RBM4

RACON

RBM4

Frequency-agile Radar Beacon

The RBM4 is a latest-generation (frequency-agile) Radar Beacon, which works in the marine X and S radar bands, providing an important information to mariners under whatever meteorological conditions.

Advanced electronic technology

The RBM4 incorporates advanced electronic technology components from radar systems, applied to navigation aids, such as programmable logic and flexible circuit antenna arrays.

Programmed Morse code

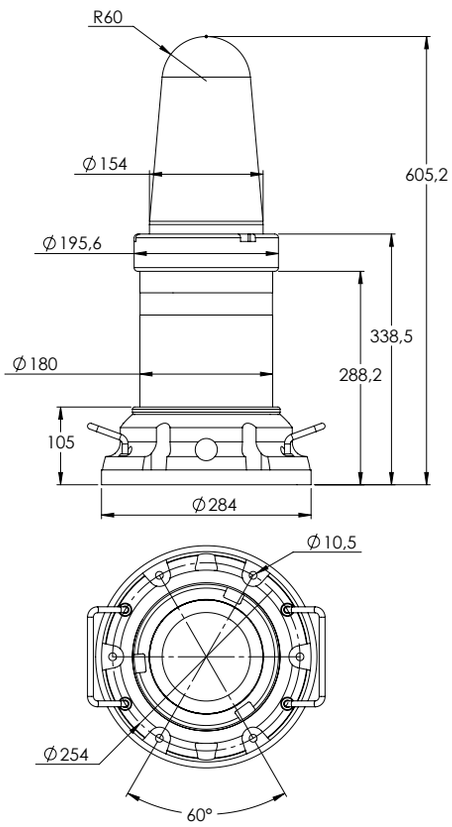
The Racon actively answers all active radars in the vicinity with a user programmed Morse code which identifies its location by appearing on the radar display.

Designed according to IALA Recommendations and IMO Standards.

FEATURES

- *Response on X and S bands.*
- *Advanced Side-Lobe Suppression system (SLS) to better discriminate the genuine pulses to be responded.*
- *The length of the Morse code response matches the display range setting by programming the duration of the answer according to the pulse length before installation.*
- *Transmitter power: 1W in both bands.*
- *Configurable receiver sensitivity.*
- *RS-232 communication serial port.*
- *Configuration via PC or Android APP (tablet and mobile).*
- *Protection against reverse polarity and transient overvoltages.*
- *Wide power supply range.*
- *Low power consumption.*
- *Light weight.*
- *Maintenance free.*

RBM4



Installation axis (Standard)

Android APP

Specifications subject to change without previous notice.

Specifications

Response encoding:	15 nos. Morse codes, according IMO A530. (Others under request).
Output power:	Typical 1W (X and S bands).
Response delay:	<700 ns (X and S bands).
Speed response (each band):	10 KHz (X and S bands).
Azimuth response:	360º.
Communications and programming:	RS-232 serial port. 3 nos. status logic outputs. 1 no. control logic input.
Programmable activity:	0 to 60 seconds.
Programmable idle mode:	0 to 60 seconds.
Side-Lobe Suppression (SLS):	Advanced.
Temperature range:	From -40º to +70ºC.
Materials:	Aluminium and polyamide.
Watertightness degree:	IP 67.
Weight:	14 kg.
Fixings:	6 nos. Ø10 drill holes each 60° in a 254 mm diameter.

Frequency range

X band:	9,300 - 9,500 MHz.
S band:	2,900 - 3,100 MHz.

Receptor sensitivity (adjustable)

X band:	-50 dBm.
S band:	-50 dBm.

Antenna

Broadcasting uniformity:	- 2 dB in X+S bands over 360° (horizontal).
Vertical divergence:	- 3 dB X and S bands / 22º vertical.

Polarisation

X band:	Horizontal.
S band:	Horizontal and vertical.

Power supply range

Range:	From 9 to 36 V d.c.

Power consumption

Average nominal:	120 mA @ 12 V (1,44 W).
Maximum (X+S):	1.400 mA @ 12 V (16,8 W).
Idle:	<0,1 W.

Options

Adaptation base, diameter 200 mm.

Lifting and carrying handles.

ATEX version, RBM4-EX.

Interface module for telecontrol.

Accessories

Programming cable.

Power cable.

User manual.

MSM

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AIS, RACON & REMOTE MONITORING

MTU AIS-C

UNIVERSAL COMPACT AIS TRANSPONDER

MTU AIS-C

Automatic information on the GPS position

The MTU AIS-C transponder is a compact AIS AtoN device, providing automatic information on the GPS position of the marine aid to navigation (AtoN); thus making easy the location and identification of buoys, beacons and lighthouses on a vessel or an AIS Base Station chart.

GPS antenna inside

A triple environmental protection housing compactly holds this device and the GPS antenna inside. The transponder is able to send status signals and alarms signals coming from any kind of beacon, either rotating or flashing one, without need to install any additional sensors.

Minimum energy consumption

Additionally, the MTU AIS-C can transmit meteorological and oceanographic data, such as current, wave height, tides, and wind direction and intensity; all this with a minimum energy consumption.

The MTU AIS-C complies with IMO, IEC, ITU and IALA Standards.

FEATURES

- *Broadcasting of aids-to-navigation (AtoN) identification data on Message 21, as well as basic data and operating status.*
- *Able to transmit meteorological and oceanographic data on Message 8.*
- *Ideal for remote monitoring and control of beacons, providing alarms and status on Message 6.*
- *Manufactured according to IEC AIS Aids to Navigation, IEC 62320-2, IEC 60945, IEC 61108-1, IEC 61162-1/2, ITU-R M.1371-4, IALA A-126 Standards.*
- *Certifications approved by BSH, R&TTE, BSH, FCC (USA) and IC (Canada).*
- *Two versions are available:*
  - *MTU AIS-C1: Type 1, transmitter only.*
  - *MTU AIS-C3: Type 3, transmitter-receiver.*
- *Capability of generating virtual and synthetic navaids (AtoN), and also repeater function.*
- *Configuration via software under Windows environment and commands via VDL radio.*
- *Remote Monitoring Centre Software via AIS available.*

MTU AIS-C

MESSAGE 21 CONTENT

MMSI number / Name of AtoN.
WGS84 position.
GPS time and date.
Type of AtoN.
AtoN indicator: Real, Synthetic, Virtual.
Out of position alarm.
Racon failure alarm.
Lantern failure alarm.
Day-Night mode lantern status.

POWER SUPPLY

Power input:	From 10 to 32V c.c.
Typical consumption (*):	Type 1: 0.06 Ah/day.
	Type 3: 0.5 Ah/day.

(*) Emission every 3 min, at 12.5W.

MTU AIS-C RF MODULE

Frequency range:	156,025 to 162,025 MHz.
Transmission power:	1, 2, 5, 12.5W (adjustable).
Number of receivers:	2.
Receiver sensitivity:	< -107 dBm (Type 3).
AIS 1 frequency:	161,975 MHz 25 Khz.
AIS 2 frequency:	162,025 MHz 25 Khz.
Auto-diagnosis:	Emission power test and SWR measurement.

TRANSMISSION

Possible messages:	21, 6, 8, 12, 14, 25, 26.
Standard transmission:	Every 3 min, adjustable.
Control:	Type 1: FATDMA. Type 3: FATDMA, RATDMA.

GPS

Integrated receptor:	50 channels. IEC 61108-1.
Antenna:	Active 20 dB, internal.

VERSIONS

MTU AIS-C Type 1:	Transmitter only.
MTU AIS-C Type 3:	Transmitter and receiver.

MECHANICS AND ENVIRONMENTAL

Dimensions:	Ø188 x 235 mm.
Weight:	1.3 kg. Unsupported.
Temperature range:	-25º to 55ºC.
Watertightness:	IP 67.
Bird spikes:	4 Uds. Detachable.

MESSAGE 6 CONTENT

MMSI number / Name of AtoN.
Battery voltage (V).
Lantern current (A).
Solar current (A).
Day-Night mode lantern status.
Lantern failure.
Racon failure.
Out of position.
Low battery voltage.
Flasher failure.
LED diodes failure.
Wrong flashing rhythm.
Excess consumption of the lantern.

MESSAGE 8 CONTENT

MMSI number.

GPS time and date.

Air temperature/wind: direction and speed, average and peak. Atmospheric pressure: average and trend.

Marine current and Tide level.

Water temperature.

MTU AIS-C INTERFACES

Digital I/O:	5 nos. opto-coupled inputs. 2 nos. relay outputs. 4 nos. non-isolated adjustable inputs/outputs.
Analogical Inputs:	2 nos. isolated inputs 0-36V. 3 nos. non-isolated inputs 0-32V. 1 no. current sensor 0.1-5A.
Ports:	RS-422 bidirectional port 38,400 baud. NMEA 0183. RS-422 input port 38,400 baud. NMEA 0183. 2 nos. adjustable RS-232 ports. RS232 38400 NMEA0183 Configuration USB port. SDI12 Bus.

STANDARDS

IEC AIS Aids to Navigation.	IALA A-126. Edition 1.4.
IEC 62320-2. Edition 1.	IEC 61162-1/2. Edition 2.0.
IEC 60945. Edition 4.	ITU-R M.1371-4.
IEC 61108-1.	

OPTIONS

Weather station.
Tide sensor (on-shore).
Glonass.
Other parameters and sensors available.

Specifications subject to change without previous notice.

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MTU AIS

UNIVERSAL AIS TRANSPONDER

MTU AIS

Automatic information on the GPS position

The MTU AIS unit is an AIS AtoN transponder device housed in a IP 67 watertight box, providing automatic information on the GPS position of the marine aid to navigation (AtoN); thus making easy the location and identification of buoys, beacons and lighthouses on a vessel or an AIS Base Station chart.

Does not require the installation of additional sensors

This unit is designed to be connected to any beacon of the market with a serial port and NMEA 0183 protocol available, thus transmitting operating status data.

Minimum energy consumption

Additionally, the MTU AIS can transmit meteorological and oceanographic data, such as current, wave height, tides, and wind direction and intensity; all this with a minimum energy consumption.

The MTU AIS complies with IMO, IEC, ITU and IALA Standards.

FEATURES

- *Broadcasting of aids-to-navigation (AtoN) identification data on Message 21, as well as basic data and operating status.*
- *Able to transmit meteorological and oceanographic data on Message 8.*
- *Ideal for remote monitoring and control of beacons, providing alarms and status on Message 6.*
- *Manufactured according to IEC AIS Aids to Navigation, IEC 62320-2, IEC 60945, IEC 61108-1, IEC 61162-1/2, ITU-R M.1371-4, IALA A-126 Standards.*
- *Two versions are available:*
  - *MTU AIS-1: Type 1, transmitter only.*
  - *MTU AIS-3: Type 3, transmitter-receiver.*
- *Capability of generating virtual and synthetic navaids (AtoN), and also repeater function.*
- *Configuration via software under Windows environment and commands via VDL radio.*
- *Position alarm generator by chain breaking (only buoys).*
- *Remote Monitoring Centre Software via AIS available.*

MTU AIS

MESSAGE 21 CONTENT

MMSI number / Name of AtoN.
WGS84 position.
GPS time and date.
Type of AtoN.
AtoN indicator: Real, Synthetic, Virtual.
Out of position alarm.
Racon failure alarm.
Lantern failure alarm.
Day-Night mode lantern status.

