CYPRESS
ENVIROSYSTEMS

Wireless Transducer Reader

User Manual

Doc # 152-10102-01
Revision 2.1
August 2025

Copyrights

Copyright 2025 by Cypress Envirosystems. All rights reserved.
The information in this document is subject to change without notice. While reasonable precautions have been taken, Cypress Envirosystems assumes no responsibility for any errors that may appear in this document. No part of this document may be copied or reproduced in any form or by any means without the prior written consent of Cypress Envirosystems.

Disclaimer

CYPRESS ENVIROSYSTEMS MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Cypress Envirosystems reserves the right to make changes without further notice to the materials described herein. Cypress Envirosystems does not assume any liability arising out of the application or use of any product or information described herein. Cypress Envirosystems does not authorize its products for use in mission or safety critical systems or where a malfunction or failure may reasonably be expected to result in significant injury to the user. The inclusion of Cypress Envirosystems' product in mission or safety critical system applications implies that the manufacturer assumes all risk of such use and in doing so indemnifies Cypress Envirosystems against all charges. In no event is Cypress Envirosystems liable to anyone for any indirect, special or consequential damages.

Table of Contents

1.0 Introduction 4
2.0 Safety Precautions 4
3.0 Description of the WTR 4
3.1 Supported Connections 6
3.2 Sample Collection 6
3.3 Cypress Envirosystems Monitoring System 7
3.4 Related Products 8
4.0 Setup 8
4.1 Components 8
4.2 Installation Overview 9
5.0 Operation 9
5.1 Configuration 9
5.2 Turning the WTR On and Off 9
5.3 Setting Sampling Rates 10
5.4 WTR Configuration Mode 10
6.0 Care and Maintenance 11
6.1 Calibration 11
6.2 Battery Life 11
7.0 Mounting 12
8.0 Technical Specifications 13
9.0 Product Disposal 13
10.0 Support 13
11.0 Warranty Information 13

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 picture describes the various components of the WTR.

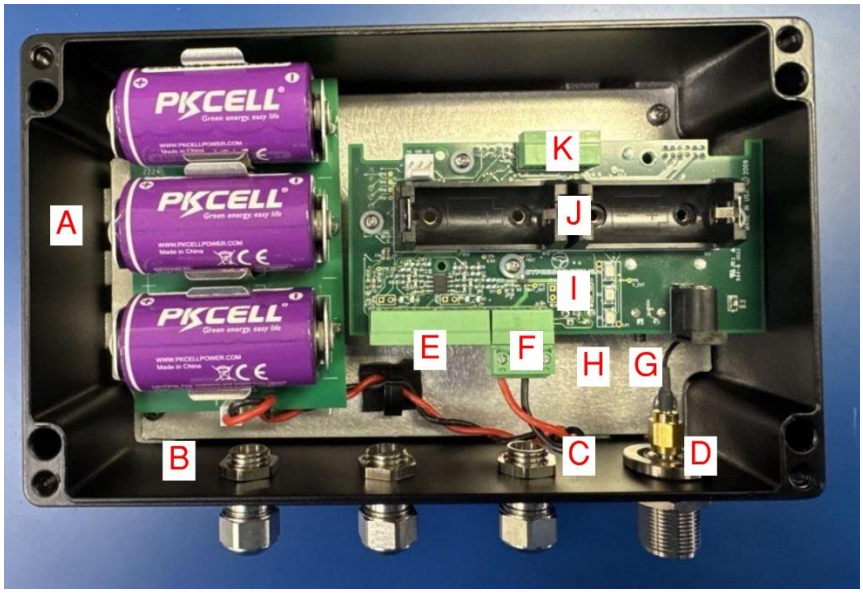


Figure 2. WTR Interior

A: Batteries – three (3) ER26500
B: Input cable gland (up to two)
C: Power input cable gland
D: Type-N antenna connector
E: 8-pin input connector
F: 4-pin power connector
G: Black button (for configuration)
H: White button (for reset)
I: LED indicators
J: Unused
K: Factory connector

Configuration A:2-input glands, 1 power gland and 1 antenna connector

Configuration B: 1 input gland, two hole plugs 1 antenna connector

Figure 3. WTR configurations (single input, battery vs dual input, external power)

The front panel can be configured for single or dual input as well as battery vs external power. Used ports have IP68 cable glands installed. Unused ports are covered using an NEMA 4 / IP67 rated hole plug. Please refer Figure 3 for examples.

