

Installation, Operation and Maintenance

Thermostat 565



Compatible With

- Conventional systems:
2-stage heating, 2-stage cooling, fan and 2 accessories
- Heat pump systems:
4-stage heating, 2-stage cooling, fan, reversing valve and 1 accessory
- Supports dual fuel systems
- Accessory options:
Humidifier, dehumidifier, HRV/ERV ventilator, heat pump loop valve

⚠ WARNING



Please read carefully before proceeding with installation. Your failure to follow any attached instructions or operating parameters may lead to the product's failure. Keep this Manual for future reference.

Table of Contents

- Important Safety Information 3
- Installation 4
 - Preparation 4
- Equipment Connections 6
- Wiring the HVAC Interface Module 7
 - 1-Stage Heat and 1-Stage Cooling with Fan 7
 - Up to 2-Stage Furnace and 2-Stage Air Conditioner 8
 - Up to 2-Stage Hydronic Boiler and 2-Stage Air Conditioner 8
 - Up to 2-Stage Heat Pump with Auxiliary Heat 9
 - Up to 2-Stage Heat Pump with 2-Stage Dual Fuel 9
 - Dehumidification using a DX Coil 10
 - Humidifier 10
 - HRV/ERV Ventilator 10
 - Outdoor Sensor 10
 - Room Sensor 11
 - Watts FloodSafe Water Detector Shutoff 11
- Startup 11
- Home Screen 12
- Symbols 12
- User Settings 13
 - Away 13
 - Schedule 13
 - Display 14
 - Time 15
 - Fan 15
- Installer Settings 16
 - Setup 16
 - Setup - Toolbox 16
 - Setup - Temp 17
 - Setup - Sensors 19
 - Setup - Alerts 20
 - Setup - Relays 20-22
 - Setup - Humidity 23
 - Setup - HRV / ERV Ventilation 24
- Sequence of Operation 25
 - Heating and Cooling Operation 25-27
 - Relative Humidity Operation 28
 - HRV / ERV Ventilator Operation 28
 - Heat Pump Loop Valve Operation 28
- Error Messages 29-30
- Technical Data 31
- Limited Warranty 32

Important Safety Information

It is your responsibility to ensure that this thermostat is safely installed according to all applicable codes and standards. tekmar® is not responsible for damages resulting from improper installation and/or maintenance.



This is a safety-alert symbol. The safety alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION), a pictorial and/or a safety message to identify hazards. When you see this symbol alone or with a signal word on your equipment or in this manual, be alert to the potential for death or serious personal injury.



This pictorial alerts you to electricity, electrocution, and shock hazards.

⚠ WARNING

- It is the installer's responsibility to ensure that this control is safely installed according to all applicable codes and standards.
- Improper installation and operation of this control could result in damage to the equipment and possibly even personal injury or death.
- This control is not intended for use as a primary limit control. Other controls that are intended and certified as safety limits must be placed into the control circuit.

NOTICE

Do not attempt to service the thermostat. There are no user serviceable parts inside the thermostat. Attempting to do so voids the warranty.

⚠ WARNING

This symbol identifies hazards which, if not avoided, could result in death or serious injury.

⚠ CAUTION

This symbol identifies hazards which, if not avoided, could result in minor or moderate injury.

NOTICE

This symbol identifies practices, actions, or failure to act which could result in property damage or damage to the equipment.

⚠ WARNING



**THINK
SAFETY
FIRST**

Read manual and all product labels BEFORE using the equipment. Do not use unless you know the safe and proper operation of this equipment. Keep this manual available for easy access by all users. Replacement manuals are available at watts.com/tekmar

Installation

Preparation

Tools Required

- tekmar or jeweler screwdriver
- Phillips head screwdriver
- Wire stripper
- Drill (for wall anchor)
- $\frac{3}{16}$ " drill bit (for wall anchor)

Materials Required

- 18 AWG LVT Solid Wire (low voltage connections)

⚠ WARNING



Ensure power to connecting equipment is off. To prevent the risk of personal injury and/or death, make sure power is not applied to the thermostat or HVAC Interface Module until they are fully installed and ready for configuration. All work must be done with power to the circuit being worked on turned off.