POWER SUPPLY

Power input:	From 10 to 32V c.c.
Typical consumption (*):	Type 1: 0.06 Ah/day.
	Type 3: 0.5 Ah/day.

** Emission every 3 min, at 12.5W.*

MTU AIS RF MODULE

Frequency range:	156,025 to 162,025 MHz.
Transmission power:	1, 2, 5, 12.5W (adjustable).
Number of receivers:	2.
Receiver sensitivity:	< -107 dBm (Type 3).
AIS 1 frequency:	161,975 MHz 25 Khz.
AIS 2 frequency:	162,025 MHz 25 Khz.
Auto-diagnosis:	Emission power test and SWR measurement.

TRANSMISSION

Possible messages:	21, 6, 8, 12, 14, 25, 26.
Standard transmission:	Every 3 min, adjustable.
Control:	Type 1: FATDMA. Type 3: FATDMA, RATDMA.

GPS

Integrated receptor:	50 channels. IEC 61108-1.
Antenna:	Active 35 dB, external.

VERSIONS

MTU AIS Type 1:	Transmitter only.
MTU AIS Type 3:	Transmitter and receiver.

MECHANICS AND ENVIRONMENTAL

Dimensions:	180 x 150 x 90 mm.
Weight:	1.6 kg.
Temperature range:	-25º to 55ºC.
Watertightness:	IP 67.

MESSAGE 6 CONTENT

MMSI number.
Battery voltage (V).
Lantern current (A).
Solar current (A).
Day-Night mode lantern status.
Lantern failure.
Racon failure.
Out of position.
Low battery voltage.
Flasher failure.
LED diodes failure.
Wrong flashing rhythm.
Excess consumption of the lantern.

MESSAGE 8 CONTENT

MMSI number.

GPS time and date.

Air temperature/wind: direction and speed, average and peak.
Atmospheric pressure: average and trend.

Tide level.

Water temperature.

MTU AIS INTERFACES

Digital I/O:	5 nos. opto-coupled inputs. 2 nos. relay outputs. 4 nos. non-isolated adjustable inputs/outputs.
Analogical Inputs:	2 nos. isolated inputs 0-36V. 3 nos. non-isolated inputs 0-32V. 1 no. current sensor 0.1-5A.
Ports:	RS-422 bidirectional port 38,400 baud. NMEA 0183. RS-422 input port 38,400 baud. NMEA 0183. Bidirectional port 38,400 baud. NMEA 0183. Input port 38,400 baud. NMEA 0183. 2 nos. adjustable RS-232 ports. Configuration USB port. SDI12 Bus.

STANDARDS

IEC AIS Aids to Navigation.	IALA A-126. Edition 1.4.
IEC 62320-2. Edition 1.	IEC 61162-1/2. Edition 2.0.
IEC 60945. Edition 4.	ITU-R M.1371-4.
IEC 61108-1.	

OPTIONS

Weather station.
Tide sensor (on-shore).
Glonass.
Other parameters available.

Specifications subject to change without previous notice.

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MTA

Automatic information on the GPS position

The MTA unit is an AIS AtoN transponder device housed in a IP 67 watertight box, providing automatic information on the GPS position of the marine aid to navigation (AtoN); thus making easy the location and identification of buoys, beacons and lighthouses on a vessel or an AIS Base Station chart.

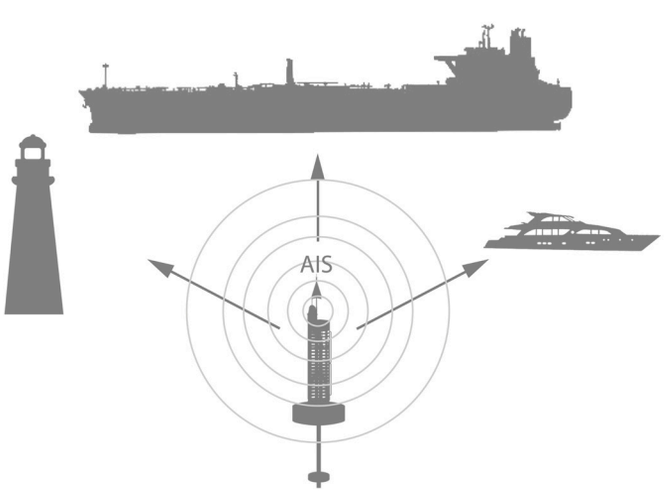
Designed to connect to any beacon

This unit is designed to be connected to any beacon of the market with a serial port and NMEA 0183 protocol, thus transmitting operating status data.

Minimum energy consumption

Thanks to its minimum energy consumption, those devices can be integrated in buoys and on-shore lanterns.

The MTA unit complies with IMO, IEC, ITU and IALA Standards.



FEATURES

- *Broadcasting of aids-to-navigation (AtoN) identification data on Message 21, as well as basic data and operating status.*
- *Ideal for remote monitoring and control unit to NMEA 0183 protocol lanterns, providing alarms and status on Message 6.*
- *Manufactured according to IEC AIS Aids to Navigation, IEC 62320-2, IEC 60945, IEC 61108-1, IEC 61162-1/2, ITU-R M.1371-4, IALA A-126 Standards.*
- *Minimum energy consumption (<0.1 Ah/day, Type 1).*
- *Two versions are available:*
  - *MTA-1: Type 1, transmitter only.*
  - *MTA-3: Type 3, transmitter-receiver.*
- *Capability of generating virtual and synthetic navaids (AtoN), and also repeater function.*
- *Configuration via software under Windows environment and commands via VDL radio.*
- *Position alarm generator by chain breaking (only buoys).*
- *Remote Monitoring Centre Software via AIS available.*

MTA

MESSAGE 21 CONTENT

MMSI number / Name of AtoN.
WGS84 position.
GPS time and date.
Type of AtoN.
AtoN indicator: Real, Synthetic, Virtual.
Out of position alarm.
Racon failure alarm.
Lantern failure alarm.
Day-Night mode lantern status.

POWER SUPPLY

Power input:	From 10 to 32V c.c.
Typical consumption (*):	Type 1: 0.06 Ah/day.
	Type 3: 0.5 Ah/day.

(*) Emission every 3 min, at 12.5W.

MTA RF MODULE

Frequency range:	156,025 to 162,025 MHz.
Transmission power:	1, 2, 5, 12.5W (adjustable).
Number of receivers:	2.
Receiver sensitivity:	< -107 dBm (Type 3).
AIS 1 frequency:	161,975 MHz 25 Khz.
AIS 2 frequency:	162,025 MHz 25 Khz.
Auto-diagnosis:	Emission power test and SWR measurement.

TRANSMISSION

Possible messages:	21, 6, 8, 12, 14, 25, 26.
Standard transmission:	Every 3 min, adjustable.
Control:	Type 1: FATDMA. Type 3: FATDMA, RATDMA.

GPS

Integrated receptor:	50 channels. IEC 61108-1.
Antena:	Active 35 dB, external, marine type.
Optional:	Glonass.

VERSIONS

MTA Type 1:	Transmitter only.
MTA Type 3:	Transmitter and receiver.

Specifications subject to change without previous notice.

MESSAGE 6 CONTENT (NMEA 0183 INTERFACE)

MMSI number.
Battery voltage (V).
Lantern current (A).
Solar current (A).
Day-Night mode lantern status.
Lantern failure.
Racon failure.
Out of position.
Low battery voltage.
Flasher failure.
LED diodes failure.
Wrong flashing rhythm.
Excess consumption of the lantern.

MTA INTERFACES

Digital I/O:	3 inputs for beacon and racon.
Ports:	RS422 Bidirectional port 38,400 baud. NMEA 0183. RS422 Input port 38,400 baud. NMEA 0183. Configuration USB port.

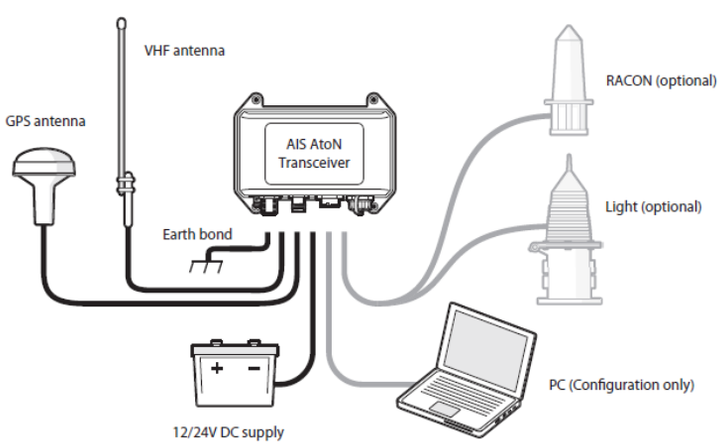
STANDARDS

IEC AIS Aids to Navigation.	IALA A-126. Edition 1.4.
IEC 62320-2. Edition 1.	IEC 61162-1/2. Edition 2.0.
IEC 60945. Edition 4.	ITU-R M.1371-4. 2010.
IEC 61108-1.	

MECHANICS AND ENVIRONMENTAL

Dimensions:	172 x 128 x 53 mm.
Weight:	350 g.
Temperature range:	-25º to 55ºC.
Watertightness:	IP 67.

BEACON TO AIS MTA CONNEXION.



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MAK

Incorporates its own solar power supply

The MAK is a solar kit that houses an AIS AtoN device and its own solar power supply, thus completing a compact and self-powered unit.

Automatic information on the GPS position

The AIS AtoN device provides automatic information on the GPS position of the marine aid to navigation (AtoN); thus making easy the location and identification of buoys, beacons and lighthouses on a vessel or an AIS Base Station chart.

Ideal for places without power system available

The MAK compact Kit is readily installed in any navaids station. Just fixing will be required and will be ready to go. It is ideal for those places without power system available where an AIS is required.

Our range of AIS AtoN complies with IMO, IEC, ITU and IALA Standards.

FEATURES

- *The MAK Kit can house any type of the following AIS AtoN devices: MFAIS, MTA and MTU AIS.*
- *The AIS device transmits aids to navigation identification (AtoN) identification data on Message 21, such as basic operating status information.*
- *Manufactured according to IEC AIS Aids to Navigation, IEC 62320-2, IEC 60945, IEC 61108-1, IEC 61162-1/2, ITU-R M.1371-4, IALA A-126 Standards.*
- *Minimum energy consumption (<0.06 Ah/day, Type 1).*
- *Two versions are available:*
  - *MAK-1: Type 1, transmitter only.*
  - *MAK-3: Type 3, transmitter-receiver.*
- *Capability of generating virtual and synthetic navaids (AtoN), and also repeater function.*
- *Configuration via software under Windows environment and commands via VDL radio.*
- *Position alarm generator by chain breaking (only buoys).*
- *Remote Monitoring Centre Software via AIS available.*

MAK

MESSAGE 21 CONTENT

MMSI number / Name of AtoN.
WGS84 position.
GPS time and date.
Type of AtoN.
AtoN indicator: Real, Synthetic, Virtual.
Out of position alarm.
Racon failure alarm.
Lantern failure alarm.
Day-Night mode lantern status.

