



Connecting 0-5V Devices to a WiYZ Remote

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

INTRODUCTION

The WiYZ Remote is equipped with analog inputs that can read voltage signals from sensors, transducers and instrumentation devices in the 0-5 VDC range. The WiYZ Remote is equipped with an onboard 12 VDC power supply that can be used to source power to attached devices even when operating from its internal battery pack.

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 and 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 0-5 VDC voltage proportional to the measured pressure.

WiYZ Remotes operating on battery power can be configured in a low power mode that is ideal for low rate monitoring where power for the transmitter is enabled for a configurable time period only when the transmitter is being read. This feature extends the battery life time.

Table 1. Pressure Sensor

Pressure Sensor	Manufacturer
UNIK5000-PMP	GE Sensing

This pressure transmitter has been selected because of its low power consumption and fast response under “pulsed power” supply operation. These are important sensor characteristics for applications where the WiYZ Remote is powered from its internal battery.

For high rate monitoring, or when using devices that do not support “pulsed power”, the WiYZ Remote would be configured to continuously source power to the device.

Pressure monitoring with a WiYZ Remote and a pressure sensor is shown in Figure 1.

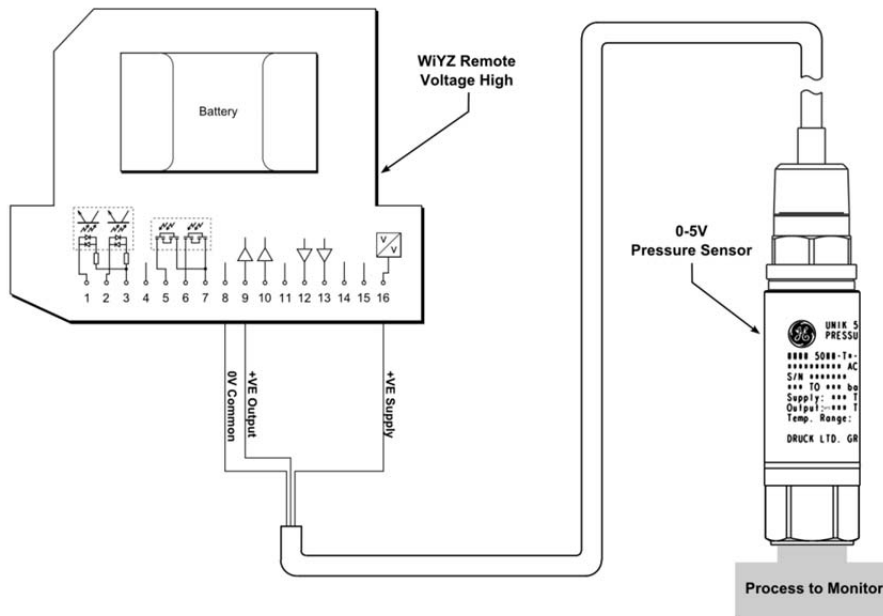


Figure 1. WiYZ Remote – Pressure Sensor Connection Diagram

In this use case, the WiYZ Remote is powering the attached pressure transmitter. The Sensor Power Supply Output (pin 16) provides power to the pressure transmitter while Analog Voltage Input 1 (pin 9) is used to read the transmitter output voltage (**+VE Output**). Sensor power (**VE+**

Supply) and signal output (**+VE Output**) share the same common potential through one wire (**0V Common**) that terminates at the Remote Ground (pin 8).

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.

