GEM elettronica

Military & Defence

CBRS-100

Coastal Battery Remote Station

Main functions

- exchange data with the **C4I** consoles through ethernet link
- monitoring coastal areas for detecting potential targets
- transmit radar tracks data to Weapon System Platforms (WSP) through redundant radio system

Key features

- ability to perform surveillance utilizing its own sensors
- operation in sites lacking any kind of infrastructure
- transportability: the CBRS-100 is fitted with standard ISO interface, making it suitable for truck transportation to reach any site where the requested surveillance task is deemed necessary (truck not included);
- communication with the external world

SHELTERED RADAR STATION

- Rugged rack, including:
  - Radar processing unit
  - Power supply module
  - UPS (10 kW, 15 min.)
  - LAN ethernet switch
- N. 2 operator consoles with 20" LCD displays, keyboard and mouse
- Air-conditioning
- AIS
- Radio system mock-up for data link
- antenna supply unit

EXTERNAL MAST

- Radar Mast from 2.5 to 4 m high
- X-band upmast fully solid state radar sensor with safety switch
- Fiber-optic sensor for positioning and automatic sensor alignment

Structure:
sandwich panels, self fire-extinguishing foam inside two aluminium walls;

Electrical fan-out:
electric panel with magnetothermic switches, several 24Vdc and 220Vac points available;

Air conditioning:
based on heat pump splitter, to get 15°C÷25°C against tropical environment

Ruggedized EMC-compliant shelter

The shelter provides the space for up to two operators, accommodated on removable seats that will be anchored at the floor for safety purposes. The internal operating environment is optimized with the use of intensity and colour adjustable illumination.
The walls, the floor and the roof of the cabin are made of metallic wafer with internal insulating material. All panels are compliant with tempest provisions.
The cabin and all included equipment are powered through a connection panel, located on the front side of the cabin. In this panel, protected by an adjustable cover against rain, dust and sand, the connectors to the radar cable and an external power supply are placed.

Options

- Diesel power generator with switchboard
- Optronic subsystem
- Voice communications
- GPS
- Data Link

X-BAND UPMAST RADAR SENSOR

with antenna supply unit and safety switch

This sensor is especially designed for short-to-medium range coastal monitoring performed by fixed or mobile places. Using advanced digital techniques and very powerful interface capability due to adoption of Ethernet LAN. The sensor proposed for the Mobile Station relies upon fully solid state transceiver connected to 9' antenna unit. The power consumption less than 2 kW. Such sensor offers also the function of programmable sector blanking, basic for this kind of applications.

RADAR SCANNER UNIT

Transmitter chain

- fully solid state transceiver with 50 or 100 or 200W peak power
- 10 angular blanked sectors programmable in position and angle
- 27 selectable frequencies from 9300 to 9500 MHz
- PRF from 350 to 2500 Hz
- PW from 0.05 to 128 µs
- frequency diversity for intra-pulse decorrelation
- TX mode with linear/non-linear frequency modulation
- VSWR: not exceeding 1.4:1, continuously monitored with warning message and automatic emission reduction in case of anomalous value
- direct digital wave shape generation

Receiver chain

- low noise, fully solid state linear coherent radar receiver with high sensitivity for weak radar signals, to give better performances
- FFT-based Doppler filter for SCR improvement
- adoption of the most advanced pulse compression techniques for pulse compression and coherent processing;
- Front-end noise figure: 2.5 dB (typical)
- Intermediate Frequency: 75 MHz
- receiver bandwidth: up to 40 MHz
- pulse compression rates up to 150:1 in standard mode (up to 930:1 in enhanced mode; in this case, equivalent pulse power is computed as 186 kW for the 200 W radar model)
- manual or automatic (A-STC) gain control
- intra-pulse correlation algorithms (i.e. diversity mode) in order to reduce sea clutter and cancel undesirable multi-path propagation effects
- side lobe suppression: down to -55 dB (depending on mode of operation)
- minimum range: 30 m
- maximum range discrimination: 30 m in standard mode (15 m in enhanced mode)

ARRAY MODEL

Length:	9 feet
Type:	slotted waveguide
Frequency band:	9410 ± 60 MHz
Gain:	31dBi
Polarization:	horizontal
Horizontal beamwidth to –3dB:	≤ 0.85°
Vertical beamwidth to –3dB:	~ 25°
Sidelobes within 10°:	-26dB
Sidelobes outside 10°:	-30dB
Rotation speed:	22 rpm
Tolerable relative wind speed:	100 knots

RADAR PROCESSOR:

PLOT EXTRACTOR AND TRACKER

- Automatic or manual track initialisation;
- Management of clutter maps and inhibition zones.
- Automatic or manual track initialisation;
- Simultaneous tracking of up to 1000 targets;
- Max target speed of 100 knots;
- Max acquisition range of 100 n.m.
- Single VME board

The proposed AHRS system is a strapdown unit based on state of the art Fiber Optic Gyroscope technology; it gives an accurate, real-time reading of true north as well as control of attitude without GPS aid. Having no moving parts, it has an intrinsic high reliability and does not require maintenance or recalibration. Besides the high reliability, the AHRS system offers a much lower settling time and a higher resolution with respect to a traditional gyrocompass.