MAK RF MODULE

Frequency range:	156,025 to 162,025 MHz.
Transmission power:	1, 2, 5, 12.5W (adjustable).
Number of receivers:	2.
Receiver sensitivity:	< -107dBm (Type 3).
Fréquence AIS 1:	161,975 MHz 25 Khz.
Fréquence AIS 2:	162,025 MHz 25 Khz.
Auto-diagnosis:	Emission power test and SWR measurement.

TRANSMISSION

Possible messages:	21, 6, 8, 12, 14, 25, 26.
Standard transmission:	Every 3 min, adjustable.
Control:	Type 1: FATDMA. Type 3: FATDMA, RATDMA.

INTERNAL GPS

Integrated receptor:	50 channels. IEC 61108-1.
Antenna:	Active 35 dB, internal.

48 Ah, Led Crystal®,

BATTERY AND SOLAR MODULES

Solar modules:	4 units of 7,5W each.
Battery:	48 Ah, Led Crystal®, free of mantenimient.
Autonomy without solar charge:	Up to 50 days.

Specifications subject to change without previous notice.

REMOTE CONTROL SIGNALS (MESSAGE 6)

Described in detail in the relevant fact sheet MTA.

STANDARDS

IEC AIS Aids to Navigation.	IALA A-126. Edition 1.4.
IEC 62320-2. Edition 1.	IEC 61162-1/2. Edition 2.0.
IEC 60945. Edition 4.	ITU-R M.1371-4. 2010.
IEC 61108-1.	

MECHANICS AND ENVIRONMENTAL

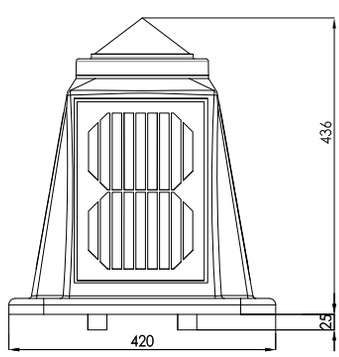
Base:	Reinforced polyamide and rotomoulded polyethylene.
Vibration resistance:	MIL-STD-202G, Method 204D (5G).
Shock resistance:	MIL-STD-202G, Method 213B.
Watertightness:	IP 68.
Fixings:	Internal of 4 bolts in a 200mm diameter / External of 4 bolts in a 465mm diameter.
Humidity resistance:	100%. Pressure-compensation valve to avoid condensation.
Temperature range:	From -25º to 55ºC.
Hardware:	Stainless steel.

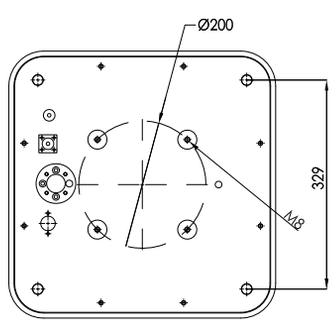
OPTIONS (*)

Weather station.
Tide sensor (on-shore).
GLONASS.

External or integrated antenna as an option.

(*) Other parameters available.





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MFAIS

AIS LANTERN MONITORING MODULE

MFAIS

Perfect integration

MFAIS circuits are AIS AtoN devices integrated inside our LED lanterns.

Automatic information on the GPS position

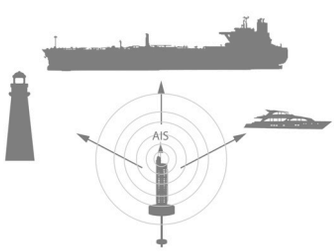
The AIS AtoN transponder provides automatic information on the GPS position of the marine aid to navigation (AtoN); thus making easy the location and identification of buoys, beacons and lighthouses on a vessel or an AIS Base Station chart.

Minimum energy consumption

Thanks to its minimum energy consumption, those circuits can be integrated with our self-powered lanterns.

Its modular construction allows its installation subsequently to the purchase of a MSM lantern.

MFAIS complies with IMO, IEC, ITU and IALA Standards.



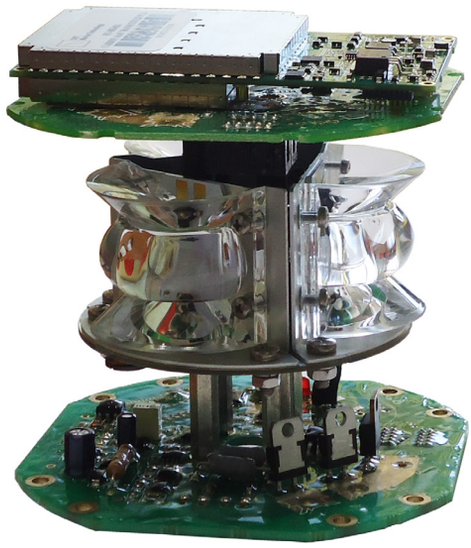
FEATURES

- *Broadcasting of aids-to-navigation (AtoN) identification data on Message 21, as well as basic data and operating status.*
- *Ideal for remote monitoring and control of MSM lanterns, providing alarms and status on Message 6.*
- *Manufactured according to IEC AIS Aids to Navigation, IEC 62320-2, IEC 60945, IEC 61108-1, IEC 61162-1/2, ITU-R M.1371-4, IALA A-126 Standards.*
- *Minimum energy consumption (<0.06 Ah/day, Type 1).*
- *Two versions are available:*
  - *MFAIS-1: Type 1, transmitter only.*
  - *MFAIS-3: Type 3, transmitter-receiver.*
- *Capability of generating virtual and synthetic navaids (AtoN), and also repeater function.*
- *Configuration via software under Windows environment and commands via VDL radio.*
- *Position alarm generator by chain breaking (only buoys).*
- *Remote Monitoring Centre Software via AIS available.*

MFAIS

MESSAGE 21 CONTENT

MMSI number / Name of AtoN.
WGS84 position.
GPS time and date.
Type of AtoN.
AtoN indicator: Real, Synthetic, Virtual.
Out of position alarm.
Racon failure alarm.
Lantern failure alarm.
Day-Night mode lantern status.



POWER SUPPLY

Power input:	10 to 32V c.c.
Typical consumption (*):	MFAIS-1: 0.06 Ah/day.
	MFAIS-3: 0.5 Ah/day.

(*) Emission every 3 min, at 12.5W.

MFAIS RF MODULE

Frequency range:	156,025 to 162,025 MHz.
Transmission power:	1, 2, 5, 12.5W (adjustable).
Number of receivers:	2.
Receiver sensitivity:	< -107 dBm (Type 3).
AIS 1 frequency:	161,975 MHz 25 Khz.
AIS 2 frequency:	162,05 MHz 25 Khz.
Auto-diagnosis:	Emission power test and SWR measurement.

TRANSMISSION

Possible messages:	21, 6, 12,14, 25, 26.
Standard transmission:	Every 3 min, adjustable.
Control:	Type 1: FATDMA. Type 3: FATDMA, RATDMA.

GPS

Integrated receptor:	50 channels. IEC 61108-1.
Antenna:	Active 35 dB, in the beacon.
Option:	Glonass.

VERSIONS

MFAIS Type 1:	Transmitter only.
MFAIS Type 3:	Transmitter and receiver.

STANDARDS

IEC AIS Aids to Navigation.	IALA A-126. Edition 1.4.
IEC 62320-2. Edition 1.	IEC 61162-1/2. Edition 2.0.
IEC 60945. Edition 4.	ITU-R M.1371-4.
IEC 61108-1.	

LANTERN STATUS SIGNALS (MESSAGE 6)

MMSI number / Name of AtoN.
Battery voltage (V).
Lantern current (A).
Solar current (A).
Day-Night mode lantern status.

ALARM SIGNALS (MESSAGE 6)

Lantern failure alarm.
Racon failure alarm.
Out of position alarm.
Low battery voltage.
Flasher failure.
LED diodes failure.
Wrong flashing rhythm.
Excess consumption of the lantern.

COMMAND FROM CONTROL CENTRE TO BEACON (Type 3) (MESSAGE 6)

Remote beacon switching-on.
Remote beacon switching-off.
General system reset.
Other status and alarm signals available under request.

Specifications subject to change without previous notice.

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MFGSM

GSM REMOTE MONITORING MODULE

MFGSM

Communication through GSM mobile phone messages

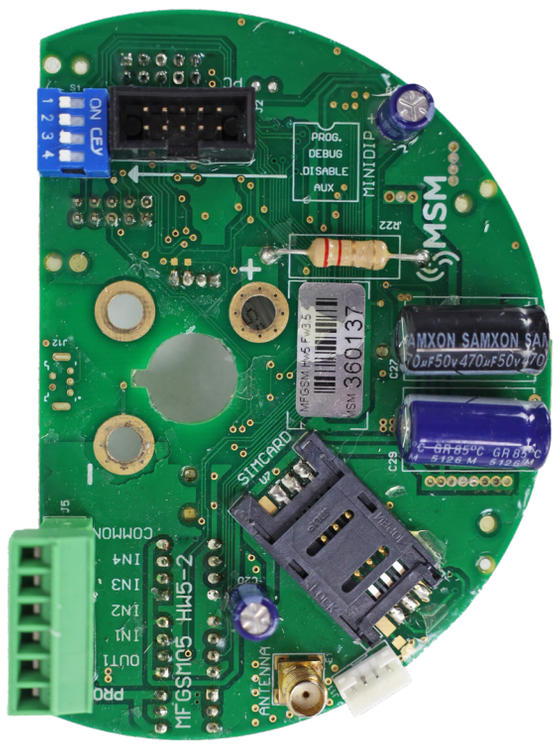
MFGSM circuits are small and compact remote monitoring devices, fitted inside our LED lanterns. The sending and receiving remote control signals is done through GSM mobile phone messages.

Up to 10 configured users

Signals and alarms are sent up to 10 configured users. Users can be mobile phones or control centres. Therefore, the ideal complement to the system is the GLOBAL NETCOM Remote Monitoring Control Centre, in order to process and manage all the information exchanged.

Easy installation

Its modular construction allows its installation subsequently to the purchase of a MSM lantern.



FEATURES

- *Ideal to remote monitoring and control of MCL and MBL. lanterns.*
- *Information is sent to mobile phones and NETCOM control centres: in general to all authorized users or in priority agenda order.*
- *Configuration is made by PC and RS-232 cable, using a free software. It can also be remotely settled from a computer or mobile phone.*
- *A configurable sleep mode is available in order to save energy, but maintaining the transmission of messages at real time.*
- *Positioning and swinging radius on buoys (when including MFGPS module).*
- *Minimum energy consumption.*
- *Free-communication protocols, which allows the user to utilise his own control centre or use them for any other application needed.*
- *An inner temperature sensor is included.*
- *"Vigilantic" system available.*

MFGSM

TECHNICAL SPECIFICATIONS

Power input:	From 5.5 to 35V.
Daily average consumption:	10 mA (GSM) 15 mA (GSM+GPS).
Temperature range:	-30º to 60ºC.
GSM/GPRS module:	850, 900, 1,800 y 1,900 MHz. Quad-band, worldwide coverage.
Digitals Inputs:	4 par optocoupleurs.
Digital outputs:	1 output optocoupleurs.
GPS MFGPS receptor:	12 channels.

