DSSXEMWRT3

VRPXEMWRT3

EMWRT3

Wireless Energy Management Network-Capable Thermostat with Built-in Occupancy Sensor and HVAC Controller
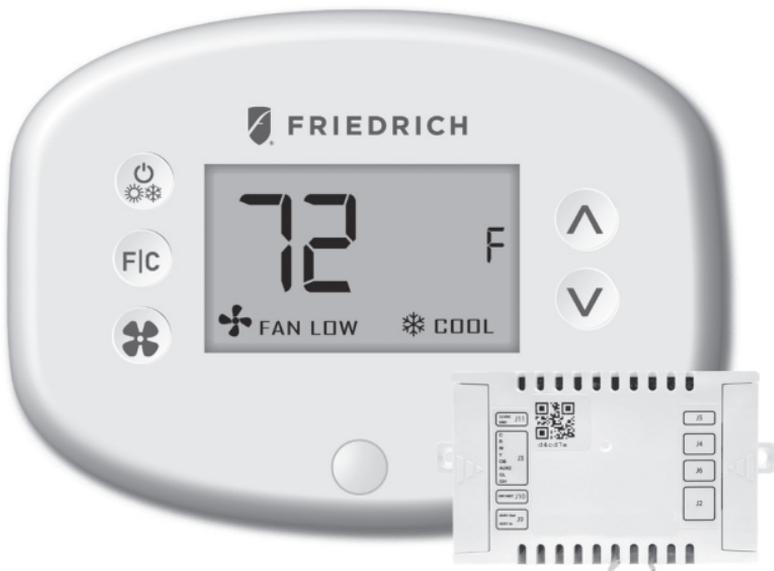
INSTRUCTION   MANUAL

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How to use this manual

This manual is written to help you mount, install and configure the next units:

- DSS
- VRP
- FreshAire PTAC
- Vert-I-Pak / PTAC units

Common settings and instructions for the above units will be listed in the "General" sections of this manual.

Unit specific settings and installation instructions will be listed under the respective unit's section.

Introduction

Friedrich 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 energy saving settings to fit any situation.

Comprehensive configuration options ensure full compatibility with virtually any existing or emerging HVAC system with up to 2 heat and 1 cool stages.

Built-in wireless mesh-networking enables online management.

Introduction

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
Thermostats	DSSXEMWRT3 VRPXEMWRT3 EMWRT3	Networked Friedrich Wireless Thermostat with HVAC Controller
Accessories	EMRWOS3	Occupancy Sensor
	EMRWDS3	Door/Window Switch with reed magnets
	EMOCT3	Online Connection Kit
	EMRWTS3	Wireless Temperature Sensor
	EMRAF	Wireless Network Access Fee

Introduction

Equipment Nomenclature

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

Thermsotat & Wireless Receiver

Online Connection Kit

Occupancy Sensor

Door/Window Sensor

Temperature Sensor

Introduction

Installation Considerations

Selecting the appropriate installation location of the thermostat and any accessories is crucial to the proper operation of your Friedrich 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 <u>NOT</u> 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.**

General: Network Installation

NOTICE

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

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

PLEASE CONFIRM WITH A TECHNICAL SUPPORT AGENT THAT THE ONLINE CONNECTION KIT IS COMMUNICATING PROPERLY WITH THE CLOUD SERVICE BY CALLING OUR TECHNICAL SUPPORT TEAM AT 1 877 318 1823 (OEM).

General: Network Installation

Connecting the Antenna Module

- Screw the Antenna onto the Wireless Receiver;
- Connect the Wireless Receiver to the Server using the supplied USB cable;
- Affix the Wireless Receiver to the wall with double sided adhesive tape;
- Orient the antenna to be pointing upwards to the closest room in which a Verdant thermostat will be installed.

THE WIRELESS RECEIVER MUST BE INSTALLED WITHIN 100FT FROM THE FIRST 2 TO 3 THERMOSTATS.

THE WIRELESS RECEIVER AND THE ANTENNA MUST NOT BE INSTALLED NEAR LARGE METAL STRUCTURES OR SURFACES.

METAL STRUCTURES AND SURFACES SIGNIFICANTLY REDUCE THE RANGE OF THE WIRELESS SIGNAL.

General: Network Installation

Connecting the Ethernet Cable

To Internet Router/Switch
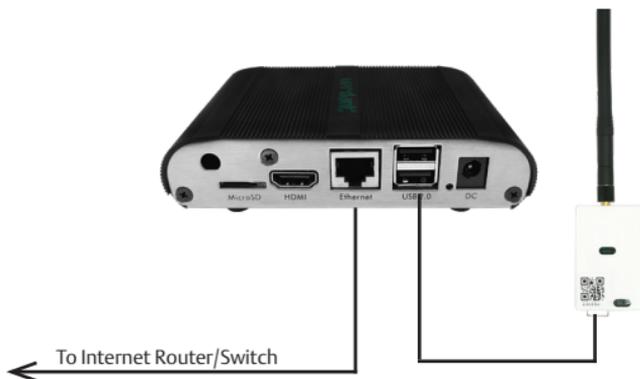
- Connect the Server to the LAN port with the supplied RJ-45 cable.

General: Network Installation

Powering on the Server

To Internet Router/Switch
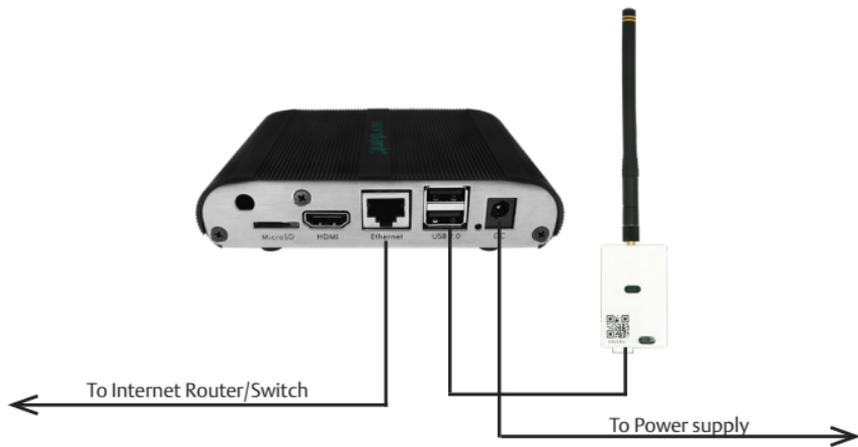
To Power supply

• Plug the Server into an electrical outlet with the supplied power cord.

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

General: Network Installation

Configuring the Online Connection Kit

- Ensure the Online Connection Kit is receiving an IP from a DHCP server. A public IP will not work;
- Ensure that the MAC address is properly Whitelisted if it needs to bypass a login (splash) page to be able to reach the internet. The MAC address is printed on a white sticker on the bottom of the Online Connection Kit.
- If behind a firewall, OUTBOUND ports 22(optional) ,80 and 443 must be allowed for the Online Connection Kit. No INBOUND ports are required for this device unless specific options are requested. Please refer to the specific instructions for these applications.

General: HVAC Controller Installation

Introduction

Friedrich HVAC Controllers enable wireless thermostat control of most HVAC units.

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.

