



PHOBOS (QR020-M4) - R-ESM System

The Phobos Threat Warner/RESM is a fully capable, compact, affordable, integrated EW sensor system comprising: Antennas, RF Processing, Digital Processing, De-interleaving & Emitter ID/Library Matching, and Operator Interface.

The system design employs a high degree of RF & digital signal processing integration, (based on established Teledyne wideband receiver and signal processing products), enabling the full 2-18GHz instantaneous frequency coverage and 360° azimuth coverage to be achieved in a compact envelope.

A key feature of the Phobos is that it is extremely easy to integrate and operate on a wide variety of small platforms of all types, including those not thought previously feasible for such protection on the grounds of size, weight, power or cost.

Only two external connections are required for connection between Mast Top Unit and User Interface; DC power (9v–36v) and a network cable for data output/system control. An optional mains power supply (EZ020) is available. The system includes options for either local or remote location of the sensor unit relative to the user interface.

The sensor system incorporates established waveform based processing algorithms enabling the creation of a user interface which is both robust in dense signal environments and requires minimal operator workload or training. Simple to use compact MMI display & full ESM MMI running on a ruggedised laptop or conventional displays are also available. MIL-STD 2525 symbology ensures ease of object recognition.

The rapid threat warning response (<1 sec) facilitates use of the system in conjunction with self-protection measures such as automatically set-on responsive jammers (ECM / EA) and it can also be used in conjunction with CESM as a frequency extension for low cost combined EW sensor suites.

FEATURES

- 2-18GHz Instantaneous Frequency Range
- Full 360° Azimuth Coverage
- Bearing Accuracy <6° rms (TX antenna V/H)
- Very Low Power Consumption (80 Watts)
- Rapid Threat Warning (Emitter ID < 1sec)
- Fully Passive Operation Mode
- Capable of detecting Pulse, CW, FMCW
- Open System Architecture
- Continuous and Interruptive passive BIT
- Network enabled connectivity

APPLICATIONS

- Offshore Patrol Vessels
- Support and Fleet Auxiliary Vessels
- Fast Patrol Boats – Littoral / EEZ Operations
- Low Cost Combined Sensor Suites
- Land Vehicle Mounted
- Man Portable Mast Mounted

Performance Data

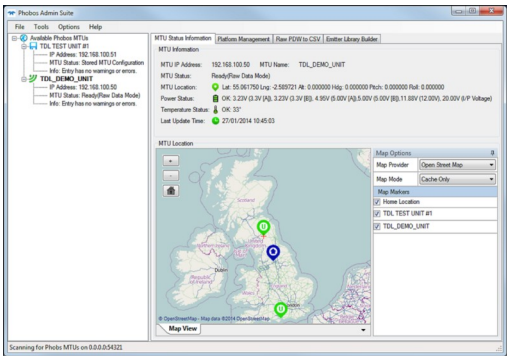
Parameter	Data	Notes
Frequency range	2.0 to 18 GHz	Instantaneous coverage
Frequency measurement	<1MHz resolution	Accuracy < 4.5MHz rms
Azimuth coverage	360 degrees	4 switched 90 degree sectors
Bearing measurement	<6° rms (Tx Antenna V or H pol)	System performance as measured in an anechoic chamber
Amplitude measurement	0.1 dB	Resolution of the measurement process
System sensitivity	-60dBmi	System sensitivity performance at antenna boresight. Sensitivity is reduced if optional protection elements or filters are installed
Instantaneous dynamic range	60dB	
Minimum pulse width	70ns (50ns at reduced POI)	Max Pulse Width is 650 µs / CW
Time of arrival	10ns	Measurement resolution
Recovery time	300ns typical	
Environment pulse density	> 1 million pulses per sec	Peak Density
Emitter library capacity	5,000 emitter mode lines	Capable of expansion
Track table	500 simultaneous tracks	Capable of expansion
Track display	500 simultaneously displayed	30 with a compact display
Full ESM MMI display modes	Map with emitter LOB overlay / polar LOB mode Track table, platform data, weapon data, polar MOB mode 2D graph mode System control	
System response time	< 1 second	Antenna to display
Operating voltage range	9 VDC to 36 VDC 95 VAC to 265 VAC (Optional EZ020 Power Supply)	24V DC optimal
Power consumption	120 W 80 W	Max typical at start up Max typical in operation
Size	Diameter 362 mm, Height 172.5 mm Height increases by 40 mm for standard filter bypass module Other optional filter dimensions on request	MTU
Weight	12 kg < 3kg	MTU Laptop
Operating temperature range	-40°C to + 55°C	
Operating altitude	60,000 feet max	

See restrictions on published datasheets at www.teledynedefence.co.uk/

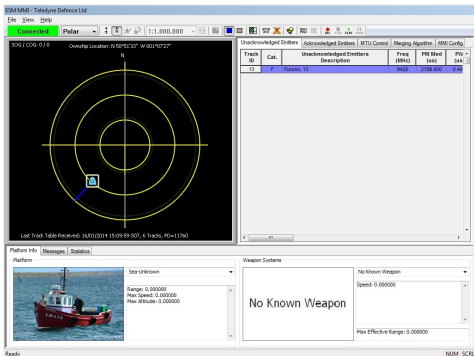
System Options

Option	Description
EZ020 Smart PSU	AC operation + 4 platform blanking inputs
RF front-end interface rejection	Custom filtering solutions available to suit requirement. Eg 2.7GHz high pass filter or inband notch filter
Remote operation	Via platform data link
End-to-End RF Interruptive BIT	Active RF BIT source for RF Front End

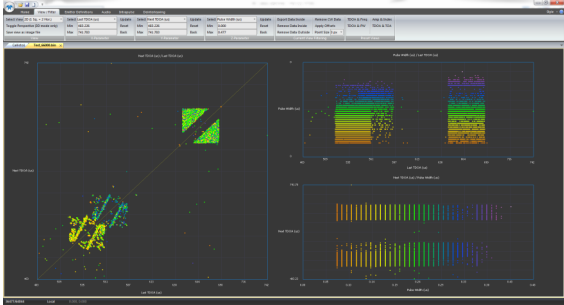
Illustrations



Phobos Admin Suite



Tactical ES MMI



Callisto - Pulse Analysis



Ruggedised Laptop



EZ020 Smart PSU (Option)

System Block Diagram