OPERATION COST

SMS text message cost.
It only informs in case of alarms or commands.
Adjustable maximum limit of messages per day.
Any operator under contract or prepayment mode.
Special GSM operator contract to M2M.

SECURITY

Authorized user passwords.
SIM card protection by access code.
Register of alarms sent.

OPTIONS

GPRS communication module.

MFGPS position/synchronisation module.

Other status/alarm signals and commands available under request.

MFGSM MODULE FEATURES

Communication by means of SMS messages.

4-band GSM/GPRS communication module with integrated antenna, for use at worldwide level.

Sending of status and alarms by means of SMS short messages.

Direct interrogation from mobile phone or control centre.

Independent communication module from flasher, improving safety and global reliability.

Alarm detection on beacon operation, power supply and mooring-chain breaking in buoys.

Remote re-programmable via SMS and GPRS.

Protection system through passwords and authorized users.

4 nos. configurable digital inputs by user (impact detection, tamper, intrusion, etc.).

LANTERN STATUS SIGNALS

Lantern off.
Mooring-chain breaking by GPS positioning (for buoys).
Battery voltage reading.
LED current consumption reading.
Solar charging reading in accumulated Ah/day.

ALARM SIGNALS

Lantern off.
LED diodes failure.
Mooring-chain breaking.
Low battery voltage.
Flasher failure.
Photocell failure.
Wrong flashing rhythm.
Excess consumption of the lantern.
Solar module charge failure.

COMMANDS FROM USER/ CONTROL CENTRE TO BEACON

Report request on beacon general status.
Day-Night mode change.
Flasher reset.
GPS reset (when included).
GSM reset.
General system reset.
Position self-detection.
Change of MFGSM configuration by SMS.
Alarm acknowledgement by users.

Specifications subject to change without previous notice.

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MFSAT

SATELLITE REMOTE MONITORING MODULE

MFSAT

Communication via satellite

MFSAT circuits are small and compact remote control devices, fitted inside our LED lanterns. The sending and receiving remote control signals is done via satellite.

Perfect for remote and isolated stations

Perfect for remote and isolated stations, where any other communication system is not viable. Even though its low-cost operation, it is the most reliable and available communication system.

Ideal for self-contained lanterns

Signals and alarms are transmitted via e-mail up to 5 configurable addresses. The users can be e-mail addresses or control centres. Therefore, the ideal complement to the system is the GLOBAL NETCOM Remote Monitoring Control Centre, in order to process and manage all the information exchanged.

Its modular construction allows its installation subsequently to the purchase of a MSM lantern.

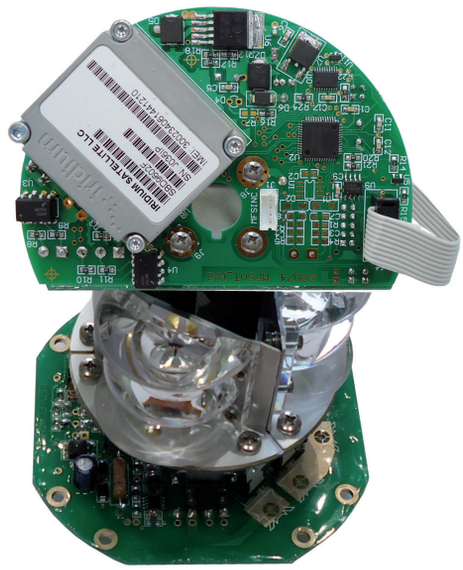
FEATURES

- *Ideal to remote monitoring and control of MCL and MBL lanterns.*
- *Satellite communication service with world coverage.*
- *Maximum reliability and availability.*
- *Configuration is made by PC and RS-232 cable software. It can also be remotely settled from a mobile phone.*
- *A configurable sleep mode is available in order to save energy, but maintaining the transmission of messages at real time.*
- *Positioning and swinging radius on buoys (when including MFGPS module).*
- *Minimum energy consumption and a low-cost operation.*
- *Free-communication protocols, which allows the user to utilise his own control centre or use them for any other application needed.*

MFSAT

TECHNICAL SPECIFICATIONS

Power range:	From 9 to 35V.
Daily average consumption:	15 mA.
Temperature range:	-30º to 60ºC.
IRIDIUM module:	Iridium SBD. Bidirectional.
External Inputs:	4 nos. opto-coupled
GPS MFGPS receptor:	12 channels.



OPERATION COST

IRIDIUM satellite communication by SBD service (reduced rate).

It only informs in case of alarms or commands.

Adjustable maximum limit of messages per day.

OPTIONS

Other communication systems via satellite available.

MFGPS position/synchronisation module.

Other status/alarm signals and commands available under request.

REAL TIME MONITORING SIGNALS

Lantern off.

Mooring-chain breaking by GPS positioning (for buoys).

Battery voltage reading.

LED current consumption reading.

Solar charging reading in accumulated Ah/day.

REAL TIME ALARMS BY SMS

Lantern off.

LED diodes failure.

Mooring-chain breaking.

Low battery voltage.

Flasher failure.

Photocell failure.

Wrong flashing rhythm.

Excess consumption of the lantern.

Solar module charge failure.

COMMANDS FROM USER/ CONTROL CENTRE TO BEACON

Report request on beacon general status.

Day-Night mode change.

Flasher reset.

GPS reset (when included).

Satellite modem reset.

General system reset.

Position self-detection.

Change of MFSAT configuration by e-mail.

MFSAT MODULE FEATURES

Communication by means of e-mails.

Independent communication module from flasher, improving safety and global reliability.

Sending of status and alarms by means of e-mails via SBD Iridium.

Alarm detection on beacon operation, power supply and mooring-chain breaking in buoys.

Remote re-programming via e-mails.

Protection system through passwords.

4 nos. configurable digital inputs by user (impact detection, tamper, etc.).

Specifications subject to change without previous notice.

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MFUHF

RADIO REMOTE MONITORING MODULE

MFUHF

Communication via UHF frequency radio messages

MFUHF circuits are small and compact remote control devices, fitted inside our LED lanterns. The sending and receiving remote control signals is done through UHF frequency radio messages, on free-band.

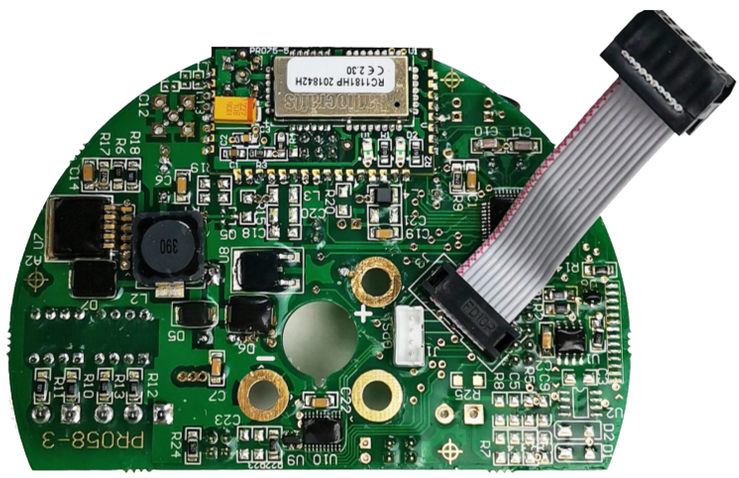
Ideal when there is a high concentration of remote stations

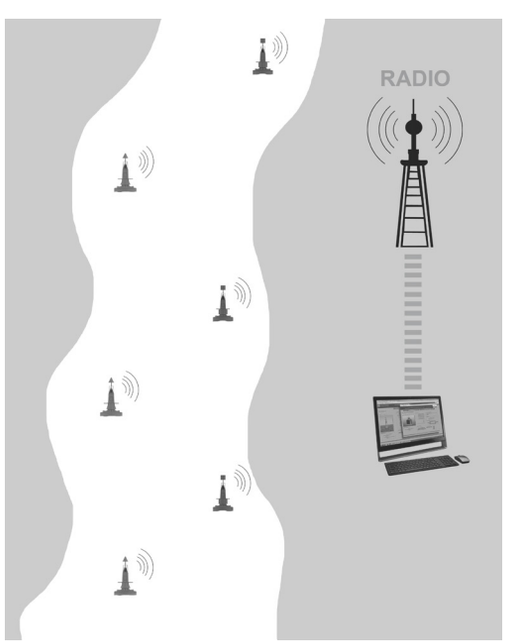
It is ideal when there is a high concentration of medium-distance remote stations, as for example port entrance channels, bays, river beaconing, etc.

Possibility of subsequent installation

Signals and alarms are transmitted to the control centre. Therefore, the ideal complement to the system is the NETCOM Remote Monitoring Control Centre, in order to process and manage all the information exchanged.

Its modular construction allows its installation subsequently to the purchase of a MSM lantern.





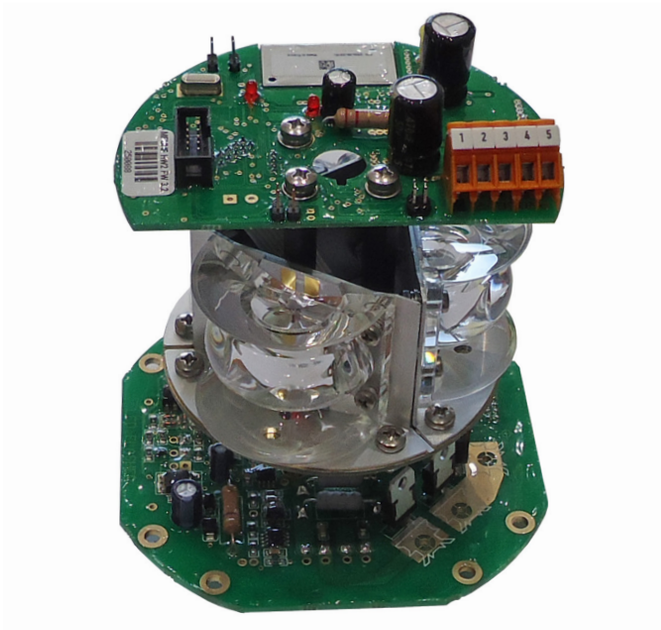
FEATURES

- *Ideal to remote monitoring and control of MCL and MBL lanterns.*
- *Communication by ICM free-band radio to a control centre.*
- *Positioning and swinging radius on buoys (when including MFGPS module).*
- *Configuration is made by PC and RS-232 cable, using a free software. It can also be remotely settled through radio.*
- *A configurable sleep mode is available in order to save energy, but maintaining the transmission of messages at real time.*
- *No operation cost.*
- *Minimum energy consumption.*
- *Free-communication protocols, which allows the user to utilise his own control centre or use them for any other application needed.*
- *"Vigilantic" system available.*
- *Its ideal complement is the NETCOM Remote Monitoring Centre.*

MFUHF

TECHNICAL SPECIFICATIONS

Power range:	From 5,5 to 35V.
Daily average consumption:	12 mA (RADIO) 17 mA (RADIO+GPS).
Temperature range:	-30º to 60ºC.
UHF frequency:	RADIO-ICM 868.10 to 869.65 MHz.
Emission power:	From 10 to 500 mW, adjustable.
Sensitivity:	-105 dBm.
Relay function:	Up to 16 hopping radio. MESH.
GPS MFGPS receptor:	12 channels.