In order to provide light controls, the controller needs to be powered with 24vac at J3. This will allow the controller to provide occupancy based outputs for light controls J9.

```
12 VDC
OUTPUT
12V                J11                                    6  5  4
GND                                              J5
                                                 Jumpers
C                                                      3  2  1
R
W                                                      V +
Y                                                      RX
OB                                            J4       TX
AUX2         J3                                        GND
GL
GH                                                O2  [] []  I2
                    Friedrich HVAC CONTROLLER  DAC  O1 [] []  I1
                                              J6   GND [] []  GND
                                                   O0 [] []  I0
JUMPER  J10                                        18  17     16

                    •))                            15  14     13
                                   ANALOG IN / OUT 12  11     10
OUT    J9                          J2               9   8      7
       OCCUPANCY OUT   900MHz                        6   5      4
IN                                                   3   2      1
```
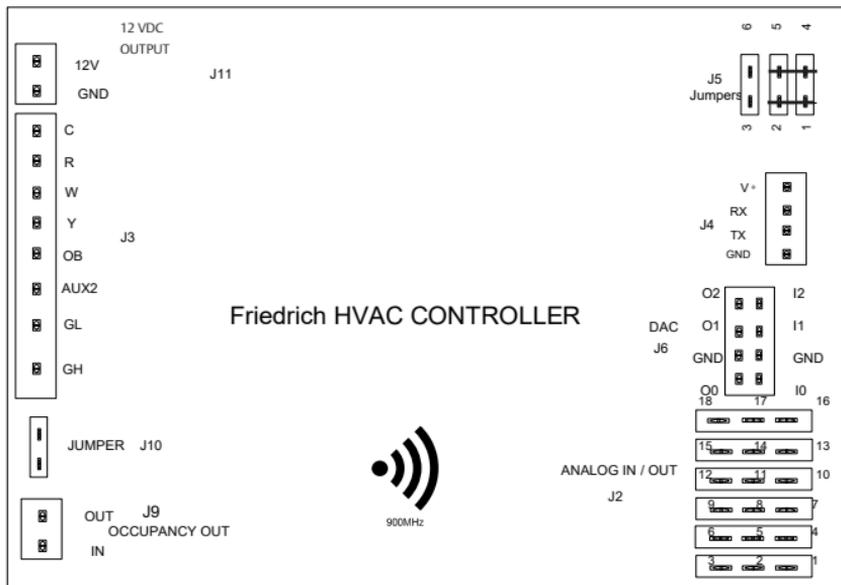
General: HVAC Controller Installation

Installing the HVAC Controller in 24VAC Relay Units

- Power Off the HVAC unit;
- Mount the HVAC Controller inside of the HVAC unit;
- Use the supplied wire harness to connect the HVAC Controller to the HVAC unit;
- 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 24VAC Relay Connections (J3 Port)								J9 Port
C **Black**	**R** **Red**	**W** **White**	**Y** **Yellow**	**O** **Orange**	**Aux2** **Brown**	**GL** **Purple**	**GH** **Green**	**AUX1** **Blue**
Common	24VAC	Heat	Cool	O/B Reverse Valve	Aux2 Signal	Fan Low	Fan High	OCC
NOTE: Functionality may change due to equipment code								

THE HVAC CONTROLLER ANTENNA MUST BE FACING THE THERMOSTAT AND MUST <u>NOT</u> 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. WE RECOMMEND USING PLASTIC CABLE TIES, OR 3M COMMAND TAPE (NOT SUPPLIED).

General: HVAC Controller Installation

Using the HVAC Controller to Power a Wireless Thermostat (Optional)

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

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

12VDC Output (J11 Port)	
12VDC	GND

General: HVAC Controller Installation

Using the HVAC Controller's Dry Contacts to Control External Devices

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

- A jumper on J10 will make this a "wet" contact supplying power from R&C.
- For PTAC connection, connect the low voltage wires to screw terminals on the PTAC unit low voltage terminal block - refer to the wiring diagram below.
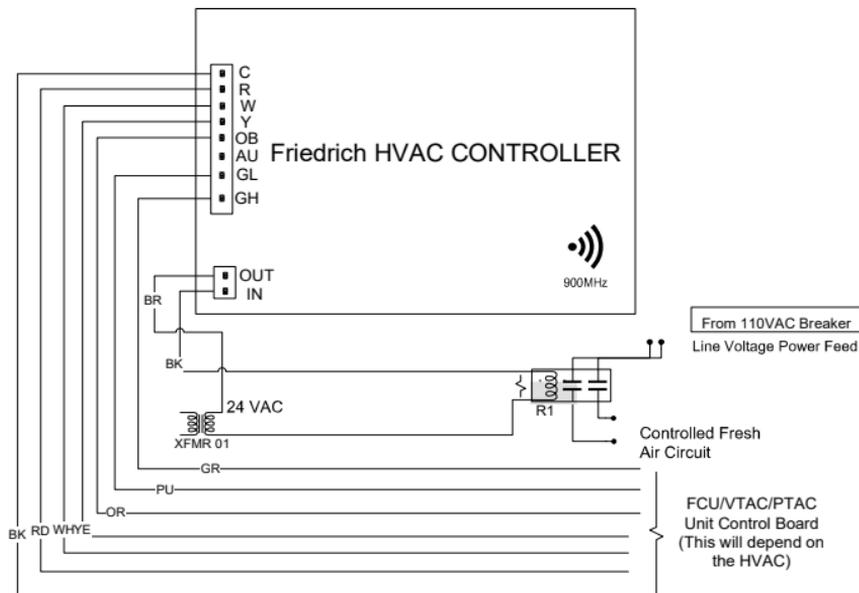
General: Thermostat Installation

Mounting the Thermostat to the Wall

- Select the appropriate installation location for the thermostat, taking into account the following;

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. DO NOT INSTALL THE THERMOSTAT NEAR WINDOWS OR DOORS WHICH MAY ALLOW A DRAFT, ON AN EXTERIOR WALL, ABOVE OR BELOW SUPPLY VENTS, AND OTHER LESS OCCUPIED AREAS.

- If using a wallplate, place it over the hole in the wall left by the previous thermostat, and mark two locations for drilling holes;
- With the faceplate removed, place the thermostat on the wall in the installation location and mark location for drilling holes for the two (2) mounting screws;

DO NOT OVER TIGHTEN THE BACK PLATE TO THE WALL. FOR UNEVEN SURFACES, CONSIDER INSTALLING A WALL PLATE.

- Drill two (2) 3/16" holes in the wall and insert the two (2) supplied wall anchors;
- Use the two (2) supplied screws to securely mount the thermostat to the wall;
- Insert two (2) AA-cell batteries (not supplied) into the thermostat battery compartment. Also, the thermostat can be powered with 12vdc or 24vac.

General: Sensor Installation

Mounting a Remote Wireless Sensor (Optional)

- Select the appropriate installation location for the external sensor, taking into account the following;

    OCCUPANCY SENSORS SHOULD FACE THE DESIRED OCCUPANCY DETECTION AREA.

- With the faceplate removed, place the sensor on the wall in the installation location and mark location for drilling holes for the two (2) mounting screws;
- Drill two (2) 3/16" holes in the wall and insert the two (2) supplied wall anchors;
- Use the two (2) supplied screws to securely mount the sensor to the wall;
- Insert one (1) AAA battery into the compartment (not supplied - wireless sensors only)

General: Thermostat Configuration

Understanding the Thermostat Screen

Disconnected sensor

How to fix it:

- Check sensor's batteries

- Check sensor's distance or if there is any large metal obstacle

Note: the d icon will disappear within 5min if new batteries are inserted and within 60 minutes if distance or metal obstacles issues are resolved.