Configuration A has 2 input cable glands, 1 cable gland for external power and 1 antenna connector.

Configuration B has 1 input cable gland, 2 hole plugs (to seal the unused ports) and 1 antenna connector.

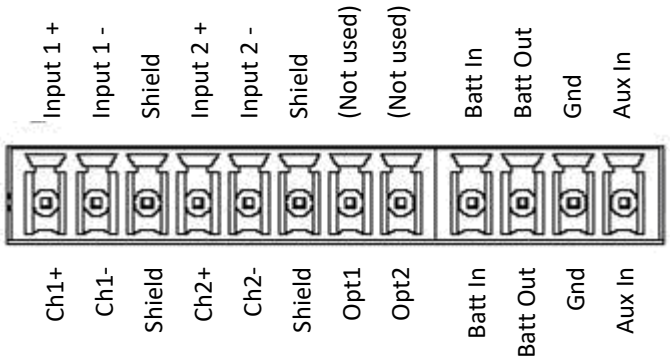


Figure 4. WTR Interior

3.1 Supported Connections

The WTR supports a variety of common transducer analog outputs: 0-5V, 0-10V, or 4-20mA. These input types are pre-configured at the factory and cannot be changed during use.

The WTR has an 8-pin terminal block connector for input and a 4-pin terminal block for the power source selection as show in Figure 4.

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 65535 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.

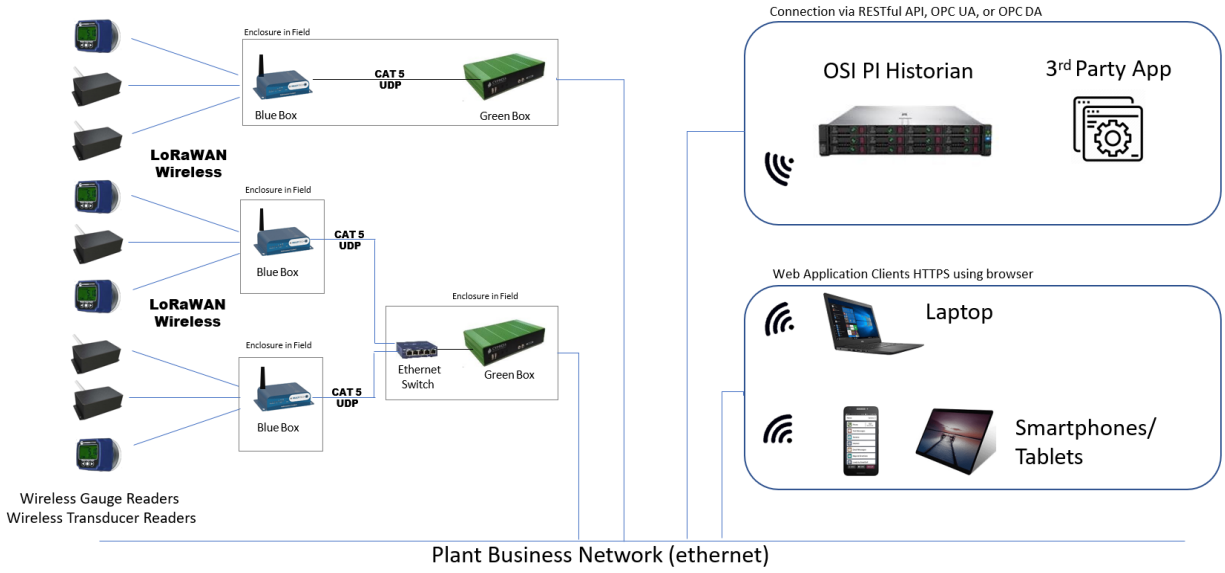
See Section 5.0, Operation, for detailed instructions for setting sample collection rates.