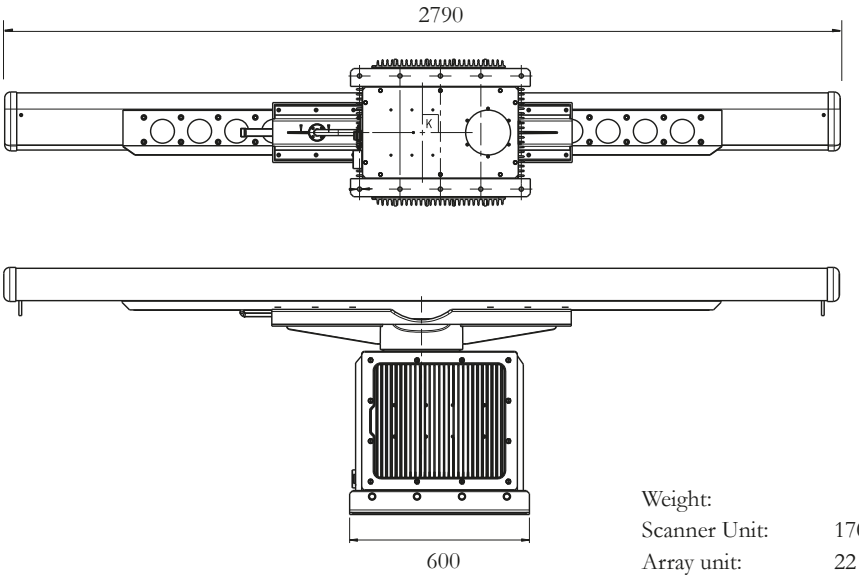
AHRS

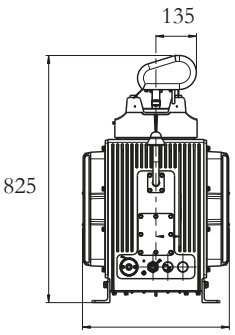
(Attitude Heading Reference System)

Accuracy	
Heading:	< 0.2° sec lat
Roll / Pitch:	< 0.05°
Range	
Heading:	0° ÷ 360°
Attitude data:	± 60°
General features	
Settling time:	< 10 min. (static conditions)
Full accuracy settling time:	< 30 min. (all conditions)
Interfaces	
Output:	7 serial lines
Input:	3 serial lines
Output protocol:	NMEA 0183, binary
I/O serial:	RS232 or RS422 (user definable)
Ethernet LAN:	N. 1 available

Power supply	
Voltage:	24 Vdc, –10% +30%, 115 / 220 Vac available with power supply unit
Power absorption:	< 15 W typical 12 W
Protection:	agains over-voltage, low voltage and inversion of polarity
Environmental features	
Operative temperature:	0° C ÷ 55 ° C
Storage temperature:	-40° C ÷ 80 ° C
Damp heat:	up to 95% at 40°C
Vibrations:	fully compliant with IEC-60945
Waterproof:	in accordance with IP66 standard
E.M.I.	fully compliant with IEC-60945
MTBF:	3000 hours
Weight and dimensions	
Width:	328 mm
Depth:	177 mm
Height:	167.5 mm
Weight:	6.8 Kg

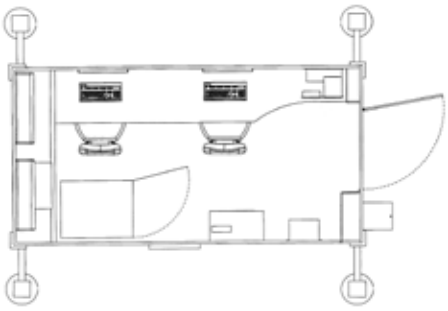
RADAR SENSOR





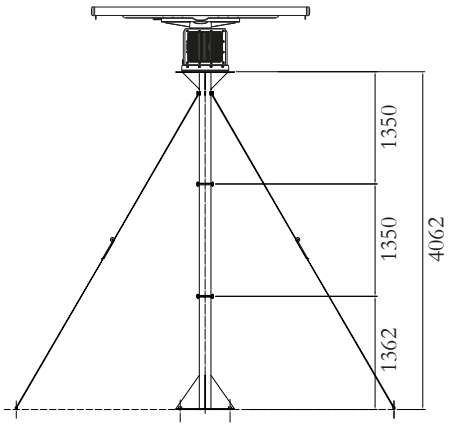
Weight:
Scanner Unit: 170 Kg
Array unit: 22 Kg

SHELTER

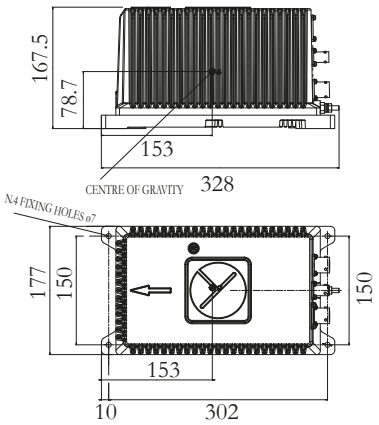


Nominal Length: 4.010 m;
Nominal Width: 2.290 m;
Nominal Height: 2.200 m;

MAST FOR RADAR SENSOR



AHRS



Weight: 6.8 Kg.

SURVEILLANCE & SECURITY

GUIDANCE, NAVIGATION & POSITIONING

MILITARY & DEFENCE

MARINE ELECTRONICS