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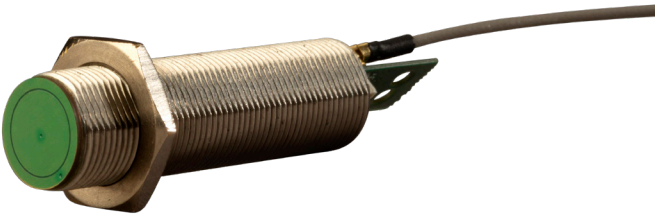
A WORLDWIDE MANUFACTURER OF PRECISION MEASUREMENT SOLUTIONS

Single Channel Capacitance Wireless Probe System

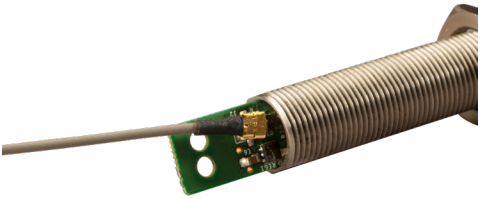
ABOUT THE SYSTEM

The system is a 2.4gHz wireless capacitive gap sensor pared with a receiving device. Calibrated, it measures the distance to a grounded metal target. The transmitter can be permanently mounted on a fixture or threaded probe holder using two jam nuts. The probe/transmitter unit has two connectors. One connector is to attach the antenna and the second connector is to attach the battery for portable operation. Typically ,the battery Amp hours is sized for the application. The receiver communicates with up to 4 wireless displacement sensors to receive displacement readings. The receiver interfaces as a RS-485 Modbus RTU device. The receiver device must also be connected to a suitable power supply. A "start sample" command is sent to the selected sensor to begin receiving data at a selected rate. For single samples, a manual sample sequence command can be executed at any point. The sample sequence puts the sensor into a powered on state for a single sample cycle. Upon completion of the cycle, the sensor transmits the data and goes back to a low-power state.

Both the transmitter "sensor" and receiver devices are "Bluetooth" radio frequency transceivers. They both are capable of transmitting and receiving digital packet messages. Multiple sensor and receiver devices may be operated in a close environment as they will not interfere with each other. Users can program and calibrate the Probe assemblies with MTI provided software.



Wireless probe with up to 2 mm measuring range (shown with antenna attached)



Closeup of wireleess probe circuit

RECEIVING MODULE

Receeiving module

Sensor System Receiver Specifications

The following specifications are listed for the "Standard" configuration.
Contact the factory for specifications of other versions.

Power	5-30 VDC, 100mA
Interface Protocol	RS-485 Modbus RTU
Protocol Baud	19200
Protocol Parity	Even
Protocol Stop Bits	1
Device Address	0x42 (may be adjusted)
Operating Temperature	4 to 55ºC
Storage Temperature	-15 to 65ºC (5 to 150ºF)
Radio frequency	2.4Ghz
Maximum distance from sensor	5 m , (Mounting dependent)
Radio Frequency Conformity	IEEE 802.15.1 (ISM standard)
Size	15mm H x 44 W x 64 mm L
Weight	4 Oz
Connector	Phoenix Contact #1844263
Mate	Phoenix Contact #1840382

PROBE ASSEMBLY

Probe / Transmitter Specifications

Measurement Range	0.1-2mm
Resolution	0.014mm
Accuracy	0.043 mm
Linearity error	0.3% FSR
Max sample rate	4 SPS
Max latency	2 seconds
Power	3.4 - 4.5 VDC (1x 3.6V LTC battery) At 5 mA
Radio frequency	2.4Ghz
Maximum distance from receiver device	5 m , (Mounting dependent)
Maximum number of devices in close proximity	30 units
Radio Frequency Conformity	IEEE 802.15.1 (ISM standard)
Size	10 mm dia x 60 mm long
Weight	10,5 grams
Antenna connector required	Hirose U.FL-LP-040
Battery connector	SURS # SM05B-SURS-TF
Mounting thread	10 mm x .75
Battery life	Dependent on SPS and Sample Period

Typical Complete System showing Probe, antenna, receiver and programming interface. Battery is not shown

Options

- Battery assembly – Contact MTI for battery and battery assembly design
- Programming / Calibration software

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