



ALPHA WAVE NARROWBAND RADIO MODEMS WIRELESS SOLUTIONS

AW400



DSP based OEM Radio Modem with Built-in wireless link Monitoring and Management Tools:

- Both Licensed and Unlicensed operation modes
- 11 miles (18 km) Maximum Distance Range
- Data Speed over the air 38400 bps at 25 kHz and 19200 bps at 12.5 kHz
- Programmable Output Power (20 mW to 2 W)
- Advanced Forward Error Correction (FEC)
- RS232 serial interface with RTS/CTS flow control support
- Data Speed over the serial port 9600 to 115200 bps
- Testing, monitoring and control of the unit over the air
- AlphaWave SuperScan® - automatic search and select for best frequency/channel

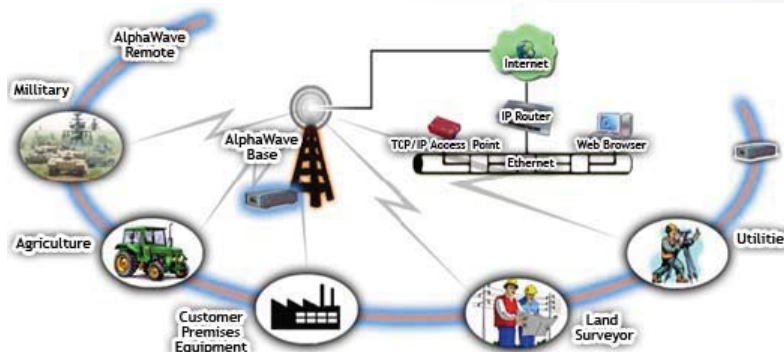
The AW400 radio modem provides a high-speed Point-to-Point and Point-to-Multipoint wireless data transfer at up to 38.4 kbps. AW software (AWARE™) supports user selectable modulation techniques (GMSK, 4FSK, DBPSK, DQPSK, D8PSK, or D16QAM), which allows the user to achieve the highest data speed for a given range (up to 11 miles/18 km). It also includes

a selectable error correction, which improves the functioning of the radio modem under interference.

The unmatched features of AW400 include data scrambling, frequency hopping, user selectable transmit output power level, low power consumption sleep modes, autoscanning for base and plug-and-play installation for remote terminals.

AW400 supports two separate Application Data and Maintenance modes of single RS232 serial port.

The built-in software tools provide the wireless link testing, units' status and error statistics monitoring as well as units' settings change over the air. The firmware



of the AW400 radio modem resides in a flash memory. The updating of the radio modem programs is entirely software-based. The flash memory is re-programmable through an RS232 interface or over the air.

AW400

General Radio Specifications

Parameter	Specification
Operating Frequency Range	406 - 470 MHz
Channel Spacing	25/20/12.5/6.25 kHz
Data Rate (25kHz Channel Spacing)	9600 bps – DBPSK/GMSK 19200 bps – DQPSK/4FSK 28800 bps – D8PSK 38400 bps – D16QAM
Data Rate (20kHz Channel Spacing)	7500 bps – DBPSK/GMSK 15000 bps – DQPSK/4FSK 22500 bps – D8PSK 30000 bps – D16QAM
Data Rate (12.5kHz Channel Spacing)	4800 bps – DBPSK/GMSK 9600 bps – DQPSK/4FSK 14400 bps – D8PSK 19200 bps – D16QAM
Data Rate (6.25 kHz Channel Spacing)	2400 bps – DBPSK 4800 bps – DQPSK 7200 bps – D8PSK 9600 bps – D16QAM
System Gain for DBPSK modulation (Antenna gain is not included)	149 dB (for 25 kHz Channel Spacing) 149 dB (for 20 kHz Channel Spacing) 151 dB (for 12.5 kHz Channel Spacing) 152 dB (for 6.25 kHz Channel Spacing)
Roaming Speed for DBPSK modulation	75 mph / 120 km/h
Modulation	GMSK/4FSK/DBPSK/DQPSK/D8PSK/D16QAM
Nominal Impedance	50 Ohms
End to End delay	60 ms
Communication Mode	Time Division Duplex (TDD) Time Division Multiple Access (TDMA)
Maximum Distance Range	11 miles / 18 km
Input/Output	Serial (RS232) up to 115200 bps

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 +16 VDC nominal
Power Consumption (Average)	6W / 2W / 0.05W –Transmit / Receive / Sleep
Housing/Color	Aluminum / Two-tone Silver / Gray
Antenna Connector	TNC, 50WΩ

Compliance

Parameter	Specification
FCC	Part 90
Industry Canada	RSS-119
R&TTE	ETSI EN 300 113-2 ETSI EN 301 489-5

Transmitter Specifications

Parameter	Specification
Output Power	DBPSK/GMSK 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W) DQPSK/4FSK 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W) D8PSK 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W) D16QAM 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W)
Output Power Control Accuracy	±1.5 dB (at normal test conditions) +2.0 dB and -3.0 dB (under extreme test conditions)
Carrier Frequency Stability	±1.5 ppm initial stability over temp with ±3.0 ppm aging/year
Max. Frequency Error	±1.0 kHz (at normal test conditions) ±1.5 kHz (under extreme test conditions)
Adjacent Channel Power (Conducted)	25/12.5/6.25 kHz CS 25/20/12.5 kHz CS Part §90.210 (C, D, E) for USA and Canada 60 dBc for Europe
Spurious Emission (Conducted)	-36 dBm (9 kHz – 1GHz) -30 dBm (1GHz – 4 GHz)
Spurious Emission (Radiated)	-36 dBm (9 kHz to 1 GHz) -30 dBm (1 GHz to 4 GHz)

Receiver Specifications

Parameter	Specification
Noise Figure	4 dB
Receiver Sensitivity (BER 1x10 ⁻⁴ , 25 kHz CS)	DBPSK -116 dBm 25kHz / -117 dBm 12.5kHz DQPSK -115 dBm 25kHz / -116 dBm 12.5kHz D8PSK -110 dBm 25kHz / -111 dBm 12.5kHz D16QAM -106 dBm 25kHz / -107 dBm 12.5kHz GMSK -113 dBm 25kHz / -114 dBm 12.5kHz
Dynamic Range	-115 to -15 dBm
Max. Input Signal Level	-10 dBm
Co-channel Rejection	-8 dB for 25 kHz Channel Spacing -8 dB for 20 kHz Channel Spacing -12 dB for 12.5 kHz Channel Spacing -16 dB for 6.25 kHz Channel Spacing
Adjacent Channel Selectivity	70 dB for 25 kHz Channel Spacing 70 dB for 20 kHz Channel Spacing 60 dB for 12.5 kHz Channel Spacing 50 dB for 6.25 kHz Channel Spacing