VX4 Wireless Series User Guide

Wireless Energy Management Thermostat with Built-in Occupancy Sensor and External HVAC Controller

VERDANT
by COPELAND

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Introduction

Verdant VX Series Energy Management Thermostats deliver unprecedented energy savings without compromising the comfort of occupants.

An integrated occupancy sensor uses a combination of motion and thermal sensing technologies for accurate occupancy detection. Reliable occupancy detection allows for energy savings when rooms are unoccupied.

Energy saving presets eliminate the guesswork and make it easy to adjust the energy saving settings.

Fully configurable energy saving settings allow for customization of the thermostat settings to fit any situation.

Comprehensive configuration options ensure full compatibility with virtually any existing or emerging HVAC system with up to 4 heat and 2 cool stages.

Built-in wireless mesh-networking enables online management.

NOTICE

Please read this manual thoroughly before installing. Any application and installation should be done in accordance with all applicable local, regional, a national electrical and building codes.

SKUs Referenced in this Manual

This user guide includes instructions on how to install each of the following compatible SKUs.

Product Type	SKU(s)	Description
STANDALONE VX4 THERMOSTATS	VX4-TW-B	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black
	VX4-HW-B	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Line Voltage, Black
	VX4-TW-B-GEA	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, GE HVAC Plug & Play
	VX4-TW-B-CV12	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, Carrier VRF
	VX4-TW-B-MIE	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, Mitsubishi & Trane VRF
	VX4-TW-B-LG	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, LG VRF
	VX4-TW-B-TCAB	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, Toshiba Carrier VRF
NETWORKED VX4 THERMOSTATS	VX4-TW-B-XMF	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, with Wireless Web Based Remote Management
	VX4-HW-B-XMF	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Line Voltage, Black, with Wireless Web Based Remote Management
	VX4-TW-B-GEA-XMF	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, GE HVAC Plug & Play, with Wireless Web Based Remote Management
	VX4-TW-B-CV12-XMF	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, Carrier VRF, with Wireless Web Based Remote Management
	VX4-TW-B-MIE-XMF	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, Mitsubishi & Trane VRF, with Wireless Web Based Remote Management
	VX4-TW-B-LG-XMF	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, LG VRF, with Wireless Web Based Remote Management

Product Type	SKU(s)	Description
NETWORKED VX4 THERMOSTATS	VX4-TW-B-TCAB-XMF	VX4 Wireless Energy Management Thermostat PIR Occupancy Detection, Black, Toshiba Carrier VRF, with Wireless Web Based Remote Management
STANDALONE VX4 THERMOSTATS	VX4-NTW-B	VX4 Wireless Smart 7-Day Programmable Thermostat, Black
	VX4-NHW-B	VX4 Wireless Smart 7-Day Programmable Thermostat, Line Voltage, Black
	VX4-NTW-B-GEA	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, GE HVAC Plug & Play
	VX4-NTW-B-CV12	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, Carrier VRF
	VX4-NTW-B-MIE	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, Mitsubishi & Trane VRF
	VX4-NTW-B-LG	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, LG VRF
	VX4-NTW-B-TCAB	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, Toshiba Carrier VRF
NETWORKED VX4 THERMOSTATS	VX4-NTW-B-XMF	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, with Wireless Web Based Remote Management
	VX4-NHW-B-XMF	VX4 Wireless Smart 7-Day Programmable Thermostat, Line Voltage, Black, with Wireless Web Based Remote Management
	VX4-NTW-B-GEA-XMF	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, GE HVAC Plug & Play, with Wireless Web Based Remote Management
	VX4-NTW-B-CV12-XMF	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, Carrier VRF, with Wireless Web Based Remote Management
	VX4-NTW-B-TCAB-XMF	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, Toshiba Carrier VRF, with Wireless Web Based Remote Management
	VX4-NTW-B-MIE-XMF	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, Mitsubishi & Trane VRF, with Wireless Web Based Remote Management
	VX4-NTW-B-LG-XMF	VX4 Wireless Smart 7-Day Programmable Thermostat, Black, LG VRF, with Wireless Web Based Remote Management

All Verdant VX Series thermostats are available in Black or White. For White thermostats, replace the letter "B" with the letter "W".

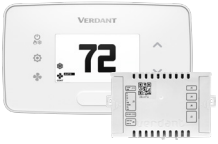
Product Type	SKU(s)	Description
Network Equipment	ZX-OL-U	VX3, VX4 & ZX Online Connection Kit for Wireless Network Access*
Network Access	XMF	Wireless Network Access Fee
Integration Setup	ZX-OL-DLI-COM	Door Lock Integration - One Time Property Set-Up & Configuration
	ZX-OL-PMS-COM	PMS Integration - One Time Property Set-Up & Configuration
	ZX-OL-BAC-COM	BACNet Integration - One Time Property Set-Up & Configuration
Verdant Plus	NS-VP-1Y	Verdant Plus - One (1) Year Subscription
	NS-VP-3Y	Verdant Plus- Three (3) Year Subscription
Lighting/Door Lock Integration	ACC- LIT- AOS-DC	Lighting Integration with Entryway Occupancy Sensor & RIBTE01B RIB Relay Included-12 VDC
	ACC- LIT- AOS-AC	Lighting Integration with Entryway Occupancy Sensor & RIB2401B RIB Relay Included-24 VAC
	ACC- LIT-AC	Lighting Integration RIB2401B RIB Relay Included-24 VAC
	ACC- LIT-DC	Lighting Integration RIBTE01B RIB Relay Included-12 VDC
	NS- DK-1	Door Lock Integration - DormaKaba 1 Way
	ACC- ZIG-DK-2	Door Lock Integration - DormaKaba 2 Way
	NS-AA	Door Lock Integration - Assa Abloy
	ACC-BLE-ONI	Door Lock Integration - Onity
Remote Sensors	ACC-AZA-D	Daikin Integration - Verdant Inverter/VRF
	ZX-AOS	VX3, VX4 & ZX Wireless Occupancy Sensor
	ZX-DWS	VX3, VX4 & ZX Wireless Exterior Door / Window Sensor With Magnet
	ZX-TSW	VX3, VX4 & ZX Wireless Temperature Sensor
	0136-025000	VX3, VX4 & ZX Wireless Exterior Door / Window Sensor Magnet Pair
Wall Plates	VX4-WPT-(W/B)	VX4 Thermostat Wall Plate (White/Black)
	ZX-CC-WPC	VX3, VX4 Controller Cover Plate

Product Type	SKU(s)	Description
HVAC Controller	ZX-LV	VX3, VX4 & ZX HVAC Controller with Seven (7) Relays and Wire Harness (24 V)
	ZX-HV	VX3, VX4 & ZX HVAC Controller with Seven (7) Relays and Wire Harness (120-277 V)
	ZX-LV-SEC	VX3, VX4 & ZX Slave HVAC Controller with Seven (7) Relays and Wire Harness (24 V)
	ZX-Y6-RR	VX3, VX4 & ZX Network Repeater
Wire Harnesses	0092 111800	Wire Harness & Screw Assembly Kit for VX4 Wireless Thermostat White
	830-00029-00	Wire Harness for VX3, VX4 & ZX Low Voltage Controller
	0092 111700	Wire Harness & Screw Assembly Kit for VX4 Wireless Thermostat Black
	0092 111400	Wire Harness & Screw Assembly Kit for VX4 Wired Thermostat White
	830-00027-00	Wire Harness & Screw Assembly Kit for LG Wireless Thermostat Controller
	830-00028-00	Wire Harness & Screw Assembly Kit for MIE Wireless Thermostat Controller
	0092 111500	Wire Harness & Screw Assembly Kit for CV12 Wireless Thermostat Controller
	0092 111600	Wire Harness & Screw Assembly Kit for TCAB Wireless Thermostat Controller
	0092 111300	Wire Harness & Screw Assembly Kit for VX4 Wired Thermostat Black

*Online Connection Kit is required to enable Wireless Web Based Remote Management. One (1) Online Connection Kit can accommodate up to 1,024 Networked Verdant Thermostats depending on property layout and configuration.

Equipment Nomenclature

Before you begin installing Verdant equipment, we recommend you familiarize yourself with the various components that may be included in your shipment.



VX Thermostat & HVAC Controller

Online Connection Kit

Occupancy Sensor

Door/Window Sensor

Adaptor for VRF Systems

Installation Considerations

Selecting the appropriate installation location of the thermostat and any accessories is crucial to the proper operation of your Verdant energy management system. The following guidelines should be adhered to in all cases;

THE THERMOSTAT'S OCCUPANCY SENSOR SHOULD FACE THE BED AREA OF THE ROOM OR THE AREA WHERE THE OCCUPANT WILL SPEND THE MOST TIME.

THE THERMOSTAT MUST NOT BE INSTALLED IN THE VICINITY OF LARGE METAL STRUCTURES OR SURFACES INCLUDING METAL AIR DUCTING THAT MAY BE IN THE WALL. LARGE METAL STRUCTURES BETWEEN THE THERMOSTAT AND CONTROL CARD AND/OR THE ONLINE CONNECTION KIT SUCH AS METAL CABINETS OR DOORS/ ELEVATOR SHAFTS SIGNIFICANTLY REDUCE THE RANGE OF THE WIRELESS SIGNAL AS THEY DEFLECT THE SIGNAL AND THEY DON'T ALLOW IT TO PASS THROUGH THEM, THUS REDUCING THE SIGNAL STRENGTH BETWEEN THE DEVICES MENTIONED.

DO NOT INSTALL THE THERMOSTAT NEAR WINDOWS OR DOOR VENTS, ON AN EXTERIOR WALL, ABOVE OR BELOW SUPPLY VENTS, OR OTHER LESS OCCUPIED AREAS.

Network Installation

NOTICE

TO ENABLE NETWORKING CAPABILITIES OF THE VX THERMOSTAT, REFER TO THE "NETWORK INSTALLATION" SECTION OF THIS MANUAL.

BEFORE STARTING THE INSTALLATION OF THE NETWORKED THERMOSTATS, ENSURE THE ONLINE CONNECTION KIT IS CONNECTED TO THE INTERNET.

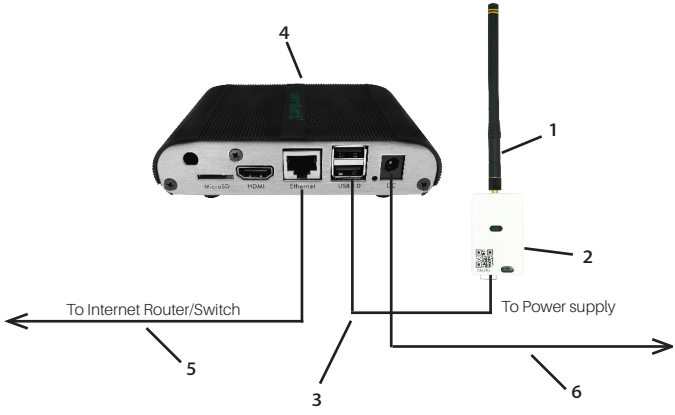
CONFIRM THE ONLINE CONNECTION KIT IS COMMUNICATING PROPERLY WITH THE CLOUD SERVICE BY CALLING TECHNICAL SUPPORT AT +1 877 318 1823.

THE ANTENNA MODULE MUST BE INSTALLED WITHIN 100FT FROM THE FIRST 2 TO 3 THERMOSTATS, AND MUST NOT BE INSTALLED NEAR LARGE METAL STRUCTURES OR SURFACES.

TO PREVENT POWER RELATED ISSUES, PLUG THE SERVER INTO A UPS (UNINTERRUPTED POWER SUPPLY) UNIT.

THE ANTENNA(S) USED FOR THIS TRANSMITTER MUST NOT BE CO-LOCATED OR OPERATING IN CONJUNCTION WITH ANY OTHER ANTENNA OR TRANSMITTER AND MUST BE INSTALLED TO PROVIDE A SEPARATION DISTANCE OF AT LEAST 20CM FROM ALL PERSONS.

