

1. Overview

The Cypress Envirosystems Wireless Pneumatic Thermostat (WPT) retrofits an existing pneumatic thermostat to provide Direct Digital Control (DDC) like zone control functionality at a fraction of the time and cost without disturbing occupants.

The WPT enables remote monitoring of zone temperature, branch pressure, remote control of setpoints, and programmable setback or setup of the pneumatic HVAC systems. It also enables integration with utility Demand Response programs.

The WPT wall-powered repeater (RWAL) is one of the components of WPT wireless network. The RWAL is used to extend the wireless range of the WPT network by allowing more WPTs to be connected in each wireless network. When the USB Hub (HUSB) is located out of RF range of the RWAL, multiple RWALs can be used to extend the range. For more details, refer to WPT Wireless Network Planning Guide.

1.1. Components

The WPT-800-RWAL kit includes the following components:

- RWAL – wall powered repeater
- Universal wall bracket
- Mounting screws, #6 x 1" self-tapping (x2)
- AC 115V to DC 3.3V power adapter

1.2. Prerequisites for Installation

The WPT system relies on a wireless network for communication. The following tasks must be completed before proceeding to RWAL installation:

- Installation of the WPT Green Box
- Installation of the HUSB
- Assignment of network IDs and RWAL IDs
- Assignment of RWAL locations

Manuals for the WPT, WPT Green Box, HUSB and other manuals related to the WPT system can be found at <http://www.cypressenvirosystems.com/wpt-downloads.php>.

1.3. Tools Required for Installation

- Phillips-head screw driver

2. RWAL Installation

The overall RWAL installation procedure includes:

- Mounting the RWAL
- Configuring the RWAL

ESD Handling Precautions

Warning!



- The RWAL contains ESD sensitive circuit cards and components, shown in Figure 1.
- Great care must be exercised while handling RWAL with the cover open.
- Do not touch any of the circuit boards with fingers or any part of the body.
- Touching the circuit boards may cause the unit to fail due to electrostatic discharge.
- Hold and handle the unit using the external bottom plastic cover as the support.

