CYPRESS
ENVIROSYSTEMS

Wireless Range Extender

User Manual

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1.0 Introduction

Thank you for purchasing the Wireless Range Extender, WRE. Please read this guide thoroughly before using the WRE.

The WRE is not a stand-alone product. See Section 3.2, Related Products, for details.

2.0 Safety Precautions

- Do not immerse the WRE in water.
- 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 WRE

The Cypress Envirosystems Wireless Range Extender (WRE) is used to extend the range of wireless data from a field device to the Blue Box Server. When the WRE receives a message, it waits its specified delay time, and repeats the signal twice.

Figure 1. Wireless Range Extender

Each WRE has two radios that are pre-programmed with a specific radio channel set that must match the channel set of the field devices. WREs are pre-programmed with a specified delay. When a WRE receives a message, it appends its tag (also known as its ID) to the message. If a WRE receives a message that already contains its ID, it will drop the message and will not repeat it.

3.1 Cypress Envirosystems Monitoring System

The Cypress Envirosystems Wireless Range Extender is part of the Cypress Envirosystems Monitoring System. WREs may be needed to get the wireless signal from a field device to the Blue Box Server (BBS). This system can be setup one of two ways:

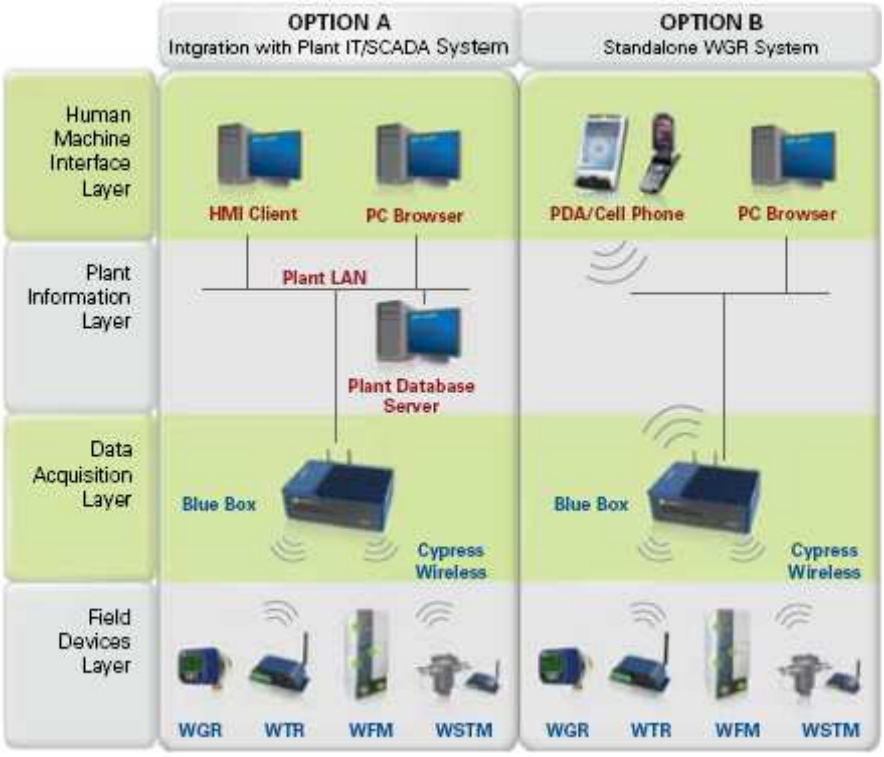

Figure 2. Cypress Envirosystems Monitoring System Setup Options

3.2 Related Products

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

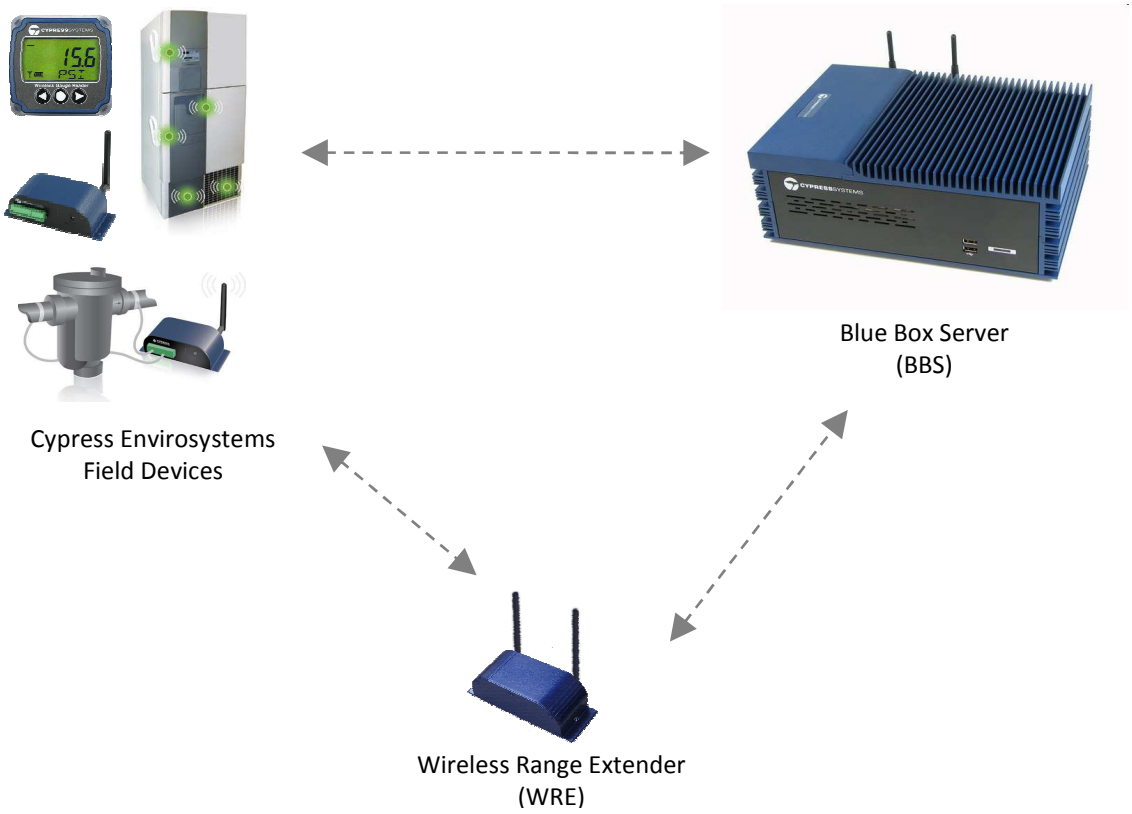

Figure 3. Cypress Envirosystems Monitoring System Overview

4.0 Setup

4.1 Components

WRE

Antennas

5V Power Adapter

4.2 Installation Overview

The Cypress Envirosystems Monitoring System is asynchronous, meaning the field devices can send messages at any given time. To ensure that data is not lost, the WREs are always on and listen for data. For prolonged field life, the WREs are powered from 110/240VAC.