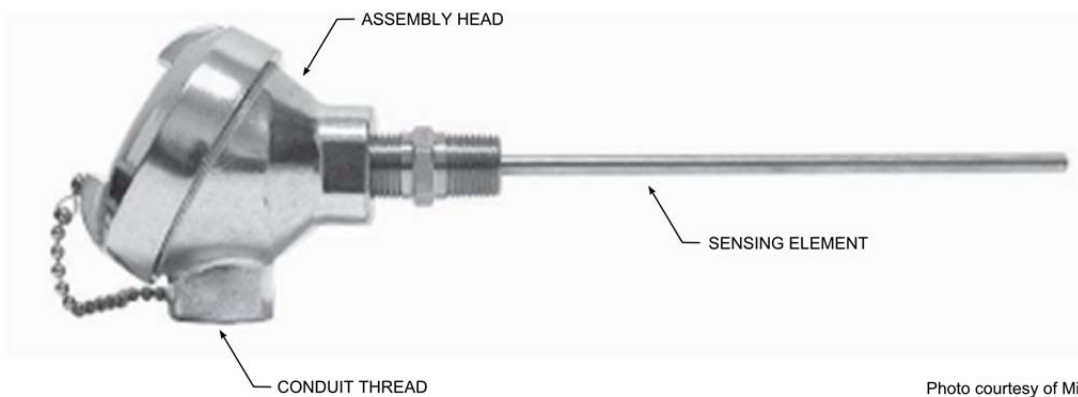


Figure 2. Temperature Sensor Assembly

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.

Table 2. Temperature Transmitter

Transmitter	Manufacturer
TT246PB1AC	Minco

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

In this example, a pair of terminal blocks (TB1 and TB2) provides the electrical connections for the sensing element (RTD), output voltage, and power. For this application, a generic 3-wire RTD has been chosen and wired to TB1. The transmitter is an active electronic device that sources its power from the WiYZ Remote Sensor Power Supply Output (pin16).

The transmitter DC power supply (TB2-2) and voltage output (TB2-1) share a common potential reference through the same cable (TB2-3). The Remote Analog Voltage Input 1 (pin 9) is used to monitor the process temperature which is proportional to the transmitter voltage output.

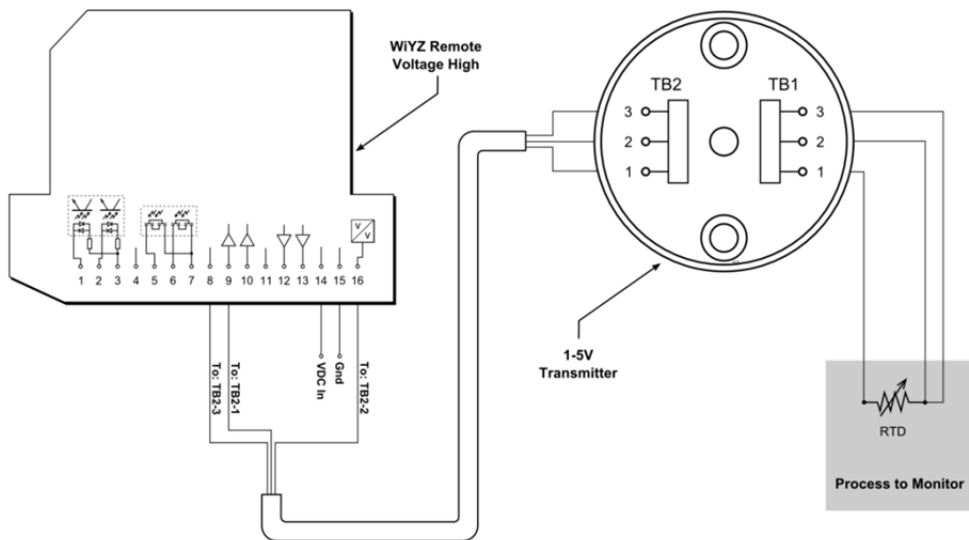


Figure 3. WiYZ Remote - Transmitter Connection Diagram

The output voltage output ranges from 1 VDC at the lowest temperature rising to 5 VDC at the top of the range. The transmitter has been factory calibrated to match the temperature range for a specific RTD.

For this example, VDC Input power configuration (pins 14-15) was used, being ideal for high rate monitoring scenarios and for locations where on-site power is available for the Remote.

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