Wireless Pneumatic Thermostat (WPT)

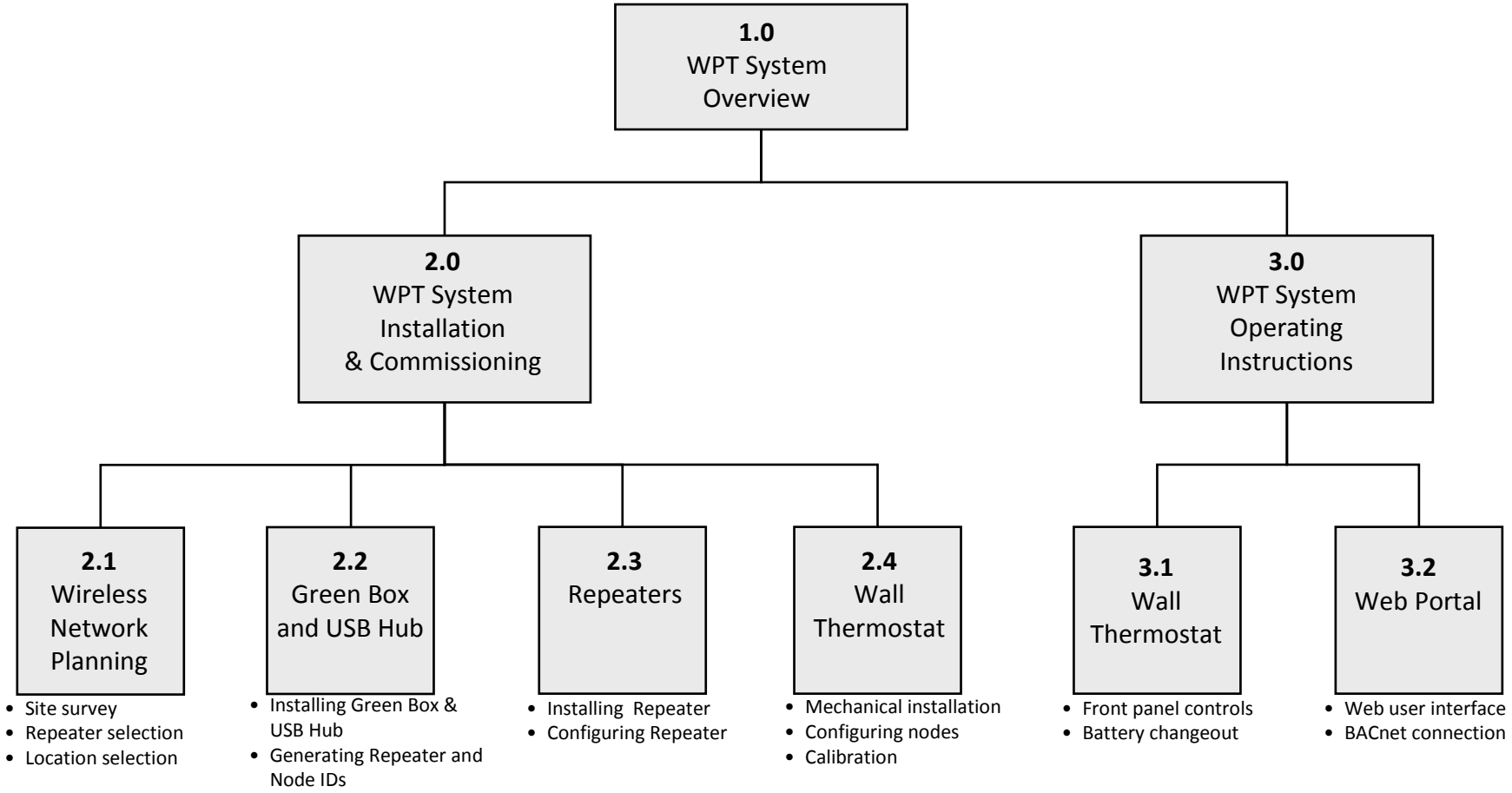
Training Program

www.CypressEnvirosystems.com

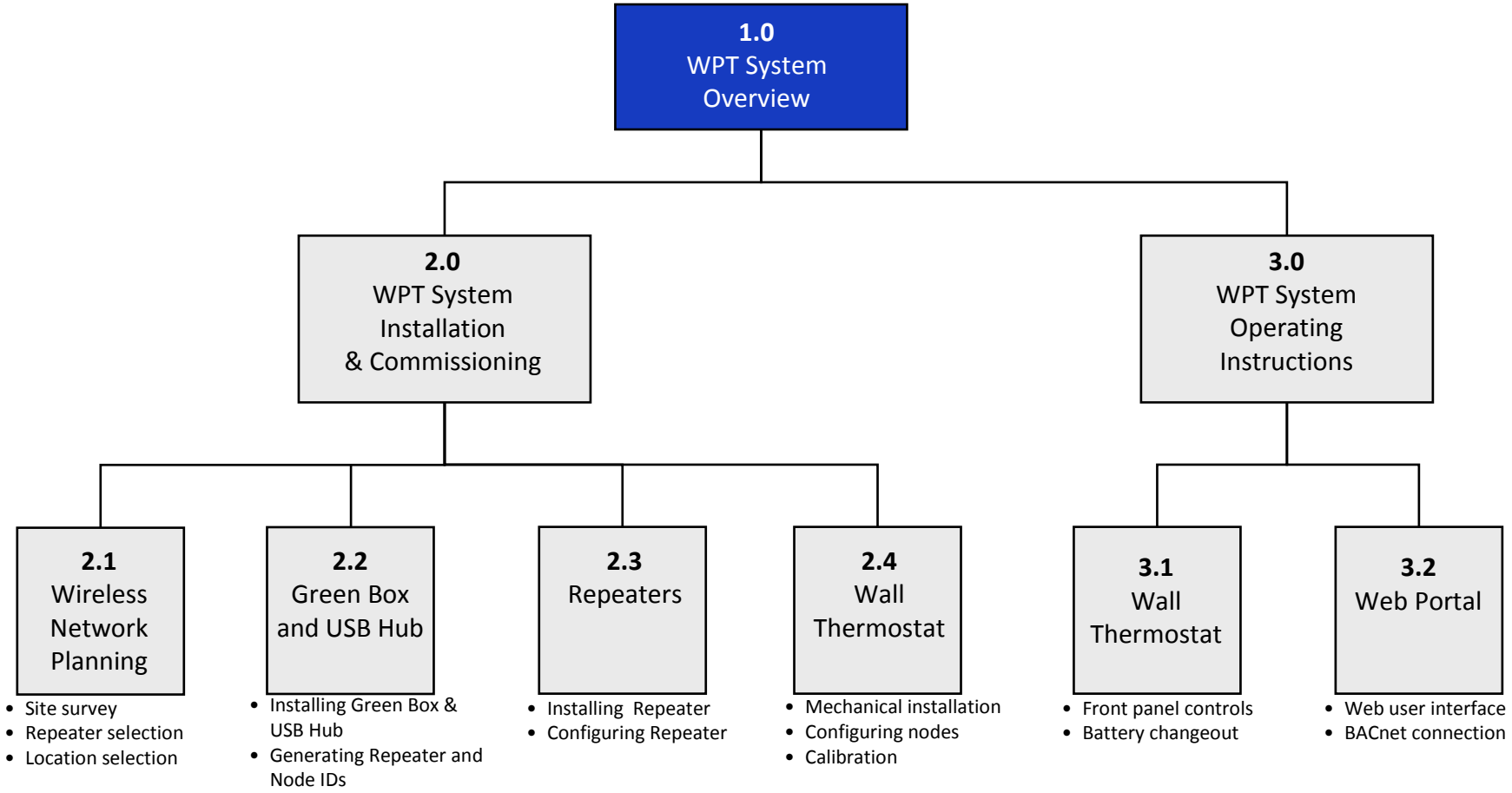
CYPRESS
ENVIROSYSTEMS

Doc No: 900-00009-01 Rev 03

WPT Training Modules



WPT Training Modules



WPT Features and Benefits

EXISTING LEGACY THERMOSTAT

DDC in 20 Minutes!

CYPRESS ENVIROSYSTEMS
WIRELESS PNEUMATIC THERMOSTAT

- Manual Setpoint Control
- No Remote Readings
- Manual Calibration Required
- No Diagnostics

- Remote Wireless Setpoint Control
- Remote Monitoring of Temperature & Pressure
- Automatic Self-calibration
- Programmable Zone/Night Setback Control
- Occupancy Override
- Enables Demand Response strategies
- BACnet Interface to BMS
- Compatible With Existing Johnson, Honeywell, Siemens, Robertshaw
- More than 2yr battery life

Get the benefits of Direct Digital Control (DDC) in less than 20 minutes

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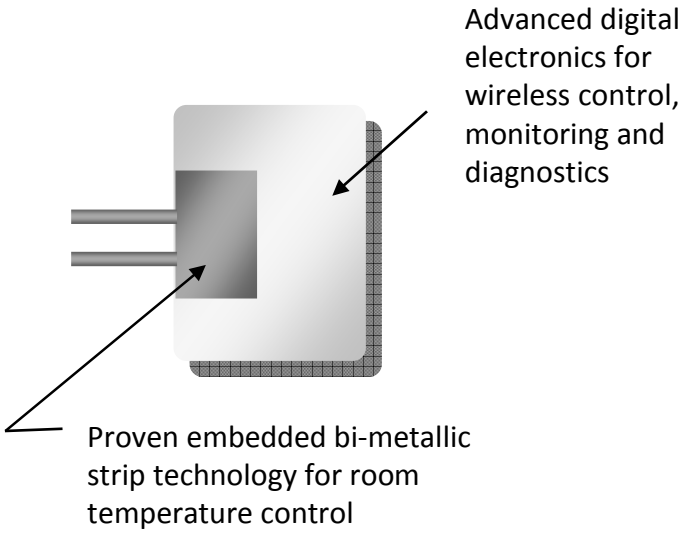
Proven Wireless + Pneumatic Technology

- Uses proven pneumatic bi-metallic strip technology for room temperature control
- Added advanced electronics to remotely control setpoint, and monitor temperature, branch pressure, and battery status
- If battery fails and electronics stop working, unit will function just like a traditional pneumatic thermostat

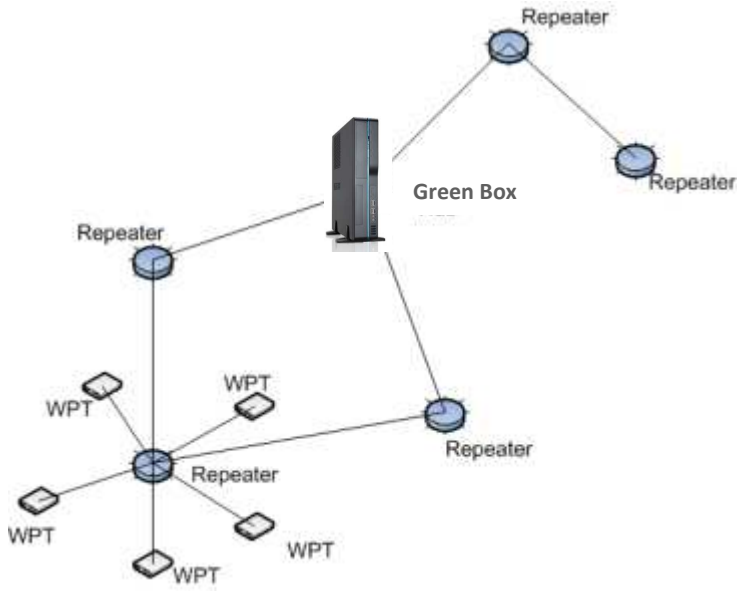


WPT = Conventional Pneumatic Thermostat + Virtual Thumb

Cypress Wireless Communications

- Uses Cypress Semiconductor wireless technology – first deployed over six years ago, with over 25 million nodes in use today
- Hybrid mesh wireless architecture provides coverage for most buildings and industrial sites – already in use by many Fortune 500 customers
- Up to 225 WPTs with 14 Repeaters are supported per USB Hub

NOTE: Do not use where cell phones or WiFi are prohibited (i.e. hospital operating rooms), or in environments requiring temperature validation



2.4 GHz DSSS radios, +20dBm (100mW) peak output power

Proven wireless technology applied for legacy retrofit application

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Selected Customer Sites Using Cypress Wireless

Stanford, Novellus, Micrel sites available for site visits upon request

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Typical Installations - Buildings

Installed August 2008

125,000 sq-ft, 30 zones installed

Installed February 2009

500,000 sq-ft, 2 buildings, 350 zones installed
Connection to Utility Auto Demand Response Program

Typical Installations – Buildings (cont'd)

Cypress Envirosystems Wireless Products Installed in Industrial Environments






CYPRESS ENVIROSYSTEMS

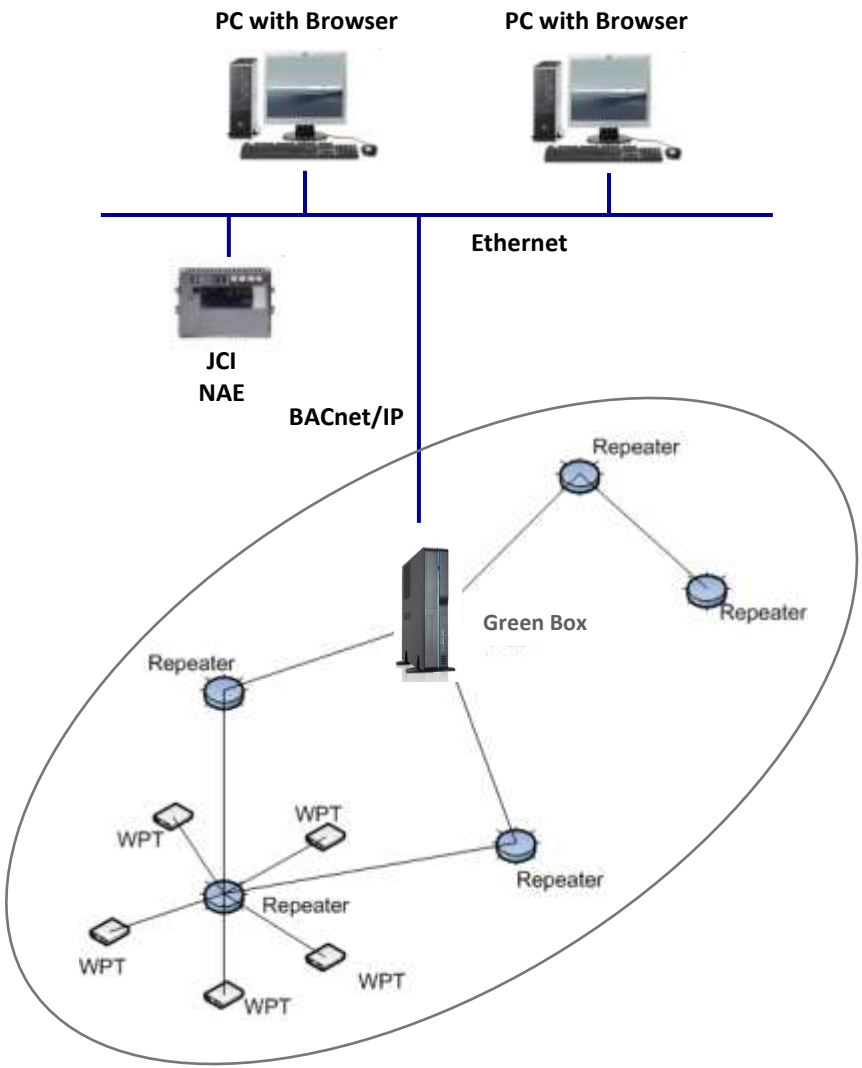
Directly Replaces Existing Thermostats

- Directly replaces most existing pneumatic thermostats from Honeywell, Johnson Controls, Siemens, Robertshaw etc.

- Supplied with a universal wall mounting bracket, and connects to existing main and branch pipes in minutes.

User Interface and Connectivity via BACnet

- The WPT Green Box has a built-in web based user interface for configuration and basic operations
- The WPT Green Box may also be connected to existing automation systems via BACnet/IP using a simple Ethernet cable
- BACnet compatible controllers (e.g. JCI Network Integration Engine) can gather data points and control setpoints, and provide a user interface
- Users do not need a separate operator station or learn a new interface



BACnet Compatibility Testing

VENDOR	BAS	TEST PARTNER	LOCATION
ALERTON	BACtalk	Syserco	Fremont, CA
AUTOMATEDLOGIC CORPORATION	ALC	ACCO Engineered Systems	San Leandro, CA
Honeywell	Excel, Tridium	Honeywell Corp.	Golden Valley, MN Wixom, MI
Johnson Controls	Metasys	RSD-Total Control JCI Sensor Products	San Jose, CA Milwaukee, WI
SIEMENS	Apogee	Siemens Building Technologies	Hayward, CA
t.a.c by Schneider Electric	Andover Continuum	EMCOR Integrated Solutions	Pleasanton, CA
TRANE	Trane Tracer Summit BCU	Trane	Calgary, Alberta - Canada
Delta CONTROLS	ORCA	Cypress Semiconductor	San Jose, CA

Key Components of WPT System

Green Box
(WPT-800-SBAC)

Contains configuration tools, remote monitoring & control application, BACnet interface, DR Interface, and web services

USB Hub
(WPT-800-HUSB)

Connects the WPT wireless network to the Green Box

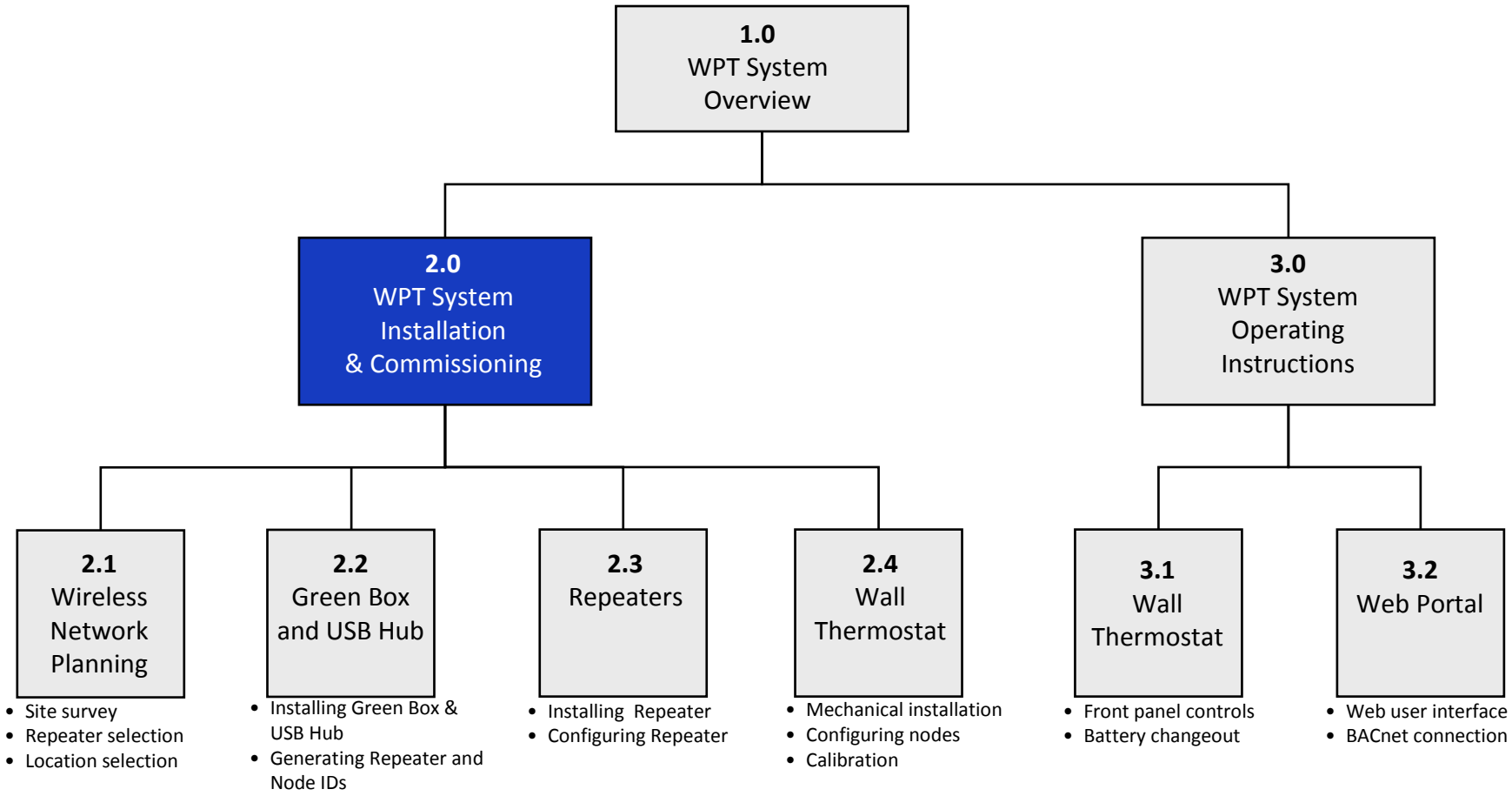
Wall powered Repeater
(WPT-800-RWAL)

Extends the WPT wireless range

WPT Node
(WPT-800-TXXX)

Replaces the existing pneumatic thermostat. Available in single/dual pipe with direct/reverse action.

