CYPRESS
ENVIROSYSTEMS

Wireless Transducer Reader

User Manual

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1.0 Introduction

Thank you for purchasing this Wireless Transducer Reader, WTR. Please read this guide thoroughly before using the WTR.

The WTR is not a stand-alone product. See Section 3.4, Related Products, for details.

2.0 Safety Precautions

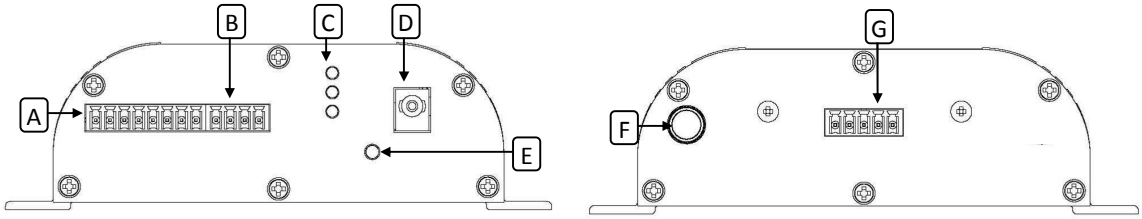
- Do not immerse the WTR in water.
- Always wear personal protective equipment appropriate to the system the WTR is being installed on.
- Do not try to repair yourself as it contains no user-serviceable parts. Contact a qualified service technician for repairs. See Section 10.0, Support, for details.

3.0 Description of the WTR

The Cypress Envirosystems Wireless Transducer Reader, WTR, is designed to monitor voltage and current loop outputs from wired sensors and transducers and transmit the data to a PC or data acquisition system. The WTR has two input channels and can be either AC or DC powered. Installation is designed to be minimally invasive.

Figure 1. Wireless Transducer Reader

The following diagram describes the various components of the WTR.



WTR Front Panel

WTR Back Panel

A. Sensor input terminal strip
B. External power terminal strip
C. LED indicators
D. 5V-48V barrel jack input, 5.0mm x 2.1mm
E. Function button
F. Radio antenna connector
G. Programming/Expansion port

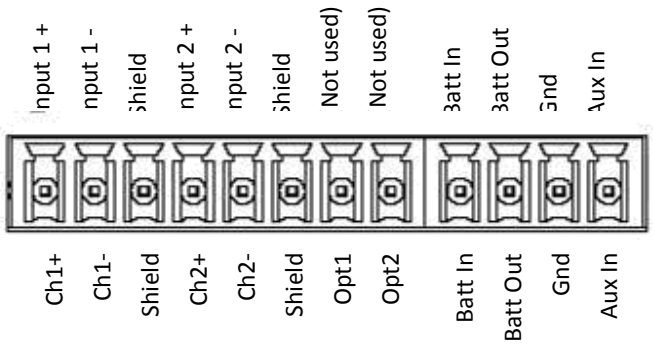


Figure 2. WTR Schematic

3.1 Supported Connections

The WTR supports a variety of common transducer analog outputs: 0-5V, 0-10V, or 4-20mA. The WTR can also support transducer digital outputs like RS232 or RS485 with factory customization. Please contact your service representative for additional details.

The WTR input types are pre-configured at the factory and cannot be changed during use.

3.2 Sample Collection

Samples are collected one of three ways.

Manual instantaneous reading. The user can physically collect a reading at the WTR.

Routine data collection. A routine sampling interval between 1 and 65000 seconds can be programmed into the WTR. When the WTR is on, this is the default sampling interval that data will be collected.

Pre-programmed short term data collection intervals. Each WTR comes with two pre-programmed data collection intervals. These are short term intervals of data collection that override the routine data collection rate. They are intended to be used for troubleshooting, or during known events when the user might want to change the sampling rate for a short period of time.

See Section 5.0, Operation, for detailed instructions for setting sample collection rates.

The reading value is then transmitted wirelessly as part of the overall Cypress Envirosystems Monitoring System.

3.3 Cypress Envirosystems Monitoring System

The Cypress Envirosystems Wireless Transducer Reader is part of the Cypress Envirosystems Monitoring System. This system can be setup one of two ways:

Figure 3. Cypress Envirosystems Monitoring System Setup Options

3.4 Related Products

The WTR sends data to the Cypress Envirosystems Blue Box Server, which stores the data in a SQL server. The WTR can communicate directly to the Blue Box Server, or through Wireless Range Extenders.