The power adapter connects to the WRE with a retaining twist lock. Be sure to line up the plug correctly so it can lock into the WRE. Gently pull on the cord to make sure it stays connected to the WRE.

WREs should be installed with the shortest delays furthest from the server, and longest delays closest to the server.

WREs should be installed at eye level or above. This reduces the chance of interference from walking pedestrians or temporarily placed obstacles.

WREs should be securely attached so it can't be moved. Preferably use screws or cable ties, otherwise Very High Bond (VHB) tape may be used. Cords should be cable tied if possible.

Lastly, ensure that the antennas are screwed in all the way and vertical.

5.0 Operation

There are three different lights on a WRE, indicating the functionality of the two radios on the unit.

- The green light corresponds with the first radio receiving a data packet.
- The yellow light corresponds with the second radio receiving a data packet.
- The red light indicates that the data packet was not received properly by either radio. This is due to very low signal where the data packet is not understood. The WRE then drops the incomplete data packet.

Figure 4. WRE Indicator Lights

A field device will send a message on one radio channel at a time. If the field device does not receive an acknowledgment from the Blue Box Server within a given time frame, it will try to resend the message on the other radio channel. The flashing green or yellow light indicates that a data packet was properly received.

A maximum of 4 WREs, each with different delays, can be used to get any one signal from a field device to the Blue Box Server. However, more than 4 WREs are possible in an installation depending on the layout. As seen in Figure 5, 8 WREs are used to get various field device data to the Blue Box Server.