NOTICE

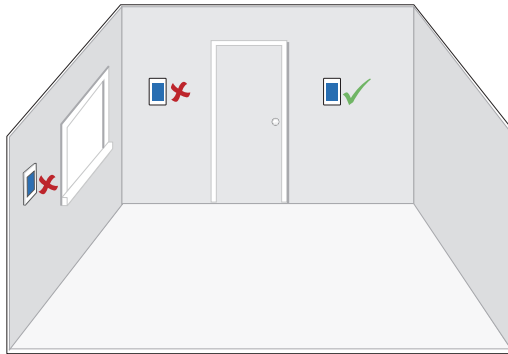
Please be aware local codes may require this thermostat to be installed or connected by an electrician.

NOTICE

Thermostat Location

Consider the following:

- Interior wall. Keep dry. Avoid potential leakage onto the control.
- No draft, direct sun, or other cause for inaccurate temperature readings.
- Away from equipment, appliances, or other sources of electrical interference.
- Approximately 5 feet (1.5 m) off the finished floor.
- The maximum length of wire is 500 feet (150 m).

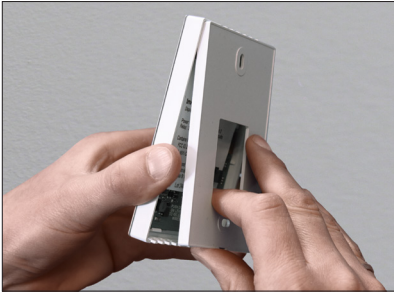


1. Remove the old thermostat

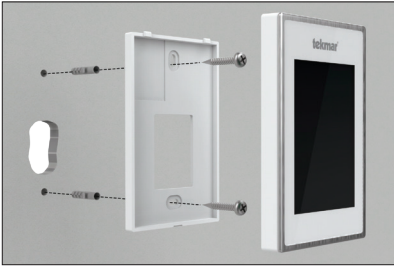
If more than 2 wires are present, identify the R & C wires for use when connecting the Thermostat. Additional wires should be secured in a way that prevents them from touching the circuit board or terminals on the thermostat after the R & C wires are connected.

2. Mount thermostat base to wall

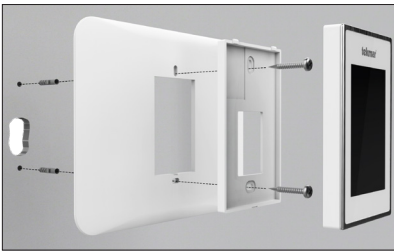
Remove the back plate from the thermostat.



Secure the thermostat back plate to a 2 x 4" electrical box with machine screws or to drywall using wood screws with wall anchors.

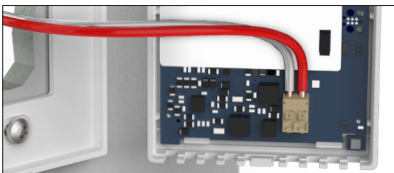


If the wall has damage extending beyond the width of the Thermostat, place the wall plate trim behind the back plate.



3. Wiring the Thermostat

Connect the 2 wires from the old thermostat to the terminals on the back of the Thermostat. This connection is not polarity sensitive.



4. Attach the thermostat to back plate

Align the 2 notches at the top of the base plate with the holes on the top of the thermostat then rotate on the hinge point down to close.



5. Mounting the HVAC Interface Module

Locate the HVAC Interface Module so that it can connect to the other end of the existing wire from the thermostat. After removing the cover, secure the HVAC Interface Module to the wall, the HVAC equipment chassis or HVAC plenum using the holes at the top and bottom of the module. Wiring to the module enters from opening on the sides or the back. Refer to the diagrams on pages 6 to 11 for wiring details.



6. Replace the Cover



Push the HVAC Interface Module Cover towards the base. Top and bottom clips hold the cover in place.

Equipment Connections

This illustration shows various equipment connected to the HVAC Interface Module. Other equipment may be included in your application.