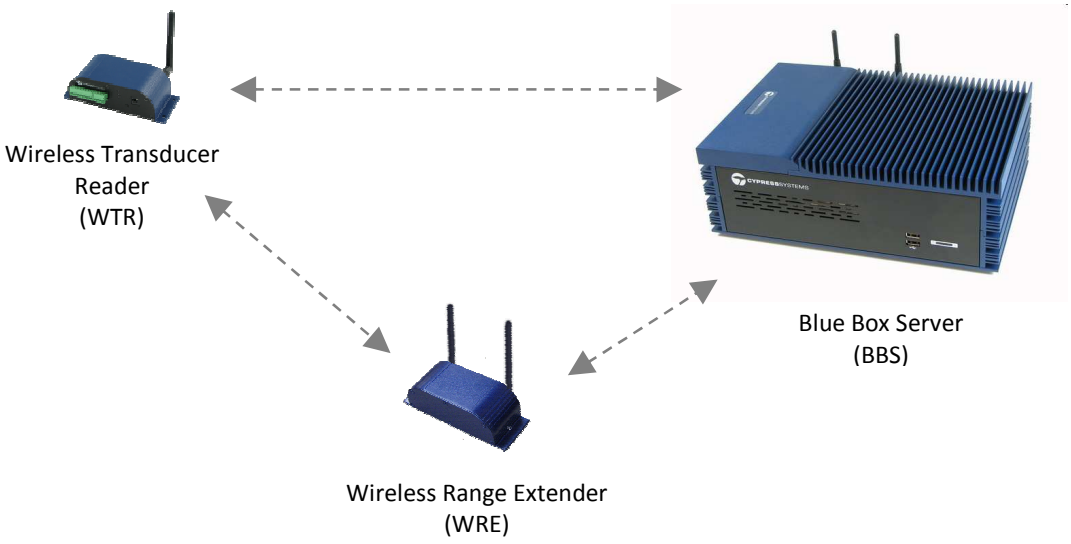


Figure 4. Cypress Envirosystems Monitoring System Overview

4.0 Setup

4.1 Components

The WTR comes with the following components:

WTR | Power cord | External power connector | Sensor input connector

4.2 Installation Overview

To Install a WTR, mount the unit in close proximity to the analog output source.

Connections between the WTR and the analog output source should be made with 22AWG stranded, shielded cable.

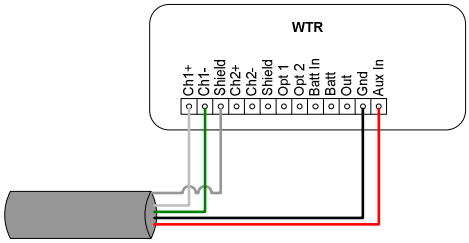
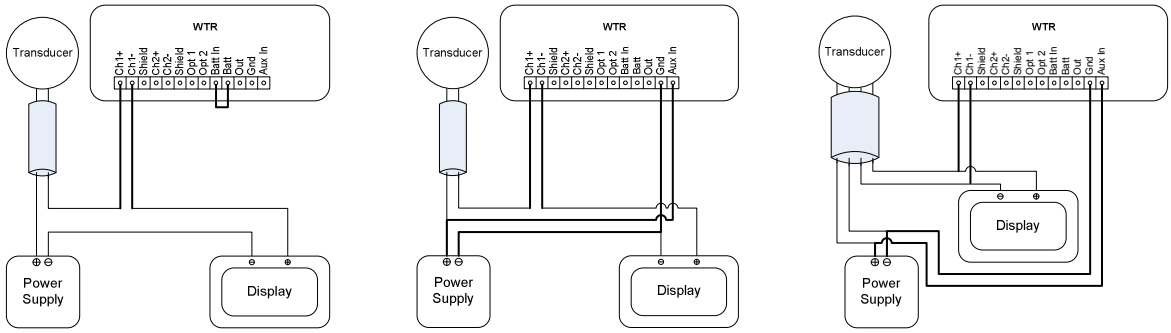


Figure 5. WTR Connection Schematic

Various connection schemes are depicted below.



Current mode connection
Battery powered

Current mode connection
External power supply

Voltage mode connection
External power supply

Figure 6. WTR Connection Schemes

5.0 Operation

5.1 Configuration

Configuration of the WTR must be performed by a qualified technician. See Section 10.0, Support, for details.

5.2 Turning the WTR On and Off

To turn on a battery powered WTR, connect the external power terminal connector. When the device is first powered on, the LED lights will turn on in sequence. To turn off a battery powered WTR, disconnect the external power terminal connector.

To turn on a 110/240 VAC powered WTR, plug in the power cord and connect the barrel jack input. When the device is first powered on, the LED lights will turn on in sequence. To turn off a 110/240 VAC powered WTR, unplug the power cord and disconnect the barrel jack input.