Wireless connection

Shows up when the thermostat is disconnected and is searching for connection

Temperature display

Displayed in Fahrenheit by default, can also be set to Celsius, F will become C:

DOOR OR WINDOW IS OPEN
LOW BATTERY

d 72 F

HIGH
MEDIUM
AUTO LOW

HEAT
COOL

2 18c

Fan mode

Auto: fan speed automatically adjusted according to demand

High/Medium/Low: user set fan speed

Heat or cool mode

Thermostat displays its current operating mode.

General: Thermostat Configuration

Configuring the Thermostat

Prerequisites: During the installation training with your support agent you will be provided with: Mesh ID (provided by Verdant Support), Room Number, Time, Equipment Code.

To start with the configuration process, remove the faceplate of the thermostat and insert 2 AA batteries.
Turn on the thermostat and the HVAC unit to land on the setup screen (as shown above) and complete the below steps as per the instructions provided in the following pages of this user guide.

- Pair the thermostat with the HVAC Controller
- Set the MESH ID;
- Enter the room number;
- Enter the equipment code;
- Configure the energy saving settings;
- Set the thermostat clock

Note: If the thermostat does not display "SETUP" when first powering the device, then it has already been paired to an HVAC Controller, and this step should be skipped.

To continue with the configuration process, follow the steps listed on the next page.

General: Thermostat Configuration

Pairing the Thermostat with the HVAC Controller

Each wireless thermostat must be paired with an individual HVAC Controller during installation. The thermostat will search for the closest HVAC Controller to it 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 the F|C button once, the thermostat will initiate a thirty (30) second countdown with a blinking connectivity icon before displaying the HVAC Controller ID closest to it;
- Verify that the HVAC controller ID found by the thermostat matches the ID's last 5 digits listed on the HVAC controller in the same room.
- Press the F|C button to pair the thermostat with the HVAC Controller displayed on the screen. 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 FAN button to reject it and follow the bolded section below;
- If pairing is successful, wait 5-10 seconds and then press the F|C button to advance to the Mesh ID configuration page.

- **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.**
- **If no controller ID is found, "FAIL" will appear on the screen, press the ON/OFF button to get back to the initial setup screen.**

General: Thermostat Configuration

Setting the 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 (can also be found labeled on the 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 Online Connection Kit closest to it.

- Press the FAN button to advance to the next digit;
- Press the UP and DOWN buttons to increase or decrease the value;
- Press the F | C button to advance to the next step.

NOTE:
- **Press the UP and DOWN button to change the values**
- **Press the FAN button to navigate from left to right**

General: Thermostat Configuration

Entering the Room Number

Enter the room number by changing the characters on the 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

Press the FAN button to advance to the next digit;

Press the UP and DOWN buttons to increase or decrease the value;

Press the F|C button to advance to the next menu.

Entering the room number correctly is crucial for proper operation of thermostats with online management.

General: Thermostat Configuration

Configuring the Equipment Settings

Enter the equipment code by changing the digits on the screen. Refer to the table below.

- Press the FAN button to advance to the next equipment setting.
- Press the UP and DOWN buttons to increase or decrease the value;
- Press the F|C button to advance to the next menu.

The table below explains each digit of the equipment settings:

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

NOTE: Digit #3 Reversing Valve makes a difference ONLY when a Compressor Type (Digit#1) is set to Heat Pump (digit value 1).
Please refer to the next page for all equipment codes.

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

General: Thermostat Configuration

Equipment codes

Model description	Equipment code
FreshAire 12V Control*	6613
DSS	6643
VRP	6603
Heat Pump PTAC/VTAC with a reversing valve B and electric Heat with two fan speeds	1112
FreshAire PTAC 24V Control*	1012

* PTAC PVH models can connect either AC or DC control wiring:
PVH that finishes in -A connects to 24 V and runs with equipment code 1012;
PVH that finishes in -B might connect to 12 V and 24 V depending on the wiring
connection. If 12 V connected, runs on equipment code 6613. If 24 V is connected,
runs on equipment code 1012.

For more information on installation of the units see the pages below:

General: Thermostat Configuration

Configuring the Energy Saving Settings
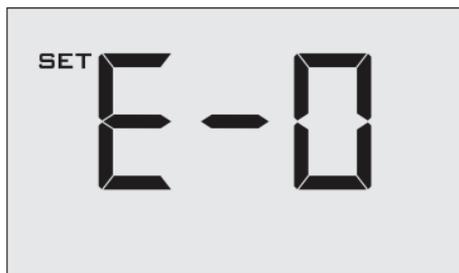
- Press the UP and DOWN buttons to increase or decrease the energy savings preset.
- Press the F|C button to advance to the next menu.

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

*Indicates default setting.

General: Thermostat Configuration

Setting the thermostat clock

Set the thermostat clock to current time in 24h (Military Time) format.

- Press the FAN button to advance to the next digit;
- Press the UP and DOWN buttons to increase or decrease the digits
- Press the F|C button once to go to the current room temperature screen.

SETTING THE CORRECT TIME IS CRUCIAL FOR PROPER OPERATION OF THE THERMOSTAT. IF YOU HAVE AAN ONLINE CONNECTION KIT, TIME WILL BE UPDATED AUTOMATICALLY

Setup is now complete.

General: Thermostat Configuration

Testing the Thermostat

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

- Ensure the thermostat is powered and the faceplate is on.
- Press the DOWN button to change the temperature set point below the current room temperature to confirm that the thermostat initiates air conditioning;
- Press the UP button to change the temperature set point above the current room temperature to confirm that the thermostat initiates heating;
- Change the fan speed by touching the FAN button to test if the thermostat is controlling the fan speed.

General: Configuring & Managing Accessories

Activating a Sensor

- Remove the faceplate from the thermostat and the sensor(s) to be paired in the room;
- Insert two (2) AAA-cell battery into each sensor (not supplied);
- Press the button inside the sensor to make the sensor discoverable;
- Move to the next step "Pairing a Sensor"

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 of making sensor(s) discoverable, repeat this step.

General: Configuring & Managing Accessories

Pairing a Sensor

Once the thermostat and HVAC unit are powered and the thermostat faceplate is removed, follow the sensor configuration instructions to correctly configure the sensors.

• Press and hold the config button on the thermostat to get to the Mesh ID screen.

SENS

• Then press and hold the config button again until SENS appears on the screen:

Note: The thermostat configuration screens have a 30-second time-out. If no action is taken within (30) seconds, the thermostat will exit configuration settings.

• Press the FAN button on the thermostat to initiate the pairing of a new sensor or press F I C to manage existing sensors. This will initiate a ten (10)

ACB

second countdown and display the last 5-digits of the sensor ID(s) discovered during the pairing procedure:

• Use the UP and DOWN buttons to toggle between discovered sensors;
• Ensure that the unique device ID displayed on the screen matches the unique device ID of the sensor you wish to configure.
• Press the F|C button to pair the selected sensor to the HVAC Controller.

