



## ALPHA WAVE NARROWBAND RADIO MODEMS WIRELESS SOLUTIONS

# AW L-Band/Beacon Receiver



AW L-Band/Beacon Receiver comprises two radio sections: L-Band receiver (1525 MHz to 1559 MHz) and Marine Radiobeacon receiver (283.5 to 325 kHz).

L-Band receiver complies with INMARSAT SDM Technical Specification for narrow band point-to-multipoint receivers as defined in INMARSAT-A Mobile Earth Station Technical Bulletin, SESTB 28A, August 1993. L-Band receiver is designed for multiple applications including particularly geostationary satellite communication networks satellite services.

Potential applications are differential GPS correction parameter distribution, financial data distribution, news, weather and sport information distribution, store and forward audio distribution, facsimile and image distribution, control of remote equipment.

Marine Radiobeacon receiver (283.5 to 325 kHz) or Beacon receiver complies with Broadcast Standard for the USCG DGPS Navigation Service COMDTINST M16577.1. Beacon receiver is designed to receive pseudorange corrections transmitting by Radiobeacon stations. Maritime Radiobeacon DGNSS systems according to RTCM SC-104 version 2.3 are usually capable of broadcasting the following RTCM messages: 1, 2, 3, 5, 6, 7, 9, 15 (seldom), and 16. Radiobeacons are widely used throughout the world. DGNSS Radiobeacon transmissions meet stringent integrity and reliability requirements mandated by the International Association of Lighthouse Authorities.

# AW L-Band/Beacon Receiver

## Radio Technical Specifications

Component	Details
Frequency Range	1525 - 1559 MHz
Frequency Offset	± 2.5 kHz (~ 1.5 ppm)
Channel Spacing	5 kHz
User Data Rates	600, 1200, 2400, 4800 bps
High Power Channels	User defined
Low Power Channels	User defined
Service Identifier	User defined
Scrambler Vector	User defined
Tuning Mode	manual/automatical
Sensitivity	-120 dBm for <math>10^{-3}</math> BER
Dynamic Range	80 dB
Adjacent Channel Rejection	60 dB
Start Time	<1 min
Output Data Format	Row Data

## Environmental Specifications

Parameter	Specification
Temperature	Operating -40°C to +70°C Storage -40°C to +85°C
Environmental	IP 66
Dimensions (H x W x D)	146 mm x75 mm x44 mm
Weight	488 g
Power Supply Voltage	+9 to +36 VDC nominal
Power Consumption	1W
Housing/Color	Aluminum / Two-tone Silver / Gray
Antenna Connector	TNC, 50WΩ

## L-Band Receiver Specification

Component	Details
Input Impedance	50 Ohms
Max Overload Input Signal of Normal Power Level	+ 0 dBm
Satellite Symbol Ratio	1219.05, 2438.1, 4878.2, 9752.4 symbol/second
Assigned Bandwidth	2.5, 5.0, 7.5, 15.0 kHz
Modulation Type	filtered BPSK
Filtering	40% square-root raised cosine
Channel Coding	Rate 1/2 convolutional Constant K=7
Decoding Algorithm	Viterbi
Channel Scrambling	V.35 prior to FEC as defined in Inmarsat-M (Scrambler vector related to Service identifier)
Frame Length	8192 symbols
Unique Word Length	2 x 32 bits (not encoded or scrambled)
Spare Byte	8 bits (encoded but not scrambled)
Eb/N0 for BER = 10-5	5.5 dB

## Beacon Receiver Specification

Component	Details
Frequency Range	283.5- 325 kHz
Channel Spacing	500 Hz
Bit Rates	50, 100, 200 bps (manual or Auto selection)
Channels	2-channel, parallel operating
Operation Mode	manual/automatic
Adjacent Channel Rejection	65 dB ± 1 dB @ for ± 400 Hz
Cold Start Time	<1 min
Warm Start Time	<2 seconds
Modulation	Minimum Shift Keying (MSK)
Sensitivity	1.5 m V/m for 6 dB SNR ( 200 bps)
Dynamic Range	100 dB
Frequency Offset	± 0.5 Hz (~ 1.5 ppm)
Correction Output Protocol	RTCM SC-104