



# 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)
- 24/7 operation
- Optimum detection of small surface targets
- Dual LAN interface
- High azimuth and range resolutions
- Comprehensive Built-In-Test (BIT)
- Can be remotely accessed and controlled
- Extremely reliable, high MTBF
- Available in upmast configuration including 12' / 19' horizontally or circularly polarized array
- 50 to 400 W available transmitted peak power

## OPTIONS

- LPI mode
- IALA GUIDELINE 1111 Top performances-compliant Tracker module
- Depending on installation requirements, cable lengths are delivered in accordance with Buyer's instructions
- Downmast transceiver: dual redundant or frequency diversity configuration available on request, in case of dual redundant configuration add /D and frequency diversity add /FD to the order code

order code

## Sentinel-XXX/YY/Z/A

**/XXX**

peak power level in W, available values: 50/100/150/200/300/400

**/YY**

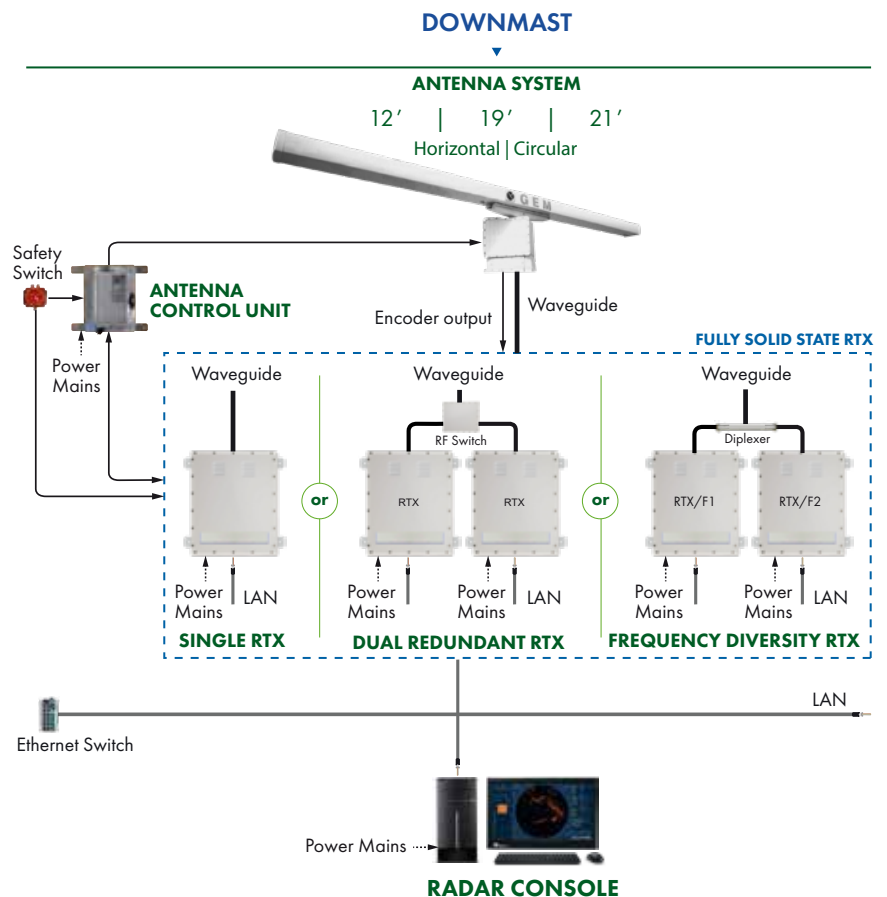
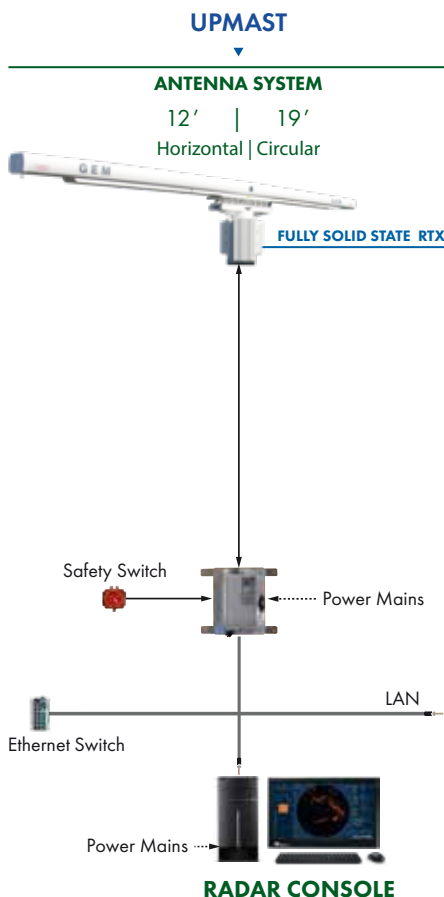
length of the antenna in feet, available values: 12' / 19' / 21'