General: Configuring & Managing Accessories

Verifying Sensor Connection Status and Unlinking Sensors

With the thermostat and HVAC unit powered;

- Remove the faceplate from the thermostat
- Press and hold the config button until the MESH ID appears on the screen;
- Press and hold the config button again until SENS appears on the screen;
- Press the F|C button. The Thermostat will initiate a ten (10) second countdown before displaying the number of linked sensors currently communicating with the thermostat (e.g. '01.02' means one (1) out of two (2) linked sensors is communicating with the thermostat;
- Press the F|C button. The thermostat will display the first linked sensor;
- Use the UP and DOWN buttons to cycle through linked sensors;
- After selecting the sensor to be unlinked, press and hold the CONFIG button. The thermostat will inititate a ten (10) second contdown before displaying the new number of linked sensors;
- Press the ON/OFF button to exit this configuration menu;
- Press the button on the sensor for three (3) seconds until a yellow light turns on. The sensor is now reset.

General: Configuring & Managing Accessories

Configuring the Functionality of a Sensor

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

- Press the F|C button to select the sensor;
- Then press the F|C button to move to the Occupancy Sensor configuration screen "OCC" and use the UP and DOWN buttons to increase or decrease the digit according to the below table;
- Press the F|C button to configure the Door Switch functionality "dS". Door switch functionality will be set to normally open (NO) or normally closed (NC) depending on the reed switch;
- Press the F|C button to configure the Temperature Sensor functionality "RT";
- Press the F I C button to move to the "ADD" screen;
- Press the FAN button to finalize the pairing.

Trailing Digit Value	OCC (Occupancy Sensor)	DWS (Door Switch)	RT (Temperature Sensor)
0	Disabled	Disabled	Disabled
1	Enabled	Normally Closed	Master
2		Normally Open	Average

General: Configuring & Managing Accessories

Completing the Sensor Setup

The thermostat will countdown from thirty (30) seconds. If the sensor has successfully paired, the thermostat will display SUCC. If the sensor did not pair successfully, the display will read FAIL, and the process must be repeated.

- Press the ON/OFF button to exit the sensor setup screen.
- Repeat the Sensor setup as many times as necessary.

DSS: Unit Specific Installations
Installing the HVAC Controller in Friedrich Ductless Split Systems for use with Friedrich Wifi capable Floating Air Pro/Premier Wall mounted or Cassette units.

Power Off the HVAC Unit;

Mount the wireless HVAC Controller on the top of the indoor HVAC unit;

Insert two supplied jumpers* into function selection pins 1-2,

and 4-5 of J5 of the wireless HVAC controller.

Connect the one end of the supplied wire harness to the J4 port on the HVAC Controller;
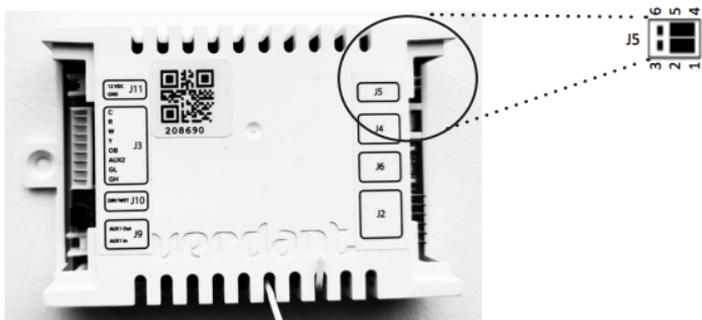
* a jumper has the following appearance

DSS: Unit Specific Installations

Installing the HVAC Controller in Friedrich Ductless Split Systems for use with Friedrich Wifi capable Floating Air Pro/Premier Wall mounted or Cassette units.

Disconnect the wifi module in the DSS Friedrich Pro/Premier Wall mount/ Cassette and connect to wireless card using the other end of the wire harness;

J4 Side   DSS Side
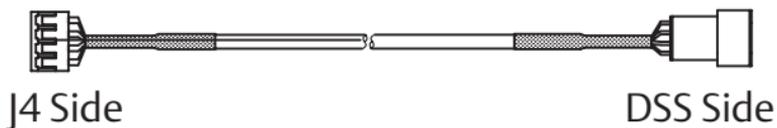
Mount the HVAC Controller next to the HVAC unit:

NOTE: For the DSS unit, the limitations for 5VDC apply: relay and analogue inputs/outputs are not working.

DSS: Thermostat Configuration
Configuring the Equipment Settings
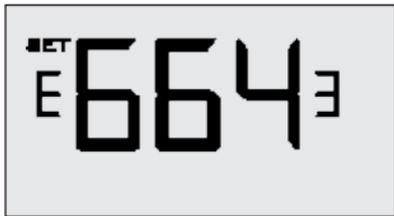
Enter the equipment code '6643' by changing the digits on the screen.

Press the FAN button to advance to the next equipment setting.
Press the UP and DOWN buttons to increase or decrease the value;
Press the F|C button to advance to the next menu.

After you have entered the equipment code, the t-stat will ask you for the source of the temperature reading. Temperature can be sensed by the thermostat (TS) or by a conditioning unit (AC) if a conditioning unit supports the option of reading temperature.

For DSS unit, AC is the default and only choice.

VRP: Unit Specific Installations

Installing the Wireless Receiver on a VRP® Unit

Mount the Receiver as high as possible. It MUST be higher than the VRP unit (top)
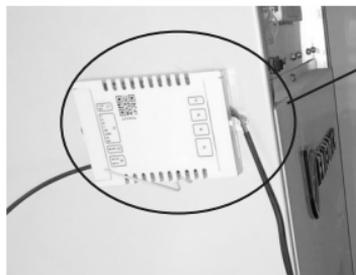
Placing the Wireless Receiver directly on the VRP unit is also acceptable.

Note: Depending upon the closet size, an appropriate length of Field Supplied CAT 6 cable will be required.

Note 2: Make sure the Wireless Receiver faces the Wall Controller and there are NO metal objects between the Receiver and the Controller.

VRP: Unit Specific Installations

Mounting the Wall Controller of the VRP to the Wall

Remove the Wall Controller cover;

Use the supplied wall anchors and mounting screws to secure the Wall Controller to the wall;

Insert two (2) AA-cell batteries (not-supplied) into the Wall Controller battery compartment;

Follow the "Wall Controller Configuration" instructions;

Replace the Wall Controller cover

The wireless thermostat can also be powered by providing 12 VDC from the J11 port of the wireless HVAC controller using the RED and BLACK wires as per picture below. If powering the thermostat using the back connector, do not insert batteries into the battery compartment.
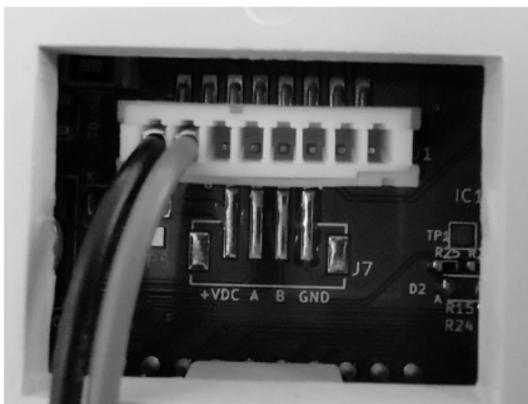
VRP: Unit Specific Installations

Installing the HVAC Controller in VRP Unit

Insert two supplied jumpers* into function selection pins 1-2,

and 4-5 of J5 of the wireless HVAC controller.