WPT Training Modules



Recommended Installation Workflow

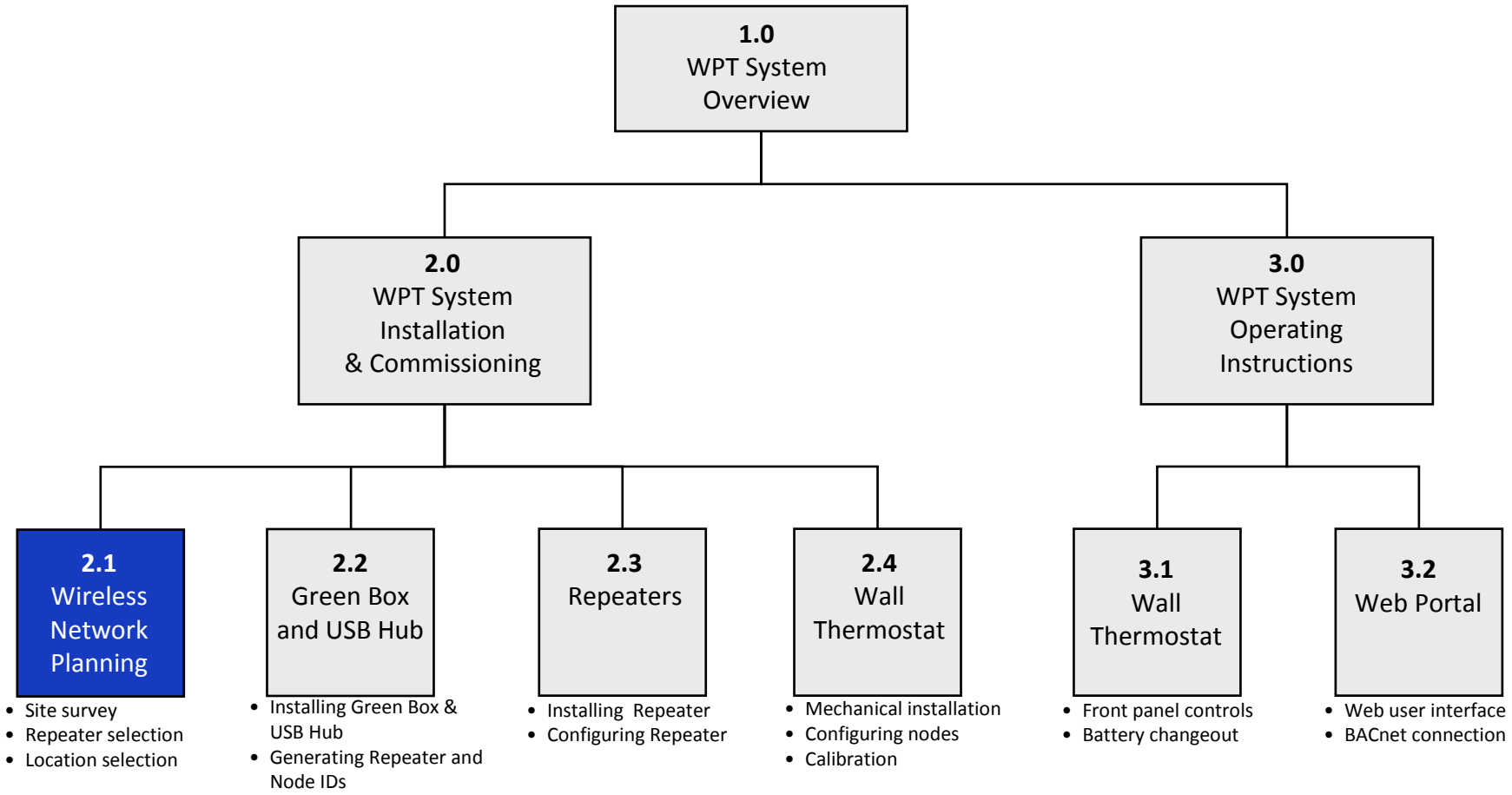
1) Start with WPT wireless network planning
   - Note the types of stats to be retrofitted
   - Perform site survey to determine where to place Repeaters, USB Hub and Green Box
   - Determine the number of Repeaters required

2) Install and configure Green Box and USB Hub
   - The USB Hub and Green Box should be setup first as the core of the network
   - Configuration tool will generate unique IDs to assign to each WPT and Repeater

3) Install and configure Repeaters
   - Install the Repeaters
   - Configure Repeaters to setup WPT wireless network

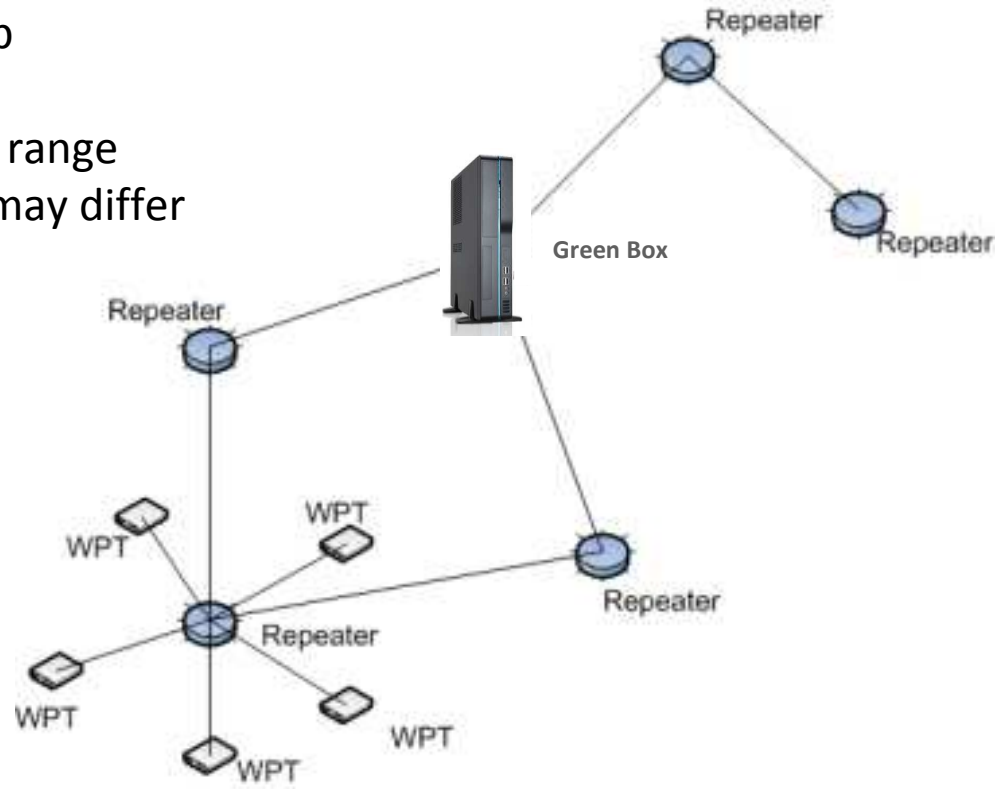
4) Install WPTs
   - Physically remove old thermostats and connect/mount WPTs in their place
   - Configure WPTs to communicate with the wireless network

WPT Training Modules



WPT Wireless Network Planning Overview

- Wireless network planning involves selecting good locations for the Repeaters and USB Hub
- Depending on the building, the wireless range and the number of Repeaters required may differ
- More than one Green Box may be used at larger sites. Each USB Hub and its associated Repeaters are considered a separate network.
- This training module addresses:
  - How to maximize wireless range
  - How to estimate number of Repeaters required
  - How to use the wireless survey tool



Guidelines for Maximizing Wireless Range

Wireless Performance in Buildings

- Cypress wireless has been installed in many different types of sites
  - low-rise office buildings
  - high-rise commercial buildings
  - industrial plants

- Typical wireless ranges for a single “hop” are:

Line of Sight	300 ft open halls 150 ft in open office floor 100 ft in corridors
Sheet Rock / Dry wood	100 ft, through five walls
Brick Walls	60 ft, through three walls
Ceilings	25 ft, through single ceiling

- Repeaters allow for multiple “hops” which extend the communications range of the system

Factors Reducing Wireless Range

- Wireless range is affected when metal obstacles are in the line of transmission
- A solid sheet of metal and some rebar reinforced concrete present the greatest obstacles
- Try to note the following objects and avoid them in the line of transmission:
  - Hollow lightweight walls filled with insulating metal foil
  - Office equipment and furniture such as book shelves, file cabinets, metal partitions, computer racks
  - Metal reinforced concrete walls, pillars and columns
  - Glass walls with metal coating
  - Plumbing and electrical risers
  - Elevator shafts and stairwells
  - Mechanical and electrical equipment rooms

The bigger the metal obstacles in the transmission path, the shorter the wireless coverage.

Where to place Repeaters and USB Hub

DOs

- Place the USB Hub in a central location on the site with power and preferably nearby LAN connection
- Mount Repeaters and USB Hubs at eye-level or higher to avoid furniture obstructions
- Place the Repeaters above each other when transmitting to adjacent floors

DON'Ts

- Avoid solid metal obstacles in the line of transmission
- Don't install Repeaters along the same side of the wall as that of the WPT (wireless coverage is better in front vs. side of WPT)
- Don't mount USB Hubs or Repeaters within 3 ft of computers or A/V equipment (which may produce interfering radio waves)

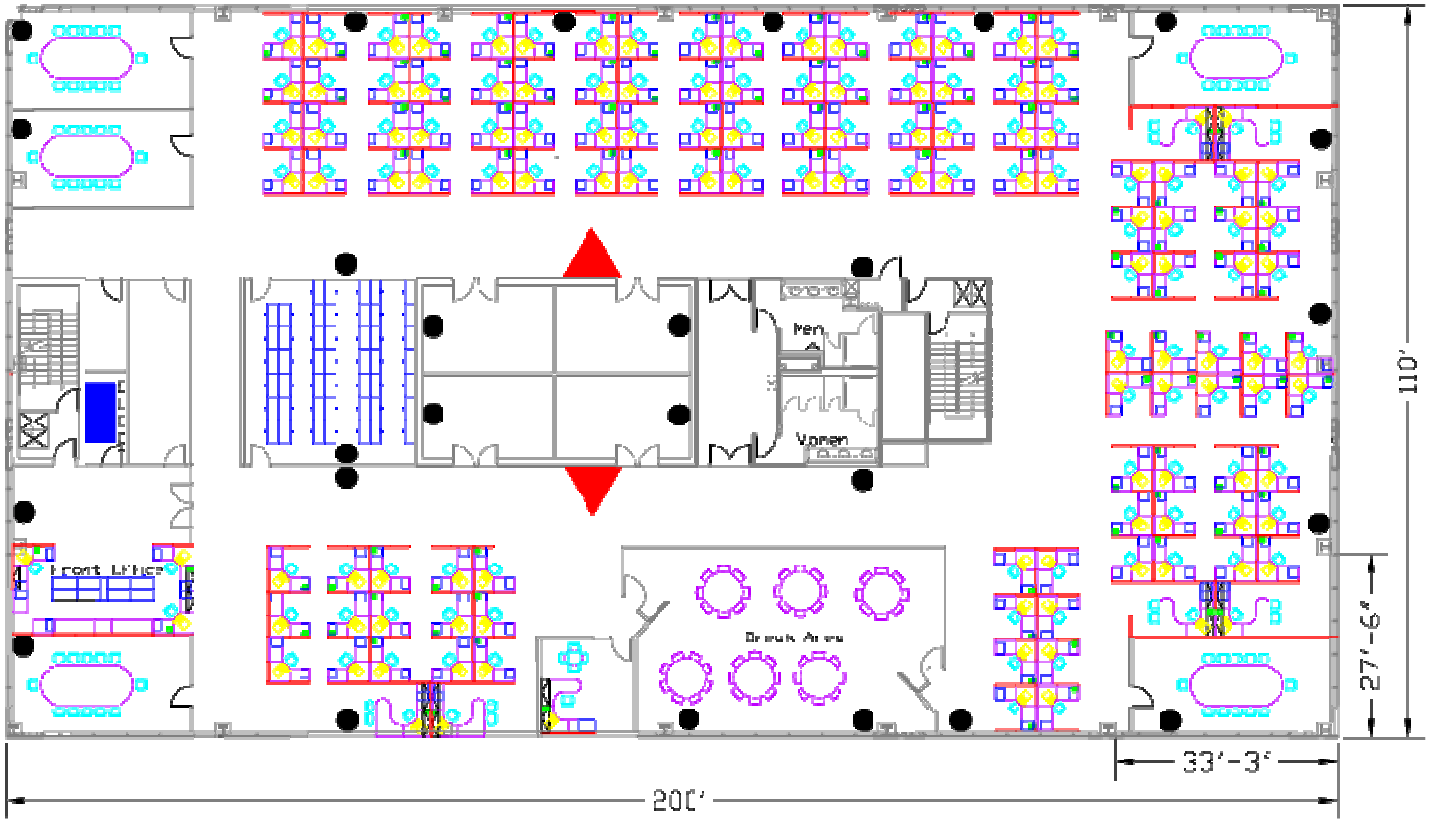
Guidelines for Estimating the Number of Repeaters Needed

Estimating Number of Repeaters Needed

GUIDELINES:

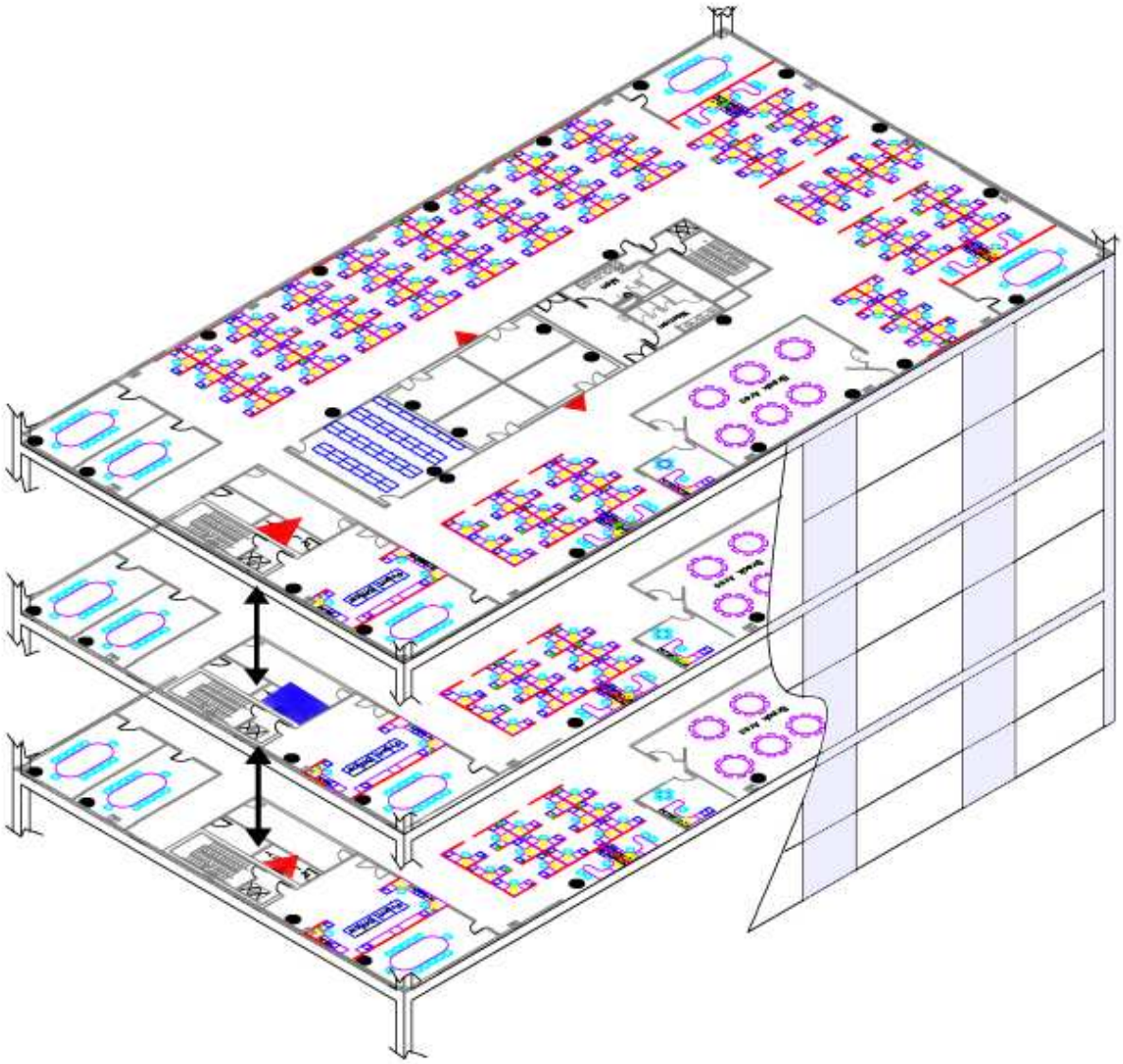
- Maximum number of Repeaters allowed in network = 14
- WPTs can talk directly to Repeaters or the USB Hub
- Allocate one Repeater for every 15 WPTs on a floor (depending on the wireless range)
- Use a Repeater for extending the WPT wireless network across different floors

Typical Layout of WPT Network in a Building



WPT Wireless Network in a Typical Office Building

Typical layout of WPT Network in a Building



Thermostats

USB Hub

Repeaters

WPT Wireless Network in a typical multi-floor office building

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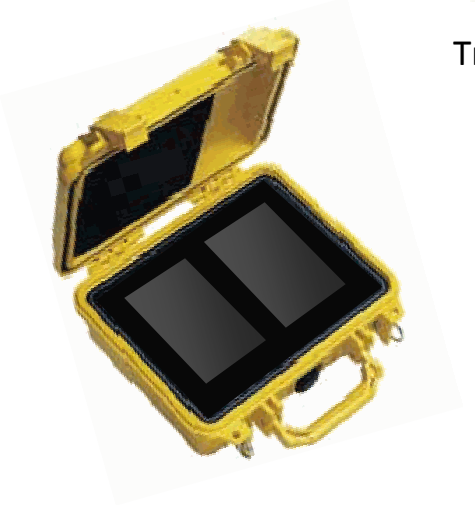
Using the Wireless Range Tester Kit

Wireless Range Tester

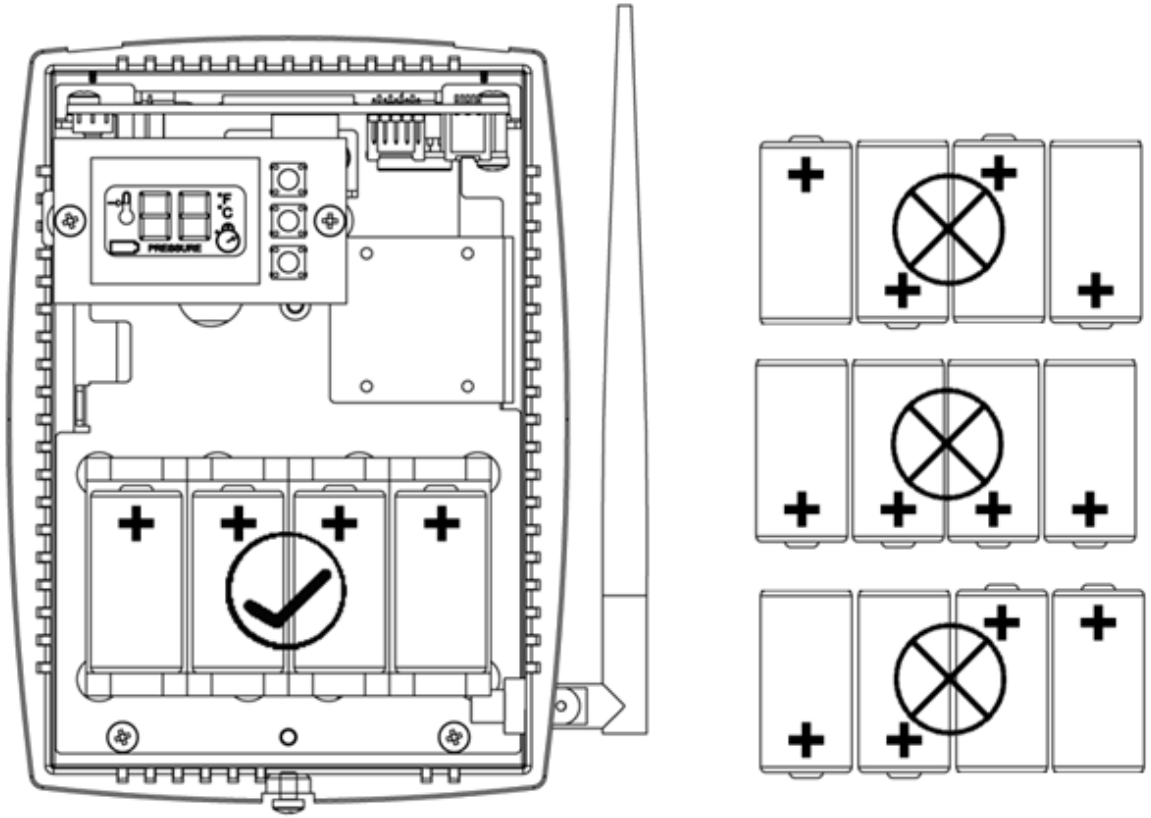
- The wireless range tester is used to determine the Repeater locations
- The wireless range tester consists of a battery powered Receiver and Transmitter
- The Receiver and Transmitter can be turned ON by simply inserting the batteries and pressing any key
- The wireless range tester does a wireless discovery process (handshake) per the WPT Wireless protocol to determine the wireless coverage reliably
- The Transmitter can be also used to check for the multiple RF paths in an installed network