Connecting Wireless Receiver



1. Screw Antenna (1) onto Wireless Receiver (2).
2. Connect Wireless Receiver (2) to Server (4) using supplied USB cable (3).
3. Affix Wireless Receiver (2) to wall with double sided adhesive tape.
4. Orient Antenna (1) to point upwards to the closest room in which a thermostat will be installed.
5. Connect Server (4) to the LAN port with the supplied RJ-45 cable (5).
6. Plug Server (4) into electrical outlet with power cord (6).

Configuring Online Connection Kit

1. Ensure Online Connection Kit is receiving an IP from a DHCP server.

   NOTE: It is not recommended to use a public IP.

2. Ensure MAC address is properly whitelisted if it needs to bypass a login (splash) page to reach the internet.

   NOTE: MAC address is printed on a white sticker on bottom of Online Connection Kit.

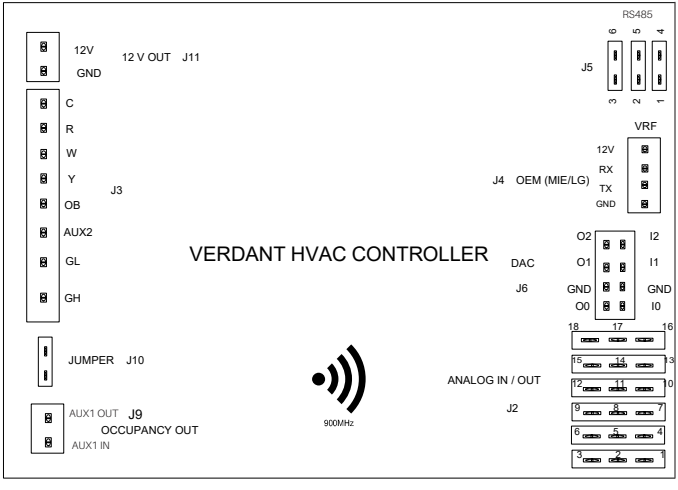
3. If behind a firewall, OUTBOUND ports 22, 80, and 443 must be allowed for the Online Connection Kit. No INBOUND ports are required for this device unless specific options are requested.

HVAC Controller Installation

Introduction

Verdant HVAC Controllers enable wireless thermostat control of most HVAC units. The HVAC Controller has relay 24 VAC outputs, analog 0-10 VDC outputs, and digital data (RS485) outputs to allow for control of virtually any HVAC unit.

The illustration below indicates the various ports available on the HVAC Controller. Refer to the appropriate page in this manual for wiring instructions for your specific HVAC unit.



Installing HVAC Controller in 24 VAC Relay Units

1. Power Off HVAC unit.
2. Mount HVAC Controller inside HVAC unit.
3. Use supplied wire harness to connect HVAC Controller to HVAC unit.
4. If applicable, set the unit to External Thermostat (Class 2) mode. Consult the HVAC unit documentation to determine how to set the unit to External Thermostat mode.

HVAC Controller 24 VAC Relay Connections (J3 Port)								J9 Port
C Black	**R Red**	**W White**	**Y Yellow**	**O/B Orange**	**Aux2 Brown**	**GL Purple**	**GH Green**	**AUX1 Blue**
Common	24 VAC	Heat	Cool	Reverse Valve	Aux2 Signal	Fan Low	Fan High	OCC
NOTE: Functionality may change due to equipment code, see APPENDIX 2 - Equipment Codes (page 103) for further information.								

THE HVAC CONTROLLER ANTENNA MUST BE FACING THE THERMOSTAT AND MUST NOT BE TOUCHING OR ENCLOSED BY ANY METAL COMPONENTS IN THE HVAC UNIT.

THE HVAC CONTROLLER MUST BE MOUNTED SO IT CANNOT FALL INTO THE HVAC UNIT CONDENSATION PAN. USE PLASTIC CABLE TIES OR 3M COMMAND TAPE .

Using Universal Input and Output Ports of HVAC Controller

The J6 port has three universal inputs, three universal outputs, and a ground. It functions in conjunction with the J2 jumper port and the J3 standard relay port. In cases where the standard 24 VAC relays of port J3 cannot control part of or all the analog controlled fan or heating/cooling modes of a specific HVAC system, the J6 port may be used to enable control of such a fan or mode (heating/cooling) or both fan and mode. A harness is provided for connections that require a J6 port.

The J6 port is often used in fan coil unit applications where the fan and heating and cooling valves are controlled using analog 0-10 or 0-3 VDC output signal on pins O0, O1, or O2. It may also be used as an input port, where I0, I1, or I3 can be set with a max of 12 VDC to read thermistors, take in 0-10VDC feedback, input wired occupancy, etc. Contact a sales representative if this setting is required.
The J2 jumper port is used in conjunction with J6, for selecting the device to be controlled per table below:

Output Connections (J6 Port)				
Output Number	**O0**	**GND**	**O1**	**O2**
Wire Color	White	Black	Yellow	Green
Set Functionality	Analog Heat	GND	Analog Cool	Analog Fan

Input Connections (J6 Port)				
Input Number	**I0**	**GND**	**I1**	**I2**
Wire Color	White/Black	Black	Yellow/ Black	Green/Black
Possible Functionality	Aux Occupancy	GND	Thermistor	Feedback of 0-10 VDC

Jumper Selection Pins (J2 Port)			
Connection Pins	**Fan**	**Heat Mode**	**Cool Mode**
1-2		X	
2-3			
4-5		X	
5-6			
7-8			X
8-9			
10-11			X
11-12			
13-14	X		
14-15			
16-17	X		
17-18			

Using HVAC Controller to Power Wireless Thermostat (Optional)

The J11 port on the HVAC Controller may be used to supply 12 VDC power to a wireless thermostat, if desired.

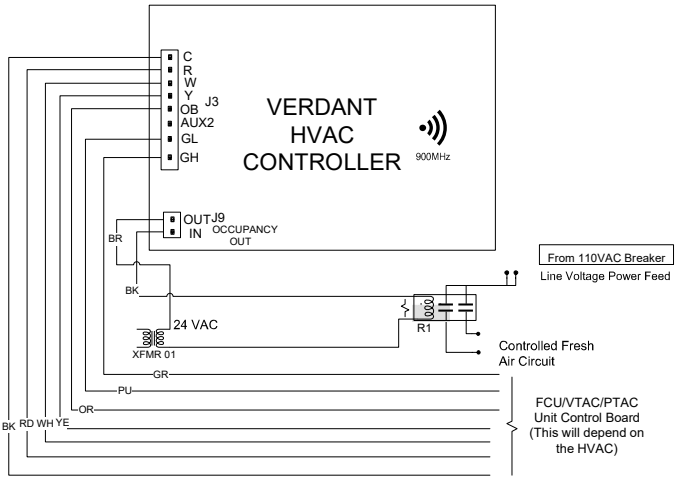
Use the supplied wire harness to connect the J11 port to the back of the wireless thermostat.

12 VDC Output (J11 Port)	
12 VDC	GND

Using HVAC Controller's Dry Contacts to Control External Devices

The J9 port on HVAC Controller can be used as a dry contact for control of external devices such as lighting relays and dampers. Refer to application notes for more information.

1. Connect jumper on J10 to create a wet contact supplying power from R (24 VAC) and C (Common).



Thermostat Installation

Mounting Thermostat to Wall

1. Select appropriate installation location for thermostat per below:

THE THERMOSTAT'S OCCUPANCY SENSOR SHOULD FACE THE BED AREA OF THE ROOM OR AREA WHERE OCCUPANT WILL SPEND THE MOST TIME.

THE THERMOSTAT MUST NOT BE INSTALLED IN THE VICINITY OF LARGE METAL STRUCTURES OR SURFACES INCLUDING METAL AIR DUCTING. DO NOT INSTALL THERMOSTAT NEAR WINDOWS OR DOORS WHICH MAY ALLOW A DRAFT, ON AN EXTERIOR WALL, ABOVE OR BELOW SUPPLY VENTS, AND OTHER LESS OCCUPIED AREAS.

2. If using a wall plate, place it over hole in wall left from previous thermostat and mark two locations for drilling holes.
3. Place thermostat on wall in installation location and mark location for drilling holes for two mounting screws.
4. Drill two 3/16" holes in wall and insert two wall anchors.
5. Use two screws to securely mount thermostat to wall.

DO NOT OVER TIGHTEN THE BACK PLATE TO THE WALL. FOR UNEVEN SURFACES INSTALL A WALL PLATE.

6. Insert two AA alkaline batteries in thermostat. The thermostat can also be powered with 12 VDC or 24 VAC.

Sensor Installation (Optional)

Mounting a Remote Wireless Sensor

1. Select appropriate installation location.

OCCUPANCY SENSORS SHOULD FACE THE DESIRED OCCUPANCY DETECTION AREA.

2. With faceplate removed, place sensor on wall in installation location and mark location for drilling holes for two mounting screws.
3. Drill two 3/16" holes in wall and insert two wall anchors.
4. Use two screws to securely mount sensor to the wall.
5. Insert one AAA alkaline battery into compartment (wireless sensors only).

Mounting Magnets for Door/Window Switch

All ZX-DWS are supplied with industrial standard 3M adehesive for mounting the magnet contacts. For the adhesive to provide a secure bond, the mounting surface must be prepared correctly..

- **Surface Cleanliness:** The mounting surface must be thoroughly cleaned to remove any dust, dirt, grease, oil, or loose particles. Isopropyl alcohol can be effective for this.
- **Surface Preparation:** Depending on the surface material, light abrasion might be beneficial to create a better grip for the adhesive. Porous surfaces may require a primer
- **Curing Time and Conditions**: It's crucial to allow sufficient curing time under appropriate temperature and humidity conditions for the adhesive to achieve its full bond strength. The unit should not be disturbed during this period.

Voltage Adaptor Installation (Optional)

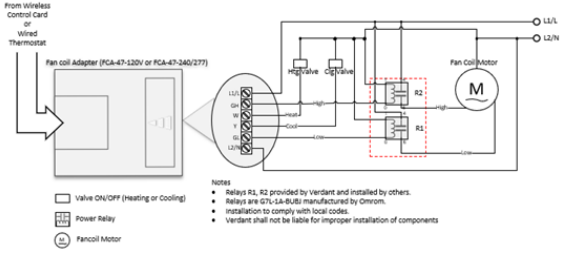
Installing Voltage Adaptor (Motor less than 1/10 HP)

Fan Coil Adaptors (FCA) are used in applications where the Fan Coil Unit (FCU) in the controlled space has components, such as the fan motor or heating / cooling valves, that use a line voltage or a voltage exceeding 30 VAC.

Where the horsepower rating of the motor is less than 1/10 HP, the solution will include the FCA and the metal oxide varistor used as control or compensation elements to provide optimal operating conditions and protect against excessive transient voltages.

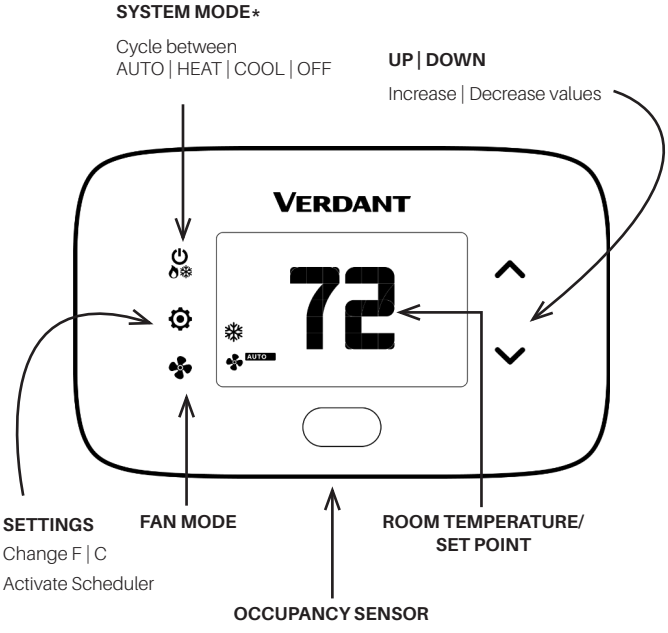
Installing Voltage Adaptor (Motor Greater than 1/10 HP)

Where the horsepower rating of the motor is greater than 1/10 HP, the solution will include the FCA and two relays.