Conventional systems:

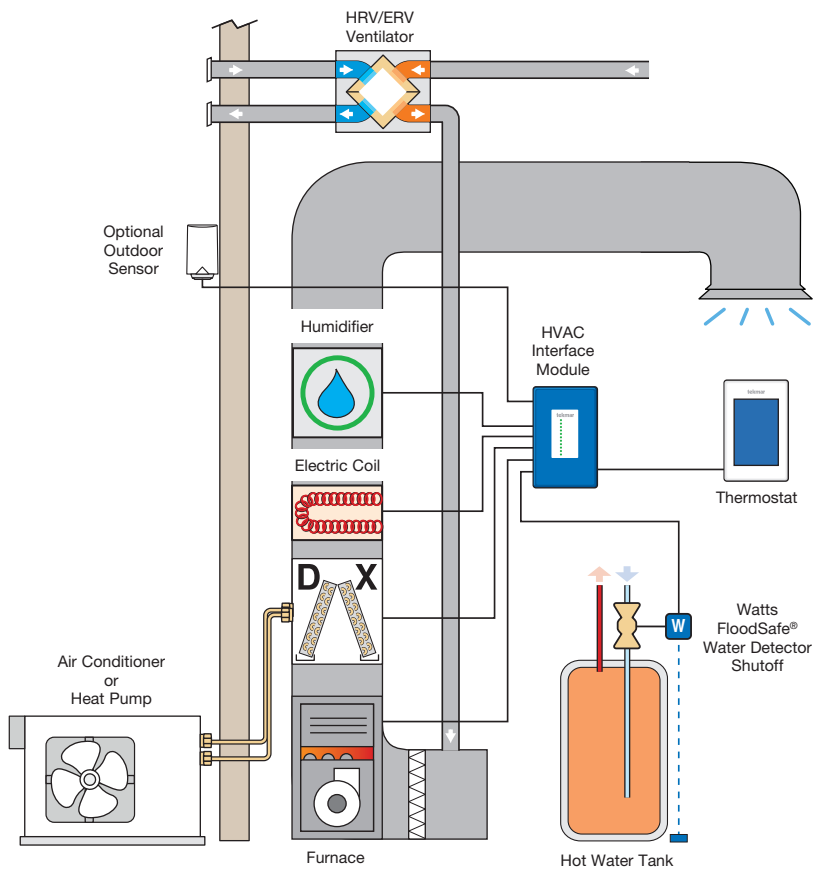
- Up to 2-stage heating, 2-stage cooling, fan and 2 accessories

Heat pump & dual fuel systems:

- Up to 4-stage heating, 2-stage cooling, fan, reversing valve and 1 accessory

Accessory options:

- Humidifier, dehumidifier, HRV/ERV ventilator



Wiring the HVAC Interface Module

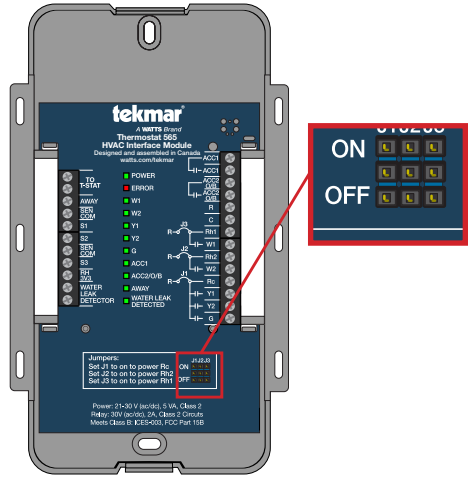
⚠ WARNING



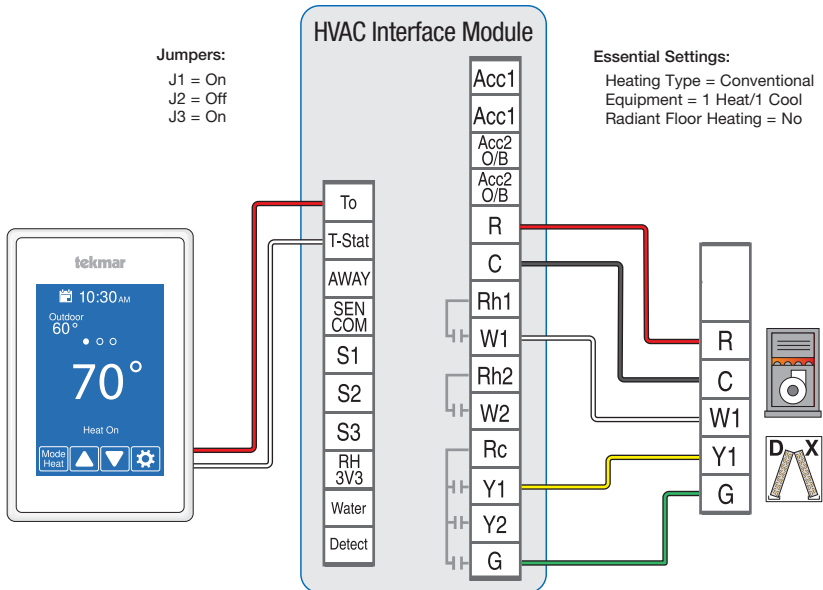
Ensure power to connecting equipment is off. To prevent the risk of personal injury and/or death, make sure power is not applied to the thermostat or HVAC Interface Module until they are fully installed and ready for configuration. All work must be done with power to the circuit being worked on turned off.

The HVAC Interface Module includes three relay power jumper connectors. These are used to provide power between terminals when necessary.

- Set Jumper J1 to On to connect power R to the Rc terminal.
- Set Jumper J2 to On to connect power R to the Rh2 wiring terminal.
- Set Jumper J3 to On connects power R to the Rh1 wiring terminal.
- Set the jumper to off to disconnect the power from Rh1, Rh2, or Rc respectively.



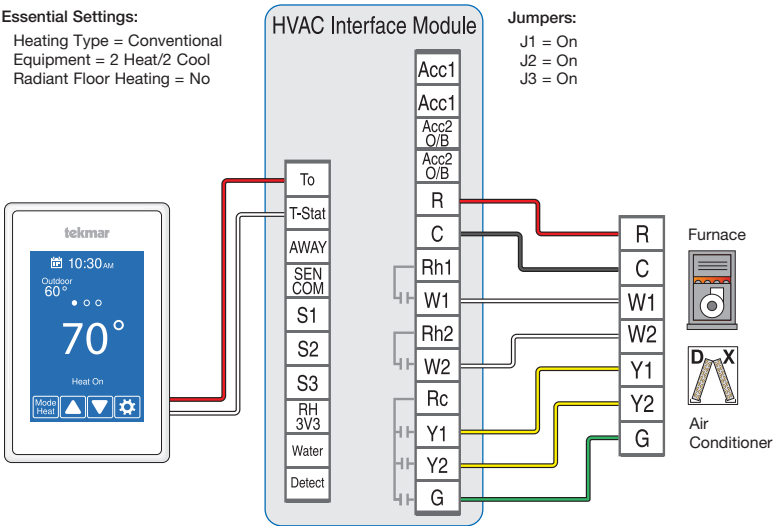
1-Stage Heat and 1-Stage Cooling with Fan



Up to 2-Stage Furnace and 2-Stage Air Conditioner

Essential Settings:

Heating Type = Conventional
 Equipment = 2 Heat/2 Cool
 Radiant Floor Heating = No



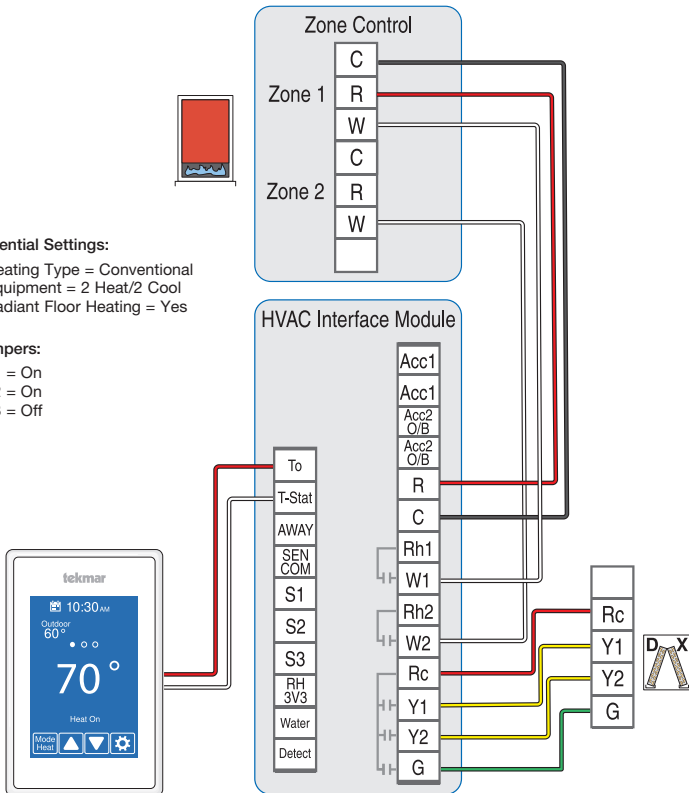
Up to 2-Stage Hydronic Boiler and 2-Stage Air Conditioner

