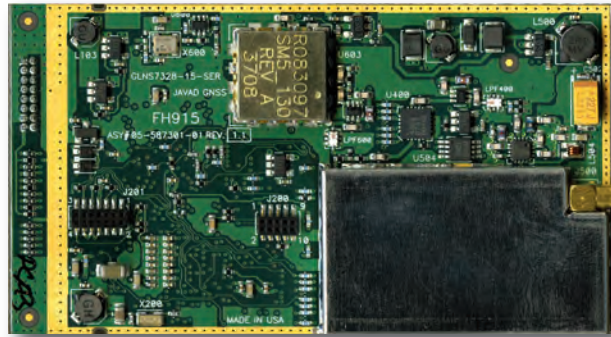# FH915

FH915 radio transceiver is designed as universal license-free modem. It uses 902-928 MHz ISM (industrial, scientific and medical) license free USA band and 915-928 MHz Australian band with frequency hopping transmission techniques for excellent reliability in noisy plant environments and European CEPT license free 868-870 MHz band, allocated for narrow band telemetry, alarms and data transfer applications.

Thanks to its small size, and multiple functions, the FH915 is specifically well suited for amount of applications within industrial complexes, for various indoor as well as medium-range applications.

The unmatched features of FH915 include data scrambling, frequency hopping, user selectable transmit output power level, low power consumption sleep modes, repeater mode, and plug-and-play installation for remote terminals.

FH915 supports two separate Application Data and Maintenance modes of single UART serial port. The built-in software tools provide the wireless link testing, unit's status and error statistics monitoring. The firmware of the FH915 radio transceiver resides in a flash memory. The updating of the radio transceiver programs is entirely software-based. The flash memory is re-programmable through an UART interface.

The FH915 is developed for exacting customer needs and to have pin-to-pin compatibility with our OEM radios AW400Tx, AW400Rx, and AW100Tx.

FH915

General Specification

- Input Voltage: 4.0 V ± 5 %
- Power Consumption (average): 3 W – transmit with 50% duty cycle (1 W TPO)
  - 1 W – receive mode
- Operation Temperature: -40ºC ... +60ºC
- Storage Temperature: -40ºC ... +80ºC
- Dimensions: L: 80 mm x W: 46.5 mm x H: 7.6/9.5 mm
- Weight: 43 g

Features

- DSP-Modem
- Zero-IF Technologies
- 902-928 MHz (USA), 915-928 MHz (Australia), 868-870 MHz (EU) Frequency Ranges
- Up to 115200 bps Serial Interface Data Rate
- Embedded Firmware Compensation for Operation at Extremely Low and High Temperatures
- Compact Design

External Connectors:

RF Connector

J2 is Antenna Input / Output Connector: MMCX RIGHT ANGLE PCB JACK, AMPHENOL P/N 908-24100.

Main Connector (J1)

16-Lead Header Connector, ECS Corp. P/N 9616-D1-01-03

Radio Transmitter Specifications

Component	Details
Transmitter Output Power	+15...+30 dBm in 1dB step/50 Ω (USA/Australia) +7...+27 dBm in 1dB step/50 Ω (EU)

Radio Transceiver Specifications

Component	Details
Frequency Range	902-928 MHz (USA) 915-928 MHz (Australia) 868-870 MHz (EU) with 25/12.5 kHz CS
Link Rate, symbols/second	8000, 16000, 32000, 64000 (USA/Australia) 4800, 9600 (EU)
Carrier Frequency Stability	±1 ppm
Modulation	GMSK
Communication Mode	Half duplex, simplex

Radio Receiver Specifications

Component	Details
Receiver Sensitivity for GMSK (BER 1x 10^{-4})	-110 dBm for 25 kHz CS -112 dBm for 12.5 kHz CS
Receiver Dynamic Range	-119 to -10 dBm

Modem Specification

Component	Details
Interface DSP	UART (serial port)
Interface Connector	16-lead Connector
Data Speed of Serial Interface	9600 - 115200 bps
Data Rate of Radio Interface (USA/Australia)	8000 bps – GMSK 16000 bps –GMSK 32000 bps – GMSK 64000 bps – GMSK
Data Rate Radio Interface (25 kHz CS)	9600 bps – GMSK
Data Rate Radio Interface (12.5 kHz CS)	4800 bps – GMSK
Forward Error Correction (FEC)	Convolutional code
Data scrambling	Yes

Compliance

Parameter	Specification
FCC	Part 15.247
ETSI	EN 300 220-1, EN 301 489-1

PIN #	Signal Designator	Signal name	Description	I/O	Comments
1	GND	GND	Ground	-	Signal and Chassis Ground
2	DSP UART 1	TXD	Transmitted Data	TTL Input	Serial Data Input
3	DSP UART 2	RXD	Received Data	TTL Output	Output for received serial data
4	DPORT5	DTR or DP/MP	Data Terminal Ready	TTL Input	Control line can be used as a backup method for entering Command mode: (0V) – Maintenance Mode; (3.3V) – Data Mode An internal 100K pull-up enables Data Mode if this signal is left unconnected. Maintenance Mode is also accessible by transmitting an escape sequence.
5	DPORT1	CTS	Clear to Send	TTL Output	Used to control transmit flow from the user to the radio: (0V) – Transmit buffer not full, continue transmitting (3.3V) – Transmit buffer full, stop transmitting
6	TTLI1	SLEEP	Sleeps/wakes radio Receive only	TTL Input	In sleep mode, all radio functions are disabled consuming less than 50µA. An internal 10K pull-down wakes up the radio if this signal is left unconnected. At wake up, any user programmed configuration settings are refreshed from flash memory, clearing any temporary settings that may have been set: (3.3V) – Sleep Radio; (0V) – Wake Radio As an option could be used as TTL Input Line 1.
7	DPORT3	MDM_GRN	Data Carrier Detect	TTL Output	Used by remotes to indicate that the remote has successfully acquired the signal from base station: (0V) – Carrier detected (synchronized) (3.3V) – No carrier detected (not synchronized)
8	DPORT4	RTS	Request to Send	TTL Input	Gates the flow of receive data from the radio to the user on or off. An internal 10K pull-down enables data receive if this signal is left unconnected. In normal operation, this signal should be asserted: (0V) – Receive data (RxD) enabled (3.3V) – Receive data (RxD) disabled
9	DPORT2	DSR	Data Set Ready	TTL Output	Used to control transmit flow from the user to the radio: (0V) – Receive buffer has data to transfer; (3.3V) – Receive buffer is empty
10	RES CONT	RESCONT	Reset the radio	TTL Input	Reset the radio by shortening this pin to the ground.
11	TTLO1	TTLOUT1	TTL Output Line 1	TTL Output	Reserve line
12	TTLO2	TTLOUT2	TTL Output Line 2	TTL Output	Reserve line
13	GND	GND	Ground	-	Signal and Chassis Ground
14	TTLI2	TTLIN	TTL Input line	TTL Input	An internal 100K pull-up resistor is applied.
15	VCC36	PWR	Power Supply	External	Regulated positive 4.0V DC from ext. Power Supply.
16	VCC36	PWR	Power Supply	External	Regulated positive 4.0V DC from ext. Power Supply.

BOTTOM
[2.95 in] 75.00 mm
[1.83 in] 46.50 mm
15
1
[3.15 in] 80.00 mm
.3 in 7.6 mm
SIDE
.37 in 9.50 mm
Connector, 16-lead, Thru-hole 2x8, Header, ".050"
DIMENSIONS·mm[inch]