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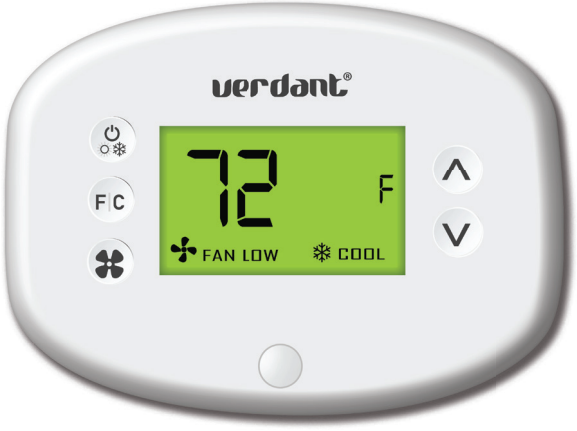
verdant®

VX-TW-KT-W

VX Series Wireless Thermostat with an Occupancy Sensor



INSTALLATION MANUAL

V.1 JULY 2018

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Introduction

Verdant VX Series Energy Management Thermostats for the hospitality industry deliver unprecedented energy savings without compromising guest comfort.

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 hospitality HVAC system with up to 2 heat and 1 cool stages.

Built-in wireless mesh-networking enables online management.

NOTICE

FOR INSTALLATION OF THERMOSTATS WITH NETWORKING CAPABILITIES, REFER TO THE "VX-TW NETWORK INSTALLATION" MANUAL.

BEFORE INSTALLING THERMOSTATS, CONFIRM WITH A VERDANT TECHNICAL SUPPORT AGENT THAT THE SERVER IS CONNECTED TO THE INTERNET BY CALLING 1 877 318 1823.

DO NOT INSTALL THERMOSTATS IF THE SERVER IS NOT CONNECTED TO THE INTERNET. STOP THE INSTALLATION AND CONTACT VERDANT TECHNICAL SUPPORT FOR FURTHER DIRECTION.

Before You Begin

➤ Determine the appropriate installation location for the thermostat.

THE THERMOSTAT SHOULD FACE THE BED AREA OF THE ROOM.

THE THERMOSTAT MUST NOT BE INSTALLED NEAR OR ON METAL STRUCTURES OR SURFACES INCLUDING METAL AIR DUCTING THAT MAY BE IN THE WALL.

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

➤ Set the HVAC unit to "External Thermostat" (Class 2) mode. Consult the HVAC unit documentation to determine how to set the HVAC unit to "External Thermostat" mode.

➤ Consult the HVAC manufacturer's documentation or use a voltmeter to determine if the HVAC unit outputs AC or DC power (24V).

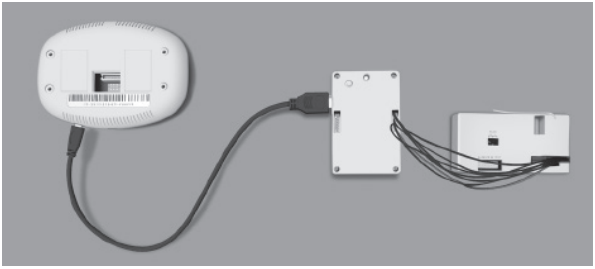
If the HVAC unit outputs AC power, make sure that the jumper on the Wireless Control Card is in the AC position - jumper is connecting "R" and "COM" pins (Default).

If the HVAC unit outputs DC power, make sure that the jumper on the Wireless Control Card is in the DC position - jumper is connecting "COM" and "C" pins.

Before You Begin

Pairing the Thermostat and the Control Card

The thermostat and Control Card must be paired in order to operate together. Once paired, the thermostat cannot be used with another wireless control card without repeating the pairing procedure.



In case of Network Installation with online management, the thermostat and the Control Card must be paired with a Network Programmer specific to the property before the installation.

The thermostat and control card must not be powered during the pairing procedure - remove batteries from the thermostat and unplug the control card from the HVAC unit during the pairing procedure.

- ➤ Plug one programmer connector into the thermostat;
- ➤ Plug the other programmer connector into the control card;
- ➤ Push the black button on the programmer. The red light on the programmer should turn on and remain steadily lit;
  If the red light on the programmer is blinking or is not steadily lit, unplug the programmer from the thermostat and the control card and repeat the steps above.
- ➤ Unplug the programmer from the thermostat and the control card;

Thermostat Installation

Installing the Wireless Control Card

- ➤ Power Off HVAC unit;
- ➤ Connect the control card to the thermostat terminals on the HVAC unit - refer to the Wiring Table to determine proper connections.
- ➤ Mount the control card inside of the HVAC unit.