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 :

Option 1: Field deployed Green Box Controller



Option 2: Centralized Green Box Controller

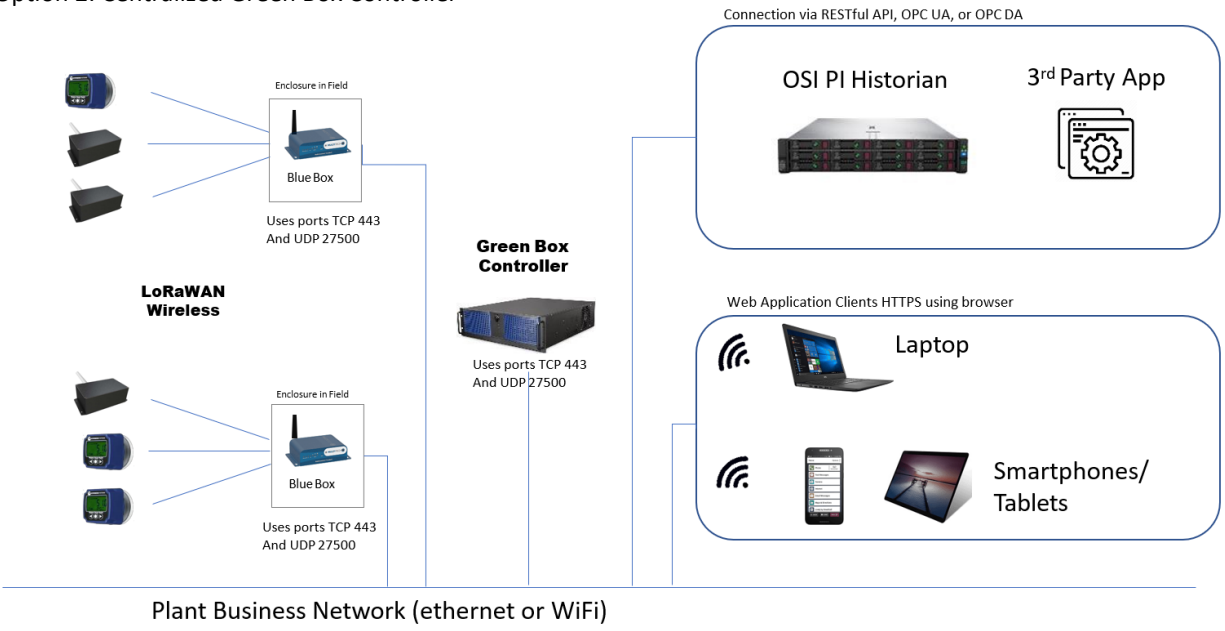


Figure 5. Cypress Envirosystems Monitoring System Setup Options

3.4 Related Products

The WTR sends data via LoRaWAN to the Wireless Gateway. The Wireless Gateway parses the wireless data and then transmits the reading to the Green Box Controller, which stores the data in a SQL server.

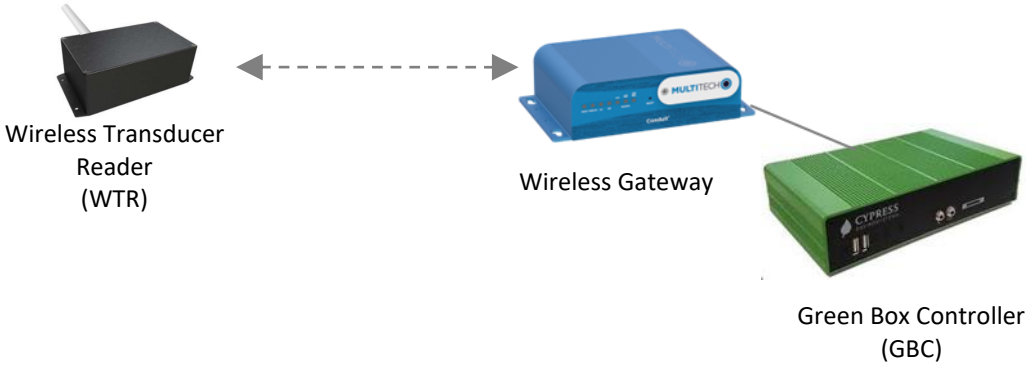


Figure 6. Cypress Envirosystems Monitoring System Overview

4.0 Setup

4.1 Components

The WTR comes with the following components:

WTR with antenna

Power cord

4-pin power connector

8-pin sensor input connector

4.2 Installation Overview

To Install a WTR, mount the unit near the analog output source.