Essential Settings:

Heating Type = Conventional
 Equipment = 2 Heat/2 Cool
 Radiant Floor Heating = Yes

Jumpers:

J1 = On
 J2 = On
 J3 = Off

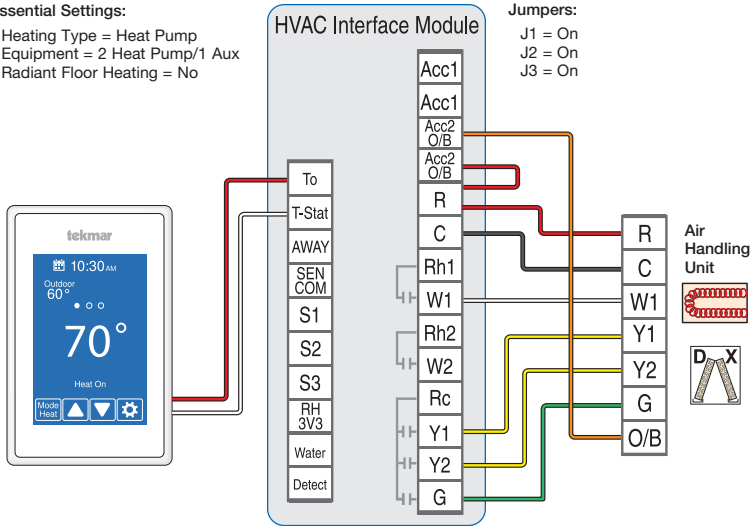


Up to 2-Stage Heat Pump with Auxiliary Heat

The thermostat operates high cost electric resistance heat when the heat pump is unable to meet the building heating load.

Essential Settings:

Heating Type = Heat Pump
 Equipment = 2 Heat Pump/1 Aux
 Radiant Floor Heating = No

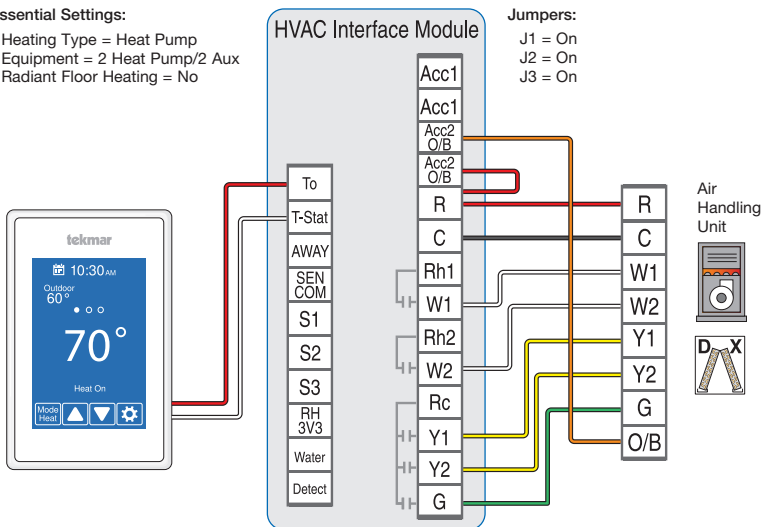


Up to 2-Stage Heat Pump with 2-Stage Dual Fuel

The thermostat operates the heat pump when the outdoor temperature is above the balance point setting and switches to the furnace when below.