Receiver

Transmitter



Installing Batteries in the Range Tester Receiver

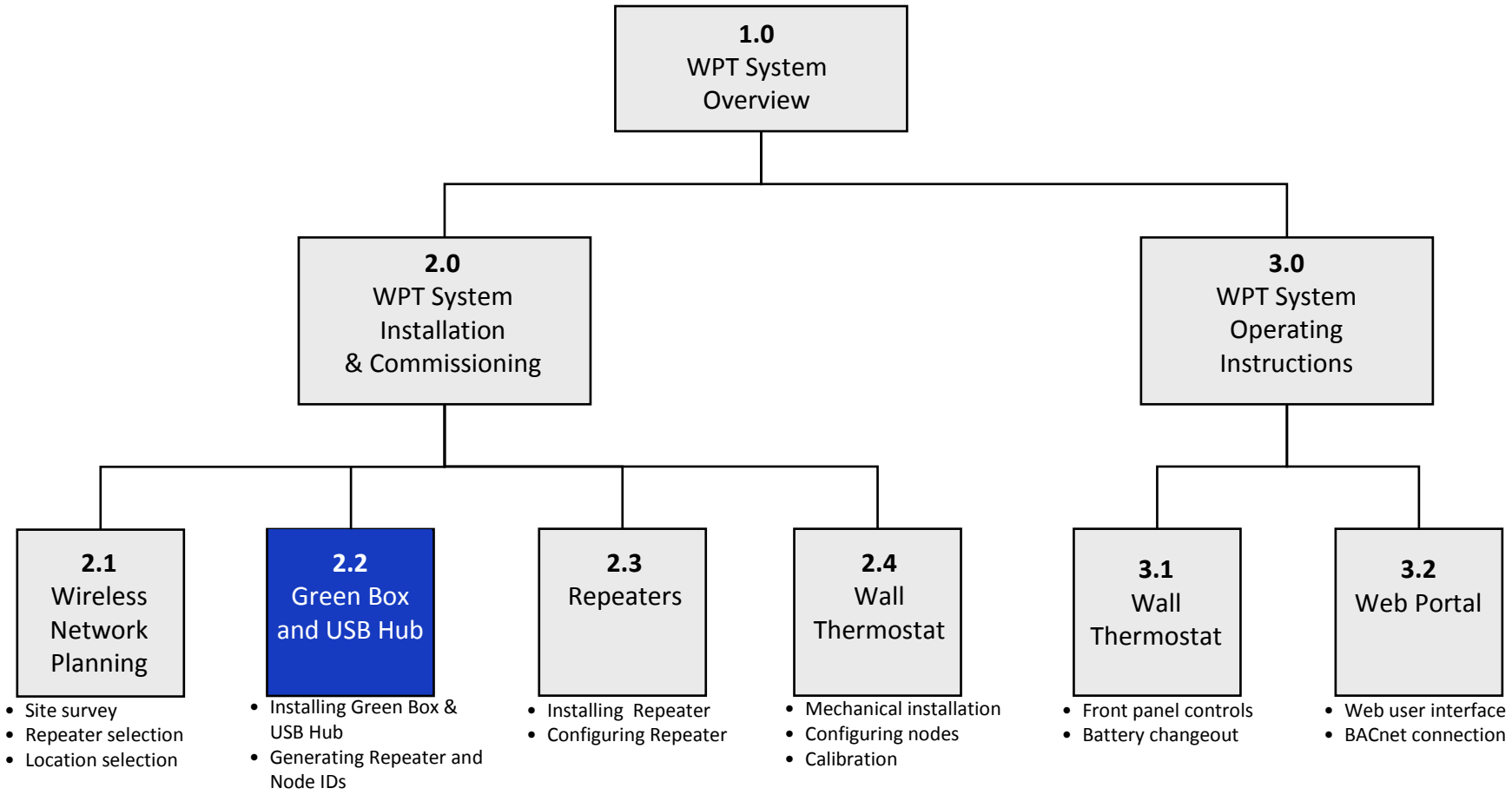


Using the Wireless Range Tester

- Identify a potential location for the Repeaters and USB Hub as per the location selection guide and the floor plan
- Keep the Receiver at the target location of the Repeater / USB Hub
- Check the signal strength at each of the thermostat locations by pressing the ▲ key on the Transmitter
  - The Transmitter displays the signal strength on a scale of 0 – 100
  - Above **75** indicates excellent coverage
  - Above **50** indicates good coverage
  - Below **42** indicates limited coverage; consider additional Repeaters or changing the location of the Repeaters
  - If the wireless coverage is bad, the discovery process will fail; LCD displays **dF**
  - To ensure consistent wireless coverage, check for signal strength multiple times

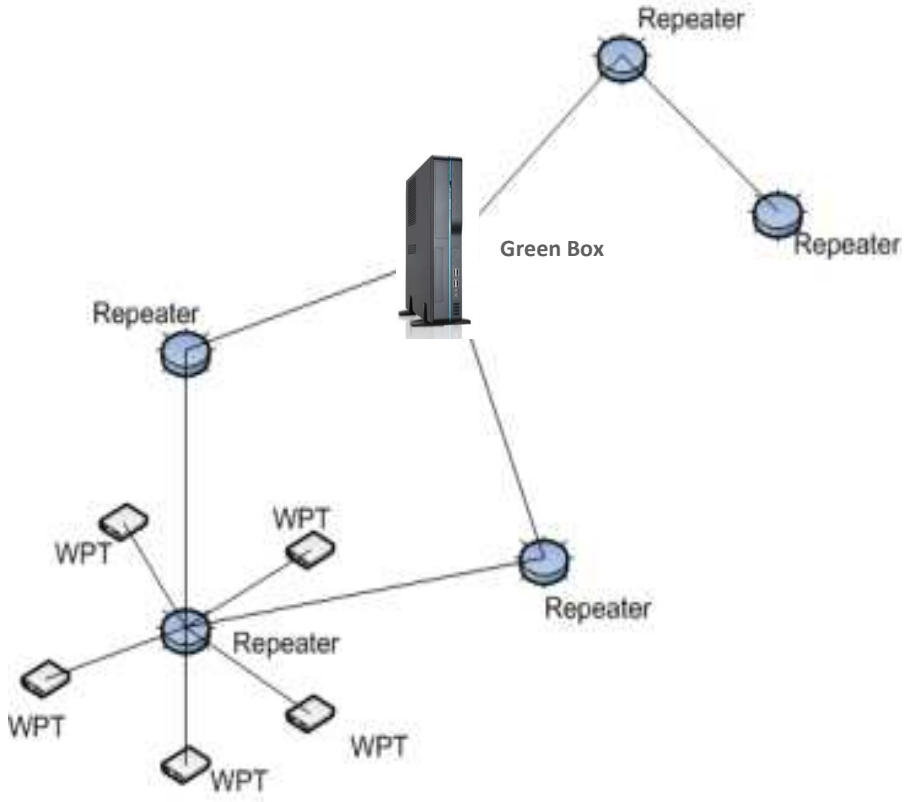
- In an installed network, availability of multiple RF paths can be verified by pressing the ▼ key on the Transmitter
  - The Transmitter displays the ID of the Repeater the primary Repeater it is talking to
  - Press ▼ key again to see the ID of the secondary Repeater available
- Press **OVR** key on the Transmitter to exit the wireless path display

WPT Training Modules



WPT USB Hub and Green Box Setup Overview

- One USB Hub and Green Box are required per WPT Wireless Network
- The USB Hub is the receiver/transmitter for the WPT wireless signals. The Green Box provides data storage and the User Interface.
- There may be more than one USB Hub & WPT Green Box per site (if necessary due to size of site)
- Each USB Hub may support up to 225 WPTs with 14 Repeaters
- The Green Box uses industry standard Windows XP/Pro operating system and includes optional BACnet/IP interface
- This training module addresses:
  - How to install and configure WPT Green Box
  - How to install and configure a USB Hub
  - How to verify a USB Hub is working correctly



WPT Green Box Setup

WPT Green Box
(Front view)

Connect the USB Hub

Connect a network cable

Connect the power cable

WPT Green Box
(Back view)

Accessing WPT Green Box

- The WPT Green Box is configured with DHCP
- WPT Green Box IP Address can be changed by connecting from any machine in the network using Microsoft Remote Desktop connection
  (Start → All Programs → Accessories → Remote Desktop Connection)
  - Machine Name: WPTServer
  - Username: (please see training coordinator)
  - Password: (please see training coordinator)
- If the WPT Green Box is not connected to the LAN, use a network cable to directly connect from a laptop
- The WPT Green Box can also be directly accessed by connecting a monitor, keyboard and mouse
- WPT Web Portal has the setup tool for generating the IDs required for configuring the USB Hub, Repeaters and WPTs
- The WPT Web Portal can be accessed using *Microsoft Internet Explorer* from a PC connected to the WPT Green Box

Accessing the WPT Web Portal

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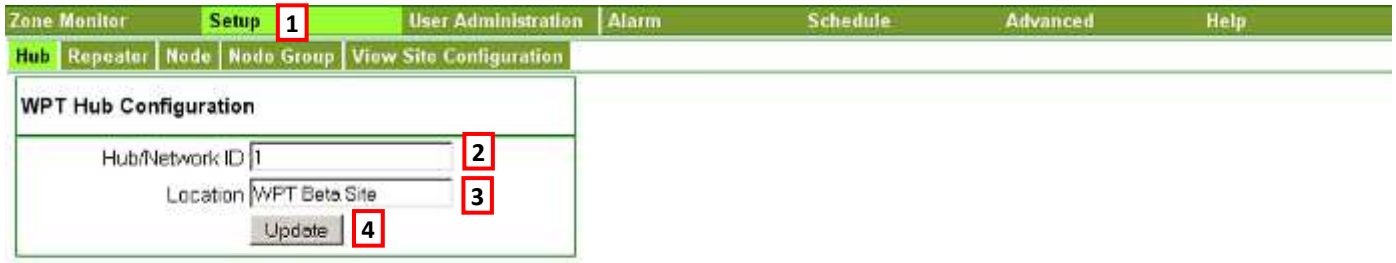
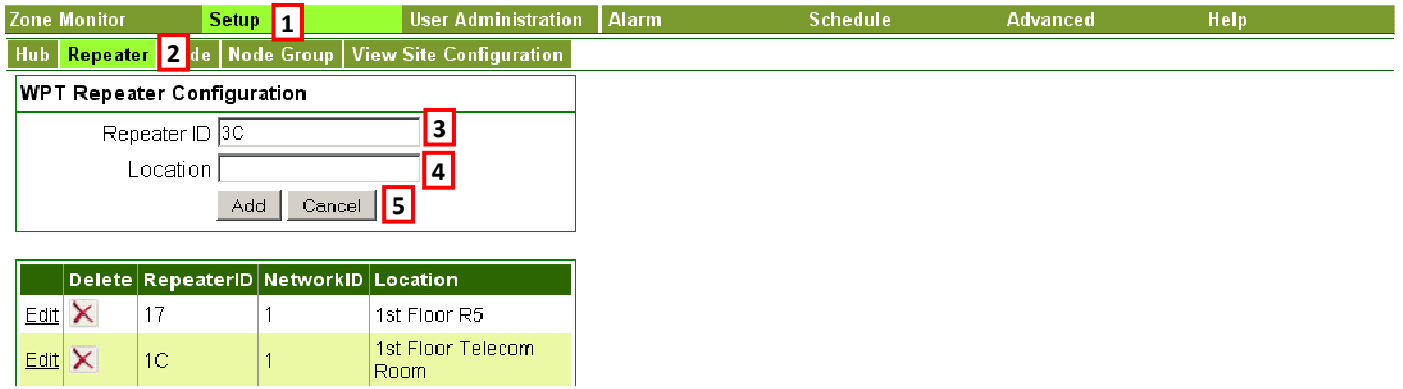
1. Enter the default username: (please see training coordinator)
2. Enter the default admin password: (please see training coordinator)
3. Click Log In

Creating Network and Repeater IDs

Create Network ID

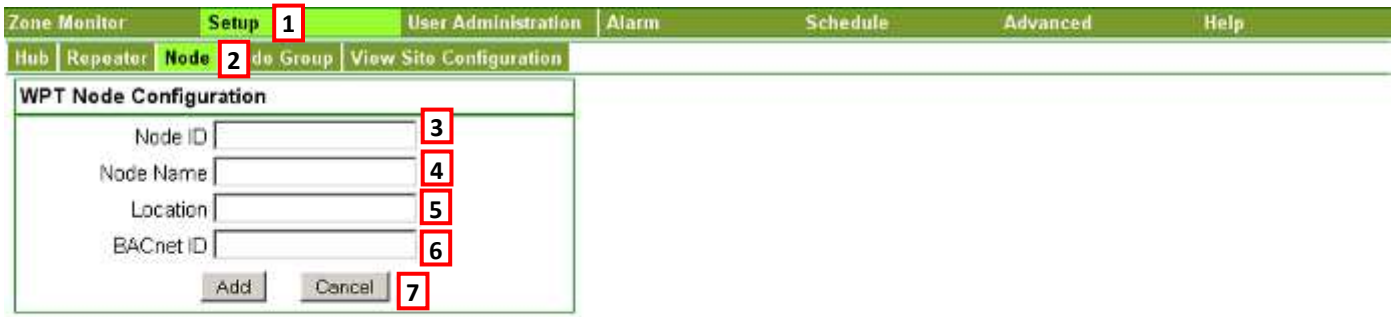


Create Repeater ID



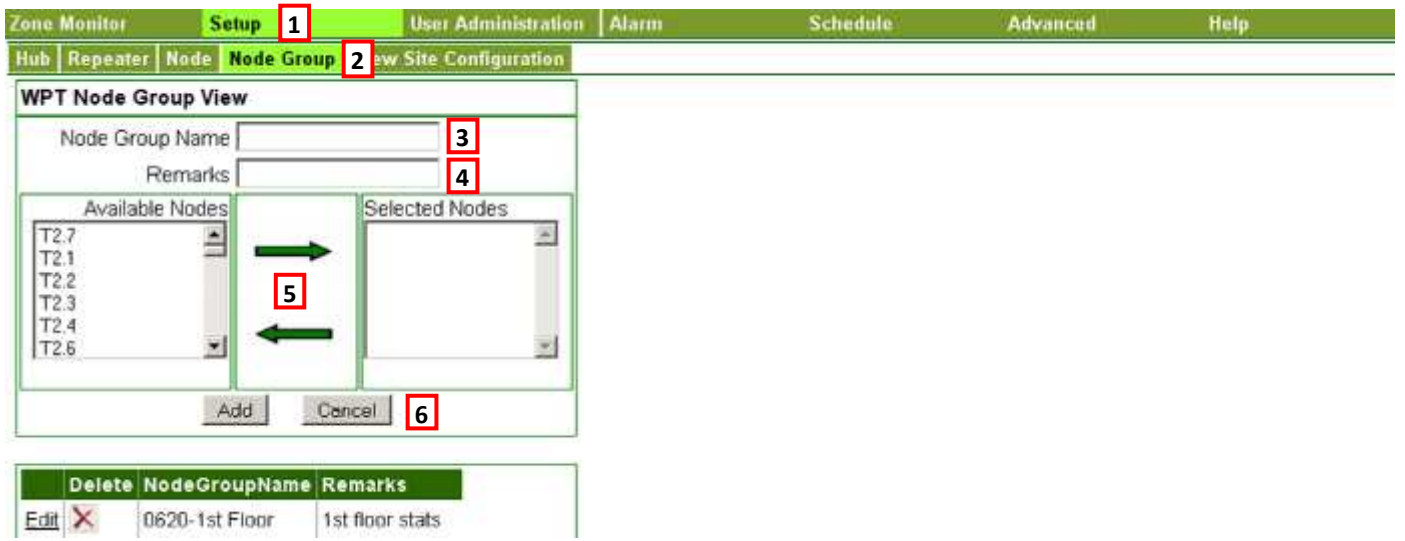
Create Node IDs and Node Groups

Create Node ID



	Delete	NodeID	NetworkID	NodeName	Location	BACnetID	OffsetValue (°F)
Edit	✕	1191	1	T3.17	0620-3-13097	400	0
Edit	✕	1141	1	T3.20	0620-3-13009	320	0
Edit	✕	1132	1	T1.29	Reception Area	4498	0

Create Node Group



	Delete	NodeGroupName	Remarks
Edit	✕	0620-1st Floor	1st floor stats

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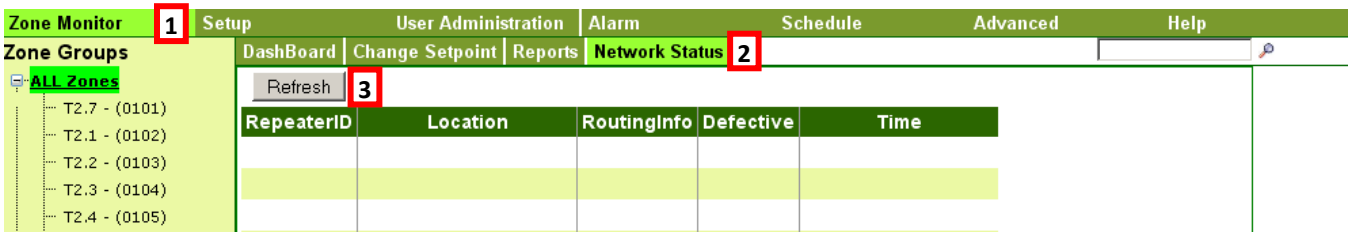
WPT Wireless Network Settings Reports

View Site Configuration

- Use this report for configuring the USB Hub, Repeaters and Nodes

Network Status

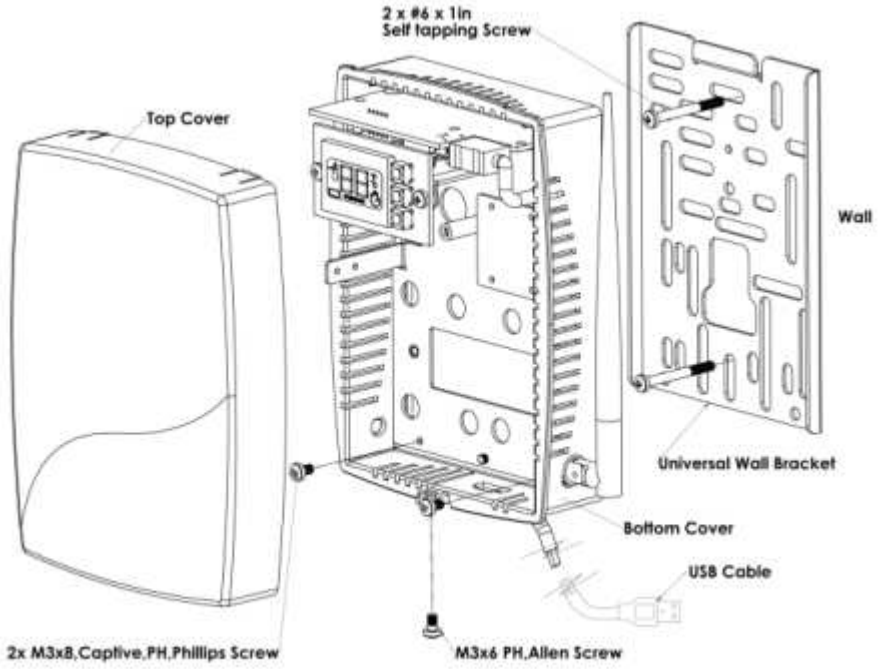
- Use this report to view the current status of the network