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

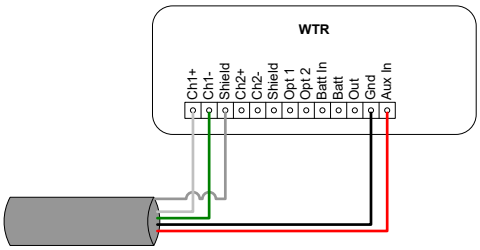
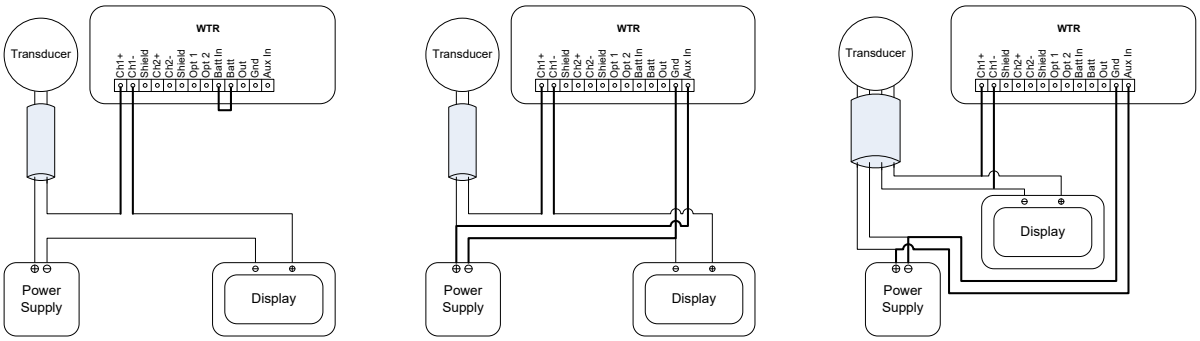


Figure 7. WTR Connection Schematic

Various connection schemes are depicted below.



Current mode connection
Battery powered

Current mode connection
External power supply

Voltage mode connection
External power supply

Figure 8. 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

Remove the top cover from the enclosure.

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. At this point, both the green and yellow LEDs will be on.
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. At this point, all 3 LEDs will be on.
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, the green and yellow LEDs will turn off leaving just the red LED on.
5. After an additional two seconds, all three LED lights will flash.
6. 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. The WTR uses three (3) ER26500 C-cell batteries.

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	9+ years

7.0 Mounting

Screw holes are provided on the mounting flange. There are two (2) center holes designed for ¼" screws and four (4) corner holes that can be used with #10 screws.