THE WIRELESS CONTROL CARD ANTENNA MUST NOT BE TOUCHING ANY METAL COMPONENTS OF THE HVAC UNIT.

THE WIRELESS CONTROL CARD ANTENNA MUST FACE THE THERMOSTAT ON THE WALL AND BE ORIENTED SO THAT ANY METAL PARTS OF THE HVAC 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.

THE WIRELESS CONTROL CARD MUST NOT BE PLACED IN THE HVAC UNIT CONDENSATION PAN AND MUST BE MOUNTED SO IT CANNOT FALL INTO THE HVAC UNIT CONDENSATION PAN.

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
Brown	AUX	Occupany Out

Wiring Table - 24V DC

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

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

Thermostat Installation

➤ Power On the HVAC unit.

Mounting the thermostat to the wall

➤ Remove the thermostat cover;

➤ Use the supplied wall anchors and mounting screws to secure the thermostat to the wall;

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

➤ Follow the "Thermostat Configuration" instructions;

➤ Replace the thermostat cover and screw in the locking screw;

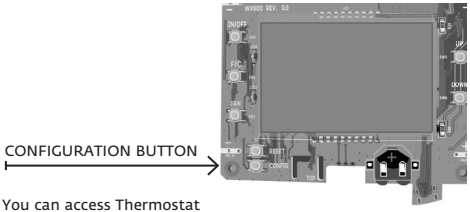
Thermostat Configuration

Once the thermostat is powered, thermostat configuration settings will appear on the thermostat screen.

In order to properly operate the HVAC unit:

- ➤ Set the thermostat clock;
- ➤ Enter the room number;
- ➤ Configure the equipment settings;
- ➤ Select Energy Savings Preset;

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

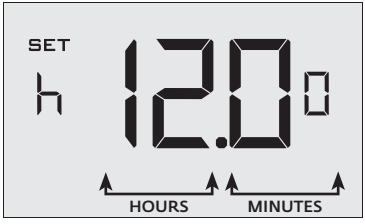


NOTE: You can access Thermostat Configuration settings at any time by pressing the "Configuration" button.

NOTE: If the thermostat is connected to a network, the equipment and the energy saving settings configured on the thermostat will be ignored and the settings configured online will be applied.

Thermostat Configuration

Setting the thermostat clock



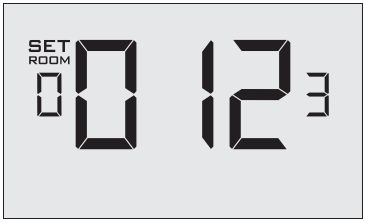
Set the thermostat clock to current time in 24h (Military Time) format.

- ➤ Use the "Up" and "Down" buttons to set the hours;
- ➤ Press the "Fan" button to advance to the minutes setting;
- ➤ Use the "Up" an "Down" buttons to set the minutes;
- ➤ Press the "F/C" button to advance to the next menu;

Setting the clock correctly is crucial for proper operation of the thermostat.

Thermostat Configuration

Entering the room number



Enter the room number by changing the digits on the screen. Leading zeros "0" preceding other digits will be ignored, i.e. Room number "123" should be entered as "00123".

- ➤ Use the "Up" and "Down" buttons to change the digit;
- ➤ Press the "Fan" button advance to the next digit;
- ➤ Press the "F/C" button to advance to the next menu;

Entering the room number correctly is crucial for proper operation of remotely managed thermostats.