On the bottom of each WRE there is a label which denotes the channel set and the delay. The channel set is a letter corresponding to predetermined set of frequencies in which the radios have been programmed. The delay is a number between 1 and 4. A delay of 1 indicates the shortest delay and a delay of 4 indicates the longest delay. A label with "A-1" means channel set A with a delay of 1. Notice that in each path to the Blue Box Server, there are 4 unique WREs.

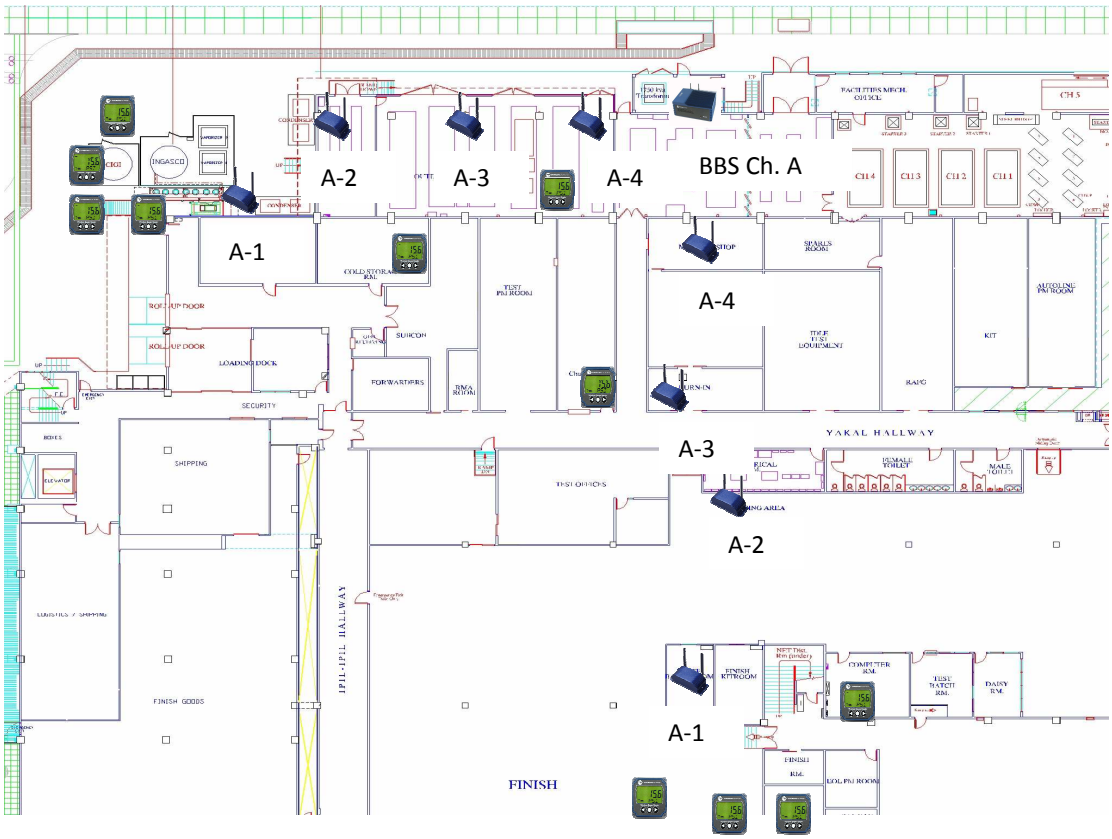

Figure 5. Sample installation with 8 WREs

6.0 Care and Maintenance

WREs, as long as they remain installed, do not require any special maintenance. If they stop functioning, please contact a qualified service technician. See Section 10.0, Support, for details.

7.0 Troubleshooting

I am missing data from several field devices in one area.
If a set of data is missing from a small cluster, it is most likely that the WRE stopped relaying messages. Verify that the WRE has not been unplugged.

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

8.0 Technical Specifications

Wireless Frequency:	2.4GHz Direct Sequence Spread Spectrum, 100mW peak output
Wireless Range:	Up to 1600 ft (488 m) line-of-sight
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

Operating Temperature:	-20°C to 70°C
Storage Temperature:	-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 WRE is recycled by Cypress Envirosystems. Contact a service technician or Cypress Envirosystems headquarters to recycle the WRE. See Section 10.0, Support, for details.

10.0 Support

For additional support, including 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.