



Sentinel Series

COASTAL SURVEILLANCE RADAR



X-BAND FULLY SOLID STATE

INNOVATION IN RADAR TECHNOLOGY



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

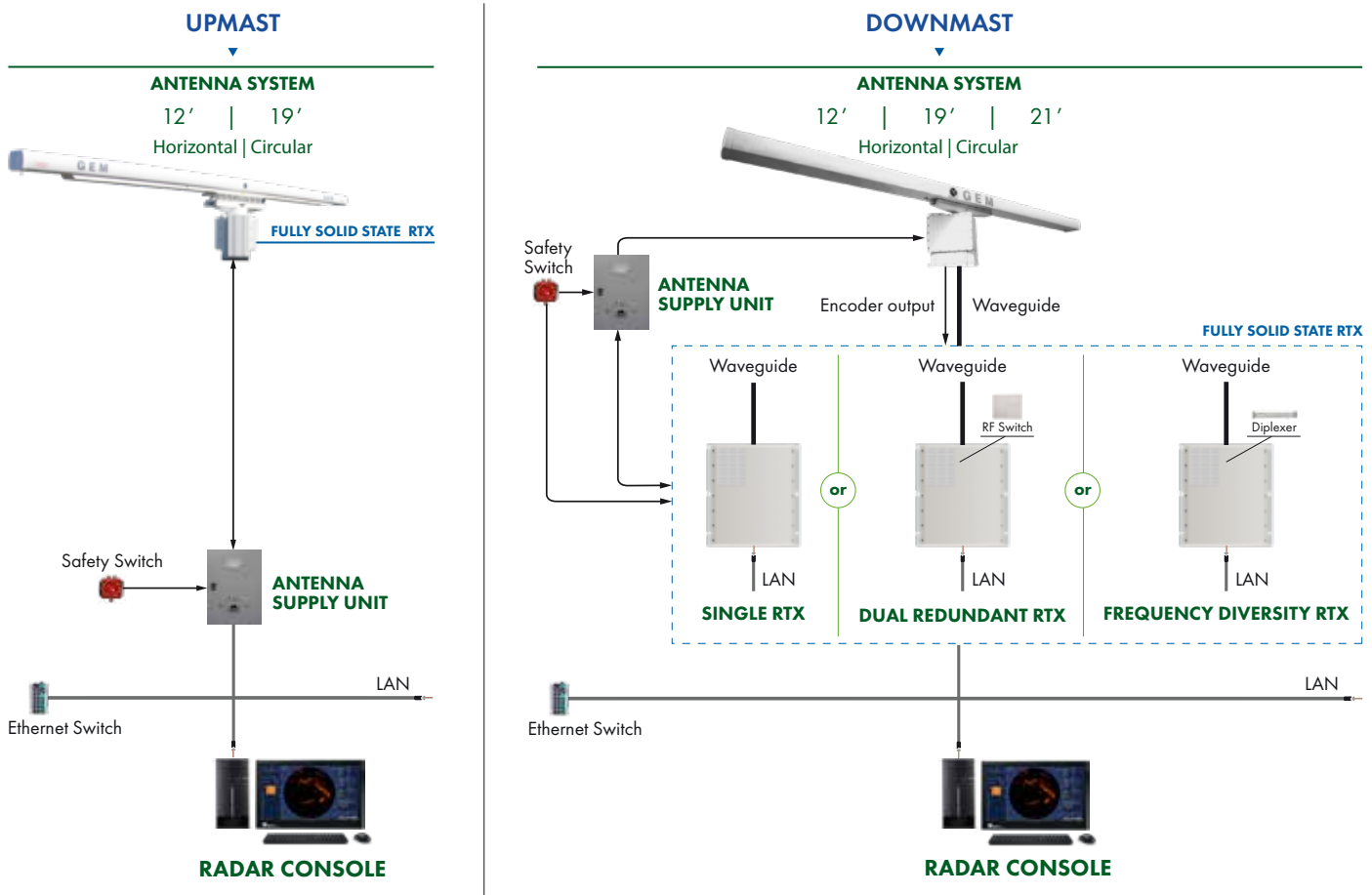
C = circular

/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

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).

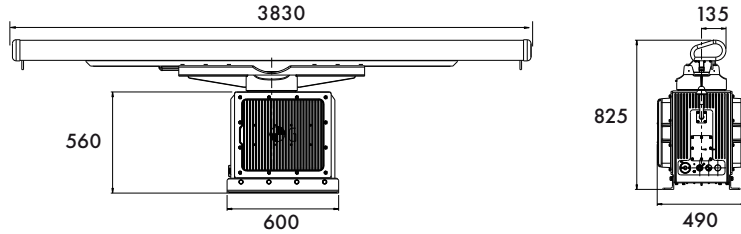
ENVIRONMENTAL CONDITIONS

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:

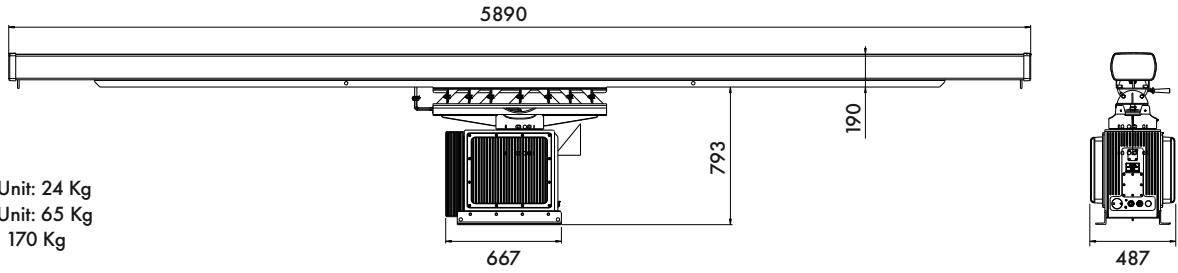
- Temperature range:
 - o Internal units: from -15°C to +55°C;
 - o External units: from -25°C to +55°C;
 - o Storage: from -30°C to +70°C;
 - o Note: inclusion of optional heating unit lowers range to -40°C;
- Humidity: 95% at 40°C non-condensing (up to 100% at +40°C with de-hydrator);
- Vibrations:
 - 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'



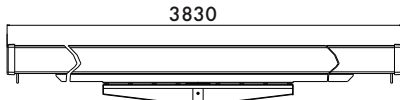
19'



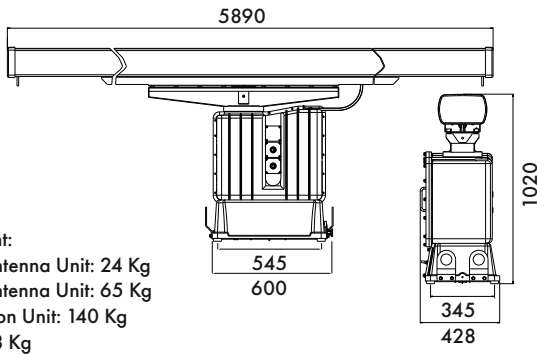
Weight:
12' Antenna Unit: 24 Kg
19' Antenna Unit: 65 Kg
Scanner Unit: 170 Kg
Tilt: 28 Kg

DOWNMAST VERSION

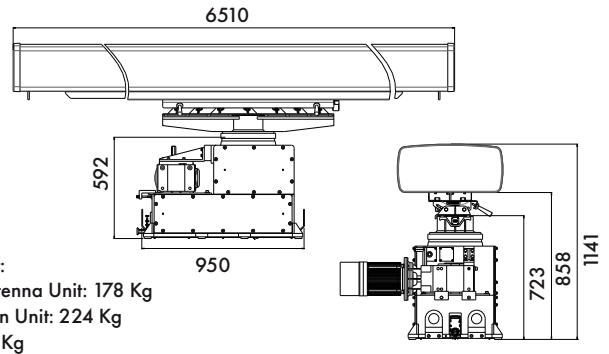
12'



19'



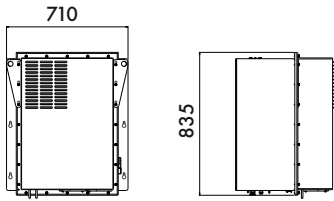
21'



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

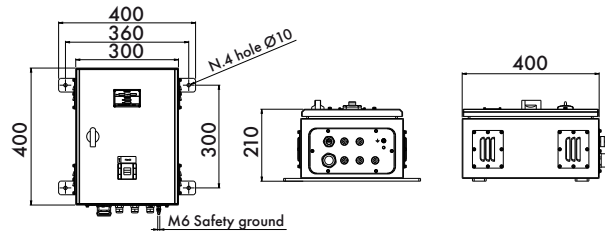
Weight:
21' Antenna Unit: 178 Kg
Rotation Unit: 224 Kg
Tilt: 28 Kg

DOWNMAST TRANSCEIVER



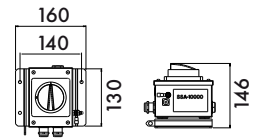
Weight: 55 Kg

ANTENNA SUPPLY UNIT



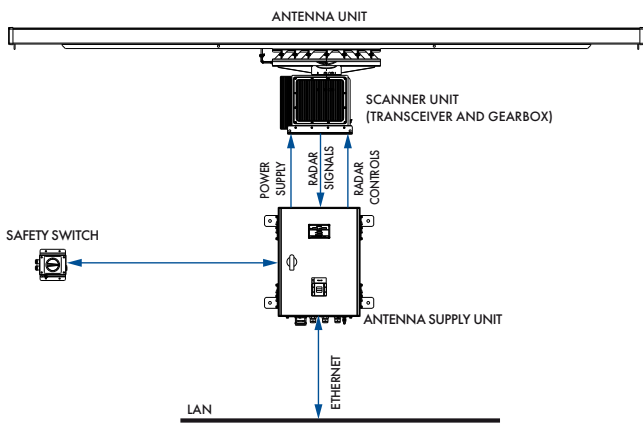
Weight: 19 Kg

SAFETY SWITCH



Weight: 2 Kg

UPMAST RTX CONFIGURATION



DOWNMAST RTX CONFIGURATION