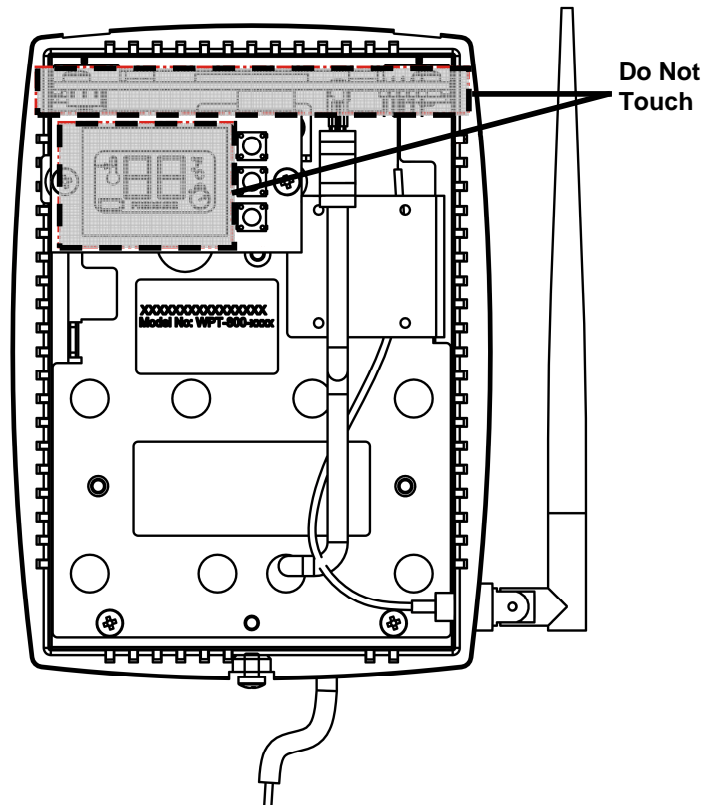


Figure 1. Handling the RWAL

2.1. Mounting the RWAL

1. Mount the universal wall bracket, shown in Figure 2, using the two screws provided.

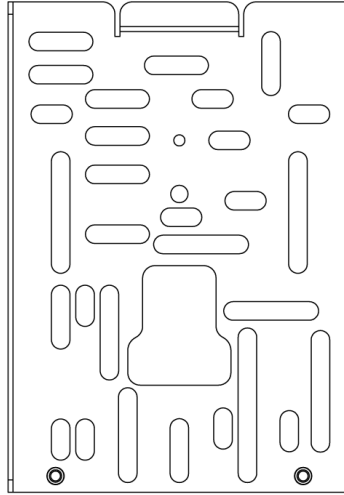


Figure 2. Universal Wall Bracket

2. Mount the RWAL on the universal wall bracket using the captive screws, shown in Figure 3.

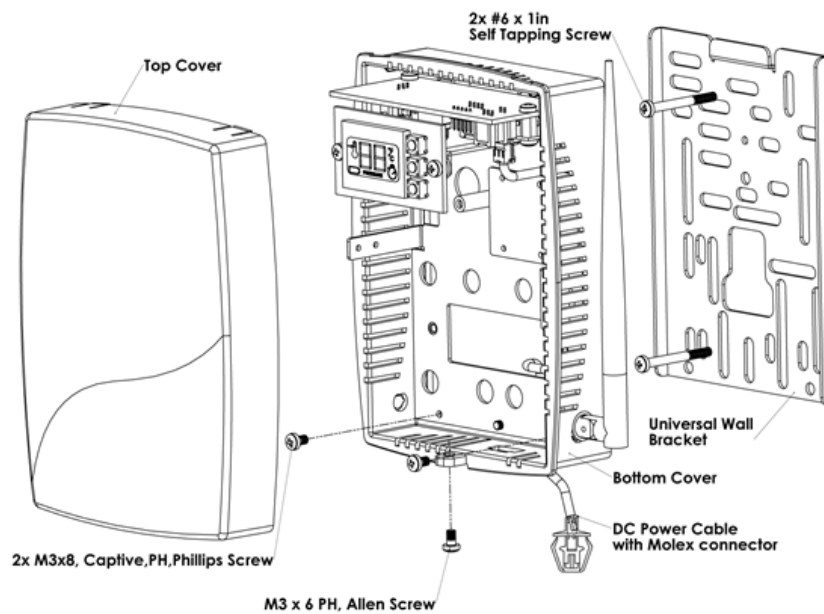


Figure 3. Mounting RWAL onto the Universal Wall Bracket

3. Close the top cover.
4. Connect the RWAL to the nearest power outlet using the power adapter, as shown in the Figure 4.

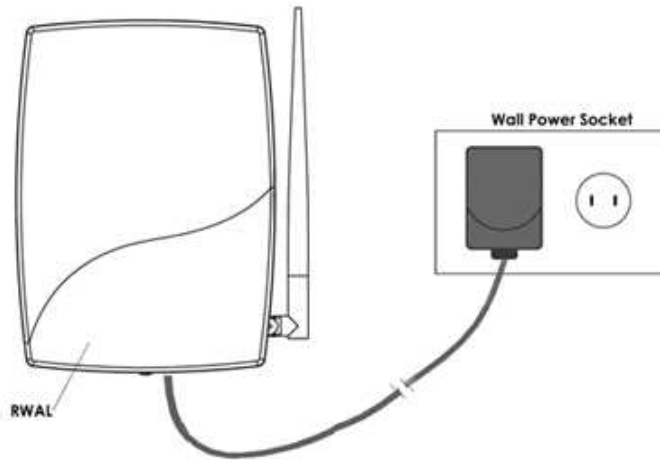


Figure 4. Connecting the RWAL to the Wall Outlet

2.2. RWAL Display

The various indicators and characters that are displayed on the LCD display are as shown in the Figure 5.



Figure 5. LCD Display

The front panel of the LCD display is used to perform diagnostics on the RWAL and no user information displayed.

2.3. Turning on the RWAL

Connect the DC adapter to a nearby power socket to turn on the RWAL. The RWAL will turn on and perform initialization. During initialization and every time the RWAL starts a discovery process, a "dy" symbol is displayed on the LCD for a few seconds.

During this period the RWAL is attempting to discover its nearest RWALs and HUSB. This process should not be disturbed. The operator must wait for the “dy” to disappear from the LCD before commencing any operation.

After initialization, the LCD displays either the current channel frequency or E0. E0 is acceptable in this case until the network is fully configured.

2.4. Configuring the RWAL

The RWAL must be configured with a valid network ID and RWAL ID in order to be functional.

Note: The RWAL has a blank front cover to prevent accidental changes to the configuration settings. The front cover must be removed to gain access to the display and switches.

Note: The network ID is a single digit number, and cannot have a “0” value.

Note: The RWAL ID is a two digit number, “D2 D1” and D1 cannot have an “F” value.

