



Sentinel Series

COASTAL SURVEILLANCE RADAR



X-BAND FULLY SOLID STATE

I N N O V A T I O N I N R A D A R T E C H N O L O G Y



Sentinel Series

MAIN CHARACTERISTICS

- Fully Solid-State Radar Transmitter and Receiver (TRX)
- From 200 W to 800 W available transmitted peak power
- Optimum detection of small surface targets
- Dual LAN interface
- High azimuth and range resolution
- Comprehensive Built-In Test Equipment (BITE)
- Both locally and remotely accessible and controllable
- Extremely high reliability and availability
- 24/7 operation

OPTIONS

- 200 W, 400 W and 800 W transceiver peak power as per order code below
- 12-foot, 19-foot and 21-foot antennas with horizontal or circular polarization as per order code below
- Single, dual redundant and Frequency Diversity configurations available as per order code below
- Top-performing radar extractor / tracker module in compliance with IALA Guideline 1111
- Waveguide kit and dehydrator available as per installation requirements

ORDER CODE

Sentinel-XXX/YY/Z/A

/XXX

peak power level in W, available values: 200/400/800

/YY

length of the antenna in feet, available values: 12' / 19' / 21'

/Z

void = horizontal

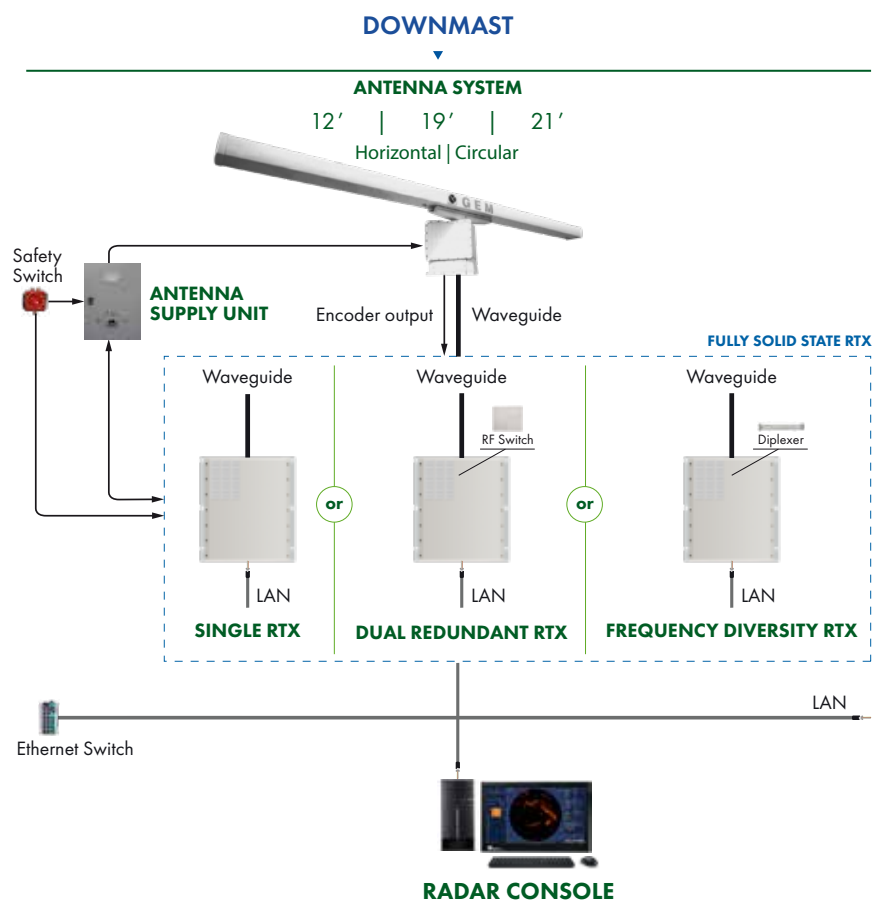
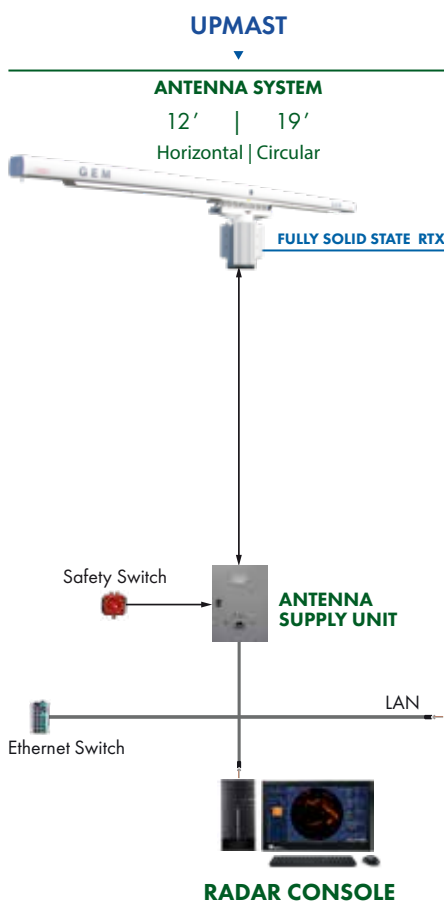
C = circular

