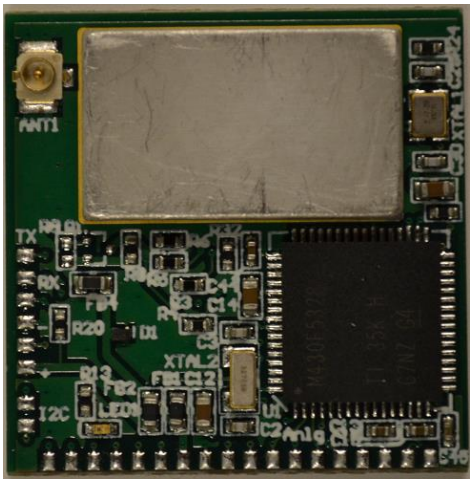
SD 2.0 Wireless Radio User Guide



Version 1.0 12/6/13

Revision History

Revision	Date	Note
1.0	12/6/13	--

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General Description

The SD 2.0 Wireless Radio is a 2.4 GHz 2-way radio module intended for wireless transmission of sensor data. The board's small package and modular design facilitate integration with a wide range of sensors, and in particular it is designed to be permanently mounted to KCF's line of Smart Diagnostics sensors.

The radio features a proprietary multi-frequency network protocol to allow simple setup and operation of up to 100 sensor nodes per receiver, making it an ideal solution for multi-point monitoring of industrial equipment. The communication protocol of the radio is highly configurable to allow tailoring of data collection to numerous different applications. Sampling rate, collection interval, input channels, etc. are all adjustable by the user.

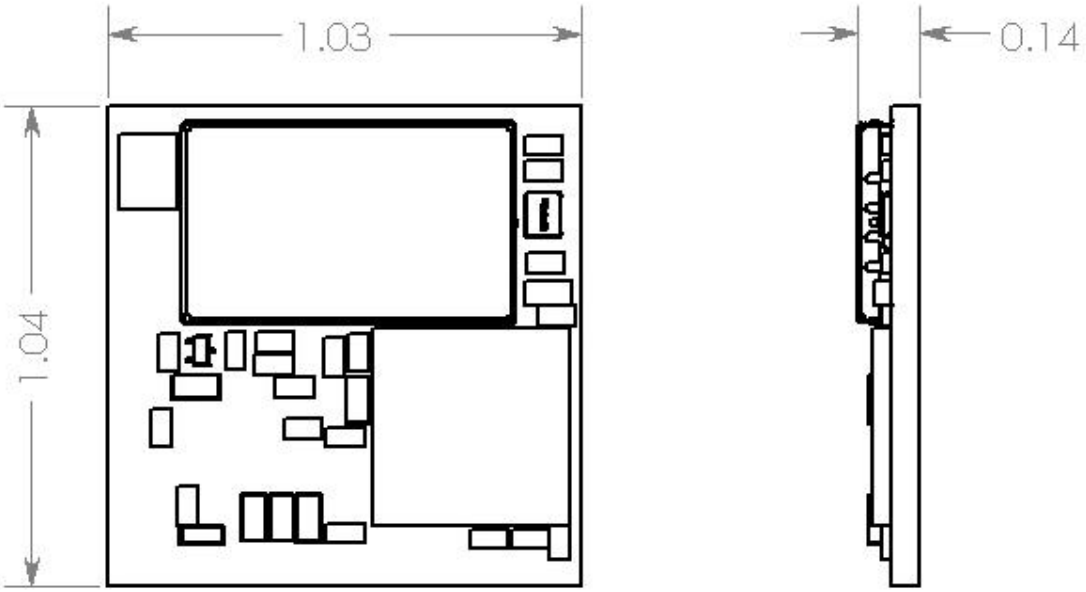
The radio is designed to be attached via land-grid-array (LGA) soldering to the sensor board it is serving, thereby minimizing the size of the entire sensor/radio package and eliminating the size, expense, and long term reliability risks of a connector. The radio is powered via the LGA connection to the sensor board.

The radio communicates using an antenna provided by KCF which attaches to the radio module using a standard U.FL connector.

Performance Specifications

Wireless Module	
RF	
Frequency Band	2.4 GHz ISM band
Data rates	2000 kbps
Modulation	GFSK
Channel spacing	6 MHz
Receive sensitivity	-90 dB at 2000 kbps
Acknowledgement	Hardware level auto-acknowledgement
Retransmission	Hardware level 0-35x
Microcontroller	
Digital I/O	47
ADC inputs	10 external - 12 bit SAR
RAM	10k
Flash	128k
Physical	
Mass	3.5 grams
Mount	LGA
Antenna port	Hirose U.FL
Temperature	-40 to+ 85C
RoHS	Compliant
Voltage	2.7-3.6 V (Recommend Duracell CR123A Battery)
Programming interface	Spy-Bi-Wire (serialized JTAG)
Certification	
FCC/ETIS	Pending

Physical Dimensions



Note: Dimensions in inches, tolerance is +/- 0.010

FCC Compliance Information

FCC ID: Z5ISD2

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this device (including operating at different power levels or substituting a different antenna) not expressly approved by KCF Technologies, Inc. may void the user's authority to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: to minimize RF exposure it is recommended to maintain a minimum separation of 20cm between the device and the user during operation.