

Sentinel-200

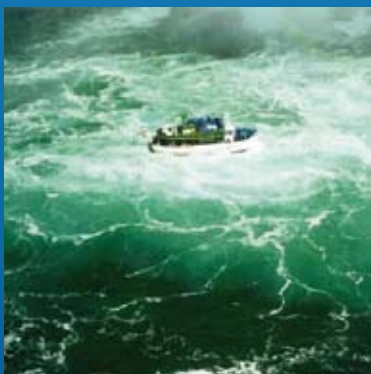
X-BAND FULL SOLID-STATE MARITIME AND COASTAL SURVEILLANCE RADAR
Prime, Cost-Effective & Advanced Technology for Superior Performance and Reliability



SENTINEL-200 is GEM elettronica's answer to the critical and demanding missions of real-time maritime and coastal surveillance.

SENTINEL-200 is the result of GEM elettronica 20-year experience in designing, manufacturing and installing coastal and ship-borne, high-performance radar systems.

SENTINEL-200 is the radar of choice to detect and against illegal maritime activities, secure coastline, protect vital maritime assets and support home-land security missions.



INNOVATION IN MARITIME RADAR TECHNOLOGY

Sentinel-200

Sentinel-200 features a sophisticated solid-state system architecture integrated with a robust and proven radar and signal processing techniques. As a result, SENTINEL-200 provides a reliable, dynamic and adaptive performance in any maritime and mission environment.

Sentinel-200 has an unique capability of detecting and tracking maritime surface targets. The radar is particularly apt in detecting very small targets (i.e., inflatable boats, RIBs and high-speed watercrafts) at long range, high sea-state and adverse meteorological conditions.

Sentinel-200 features an open-system architecture and can be interfaced and integrated with a large number of other sensors to provide a seamless surveillance network and accommodate several different mission requirements.

Sentinel-200 can also operate in Low Probability of Intercept (LPI) Mode when operating in hostile or Electronic Warfare (EW) environments while retaining its excellent detection and surveillance capabilities.

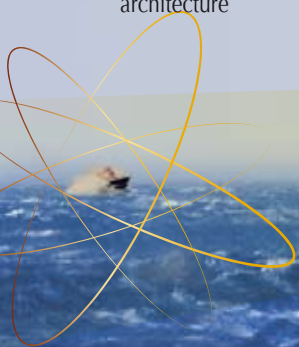
Sentinel-200 features an outstanding level of performance and operational reliability with its MTBF 20,000 hrs (whole system) and 365/24 continuous operation

MAIN CHARACTERISTICS

- Full Solid-State Radar Transmitter and Receiver (TRX) based on semiconductor technology
- 365/24 operation in any meteorological condition.
- Optimized detection of small surface targets through Doppler processing
- Rapid and accurate automatic target acquisition without operator intervention
- Simultaneous tracking of 1,000 tracks
- High azimuth and range resolutions
- Coherent Pulse Compression with Doppler processing, digital processing e clutter rejection.
- Automatic Target Acquisition and automatic track initialization
- Clutter suppression through CFAR and dedicated clutter maps
- PC-Based Signal Processor
- High-resolution, color display (1,600x1,200 pixel)
- Optimized and user-friendly man-machine interface
- Rugged, small and light configuration
- High reliability due to absence of consumable parts.
- Active and Passive Built-In-Test (BIT) for immediate fault localization and in support of all-level maintenance activities
- Continuous monitoring of functional parameters through the internal Performance Monitor System.
- Configurable in a LAN for remote access and control from one or more Control Centers
- Expandable and growth capabilities thanks to its open-system and modular architecture

OPERATIONS

- Multi-mission naval operations
- Maritime, coastal and port security surveillance
- Prevention of illegal activities, counter-narcotrafic and illegal immigration.
- EEZ monitoring and surveillance
- Search And Rescue (SAR) operations



ANTENNA UNIT

Length:	21' (other antennas available on request)
Type:	slotted waveguide array
Frequency:	9300 ÷ 9500 MHz
Polarization:	horizontal or circular
Rotation speed:	24 or 40 r.p.m.
Tolerable relative wind speed:	100 knots (operative) – 120 knots (non operative)
Gain:	31 dB
H-BW:	0.85°
V-BW:	25°

TRANSCEIVER

Transmitter type:	fully solid state
Peak power:	200 W (at WR90 output flange)
Average power:	up to 30 W, depending on mode
Duty:	up to 15%, depending on mode
RF spectrum occupation:	compliance with IMO/ITU rules
Selectable frequencies:	approx. 32 (between 9300 and 9500 MHz)
TX mode:	selectable
Receiver:	coherent linear
IF frequency:	75 MHz
Receiver bandwidth:	depending on mode
Dynamic range:	approx. 120 dB
Sidelobe suppression:	< - 55 dB
Minimum range:	40 m typical
Doppler processing:	FFT-based integration
Signal elaborations:	CFAR, GAIN, STC (manual and automatic), FTC (manual and automatic), interference rejection, echo enhancement
Output power control:	up to 4 levels
Main supply:	220 Vac, 50 Hz, 1φ
Reliability:	20,000 hours (whole system)
Availability:	99,995%
Maintenance:	major parts to be replaceable on field without calibration
Diagnostic:	BITE (including but not limited to transmitter power and receiver parameters)
Interfaces:	dual digital (Ethernet) independently configurable