Thermostat Details

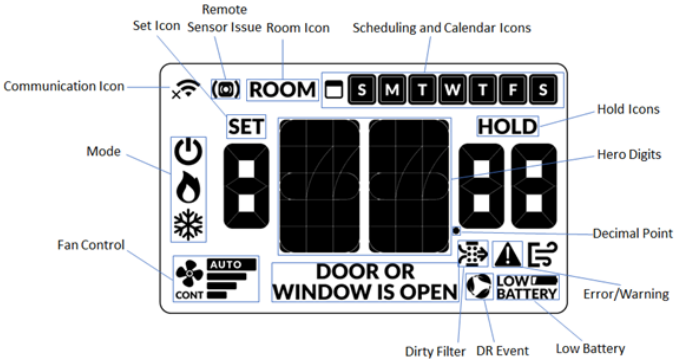
Thermostat Buttons



* In AUTO Mode, cycle between ON | OFF.
In MANUAL mode, cycle between OFF | HEAT | COOL.

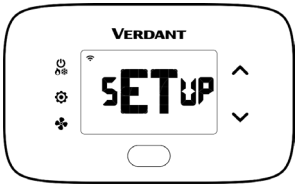
Thermostat Screen

Understanding Display Screen Icons



Thermostat Configuration

Configuring Thermostat



Prerequisites: During installation training with your support agent you will be provided with: Mesh ID (provided by Verdant Support), Room Number, Time, and Equipment Code. For VRF insert one jumper into function selection pins 2 and 3 of and another jumper in pins 5 and 6 at J5 on the control card.

To start the configuration process, remove faceplate and insert 2 AA batteries.

NOTE: Press and hold **FAN** and **SYSTEM MODE** buttons to enter the configuration process at any time.

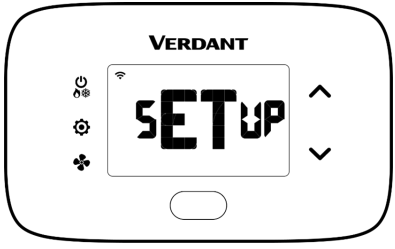
Turn on thermostat and HVAC unit to activate "**SETUP**" screen and complete the below settings shown the following pages:

1. Pairing Thermostat with HVAC Controller (page 27)
2. Setting MESH ID (page 28)
3. Entering Room Number (page 29)
4. Configuring Equipment Code (page 30)
5. Configuring Energy Saving Settings (page 31)
6. Setting Thermostat Clock (page 32)
7. Enabling Scheduler (page 32)
8. Testing Thermostat (page 33)

NOTE: If the thermostat does not display "**SETUP**" when first powering the device, then it has already been paired to an HVAC Controller. To exit configuration menu at any time, press the **SYSTEM MODE** button.

Pairing Thermostat with HVAC Controller

Each wireless thermostat must be paired with an individual HVAC Controller during installation. The thermostat will search for the closest HVAC Controller and display the unique HVAC Controller ID. The HVAC Controller ID is located on the case of the HVAC Controller. **Only install one room at a time.**



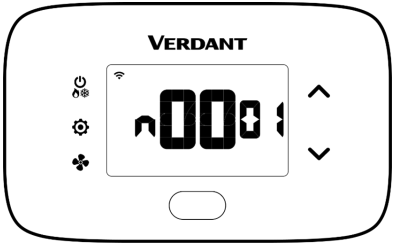
Press **SETTINGS** button. The thermostat will initiate a 30-second countdown with a blinking connectivity icon before displaying the closest HVAC Controller ID.

1. Verify HVAC controller ID found by thermostat matches the ID's last 5 digits listed on HVAC controller in the same room.
2. Press **SETTINGS** button to pair thermostat with HVAC Controller displayed on the screen. A 30-second countdown will begin. The screen will display "**SUCC**" when the HVAC Controller has been paired successfully. If the HVAC Controller ID displayed on the screen is incorrect, press the **SYSTEM MODE** button to reject it (see notes below).
3. If pairing is successful, wait 5-10 seconds and press **SETTINGS** button to advance to the Mesh ID configuration page.

NOTE: If the HVAC controller ID displayed does not match, press the **DOWN** button to see what other controllers are trying to connect with the thermostat. Keep pressing until you identify the matching controller number.

NOTE: If no controller ID is found, "**FAIL**" will appear on the screen. Press the **SYSTEM MODE** button to get back to the initial setup screen and repeat procedure.

Setting MESH ID

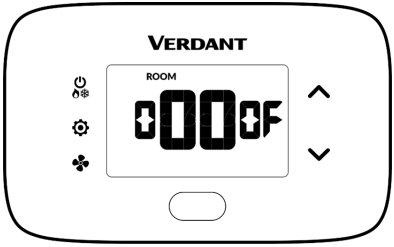


For networked installations, a unique MESH ID is associated to each Online Connection Kit and is provided by your technical support agent during the installation training (also be found labeled on device).

For properties using a single Online Connection Kit, each thermostat may be linked to MESH ID 0001. For properties requiring multiple Online Connection Kits, each thermostat should be linked to the MESH ID of the closest Online Connection Kit.

1. Press **UP | DOWN** buttons to increase or decrease the value.
2. Press **FAN** button to advance to next digit.
3. Press **SETTINGS** button to advance to next menu.

Entering Room Number



Enter room number by changing characters on screen. Available characters include digits 0-9 and letters A-F. To distinguish between two or more thermostats in the same unit, enter as follows:

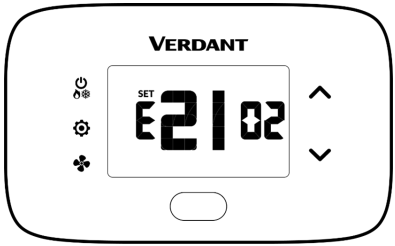
Thermostat 1: 00100
Thermostat 2: 0100A

1. Press **UP | DOWN** buttons to increase or decrease the value.
2. Press **FAN** button to advance to the next digit.
3. Press **SETTINGS** button to advance to next menu.

ENTERING ROOM NUMBER CORRECTLY IS CRUCIAL FOR PROPER OPERATION OF THERMOSTATS WITH ONLINE MANAGEMENT.

Configuring Equipment Code

Enter equipment code by changing digits on the screen.



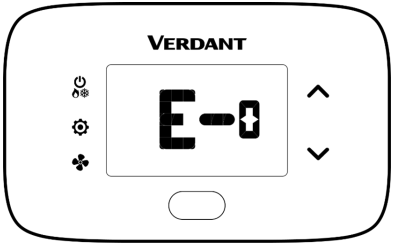
1. Press **UP | DOWN** buttons to increase or decrease the value.
2. Press **FAN** button to advance to next equipment setting.
3. Press **SETTINGS** button to advance to next menu.

Digit Value	Digit #1 Compressor Type	Digit #2 Electric Heat	Digit #3 Reversing Valve	Digit #4 Fan Speed
0	No Compressor	No Electric Heat	O/B Contact is energized to cool*	N/A
1	Heat Pump	Electric Heat*	O/B Contact is energized to heat	One Fan Speed*
2	Air Conditioner*	N/A	N/A	Two Fan Speeds
3	N/A			Three Fan Speeds

NOTE: * indicates default setting.

IMPORTANT: INSERTING INCORRECT EQUIPMENT CODE MAY CAUSE HVAC UNIT TO NOT OPERATE AS EXPECTED.

Configuring Energy Saving Settings



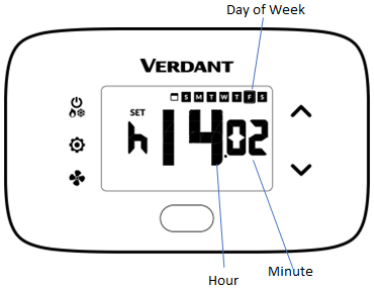
1. Press **UP | DOWN** buttons to increase or decrease energy savings preset.
2. Press **SETTINGS** button to advance to next menu.

Preset	Energy Savings Presets
E-0*	Energy Savings Off - No Temperature Setback
E-1	Lowest Energy Savings
E-2	Lower Energy Savings
E-3	Standard Energy Savings
E-4	Higher Energy Savings
E-5	Highest Energy Savings

NOTE: * indicates default setting.

Setting Thermostat Clock

Set thermostat clock to current time in 24-hour format.



1. Press **UP | DOWN** buttons to increase or decrease digits.
2. Press **FAN** button to advance to next digit.
3. Press **SETTINGS** button to advance to Scheduler screen.

SETTING CORRECT TIME IS CRUCIAL FOR PROPER OPERATION OF THERMOSTAT. TIME UPDATES AUTOMATICALLY IF CONNECTED TO ONLINE CONNECTION KIT.

Enabling Scheduler

1. Press **UP | DOWN** buttons to select "**y**" (yes) or "**n**" (no) to enabled or disable scheduling function.
2. Press **SETTINGS** button to complete set up.

Testing Thermostat

Following thermostat configuration, test if the thermostat is controlling the HVAC unit.

1. Ensure thermostat is powered and faceplate is affixed.
2. Press **DOWN** button to change temperature set point below current room temperature to confirm thermostat initiates cooling.
3. Press **UP** button to change temperature set point above current room temperature to confirm thermostat initiates heating.
4. Change fan speed by touching **FAN** button to verify thermostat is controlling fan speed.

Thermostat Maintenance

Replacing Thermostat Batteries

The low battery indicator is displayed on thermostat screen when necessary to replace batteries.

Under normal operating conditions, new brand-name alkaline batteries last for approximately 18 months. Replace batteries every 16 months to ensure continuous thermostat operation.

1. Remove thermostat cover.
2. Replace two AA alkaline batteries.
3. Re-affix thermostat cover.
4. Press **SYSTEM MODE** button to start thermostat.

NOTE: Thermostat maintains all previous configuration settings in non-volatile memory.

Configuring & Managing Accessories

Activating a Sensor

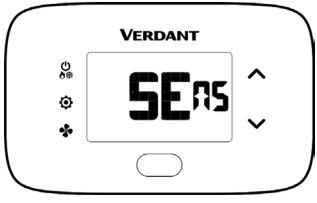
1. Remove the faceplate from the sensor to be paired.
2. Insert two AAA alkaline batteries into each sensor.
3. Press button inside sensor to make sensor discoverable.
4. Continue to Pairing a Sensor (page 36).

NOTE: The sensor(s) will remain discoverable for five (5) minutes after pressing the button inside the device. If the pairing process has not been completed within five (5) minutes, push button inside sensor again.

Pairing a Sensor

Ensure thermostat and HVAC unit are powered and thermostat faceplate is removed. The thermostat configuration screens have a 30-second time-out. If no action is taken within this time, the thermostat exits configuration settings.

1. Press and hold **SYSTEM MODE** and **FAN** buttons on thermostat to access Mesh ID screen.
2. Press and hold **SYSTEM MODE** and **FAN** buttons again until "**ZbEE**" appears.
3. Press **SETTINGS** button until "**SENS**" appears.



