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APPLICATION BULLETIN

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WIYZ Remote Monitoring Scenarios

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Connecting 4-20mA Devices to a WiYZ Remote

This is an example installation connecting pressure and temperature devices to the GE MDS WiYZ "Current Input" Remote to monitor industrial processes.

INTRODUCTION

The WiYZ Remote is equipped with analog inputs that can read signals in the 0-22 mA range. This extended range allows readings outside the standard 4-20 mA measurement range in order to support the reporting of errors or trouble conditions. The WiYZ remote is equipped with an onboard 24 VDC power supply that can be used to power the attached sensor, transducer or other instrumentation device.

DEFINITIONS

This section summarizes the definition of various terms used in this bulleting as many of their definitions are not consistent across manufacturers, system integrators and end users.

Sensor: Device that measures a physical parameter like pressure or temperature and converts it into a measurable signal.

Sensing Element: The physical element that registers a change based on changes in the physical parameter it measures.

Transducer/Transmitter: A term used to for devices that combine sensors, conditioning circuits that linearize and amplify sensor signals and output 0-20 mA or 0-5 V signals.

Instrument/Instrumentation: A general classification of devices that can include Sensors, Transducers and Transmitters.

RTD: Resistance Temperature Device. An example of a sensing element.

High Rate: Periodic sampling every 1 second up to 1 minute.

Low Rate: Periodic sampling every 5 minutes or more.

VDC Input: WiYZ Remote sources power from terminal strip pins 14-15.

Battery Input: WiYZ Remote sources power from internal battery pack.

PRESSURE SENSOR

Pressure transmitters are examples of devices that integrate a pressure sensing element and output a linear 4-20 mA DC current proportional to the measured pressure.

Table 1. Pressure Sensor

Model	Manufacturer
UNIK5000-PTX	GE Sensing

An example of connecting a pressure transmitter to a WiYZ Remote is shown in Figure 1. A pair of wires provides power to the transmitter and also is used to generate a linear 4-20 mA signal proportional to the measured pressure. The current increases with the pressure starting at 4mA at the lowest pressure value, rising to 20mA at the top of the pressure range.

The Sensor Power Supply Output (pin 16) is connected to the positive terminal of the transmitter (**+VE Supply**) while the negative terminal (**-VE Supply**) is connected to Analog Current Input 1+ (pin 9). At this point, the current loop needs to be completed with a jumper between Analog Current Input 1- (pin 10) and the WiYZ Remote ground (pin 8).

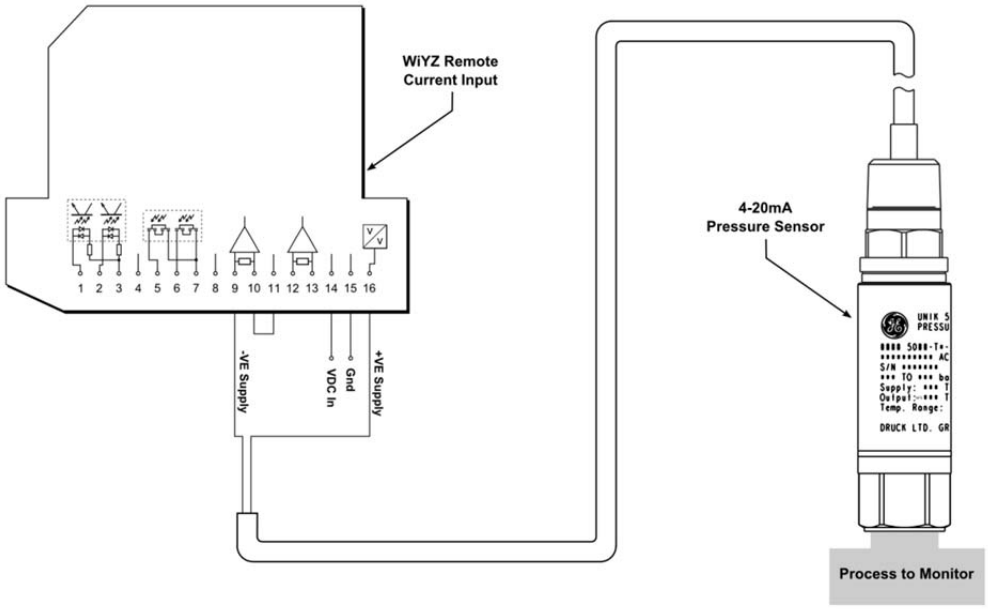

Figure 1. WiYZ Remote – Pressure Sensor Connection Diagram

The Sensor Power Supply Output is useful for use cases where the user wishes to power the transmitter from the WiYZ Remotes internal power supply vs. installing or using a separate external power source. A maximum of 40mA can be sourced being enough to run two simultaneous current loops.

TEMPERATURE SENSOR

RTDs are sensing elements that exhibit a correlation between resistance and temperature. RTD Transmitters and Transducers are used to amplify, linearize and condition the low level signal provided by these sensor elements. When selecting a sensor, the output signal conditioner is the starting point to consider because this is the interface element to the WiYZ Remote.