**/Z**

none = horizontal      C = circular

**/A**

none = single      D = dual redundant      FD = frequency diversity



**ANTENNA UNIT**

Length:	<b>12'</b>	<b>19'</b>	<b>21'</b>
Type:	slotted waveguide array		
Frequency:	9250 ÷ 9500 MHz		
Polarization:	horizontal or circular		
Rotation speed:	11 / 22 r.p.m. , depending on transmission mode selected	16 / 22 r.p.m.	6 / 11/ 16 / 22 r.p.m.
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, more than 31 sectors programmable by the user

**MAIN FEATURES**

Instrumented Range	Up to 96 nmi, depending on the chosen profile
Minimum Detection Range	30 m from the antenna location
Target separation	Better than 12 m (3 m cell size) or 18 m (6 m cell size)
BITE measurements	Fully integrated BITE facility covering also RF sections
Interface	1 GB LAN Ethernet (digitized video and controls), Analog raw video signals and radar controls
Management	Remote management during operation. Local management for local assistance

**MAIN FEATURE OF THE TRACKER SOFTWARE MODULE**

Embedded plot extraction	Included
Compliance of the tracker	IALA advanced performances, top performances as stated by IALA Guideline 1111, 2015
Number of surface tracks	At least 1000
Output track data	NMEA 0183 TTM string
Tracking performances	Automatic clutter map building for automatic filtering thresholds to maximize true tracks and reducing probability of fake tracks
Interface	1 GB LAN Ethernet

**FREQUENCY BAND:** 9.25 to 9.5 GHz.

**MAIN FEATURES OF THE TRANSMITTER**

True transmitted power	50 to 400 W
Modulation	Pulsed FM
Minimum Detection Range	30 m from the antenna location
Stagger function	available

**MAIN FEATURES OF THE RECEIVER**

Demodulation	Fully coherent
LNFE noise figure	<2.5 dB
Receiver sensitivity	-131 dBm (dynamic range more than 110 dB)
Receiver IF bandwidth (adequate to mode of operation)	45 MHz maximum
Compression gain	At least 32dB
STC	programmable versus antenna height