RADAR DISPLAY UNIT

Presentation:	colour TV raster scan with day / night palettes, user friendly MMI and symbols and colours as per IMO/IHO recommendations.
Screen:	Ruggedised, low flicker, high-resolution 23" LCD based on Si-TFT technology, active matrix
PPI size:	≥ 340 mm
Pixel pitch:	0.31 mm
Radar target screen resolution:	1600 x 1200 pixels
Video levels:	15
Range scales (n.m.):	0.125 / 0.25 / 0.5 / 0.75 / 1.5 / 3 / 6 / 12 / 24 / 48 / 96
Max range PPI off centered:	more than 130 nm
VRM:	two, with continuous regulation
VRM resolution:	better than 0.42% of the selected scale
VRM precision:	0.001 nm up to 1.5 nm, 0.01 up to 12 nm and 0.1 nm elsewhere
EBL:	two, with continuous regulation from 0° to 360°
EBL resolution:	0.1°
EBL precision:	± 0.5°



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)

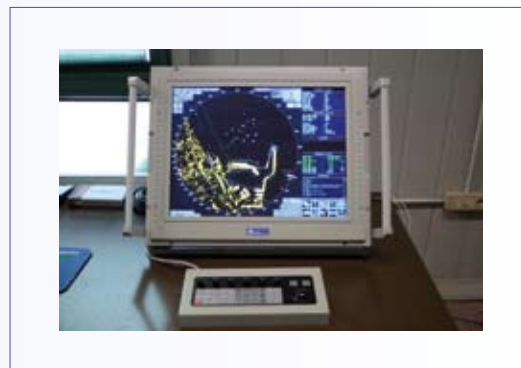
These environmental conditions are:

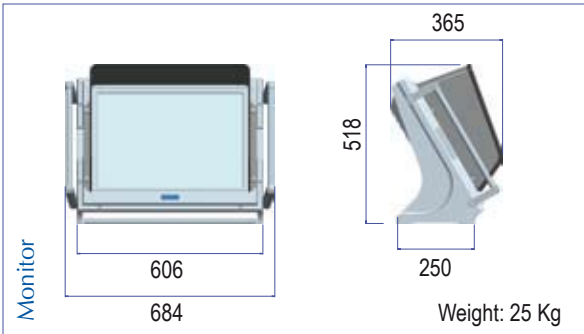
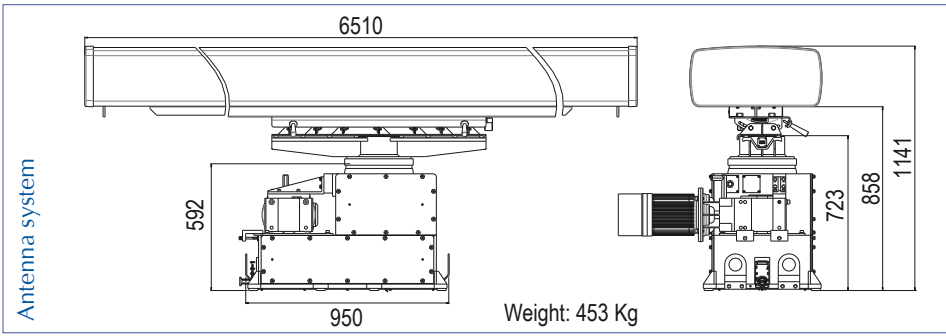
- Temperature range:
 - o Internal units: from -15°C to +55°C;
 - o External units: from -25°C to +55°C;
 - o Storage: from -30°C to +70°C;
 - o Note: Inclusion of optional heating unit lowers range to -40°C;
- Humidity: 95% at 40°C non-condensing (up to 100% at +40°C with de-hydrator);
- Vibrations: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

