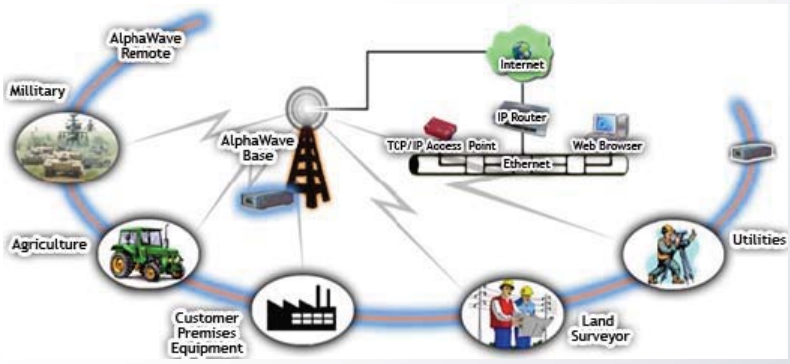
AlphaWave
Narrowband Radio Modems
WIRELESS SOLUTIONS

AW135

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

- 48 miles Maximum Distance Range
- Data Speed over the air 38400 bps at 25 kHz and 19200 bps at 12.5 kHz
- Programmable Output Power (320 mW to 35 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 48 miles). It also includes a selectable error correction, which improves the functioning of the radio modem under interference.



The unmatched features of AW 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.

AW 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 software of the AW 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.

AW135

General Radio Specifications

Parameter	Specification
Operating Frequency Range	138-174 MHz
Channel Spacing	25/12.5/6.25 kHz
Data Rate (25kHz Channel Spacing)	9600 bps – DBPSK/GMSK 19200 bps – DQPSK/4FSK 28800 bps – D8PSK 38400 bps – D16QAM
Data Rate (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)	161 dB (for 25 kHz Channel Spacing) 163 dB (for 12.5 kHz Channel Spacing) 164 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	48 miles / 77 km
Input/Output	Serial (RS232) up to 115200 bps

Environmental Specifications

Parameter	Specification
Temperature	Operating –40°C to +60°C Storage –40°C to +85°C
Environmental	IP 66
Dimensions (H x W x D)	152 mm x 84 mm x72 mm
Weight	900 g
Power Supply Voltage	+9 to +16 VDC nominal
Power Consumption (Average)	120W/38W/300mW – Continuous Transmit/ Transmit with 30% duty cycle/Sleep
Housing/Color	Aluminum / Two-tone Silver / Gray
Antenna Connector	TNC, 50WΩ

Compliance

Parameter	Specification
FCC	Part 90
Industry Canada	RSS-119

Transmitter Specifications

Parameter		Specification
Output Power	DBPSK/GMSK	25 dBm to 45.44 dBm in 1 dB steps (320 mW to 35W)
	DQPSK/4FSK	25 dBm to 45.44 dBm in 1 dB steps (320 mW to 35W)
	D8PSK	25 dBm to 40 dBm in 1 dB steps (320 mW to 10 W)
	D16QAM	25 dBm to 37 dBm in 1 dB steps (320 mW to 5 W)
Output Power Control Accuracy		±1.5 dB (at normal 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		Part §90.210 (C, D, E)
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	DBPSK	-116 dBm 25kHz / -117 dBm 12.5kHz
(BER 1x10-4, 25 kHz CS	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 -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 60 dB for 12.5 kHz Channel Spacing 50 dB for 6.25 kHz Channel Spacing

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