**EMI**

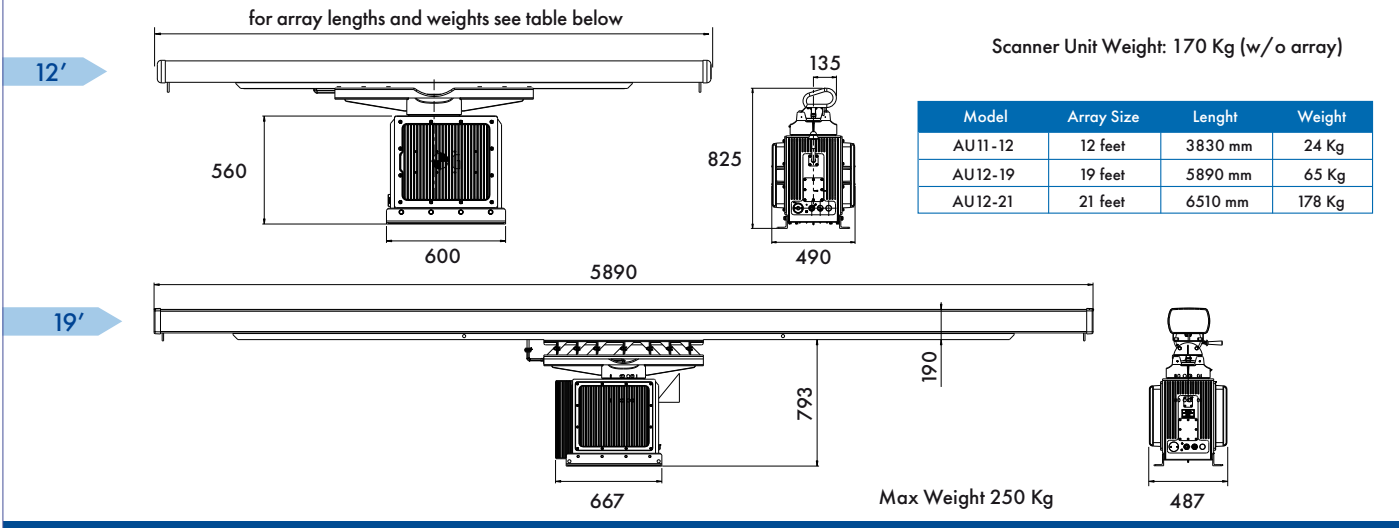
The equipment has been designed and manufactured to operate in full compliance with the international IEC 60945 standard (ed. 4, 2002-8), chapters 9 (Electromagnetic emission) and 10 (Immunity to electromagnetic environment).

**ENVIRONMENTAL CONDITIONS**

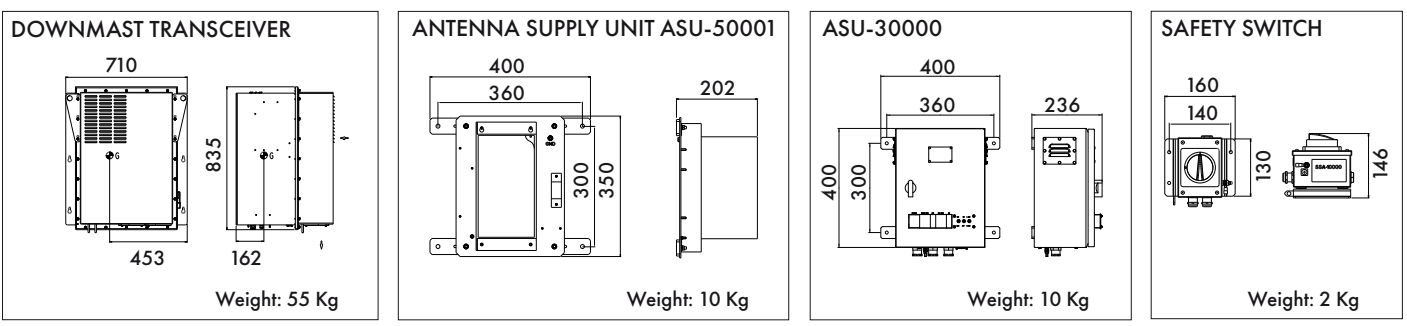
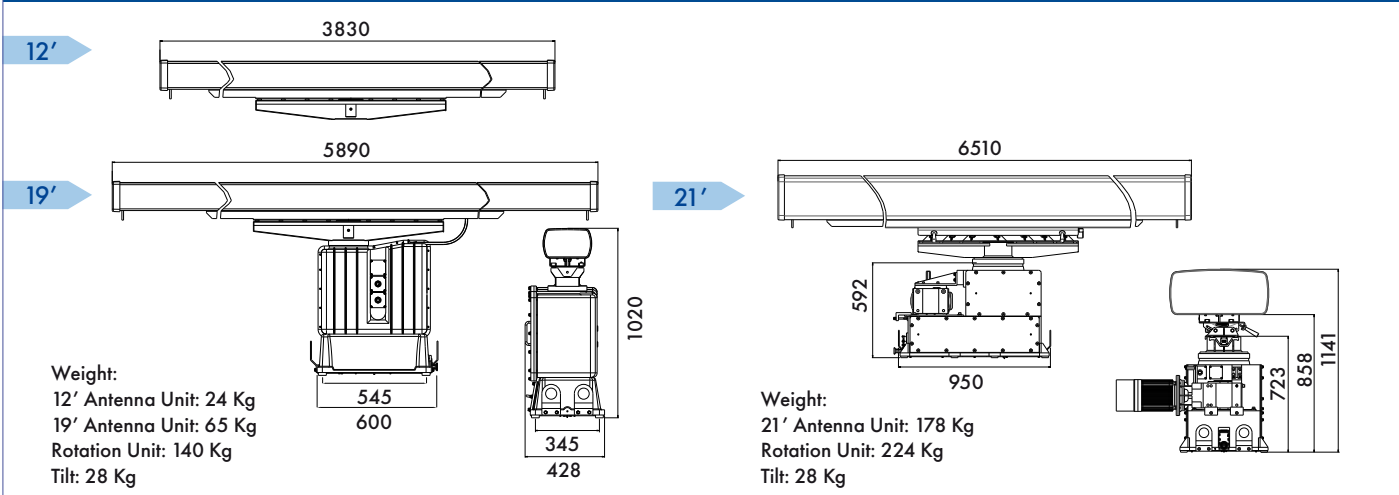
The equipment has been designed and manufactured to operate in the environmental conditions specified by the international IEC 60945 standard (ed. 4, 2002-8) as follows:

- 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/s<sup>2</sup> and for 2 h on each resonance, otherwise 2 h at 30 Hz in all three axes;
- Shock: 6 drops from 1 m.

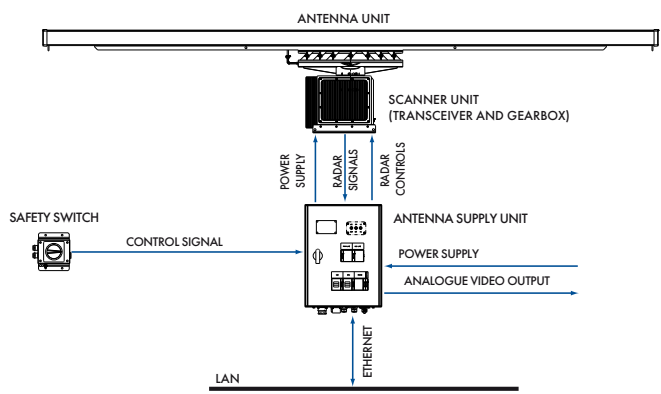
## CONFIGURATION UPMAST



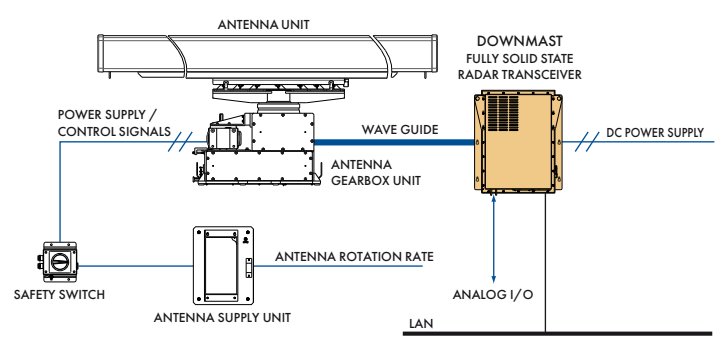
## CONFIGURATION DOWNMAST



### VERSION UPMAST RTX



### VERSION DOWNMAST RTX



This brochure should not be considered a contractual offer. The specifications given herein may be changed by the manufacturer, GEM elettronica, without notice.