Thermostat Configuration

Configuring the Equipment Settings - Compressor Type

➤ Use the "Up" and "Down" buttons to change the compressor type by changing the first digit;

0 No Compressor

1 Heat Pump

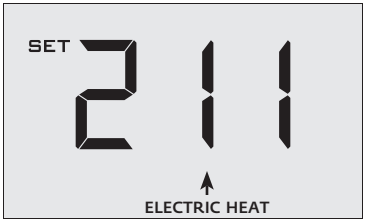
2* Air Conditioner

➤ Press the "Fan" button to advance to the next setting;

* Indicates default setting;

Thermostat Configuration

Configuring the Equipment Settings - Electric Heat



➤ Use the "Up" and "Down" buttons to change the Electric Heat setting by changing the second digit;

0 No Electric Heat

1* Electric Heat

➤ Press the "Fan" button to advance to the next setting;

* Indicates default setting;

Thermostat Configuration

Configuring the Equipment Settings - Reversing Valve

➤ Use the "Up" and "Down" buttons to change the Reversing Valve setting by changing the third digit;

0 OB contact is energized to cool;

*1** OB contact is energized to heat;

Refer to the HVAC unit documentation to determine the correct OB VALVE setting.

If incorrect OB VALVE Setting is selected, the HVAC unit will turn on the heating when air conditioning is requested and turn on the air conditioning when heating is requested;

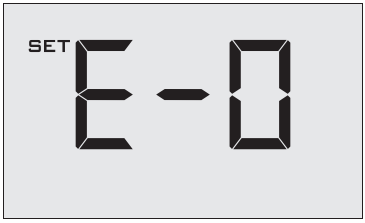
➤ Press the "Fan" button to advance to the next setting;

➤ Press the "F/C" button to advance to the next menu;

* Indicates default setting;

Thermostat Configuration

Configuring the Energy Saving Settings



➤ Use the "Up" and "Down" buttons to select the Energy Saving preset:

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;
	Refer to the APPENDIX 1 for Energy Saving Preset details.
E-C	Indicates "Custom Energy Savings Settings" in case the active thermostat savings settings differ from any Energy Saving preset;
	For details, refer to the "Custom Energy Savings Settings" section;

➤ Press the "Power" button to save the Thermostat Configuration and start using the thermostat;

* Indicates default setting;

Thermostat Configuration

Testing the thermostat

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

- ➤ Press the "Power" button to turn the thermostat 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.

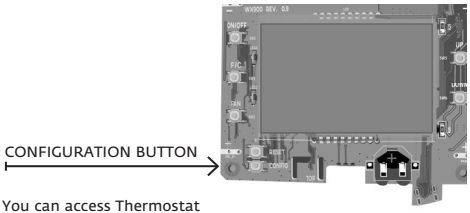
Custom Energy Savings Settings

If you don't want to use the one of the energy saving presets, you can enter custom energy savings settings.

Accessing the Thermostat Settings

➤ Press and hold the "Configuration" button until the first thermostat settings screen appears.

The thermostat must be turned on to access the thermostat settings.



NOTE: You can access Thermostat Configuration settings at any time by pressing the "Configuration" button.

NOTE: If the thermostat is connected to a network, the equipment and the energy saving settings configured on the thermostat will be ignored and the settings configured online will be applied.

➤ Use the "Up" and "Down" buttons to change the setting;

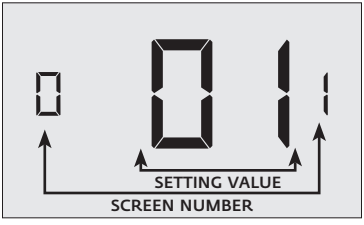
➤ Press the "F/C" button to advance to the next setting;

➤ Press the "Fan" button to return to the previous setting;

➤ Press the "Power" button to save and exit thermostat settings;

Custom Energy Savings Settings

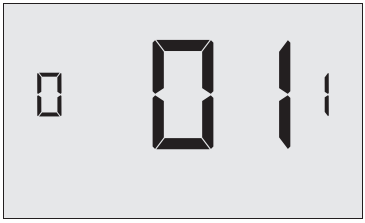
Using the Thermostat Settings Screens



- ➤ Use the "Up" and "Down" buttons to change the setting;
- ➤ Press the "F/C" button to advance to the next setting;
- ➤ Press the "Fan" button to return to the previous setting;
- ➤ Press the "Power" button to save and exit thermostat settings;

Custom Energy Savings Settings

01 – FAN CONTROL MODE

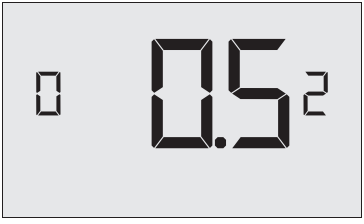


Select Fan Control Mode:

00	MANUAL - guest can select automatic or continuous fan mode;
*01**	AUTOMATIC - fan runs only when there is a demand for heating or air conditioning;
*	Indicates default setting;

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.