OPERATION COST

No operation cost.
Free-band radio, without channel contract.
It only informs in case of alarms or commands.
Adjustable maximum limit of messages per day.

OPTIONS

Other modems available at other frequencies.

MFGPS position/synchronisation module.

Other status/alarm signals and commands available under request.

REAL TIME MONITORING SIGNALS

Lantern off.
Mooring-chain breaking by GPS positioning (for buoys).
Battery voltage reading.
LED current consumption reading.
Solar charging reading in accumulated Ah/day.

REAL TIME ALARMS BY SMS

Lantern off.
LED diodes failure.
Mooring-chain breaking.
Low battery voltage.
Flasher failure.
Photocell failure.
Wrong flashing rhythm.
Excess consumption of the lantern.
Solar module charge failure.

COMMANDS FROM USER/ CONTROL CENTRE TO BEACON

Report request on beacon general status.
Day-Night mode change.
Flasher reset.
GPS reset (when included).
Position self-detection.
Alarm acknowledgement by users.

MFUHF MODULE FEATURES

Communication by means of codified radio messages.

Independent communication module from flasher, improving safety and global reliability.

Sending of status and alarms by means of codified radio messages.

Alarm detection on beacon operation, power supply and mooring-chain breaking in buoys.

Remote re-programming via radio.

Protection system through passwords and authorized users.

4 nos. configurable digital inputs by user (impact detection, tamper, etc.).

Radio network auto-configuration by means of MESH protocol.

Specifications subject to change without previous notice.

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MFGPS

POSITION/SYNCHRONISATION MODULE

MFGPS

Device with double function

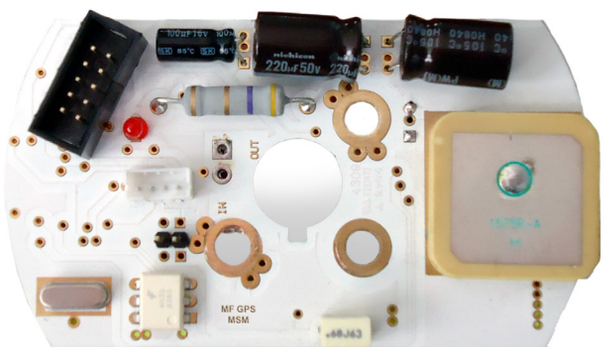
MFGPS position and synchronisation module is a device with double function. On the one hand, it is used to determine buoy positioning and, on the other hand, to synchronise lanterns through a GPS receiver of 12 channels.

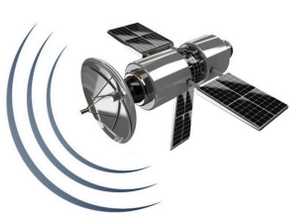
Compatible with other manufacturers

Even if it is especially designed to be connected to a MF flasher, it allows to establish a synchronisation with lanterns from other manufacturers; since the synchronising delay can be adjusted with the programming software.

Ideal for places without power system available

The MFGPS second function is to watch the aid to navigation positioning, in such a way that, if it is placed on a buoy, the maximum allowed swinging radius can be programmed, causing an alarm if the buoy exceeds the established limit.





FEATURES

- *High-sensitivity GPS satellite reception module of 12 channels, with integrated antenna.*
- *It allows flash synchronisation between lanterns from MSM and the ones from other manufacturers.*
- *A configurable sleep mode is available in order to save energy.*
- *Initial self-detection of buoy position coordinates is made automatically, no manual configuration is needed.*
- *Free-communication protocols, which allows the user to utilise his own control centre or use them for any other application needed.*
- *Mooring chain breaking alarm by GPS positioning (for buoys).*
- *Configurable maximum allowed swinging radius.*
- *Setting by PC.*

MFGPS

MFGPS MODULE FEATURES

Information on buoy positioning in WGS84 real time, including swinging radius in metres.

Flash synchronisation between beacons with the possibility of consecutive flash patterns and sequential lights with programmable offset."

Time and date according to GPS satellite signal, with self-adjusting for time zone.

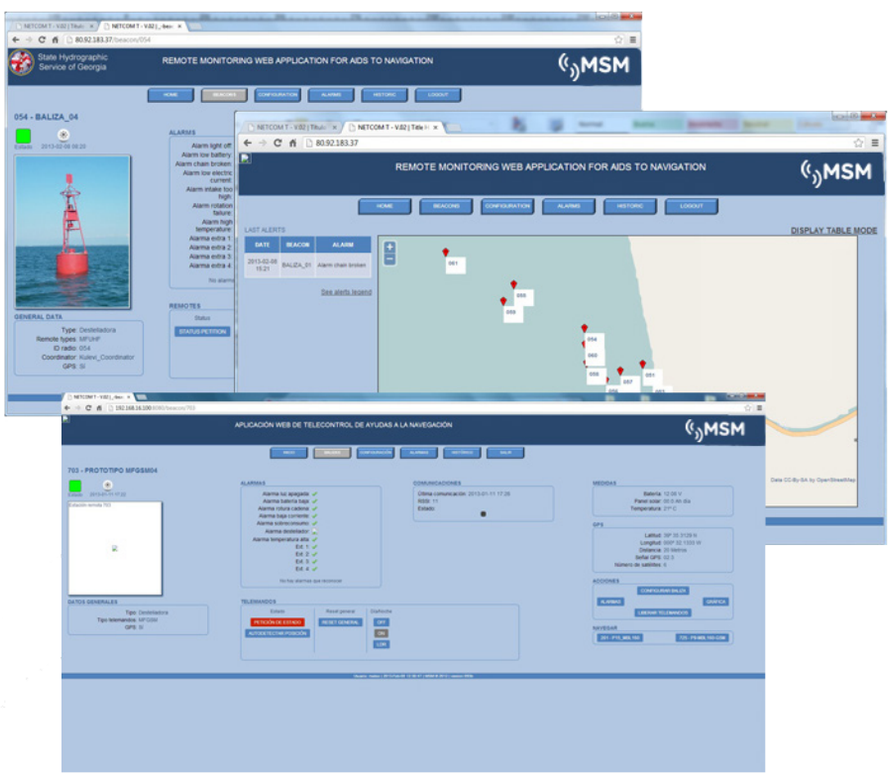
Alarm detection on mooring-chain breaking in buoys.

Initial self-detection of buoy position coordinates at time of installation.

High-sensitivity GPS satellite reception module, 12 channels, with integrated antenna.

TECHNICAL SPECIFICATIONS

Voltage:	From 4 to 32V c.c.
Consommation moyenne:	5 mA.
Programming:	PC (hiperterminal). Remote via GSM, radio or e-mail, depending on communication via.
Operation modes:	Synchronisation or position plus synchronisation.
GPS receiver:	12 channels, with integrated antenna.
Positioning format:	WGS 84.
Synchronisation accuracy:	2 ms.



Specifications subject to change without previous notice.

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MTU

UNIVERSAL REMOTE CONTROL UNIT

MTU

Communication via satellite

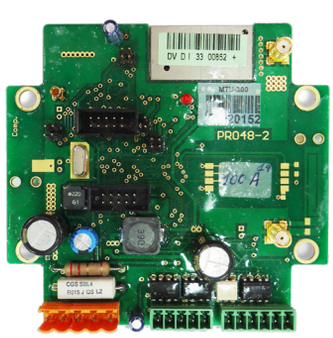
MTU Remote Control Unit is an universal device, able to send status and alarm signals coming from any kind of beacon, either rotating or flashing one, without need to install any additional sensors or inner modification. Remote control can be also made to the beacon or peripheral devices. The system of sending and receiving remote signals is via SMS, GPRS, IRIDIUM or radio.

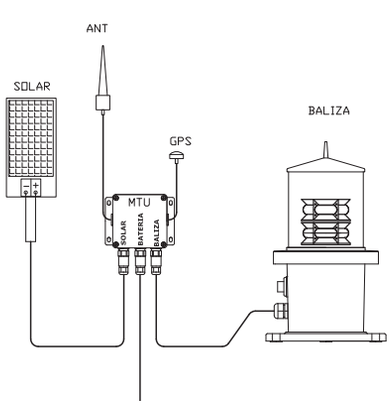
Perfect for remote and isolated stations

Users can be mobile phones, e-mail addresses or control centres. Signals and alarms can be transmitted to up to 10 configurable users, depending on communication mode.

Ideal for places without power system available

Therefore, the system ideal complement is the GLOBAL NETCOM Remote Monitoring Centre, in order to process and manage all the information exchanged.





FEATURES

- *GSM/GPRS or radio communication modules, or bidirectional satellite communication module via IRIDIUM.*
- *Power connectors and quick connexion control.*
- *Status and alarms sending.*
- *Remote programming.*
- *System protection by access codes and authorized user passwords.*
- *Able to receive beacon test commands.*
- *Alarm detection on beacon operation, power system operation and mooring chain breaking in buoys.*
- *Low operation cost.*
- *Two versions available:*
  - *Solar charge reading up to 15 A.*
  - *Solar charge reading up to 100 A (by external sensor).*
- *Its ideal complement is the GLOBAL NETCOM Remote Monitoring Centre.*

MTU

ALARM COMMUNICATOR

MTU 100	MTU 200	MTU 300
Communication via GSM/GPRS.	Communication via IRIDIUM.	Communication via RADIO UHF.
Up to 10 different configurable users, with simultaneous sending or by agenda order.	Up to 5 different configurable users via e-mail, by simultaneous sending.	Coordinator transmits to the Control Centre, which distributes to the users.

Circuit controlled by microprocessor.

Protection system through passwords and authorized users.

Lantern test commands.

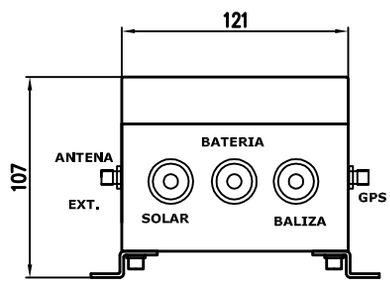
Initial self-detection of buoy position coordinates at the moment of installation.

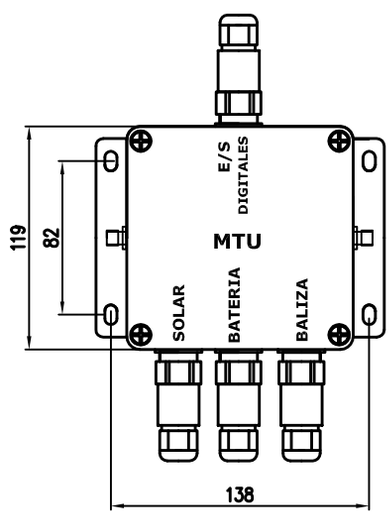
Alarm detection on current consumption failure.