Connect the other end of the harness into the four VRP terminals.

Mount the wireless controller on the top of the VRP unit for better signal transmission (don't install inside the unit).

The connections are color coded as shown in the table below:

Wire Color	Terminal Letter
ORANGE	V+
BROWN	D+
BLUE	D-
GREEN	V-

J4 Side   VRP Side
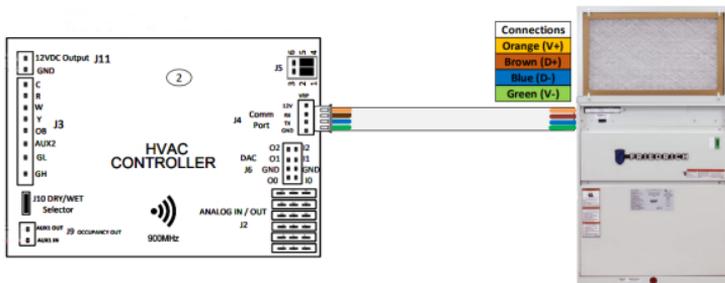
* a jumper has the following appearance

VRP: Thermostat Configuration

Configuring the Equipment Settings for VRP
Enter the equipment code '6603' by changing the digits on the screen.

Press the FAN button to advance to the next equipment setting.

Press the UP and DOWN buttons to increase or decrease the value;

Press the F | C button to advance to the next menu.

After you have entered the equipment code, the t-stat will ask you for the source of the temperature reading. Temperature can be sensed by the thermostat (TS) or by a conditioning unit (AC) if a conditioning unit supports the option of reading temperature.

Press the UP or DOWN buttons to choose the value TS (preferrable over AC).

FreshAire PTAC: Unit Specific Installations
Wireless Receiver Installation

FreshAire® PTAC Installation (Cat 6 to FreshAire® PTAC)

Note: Friedrich FreshAire® PTAC models with a SKU ending in 'A' are only compatible with 24V. Friedrich FreshAire® PTAC models with a SKU ending in 'B' and above are compatible with VRPXEMWRT3 thermostat.

- Connect one end of the Cat6 wire to the FreshAire® PTAC using the RJ45 port on the PTAC unit.

RJ45   PORT
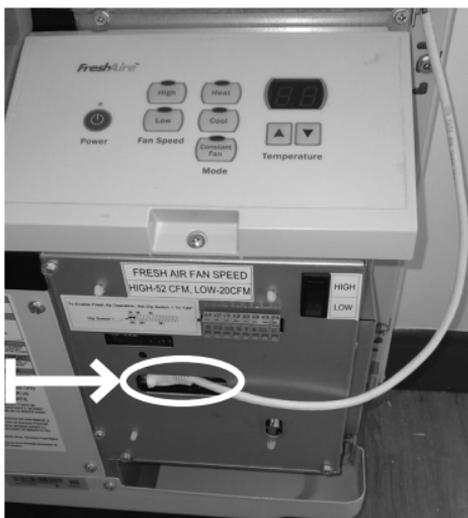
FreshAire PTAC: Unit Specific Installations

Installing the HVAC Controller for FreshAire PTAC Unit

Power Off the HVAC Unit;

Mount the wireless HVAC Controller on the top of the indoor HVAC unit;

Connect the one end of the supplied wire harness to the J4 port on the HVAC Controller;

Insert one of the supplied jumpers* into function selection pins 1-2, and 4-5 of J5 of the wireless HVAC controller.

Connect the J4 harness into the J4 port on the right side of the wireless controller.

Insert the 2 provided jumpers into pin terminals 1-2 and 4-5 of the J5 port.
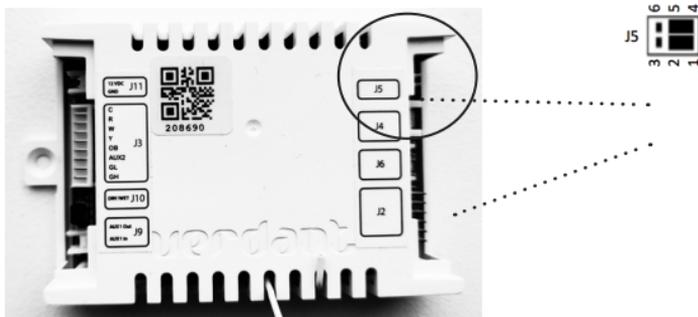
* a jumper has the following appearance

FreshAire PTAC: Thermostat Configuration

Configuring the Equipment Settings

Enter the equipment code '6613' by changing the digits on the screen.

> Press the FAN button to advance to the next equipment setting.
>
> Press the UP and DOWN buttons to increase or decrease the value;
>
> Press the F|C button to advance to the next menu.
>
> The t-stat will also ask you which device is responsible for temperature reading, Use the value TS not AC.

> After you have entered the equipment code, the t-stat will ask you for the source of the temperature reading. Temperature can be sensed by the thermostat (TS) or by a conditioning unit (AC) if a conditioning unit supports the option of reading temperature.
>
> Press the UP or DOWN buttons to choose the value TS (preferrable over AC).

General: Vert-I-Pak / PTAC T-stat Installation

Mounting the Wireless Control Card

- Unplug the PTAC/Vert-I-Pak* unit from power supply

- Connect the low voltage wires to screw terminals on the PTAC/Vert-I-Pak* unit low voltage terminal block - refer to the Wiring Table below.

- Mount the Friedrich HVAC Controller on top of the PTAC/Vert-I-Pak* unit. Ensure that the Wireless Control Card antenna is not touching any metal components of the PTAC/Vert-I-Pak* unit.

- Ensure the Wireless Friedrich HVAC Controller Antenna is facing the thermostat on the wall and is oriented so that any metal parts of the PTAC/ Vert-I-Pak* unit do not obstruct the wireless communication to the thermostat and, in case of a network installation, to other wireless control cards and the server.

- Ensure that the Friedrich HVAC Controller is secured and cannot fall into the PTAC/ Vert-I-Pak* unit Condensation Pan.

- Plug in the PTAC/Vert-I-Pak* unit to power supply.

Wiring Table - 24V AC

Wire Color	Terminal Letter	Terminal Connection
Black	C	Common
Red	R	24V
Yellow	Y	Compressor
White	W	Heat
Orange	O or B	Reverse Valve
Green	GH	Fan High
Purple	GL	Fan Low

NOTE: If the PTAC/Vert-I-Pak* unit has only one (1) fan speed, connect both fan control wires – Green and Purple – to the fan terminal (G).

Vert-I-Pak/ PTAC

* Friedrich HVAC Controller should never be installed inside the metal electrical control enclosure/ box of the PTAC/Vert-I-Pak unit. Failure to comply will result in obstruction to the wireless communication.