Custom Energy Savings Settings

03 – 2ND STAGE DIFFERENTIAL - HEAT

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.

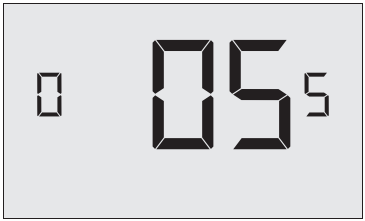
Custom Energy Savings Settings

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.

Custom Energy Savings Settings

05 – INCIDENTAL OCCUPANCY THRESHOLD



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.

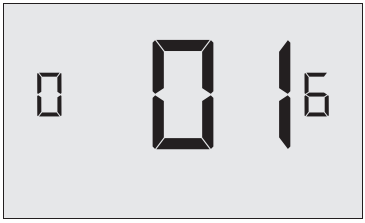
When occupancy is detected, thermostat will switch to occupied mode for a duration of "Incidental Occupancy Threshold" selected here.

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.

Custom Energy Savings Settings

06 – NIGHT OCCUPANCY THRESHOLD



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.

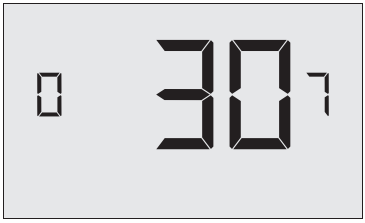
If occupancy is detected for a period of time shorter than the "Night Occupancy Threshold" selected here, the thermostat will automatically revert to unoccupied mode and continue to observe energy saving functions that were in effect before the room became occupied.

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.

Custom Energy Savings Settings

07 – FORCED 2ND STAGE HEATING



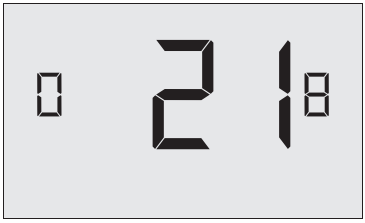
00-60 (30* default setting) Select a number of minutes 1st stage heating will run before 2nd stage heating is automatically initiated if the guest set point is not reached and the 2nd stage heating is not initiated through differential settings.

This feature allows automatically turning on 2nd stage heating to avoid excessive compressor use.

Set to *00* to disable the feature.

Custom Energy Savings Settings

08 – NIGHT OCCUPANCY START



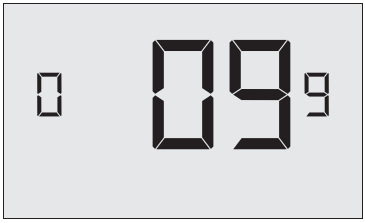
00-23 (21* default setting) Select the start time (in hours - 24-hour clock) for "Night Occupancy"

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".

Custom Energy Savings Settings

09 – NIGHT OCCUPANCY END

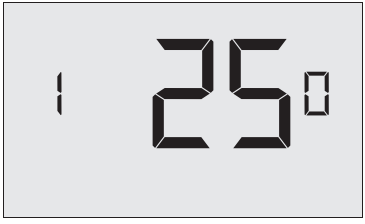


00-23 (09* default setting) Select the time (in hours - 24-hour clock) for "Night Occupancy" to end.

The time of day the "Night Occupancy" ends and the thermostat switches back to the room sensing settings chosen in the other occupancy modes.

Custom Energy Savings Settings

10 – TEMPERATURE RECOVERY TIME



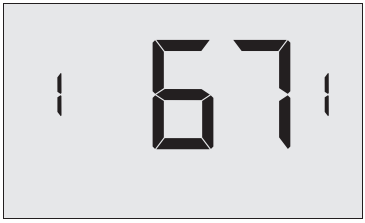
00-60 (25* default setting) Select the maximum time allowed for a HVAC unit to attain temperature as defined by Heat and Cool "Recovery Temperature".

"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.

Custom Energy Savings Settings

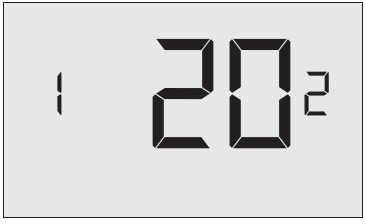
11 – RECOVERY TEMPERATURE - HEAT



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.