Essential Settings:

Heating Type = Heat Pump
 Equipment = 2 Heat Pump/2 Aux
 Radiant Floor Heating = No

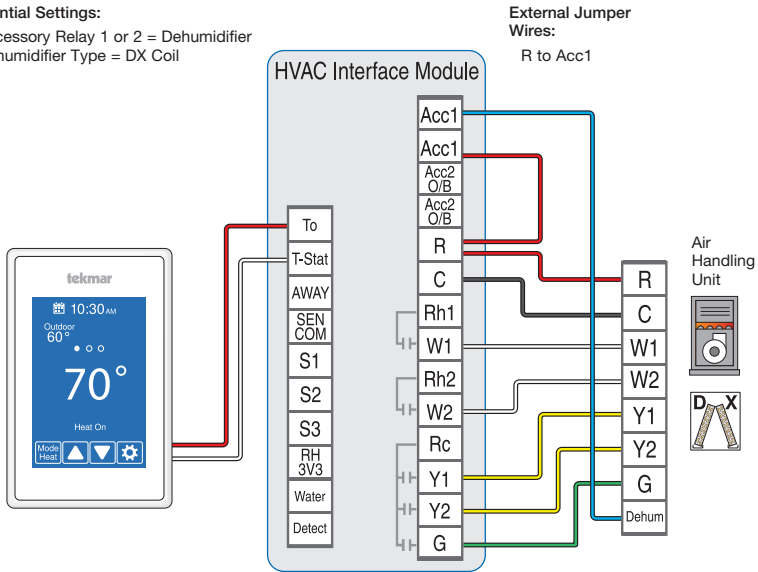


Dehumidification using a DX Coil

The thermostat operates the cooling system and runs the system fan at low speed to dehumidify the air.

Essential Settings:

Accessory Relay 1 or 2 = Dehumidifier
Dehumidifier Type = DX Coil

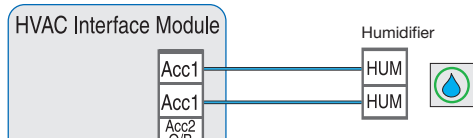


Humidifier

The thermostat operates a humidifier to increase relative humidity.

Essential Settings:

Accessory Relay 1 or 2 = Humidifier

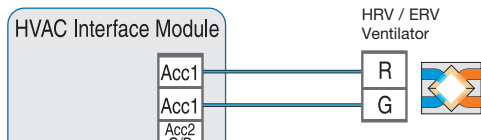


HRV/ERV Ventilator

The Heat Recovery Ventilator (HRV) or Energy Recovery Ventilator (ERV) operates to improve indoor air quality and recovers heat from exhaust air.

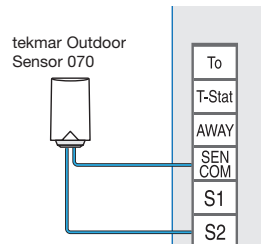
Essential Settings:

Accessory Relay 1 = Ventilation



Outdoor Sensor

- Outdoor temperature is displayed on home screen.
- Used to enable heat pump dual fuel switchover, warm weather shut down, and cold weather shut down.

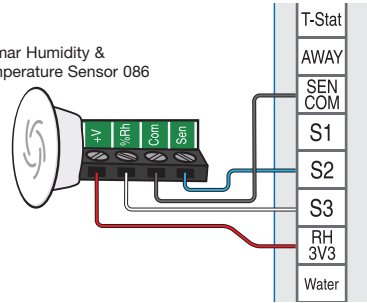


Room Sensor

When the location of the thermostat is not ideal for accurate temperature and humidity measurement, an optional room sensor can be installed in a better location. The 086 mounts flush to a wall, blending in with the room decor.

- Remotely measure the temperature and relative humidity
- The Thermostat provides the option to disable the internal temperature and relative humidity sensor, and use the external sensor instead.