General: Vert-I-Pak /PTAC T-stat Installation

For wiring instructions, please see the table below:

HVAC Controller 24VAC 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	24VAC	Heat	Cool	Reverse Valve	Aux2 Signal	Fan Low	Fan High	OCC
NOTE: Functionality may change due to equipment code								

For the most common equipment codes for PTAC models, please see the table below:

Model with:	Equipment Code
PTAC Single stage Heat/Cool units, with two fan speeds	2102
Heat Pump PTAC with a reversing valve B and electric Heat with two fan speeds	1112

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

General: Custom Energy Savings Settings

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

Accessing the Custom Energy Savings Settings

- Ensure the thermostat is powered and faceplate removed;
- Press and hold the config button to get to the Mesh ID screen.
- Press the F | C button to navigate to the Energy Saving Settings screen:
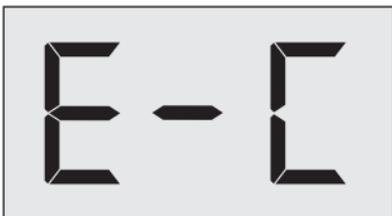
- From the Energy Savings Settings screen, press and hold the config button until the first custom energy saving settings screen appears:

General: Custom Energy Savings Settings

Using the Thermostat Settings Screens
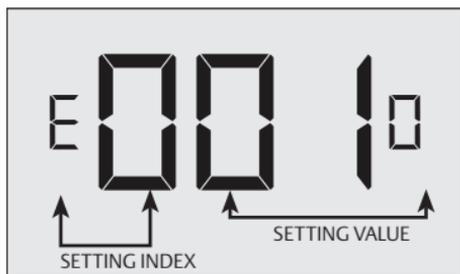
- Use the "Up" and "Down" buttons to select the desired 'index setting'.
- Press the "Config" button to edit the value of the 'index setting';
- Use the "Up" and "Down" buttons to change the 'setting value' (see Custom energy saving settings section for more info and Min-Max values).
- Press the "Fan" button to temporarily store the 'setting value'.
- Press the "Fan" button to save the profile and exit the Custom Energy Savings Settings.
- To discard the changes, press the "On/Off" button at any time.

General: Custom Energy Savings Settings

Setting Index	Max	Min
E1	0	1
E2	70	02
E3	70	05
E4	70	02
E5	20	00
E6	60	00
E7	60	00
E8	23	00
E9	23	00
10	60	00
11	82	62
12	120	00
13	72	52
14	92	72
15	82	62
16	90	60
17	90	60
18	01	00
19	05	00
20	01	00
21	01	00
22	NA	NA

General: Custom Energy Savings Settings

Setting Index	Max	Min
23	20	04
24	01	00
25	30	05
26	01	00
27	70	55
28	75	65
29	NA	NA
30	01	00
31	60	01
32	08	02
33	10	02
34	50	-50
35	02	00
36	01	00
37	02	00

General: Custom Energy Savings Settings

01 – FAN CONTROL MODE

E 1001

Select Fan Control Mode:

00 *   NON-Continuous - fan runs only when there is a demand for heating or air conditioning with auto adjustable fan speed;

01   CONTINUOUS - fan runs continuously when thermostat is on

*   Indicates default setting;

General: Custom Energy Savings Settings

02 – 1ˢᵀ STAGE DIFFERENTIAL - HEAT

02-30 (0.2°F - 3.0°F; 0.5°F* default setting) Select the number of degrees 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.

General: Custom Energy Savings Settings

03 – 2ND STAGE DIFFERENTIAL - HEAT ^{}*

E**302**o

10-20 (1.0°F - 2.0°F*; 2.0°F* default setting) Select the difference 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.

*   If applicable.

General: Custom Energy Savings Settings

04 – 1ST STAGE DIFFERENTIAL - COOL

02-30 (0.2°F - 3.0°F; 0.5°F* default setting) Select the number of degrees 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.

General: Custom Energy Savings Settings

05 – INCIDENTAL OCCUPANCY THRESHOLD

$_E 500 _S$

00-60 (05* default setting) Select the minimum period of time (in minutes) for which occupancy needs to be detected to enter the guest occupancy mode.

When occupancy is detected, thermostat will switch to occupied mode for a duration of "Incidental Occupancy Threshold" selected here.

If occupancy is detected for a period of time shorter than the "Incidental Occupancy Threshold" selected here, 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 here, 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.

General: Custom Energy Savings Settings

06 – NIGHT OCCUPANCY THRESHOLD

$$E\ 600\ \iota$$

00-60 (01* default setting) Select the minimum period of time (in minutes) for which occupancy needs to be detected in order to consider the room occupied during the "Night Occupancy" period.

When occupancy is detected during the "Night Occupancy Period" for longer than the "Night Occupancy Threshold" selected here, the thermostat will instantaneously switch to occupied mode.

If occupancy is detected for a period of time shorter than the "Night Occupancy Threshold" selected here, 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 here, 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.

General: Custom Energy Savings Settings

07 – FORCED 2ND STAGE HEATING [*]

00-60 (30[*] default setting) 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 00 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.

[*]   If applicable.

General: Custom Energy Savings Settings

08 – NIGHT OCCUPANCY START

$E \; \boldsymbol{802} \; \mathsf{I}$

00-23 (21* default setting) Select the start time (in hours - 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".

General: Custom Energy Savings Settings

09 – NIGHT OCCUPANCY END

00-23 (09* default setting) Select the time (in hours - 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.

General: Custom Energy Savings Settings

10 – TEMPERATURE RECOVERY TIME

00-60 (25* default setting) Select the maximum time allowed for a HVAC unit to attain temperature as defined by Heat and Cool "Recovery Temperature";

"Temperature Recovery Time" selected here 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 ensure that 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 "00", disables temperature recovery. When temperature recovery is disabled, thermostat will use the Minimum and Maximum Setback Temperatures as setback set points.

General: Custom Energy Savings Settings

11 – RECOVERY TEMPERATURE - HEAT

62-82 (67°F* default setting) 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 heating.

If recovery is disabled ("Temperature Recovery Time" is set to "0") or if setback temperatures have not yet been calculated, the "Recovery Temperature - Heat" value will be used as the setback temperature for heating.

General: Custom Energy Savings Settings

12 – TEMPERATURE SETBACK DELAY

00-120 (20* default setting) 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 "00", disables the setback in the heat mode. Set to "00" to disable EMS.

General: Custom Energy Savings Settings

13 – MINIMUM SETBACK TEMPERATURE - HEAT

52-72 (64°F* default setting) Select the "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 "0") 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.

General: Custom Energy Savings Settings

14 – MAXIMUM SETBACK TEMPERATURE

72-92 (78°F* default setting) 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 "0") 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.

General: Custom Energy Savings Settings

15 – RECOVERY TEMPERATURE - COOL

62-82 (74°F* default setting) 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.

General: Custom Energy Savings Settings

64-84 (66°F* default setting) Select the minimum set point in °F that a guest can select.

General: Custom Energy Savings Settings

17 – MAXIMUM SET POINT

60-82 (78°F* default setting) Select the maximum set point in °F that a guest can select.

General: Custom Energy Savings Settings

18 – TEMPERATURE CONTROL MODE

Select Temperature Control Mode:

00   MANUAL - Allows users to select HEAT only or COOL only temperature control mode to maintain the room temperature;

01 *   AUTOMATIC - Thermostat automatically turns on heating or air conditioning to maintain the room temperature at the selected temperature set point;

*   Indicates default setting;

General: Custom Energy Savings Settings

19 – AUTO CHANGEOVER SET POINT OFFSET

00-04 (01°F* default setting) 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 02 and 04,
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 order to avoid the
system from bouncing back and forth between heating and cooling
under normal operating conditions.

General: Custom Energy Savings Settings

20 – SETBACK SET POINTS

00   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;

01*   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.