Custom Energy Savings Settings

12 – TEMPERATURE SETBACK DELAY - HEAT



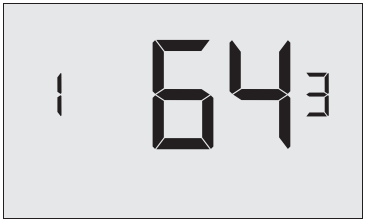
00-120 (20* default setting) Select the time delay (in minutes) for which the room that is in the guest occupancy mode needs to be unoccupied before the temperature setback is initiated.

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.

Custom Energy Savings Settings

13 – MINIMUM SETBACK TEMPERATURE



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".

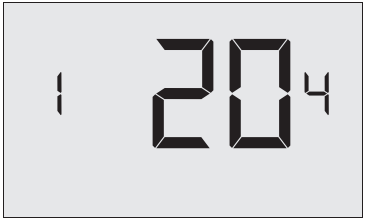
If recovery is disabled ("Temperature Recovery Time" is set to "0") or if setback temperatures have not yet been calculated, the "Minimum Setback Temperature" value will be used as the setback temperature for heating.

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.

Custom Energy Savings Settings

14 – TEMPERATURE SETBACK DELAY - COOL



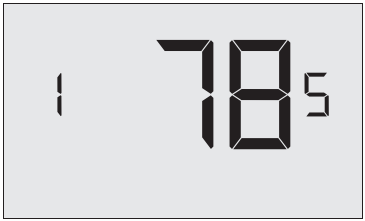
00-120 (20* default setting) Select the time delay (in minutes) for which the room that is in the guest occupancy mode needs to be unoccupied before the temperature setback is initiated.

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 - Cool" to "00", disables the setback in the cool mode. Set to "00" to disable EMS.

Custom Energy Savings Settings

15 – 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".

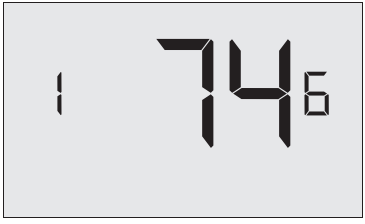
If recovery is disabled ("Temperature Recovery Time" is set to "0") or if setback temperatures have not yet been calculated, the "Maximum Setback Temperature" value will be used as the setback temperature for cooling.

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.

Custom Energy Savings Settings

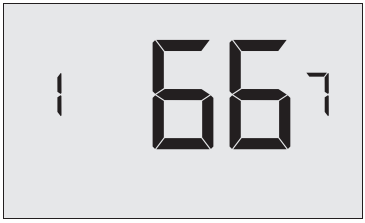
16 – RECOVERY TEMPERATURE - COOL



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.

Custom Energy Savings Settings

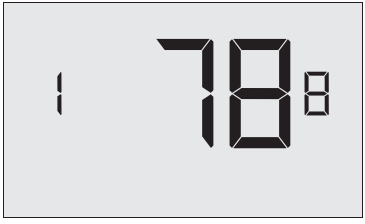
17 – MINIMUM SET POINT



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

Custom Energy Savings Settings

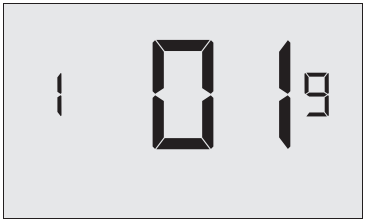
18 – MAXIMUM SET POINT



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

Custom Energy Savings Settings

19 – TEMPERATURE CONTROL MODE

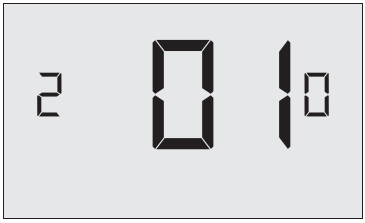


Select Temperature Control Mode:

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;

Custom Energy Savings Settings

20 – AUTO CHANGEOVER SET POINT OFFSET (DEAD BAND)



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 dead band 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.