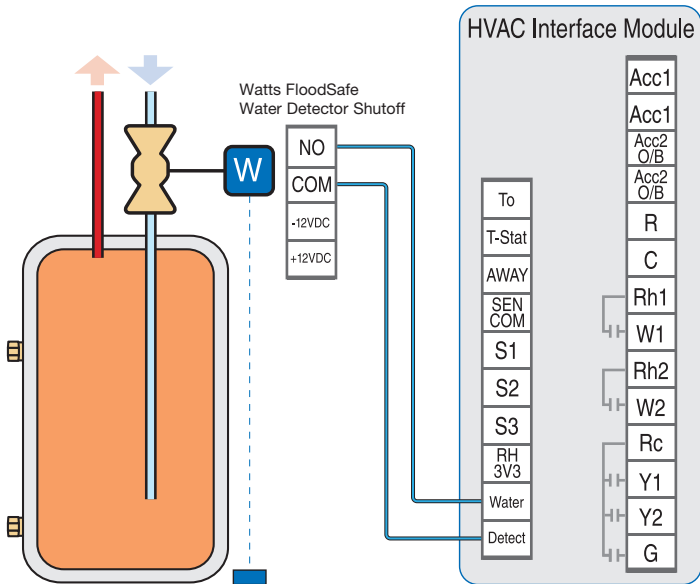
tekmar Humidity & Temperature Sensor 086



Watts FloodSafe® Water Detector Shutoff

The Watts FloodSafe Water Detector Shutoff LFWDS prevents catastrophic water damage in the event of a water heater leak.

The thermostat provides alert notification on the screen in the event that the FloodSafe Water Detector Shutoff LFWDS detects a water and shuts off the supply line to the water heater.



Startup

Restore power to the connected equipment. Once energized, the Thermostat will display the home screen.

Home Screen

After 60 seconds of inactivity, the thermostat home screen displays only the time and the temperature.

Go to schedule

Swipe to view:

- Heat To setting
- Cool To setting
- Outdoor temperature
- Floor temperature
- Relative Humidity

Humidifier or Dehumidifier operation

Change operating mode

Current time

Current temperature

Equipment operation Heat, Cool and Fan On

Go to settings

Mode

Emergency Heat

Heat

Cool

Auto Heat-Cool

Off

Save Cancel

Touch ▲ or ▼ to adjust temperatures

Select either Heat To or Cool To

Temperature Adjustment

Heat To Cool To

70 75

Hold Until 5:00 PM

Save to Schedule

Save to Schedule

'Save to schedule' applies the new temperature to the current schedule event.

MENU SELECTION

AWAY SCHEDULE

DISPLAY TIME

SETUP

FAN

Hold overrides the programmed schedule until the time shown

Symbols



The fan is on



The dehumidifier is on



Ok setting change



The humidifier is on



The info button provides a description of the setting



Cancel setting change

User Settings

Away

Use the Away setting to save energy when the building is unoccupied

Operates normally At Home

Operates using the Away temperature selected in the Setup menu Away

• The Away temperature can be adjusted in the Setup / Temps menu.

Save Info



Schedule

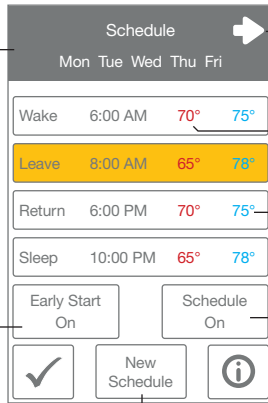
Current group of program days.

Go to the next group of program days.

Early Start anticipates the time required to heat or cool a room and starts early.

Set to On to follow the schedule. Set to Off to use the same temperature all of the time.

Creates a new schedule.

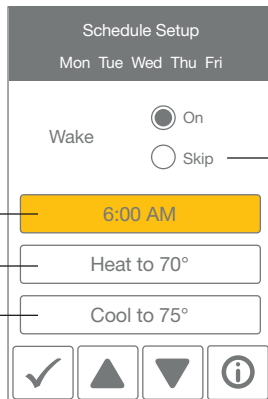


Set schedule start time

Set heating temperature

Set cooling temperature

Select skip if you don't want a temperature change.



Display

Setting	Range	Default
TEMPERATURE UNITS Select °F or °C.	°F or °C	°F
ENERGY USE View the number of hours the heating or cooling has operated either daily or monthly.	0 to 24 (daily) 0 to 744 (monthly)	0 hours

Daily Usage

Today	0 hrs	0 hrs
Yesterday	0 hrs	0 hrs
Tue	0 hrs	0 hrs
Mon	0 hrs	0 hrs
Sun	0 hrs	0 hrs
Sat	0 hrs	0 hrs
Fri	0 hrs	0 hrs

Monthly Usage

View each day's run time for both heating and cooling.

