AlphaWave
Narrowband Radio Modems
WIRELESS SOLUTIONS
FOR SYSTEM CONTROL APPLICATIONS

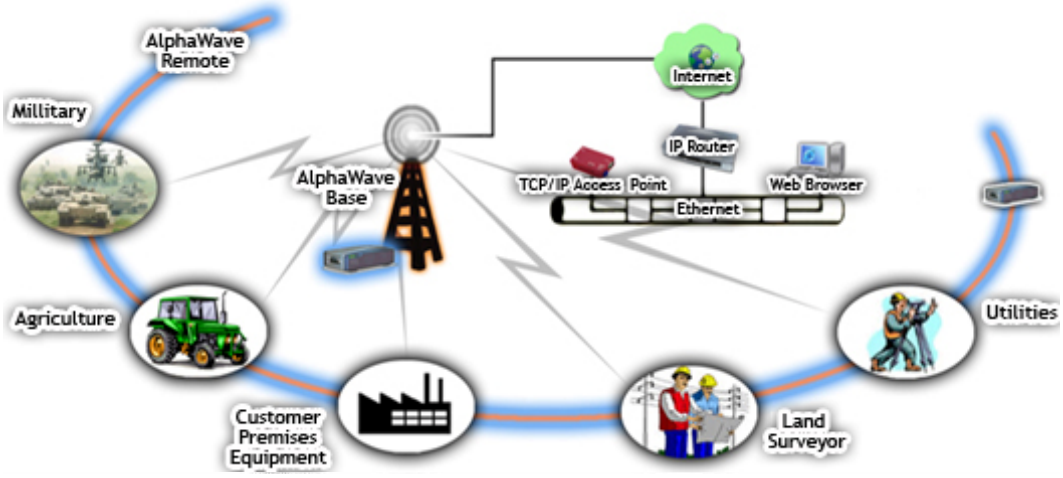
UHF 403 – 470 MHz

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

- Both Licensed and Unlicensed operation modes
- 50 miles Maximum Distance Range
- Data Speed over the air 38400 bps at 25 kHz and 19200 bps at 12.5 kHz
- Programmable Output Power (100 mW to 2 W)
- Advanced Forward Error Correction (FEC)
- RS-232 compatible serial interfaces with RTS/CTS flow control support
- Data Speed over the serial ports 300 to 115200 bps
- Testing, monitoring and control of the unit over the air
- *AlphaWave* SuperScan® - automatic search and select for best frequency/channel

ArWest Communications Corp. exceeds established standards within the SCADA and outdoor telemetry markets with the release of *AlphaWave* (**AW**) series DSP based integrated wireless modem, the first in a series of next generation Narrow-Band products. The *AW* radio modem provides a high-speed Point-to-Point and Point-to-Multipoint wireless data transfer at up to 38.4 kbps.

AW software supports user selectable modulation techniques (GMSK/BPSK, QPSK, 8PSK, or 16QAM), which allows the user to achieve the highest data speed for a given range (up to 50 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, auto-scanning for base and plug-and-play installation for remote terminals.

AW supports two separate Application Data and Maintenance RS-232 serial ports. Without data link interruption the radio parameter settings can be changed through the unit's Dedicated Maintenance 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 RS-232 interface or over the air.

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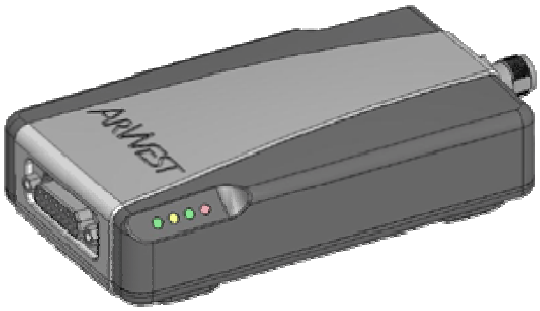
ARWEST

AW400

General Radio Specifications

Parameter	Specification		
Operating Frequency Range	403 - 470 MHz		
Modulation Technique	GMSK/DBPSK, DQPSK, D8PSK and D16QAM		
Media Access Control Protocols	Time Division Duplex (TDD) Time Division Multiplex Access (TDMA)		
Supported User Interfaces	RS232 (current)		
Supported Comms. Protocols	MODBUS (current)		
Maximum Distance Range	50 miles / 80 km		
Occupied Bandwidth	6.25 kHz, 12.5 kHz or 25 kHz		
Data Rate	25 kHz	12.5 kHz	6.25 kHz
GMSK/DBPSK	9600	4800	2400
DQPSK	19200	9600	4800
D8PSK	28800	19200	7200
D16QAM	38400	28800	9600
System Gain (Antenna not incl.)	146 dBm	149 dBm	152 dBm
End to End delay	50 ms		



Transmitter Specifications

Parameter	Specification
Output Power	13 dBm to 33 dBm in 1 dB steps
Output power control accuracy	±1.5 dB (at normal test conditions)
Nominal Output Impedance	50 Ohms
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)
Adjacent Channel Power (Conducted) 25/12.5/6.25 kHz CS	< 70 / 60 / 50 dBc
Spurious Emission (Conducted)	-36 dBm @(9 kHz – 1GHz) -30 dBm @(1GHz – 4 GHz)
Spurious Emission (Radiated)	-36 dBm @(9 kHz – 1GHz) -30 dBm @(1GHz – 4 GHz)

Receiver Specifications

Parameter	Specification
Noise Figure	10 dB
Nominal Input Impedance	50 Ohms
Receiver Sensitivity (@BER $1x10^{-4}$, over temperature −30°C to +60°C) 25/12.5/6.25 kHz CS	-113 / -116 / -119 dBm
Rx AGC Dynamic Range	-119 to −52 dBm
Co-Channel Rejection 25/12.5 kHz CS	-8 / -12 / -16 dB
Adjacent Channel Selectivity 25/12.5/6.25 kHz CS	70 / 60 / 50 dBc

Environmental Specifications

Parameter	Specification	
Temperature	Operating	−30°C to +60°C (ETSI 300-019-1-3 Class 3.1 (E).
	Storage	−40°C to +85°C
Environmental	IPC66	
Dimensions (H x W x D)	5.87" x 2.93" x 1.51" D (137mm x 75mm x 29mm)	
Weight	12 oz (340 g)	
Power Supply Voltage	+9 to +24 VDC nominal	
Power Consumption (Average)	6W / 2W / 0.05W – Transmit / Receive / Sleep	
Housing/Color	Aluminum / Two-tone Silver / Black	
Antenna Connector	TNC, 50Ω, female	
User Interface Connector / Power Connector	D15 waterproof, female connector	
Altitude	-1,000 m below sea level to 8,500 m above sea level	

Compliance

Parameter	Specification
ETSI / FCC / Industry Canada	ETSI 300-113 / FCC Part 15 / RSS-210
UL	UL 1419
UL Hazardous Locations	Class 1, Div 2; Groups A, B, C, and D; hazardous locations
FM	Approved

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