

A WORLDWIDE LEADER IN PRECISION MEASUREMENT SOLUTIONS

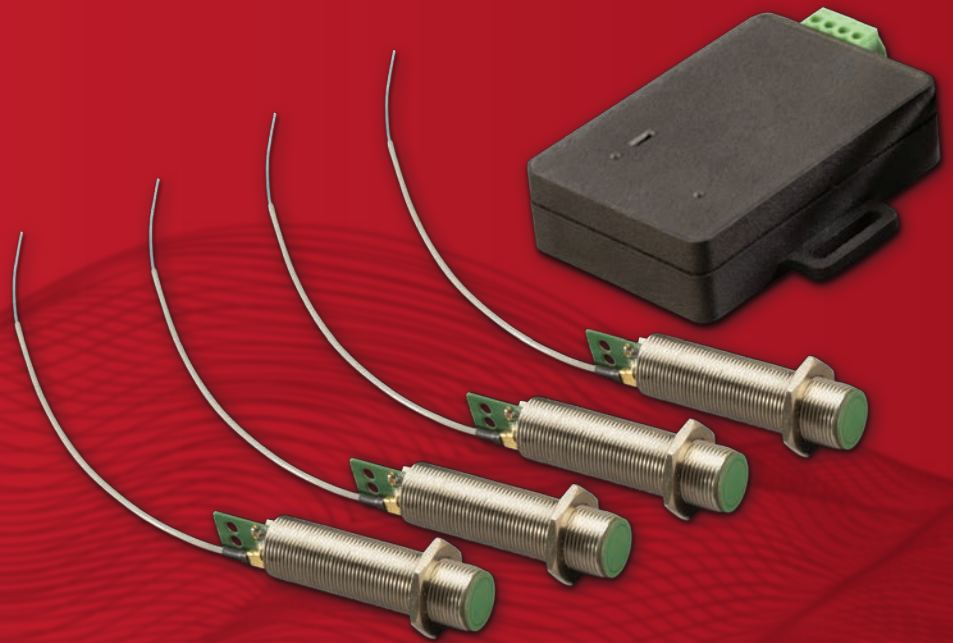
mti instruments

By **VITREK**

Accumeasure Wireless Gap Measurement Probe System

Bluetooth | Up to 240 readings/min | 0.1 - 2mm Range

Typical components showing probes with antennae, and receiver for gap measurement in rotating machinery.



About the System

The system is a 2.4GHz wireless capacitive gap sensor paired 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.

Additional Features Include

- **Bluetooth Wireless**—Proven to work in noisy industrial environments and is immune to jamming by other wireless devices.
- **Capacitance-based Technology**—Unlike eddy current, capacitance is insensitive to target material, self-contained absolute calibration.
- **Standard PLC Interface**—Easy to hook up to a PLC without any custom wiring.
- **Networking Capable**—Up to 4 sensors can be networked together per receiver, for rich geometrical measurement.
- **Battery-operated Compact Form Factor**—Can be easily placed in hazardous or unserviceable environments like in rotating machinery
- **Measurement Range** 0.1-2.0 mm
- **Unique ID** for each sensor in the system

Applications

Replacement of out-dated Eddy Current probe systems

- Eliminate drift due to temperature, by replacing eddy current probes with higher temperature stability capacitance.
- Gain more insight by networking wireless probes together to measure target geometry
- Built-in calibration replaces in-situ Eddy Current calibration saving installation time
- Immune to magnetic field interference

Measuring gap in rotating machinery

- The wireless capability and compact form factor, were designed specifically to measure gap in difficult to reach or inaccessible locations
- Optimized for machines that have a surface velocity up to 6000 SFM
- Capacitance-based technology allows measurement to any type of metal surface

Probe/Transmitter Specifications

Resolution	0.014 mm
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	2.4 GHz
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



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



Closeup of wireless probe circuit.

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 55°C
Storage Temperature	-15 to 65°C (5 to 150°F)
Radio Frequency	2.4 GHz
Maximum Distance from Sensor	5 m, (Mounting dependent)
Radio Frequency Conformity	IEEE 802.15.1 (ISM standard)
Size	15 mm H x 44 mm W x 64 mm L
Weight	4 oz
Connector	Phoenix Contact #1844236
Mate	Phoenix Contact #1840382



Options

- The battery and holder are designed to fit to the clients application. Contact MTI for information on custom formats.
- Programming/Calibration software

mti instruments

By **VITREK**

A WORLDWIDE MANUFACTURER OF PRECISION MEASUREMENT SOLUTIONS

325 WASHINGTON AVENUE EXTENSION
ALBANY, NY 12205-5505
PH. +1-518-218-2550
OR USA TOLL FREE: 1-800-342-2203

FAX: +1-518-218-2506
EMAIL: SALES@MTIINSTRUMENTS.COM
WWW.MTIINSTRUMENTS.COM