Installing the USB Hub

USB Hub (HUSB) Installation

1. Mount the USB Hub on the wall at eye level or higher



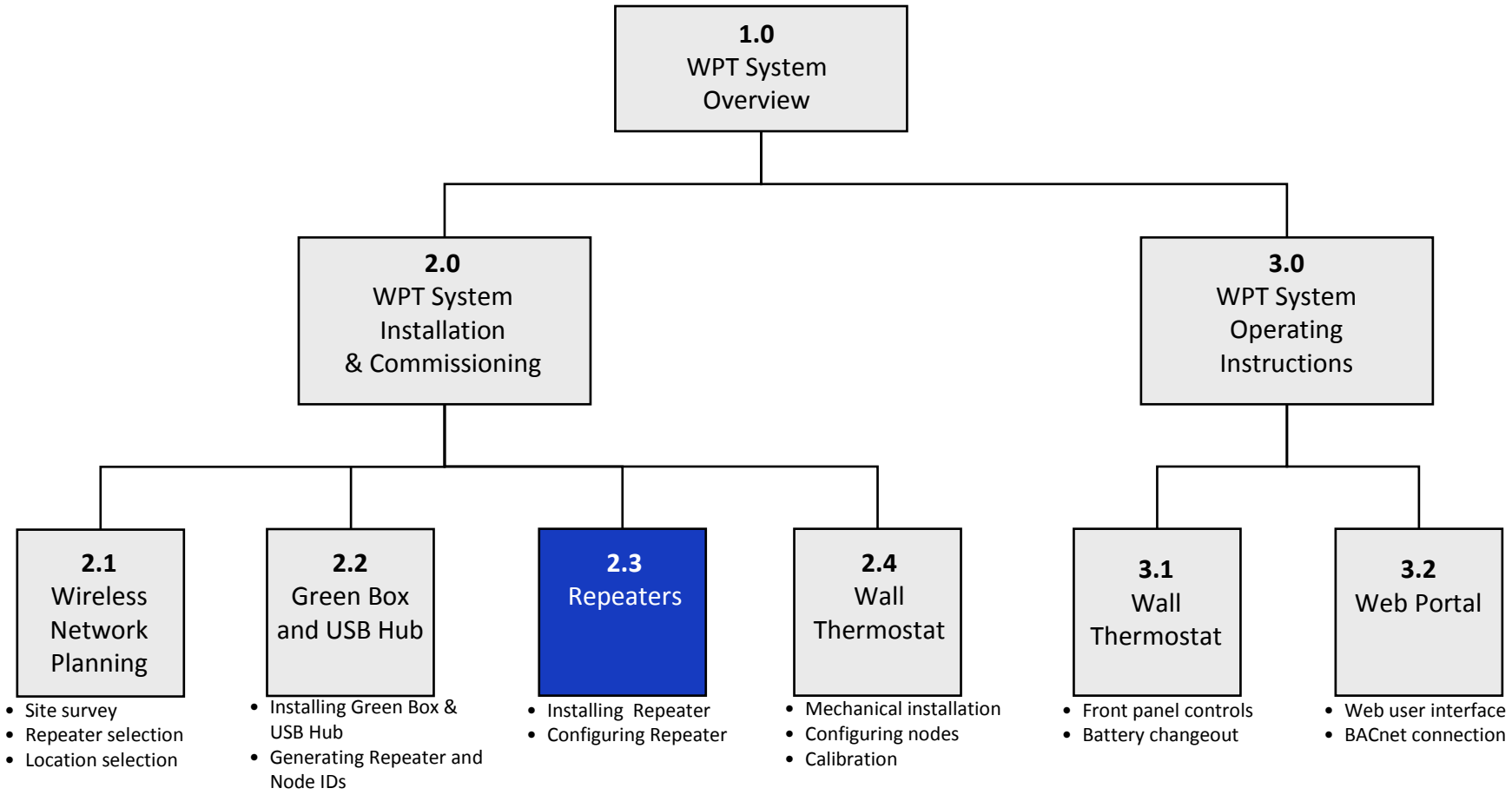
2. Turn ON the Green Box

3. Connect the USB Hub to the Green Box's USB port

Troubleshooting the USB Hub

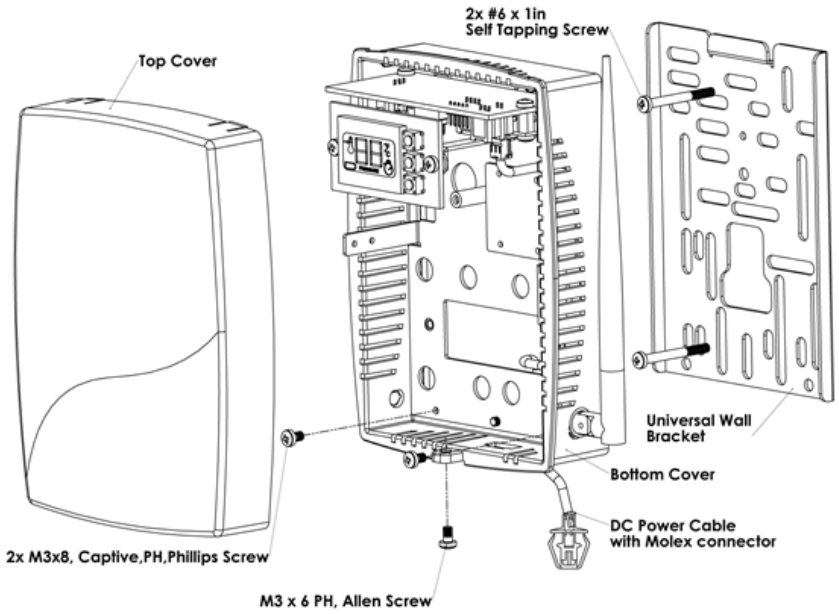
Error Code	Possible Cause	Solution
E2	Radio Error – Not able to send/receive data	Restart the unit with removing and inserting the USB Cable to the WPT Green Box If the error continues the device requires replacement
E3	Ping Error – Due to a new RF interference source in the area	Track down and eliminate the new source of RF interference or change the location of the USB Hub
E4	Connect Error – Not able to connect to the nearest Repeater	If this error occurs after successful installation, the HUSB will auto recover after couple of refresh cycles If the error persists for more than few hours, add a Repeater in the zone
E5	USB Error – Not able to communicate with the WPT Green Box	Check USB cable Change to a different USB port If problem persists, replace the HUSB

WPT Training Modules

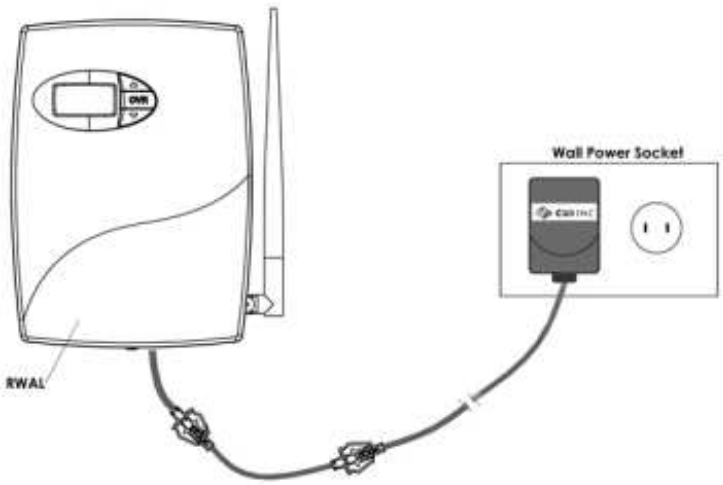


Installing Repeaters

Wall Powered Repeater (RWAL)



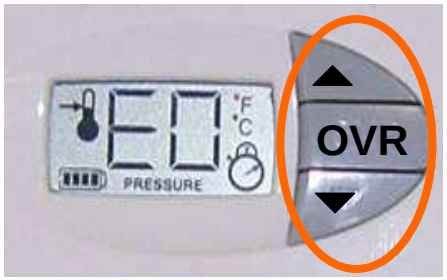
Mounting the Repeater



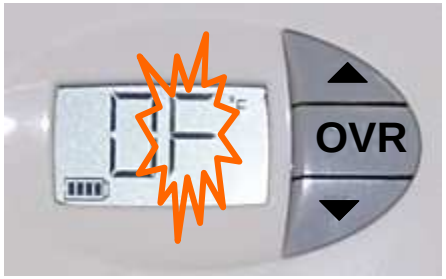
Powering the Repeater from a wall socket

NOTE: Consider using wire mold to conceal the power cable

Programming Repeater Network ID



Press and release all three keys simultaneously to enter programming mode.



Network ID Programming Mode

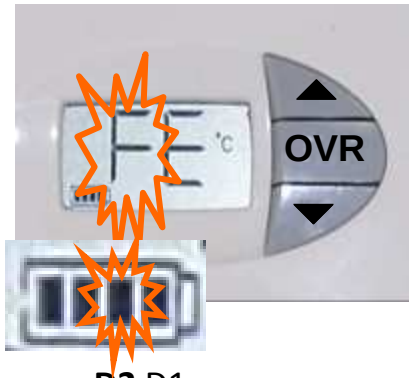
- Network ID is a single digit hexadecimal number (1-9, A-F) generated using the WPT Web Portal, as discussed in module 2.2
  - Network ID cannot be “0”
- °F icon is ON and Network ID flashes
- Use ▲ and ▼ keys to enter the ID
- Press **OVR** key to confirm

NOTES:

1. The Repeater is factory configured with Network ID 1. You can leave the Network ID unchanged by pressing the **OVR** key.
2. The Repeater will exit programming mode automatically if there is no action for 1 minute

Programming Repeater ID

D2 **D1**



D2 D1

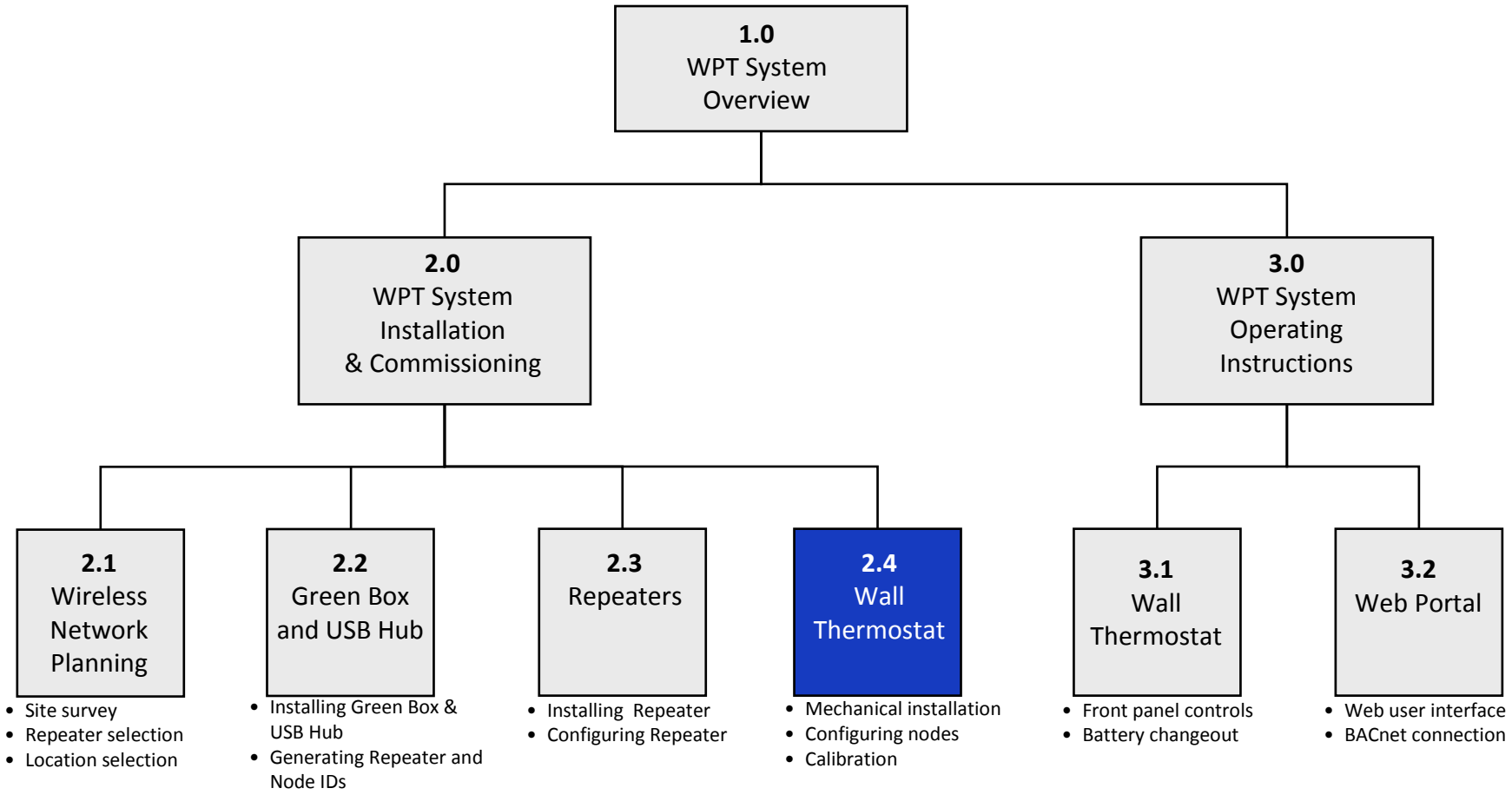
- Repeater ID is a two digit [D2 D1] hexadecimal number (0-9, A-F) generated using the WPT Web Portal, as discussed in module 2.2
  - D1 cannot be “F”
- °C icon is ON and the corresponding bar of the battery indicator flashes
- Use ▲ and ▼ keys to enter the Repeater ID
- Press **OVR** key to confirm

NOTE: The Repeater will exit the programming mode automatically if there is no action for 1 minute

Troubleshooting the Repeaters

Error Code	Possible Cause	Solution
E0	Discovery Error – Not able to connect to nearest Repeater or USB Hub	Retry discovery by pressing any key Check if Repeater or USB Hub is working Try resetting the Repeater Try with a different position of the Repeater/ USB Hub if feasible
E1	Time Synchronization Error – Not able to synchronize the RWAL time with the wireless network	If this error occurs after successful commissioning of the system, RWAL will recover from this error within couple of refresh cycles
E2	Radio Error – Not able to send/receive data	Restart the unit with removing and inserting the battery or unplugging and plugging the A/C power adapter If the error continues the device requires replacement
E3	Ping Error – Due to a new RF interference source in the area	Track down and eliminate the new source of RF interference or change the location of the USB Hub
E4	Connect Error – Not able to connect to the nearest USB Hub or Repeater	If this error occurs after successful installation, the Repeater will auto recover after couple of refresh cycles If the error persists for more than few hours, add a Repeater in the zone

WPT Training Modules



WPT Wall Thermostat Installation Overview

- Installing a WPT and configuring it for wireless communication should take less than 20 minutes

- This training module addresses:
  - How to physically install the WPT
  - How to install the batteries
  - How to turn on and configure the WPT using the front panel
  - How to calibrate the WPT

Mounting the WPT

Installing the WPT – Step 1

Remove the existing thermostat and wall plate

(Figure shows 2-pipe thermostat. Procedure is the same for a 1-pipe thermostat.)

NOTE: Use caution when removing the pneumatic lines from the existing thermostat. Lack of slack may cause the lines to retract into the wall.

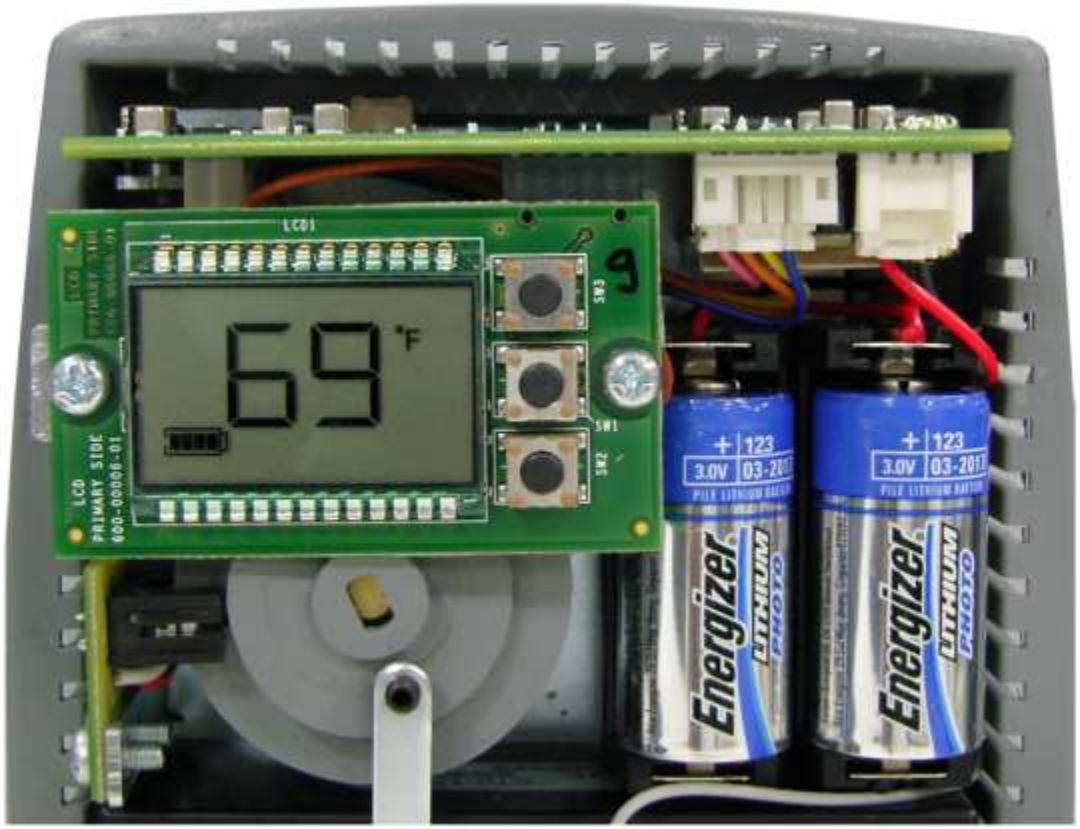
Installing the WPT – Step 2

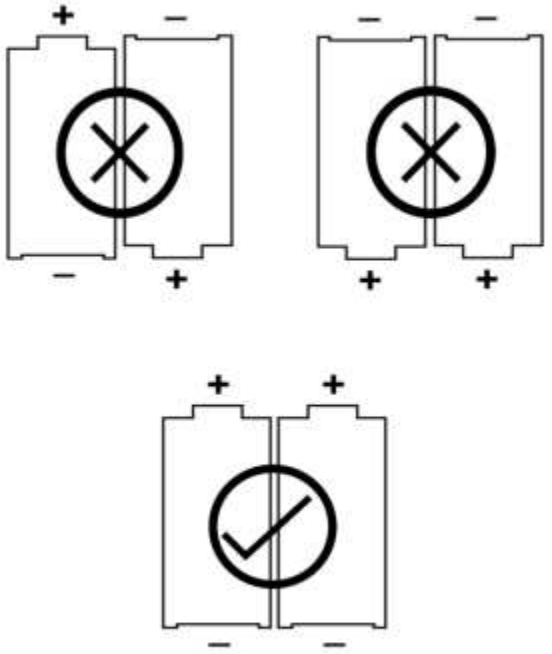
Mount universal adapter plate, connect pneumatic lines to WPT, mount WPT to wall, and install WPT cover plate

(Figure shows 2-pipe thermostat. Procedure is the same for a 1-pipe thermostat.)