4. Press the button on the sensor to activate pairing.
5. Press **FAN** button on thermostat to initiate pairing of a new sensor, or, press **SETTINGS** to manage existing sensors. This will initiate a 10-second countdown and display the last 5 digits of the sensor ID(s) discovered during the pairing procedure.
6. Use **UP | DOWN** buttons to toggle between discovered sensors.
7. Ensure unique device ID displayed on screen matches unique device ID of sensor to configure.
8. Press **SETTINGS** button when the **UniqueID (**numerical**)** appears.
9. Select "**OCC1**" for occupancy sensor, "**DS1**" for doorswitch, and "**rt1**" for master or "**rt2**" for average temperature reading sensor. Select "**0**" to disable a device.
10. Press **SETTINGS** button, a 30-second countdown will begin. "**SUcc**" will show when successfully paired.

NOTE: If pairing fails, press **SYSTEM MODE** button to try again.

Verifying Sensor Connection Status and Unlinking Sensors

NOTE: Thermostat and HVAC unit must be powered.

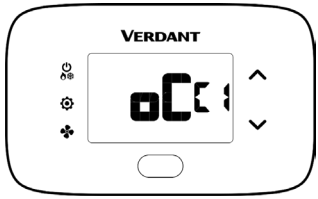
1. Press and hold **SYSTEM MODE** and **FAN** buttons until MESH ID appears on the screen.
2. Press and hold **SYSTEM MODE** and **FAN** buttons again until "**ZbEE**" appears on screen.
3. Press **SETTINGS** button again until "**SENS**" appears on the screen.
4. Press **SETTINGS** button. The Thermostat will initiate a 10-second countdown before displaying the number of linked sensors currently communicating with the thermostat (e.g., "**02.02**" means 2 out of 2 linked sensors is communicating with thermostat).

5. Press **SETTINGS** button to display the first linked sensor and **UP | DOWN** buttons to cycle through linked sensors.
6. After selecting sensor to be unlinked, press and hold **SETTINGS** button. The thermostat will initiate a 5-second countdown before displaying the total number of linked sensors.
7. Press **SYSTEM MODE** button to exit this configuration menu.
8. Press button on the sensor for three (3) seconds until a yellow light turns on. The sensor is now reset and can be paired to the thermostat again if necessary.

Configuring Functionality of Sensor

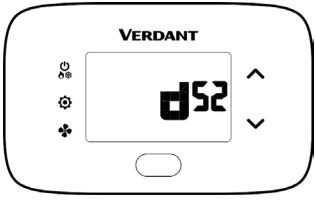
The thermostat allows the user to choose the functionality of a sensor. Use the table on the following page to configure the desired functionality. For example, if sensor is intended to be used as Occupancy Sensor, OCC value must be set to 1.

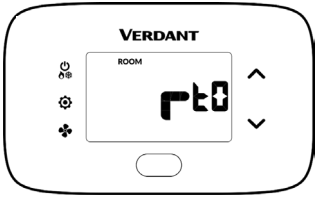
NOTE: OCC default setting = 1.



1. Press and hold **SYSTEM MODE** and **FAN** buttons until MESH ID appears on the screen.
2. Press and hold **SYSTEM MODE** and **FAN** buttons again until "**ZbEE**" appears on screen.
3. Press the **SETTINGS** button again until "**SENS**" appears on the screen.
4. Press the **SETTINGS** button again to display the number of linked sensors.
5. Press the **SETTINGS** button again to display the **UniqueID** of paired sensors. **UP | DOWN** will cycle through paired sensors.
6. Press the **SETTINGS** button again. "**OCC1**" will appear on the screen. Use **UP | DOWN** to change digits based on the table on the following page.
7. Press **SETTINGS** button to configure Door Switch functionality (**dsx**). Door switch functionality should be set to Normally Open (NO) or Normally Closed (NC) depending on reed switch.
8. Press **SETTINGS** button to configure Temperature Sensor functionality (**rtx**).
9. Press **SETTINGS** button to finalize pairing.

Trailing Digit Value	OCC cx (Occupancy Sensor)	dsx (Door Switch)	rtx (Temperature Sensor)
0*	Disabled	Disabled	Disabled
1	Enabled	Normally Closed	Master
2		Normally Open	Average





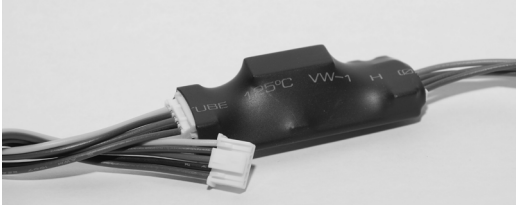
Unit Specific Applications

Mitsubishi Units

Installing HVAC Controller for Mitsubishi Electric Trane HVAC US VRF Units

1. Power Off HVAC Unit.
2. Mount HVAC Controller inside of HVAC unit.
3. Connect one end of wire harness to J4 port on HVAC Controller.
4. Insert one jumper into function selection pins 1 and 2 of and another jumper in pins 4 and 5 at J5 on the control card.
5. Connect other end of wire harness to METUS unit CN105 port.

NOTE: If the space is unoccupied and humidity levels are high, the MIE Thermostat is able to manage the humidity levels using the Dry Mode of the indoor unit.



METUS Wire Harness

THE HVAC CONTROLLER ANTENNA MUST BE FACING THERMOSTAT AND MUST NOT BE TOUCHING OR ENCLOSED BY ANY METAL COMPONENTS IN THE HVAC UNIT.

Configuring Equipment Settings for Mitsubishi/Trane VRF Units

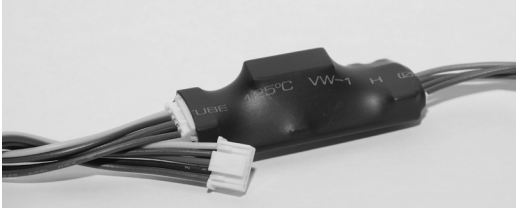
Enter equipment code 7703 by changing digits on screen.

1. Press **FAN** button to advance to the next equipment setting.
2. Press **UP | DOWN** buttons to increase or decrease value to 7703.
3. Press **SETTINGS** button to advance to next menu.

LG Units

Installing HVAC Controller for LG VRF Units

1. Power Off HVAC Unit.
2. Mount HVAC Controller inside of HVAC unit.
3. Connect one end of wire harness to J4 port on HVAC Controller.
4. Insert one jumper into function selection pins 1 and 2 of J5. Insert another jumper in pins 4 and 5.
5. Connect other end of wire harness to LG unit CN-REMO port.



LG Wire Harness

THE HVAC CONTROLLER ANTENNA MUST BE FACING THERMOSTAT AND MUST NOT BE TOUCHING OR ENCLOSED BY ANY METAL COMPONENTS IN THE HVAC UNIT.

Configuring Equipment Settings for LG VRF & Inverter PTAC Units

If LG Inverter PTACs are being controlled, enter equipment code 7713 by changing digits on screen. If LG VRFs are being controlled, enter equipment code 7723.

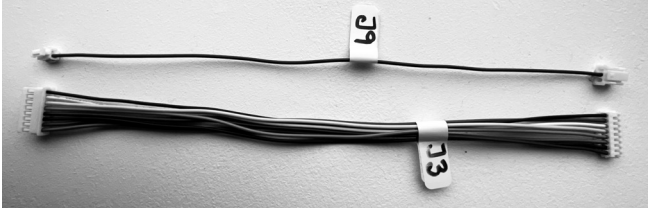
1. Press **FAN** button to advance to the next equipment setting.
2. Press **UP | DOWN** buttons to increase or decrease value to 7713 | 7723.
3. Press **SETTINGS** button to advance to next menu.

GE Units

Installing HVAC Controller for GE Units

This procedure is **only required** if the unit's Make Up Air will be driven by the thermostat.

1. Power Off HVAC Unit.
2. Mount HVAC Controller inside of HVAC unit.
3. Insert GE specific wire harnesses into corresponding J3 (controls) and J9 (occupancy) ports of HVAC controller.
4. Insert other end of J3 harness into unit's External Thermostat Connector terminal and J9 harness into unit's CDC terminal.
5. Insert jumper onto J10 port pins on controller.



GE Wire Harnesses

Configuring Equipment Settings for GE V12 Units

Enter equipment code 1812 by changing digits on screen.

1. Press **FAN** button to advance to the next equipment setting.
2. Press **UP | DOWN** buttons to increase or decrease value to 1812.
3. Press **SETTINGS** button to advance to next menu.

Configuring Occupancy Relay Output for GE Units

If the unit's Make Up Air will be controlled by thermostat, occupancy output must be set to Normally Open (NO).

1. From room temperature screen, press and hold the **SYSTEM MODE** and **FAN** button to reach "**n0001**" screen.
2. Press **SETTINGS** button to advance to the clock configuration screen.
3. Press and hold **SYSTEM MODE** and **FAN** buttons to advance to "**RST**" screen.
4. Press and hold **SYSTEM MODE** and **FAN** buttons to advance to "**bt2.0u**" screen.
5. Press and hold **SYSTEM MODE** and **FAN** buttons to advance to "**OCC**" screen.
6. Press **SETTINGS** button to advance to "**NC**" screen.
7. Press **DOWN** button to advance to "**NO**" on screen.
8. Press **SYSTEM MODE** button to save changes

Equipment codes for GE V12 and other GE units:

Model	Equipment Code
V12 with or without Make Up Air	**1812**
PTAC with or without Make Up Air	**2102**
PTHP with or without Make Up Air	**1112**
VTAC A/C with or without Make Up Air	**2102**
VTAC HP with or without Make Up Air	**1112**

Refer to APPENDIX 2 - Equipment Codes (page 103) for proper wiring.

WHEN ROOM IS OCCUPIED THE MAKE UP AIR SHOULD WORK AS WELL. FOR THE FRESH AIR TO OPERATE ACCORDING TO GE'S SPECIFICATIONS, THE OCCUPANCY OUTPUT RELAY MUST BE SET AS NORMALLY OPEN (NO).

IMPORTANT: INSERTING THE WRONG EQUIPMENT CODE MAY CAUSE THE HVAC UNIT TO NOT OPERATE AS EXPECTED.

Application Notes

A comprehensive list of published application notes can be found at www.verdant.co/resources/application-notes.

Applications include (among others):

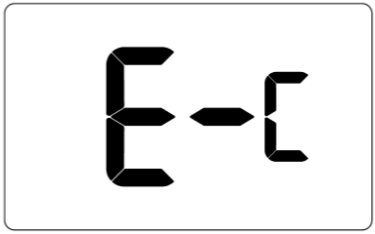
1. Energy Savings Settings
2. Scheduler
3. Door-lock ZigBee Integrated Solution
4. Demand Response
5. Hilton Connected Room
6. IHG Studio
7. Occupancy Based Lighting Control
8. Advanced Lighting Application: ZigBee Controlled Switch and socket from LEVITON

Custom Energy Savings Settings

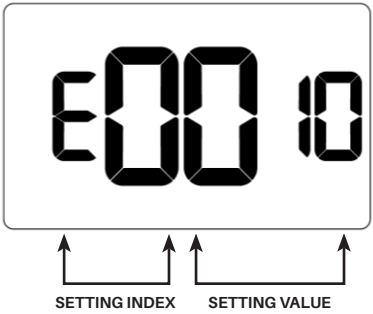
If you do not want to use one of the energy saving presets detailed in Appendix 1, you can enter custom energy savings settings.

Accessing Custom Energy Savings Settings

1. Ensure thermostat is powered.
2. Press and hold **SYSTEM MODE** and **FAN** buttons to access Mesh ID screen.
3. Press **SETTINGS** button to navigate to Energy Saving Settings screen.
4. From Energy Savings Settings screen, press and hold **SYSTEM MODE** and **FAN** buttons until first custom energy saving settings screen appears.