The range of temperature sensors is as large and diverse as the applications where they can be used. Some sensors are fully integrated solutions while others are built from stocked parts to fit a particular requirement. One example is the temperature sensor assembly shown in Figure 2.

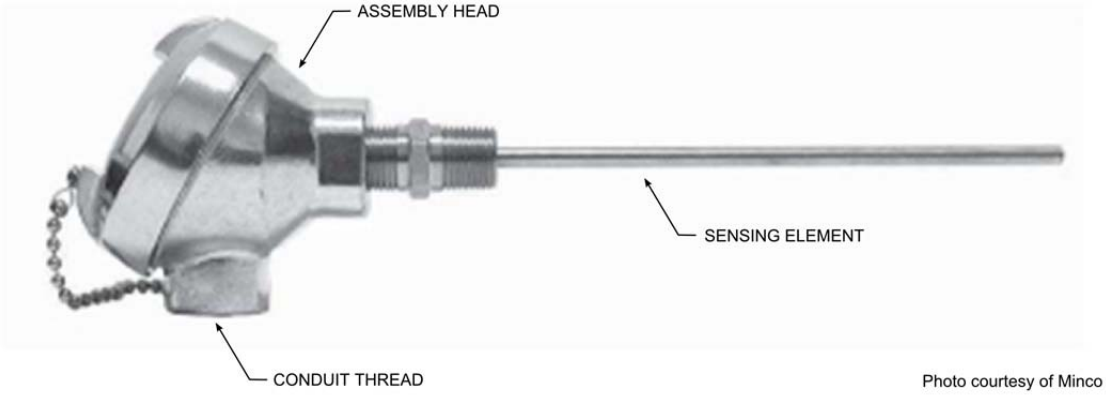

Figure 2. Temperature Sensor Assembly

This offering is a rugged and easy to install solution designed to read temperatures from bearings, blocks and other solids. The assembly head is sized to house the signal conditioner and provide mechanical support for the sensing element. A conduit threaded hole is available at the bottom of the head to route cables for sensor power and output.

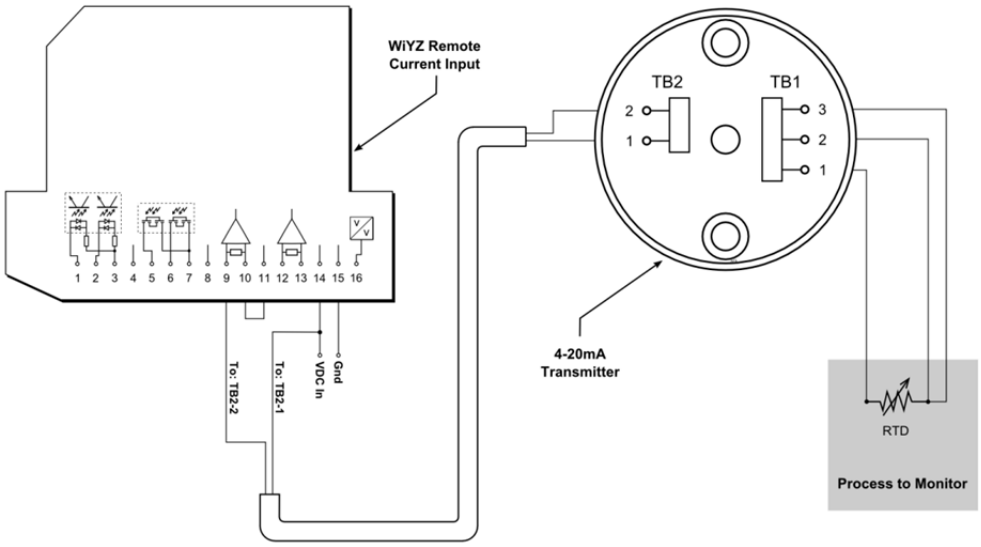

Figure 3. WiYZ Remote - Transmitter Connection Diagram

Figure 3 above shows an example of a transmitter connected to a WiYZ Remote for the temperature assembly presented in Figure 2.

Table 2. Temperature Transmitter

Model	Manufacturer
TT176PB1AC	Minco

In this example, a pair of terminal blocks (TB1 and TB2) provides the electrical connections for the sensing element (RTD). A generic 3-wire RTD has been chosen and wired to TB1. The transmitter 4-20 mA current loop positive terminal (TB2-1) is connected to the WiYZ Remote VDC In power supply. The transmitter negative terminal (TB2-2) is connected to the Analog Current Input 1+ terminal used to monitor the loop current. Finally, a jumper is placed between Analog Current Input 1- and the Remote Ground completing the current loop.

The loop current increases proportional with the temperature starting at 4mA at the lowest temperature value, rising to 20mA at the top of the temperature range. The transmitter has been factory calibrated to match its marked temperature range for a specific RTD.

For more information, contact GE MDS Technical Services at gemds.techsupport@ge.com or by phone at +1-585-241-5510.