/A

void = single

D = dual redundant

FD = Frequency Diversity



ANTENNA UNIT

Length:	12'	19'	21'
Type:	slotted waveguide array		
Frequency:	9250 ÷ 9500 MHz		
Polarization:	horizontal or circular		
Rotation speed:	5 / 11 / 16 RPM, depending on transmission mode selected		
Tolerable relative wind speed:	100 knots (operative) - 120 knots (non operative)		
Gain:	32.5 dB typical	35 dB typical	38 dB typical
H-BW:	0.65° typical	0.42° typical	0.35° typical
V-BW:	22° typical	18° typical	11° typical

TECHNICAL SOLUTIONS

- Fully coherent, fully solid state pulse compression radar
- Fully digital configuration available through software-defined functionalities
- Time and frequency diversity techniques with automatic adaptation to the real scenario
- Operator-selectable transmitted power level for each transmitting sector, up to 10 sectors programmable by the user

MAIN FEATURES

Instrumented range	Up to 96 NM, depending on the chosen mode
Minimum detection range	40 m from the antenna location
Target separation	Better than 15 m (short range) or 40 m (long range)
BITE	Fully integrated BITE facility covering also RF section
Interface format	TCP/IP over dual redundant 1 Gb Ethernet LAN (digital video and controls)
Interface protocol	Proprietary format Option: (ASTERIX Cat. 240 video, Cat. 048 plots and tracks, Cat. 253 data, states and commands)
Management	Remote during operation; local for configuration or maintenance

FREQUENCY BAND: 9.3 to 9.5 GHz

MAIN FEATURES OF THE TRANSMITTER

True transmitted power From 200 W to 800 W

Modulation	Pulsed FM
Transmission mode	selectable among 6 according to the operating requirement
Stagger function	Available

MAIN FEATURES OF THE RECEIVER

Demodulation	Fully coherent
LNFE noise figure	< 2.5 dB
Receiver sensitivity	-127dBm (dynamic range up to 140 dB)
Receiver IF bandwidth	30 MHz @ -3 dB (typical)
Compression gain	Up to 30 dB
STC	Programmable

MAIN FEATURES OF THE TRACKER MODULE

Embedded plot extractor	Included
Number of surface tracks	1000 or more
Speed of tracked object	Up to 100 knots
Turn rate of tracked object	Up to 20°/s
Tentative track confirmation time	≤ 1 minute
Range accuracy	Better than 0.5% of the selected range or 15 meters, whichever the greater
Azimuth accuracy	Better than 0.25°
Clutter maps	Automatic clutter map building for automatic filtering thresholds to maximize true tracks and reducing probability of fake tracks
Applicable standard	IALA Guideline 1111, 2015 - Advanced level

EMI

The equipment has been designed and manufactured to operate in full compliance with the international IEC 60945 standard (ed. 4, 2002-8), chapters 9 (Electromagnetic emission) and 10 (Immunity to electromagnetic environment).

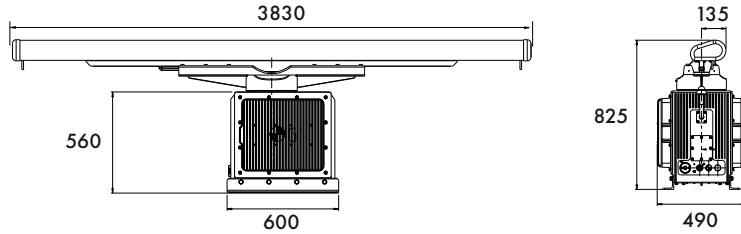
ENVIRONMENTAL CONDITIONS

The equipment has been designed and manufactured to operate in the environmental conditions specified by the international IEC 60945 standard (ed. 4, 2002-8) chapter 8 (Durability and resistance to environmental conditions) as follows:

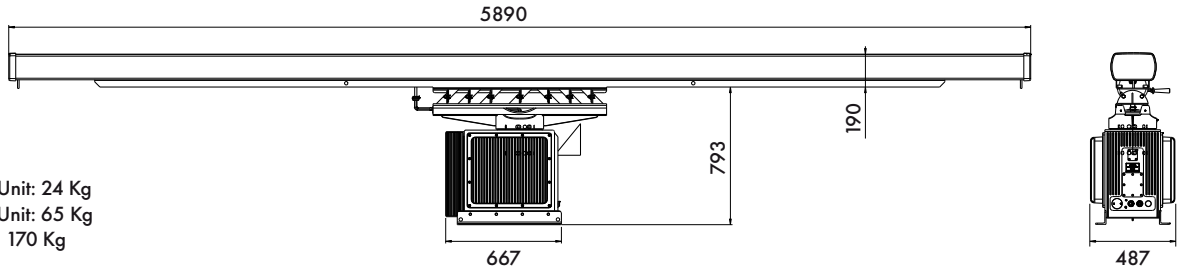
- Temperature range:
 - o Internal units: from -15°C to +55°C;
 - o External units: from -25°C to +55°C;
 - o Storage: from -30°C to +70°C;
 - o Note: inclusion of optional heating unit lowers range to -40°C;
- Humidity: 95% at 40°C non-condensing (up to 100% at +40°C with de-hydrator);
- Vibrations:
 - o Sweep 2 Hz – 13.2 Hz at ± 1 mm,
 - o 13.2 Hz – 100 Hz at 7 m/s² and for 2 h on each resonance, otherwise 2 h at 30 Hz in all three axes;
- Shock: 6 drops from 1 m.