Alarm detection on power supply failure.

TECHNICAL DATA

	MTU 100	MTU 200	MTU 300
Power input:	10 to 35V.	10 to 35V.	10 to 35V c.c.
Standby consumption:	5 mA.	5 mA.	7 mA.
Average consumption:	15 mA.	22 mA.	20 mA.
Emission power:			10 mW to 500 mW.
Watertightness degree:	IP 66.	IP 66.	IP 66.
Frequency range:	850-900 MHz.	1,542.50 MHz.	868.10 to 869.65 MHz.
Message format:	Free, with NMEA tracings.	Free, with NMEA tracings.	Free, with NMEA tracings.





GPS SPECIFICATIONS

GPS satellite reception module, 12 channels, high sensitivity.

Information on buoy positioning in WGS84 real time, including maximum allowed swinging radius.

Integrated or external antenna.

Time and date according to GPS satellite signal and self-adjusting of time zone.

Initial self-detection of buoy position coordinates at the moment of installation.

MTU 100/200/300 SIGNALS

Beacon off.
LED diode failure alarm.
Mooring-chain breaking through GPS positioning (for buoys).
Low battery voltage alarm.
Alarm on beacon consumption excess.
Alarm on solar module loading failure.
Rotating speed in rpm.
Battery voltage reading.
Beacon current consumption reading.
Solar charge current reading (in accumulated Ah per day).
4 nos. inputs and 3 nos. digital outputs, free, opto-coupled, user-configurable.
Inner temperature.

OPTIONS

Other radio frequencies.

Other communication system via satellite.

Intrusion, fire and impact external sensors.

Specifications subject to change without previous notice.

MSM

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MRF

UNIVERSAL REMOTE MONITORING UNIT FOR LIGHTHOUSES

MRF

Universal Remote Control Unit

MRF Remote Control Unit is a universal device designed for AtoN remote monitoring, especially for long-range beacons and major lighthouses.

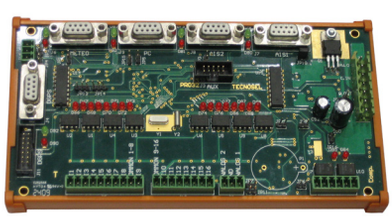
Multiple inputs and outputs

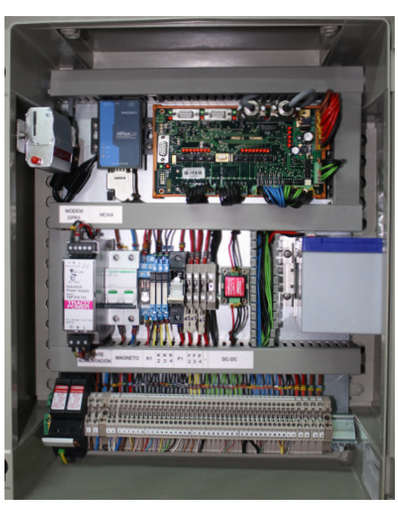
It has multiple digital and analogical inputs and outputs, opto-coupled which may be timed and adjusted at different levels by a configuration software; as well as to configure their logic, being easily adapted to any control system installed into a lighthouse or beacon.

Free communication protocol

The unit uses different communication modems, depending on the way selected: GSM, radio, AIS, satellite, IP, microwaves, fibre optic, etc.

Although its ideal complement is the NETCOM Remote Monitoring Centre, the communication protocol used is free, in such a way that it is very easy to send the information to any existing platform.





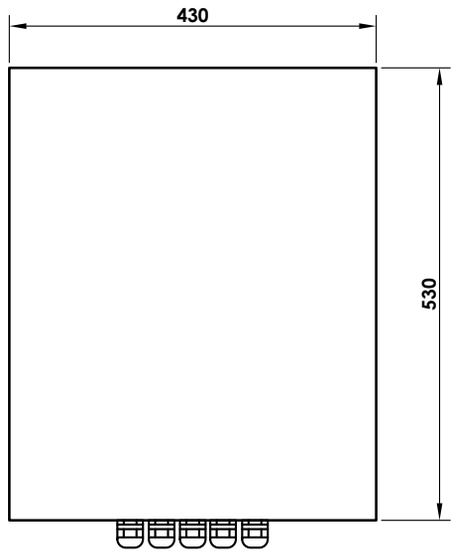
FEATURES

- *Compatible with lighthouses and rotating beacons, with lamps and LEDs.*
- *Monitoring of solar power supply systems, diesel generators, etc.*
- *Direct current measurement for solar charging up to 15 A, or up to 10 0A with external Hall sensors.*
- *Rotation alarm detection for lighthouses through a magnetic rotation sensor.*
- *12 or 24 V d.c. power supply.*
- *Analogical inputs by voltage or current, with configurable alarm threshold detection. Current measurement up to 100 A.*
- *GPS, DGPS modules available as an option.*
- *Configuration and testing software for PC, and remote programming.*
- *Reverse-polarity and atmospheric over-surge protections.*
- *Configurable sleep mode available in order to save energy.*
- *Redundant communications available with several modems and different technologies.*

MRF

TECHNICAL SPECIFICATIONS

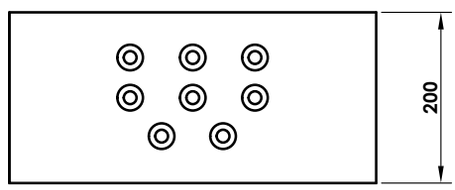
Power supply voltage:	12 or 24V c.c.
Daily average consumption:	25 mA.
Internal battery:	12V-12 Ah.
Temperature range:	-30º to 60ºC.
Watertightness degree:	IP 65.
Dimensions:	530x430x200 mm.



TYPE OF COMMUNICATIONS (DEPENDING ON MODEM)

GSM:	SMS/GPRS (850, 900, 1800, 1900 Mhz).
Radio:	UHF 869 Mhz or 330 to 473 Mhz. VHF 135 to 174 Mhz ou 218 to 238 Mhz.
Satellite:	E-mail messages (Iridium/Inmarsat).
AIS:	Messages 6 and 8 (161.972 to 162.025 Mhz).
ADSL:	IP fixed connexion.
Microwaves:	IP linked (Wifi or Wimax).
Optical fibre:	Serial converter IP link.

** Other frequencies and types of communications available.*



INPUTS/OUTPUTS

	MTF 800	MTF 900
Opto-coupled digital inputs:	4	16
Opto-coupled digital outputs:	3	9
Analogical inputs V/I:	3	7
Power outputs:	-	1(8A)
Inner current sensor:	15A	15A
External solar current sensor:	1(100A)	6(100A)
RS-232 ports:	2	6
RS-485 ports:	-	1

ADJUSTABLE PARAMETERS (PROGRAMMING SOFTWARE)

Input and output timing.

Reversal of logic.

Status view of every input/ouput.

Alarm and status threshold adjustment.

Analogical value reading.

Type of communications and parameters.

Password changing and network-identifier.

Matching inputs and outputs with status and alarms.

OPTIONS

Redundant communications (MTF 900).

GPS/DGPS receptor.

Meteorologic, oceanographic and environmental sensor connexions.

Additional input and output expansion module.

Specifications subject to change without previous notice.

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NETCOM

Easy way to communicate with the different remote stations

NETCOM is a Remote Monitoring Multicentre that provides an easy way to obtain information and interacts with the different remote stations installed in lighthouses, buoys and beacons, displaying the data in a clear way on a computer screen.

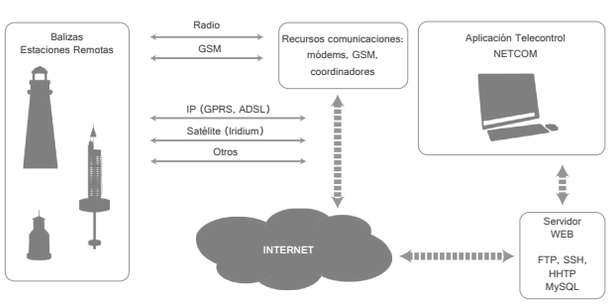
It admits all kind of communications

This control centre can be located in a server in the customer's premises if desired, or in a general server shared by several clients.

It admits all kind of communications: GSM, radio, satellite, ADSL, microwaves, optical fibre, AIS, etc.

Internet connexion needed

Thanks to its design based on WEB concept, customers just need an Internet connexion to monitor their beaconing systems.



FEATURES

- *The Managing Software has been designed in such a way that final users can maintain, create new remote stations or modify the existing ones.*
- *Simple and intuitive operation, allowing to obtain information fastly and interact with the remotely monitored stations.*
- *The system allows the storage in databases type ORACLE, MySQL, SQL SERVER or others.*
- *Historical records are configurable by the user, in order to obtain reports.*
- *Designed to interact with an AIS Base Station, able to generate virtual or synthetic navaids.*
- *Its flexible structure can be customized under client request.*

NETCOM

HARDWARE

PC/Server (minimum requirements):	Transceiver unit:
Intel Xeon processor.	Configurable depending on requirements and type of communication used, GSM, radio, satellite, ADSL, microwaves, optical fiber, AIS, etc.
Ubuntu Linux Server 18.04 LTS	
2 nos. Hard Disk of 500GB (RAID1, one as a mirror of the other, to ensure the protection of the information).	
4 GB RAM memory.	

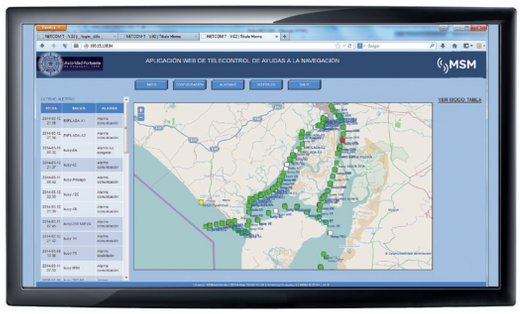


Fig. 1

Fig. 2

SOFTWARE

Communication program with message transceiver.
Database driver.
Web application for network access.
GIS Map of the area (electronic chart with dynamic positioning).
Individual screens for each Remote Station.

SYSTEM SCREENS

Initial system start-up.	Remote station configuration.
Validating user.	General system configuration.
System General Display.	Total active alarms.
Individual screens (Remote Stations).	Historical reports of alarms and status.

GENERAL SCREEN (FIG.1)

Access to the whole application.
Dynamic GIS map of the area.
Every remote station positioned on the basis of the latest GPS data received: - Green flag: Beacon in correct operation. - Yellow flag: Low level alarm, the beacon is still operating. - Red flag: General alarm, beacon off.

Specifications subject to change without previous notice.

INDIVIDUAL SCREEN (REMOTE STATION) (FIG.2)

Indicators	Light signal status pilot (green, yellow or red).
	Beacon status (on/off).
	Battery voltage reading.
	LED current consumption reading.
	Correct light rhythm signal.
	Other free-configuration values.
Alarms	LED failure alarm.
	Low-battery voltage alarm.
	Flasher failure alarm.
	Alarm on beacon consumption excess.
	Solar panel charging failure.
	Mooring chain breaking (for buoys, through GPS positioning).
Commands	Switching-on/off.
	Request of status report.
	Beacon general reset.

