

# **MPE Wireless Transducer Specification**

The wireless transducer shall be comprised of two parts, the Transmitter and the Receiver.

## **Transmitter**

The Wireless Transducer Transmitter shall perform liquid level measurement and sends the data by radio signal to the Receiver. The wireless transducer transmitter shall consist of two parts, connected by a cable; the Transmitter and the Pressure Sensor. The Transmitter shall be suspended above the liquid, and the Pressure Sensor shall be submerged in the liquid near the bottom of the tank.

The Transmitter shall transmit updated level data and battery condition data once every second. The transmitter shall conserve battery power by ensuring most of its circuitry is powered down and asleep between updates. After being asleep for one second, the Transmitter shall wake up, power up the Pressure Sensor, check the level, check the condition of the battery, and then transmits the new data to the Receiver. When this has been done, the transmitter shall go back to sleep.

## **Transducer Pressure Sensor**

When submerged in liquid, the Pressure Sensor shall convert the pressure exerted by the liquid into an analog voltage signal that shall represent the liquid level. The pressure sensor shall measure the absolute pressure, and the receiver shall contain a sensor to measure atmospheric pressure to make corrections for changes in the barometric pressure. These corrections to the barometric pressure shall be performed in the Receiver where the local atmospheric pressure is measured and subtracted from the absolute pressure signal.

A stainless steel diaphragm and silicone oil fill is provided to isolate and protect the pressure sensor from the liquid being measured. The weight of the Pressure Sensor acts to reduce its movement when placed in a moving liquid, and shall be a minimum of 6.0 lbs. A Strength Cord shall be part of the cable construction, providing the cable ample support for its weight. In applications where strong currents may be present, there shall be a 1/2" NPT fitting on top may be used to mount the transducer body in a fixed position. The Pressure Sensor and the Transmitter shall be connected together, tested and calibrated as a single unit. There shall be a number of pressures ranges and cable lengths available. The submersible transducer unit shall be no more than 3.75 inches in diameter, and shall fit inside of a 4 inch stilling well.

## **Receiver**

The Wireless Transducer Receiver (WTR420) shall read the liquid level information in the radio signal from the nearby Wireless Transducer Transmitter and provide an analog 4-20mA output and SCADA register data representing the liquid level being monitored. The Receiver shall obtain the liquid level by radio signal from the Pressure Sensor, which shall be submerged near the bottom of the tank, and connected by cable to the Wireless Transducer Transmitter.

The WTR420 shall provide four levels of Radio Link Quality indication. The four levels shall be defined as HIGH, GOOD, LOW, and LOST. HIGH, shall indicate strong error free communication. GOOD, shall indicate good but less than ideal communication. LOW, shall indicate intermittent and unreliable communication. LOST, which shall indicate no communication with the Transmitter.

The WTR420 shall provide a BATTERY LOW indication to indicate the condition of the battery in the Transmitter. The indicator shall blink when the battery has low voltage and must be replaced.

The WTR420 shall contain Zero and Span potentiometers are for field calibration.

The WTR420 acts as a Modbus RTU slave. Connecting the RS-232 serial port (or optional Ethernet Port) to a SCADA system shall allow the liquid level to be monitored remotely.

Additional setup and troubleshooting features shall be available using the separately supplied Touch Screen Interface Device (TSID), manufactured by M.P. Electronics.

The Transmitter and Receiver shall be capable of reliable communication even with the Transmitter under the concrete slab of a lift station wet well. The Antenna for the Receiver shall be mounted external to the control panel that the Receiver is installed in. For applications where the Transmitter and Receiver Antenna have line of site, reliable communication shall be maintained at distances up to 125 feet.

The Wireless Transmitter shall be part number WTT-A-B, where A is the pressure range, and B is the cable length, The Wireless Receiver shall be part number WTR420-X, where X is blank for the standard unit with an RS232 Serial Port, or X equals E for the optional Ethernet connectivity. The Wireless Transmitter and Receiver shall be manufactured by M.P. Electronics, Apopka, Florida, 407-299-3825.