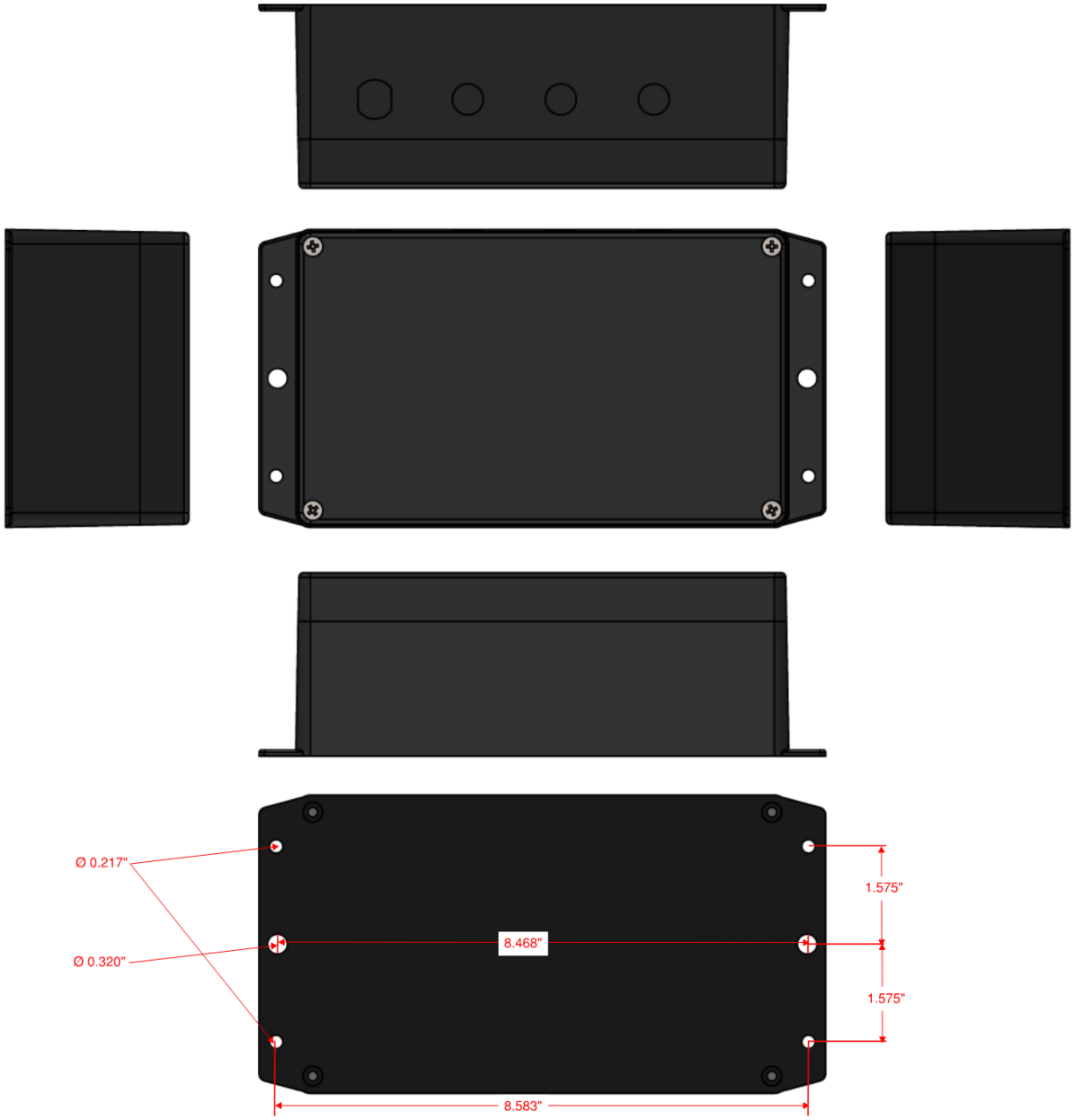


Figure 9. WTR Interior

8.0 Technical Specifications

Data Inputs:	0-5V, 0-10V, 4-20mA, Thermistor, Thermocouple, Dry Contact
Number of Inputs:	Two transducer inputs
Data Capture Rate:	User-configurable from three seconds to six hour sample rate
Wireless Frequency:	902 MHz to 928 MHz LoRa, 2.4GHz for Bluetooth Low Energy
Wireless Range:	500 to 1,500 ft in typical plant environments
Approvals:	FCC CFR47 Part 15 Class C
Power Supply:	Standard 110-240VAC or battery powered (three C-size, type ER26500)
Battery Life:	>9 years at 15 minute sample rate
Humidity:	10-99%RH, non-condensing
Operating Temperature:	-4°F to 158°F (-20°C to 70°C)
Storage Temperature:	-40°F to 176°F (-40°C to 80°C)
Enclosure:	Power coated ADC-12 die cast aluminum (IP68 equivalent) with IP67 glands for cable entry
Dimensions:	9.09” x 4.72” x 2.95” (231mm x 120mm x 75mm)
Weight:	3.5 lbs (1.6 kg) including batteries

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.

Cypress Envirosystems
6830 via Del Oro, Suite 100
San Jose, CA 95119
Email: support@cypressenvirosystems.com

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.

Appendix A: Hole plug and cable gland specifications

Specifications for the hole plug and cable gland

Hole plug

Size :	M12
Material:	Nylon 6/6
NEMA / IP Rating:	NEMA 4, IP67
Flame Rating:	UL94 V-2

Cable gland

Size:	M12
Material:	Nickel-plated brass, TPE (seal)
NEMA / IP Rating:	4X, IP68 (up to 10 bar)