Using Thermostat Settings Screens



1. Use **UP | DOWN** buttons to select desired index setting.
2. Press **SETTINGS** button to edit value of index setting.
3. Use the **UP | DOWN** buttons to change setting value (see page 60 - page 96 or Appendix 3 - Energy Saving Settings Index (page 102) for more info and minimum and maximum values).
4. Press **FAN** button to temporarily store setting value.
5. Press **FAN** button to save profile and exit Custom Energy Savings Settings.
6. To discard the changes, press **SYSTEM MODE** button at any time.

Default value: **enabled** Range: **7 days**	Allows for setting of cooling and heating set points at varying times throughout the day. The scheduler is enabled by default and let's the user set cooling and heating set points for different times for each day of the week. The scheduler allows the thermostat to store up to 6 events for each day (7 days). Events #5 and #6 should be enabled via the web.

Scheduler

Firmware version 1404 and higher is required for Scheduler feature.

1. Ensure thermostat is powered and operational.

   NOTE: Below illustration is an example. Temperature and fan mode can differ.

2. Press **SETTINGS** button until temperature value shows.
3. Press **SETTINGS** button again to activate scheduler and show current status ("**n**" or "**y**").

4. Use the **UP | DOWN** button to select desired status.

5. Press **SETTINGS** button to navigate to first event of the week. Use **UP | DOWN** buttons to set event time.

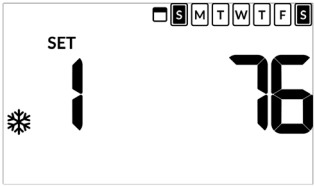
   NOTE: Below example shows setting for second event.

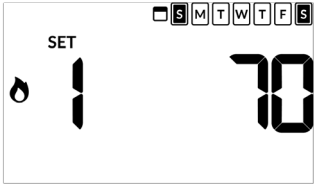
6. Press **SETTINGS** button to display "**Set**" and press **FAN** button to select necessary day of the week. Press **SETTINGS** button when correct day is selected.

   NOTE: Go to Step 5 immediately after selecting correct day.

7. Use **UP | DOWN** buttons to set cooling temperature to desired set point and press **SETTINGS** button.
8. Use **UP | DOWN** arrows to set heating set point.

   NOTE: Press **SYSTEM MODE** button at anytime to exit scheduler menu.





9. Repeat Step 5 until all desired events are scheduled.

Door Lock Integration

Door Lock integration can be via one-way communication or two-way communication.

- One-way application: door locks must be networked and communicating with a Door Lock Management System for thermostat integration.
- Two-way application: thermostat acts as the network. Door locks are not required to be networked. A ZigBee coordinator is also required for wired/ wireless integration.

NOTE: Integration with dormakaba requires ebox and dorma server set-up and communicating.

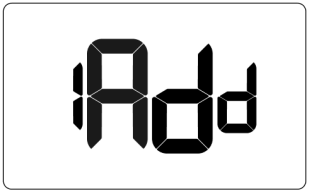
NOTE: Remove faceplate from thermostat before starting procedure.

1. Press and hold **SYSTEM MODE** and **FAN** buttons until MESH ID appears.
2. Press and hold **SYSTEM MODE** and **FAN** buttons until "**type**" appears.
3. Press **FAN** button until "**Selc**" shows on screen.

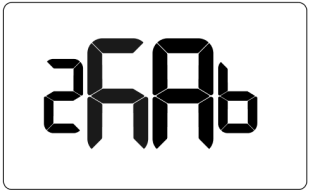
   NOTE: Wireless: countdown appears to confirm pairing to control card.

   Wired: no countdown.

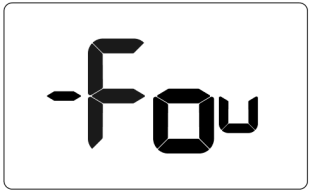
4. Press **DOWN** button to display "**Add**" and then press **SETTINGS** button to display select list.



5. Press **DOWN** button until desired lock platform shows ("**oni**" or "**kaba**") and then press **SETTINGS** (below example only).

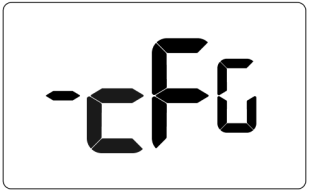


6. Allow countdown to complete until screen displays "**Found**[**1**-**8**]".

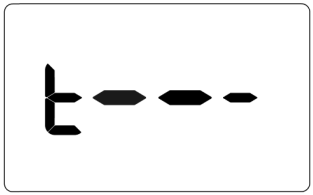


7. Use **DOWN** button to scroll through found devices with "**EuI_[lockid]_255**" format.

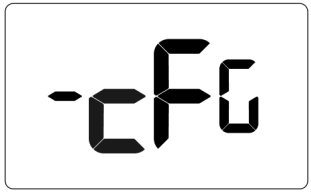
   NOTE: Dorma locks display as lock's respective short ZigBee ID. Onity locks display as lock's respective serial number. Press **SETTINGS** to select and display "**-cFg_[lockid]_255**".



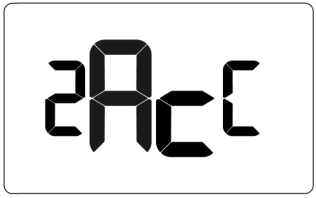
8. Press **DOWN** one time to display the "**1tag**" screen. Then press **SETTINGS** to display "**t----**".

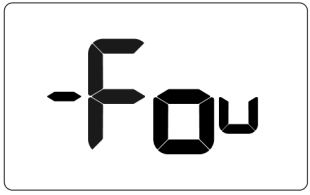


9. Use **UP | DOWN** buttons to select a tag number (typically "**t001**") and then press **SETTINGS** to set and display "**cfg_[lockid]_[tag]**".



10. Press **DOWN** button twice to display "**Acc**" and then press **SETTINGS** to accept and re-display "**Found**" screen.





11. Press **SYSTEM MODE** button to exit the menu system.

Demand Response

Demand Response (DR) is a resource for balancing power supply and demand by allowing consumers options to reduce or shift their energy consumption away from peak periods.

How it works

- Enroll: Tenant or Property owner opt in to receive DR events.
- Integration with Aggregators: DR aggregators linked to the property's utility company integrate with APIs allowing automatic transmission of DR events to thermostats.
- Active DR Event Indicator: Thermostats display a distinctive icon alerting tenants and guests a DR event has been sent.
- Opt-Out Option: Tenants and Guests may opt out of DR events by adjusting the set point.

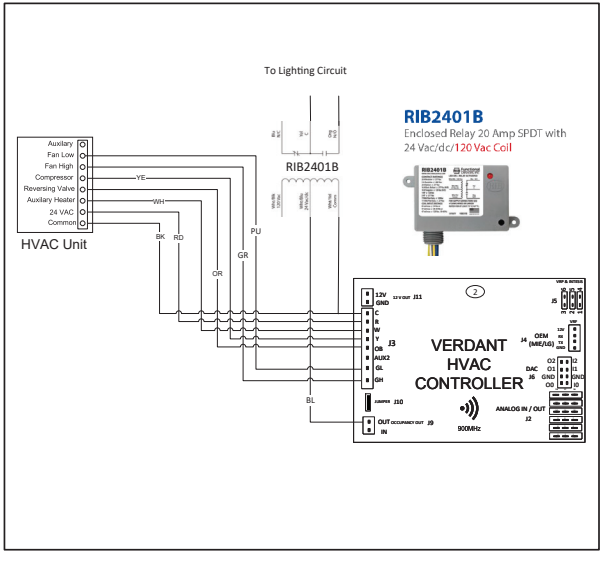
NOTE: DR requires firmware 1130 or later

Lighting Integration

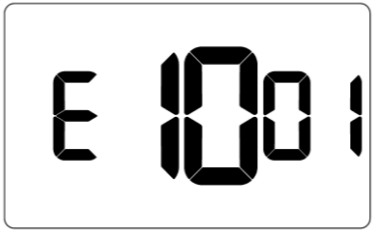
The thermostat uses built-in infrared motion sensors in conjunction with a wired occupancy sensor to scan a room for occupancy. An auxiliary output provides a binary signal according to real-time occupancy status in the room.

The auxiliary output is wired to a 24 VAC relay installed on the lighting circuit; closing the circuit when the room is occupied, and automatically shutting off power to the circuit after occupancy is no longer detected.

A RIB2401B relay is recommended.



E1 - FAN CONTROL MODE



Default value: **000 (AUTOMATIC)** Range: **000-001 (AUTOMATIC/ CONTINUOUS)**	Select Fan Control Mode: **000**: AUTOMATIC - fan runs only when there is a demand for heating or air conditioning. **001**: CONTINUOUS - fan runs continuously when thermostat is on.

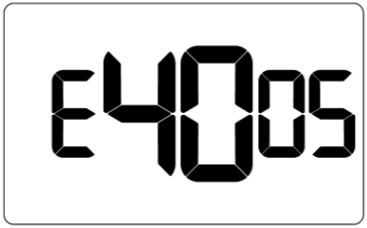
E2 - 1ST STAGE DIFFERENTIAL HEAT

Default value: **005 (0.5°F)** Range: **002-030 (0.2F - 3.0°F)**	Select number of degrees thermostat has to sense between automatic changeover temperature for heat and room temperature before a call for 1st stage heating is initiated.

E3 - 2ND STAGE DIFFERENTIAL HEAT

Default value: **010** (**1.0°F**) Range: **010**-**020** (**1.0**-**2.0°F**)	Select difference (°F) between 1st stage heating and 2nd stage heating initiation. This also applies as the 3rd and 4th stage differential on top of the 2nd when there are more than 2 stages.

E4 - 1ST STAGE DIFFERENTIAL COOL

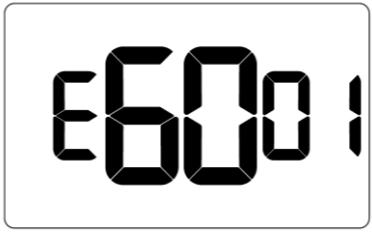


Default value: **005 (0.5°F)** Range: **002-030 (0.2-3.0°F)**	Select number of degrees (°F) thermostat has to sense between automatic changeover temperature for cool and room temperature before a call for 1st stage cooling is initiated.

E5 – INCIDENTAL OCCUPANCY THRESHOLD

Default value: **000 (0 minutes)** Range: **000-060 (0-60 minutes)**	Select minimum period of time (in minutes) for which occupancy needs to be detected to enter guest occupancy mode. When occupancy is detected, thermostat will switch to occupied mode for a duration of Incidental Occupancy Threshold selected. If occupancy is detected for a period of time shorter than the Incidental Occupancy Threshold selected, the thermostat will automatically revert to unoccupied mode at the end of the Incidental Occupancy Threshold period and continue to observe energy saving functions that were in effect before the room became occupied. This setting allows ignoring incidental room visits. If occupancy is detected for a period of time longer than the Incidental Occupancy Threshold selected, the thermostat will enter the guest occupancy mode. When the thermostat is in the guest occupancy mode, it will revert to unoccupied mode and initiate the setback temperature only when occupancy is not detected for the duration of the setback delay (Heat or Cool) period.

E6 - NIGHT OCCUPANCY THRESHOLD

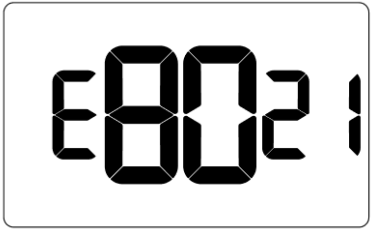


Default value: **001** (**1 minute**) Range: **000**-**060** (**0**-**60 minutes**)	Select minimum period of time (in minutes) for which occupancy needs to be detected to consider the room occupied during the Night Occupancy period. When occupancy is detected during Night Occupancy Period for longer than the Night Occupancy Threshold selected, the thermostat will instantaneously switch to occupied mode. If occupancy is detected for a period of time shorter than the Night Occupancy Threshold selected, the thermostat will automatically revert to unoccupied mode and continue to observe energy saving functions that were in effect before the room became occupied. If occupancy is detected for a period of time longer than the Night Occupancy Threshold selected, the thermostat will disable the occupancy sensor and consider the room occupied until the end of the Night Occupancy period. This feature ensures energy saving functions that may affect guest comfort will not come in effect during the Night Occupancy period.

