ATONIS AIS TRANSPONDER
Technical Specification

ATONIS AIS Aton Station Transponder complies with the latest version of IALA Recommendation A-126: *On the Use of Automatic Identification System (AIS) in Marine Aids to Navigation Services, Edition 1.4 (December 2008)*

IEC Type	62320-2	
Electrical		
Input Voltage	Nominal 12V and 24V Supply Voltage Range: 9 to 36 VDC	
Electrical Isolation	DC isolated, 1500VDC insulation barrier to prevent galvanic currents	
Electrical Protection	Over-current and Reverse Polarity protection	
Power Consumption @ 12 VDC	FATDMA –Msg 21,6 @ 3 minute interval: 0.54 Ah/day RATDMA – Msg 21,6 @ 3 minute interval: 3.91 Ah/day Lean Operation Mode[1]: 100 mW (0.2 mAh per 24 hour period) Optional External dGPS IALA beacon receiver @ 3 minute interval: add 0.25 Ah/day	
Communication Ports		
ATONIS	RS-232 – Configuration Port 1 – RS-232 (SATCOM default) Port 2 – RS-232 (dGPS default) Port 3 – RS-232 (Bluetooth default) Port 4 – RS-422 Opto-isolated NMEA 0183 Out	Port 5 – RS-232 GSM/GPRS (default) Port 6 – RS-422 Opto-isolated NMEA In Port 7 – RS-232 AtoN (ACC-1 default) Port 8 – RS-232 Control (default)
ACC-1 Interface Board	(4) Analog, (4) Digital In (4) Digital Out (1) RS-485 (1) RS-232/485 selectable Power Switch; 10-amp, bi-directional : use to turn Lamp ON/OFF or use as Solar Charge Regulator (customer to specify) Additional ACC-1 boards can be cascaded to provide additional ADIO ports	
Positioning	GPS/dGPS using SBAS Service (default); dGPS position accuracy < 3 m 95% Selectable *Normal* or *Advanced EPFS* Algorithm (per IALA A-126 Appendix 1) External dGPS using IALA Beacon Service/SBAS (optional)	
Configuration	Via RS-232 or optional Inmarsat D+, AIS, GSM/GPRS, or Bluetooth™ connection using COTS software (e.g., MS Hyper Terminal) One-Time encryption key used for configuration commands to ensure system security	
Capabilities	Type 1 FATDMA: Single and Dual transmit modes Type 2 FATDMA : Single and Dual transmit modes Type 3 FATDMA and RATDMA: Single and Dual transmit modes REPEATER: Simplex operation (see Repeater specification sheet for additional information) Dual Repeater and Aton mode operation allowed Configurable Repeater ON times (interval, duration) for lower power consumption High Integrity Version: Two synchronized ATONIS units with monitoring interfaces operating independently for redundancy at remote installations (Complies with IALA A-126 for Wreck Marking) Transmit AIS Messages 21, 6, 8, and 14; TX interval 0-1440 minutes, configurable Failure Msg 21: user configurable to transmit Msg 21 at different interval if unit goes off-station Automatic transmission of Safety Msg 14 if unit goes off-station Retransmit SART Messages (Type 3 only) Broadcast of Message 21 for up to (4) virtual or synthetic AtoNs Configurable Receiver ON times (interval, duration) Meteorologic and Hydrographic sensor monitoring: Connect directly to third party datalogger/sensors. ATONIS controls datalogger/sensor On/Off times for lower power consumption.	

[1] Monitoring of AtoN status, buoy position, and AIS reporting once every 10 minutes. Lower duty cycles will result in lower power consumption.

Pharos Marine Automatic Power

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Continued

Monitoring	Msg 21 Regional Status bits implemented per IALA A-126 (4.8.4) (Lantern status, Racon status, and Health of Aton) Msg 6 (monitored parameters to customer specification) Monitor Lantern status by either current sensing or Lantern fault contact Off-station alarm output reportable by Msg 6
VHF-FM Antenna	External 50 ohms
GPS Antenna	External 50 ohms (3.3V active)
Transmitter Module	FM-GMSK
Frequency Range	155 – 163 MHZ, 25kHz bandwidth, configurable
Power Output	12.5 Watts per IEC 62320-2 (see note 1)
Frequency Stability	± 2.5 ppm
Receiver Module (Types 2 and 3 only)	
Type	FM-GMSK
Frequency Range	155 – 163 MHZ, 25kHz bandwidth, frequency agile
Frequency Stability	± 2.5 ppm
Sensitivity	< –112 dBm PER 20%
Spurious Response Rejection	> 70 dB
Adjacent Channel Selectivity	> 70 dB
Intermodulation Response Rejection	> 80 dB @ -112 dBm
Blocking or Desensitization	> 84 dB
Spurious Radiation, conducted	< –57 dBm
Co-channel Rejection	Better than –10 dBm
Mechanical	Fittable within 155mm Lantern Housing or mounted in customer specified enclosure Case Material: Aluminum, Stainless Steel, or Fiberglass to customer requirement Case Dimensions: various, on configuration Protection: IP67 or NEMA 4X. Other enclosures to customer requirement Weight: Various, on configuration. Basic configuration <2.5 kg
Temperature Range	-20 º to +55ºC
Humidity	95% relative humidity at 30ºC
Salt Fog and **Vibration**	IEC 60945
EMC	IEC 60945
Standards	IALA A-126; IEC 60945 and IEC 62320-2; ITU-R M.1371/3
Certifications	CE. (pending):R&TTE Directive (EC/1999/5) FCC, IC

Note 1: Lower power settings are optional but not recommended. **IALA A-126, 4.1** states

> The AIS AtoN transmissions containing the AtoN information shall have a signal level of greater than or equal to –107dBm when measured at the air-antenna interface of the user's receiver within the following coverage areas:
>
> - 5-10 NM of the AIS AtoN for floating AtoN depending on height of AtoN.
> - 10-25 NM of the AIS AtoN for fixed AtoNs depending of height of AtoN.

Power settings below 12.5W may not meet this requirement. No appreciable power saving is realized by transmitting at a lower power. A transmit power of 1W would only reduce power consumption by less than 0.03Ah/day for Msg 21 and Msg 6 transmitted every 3 minutes.