Software

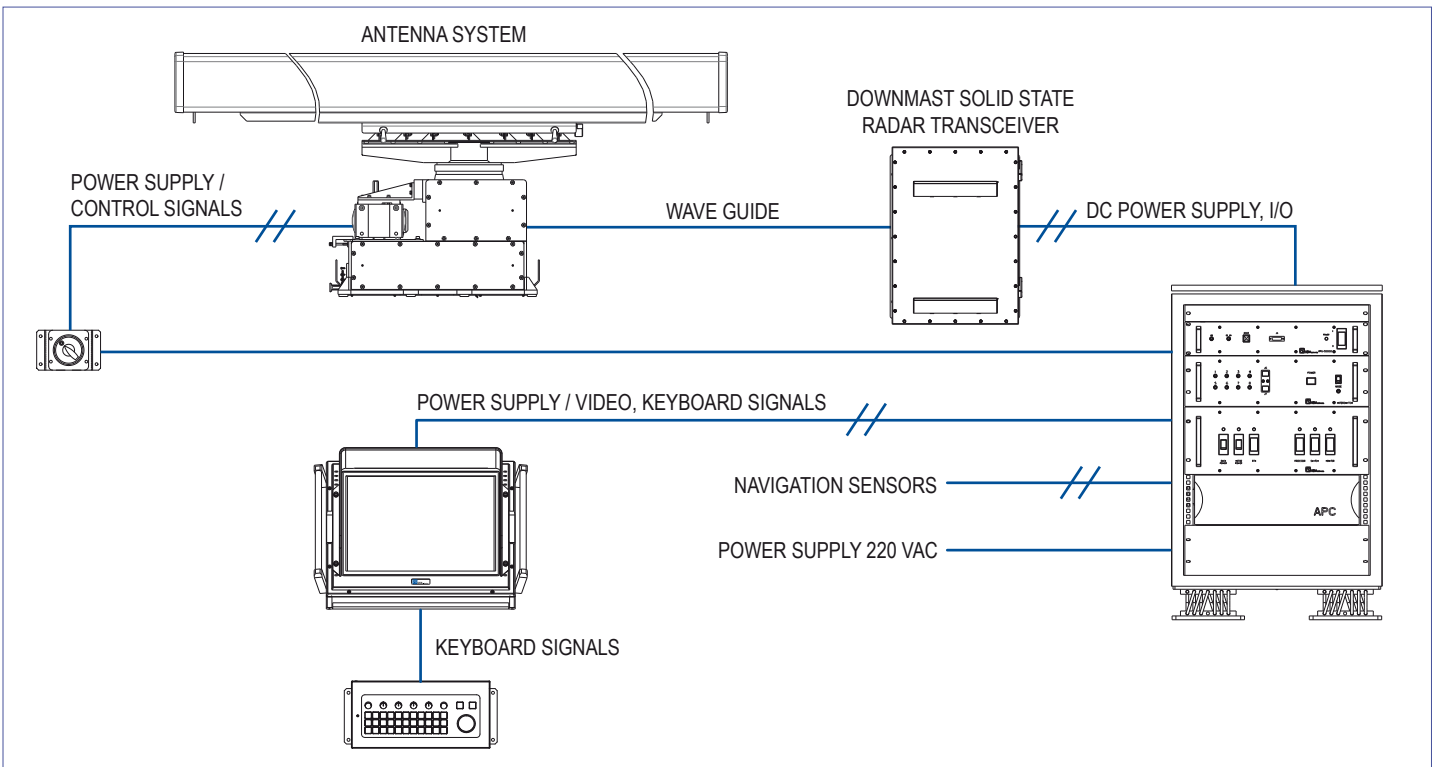
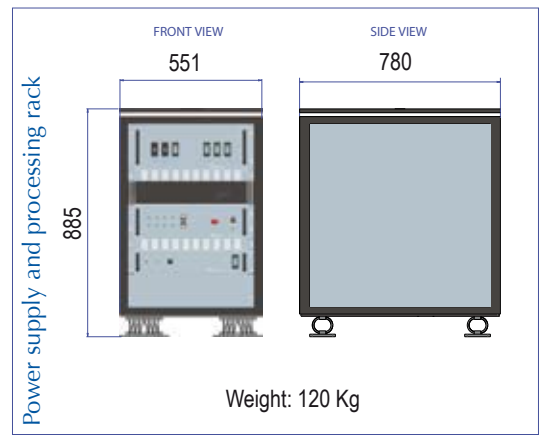
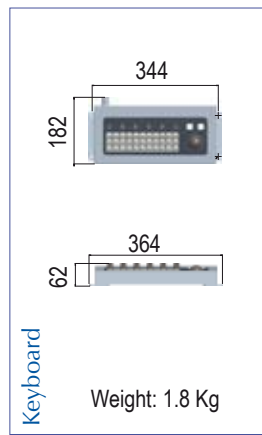
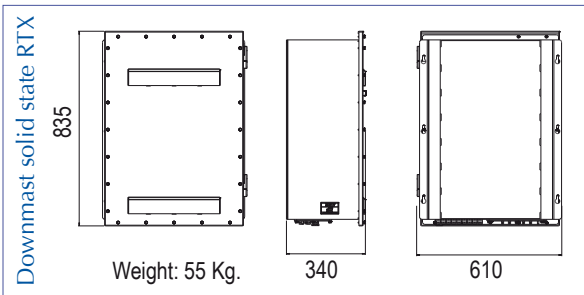
SIGNAL PROCESSING TECHNIQUES

- Adaptive CFAR (Constant False Alarm Rate)
- High-resolution, scan-to-scan processing
- Kalman filter, multi-track processing





Sentinel-200



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



Via Amerigo Vespucci, 9 - P.O. BOX 212
 63074 San Benedetto del Tronto (AP) - I T A L Y
 Tel. +39 0735 - 59051 - Telefax +39 0735 - 590540
 marketing@gemrad.com; www.gemrad.com