E7 - FORCE 2ND STAGE HEATING AFTER

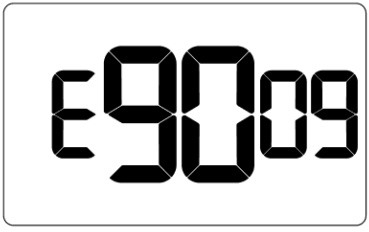
Default value: **030** (**30 minutes**) Range: **000**-**060** (**0**-**60 minutes**)	Select a number of minutes 1st stage heating will run before 2nd stage heating is automatically initiated if the guest set point is not reached and the 2nd stage heating is not initiated through differential settings. This feature allows automatically turning on 2nd stage heating to avoid excessive compressor use. Set to **000** to disable the feature. This also applies as the 3rd and 4th stage differential on top of the 2nd when there are more than 2 stages.

E8 – NIGHT OCCUPANCY START



Default value: **018** (**18:00 hours**) Range: **000-023** (**00:00-23:00 hours**)	Select the start time (24-hour clock) for Night Occupancy. If occupancy is detected for a period of time longer than the Night Occupancy Threshold during Night Occupancy period, the thermostat will disable the occupancy sensor and consider the room occupied until the end of the Night Occupancy period. This feature ensures that energy saving functions that may affect guest comfort will not come in effect during the Night Occupancy period if room was occupied for a period of time longer than Night Occupancy Threshold.

E9 - NIGHT OCCUPANCY END

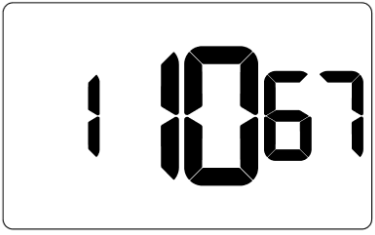


Default value: **012** (**12:00 hours**) Range: **000**-**023** (**00:00**-**23:00 hours**)	Select time (24-hour clock) for Night Occupancy to end. The time of day the Night Occupancy ends and the thermostat switches back to the room sensing settings chosen in the other occupancy modes.

10 - TEMPERATURE RECOVERY TIME

Default value: **000** (**0 minutes**) Range: **000**-**060** (**0**-**60 minutes**)	Select the maximum time allowed for a HVAC unit to attain temperature as defined by Heat and Cool Recovery Temperature; Temperature Recovery Time selected and the actual temperature recovery ability of the HVAC unit are used to calculate setback temperatures. Calculated setback temperatures maximize energy savings and at the same time ensures a comfortable room temperature (defined as Heat and Cool Recovery Temperature) will be restored within the selected Temperature Recovery Time. Setting the Temperature Recovery Time to **000**, disables temperature recovery. When temperature recovery is disabled, thermostat will use the Minimum and Maximum Setback Temperatures as setback set points.

11 - RECOVERY TEMPERATURE HEAT



Default value: **070** (**70°F**) Range: **062-082** (**62-82°F**)	Select room temperature in °F that a HVAC unit will have to attain within the selected Temperature Recovery Time when there is a need for heating. If recovery is disabled (Temperature Recovery Time set to **000**) or if setback temperatures have not yet been calculated, the Recovery Temperature - Heat value will be used as the setback temperature for heating.

12 - TEMPERATURE SETBACK DELAY

Default value: **000** (**0 minutes**) Range: **000**-**120** (**0**-**120 minutes**)	Select the time delay (in minutes) for which the room that is in the guest occupancy mode needs to be unoccupied before the temperature setback is initiated. This feature prevents initiating temperature setback prematurely while the guest is still in the room but in an area where occupancy cannot be detected by the occupancy sensor. Setting the Temperature Setback Delay - Heat to **000**, disables the setback in the heat mode. Set to **000** to disable EMS.

13 - MINIMUM SETBACK TEMPERATURE

Default value: **067** (**67°F**) Range: **052-072** (**52-72°F**)	Select Minimum Setback Temperature in °F. Setback temperature is calculated by measuring HVAC unit's ability to attain Recovery Temperature - Heat within Temperature Recovery Time. If recovery is disabled (Temperature Recovery Time is set to **000**) or if setback temperatures have not yet been calculated, the Recovery Temperature - Heat value will be used as the setback temperature for heating. If calculated setback temperature for heating is lower than Minimum Setback Temperature, then the Minimum Setback Temperature will be used as setback temperature for heating. This feature allows defining the minimum temperature in a room when room is unoccupied and the thermostat is in the setback mode.

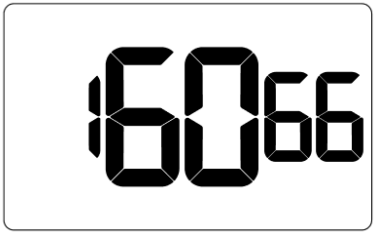
14 - MAXIMUM SETBACK TEMPERATURE

Default value: **072 (72°F)** Range: **072-092 (72-92°F)**	Select the Maximum Setback Temperature in °F. Setback temperature is calculated by measuring HVAC unit's ability to attain Recovery Temperature - Cool within Temperature Recovery Time. If recovery is disabled (Temperature Recovery Time is set to **000**) or if setback temperatures have not yet been calculated, the Maximum Setback Temperature value will be used as the setback temperature for cooling. If calculated setback temperature for air conditioning is higher than Maximum Setback Temperature, then the Maximum Setback Temperature will be used as setback temperature for air conditioning. This feature allows defining the maximum temperature in a room when room is unoccupied and the thermostat is in the setback mode.

15 - RECOVERY TEMPERATURE COOL

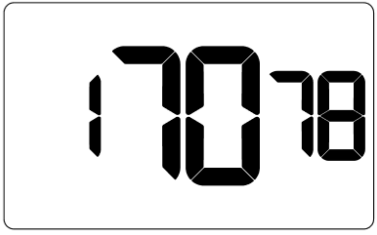
Default value: **071** (**71°F**) Range: **062-082** (**62-82°F**)	Select the room temperature in °F that a HVAC unit will have to attain within the selected Temperature Recovery Time when there is a need for air conditioning.

16 - MINIMUM SET POINT



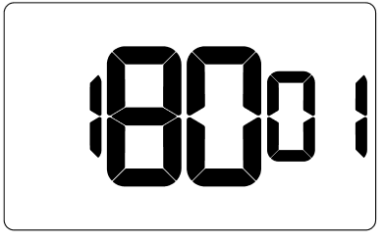
Default value: **064** (**64°F**) Range: **064**-**084** (**64**-**84°F**)	Select the minimum set point in °F that a guest can select.

17 - MAXIMUM SET POINT



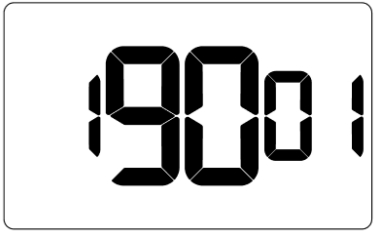
Default value: **082** (**82°F**) Range: **060**-**082** (**60**-**82°F**)	Select the maximum set point in °F that a guest can select.

18 - TEMPERATURE CONTROL MODE



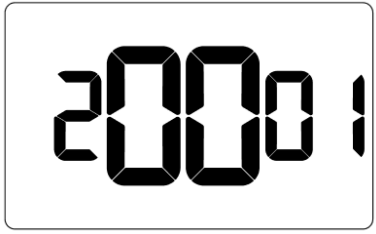
Default value: **001** (**AUTOMATIC**) Range: **000 - 001** (**MANUAL/AUTOMATIC**)	Select Temperature Control Mode: **000**: MANUAL - Allows users to select HEAT only or COOL only temperature control mode to maintain the room temperature **001**: AUTOMATIC - Thermostat automatically turns on heating or air conditioning to maintain the room temperature at the selected temperature set point

19 - AUTO CHANGEOVER SET POINT OFFSET (DEAD BAND)



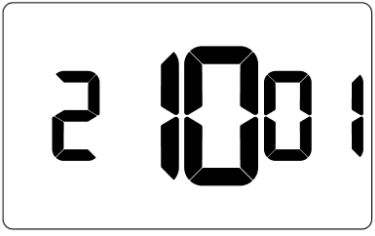
Default value: **001 (1°F)** Range: **000-004 (0-4°F)**	Select the difference between the guest-selected set point and the heat and the cool set point when the thermostat is in the automatic temperature control mode. This value plus the 1st stage differential defined in steps 2 and 4, defines the temperature at which the thermostat would automatically change heating/ cooling modes. This feature allows adjusting the deadband between the heat and the cool set points in automatic changeover mode in to avoid the system from bouncing back and forth between heating and cooling under normal operating conditions.

20 - USE SETBACK SET POINTS



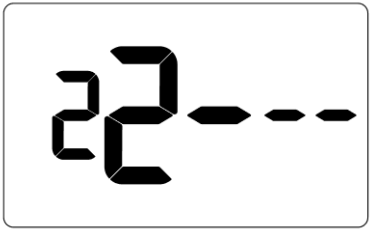
Default value: **000 (OFF)** Range: **000-001 (OFF/ ON)**	Select the Use Setback Set Points mode: **000**: OFF - When room is unoccupied and the thermostat is in the setback mode or turned off, it will NOT maintain the temperature between heat and cool setback set points. **001**: ON - When room is unoccupied and the thermostat is in the setback mode or turned off, it will maintain the temperature between heat and cool setback set points.

21 - AUTO-RESTORE



Default value: **000** (**OFF**) Range: **000**-**001** (**OFF/ ON**)	Select the Auto-Restore mode: **000**: OFF - When guest enters the room, the thermostat will be turned off - it will not automatically restore the most recent guest settings **001**: ON - When guest enters the room, the thermostat will automatically restore the most recent guest settings

22 - PLACEHOLDER SCREEN

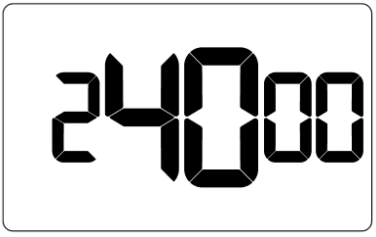


NOTE: For future use.

23 - SET POINT OVERSHOOT

Default value: **006** (**0.6°F**) Range: **004**-**020** (**0.4**-**2°F**)	Select the °F of overshoot above or below the set point on the thermostat before the thermostat stops the call for cooling or heating.

24 - AUTOMATIC HUMIDITY CONTROL

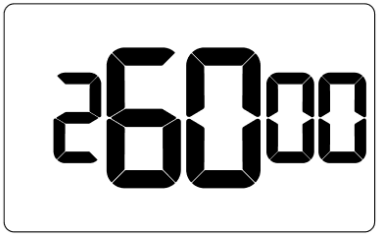


Default value: **000** (**DISABLED**) Range: **000**-**001** (**DISABLED**/ **ENABLED**)	Select Automatic Humidity Control mode: **000**: Disable automatic humidity control **001**: Enable automatic humidity control When Automatic Humidity Control is enabled, thermostat will turn on air conditioning in an unoccupied room when humidity raises above 60% and room temperature is above 72°F until either room humidity is below 55% or room temperature is below 72°F. This setting is active only on thermostats with enabled humidity features. Changing this setting on a non-humidity thermostat will have no effect on thermostat operation. Humidity features can be enabled on compatible thermostats via online management.

25 - 2ND STAGE DIFFERENTIAL COOL

Default value: **010 (1°F)** Range: **005-030 (0.5-3°F)**	Select the °F differential required to trigger 2nd stage cooling (if applicable). This also applies as the 3rd and 4th stage differential on top of the 2nd when there are more than 2 stages.