UPMAST VERSION

12'



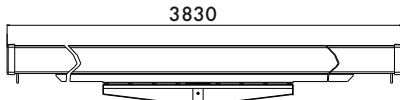
19'



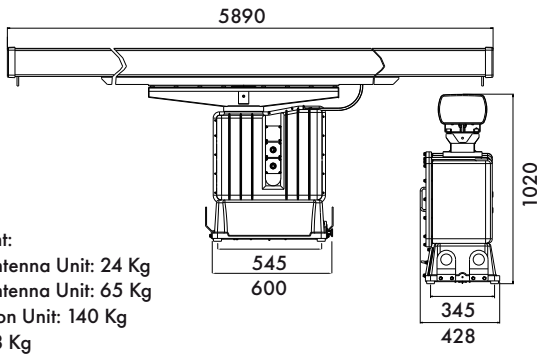
Weight:
 12' Antenna Unit: 24 Kg
 19' Antenna Unit: 65 Kg
 Scanner Unit: 170 Kg
 Tilt: 28 Kg

DOWNMAST VERSION

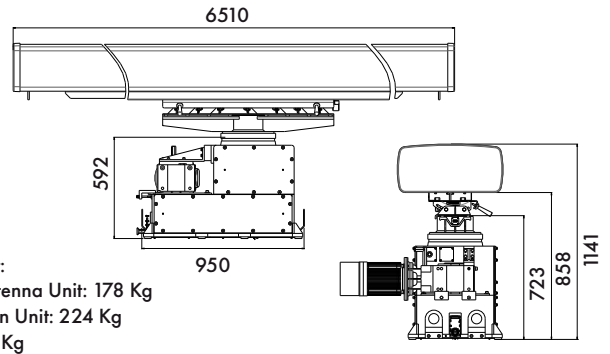
12'



19'



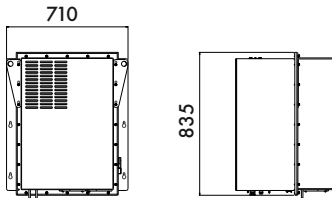
21'



Weight:
 12' Antenna Unit: 24 Kg
 19' Antenna Unit: 65 Kg
 Rotation Unit: 140 Kg
 Tilt: 28 Kg

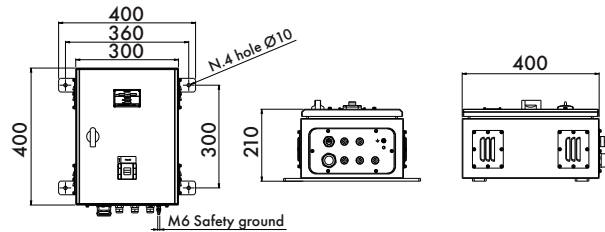
Weight:
 21' Antenna Unit: 178 Kg
 Rotation Unit: 224 Kg
 Tilt: 28 Kg

DOWNMAST TRANSCIEVER



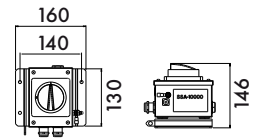
Weight: 55 Kg

ANTENNA SUPPLY UNIT



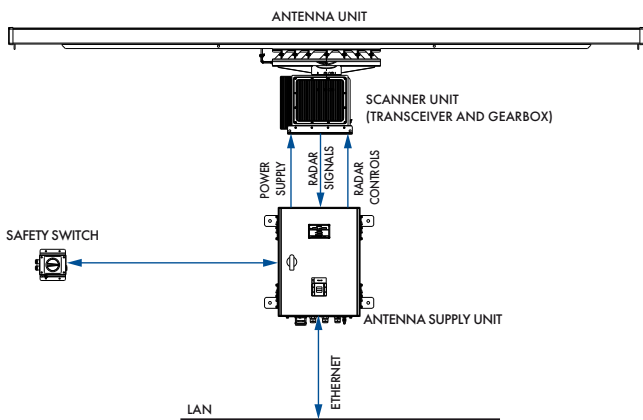
Weight: 19 Kg

SAFETY SWITCH



Weight: 2 Kg

UPMAST RTX CONFIGURATION



DOWNMAST RTX CONFIGURATION