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MMB02

DAUGHTER BOARD

MMB02

Ideal for offshore platforms

The MMB02/MMB03 daughter board is a universal device especially designed for aids-to-navigation equipment monitoring, in particular lighthouses and beacons. Due its versatility, it is ideal for offshore platforms, since all the aids to navigation can be controlled by it.

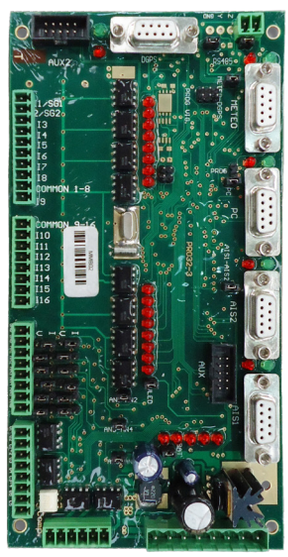
Fitted with 6 nos. RS-232 serial ports

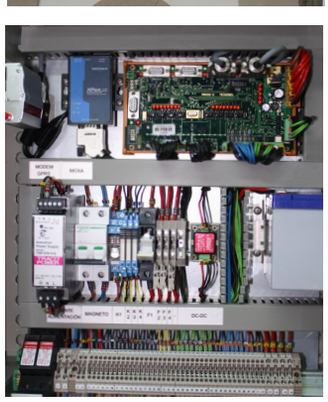
It allows external beacon monitoring and also conversion to Standard IEC protocol, to be connected to an AIS AtoN unit.

Fitted with 6 nos. RS-232 serial ports for data acquisition, other equipment interface and programming. Besides, this device can be connected to any communication means (GSM-GPRS, radio, satellite, IP broadband, microwaves technology, optical fibre, etc.). Additionally, it includes a RS-485 serial port to connect all type of sensors, analogical or digital, in order to obtain meteorologic or oceanographic data.

Low power consumption

Designed taking into account a low power consumption, for the use of solar modules.





FEATURES

- *Large number of digital and analogical inputs and outputs.*
- *Equipment controlled by last generation microprocessor, with CMOS of 32-bit technology, which allows data transmission in real time.*
- *E2PROM memory for all parameters of configuration.*
- *Input and output signals protected through an optocoupled collector.*
- *6 nos. RS-232 serial ports and a RS-485 serial port.*
- *Daily average power consumption of 25mA at 12V.*
- *A configurable "sleep" mode is available to save energy.*
- *PC programming software for timing and parameter editing.*
- *Firmware able to be updated in site.*
- *Protected against reverse-polarity and atmospheric surges.*
- *Housed in a support with DIN rail fixation, which allows to be replaced very easily and fast.*

MMB02

TECHNICAL SPECIFICATIONS

Power input:	From 10 to 36V c.c.
Daily average consumption:	25mA (12V).
Temperature range:	From -30º to 60ºC.
Unidad Control:	CMOS 32-bit microprocesor.
Data storage:	E2PROM memory.
Fixings:	DIN rail.

OPTIONS

Current profiler HTP50 up to 50A d.c. and a.c.

GPS and DGPS module (MFGPS).

GSM (MFGSM), VHF, UHF (MFUHF), Iridium, ADSL modem.

AIS Transponder (MTU AIS).

Input/Output expanding MMB-E module.

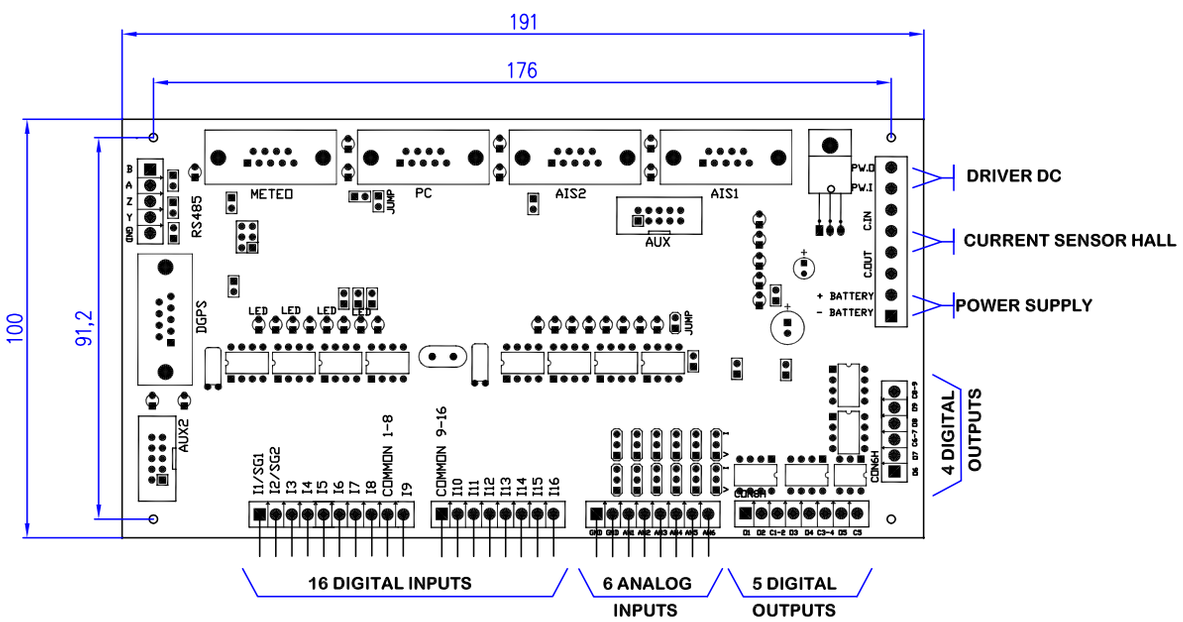
Meteo/Oceanographic Sensors (availability to include MSM sensors).

INPUTS AND OUTPUTS

Digital inputs:	16 nos. opto-coupled inputs of alarms or status, configurable logic and timer.
Digital outputs:	9 nos. Mosfet outputs, 3A maximum. 1 no. 10A Mosfet power output for emergency beacon or racon.
Analogical Inputs:	8 nos. V or I inputs with ranges from 0-36V / 0,100mA with programmable alarms. 1 no. current profiler up to 15A (up to 50A as an option).

COMMUNICATION PORTS

AIS:	2 nos. RS-232 serial ports for modem or AIS unit connexion.
PC:	1 no. RS-232 serial port for PC programming.
METEO:	1 no. RS-232 serial port for sensors or modems.
DGPS:	1 no. RS-232 serial port for DGPS module.
RS-485:	1 no. RS-485 serial port for bus topology connection.
AUX:	1 no. RS-232-TTS* serial port for MF12 flasher or IDC10 modem.



Specifications subject to change without previous notice.

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RECOMMENDED BY:

AIS, RACON & REMOTE MONITORING

MTA300

AIS BASE STATION

MTA300

Operates on the VHF band

The MTA 300 AIS Base Station is a VHF maritime system designed specifically for coastal surveillance, vessel traffic monitoring and management at ports. The MTA 300 facilitates safe navigation of ships, helps to protect the marine environment and supports the VTS NET operation. Moreover, the effective processing of AIS information contributes significantly to the security of port and offshore installations.

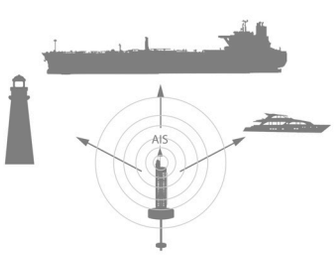
It can operate as a standalone solution or in an AIS network

Easily configured to the specific needs of any customer, MSM AIS Base Station can operate as a standalone solution or in an AIS network.

Management of multiple reports

It allows the management of multiple reports (identification, position, course, speed over the ground,etc) and high-update frequency, based on SOTDMA technology (Self Organization Time Division Multiple Access).

The MTA 300 meets with IALA Recommendation on AIS (A-124 Recommendation), IEC and ITU Standards.



FEATURES

- *Automatic vessel identification (Name, IMO number, MMSI and Callsign).*
- *Provides all the features required for extended vessel traffic surveillance.*
- *Reception of messages on coordinates, course, speed over the ground, heading, ship type, route plan, availability of dangerous cargo, etc.*
- *Reception of static and dynamic data and binary messages.*
- *Reception and transmission of text messages relating to maritime security.*
- *Reception of differential GNSS (GPS) corrections from the GNSS reference station or radio beacon data link and their transmission via AIS channel.*
- *Low power consumption and alternative power sources drastically limit the need for infrastructure investments.*
- *Can be equipped with dual antennas Tx/Rx.*
- *Assignment of appropriate operating modes to the vessel stations including the assignment of areas, frequencies, radiation power, slots, interval reports, and number of report.*
- *Capable to generate virtual or synthetic AIS AtoN (up to 20).*

MTA300

TECHNICAL SPECIFICATIONS

Input voltage:	100-240V c.a., 50,60 Hz and 7 or +24V c.c.
Power consumption:	Idle 15W, Nominal 25W, Max. 40W.
Transmitter output power (adjustable):	12.5W/1W, 50 Ohm load.
Receiver sensitivity 20% MER:	<-107 dBm.
Bandwidth:	25 kHz.
Protocol:	TDMA (AIS).
Baud rate:	9600 bps (AIS) 71200 bps (DSC).
Modulation:	GMSK (AIS)/ FSK (DSC).
Frequencies:	156.025 MHz-162.025 MHz.
Default channels:	87B (161.975 MHz). 88B (162.025 MHz). 70 (156.525 MHz).
GPS:	L1, 16 parallel channels.
DGNSS support:	NMEA via RJ 45 Ethernet.

VTS NET

The VTS NET application has as main function the display of AIS transponder-equipped stations (aids to navigation, vessels, etc.) on a map.

For that purpose, it requires interaction with AIS Base Stations with which exchange the AIS messages coming from transponders, generate virtual AtoN or send messages to the vessels.

AIS targets are displayed on a map with different cartographic layers to represent land (Google Earth) and sea (Electronic Nautical Charts), showing an intuitive and user-friendly interface.

INTERFACES

VHF antenna (combined Tx/Rx):	N female, 50 Ohm.
VHF antenna (separate Tx and Rx):	Optional: N female, 50 Ohm.
GPS antenna:	TNC female, 50 Ohm.

STANDARDS

A-124 IALA Recommendation.	ITU-R M.1371-4.
IEC 62320-1.	ITU-R M.1084-4.
IEC 62320-2.	R&TTE Directive 1999/5/EC.
IEC 61993-2.	EN 60950.
IEC 61162-1,2.	IPC-A-610 (manufacturing).
IEC 61108-1.	RTCA/DO-178B (SW development).

OPTIONS

Repeater base station.

Limited base station.

AtoN base station.

VTS NET APPLICATIONS AND MENUS AVAILABLE

Target and filter feedback.

Measurement on the chart.

Areas.

Display of rules.

Alarms and active alarms.