Installing the Batteries

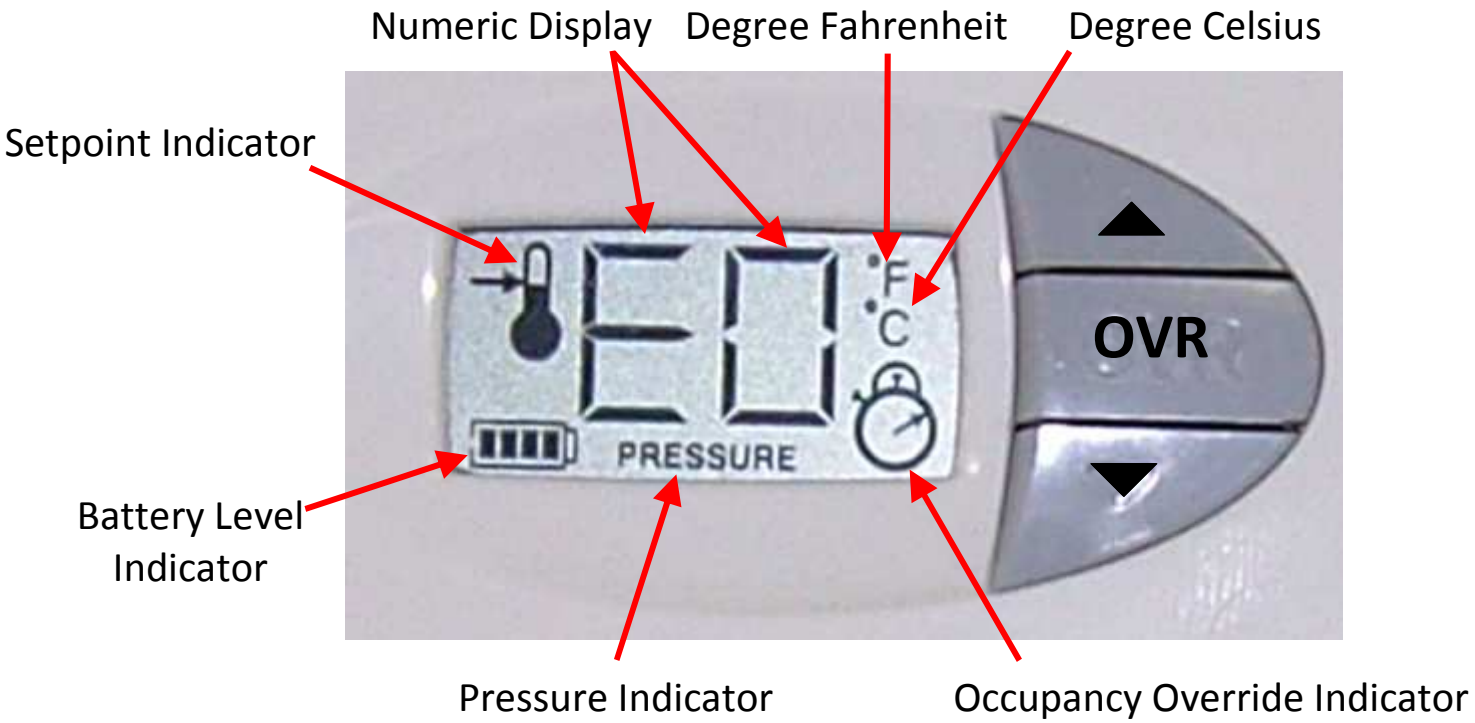
Installing the Batteries in the WPT



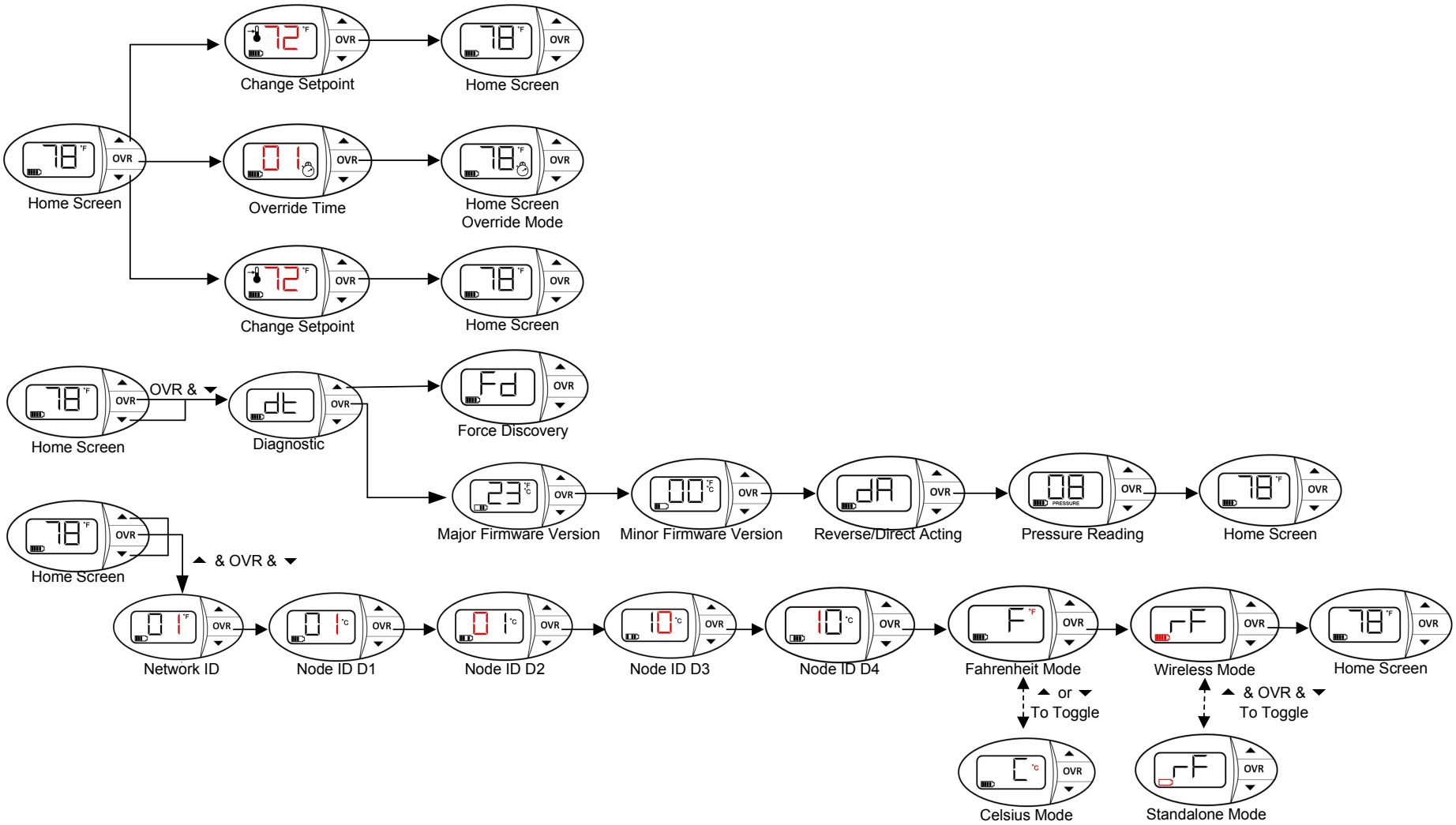


Configuring the WPT for Wireless Communications

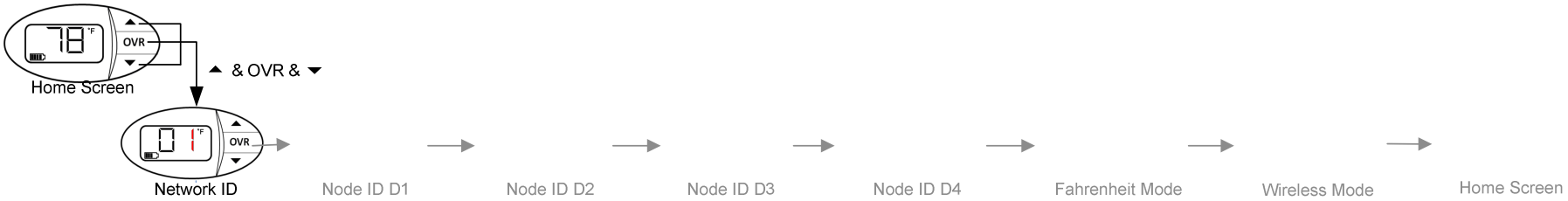
WPT LCD Display



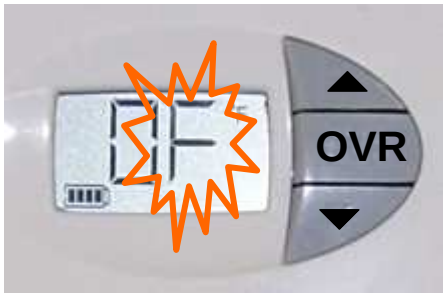
WPT Menu Structure



Programming WPT Network ID



- Network ID is a single digit hexadecimal number (1-9, A-F) generated using the WPT Web Portal, as discussed in module 2.2
  - Network ID cannot be “0”
- °F icon is ON and Network ID flashes
- Use ▲ and ▼ keys to enter the ID
- Press **OVR** key to confirm

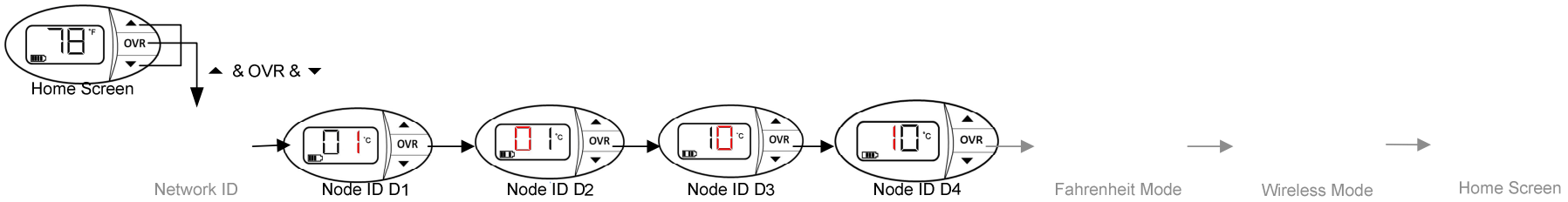


Network ID Programming Mode

NOTES:

1. The WPT is factory configured with Network ID 1. You can leave the Network ID unchanged by pressing the **OVR** key.
2. The WPT will exit the programming mode automatically if there is no action for 1 minute

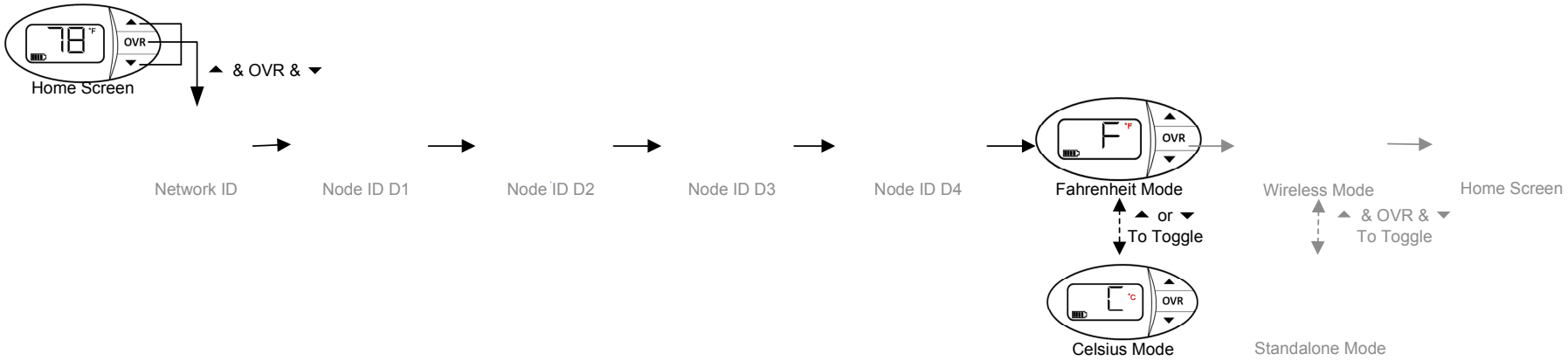
Programming WPT Node ID



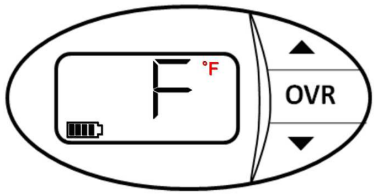
- Node ID is a four digit [D4 D3 D2 D1] hexadecimal number (0-9,A-F) generated using the WPT Web Portal, as discussed in module 2.2
  - D1 cannot be “0”
- Press ▲ and **OVR** and ▼ keys simultaneously to enter programming mode
- Press **OVR** to enter Node ID menu
- °C icon is ON and corresponding bar of the battery indicator flashes
- Press ▲ and ▼ keys to enter Node ID D1
- Press **OVR** key to confirm and enter Node ID D2 menu
- Repeat until all for node digits have been entered

NOTE: The WPT will exit programming mode automatically if there is no action for 1 minute

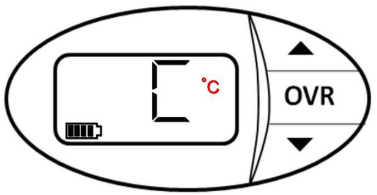
Programming the WPT Units of Measure



- Press ▲ and **OVR** and ▼ keys simultaneously to enter programming mode
- Press **OVR** key five times to toggle between Fahrenheit or Celsius mode
- Press **OVR** to confirm



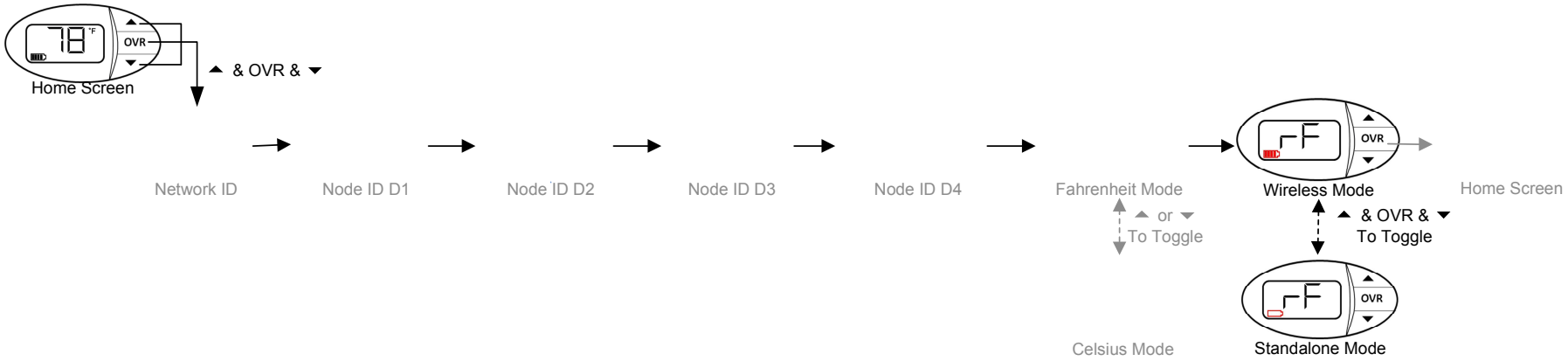
Fahrenheit mode



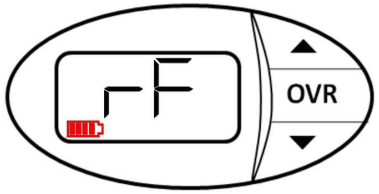
Celsius mode

NOTE: The WPT will exit programming mode automatically if there is no action for 1 minute

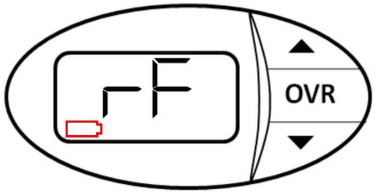
Configuring the WPT for Standalone Mode



- Press ▲ and **OVR** and ▼ keys simultaneously to enter programming mode
- Press **OVR** six times to enter wireless mode screen
- Press ▲ and **OVR** and ▼ keys simultaneously to toggle between wireless and standalone modes
- Press **OVR** to confirm



Wireless mode



Standalone mode

NOTE: The WPT will exit programming mode automatically if there is no action for 1 minute

Common WPT Display Messages

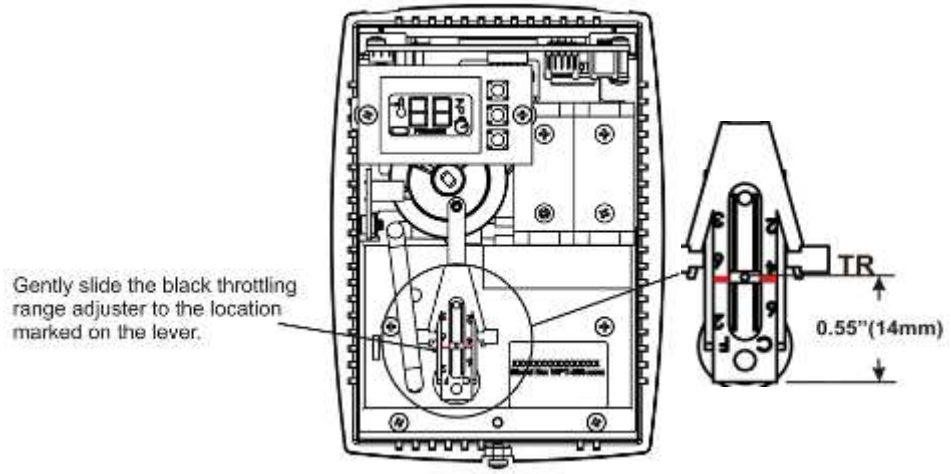
Code	Description
dy	“dy” indicates that the WPT is performing a discovery operation and it should not be disturbed
dt	“dt” indicates that the WPT is performing a diagnostic operation
Fd	“Fd” indicates that the WPT is performing a forced discovery operation
UL	“UL” indicates that the keypad is unlocked by the user
LC	“LC” indicates that the keypad is locked

Troubleshooting the WPT

Error Code	Possible Cause	Solution
E0	Discovery Error – Not able to connect to nearest Repeater or USB Hub	Retry discovery by pressing any key Check if Repeater or USB Hub is working Try resetting the Repeater Try with a different position of the Repeater/ USB Hub if feasible
E1	Time Synchronization Error – Not able to synchronize the WPT time with the wireless network	If this error occurs after successful commissioning of the system, WPT will recover from this error within couple of refresh cycles
E2	Radio Error – Not able to send/receive data	Restart the unit by removing and inserting the battery If the error continues the device requires replacement
E4	Connect Error – Not able to connect to the nearest USB Hub or Repeater	If this error occurs after successful installation, the WPT will auto recover after a couple of refresh cycles If the error persists for few hours add a Repeater in the zone

Calibrating the WPT

Calibrating the WPT – Step 1

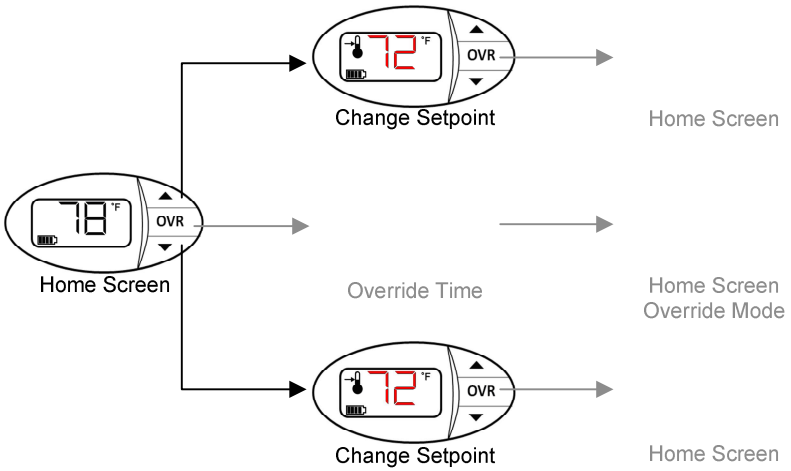


- Remove the front cover of WPT
- Make sure that the WPT is acclimatized to the ambient temperature
- Verify that the black throttling range adjuster is set to the location marked on the lever

Warning!

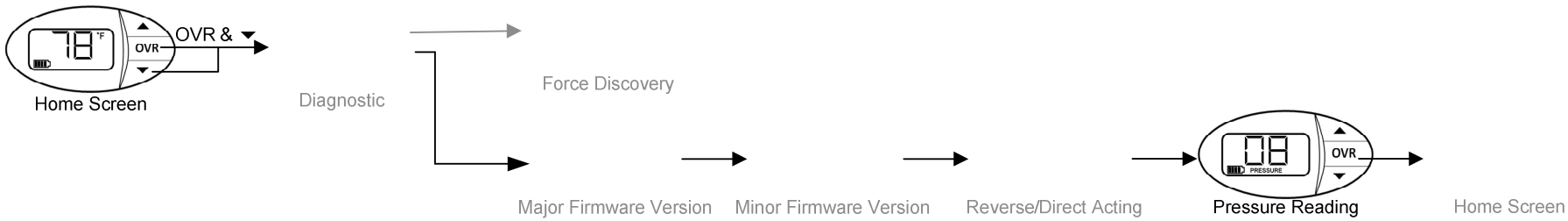
- WPT is factory adjusted for about 4°F throttling range
- It is highly recommended to avoid touching or adjusting the throttle range
- The bi-metallic strip can be damaged if enough care is not taken while moving the throttling range adjuster
- Use a gentle nudging motion on the throttling range adjuster, without exerting force on the bi-metal strip as this type of force will likely damage the bi-metallic strip

Calibrating the WPT – Step 2



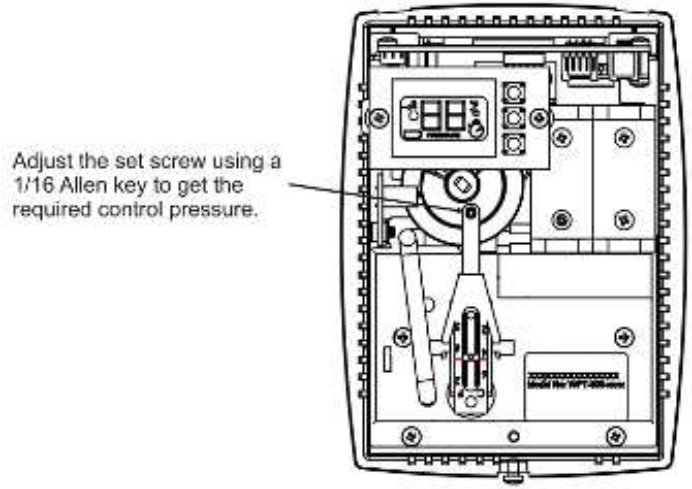
- Program setpoint to ambient temperature using the ▲ or ▼ key
- Press **OVR** to confirm

