



Wireless Instrumentation Base Radio Logger



Base Radio/Logger Description

The Base Radio/Logger is the heart of the wireless instrument network. It communicates with all of the deployed Field Units attached to it in a local area star network and acts as a standalone intelligent data logger via a hot swappable SDRAM card or interfaces with your existing control system and/or the AKS Wireless Instrumentation Manager for network management. Outputs include RS-485 WIM and serial Modbus RTU. A Modbus TCP/IP converter can also be provided.

Multiple 4-20 mA outputs and discrete switch outputs are available for easy interface to existing I/O. (See the output module data sheet for details). One Base Radio can communicate with up to 100 Field Units. Multiple Base Radios can be used to accommodate additional field units. With the capability to scale up to as many as 16 LAN's, AKS's Wireless Instrumentation allows for future expansion. The Base Radio/Logger mounting is available as a standalone cage assembly, mounted inside an explosion proof housing, or mounted inside a NEMA 4X enclosure.

Technical Specifications

Power Characteristics

- 24 VDC @ .2A, standard 2-wire
- 120/240 VAC adapter (optional)

RF Characteristics

- 902 MHz – 928 MHz Frequency Hopping Spread Spectrum (FHSS), FCC certified ISM license-free band Registration # QQN 16363
- Up to 3000' range to Field Units with clear line of sight; 500' to 1000' range with obstructions – range doubles with use of high gain antenna.
- The RF module in each radio is individually tested and calibrated over the full temperature range to ensure reliable wireless operation

Output Options

- RS-485 digital communications (WI-BR-I-XP) with conversion to RS-232 or USB for interface with PC or server and Wireless Instrumentation Manager (WIM) (optional)
- Multiple 4-20 mA analog outputs with RS-485 digital communications (WI-BR-I-XP) and Analog/Digital Output Modules (WI-4AO, WI-8SW, or WI-4AO-8SW) (optional)
- Serial Modbus RTU (Binary) (WI-BR-I-XP-MOD) over RS-485 is compatible with most HMI application packages, PLC's and DCS's
- Modbus TCP over Ethernet (with optional off-the-shelf converter)

Self-Diagnostics

- Contains extensive self-checking software and hardware that continuously monitors the operation. Any sensor or device parameter out of spec is identified and reported

Physical Characteristic

- Baked enamel explosion-proof, weather-proof and corrosion proof housing Electromagnetic Compatibility (CE Compliance)
- Operates within specification in fields from 80 to 1,000 MHz with field strengths to 30 V/m. Meets EN 50082-1 general immunity standard and EN 55011 compatibility emissions standard Industrial Certification with integral antenna
- Rated for industrial use FM Rated -40° F to +185° F (-40° C to +85° C); CSA Rated -40° F to +104° F (-40° C to +40° C) and EN 55011 compatibility emissions standard.FM Approved as explosion-proof (XP) for Class I, Division 1, Groups B,C,&D, T6 @ ambient temperatures ≤+40°; T5 @ ambient temperatures ≤ +85°C; as dust ignition-proof for Class II/III, Division 1, Groups E, F, & G, T6; indoor and outdoor (Type 4X) hazardous (classified) locations.

Technical Specifications - Cont.

- CSA Approved as explosion-proof (XP) for Class I, Division 1, Groups B, C, & D, T4@ ambient temperatures $\leq +40^{\circ}\text{C}$; as dust ignition-proof for Class II/III, Division 1, Groups E, F, & G; indoor and outdoor (Type 4X) hazardous (classified) locations.
- NEMA 4X weather-proof housing

Base Radio Modbus Output Option

The Modbus Base Radio output option allows the user flexibility to implement serial Modbus RTU for monitoring and the Wireless Instrumentation Manager for remote configuration of the Field Units. The data streams run continuously in parallel enabling network management and diagnostics without interrupting data flow. More information on implementing Serial Modbus RTU can be obtained at <http://www.Modbus.org>. AKS supports conversion to Modbus TCP/IP with an optional DIN rail mounted module.

OPC Server Option

The WIM data stream has an OPC server utility option that enables OPC HMI software access to the Base Radio and field unit data elements. This user-friendly interface is available at no cost with registration of your Wireless Instrument System.

WIM Configuration & Diagnostic Software Option

The Wireless Instrument Manager (WIM) software provides access to the Base Radio and field units for initial configuration, ongoing configuration and network management, field unit diagnostics and limited duty data logging. This software is also available at no cost with registration of your Wireless Instrument System. The versatile WIM is easy to use and enables remote configuration with administrative security functions. WIM has a client/server architecture. Using a battery powered laptop and Base Radio in conjunction with self powered field units creates a totally portable rapidly deployed diagnostic capability for any process. (See the WIM data sheet for more details)

Analog and/or Discrete Output Options

When existing data management infrastructure favors the use of traditional 4-20 mA and contact closure outputs, the RS-485 WIM data stream can be converted to analog and discrete values with DIN rail mounted modules.

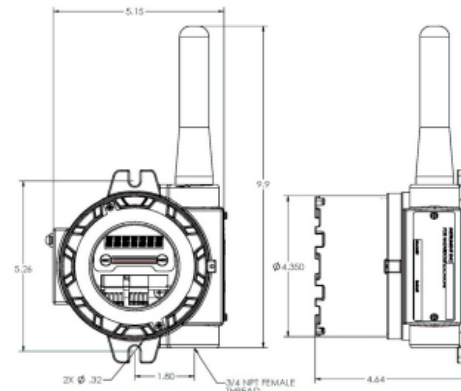
Remote Antenna Options

The base radio is available with remote antenna options that are described in detail in the data sheet entitled High Gain Antennas. Impedance matching is necessary for optimal antenna performance and FCC compliance, so only high gain antennas offered by AKS should be used.

Logger Function Board

The base radio logger board incorporates logic and memory logging into the cage assembly. All loggers come complete with industry rated SDRAM cards. All programming of the loggers are done via the SDRAM card so no direct connection to the logger is required.

- Data sampling frequency intervals: 1 sec to hourly samples
- Logger utilizes industry rated 256MB SDRAM
- All data logged to .csv file format
- On board processor computes AGA 3 gas flow calculation
- Hot swappable interface



Model	Gauge Pressure Field Unit		
BR	Base Radio		
BRL	Base Radio w/Logger and logic board		
	Code	Antenna Option	
	I	INTEGRAL WITH XP ANTENNA COVER	
	R	REMOTE ANTENNA	
	Code	Hazardous Area Rating	
	XP	EXPLOSION PROOF (Class 1, Div 1 Locations, available only with integral antenna)	
	4X	NEMA 4X RATED (Class 1, Div 2 Locations)	
	CG	OPEN CAGE ASSEMBLY (for panel construction only, DIN rail mount included)	
	Code	24VDC POWERED OPTION	
	MOD	MODBUS COMMUNICATIONS PROTOCOL	
BRL	I	XP	MOD
TYPICAL MODEL NUMBER			