3 meter optional
	SAR Imaging - Strip Mode (resolution)	1 meter	1 meter 0.3 meter optional	1 meter 0.3 meter optional
	GMTI - Vehicle Detection and Tracking			X
Track Manage	Manual Track Initiate (# tracks)	200		
	Auto Track Initiate w/Land Mass Rejection (# tracks)		1,000	1,000
	Moving Map Underlays		6 types	6 types
	Radar/AIS Track Alignment		X	X
	Display Track History		X	X
	User-Defined Multi-Criteria Track Filtering		X	X
	Image-Track Association and Storage		X	X
Interface	SXGA Monitor Video/Mouse Control	X		
	Telephonics Radar SHARC/Display Laptop Control		X	X
	Interface to A/C Mission Computer C2/Display (Ethernet)		Optional	Optional
	Web Browser Interface (Ethernet)		X	X
	Output of Net-Ready Track/Image Products (Ethernet)		X	X
Other	Microwave Power Module	TWT	Solid State	Solid State
	Average Output Power	40 watts	80 watts	80 watts
	Weight	<32 Kg	<34 Kg	<37 Kg
	Weather Mode	X	X	X
	EO Sensor Cueing	X	X	X
	Sector or 360 Degree Antenna Drive	X	X	X

X = Available capability. Information is subject to change in final product release. All capabilities are subject to USG export approval to specific end-users.

RDR-1700B

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