*   Indicates default setting;

General: Custom Energy Savings Settings

21– AUTO-RESTORE

00   When guest enters the room, the thermostat will be turned off - it will not automatically restore the most recent guest settings;

01 *   When guest enters the room, the thermostat will automatically restore the most recent guest settings;

*   Indicates default setting;

General: Custom Energy Savings Settings

22 – The setting is reserved for the internal functions.
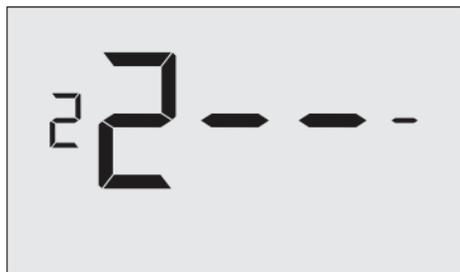
General: Custom Energy Savings Settings

23 – SETPOINT OVERSHOOT

04-20 (0.6°F* default setting) Select the °F of overshoot above or below the setpoint on the thermostat before the thermostat stops the call for cooling or heating.

General: Custom Energy Savings Settings

24 – AUTOMATIC HUMIDITY CONTROL†

00 *   Disable automatic humidity control;
01   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;

*   Indicates default setting;

†   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.

       Certain models only. Additional fees apply.

General: Custom Energy Savings Settings

25 – 2ND STAGE COOL DIFFERENTIAL *

```
 ₂ 5 0 2 ₀
```

05-30 (2.0°F* default setting) Select the °F differential required to trigger 2nd stage cooling ().

This also applies as the 3rd and 4th stage differential on top of the 2nd when there are more than 2 stages.

*   If applicable;

General: Custom Energy Savings Settings

26 – SMART SETBACK

00 *   Smart Setback disabled;
01   Smart Setback enabled;

Smart setback reduces the excessive heating or cooling that may occur
when occupants set their thermostats to setpoints outside of the norm.
Occupant setpoint that is greater than Cool Setback or less than Heat
Setback will be respected during setbacks to save energy.

General: Custom Energy Savings Settings

27 – HUMIDITY CONTROL THRESHOLD

55-70 (60* default setting) Select the relative humidity level that automatic humidity control will attempt to control for in conjunction with the humidity cut-off temp.

General: Custom Energy Savings Settings

28 – HUMIDITY CUTOFF TEMPERATURE

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²807²
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65-75 (72°F* default setting) Select the temperature at which humidity control
will shut off.

General: Custom Energy Savings Settings

29– The setting is reserved for the internal functions.
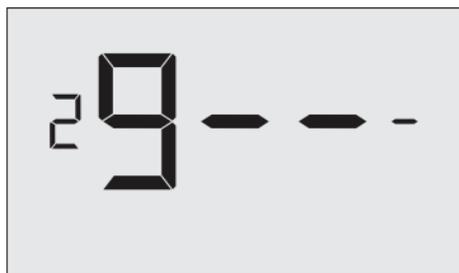
General: Custom Energy Savings Settings

30– ENERGY MANAGEMENT ON/OFF

00   Energy management disabled;
01 *   Energy management enabled.

*   Indicates default setting;

General: Custom Energy Savings Settings

31– DOOR/WINDOW SHUT OFF DELAY

01-60 (2* default setting) Select the time delay (in minutes) before the thermostat disables air conditioning when a door or window sensor has been installed.

General: Custom Energy Savings Settings

32– AUTO FAN SPEED 1ST STAGE DIFFERENTIAL

02-08 (2°F* default setting) Select the °F differential between Low Fan and 2nd stage fan (Medium or High) when Auto-Fan Speed is selected.

General: Custom Energy Savings Settings

33– AUTO FAN SPEED 2ND STAGE DIFFERENTIAL

02-10 (4°F* default setting) Select the °F differential between Medium and High Fan when Auto-Fan Speed is selected (only active if 3 fan speeds are available).

General: Custom Energy Savings Settings

34 – TEMPERATURE CALIBRATION

-5.0 – 5.0 (0.0°F* default setting) Calibrate the temperature display : -5.0°F - 5.0°F.

General: Custom Energy Savings Settings

01 *   Standard Auto Mode - The thermostat will apply the deadband on the guest setpoint and control temperature with the guest setpoint as the median;

02   Changover 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;

*   Indicates default setting;

General: Custom Energy Savings Settings

36 – HUMIDITY CONTROL IN AN OCCUPIED ROOM

00	Humidity control OFF - The thermostat will disable humidity control when the room is occupied;
01	Humidity control ON - The thermostat will enable humidity control even when the room is occupied.

General: Custom Energy Savings Settings

37 – HEAT EQUIPMENT LOCKOUT

00 Equipment lockout is disabled (default) - The thermostat will enable both compressor and electric heat;

01 Compressor lockout - If set to 1, the Thermostat will only allow electric heat;

02 Electric heat lockout - If set to 2, the Thermostat will only allow compressor heat.

General: Thermostat Maintenance

Replacing Thermostat Batteries

The low battery indicator will be displayed on the thermostat screen when it is necessary to replace batteries in the thermostat.

Under normal operating conditions, new brand-name alkaline batteries will last for a period of approximately eighteen (18) months.

Please replace batteries every sixteen (16) months to ensure continuous thermostat operation.

To replace thermostat betteries:

- Remove the thermostat cover;
- Replace the two (2) AA-cell batteries (not supplied);
- Re-affix the thermostat cover;
- Press the ON/OFF button to start using the thermostat.

NOTE: The thermostat maintains all the "Thermostat Configuration" settings in non-volatile memory. There is no need to configure the thermostat again after battery replacement.

General: Errors

Errors that might appear

Appearance	Description
Connectivity Symbol on the screen	The thermostat and HVAC controller are disconnected. Make sure the HVAC Controller is powered and installed. Optimize antenna placement to ensure unhindered signal transmission around metallic barriers/obstacles.
Door or Window is Open	Close the Door/Window
Low Battery	Change the battery
E2205	Stuck Button, open the cover, fix the rubber underneath the buttons and put the cover back. Make sure you get tactical feedback from every button.
E0FFE	Connection error, check the wiring and installation process.

General: Troubleshooting

Restoring Factory Settings

If there are reported errors or configuration issues, the user may restore factory settings to return the thermostat to its default parameters.

Procedure

- Remove the faceplate from the thermostat;
- Make sure you are on the temperature screen
- Press and hold the CONFIG button located on the control board inside the thermostat to move to the MESH ID screen.
- Press F I C to reach the thermostat equipment type configuration screen;
- Press and hold the CONFIG button until the thermostat displays "RST", then press the F|C button.
- If the master reset was successful, the thermostat will display SETUP after three (3) seconds and the thermostat must be re-configured. Refer to the thermostat configuration section of this manual.

Contact Friedrich technical support if the issues are not resolved.