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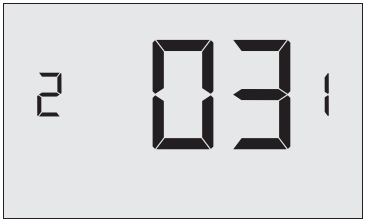
Custom Energy Savings Settings

21 – SETBACK SET POINTS / AUTO-RESTORE



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;

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

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;

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

02 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;

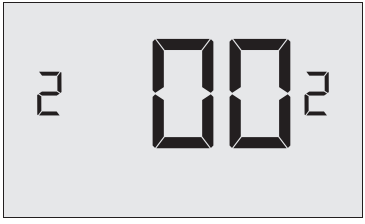
When guest enters the room, the thermostat will automatically restore the most recent guest settings;

*03** 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;

When guest enters the room, the thermostat will automatically restore the most recent guest settings.

Custom Energy Savings Settings

22 – 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;

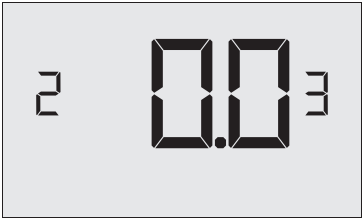
† This setting is active only on thermostats with enabled humidity features. Changing this setting on a non-humidity thermostat will have no effect on thermostat operation.

Humidity features can be enabled on compatible thermostats via remote management.

Certain models only. Additional fees apply.

Custom Energy Savings Settings

23 – TEMPERATURE CALIBRATION



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

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 one (1) year.

Please replace batteries every twelve (12) months to ensure continuous thermostat operation.

To replace thermostat batteries:

- ➤ Remove the thermostat cover;
- ➤ Replace the two (2) AA-cell batteries (not-supplied);
- ➤ Replace the thermostat cover;
- ➤ Follow the "Thermostat Configuration" instructions to set the thermostat clock;
- ➤ Press the "Power" button to start using the thermostat;

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

Troubleshooting

Error Codes

ERR1	Thermostat Temperature Sensor Hardware Defect
ERR2	Thermostat Radio Hardware Defect
ERR3	Thermostat Radio Software Defect
ERR4	No link with the Wireless Control Card
ERR5	Thermostat Memory Defect

Troubleshooting

The thermostat is not controlling the HVAC unit.

Check if the HVAC unit is set to "External Thermostat" (Class 2) mode.

Verify the status of the red light on the Wireless Control Card;

➤ The red light is off

The Wireless Control Card is not powered. Verify that the Wireless Control Card is properly wired to the HVAC unit - specifically make sure that the RED and the BLACK wire are properly connected;

➤ If the red light is blinking with one (1) flash

The Wireless Control Card is powered but it is not communicating with the thermostat, turn the thermostat off and on to re-initiate the linking procedure.

In case of a Network Installation, re-link the thermostat and the Wireless Control Card with the Network Programmer.

➤ The red light is blinking with three (3) flashes.

The Wireless Control Card is communicating with the thermostat. Verify that the Wireless Control Card is properly wired to the HVAC unit and that equipment settings on a thermostat - compressor type, electric heat and reversing valve - are properly configured.

Troubleshooting

Initiating a Master Reset

If there are reported errors or configuration issues, the user may master reset the thermostat to its default parameters.

Procedure

- Power down the thermostat by either removing the batteries or cutting power to the thermostat.
- Remove the faceplate of the thermostat
- While the thermostat is powered off, press and hold the "config" button located on the control board inside the thermostat and power on the thermostat.
- Release the "config" button once the thermostat has started to power down.
- If the master reset was successful, the thermostat will display "12:00",indicating all settings will be reset to default and the thermostat needs to be re-configured. Please see "configuring thermostat" in the manual.

Contact Verdant technical support if the issues are not resolved.