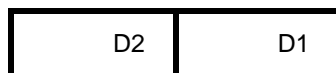
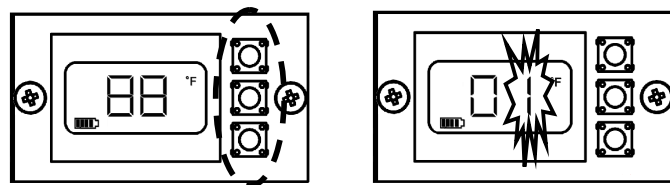


Figure 6. RWAL ID Digits

To configure the network ID and the RWAL ID, perform the following:

1. Press and release all three buttons simultaneously. The RWAL enters programming mode, shows the current or default network ID and the first digit starts flashing.

The ‘F’ icon is displayed, indicating that the network ID is being programmed.



Press and release all three buttons simultaneously to enter Programming Mode

Digit will flash when configuring the Network ID

Figure 7. Configuring the Network ID

2. Press the top or bottom button to change the network ID to the required value.

The network ID cannot have a “0” value.

3. Press **middle button** to confirm the network ID. This completes the programming of the network ID and the LCD displays starts flashing the first digit, D1, of the RWAL ID.

The °C icon is displayed, indicating that the RWAL ID is being programmed.

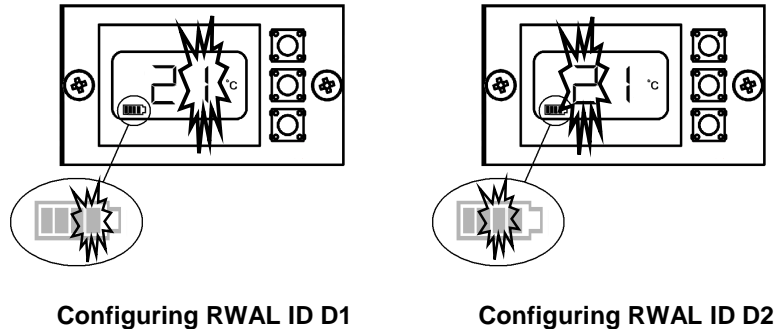


Figure 8. Configuring RWAL ID

4. Press the top or bottom button to change D1 to the required value.
RWAL ID D1 cannot have an “F” value.
5. Press **middle button** to confirm D1.
The first digit stops flashing and the second digit starts flashing.
6. Repeat steps 4 and 5 to configure D2 of the RWAL ID.
While the RWAL ID is being configured, the corresponding bar of the battery indicator also flashes.
7. After D2 is configured and confirmed, RWAL will exit from programming mode.
The RWAL will automatically exit the programming mode if no key is pressed for one minute.
8. After programming the RWAL, replace the front cover.

The network and RWAL IDs can be changed any time by following steps one through eight. When the RWAL is working normally, the current channel number in use will be displayed.

3. Troubleshooting

The RWAL is designed with the following diagnostic functions to detect and diagnose faults.

Code	Reason	Solution
dy	This code indicates that the RWAL is performing a discovery operation and it should not be disturbed.	This display goes off automatically after a few seconds.
E0	Discovery error – Not able to connect to nearest RWAL or HUSB	Press any key to retry discovery. Check if RWAL or HUSB is working. Reset the RWAL. Place the RWAL or HUSB in a different position, if feasible.
E1	Time synchronization error – Not able to synchronize the RWAL time with the wireless network	The RWAL recovers from this error within a few refresh cycles, if this error occurs after successful commissioning of the system.
E2	Radio error – Not able to send/receive data	Restart the unit by unplugging and plugging the adapter. If the error persists, contact the original distributor for replacement.
E3	Ping Error – Not able to locate a free RF channel to use due to high RF interference	Change the position of the RWAL.
E4	Connect error – Not able to connect to the nearest HUSB or RWAL	The RWAL auto recovers after a few refresh cycles, if this error occurs after successful installation. Consider adding a RWAL in the zone if the error persists.

4. Repair

The RWAL does not have any replacement or repairable parts. Contact the original distributor of the unit for repair or warranty service.

Note: Care should be taken to keep the unit dust-free during installation.

5. Technical Specification

DC Power	3.3V DC; 3W (powered by the DC adaptor)
Antenna	External rubber dipole, 4dBi gain, omni-directional, 2.4 to 2.5 GHz
Operating Frequency Band	2.4 GHz ISM Band
Operating Conditions	32 to 122°F (0 to 50°C) 95% RH Max, Noncondensing
Storage Conditions	-40 to 122°F (-40 to 50°C) 95% RH Max, Noncondensing
Dimensions	Length: 5.6 inches (141 mm) Width: 1.2 inches (28.5 mm) Depth: 4.1 inches (103.5 mm)

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