26 - SMART SETBACK

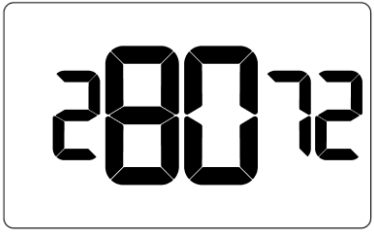


Default value: **000** (**DISABLED**) Range: **000**-**001** (**DISABLED**/ **ENABLED**)	Select Smart Setback mode: **000**: Disable Smart Setback **001**: Enable Smart Setback Smart setback reduces the excessive heating or cooling that may occur when occupants set their thermostats to set points outside of the norm. Occupant set point that is greater than Cool Setback or less than Heat Setback will be respected during setbacks to save energy.

27 - HUMIDITY CONTROL THRESHOLD

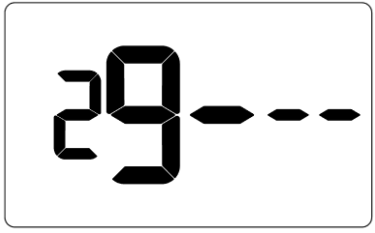
Default value: **060 (60°F)** Range: **055-070 (55-70°F)**	Select the relative humidity level that automatic humidity control will attempt to control in conjunction with the humidity cut-off temp.

28 - HUMIDITY CUTOFF TEMPERATURE



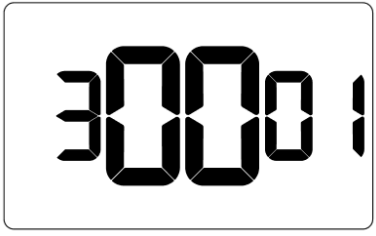
Default value: **072 (72°F)** Range: **065-075 (65-75°F)**	Select the temperature in °F at which humidity control will shut off.

29 - PLACEHOLDER SCREEN



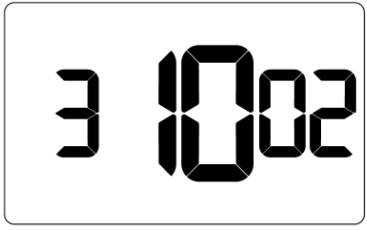
NOTE: For future use.

30 - ENERGY MANAGEMENT ON/OFF



Default value: **000** (**OFF**) Range: **000**-**001** (**OFF/ ON**)	Select Energy Management mode: **000**: OFF - Energy management disabled **001**: ON - Energy management enabled

31 - DOOR/WINDOW SHUT OFF DELAY



Default value: **002** (**2 minutes**) Range: **001**-**060** (**1**-**60 minutes**)	Select the time delay (in minutes) before the thermostat disables air conditioning when a door or window sensor has been installed.

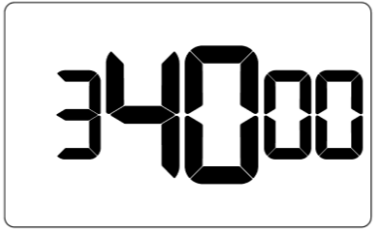
32 - AUTO FAN SPEED 1ST STAGE DIFFERENTIAL

Default value: **002 (2°F)** Range: **002-008 (2-8°F)**	Select the °F differential between Low Fan and 2nd stage fan (Medium or High) when Auto-Fan Speed is selected.

33 - AUTO FAN SPEED 2ND STAGE DIFFERENTIAL

Default value: **004 (4°F)** Range: **002-010 (2-10°F)**	Select the °F differential between Medium and High Fan when Auto-Fan Speed is selected (only active if three fan speeds are available).

34 - TEMPERATURE CALIBRATION



Default value: **000 (0°F)** Range: **-050-050 (-5-5°F)**	Calibrate the temperature display.

35 - AUTO MODE TYPE

Default value: **001** (**STANDARD**) Range: **001**-**002** (**STANDARD**/ **CHANGEOVER**)	Select Auto Mode Type: **001**: Standard Auto Mode - The thermostat will apply the deadband on the guest set point and control temperature with the guest set point as the median **002**: Changeover Auto Mode - The thermostat will apply the deadband as a changeover limit where the deadband is crossed triggering a change in heating or cooling mode

36 - HUMIDITY CONTROL OCCUPIED ROOM

Default value: **000** (**OFF**) Range: **000**-**001** (**OFF/ ON**)	Select Humidity Control mode: **000**: Humidity control OFF - The thermostat will disable humidity control when the room is occupied **001**: Humidity control ON - The thermostat will enable humidity control even when the room is occupied

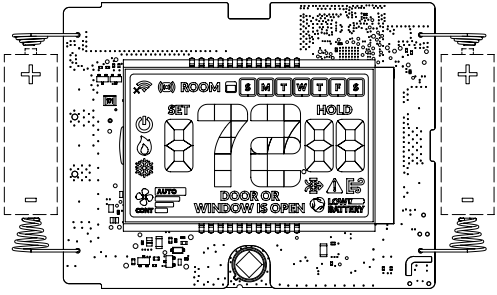
37 - HEAT EQUIPMENT LOCKOUT

Default value: **000 (NOTHING)** Range: **000-002 (NOTHING/ELECTRIC HEAT/COMPRESSOR)**	Select Heat Equipment Lockout mode: **000**: LOCKOUT_NOTHING - The thermostat will enable both compressor and electric heat. **001**: LOCKOUT_ELECTRIC_HEAT - The thermostat will only allow compressor heat. **002**: LOCKOUT_COMPRESSOR - The thermostat will only allow electric heat.

Troubleshooting

Restoring Factory Settings

For reported errors or configuration issues, restore settings to thermostat default parameters and re-pair with HVAC Controller.



1. Press and hold the **SYSTEM MODE** and **FAN** buttons together for three (3) seconds to enter Mesh ID screen.
2. Press **SETTINGS** to reach the clock configuration screen.
3. Press and hold **SYSTEM MODE** and **FAN** buttons until thermostat displays "**RST**", then press the **SETTINGS** button.
4. Verify thermostat displays "**SETUP**" after three (3) seconds and reconfigure thermostat.

Contact Verdant technical support if the issues are not resolved.

Appendices

Appendix 1 - Energy Saving Presets

* Bolded values below indicate the factory default profile.

		Level 0*	Level 1	Level 2	Level 3	Level 4	Level 5
E1	Fan Control Mode	**AUTO**	AUTO	AUTO	AUTO	AUTO	AUTO
E2	1st Stage Differential Heat	**005**	005	005	005	005	005
E3	2nd Stage Differential Heat	**010**	010	010	020	020	020
E4	1st Stage Differential Cool	**005**	005	005	005	005	005
E5	Incidental Occupancy Threshold	**000**	005	005	005	005	005
E6	Night Occupancy Threshold	**001**	001	001	001	001	001
E7	Force 2nd Stage Heating After	**030**	030	030	030	030	030
E8	Night Occupancy Start	**018**	019	020	021	022	023
E9	Night Occupancy End	**012**	011	010	009	008	007
10	Temperature Recovery Time	**000**	015	020	025	030	000
11	Recovery Temperature Heat	**070**	069	068	067	066	065
12	Temperature Setback Delay	**000**	030	025	020	015	010
13	Minimum Setback Temperature	**067**	066	065	064	063	062
14	Maximum Setback Temperature	**072**	074	076	078	080	082
15	Recovery Temperature Cool	**071**	072	073	074	075	076
16	Minimum Set Point	**064**	064	065	066	067	068
17	Maximum Set Point	**082**	082	080	078	076	074
18	Temperature Control Mode	**AUTO**	AUTO	AUTO	AUTO	AUTO	AUTO
19	Auto Changeover Set Point Offset (Dead Band)	**001**	001	001	001	001	001

		Level 0*	Level 1	Level 2	Level 3	Level 4	Level 5
20	Use Setback Set Points	**OFF**	ON	ON	ON	ON	ON
21	Auto-Restore	**OFF**	ON	ON	ON	ON	ON
22	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	Set Point Overshoot	**006**	006	006	006	006	006
24	Automatic Humidity Control	**OFF**	OFF	OFF	OFF	OFF	OFF
25	2nd Stage Differential Cool	**010**	010	010	020	020	020
26	Smart Setback	**OFF**	OFF	OFF	OFF	OFF	OFF
27	Humidity Control Threshold	**060**	060	060	060	060	060
28	Humidity Cutoff Temperature	**072**	072	072	072	072	072
29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	Energy Management On/Off	**OFF**	ON	ON	ON	ON	ON
31	Door/Window Shut Off Delay	**002**	002	002	002	002	002
32	Auto Fan Speed 1st Stage Differential	**002**	002	002	002	002	002
33	Auto Fan Speed 2nd Stage Differential	**004**	004	004	004	004	004
34	Temperature Calibration	**000**	000	000	000	000	000
35	Auto Mode Type	**STD**	STD	STD	STD	STD	STD
36	Humidity Control Occupied Room	**OFF**	OFF	OFF	OFF	OFF	OFF
37	Heat Equipment Lockout	**000**	000	000	000	000	000

Appendix 2 - Equipment Codes

	Outputs						
EQPT Code	**J3 port**						**J9 port**
Color	**White**	**Yellow**	**Orange**	**Purple**	**Green**	**Brown**	**Blue**
0101	W1	X	X	X	GH	X	OCC
0102	W1	X	X	GL	GH	X	OCC
0103	W1	X	GM	GL	GH	X	OCC
0302	GH	WCW	WCCW	GL	X	X	OCC
0303	GH	WCW	WCCW	GL	GM	X	OCC
1001	X	Y1	O	X	GH	X	OCC
1002	X	Y1	O	GL	GH	X	OCC
1011	X	Y1	B	X	GH	X	OCC
1012	X	Y1	B	GL	GH	X	OCC
1101	W1	Y1	O	X	GH	X	OCC
1102	W1	Y1	O	GL	GH	X	OCC
1111	W1	Y1	B	X	GH	X	OCC
1112	W1	Y1	B	GL	GH	X	OCC
1201	WAUX	Y1	O	X	GH	X	OCC
1202	WAUX	Y1	O	GL	GH	X	OCC
1211	WAUX	Y1	B	X	GH	X	OCC
1212	WAUX	Y1	B	GL	GH	X	OCC
2001	X	Y1	X	X	GH	X	OCC
2002	X	Y1	X	GL	GH	X	OCC
2003	X	Y1	GM	GL	GH	X	OCC
2100	W1	Y1	X	X	X	X	OCC

	Outputs						
EQPT Code	**J3 port**						**J9 port**
Color	**White**	**Yellow**	**Orange**	**Purple**	**Green**	**Brown**	**Blue**
2101	W1	Y1	X	X	GH	X	OCC
2102	W1	Y1	X	GL	GH	X	OCC
2103	W1	Y1	GM	GL	GH	X	OCC
2106	W1	Y1	X	X	X	X	OCC
2502	Y1	W1	W2	GL	GH	X	OCC
5501	Y1	Y2	W1	W2	GH	X	X
5502	Y1	Y2	W1	W2	GH	X	GL
1802	W1	Y1	O	GL	GH	Y2	OCC
1812	W1	Y1	B	GL	GH	Y2	OCC
1902	W1	Y1	O	GL	GH	Y2	W2
1912	W1	Y1	B	GL	GH	Y2	W2

	Outputs							Analog Output Connections (J6 Port)			
EQPT Code	**J3 port**						**J9 port**	**O0**	**GND**	**O1**	**O2**
Color	White	Yellow	Orange	Purple	Green	Brown	Blue	White	Black	Yellow	Green
4403	X	X	GM	GL	GH	X	OCC	Analog Heat	GND	Analog Cool	X
4406	X	X	X	X	X	X	OCC	Analog Heat	GND	Analog Cool	Analog Fan