Calibrating the WPT – Step 3

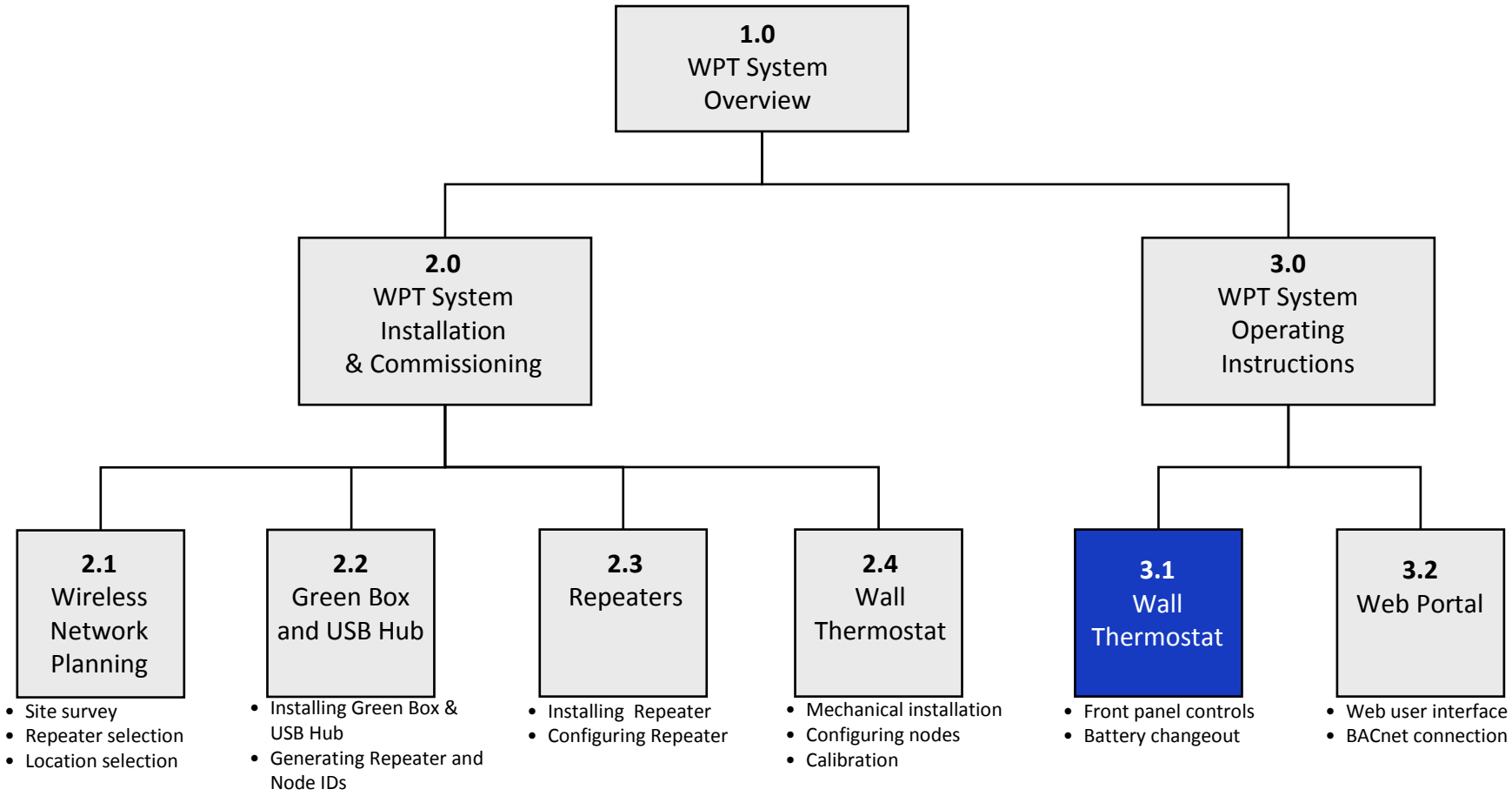


- Set the WPT to the pressure reading screen. Press the **OVR** and ▼ keys simultaneously, then press **OVR** four times
- Use a 1/16” hex Allen wrench and turn the calibration set screw on the thermostat lever until the desired pressure is displayed on the LCD

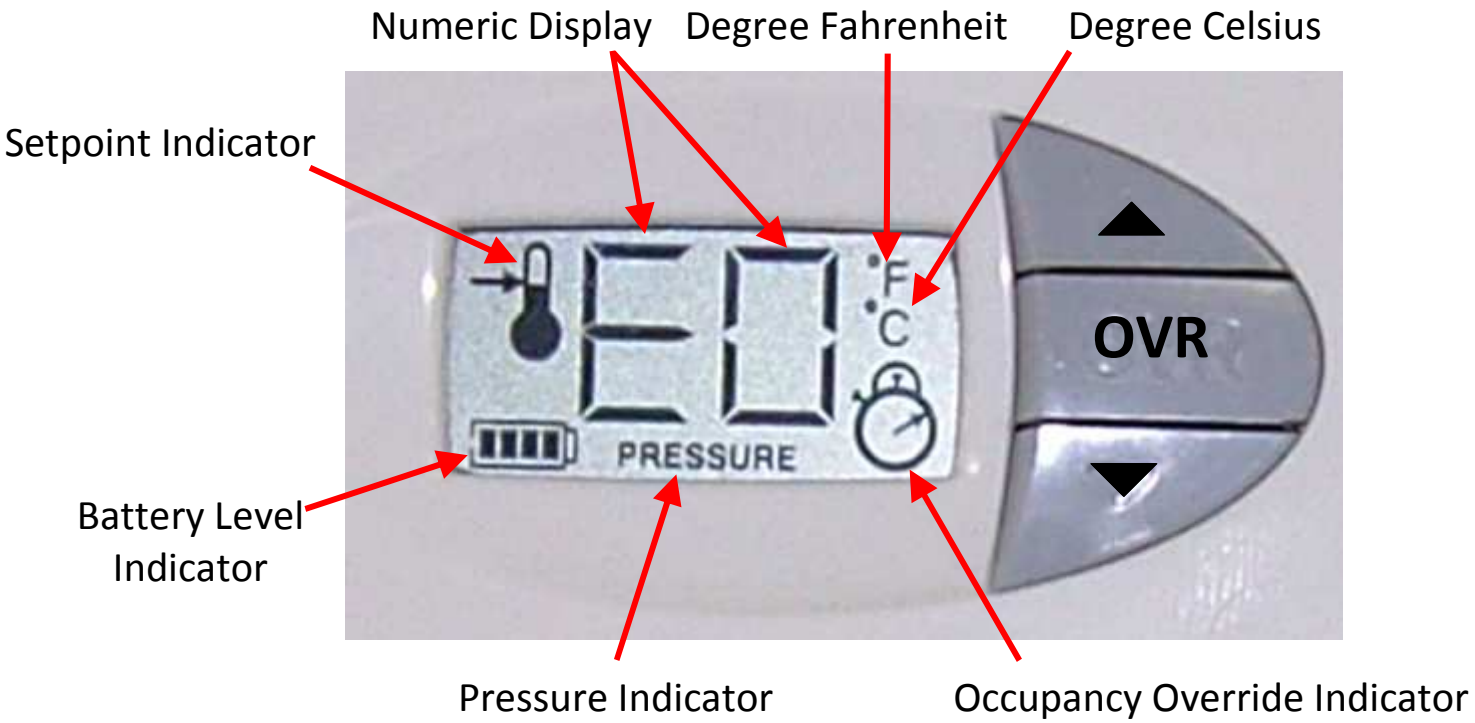
  NOTE: Single pipe stats might take longer to respond during calibration. Please allow sufficient time to calibrate the WPT.
- Press **OVR** key to exit the pressure reading screen
- Verify that the pressure changes per the control action (Direct/Reverse) by increasing and decreasing the setpoint using the ▲ or ▼ key
- Set the setpoint to the desired value using the ▲ or ▼ key
- Press **OVR** to confirm
- Replace the front cover of the WPT



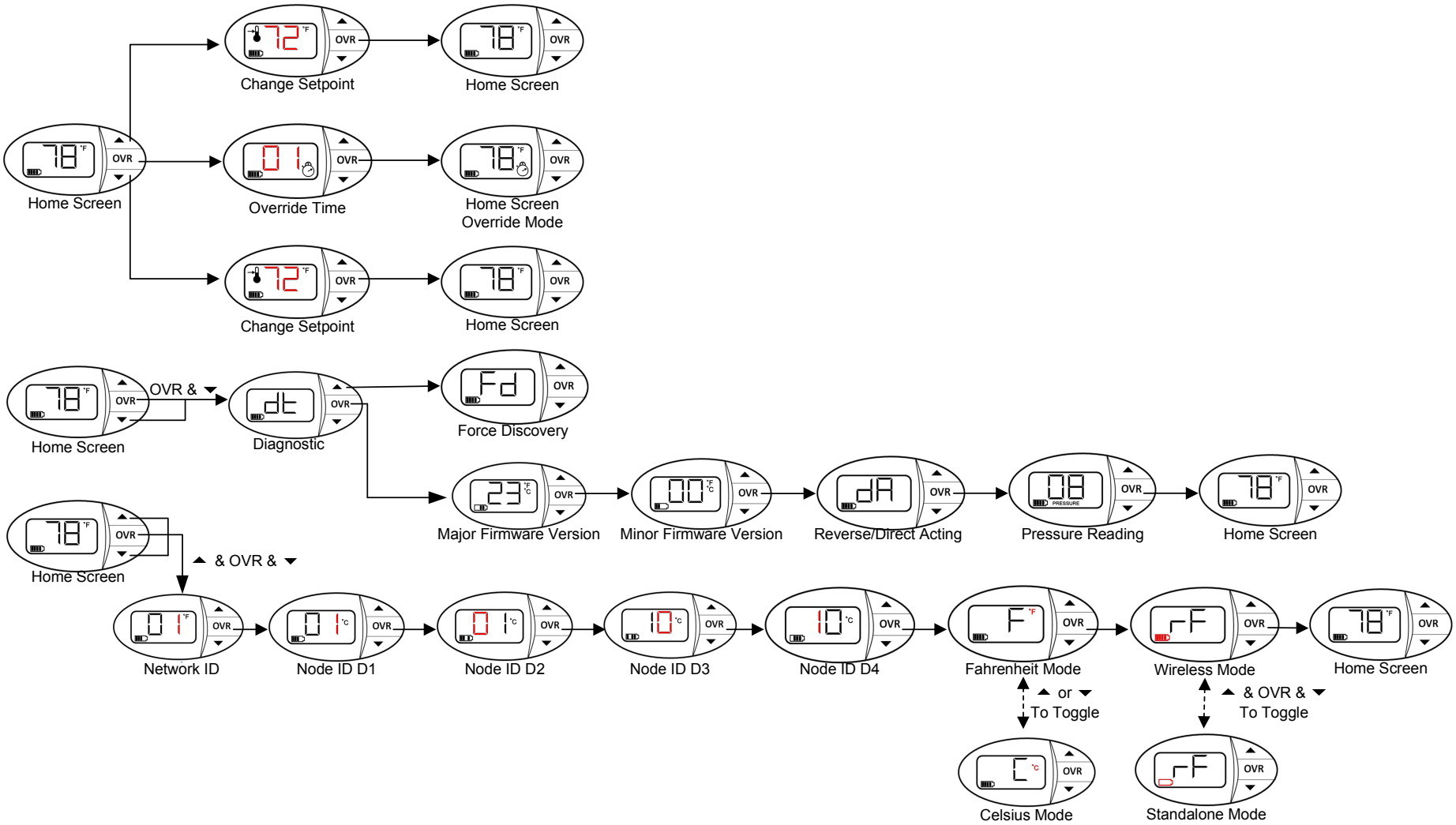
WPT Training Modules



WPT LCD Display

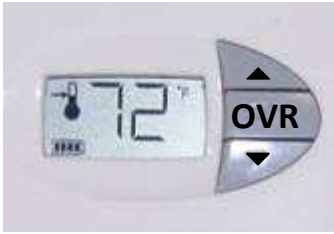


WPT Menu Structure



WPT Operation

- Change Setpoint
  - Press the ▲ or ▼ key once to view the current set point along with the setpoint indicator
  - Press the ▲ or ▼ key to change the set point value
  - Press the **OVR** key to accept the set point value and to show the current temperature



NOTE: The WPT accepts the new set point value and the LCD display reverts to the current temperature if there is no action after 1 minute.

- Set / Reset Occupancy Override
  - Press the **OVR** key to activate the occupancy override
    The LCD display flashes the override duration in hours
  - Press the ▲ or ▼ key to change the override duration to desired value
  - Press the **OVR** key to accept override and to show the current temperature
    NOTE: The WPT accepts the override duration and the LCD display reverts to the current temperature if there is no action after 1 minute.
  - LCD displays the Occupancy Override Indicator during the Override period
  - To cancel the Occupancy Override mode, press the **OVR** key and the Occupancy Override Indicator will disappear

Lock/Unlock WPT LCD Keys

- Locking the LCD keys prevents user from changing the setpoint and other configuration information of WPT

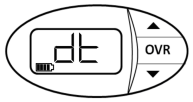
- Locking the LCD keys
  - Press the ▲ and ▼ keys simultaneously for 2 seconds
  - The key is locked and the LCD displays “LC” for 2 seconds
  - When the keys are locked user won’t be able to use the keys on the stat to change the setpoint or Occ Override
  - When the Keys are locked and if the user tries pressing any keys, “LC” appears to indicate that keys are locked

- Unlocking the LCD keys
  - Press the ▲ and ▼ keys simultaneously for 2 seconds
  - The key is locked and the LCD displays “UL” for 2 seconds

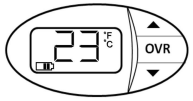
NOTE: The LCD Keys can also be locked/unlocked from the WPT Green Box

Diagnostic Info

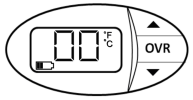
- To view diagnostic info press and hold ▼ and **OVR** keys simultaneously for 2 seconds



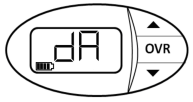
- The LCD displays '**dt**' to indicate the diagnostic mode



- Press **OVR** once to view the major firmware Version of the WPT

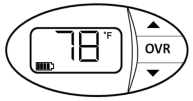


- Press **OVR** a second time to view the minor firmware Version of the WPT



- Press **OVR** for a third time to view the action of the WPT (direct/reverse)

- Press **OVR** for a fourth time to view the current branch pressure in PSI



- Press **OVR** to exit the diagnostic page and return to the home page

NOTE: The WPT will exit diagnostic mode automatically if there is no action for 1 minute

Force Discovery

- Force discovery helps in establishing the Wireless connectivity during installation/troubleshooting
- To initiate Force Discovery, user must enter into the diagnostic mode by pressing and holding ▼ and **OVR** keys simultaneously for 2 seconds
- The LCD displays '**dt**' to indicate the diagnostic mode

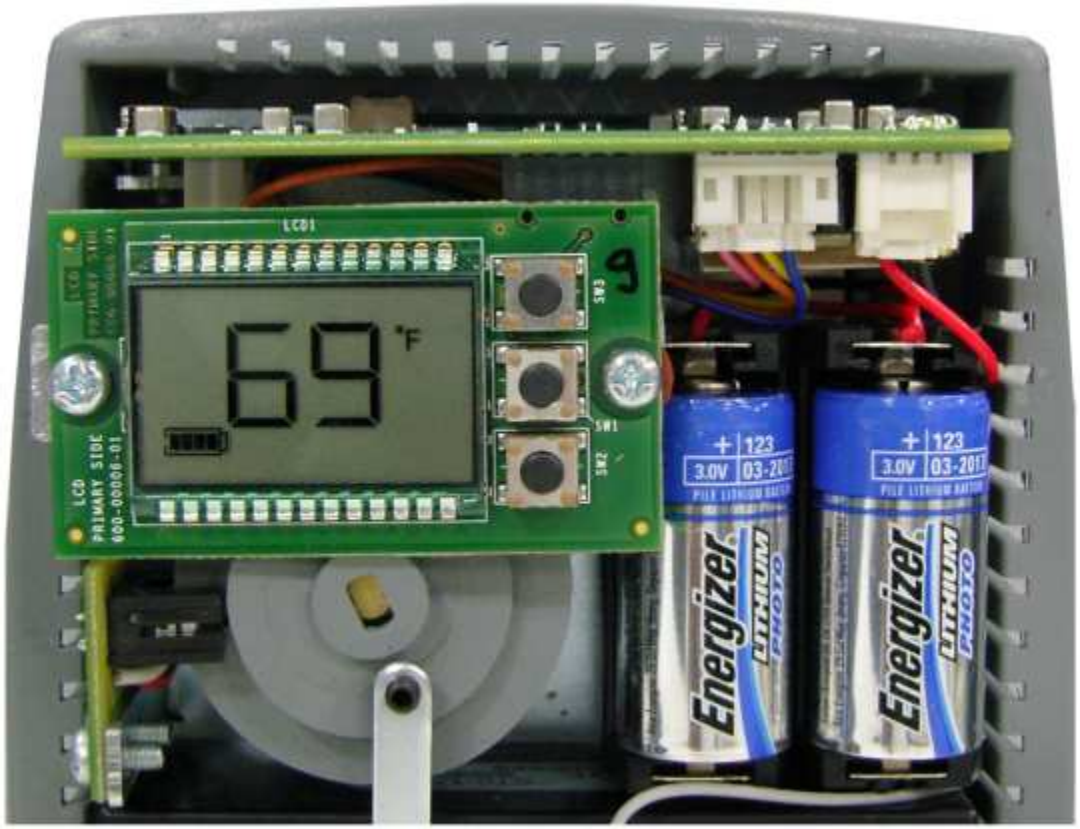
- Press ▲ once to enter the Force discovery mode; The LCD displays '**Fd**'

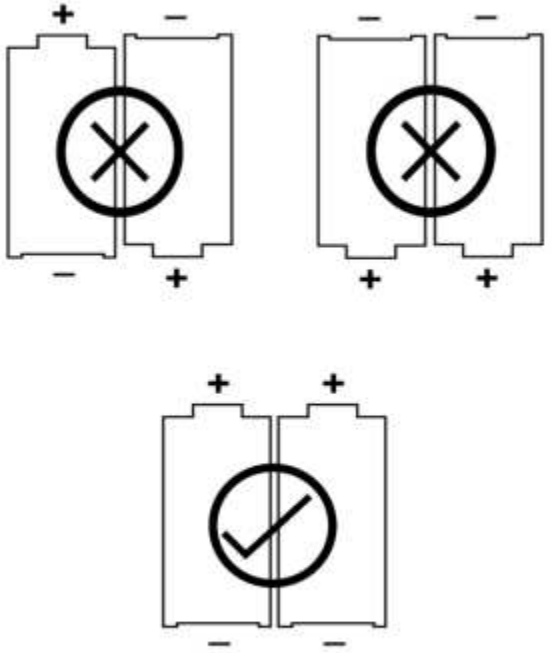
- During the discovery process the LCD displays **"dy"** for few seconds until it returns to normal operating mode

- If the WPT is not able to establish wireless connection with a Repeater/USB Hub, LCD will display '**df**' to indicate discovery failure

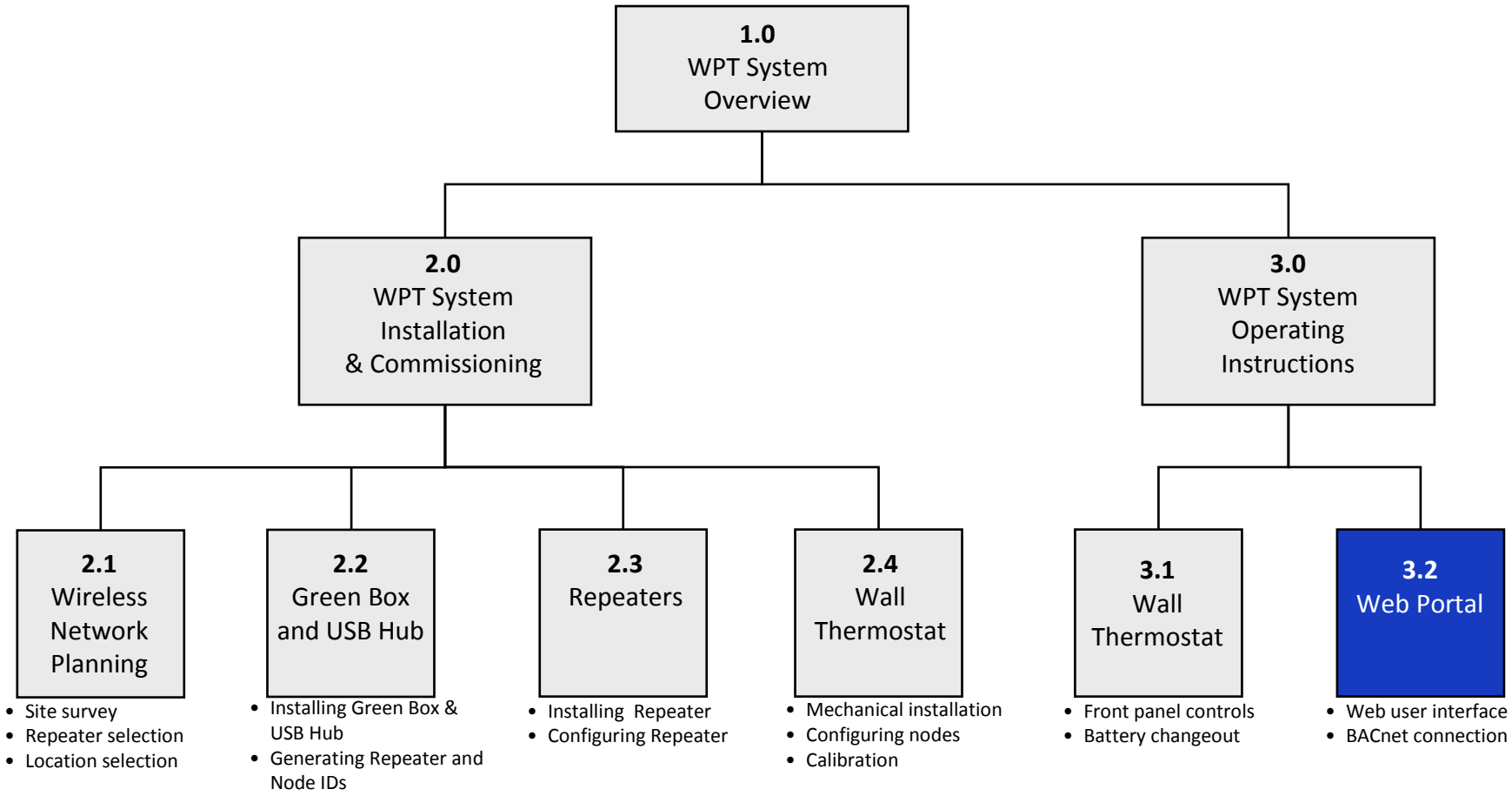
- When Force Discovery fails, use a WPT Wireless Range Tester to check the signal strength and install an additional Repeater, if required