APPENDIX 1 - Energy Saving Presets

SCREEN NUMBER		**Level 0**	Level 1	Level 2	Level 3	Level 4	Level 5
1	Fan Control Mode	**AUTO**	AUTO	AUTO	AUTO	AUTO	AUTO
2	1st Stage Differential Heat	**0.5**	0.5	0.5	0.5	0.5	0.5
3	2nd Stage Differential Heat	**1**	1	1	2	2	2
4	1st Stage Differential Cool	**0.5**	0.5	0.5	0.5	0.5	0.5
5	Guest Occupancy Threshold	**0**	5	5	5	5	5
6	Night Occupancy Threshold	**1**	1	1	1	1	1
7	Force 2nd Stage Heating After	**30**	30	30	30	30	30
8	Night Occupancy Start	**18**	19	20	21	22	23
9	Night Occupancy End	**12**	11	10	9	8	7
10	Recovery Time	**0**	15	20	25	30	0
11	Recovery Temperature Heat	**70**	69	68	67	66	65
12	Setback Delay - Heat	**0**	30	25	20	15	10
13	Minimum Setback Temperature	**67**	66	65	64	63	62
14	Setback Delay - Cool	**0**	30	25	20	15	10
15	Maximum Setback Temperature	**72**	74	76	78	80	82
16	Recovery Temperature Cool	**71**	72	73	74	75	76
17	Minimum Set point	**64**	64	65	66	67	68
18	Maximum Set point	**82**	82	80	78	76	74
19	Temperature Control Mode	**AUTO**	AUTO	AUTO	AUTO	AUTO	AUTO
20	Auto Changeover Set Point	**1**	1	1	1	1	1
21	Auto Restore	**OFF**	ON	ON	ON	ON	ON
21	Setback Set Points	**OFF**	ON	ON	ON	ON	ON
22	Automatic Humidity Control	**ON**	ON	ON	ON	ON	ON
23	Temperature Calibration	**0**	0	0	0	0	0

APPENDIX 2 - Glossary

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

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

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

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

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

"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;

"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;

"Forced 2nd Stage Heating" - 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

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

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

"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;

"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;

"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;

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

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

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

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

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

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

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

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

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

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

Warranty Information

Hardware
Verdant Environmental Technologies Inc. ("Verdant") warrants the original end user ("Customer") that new Verdant branded products will be free from defects in workmanship and materials, under normal use, for one (1) year from the original purchase date.

Software
Verdant warrants to Customer that the Verdant thermostat software will perform in substantial conformance to its program specifications for a period of one (1) year from the date of the original purchase.

Exclusions
This warranty excludes (1) physical damage to the surface of the product, including cracks, scratches or marks on the screen or outside casing; (2) damage caused by misuse, neglect, improper installation, unauthorized attempts to open, repair, or modify the product, or any other cause beyond the range of intended use; (3) damage caused by accident, fire, power changes, other hazard, or Acts of God; (4) damage caused by water, liquids, or foreign chemicals including condensation and humidity; or (5) use of the product with any device if such device causes the problem.

Exclusive Remedies
Should a covered defect occur during the warranty period and Customer notifies Verdant, Customer's sole and exclusive remedy will be, at Verdant's sole option and expense, to repair or replace the product. Replacement products or parts may be new or reconditioned or a comparable version of the defective item. Verdant warrants any replaced product or part for a period of ninety (90) days from shipment, or through the end of the original warranty, whichever is longer.

Obtaining Warranty Service
To obtain Warranty Service customer must follow Verdant's "Warranty Service Procedure" and request a Return Merchandise Authorization (RMA) number by filling out the RMA Request Form on Verdant's website.

Warranty Exclusive
THE FORGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, CORRESPONDENCE WITH DESCRIPTION, AND NON-INFRINGEMENT, ALL OF WHICH ARE EXPRESSLY DISCLAIMED BY VERDANT AND ITS SUPPLIERS.

Disclaimer
NEITHER VERDANT NOR ITS SUPPLIERS SHALL BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE OR USE OF THIS PRODUCT, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE) OR ANY OTHER THEORY, EVEN IF VERDANT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. VERDANT'S ENTIRE LIABILITY SHALL BE LIMITED TO REPLACEMENT OR REPAIR OF THE PRODUCT.

Technical Specifications

	Thermostat	Wireless Control Card
Case Dimensions (Imperial)	4.015 x 5.5118" x 0.925"	3.875" x 2.125" x 0.75"
Case Dimensions (Metric)	102mm x 140mm x 23.5mm	98mm x 54mm x 19mm
Screen Dimensions (Imperial)	3.625" x 2.125"	N/A
Screen Dimensions (Metric)	92mm x 54mm	N/A
Operating Voltage	3V DC - 2 "AA" Cell Batteries	24V AC/DC
Control Outputs		Fan High (GH)
		Fan Low (GL)
		Compressor (Y)
		Heat Pump (OB)
		Electric Heat (W2)
		Occupancy Out (AUX)
Occupancy Sensor Beam Width	±47° (94°)	N/A
Wireless Frequency	900MHz	900MHz
Temperature Accuracy	±1°F	N/A
FCC ID	XEYWX	XEYV8ACCC
IC	8410A-WX	8410A-V8ACCC

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