Views.

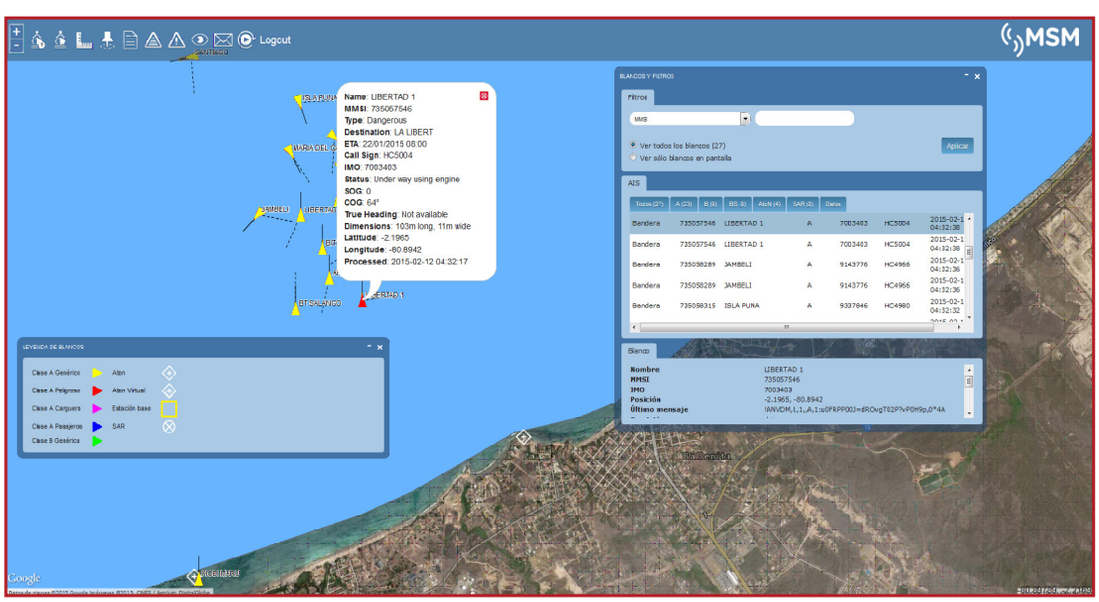
AIS AtoN management.

AIS Base Station.

Messaging System.

Historical reports.

General configuration.



Display of data received from the MTA 300 AIS Base Station by means VTS NET Software.

Specifications subject to change without previous notice.

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RECOMMENDED:

AIS, RACON & REMOTE MONITORING

VTS Net

AIS DISPLAY AND MANAGEMENT SOFTWARE

VTS NET

Monitoring of vessels

VTSNet is MSM's solution for the monitoring of vessels for any organisation that needs to monitor maritime traffic in its waters.

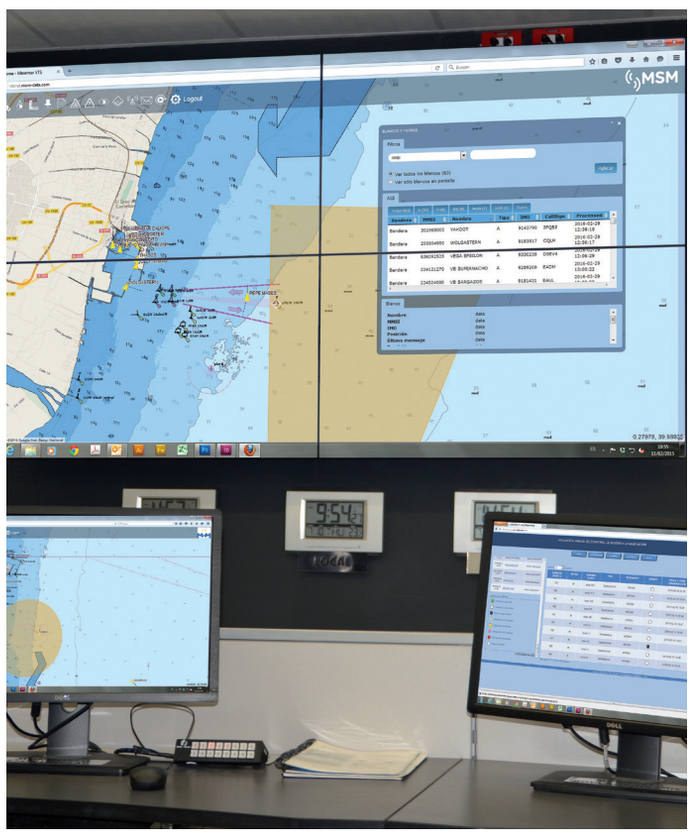
Display and track all vessels

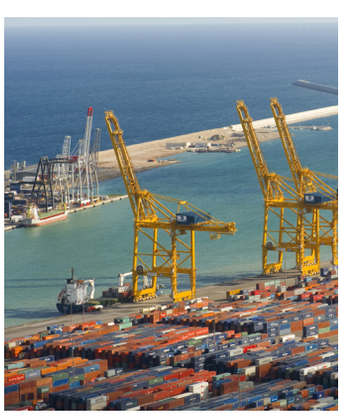
VTSNet provides a complete AIS interface that includes the possibility to display and track all vessels, show specific information on the ships, send and receive text messages related to safety and monitor real and virtual Aids to Navigation (AtoN).

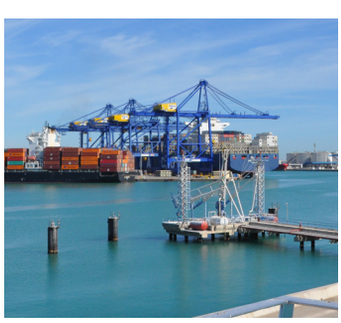
VTSNet is totally configurable and can be used in several ways to satisfy the safety needs of any organisation.

Ideal for security operations and monitoring

VTSNet is ideal for security operations and monitoring of vessels since it includes features such as the configuration of areas and settings of entry and exit alerts, filtering ships of interest, etc. Operators can also play the recorded data selecting the date and start and end times.







FEATURES

- *WEB-based application.*
- *Monitoring and identification of ships or other navigation objects.*
- *Manual and automatic target identification and acquisition.*
- *Configuration of polygonal and cicular areas and pathways.*
- *Setting of rules associated to exclusion zones, inclusion zones or crossing of pathways.*
- *Target filtering based on MMSI No., IMO No., name, speed, draft, etc.*
- *Supports text messages related to safety, targeted as well as broadcast (12 or 14).*
- *Configuration of management alarms including sensor alarms as well as navigation alarms.*
- *Presentation of dynamic and static AIS data.*
- *Monitoring of real AIS AtoN and creation of virtual and synthetic AIS AtoN.*
- *Possibility of recording and playing stored data for administrative purposes and analysis of incidents.*
- *Creation of predefined views by the user.*

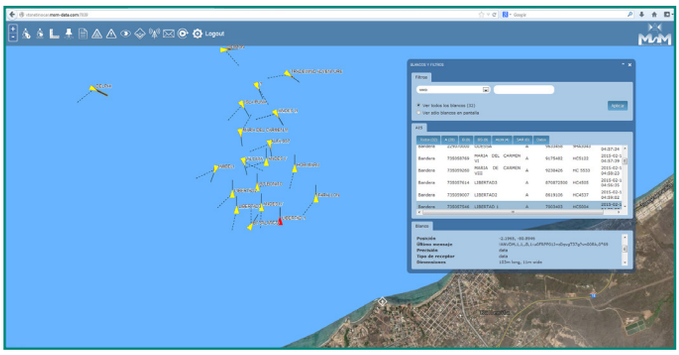
VTS NET

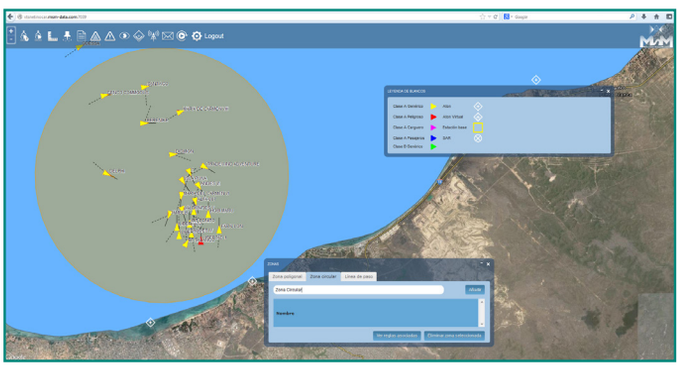
VTS NET

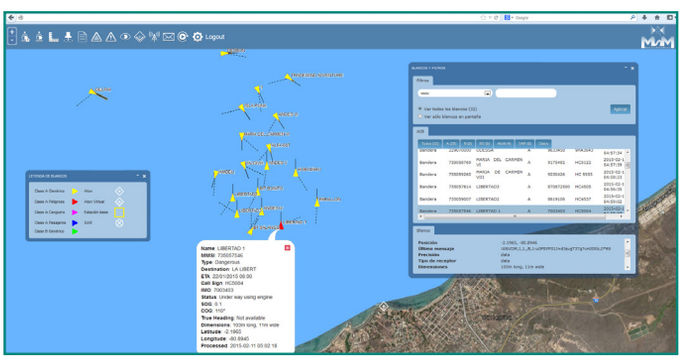
VTS NET main function is the display of AIS transponder-equipped stations (aids to navigation, vessels, etc.) on a map.

For that purpose, it requires interacting with AIS Base Stations with which it exchanges AIS messages received from the different transponders and being able to create virtual AIS AtoN or sending messages to the vessels.

The different AIS targets are displayed on a map with several cartographic layers to represent the land (Google Earth) and the sea (Electronic Nautical Charts), with a graphic and intuitive interface.







FEATURES OF VTS NET

WEB-based application.

Monitoring and identification of ships or navigation objects.

Ensures transit efficiency.

Collision prevention devices.

Manual and automatic target acquisition.

Manual and automatic target identification.

Assistance in search and rescue, as well as in coast guards activities.

Supports multiple IP connections with AIS Base Stations and Receivers.

Different levels of details in the display of nautical charts configurable.

Creation of predefined views by the user.

Configuration of polygonal and circular areas and pathways.

Setting of rules associated to inclusion and exclusion areas or crossing of pathways.

Target filtering based on MMSI No., IMO No., name, speed, draft, etc.

Supports text messages related to safety, targeted as well as broadcast (12 or 14).

Configuration of management alarms including sensors alarms as well as navigation alarms.

Presentation of dynamic and static AIS data.

Monitoring of real AIS AtoN.

Creation of virtual and synthetic AIS AtoN.

Possibility of recording and playing stored data for administrative purposes and analysis of incidents.

Protection of the environment.

Integration of tracking through Radar and AIS.

Integration of multi-radar tracking.

OPTIONS

Possibility of integration with the existing port systems.

Detection of illegal activity (terrorism, piracy, inmigration, illegal fishing...).

Support and control of radar, AIS, CCTV, Meteo and Hydro sensors.

Integration and filtering of multi-AIS data.

Transmission and reception of AIS text telegrams.

Specifications subject to change without previous notice.

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