Changing Batteries in the WPT

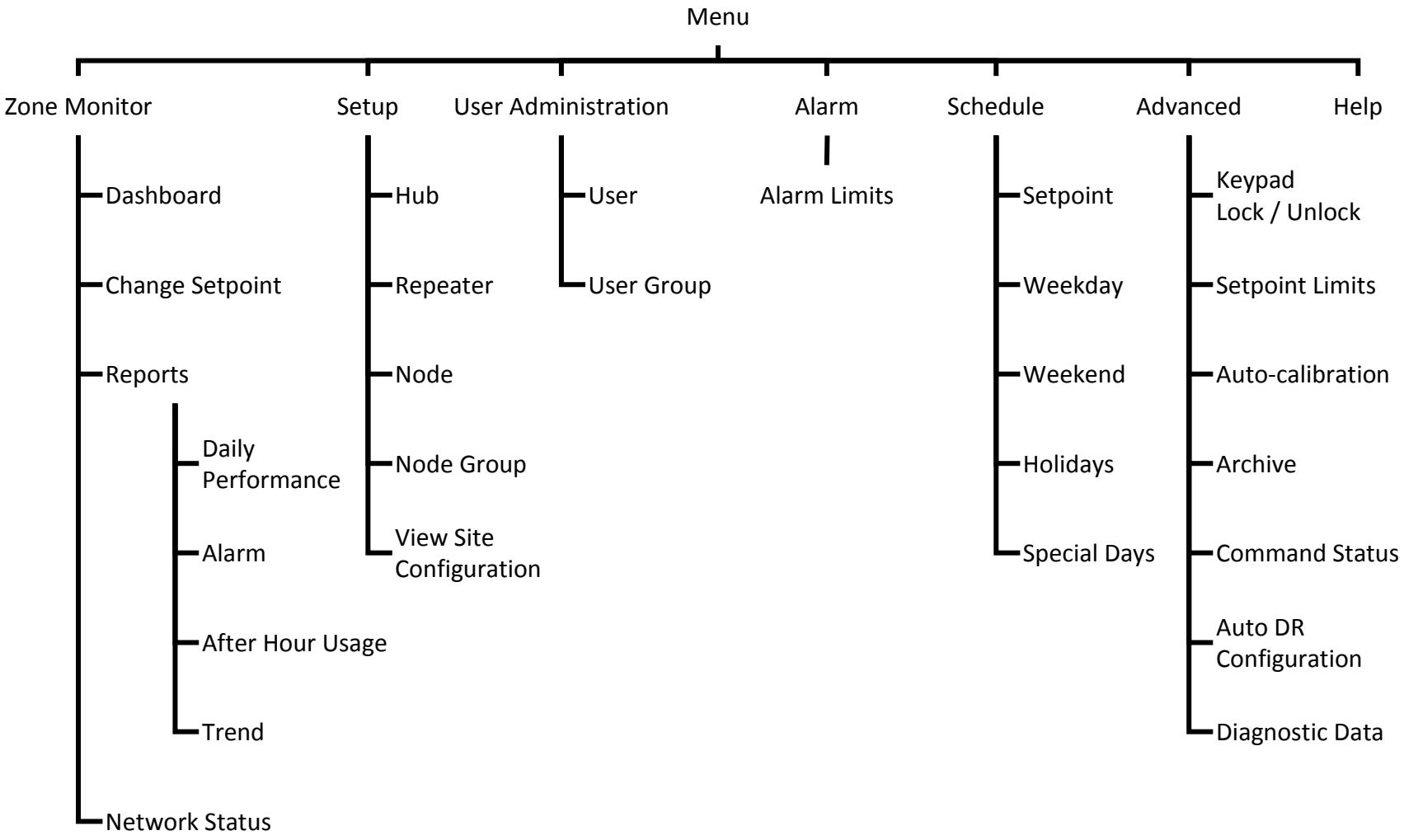




WPT Training Modules

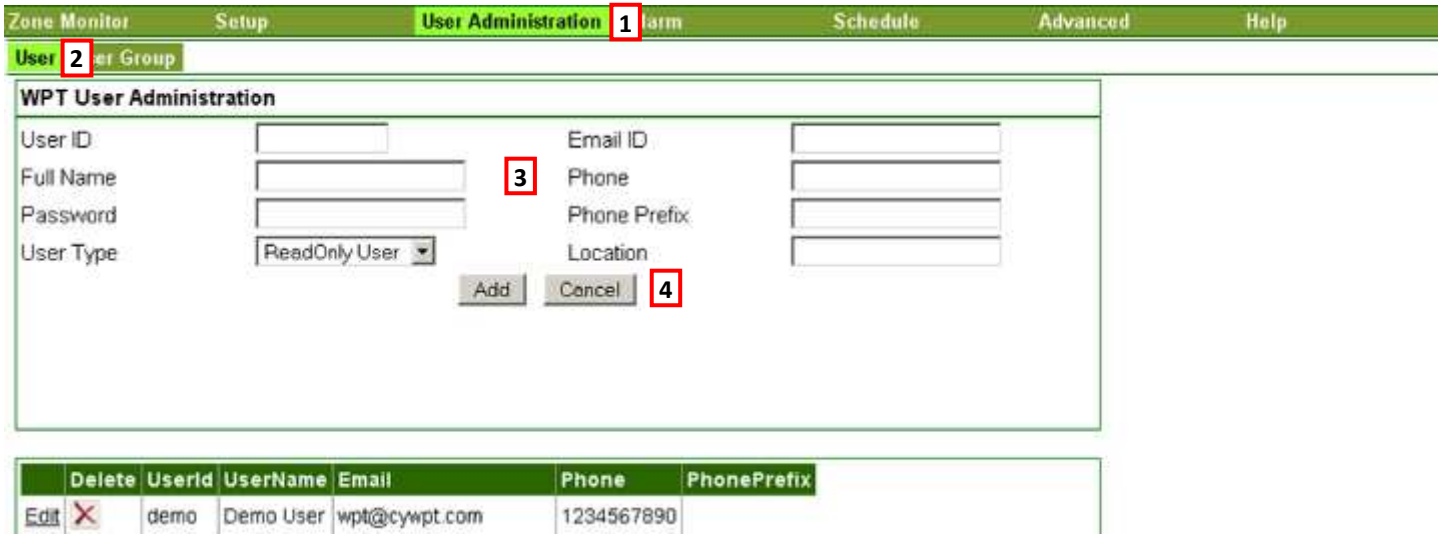


WPT Web Portal Menu Structure

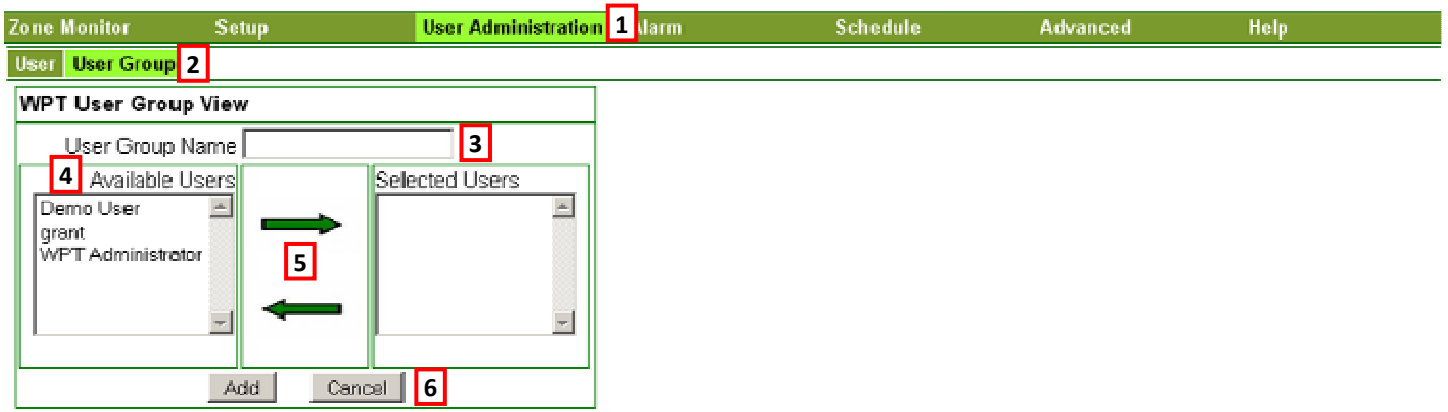


User Administration

Adding Users

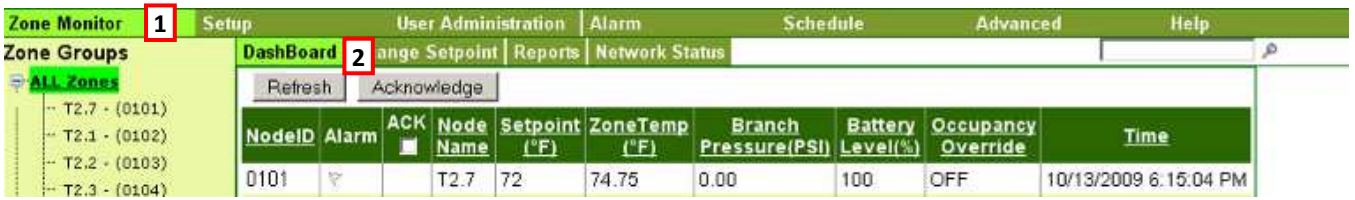


Creating User Groups



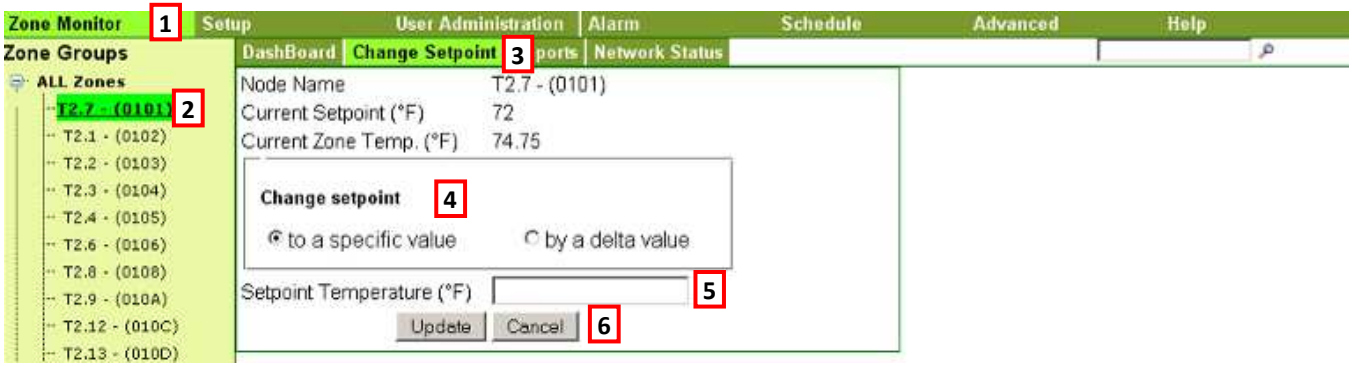
Zone Monitoring

WPT Dashboard



Changing Setpoint

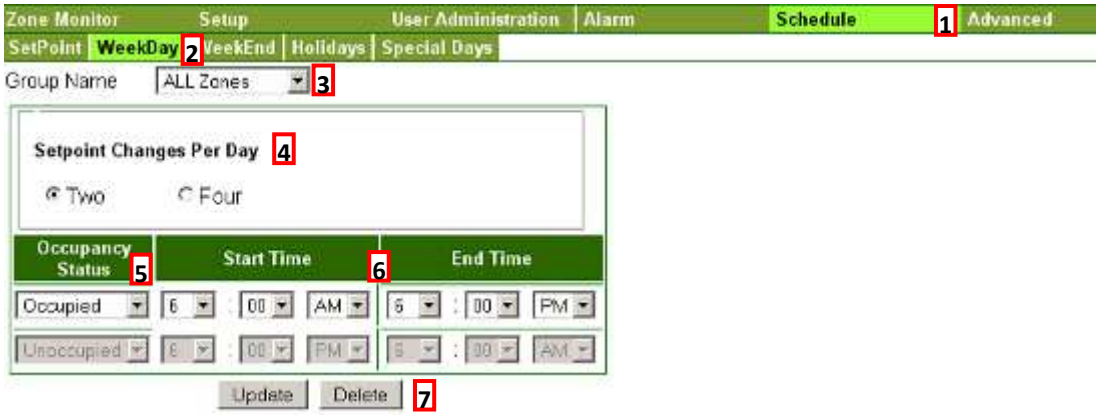
- Setpoint can be changed for selected zone or for all zones in a group
- Setpoint can be changed either by a delta value or to a specific value