Appendix 3 - Energy Saving Settings Index

Setting Index	Description	Min	Max	Default
E1	Fan Control Mode	000	001	000
E2	1st Stage Differential Heat	002	030	005
E3	2nd Stage Differential Heat	010	020	010
E4	1st Stage Differential Cool	002	030	005
E5	Incidental Occupancy Threshold	000	060	000
E6	Night Occupancy Threshold	000	060	001
E7	Force 2nd Stage Heating After	000	060	030
E8	Night Occupancy Start	000	023	018
E9	Night Occupancy End	000	023	012
10	Temperature Recovery Time	000	060	000
11	Recovery Temperature Heat	062	082	070
12	Temperature Setback Delay	000	120	000
13	Minimum Setback Temperature	052	072	067
14	Maximum Setback Temperature	072	092	072
15	Recovery Temperature Cool	062	082	071
16	Minimum Set Point	064	084	064
17	Maximum Set Point	060	082	082
18	Temperature Control Mode	000	001	001
19	Auto Changeover Set Point Offset (Dead Band)	000	004	001
20	Use Setback Set Points	000	001	000
21	Auto-Restore	000	001	000

Setting Index	Description	Min	Max	Default
22	N/A	N/A	N/A	N/A
23	Set Point Overshoot	004	020	006
24	Automatic Humidity Control	000	001	000
25	2nd Stage Differential Cool	005	030	010
26	Smart Setback	000	001	000
27	Humidity Control Threshold	055	070	060
28	Humidity Cutoff Temperature	065	075	072
29	N/A	N/A	N/A	N/A
30	Energy Management On/Off	000	001	000
31	Door/Window Shut Off Delay	001	060	002
32	Auto Fan Speed 1st Stage Differential	002	008	002
33	Auto Fan Speed 2nd Stage Differential	002	010	004
34	Temperature Calibration	-050	050	000
35	Auto Mode Type	001	002	001
36	Humidity Control Occupied Room	000	001	000
37	Heat Equipment Lockout	000	002	000

Appendix 4 - Glossary

"1st Stage Differential Cool" - the temperature that the thermostat has to sense between the automatic changeover temperature for cool and the room temperature before a call for the 1st stage cooling is initiated;

"1st Stage Differential Heat" - the temperature that the thermostat has to sense between the automatic changeover temperature for heat and the room temperature before a call for the 1st stage heating is initiated;

"2nd Stage Differential Heat" - difference between 1st stage heating temperature and room temperature before the 2nd stage heating is initiated;

"Auto Changeover Set Point Offset" - the difference between the guest-selected set point and the heat and cool changeover temperatures;

"Auto Restore Off" - thermostat will NOT restore the most recent guest settings and will remain turned off when new occupancy is detected;

"Auto Restore On" - thermostat will restore the most recent guest settings when new occupancy is detected;

"Automatic Fan Control Mode" - fan runs only when there is a demand for heating or cooling;

"Automatic Temperature Changeover" - thermostat automatically activates heating or cooling to maintain the desired room temperature;

"External Thermostat" (Class 2) mode - HVAC unit setting allowing it to be controlled by a remote thermostat;

"Force 2nd Stage Heating After" - number of minutes1st stage heating will run before 2nd stage heating is automatically initiated if the guest set point is not reached and the 2nd stage heating is not initiated through differential settings;

"Guest Occupancy" - occupancy longer than the Incidental Occupancy Threshold;

"Incidental Occupancy" - occupancy shorter than the Incidental Occupancy Threshold;

"Incidental Occupancy Threshold" - the minimum period of time (in minutes) for which occupancy needs to be detected in order to enter the "Guest Occupancy" mode;

"Manual Fan Control Mode" - guest can select between automatic or continuous fan operation;

"Maximum Set Point" - maximum temperature that a guest can request;

"Minimum Set Point" - minimum temperature that a guest can request;

"Maximum Setback Temperature" - the highest room temperature allowed when thermostat is in the setback mode;

"Minimum Setback Temperature" - the lowest room temperature allowed when thermostat is in the setback mode;

"Night Occupancy Mode" - thermostat status during which setback mode is disabled if occupancy longer than Night Occupancy Threshold is detected within the "Night Occupancy" period;

"Night Occupancy Period" - the period of time during the day during which the Night Occupancy mode can be activated if occupancy longer than the Night Occupancy Threshold is detected;

"Night Occupancy Threshold" - the minimum period of time during the Night Occupancy period for which occupancy needs to be detected in order to enter the Night Occupancy mode;

"Recovery Temperature" - the room temperature that needs to be restored within the "Temperature Recovery Time";

"Setback Set Points Off" - thermostat will NOT maintain setback temperatures when room is unoccupied;

"Setback Set Points On" - thermostat will maintain setback temperatures when room is unoccupied;

"Temperature Recovery Time" - the maximum period of time allowed for restoring the "Recovery Temperature";

"Temperature Setback" - thermostat maintains setback temperatures and not the guest set point temperature in order to save energy;

"Temperature Setback Delay" - the length of time for which the room that is in the guest occupancy mode needs to be unoccupied before the temperature setback is initiated

Warranty Information

Refer to www.verdant.co/verdant-warranty information.

Technical Specifications

Product Type		Thermostat
White Model	**Black Model**	**Description**
VX4-TR-W	VX4-TR-B	Relay outputs
VX4-NTR-W	VX4-NTR-B	Relay outputs with no occupancy detection
VX4-WU-W	VX4-WU-B	Wireless
VX4-NWU-W	VX4-NWU-B	Wireless with no occupancy detection
VX4-TVF-W	VX4-TVF-B	UART serial communicating
VX4-RSR-W	VX4-RSR-B	RS485 serial communicating
VX4-NTVF-W	VX4-NTVF-B	UART serial communicating with no occupancy detection
VX4-NRSR-W	VX4-NRSR-B	RS485 serial communicating with no occupancy detection
VX4-TR-868-W	VX4-TR-868-B	Relay outputs (European version)
VX4-NTR-868-W	VX4-NTR-868-B	Relay outputs with no occupancy detection (European version)
VX4-WU-868-W	VX4-WU-868-B	Wireless (European version)
VX4-NWU-868-W	VX4-NWU-868-B	Wireless with no occupancy detection (European version)
VX4-TVF-868-W	VX4-TVF-868-B	UART serial communicating (European version)
VX4-RSR-868-W	VX4-RSR-868-B	RS485 serial communicating (European version)
VX4-NTVF-868-W	VX4-NTVF-868-B	UART serial communicating with no occupancy detection (European version)
VX4-NRSR-868-W	VX4-NRSR-868-B	RS485 serial communicating with no occupancy detection (European version)
Wireless Frequency	902-928MHz (NA)	863-870MHz (EU)
Case Dimensions	5.60" x 3.46" x 0.937" (142.3mm x 88mm x 23.8mm)	
Screen Dimensions	2.60" x 1.5" (66.1mm x 38.1mm)	
Operating Voltage	2 x 1.5 VDC AA Alkaline Non-rechargeable Batteries - Not Supplied 24 VAC or 12 VDC	

Product Type	Thermostat
Control Outputs (24 VAC) **(1.5 A maximum per terminal, 2.5 A maximum all terminals combined)**	N/A
Power Supply Outlet	N/A
Occupancy Sensor Detection Range	Horizontal (FOV 100°)
Temperature Accuracy	±1°F (±0.5°C)
Enclosure Material	SABIC PC/ABS CYCOLOY C2800
Ambient Operating Temp	32-105°F (0-41°C)
Internet Connectivity	N/A
FCC ID	2A4JN-VX4001
IC	28229-VX4001

Product Type	HVAC Controller		Gateway	
SKU(s)	ZX-LV-868	ZX-LV	ZX-OL-U-868	ZX-OL-U
Wireless Frequency	863-870MHz (EU)	902-928MHz (NA)	N/A	
Case Dimensions	4.08″ x 2.76″ x 1.02″ 104mm x 70mm x 26mm		4.72″ x 3.15″ x 1.18″ 120mm x 80mm x 30mm	
Operating Voltage	24 VAC (20-30 VAC) 12 VDC (9-15 VDC)		12 VDC 1.5 A	
Control Outputs (24 VAC) **(1.5 A maximum per terminal, 2.5 A maximum all terminals combined)**	Fan High (GH)		N/A	
	Fan Low (GL)			
	Compressor (Y)			
	Heat Pump (OB)			
	Electric Heat (W2)			
	Occupancy Out (AUX1)			
	(AUX2)			
Power Supply Outlet	12 VDC @ 0.05 A (Max)		N/A	N/A
Occupancy Sensor Beam Width	N/A		N/A	N/A
Temperature Accuracy	±1°F (±0.5°C)		N/A	N/A
Enclosure Material	ABS+PC (TAIRILOY® AC3100 (Formosa Chemicals & Fibre Corporation))		Extruded Aluminum	
Ambient Operating Temp	32-105°F (0-41°C)		32-105°F (0-41°C)	
Internet Connectivity	N/A		100M/1000M Base-T Ethernet	
FCC ID	XEY-ZX-LV		N/A	
IC	8410A-ZX-LV		N/A	

Product Type	HVAC Controller	
SKU(s)	ZX-HV-868	ZX-HV
Wireless Frequency	863-870MHz (EU)	902-928MHz (NA)
Case Dimensions	4.08″ x 2.76″ x 1.02″ 104mm x 70mm x 26mm	
Operating Voltage	110-277VAC 50/60Hz 12 VDC (9-15 VDC)	
Max Load: (Y, W, AUX) 0.5A (GL, GH) 2.0A (GH/GL + Y/W + AUX)3.0A Max 3 relays operated simultaneously	Fan High (GH)	
	Fan Low (GL)	
	AUX (Occupancy Out)	
	Cooling (Y)	
	Heating (W)	
Power Supply Outlet	12 VDC @ 0.05 A (Max)	
Occupancy Sensor Beam Width	N/A	
Temperature Accuracy	±1°F (±0.5°C)	
Enclosure Material	ABS+PC (TAIRILOY® AC3100 (Formosa Chemicals & Fibre Corporation))	
Ambient Operating Temp	32-105°F (0-41°C)	
Internet Connectivity	N/A	
FCC ID	XEY-ZX-LV	
IC	8410A-ZX-LV	

Product Type	Root Node		Sensors	
SKU(s)	ZX-RN-868	ZX-RN	ZX-AOS-868 ZX-DWS-868 ZX-TSW-868	ZX-AOS ZX-DWS ZX-TSW
Wireless Frequency	863-870MHz (EU)	902-928MHz (NA)	863-870MHz (EU)	902-928MHz (NA)
Case Dimensions	2.4" x 1.54" x 0.78" 46mm x 61mm x 19mm		1.82" x 2.4" x 0.74" 46mm x 61mm x 19mm	
Operating Voltage	+5 VDC (nom.)		2 1.5 VDC AAA Alkaline Non-rechargeable Batteries - Not Supplied	
Control Outputs (24 VAC) **(1.5 A maximum per terminal, 2.5 A maximum all terminals combined)**	N/A		N/A	
Power Supply Outlet	N/A		N/A	
Occupancy Sensor Beam Width	N/A		±47° (94°)	
Temperature Accuracy	±1°F (±0.5°C)		±1°F (±0.5°C)	
Enclosure Material	ABS (AF312C(LG CHEM))		ABS+PC (TAIRILOY® AC3100 (Formosa Chemicals & Fibre Corporation))	
Ambient Operating Temp	32-105°F (0-41°C)		32-105°F (0-41°C)	
Internet Connectivity	N/A		N/A	
FCC ID	XEY-ZX-RN		XEYZ9RF	
IC	8410A-ZXRN		8410A-Z9RF	

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radio électrique subi, même si le brouillageest susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotroperayonnéequivalente (p.i.r.e.) ne dépassepas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

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TECHNICAL SUPPORT: verdant.support@copeland.com 1-877-318-1823