APPENDIX 1 - Energy Saving Presets

Bolded values below indicate the factory default profile*

	Setting Index	Level 0*	Level 1	Level 2	Level 3	Level 4	Level 5
Fan Control Mode	**E1**	**AUTO**	AUTO	AUTO	AUTO	AUTO	AUTO
1st Stage Differential Heat	**E2**	**0.5**	0.5	0.5	0.5	0.5	0.5
2nd Stage Differential Heat	**E3**	**1.0**	1.0	1.0	2.0	2.0	2.0
1st Stage Differential Cool	**E4**	**0.5**	0.5	0.5	0.5	0.5	0.5
Guest Occupancy Threshold	**E5**	**0**	5	5	5	5	5
Night Occupancy Threshold	**E6**	**1**	1	1	1	1	1
Force 2nd Stage Heating After	**E7**	**30**	30	30	30	30	30
Night Occupancy Start	**E8**	**18**	19	20	21	22	23
Night Occupancy End	**E9**	**12**	11	10	9	8	7
Temperature Recovery Time	**10**	**0**	15	20	25	30	0
Recovery Temperature Heat	**11**	**70**	69	68	67	66	65
Temperature Setback Delay	**12**	**0**	30	25	20	15	10
Minimum Setback Temperature	**13**	**67**	66	65	64	63	62
Maximum Setback Temperature	**14**	**72**	74	76	78	80	82
Recovery Temperature Cool	**15**	**71**	72	73	74	75	76
Minimum Set point	**16**	**64**	64	65	66	67	68
Maximum Set point	**17**	**82**	82	80	78	76	74
Temperature Control Mode	**18**	**AUTO**	AUTO	AUTO	AUTO	AUTO	AUTO
Auto Changeover Set Point Offset Dead Band)	**19**	**1**	1	1	1	1	1

APPENDIX 1 - Energy Saving Presets

	Setting Index	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Setback Set Points	20	OFF	ON	ON	ON	ON	ON
Auto Restore	21	OFF	ON	ON	ON	ON	ON
N/A - reserved for internal function	22						
Setpoint Overshoot	23	0.6	0.6	0.6	0.6	0.6	0.6
Automatic Humidity Control	24	OFF	OFF	OFF	OFF	OFF	OFF
2nd Stage Cool Differential	25	1.0	1.0	1.0	2.0	2.0	2.0
Smart Setback	26	OFF	OFF	OFF	OFF	OFF	OFF
Humidity Control Threshold	27	60	60	60	60	60	60
Humidity Cutoff Temperature	28	72	72	72	72	72	72
N/A - reserved for internal function	29						
Energy Management On/Off	30	OFF	ON	ON	ON	ON	ON
Door/Window Shutoff Delay	31	2	2	2	2	2	2
Auto Fan Speed 1st Stage Differential	32	2	2	2	2	2	2
Auto Fan Speed 2nd Stage Differential	33	4	4	4	4	4	4
Temperature Calibration	34	0.0	0.0	0.0	0.0	0.0	0.0
Automode Type	35	STD	STD	STD	STD	STD	STD

APPENDIX 2 - Glossary

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

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

"Minimum Set point" - minimum temperature that a occupant can request;

"Maximum Set point" - maximum temperature that a occupant can request;

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

"1st Stage Differential - Heat" - the amount of degrees the Wall Controller 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;

"1st Stage Differential - Cool" - the amount of degrees the Wall Controller has to sense between the automatic changeover temperature for cool and the room temperature before a call for the 1st stage cooling is initiated;

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

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

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

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

"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;

"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;

"Auto Restore On" - Wall Controller will restore the most recent occupant settings when new occupancy is detected;

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

"Setback Set points On" - Wall Controller will maintain setback temperatures when room is unoccupied;

"Setback Set points Off" - Wall Controller will NOT maintain setback temperatures when room is unoccupied;

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

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

"Temperature Setback" - Wall Controller maintains setback temperatures and not the occupant set point temperature in order to save energy;

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

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

Warranty Information

**For the most recent warranty information, please visit
www.friedrich.com.**

Technical Specifications

Product Type	Thermostat
SKU(s)	DSSXEMWRT3 VRPXEMWRT3 EMWRT3
Wireless Frequency	902-928MHz (NA)
Case Dimensions (Imperial)	4.02 x 5.51" x 0.93"
Case Dimensions (Metric)	102mm x 140mm x 23.5mm
Screen Dimensions (Imperial)	3.63" x 2.13"
Screen Dimensions (Metric)	92mm x 54mm
Operating Voltage	2 1.5VDC AA Alkaline Non-rechargeable Batteries - Not Supplied
Control Outputs (24VAC) (1.5A maximum per terminal, 2.5A maximum all terminals combined)	N/A
Power Supply Outlet	N/A
Occupancy Sensor Beam Width	±47° (94°)
Temperature Accuracy	±1°F
Enclosure Material	ABS
Ambient Operating Temp	32°F -105°F | 0 - 41°C
Internet Connectivity	N/A
FCC ID	XEYWX-DB
IC	8410A-WXDB

Technical Specifications

Product Type	HVAC Controller	Gateway
SKU(s)	HVAC Controller for DSSXEMWRT3 HVAC Controller for VRPXEMWRT3 HVAC Controller for FreshAire	EMOCT3
Wireless Frequency	902-928MHz (NA)	N/A
Case Dimensions (Imperial)	4.08" x 2.76" x 1.02"	4.72" x 3.15" x 1.18"
Case Dimensions (Metric)	104mm x 70mm x 26mm	120mm x 80mm x 30mm
Screen Dimensions (Imperial)	N/A	N/A
Screen Dimensions (Metric)	N/A	N/A
Operating Voltage	24VAC (20-30VAC)	12VDC (9-15VDC) 5VDC*	12VDC 1.5A
Control Outputs (24VAC) (1.5A maximum per terminal, 2.5A maximum all terminals combined)	Fan High (GH) Fan Low (GL) Compressor (Y) Heat Pump (OB) Electric Heat (W2) Occupancy Out (AUX1)	N/A
Power Supply Outlet	12VDC @ 0.05A (Max)	
Occupancy Sensor Beam Width	N/A	
Temperature Accuracy	±1°F	
Enclosure Material	ABS	Extruded Aluminum
Ambient Operating Temp	32°F -105°F | 0 - 41°C	32°F -105°F | 0 - 41°C
Internet Connectivity	N/A	100M/1000M Base-T Ethernet
FCC ID	XEY-ZX-LV	
IC	8410A-ZX-LV	

* certain functions are not available with 5VDC input

Technical Specifications

Product Type	Root Node	Sensors
SKU(s)	Root Node for EMOCT3	EMRWOS3 EMRWTS3 EMRWDS3
Wireless Frequency	902-928MHz (NA)	902-928MHz (NA)
Case Dimensions (Imperial)	2.4" x 1.54" x 0.78"	1.82" x 2.4" x 0.74"
Case Dimensions (Metric)	46mm x 61mm x 19mm	46mm x 61mm x 19mm
Screen Dimensions (Imperial)	N/A	N/A
Screen Dimensions (Metric)	N/A	N/A
Operating Voltage	+5VDC (nom.)	2 1.5VDC AAA Alkaline Non-rechargeable Batteries - Not Supplied
Control Outputs (24VAC) (1.5A maximum per terminal, 2.5A 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	±1°F
Enclosure Material	ABS	ABS+PC (TAIRILOY® AC3100 (Formosa Chemicals & Fibre Corporation))
Ambient Operating Temp	32°F -105°F	0 - 41°C	32°F -105°F	0 - 41°C
Internet Connectivity	N/A	
FCC ID	XEY-ZX-RN	XEYZ9RF
IC	8410A-ZXRN	8410A-Z9RF

FC 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 isotroperayonnéeequivalente (p.i.r.e.) ne dépassepasl'intensiténécessaire à l'établissementd'une communication satisfaisante.

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