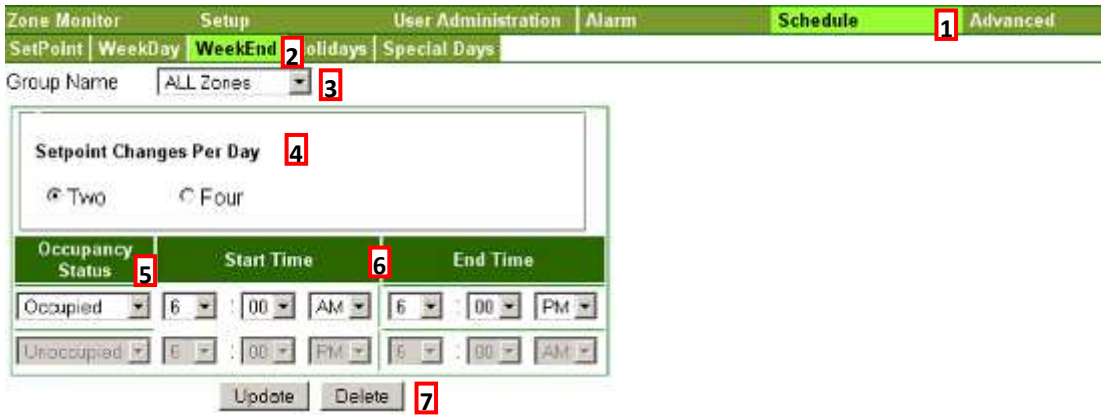
Configure schedule

Configure Occupied / Unoccupied Setpoints

Configure Weekday Schedule

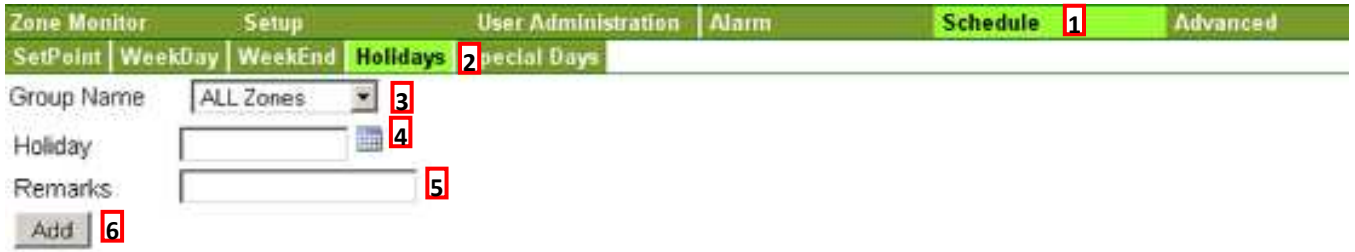


Configure Weekend Schedule

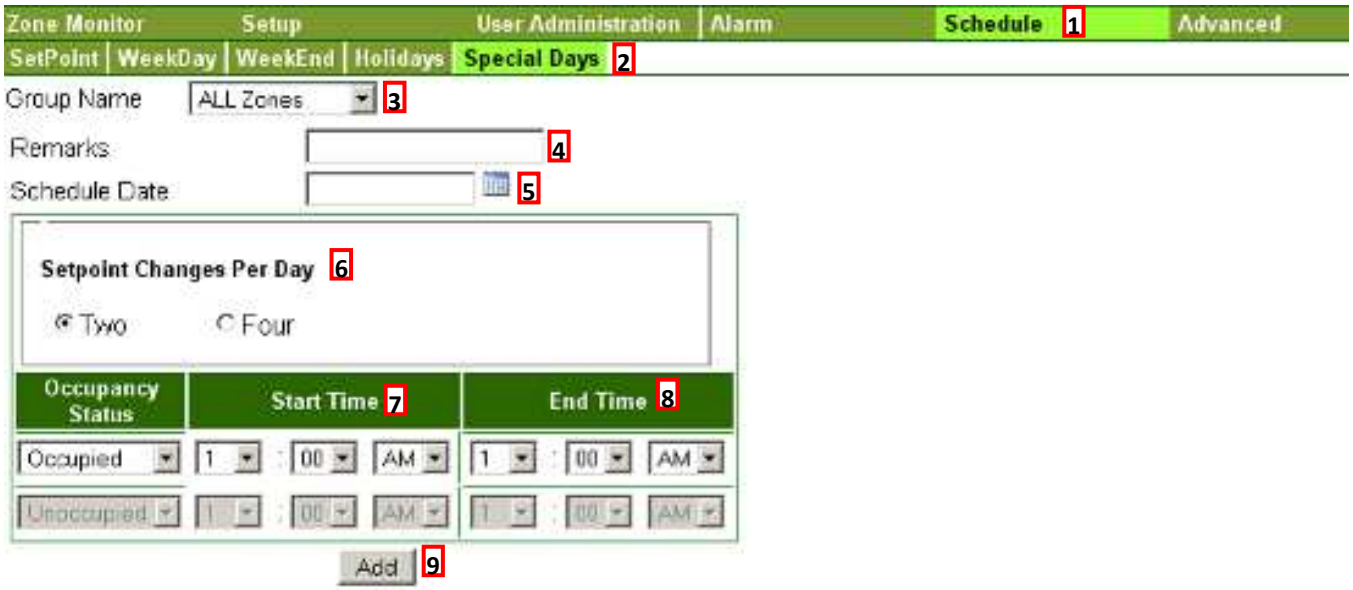


Configure schedule

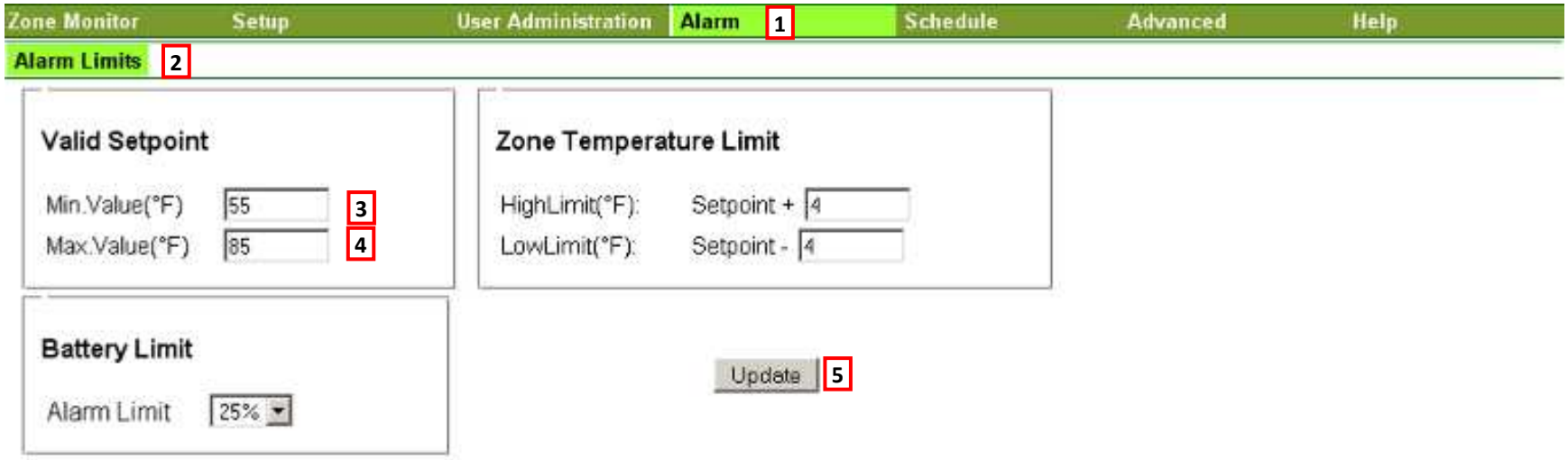
Configure Holiday Schedule



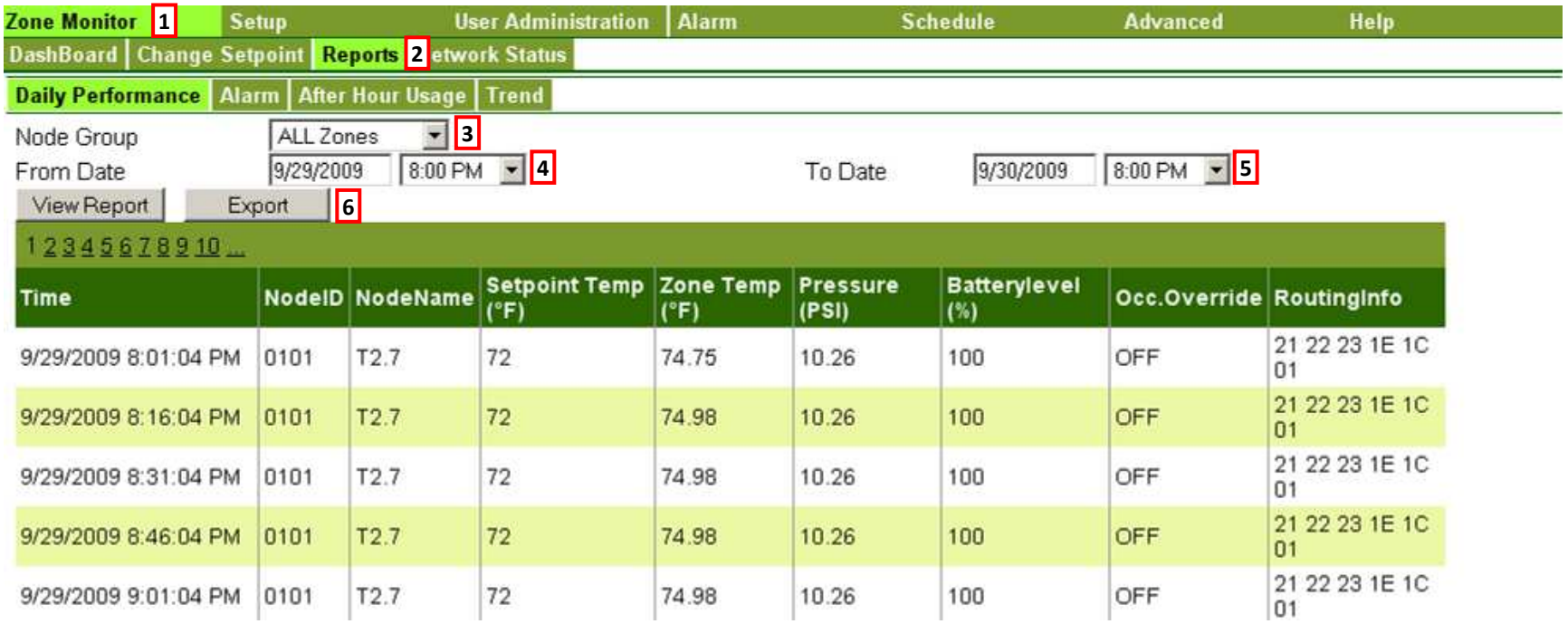
Configure Special Day Schedule



Configure Alarm Limits

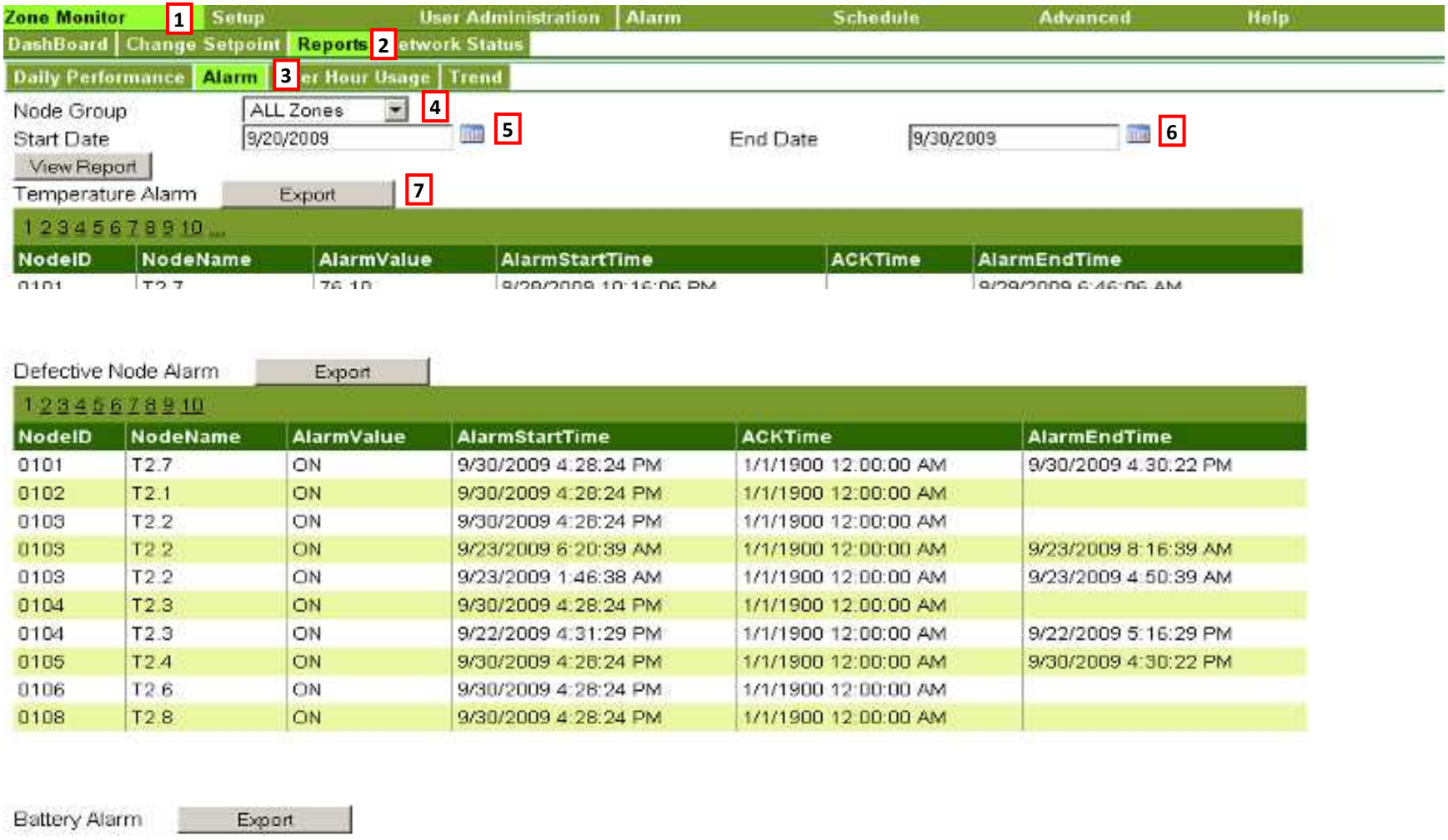


View Daily Performance Report

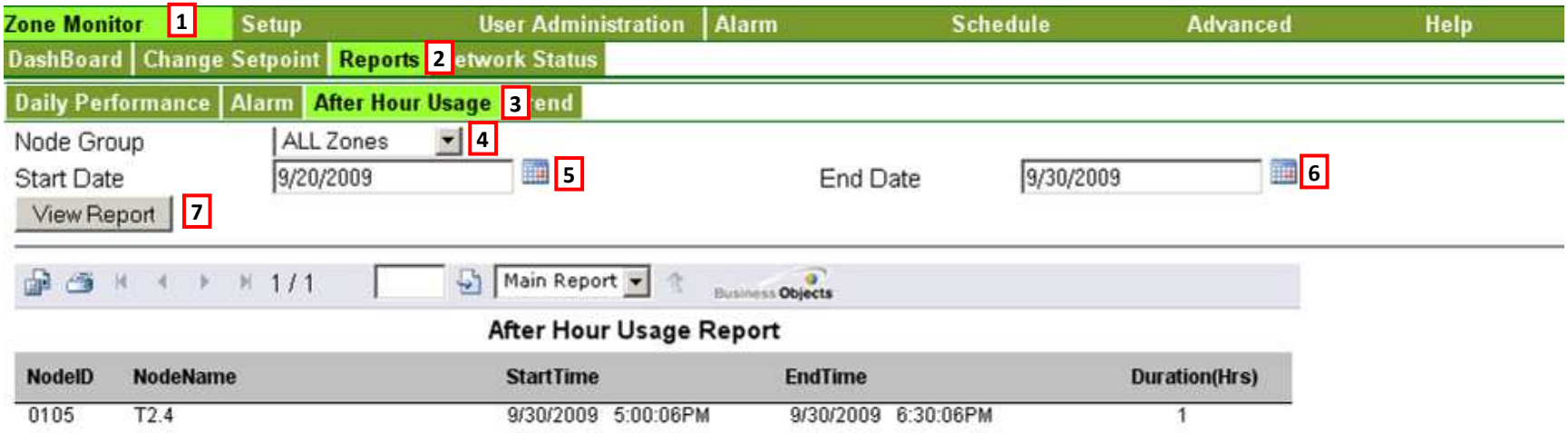


Time	NodeID	NodeName	Setpoint Temp (°F)	Zone Temp (°F)	Pressure (PSI)	Batterylevel (%)	Occ.Override	RoutingInfo
9/29/2009 8:01:04 PM	0101	T2.7	72	74.75	10.26	100	OFF	21 22 23 1E 1C 01
9/29/2009 8:16:04 PM	0101	T2.7	72	74.98	10.26	100	OFF	21 22 23 1E 1C 01
9/29/2009 8:31:04 PM	0101	T2.7	72	74.98	10.26	100	OFF	21 22 23 1E 1C 01
9/29/2009 8:46:04 PM	0101	T2.7	72	74.98	10.26	100	OFF	21 22 23 1E 1C 01
9/29/2009 9:01:04 PM	0101	T2.7	72	74.98	10.26	100	OFF	21 22 23 1E 1C 01

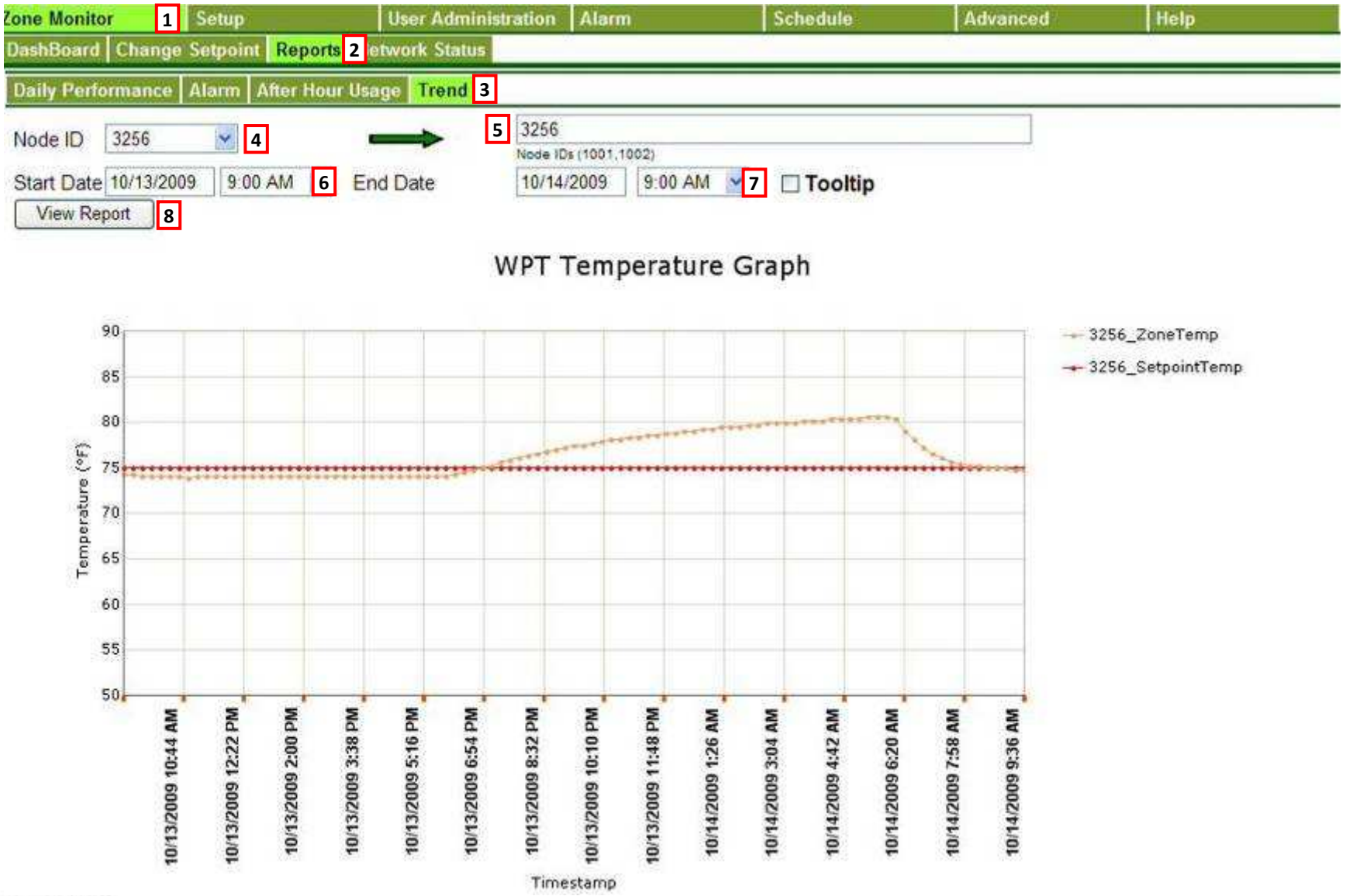
View Alarm Report



After Hour Usage Report



View Trend


Zone Monitor
1
Setup
User Administration
Alarm
Schedule
Advanced
Help
DashBoard
Change Setpoint
Reports
2
etwork Status
Daily Performance
Alarm
After Hour Usage
Trend
3
Node ID
3256
4
5
3256
Node IDs (1001,1002)
Start Date
10/13/2009
9:00 AM
6
End Date
10/14/2009
9:00 AM
7
Tooltip
View Report
8
WPT Temperature Graph
3256_ZoneTemp
3256_SetpointTemp
Temperature (°F)
90
85
80
75
70
65
60
55
50
10/13/2009 10:44 AM
10/13/2009 12:22 PM
10/13/2009 2:00 PM
10/13/2009 3:38 PM
10/13/2009 5:16 PM
10/13/2009 6:54 PM
10/13/2009 8:32 PM
10/13/2009 10:10 PM
10/13/2009 11:48 PM
10/14/2009 1:26 AM
10/14/2009 3:04 AM
10/14/2009 4:42 AM
10/14/2009 6:20 AM
10/14/2009 7:58 AM
10/14/2009 9:36 AM
Timestamp

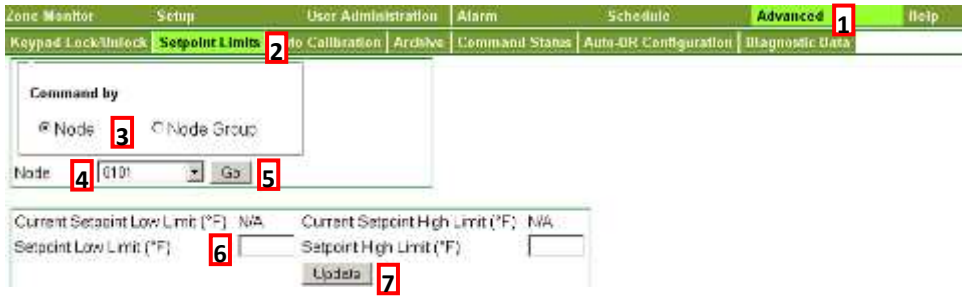
Advanced Features

WPT LCD Key Lock/Unlock

- To lock/unlock the keys on the stat so that users don't accidently change the settings

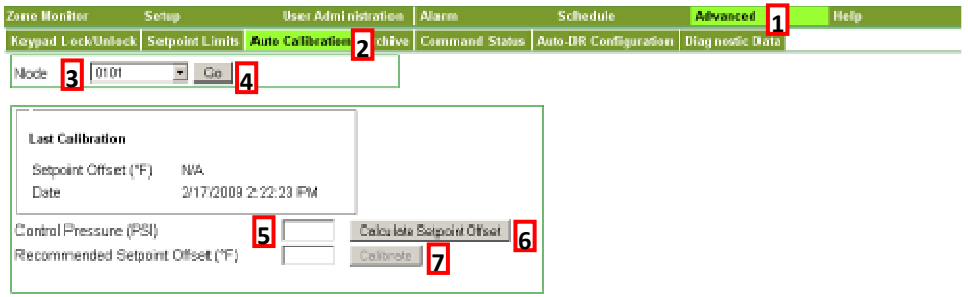
Configure Setpoint Limits

- To set the limits within which the users can change the setpoint values



Auto Calibration

- To initiate auto calibration based on the historical data and the desired control pressure



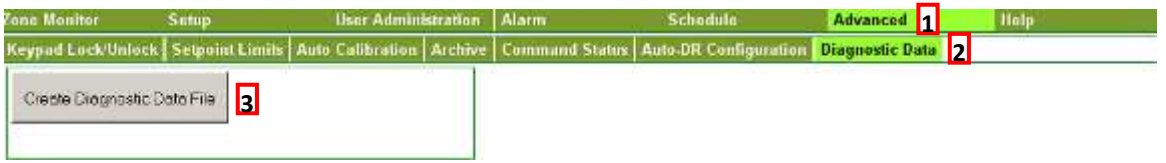
History Data Archival

- To archive the historical data

Advanced Features (cont'd)

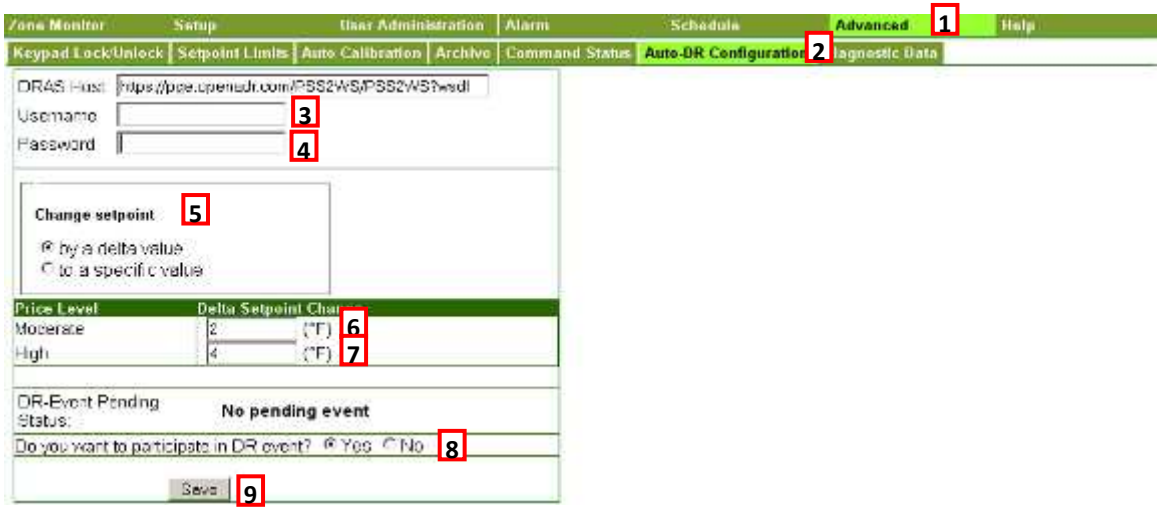
Diagnostic Data Collection

- To create diagnostic data file on the Green Box for troubleshooting purposes



Auto-DR Configuration

- To configure the DRAS Host address, username and password
- Options to change the setpoint either by delta or to a fixed value



Command Status

- To view advanced configuration commands for given to nodes

Accessing WPT using BACnet/IP

- Each WPT is represented as a BACnet Device Object

- The WPT device object has following I/O Objects
  - 3 x Analog Input Object (Ambient Temp, Branch Pressure and Battery Level)
  - 1 x Analog Output Object (setpoint)
  - 1 x Binary Input Object (Occupancy Override)

- WPT BACnet Gateway has a Notification Class Object that can be used to Alarm/Event Notification subscription

- WPT BACnet Gateway is BBMD enabled

Reference Documents

Topics	Reference Document	Document Number
Features and benefits of the WPT	Wireless Pneumatic Thermostat Product Brief	PBWPT
Installing and configuring Wall Powered Repeaters (RWAL)	RWAL Installation Manual	910-00002-01
Installing and configuring the USB Hub (HUSB)	HUSB Installation Manual	910-00003-01
Installing and configuring the WPT	WPT installation Manual	910-00005-01
Estimating the number of Repeaters and selecting the optimum locations for Repeaters and USB Hub	WPT Wireless Network Planning Guide	910-00006-01
Installing and configuring the WPT Green Box	WPT Green Box Installation Manual	910-00007-01
BACnet Objects and Properties supported by the WPT Green Box	WPT BACnet PICS	910-00008-01
Using the wireless range testers	WPT Wireless Range Tester User Manual	910-00009-01

Thank you

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