5.3 Setting Sampling Rates

Manual instantaneous reading. To take a one-time reading, press the Function button for less than 2 seconds. The green LED light will flash to indicate that data has been collected.

Routine data collection. Whenever the WTR is on, it samples based on the routine data collection rate. This rate is between 0 and 65535 seconds, or approximately 18 hours. This value is defined by the user, but can only be changed using the Handheld Configuration Tool.

Preprogrammed short term data collection intervals. In addition to the routine data collection rate, there are two pre-programmed short term data collection intervals associated with the WTR.

FAST
The FAST sample mode collects data at a 5-second interval for a 5-minute duration. The WTR can be placed into the FAST sample mode using the Function button.

1. Press the Function button. The green LED will illuminate.
2. Hold the Function button until the yellow LED illuminates.
3. Release the Function button.

To cancel the FAST sample mode once it has been initiated, press the Function button. The yellow LED will flash, to indicate that the sample mode has been cancelled.

MEDIUM
The MEDIUM sample mode collects data at a 30-second interval for an 8-hour duration. The WTR can be placed into the MEDIUM sample mode using the Function button.

1. Press the Function button. The green LED will illuminate.
2. After two seconds, the yellow LED will also illuminate.
3. Hold the Function button until the red LED illuminates.
4. Release the Function button.

To cancel the MEDIUM sample mode once it has been initiated, press the Function button. The yellow LED will flash, to indicate that the sample mode has been cancelled.

5.4 WTR Configuration Mode

The Configuration mode is primarily restricted and for use by qualified service technicians to configure and install the WTR.

The WTR can be placed into the Configuration mode using the Function button.

1. Press the Function button. The green LED will illuminate.
2. After two seconds, the yellow LED will illuminate.
3. After an additional two seconds, the red LED will illuminate.
4. After an additional two seconds, all three LED lights will flash.
5. Then release the Function button. The green LED light will continuously flash.

To exit from the Configuration mode, press the Function button. The LED lights will no longer flash.

6.0 Care and Maintenance

6.1 Calibration

The WTR is calibrated during installation and initial configuration. Routine calibration can be performed and verified by a qualified service technician, but is not required. See Section 10.0, Support, for details.

6.2 Battery Life

If you are using a battery powered WTR, the battery status of the WTR can be monitored through the web console. Battery change-out must be performed by a qualified service technician. See Section 10.0, Support, for details.

The battery life of the WTR is dependent on the sampling frequency. Typical ranges are listed below.

Sampling Frequency	Estimated Battery Life
1 sample per 1 minute	2+ years
1 sample per 15 minutes	4+ years
1 sample per hour	5+ years
1 sample per day	5+ years

7.0 Troubleshooting

My reading on the web console does not match the transducer display.

Please verify that the min and max values were set properly on the Cypress Envirosystems Web Console.

If you have any additional problems, please contact us. See Section 10.0, Support, for details.

8.0 Technical Specifications

Data Inputs:	0-5V, 0-10V, 4-20mA, optional RS232 or RS485
Number of Inputs:	Up to two transducer inputs per WTR
Data Capture Rate:	User-configurable
Wireless Frequency:	2.4GHz Direct Sequence Spread Spectrum, 100mW peak output
Wireless Range:	Up to 1600ft (488m), high interference immunity, extendable with repeaters
Wireless Protocol:	Cypress Semiconductor's highly optimized industrial DSSS radio and protocol. Integrates robust security, antenna and frequency diversity, optional encryption and minimal interference with existing wireless systems (for additional details, please see FAQ at www.cypressenvirosystems.com)
Approvals:	FCC Class B compliant, RoHS, ETSI compliant
Power Supply:	Standard 110-240VAC or battery powered
Battery Life:	>2 years @ 1 sample per min, >5 years @ 1 sample per hour (approximate)
Humidity:	10-99%RH, non-condensing
Operating Temperature:	-4°F to 158°F (-20°C to 70°C)
Storage Temperature:	-40°F to 185°F (-40°C to 85°C)
Enclosure:	Rugged extruded aluminum industrial chassis (optional NEMA4/IP66 enclosure)
Dimensions:	5.7” x 2.2” x 1.6” (145mm x 57mm x 42mm)
Weight:	0.51 lbs (230g)

9.0 Product Disposal

The WTR is recycled by Cypress Envirosystems. Contact a service technician or Cypress Envirosystems headquarters to recycle the WTR. See Section 10.0, Support, for details.

10.0 Support

For additional support, including configuration, maintenance, and troubleshooting, please contact us.

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11.0 Warranty Information

Every product comes with a full one-year parts and labor warranty. Cypress Envirosystems monitoring of battery status, product status, and potential communications packets are included during this period, so that proactive service can be provided to our customers.