Toggle between Daily and Monthly Usage.

Setting	Range	Default
BRIGHTNESS ACTIVE Select the brightness when touching the screen.	30 to 100%	100%
BRIGHTNESS INACTIVE Select the brightness when not in use.	Off, 30 to 100%	50%
BACKGROUND Select the background color.	Light, Blue, Night, Latte, Espresso	Blue
LANGUAGE Select the language.	English, Español, Français	English
SCREEN CLEAN Locks screen for 10 seconds to allow cleaning.	N/A	N/A
INACTIVE TIME DISPLAY Select if the time is visible when the display is inactive.	Off or On	On
INACTIVE HUMIDITY DISPLAY Select if the humidity is visible when the display is inactive.	Off or On	Off
INACTIVE OUTDOOR DISPLAY Select if the outdoor temperature is visible when the display is inactive. Requires Outdoor Sensor 070.	Off or On	Off

Time

TIME & DATE

Aug
25
2019

1
30
PM

▲
▲
▲

▼
▼
▼

✓
OPTIONS
i

The time and date can be manually set by highlighting a field and then using the ▲ or ▼ buttons.

Choose from the time options listed below.

Setting	Range	Default
TIME FORMAT Select the time format.	12 or 24 hour	12 hour
DAYLIGHT SAVING TIME Select if Daylight Savings Time is used in location.	Off, On	On

Fan

Fan

On

Auto

Follow Schedule

✓
Setup Fan Schedule
✕

The fan is normally off when set to auto but turns on when needed for the heating or cooling equipment.

When a programmable schedule is used, there is a fan setting for each time period.

Fan

Wake
On

Leave
Auto

Return
On

Sleep
Auto

✓
i

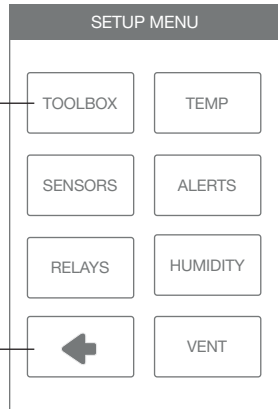
Installer Settings

Setup

The Setup menu contains seven sub-menus that determine how the thermostat operates.

The Access Level setting in the Toolbox menu determines how many settings are available to the user.

Press back to return to the main Settings menu.



Setup - Toolbox

Setting	Range	Default
ERROR Displays any error messages.	N/A	N/A
ACCESS LEVEL Select between user and installer access levels. User access level restricts access in the Setup Menu.	User, Installer	Installer
STATUS The current status of warm weather shut down, cold weather shut down and each of the relays.	Early Start, WWSD, CWSD, W1, W2, Y1, Y2, G, Acc1, Acc2	N/A
SOFTWARE VERSION Display the software version.	N/A	N/A
LOAD DEFAULTS All settings are returned to factory defaults.	Yes, No	No
CALIBRATE TOUCHSCREEN Recalibrate the screen after loading factory defaults.	N/A	N/A

Setup - Temp

Setting	Range	Default
<i>Screen Page 1</i>		
FLOOR MIN: Select the floor temperature minimum. Applies when there is both floor and an air sensors and when no schedule is set.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
HEAT TO AWAY Select the heating temperature when away.	Off, 40 to 95°F Off, 4.5 to 35.0°C	62°F 16.5°C
HEAT TO MIN LIMIT Select the minimum heating temperature limit.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
HEAT TO MAX LIMIT Select the maximum heating temperature limit.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
COOL TO AWAY Select the cooling temperature when away.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
COOL TO MIN LIMIT Select the minimum cooling temperature limit.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
COOL TO MAX LIMIT Select the maximum cooling temperature limit.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
<i>Screen Page 2</i>		
FLOOR MIN - WAKE Select the floor temperature while in the wake schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - LEAVE Select the floor temperature while in the leave schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - RETURN Select the floor temperature while in the return schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - SLEEP Select the floor temperature while in the sleep schedule. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
FLOOR MIN - AWAY Select the floor temperature while in away. Applies when there is both a floor and an air sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
<i>Screen Page 3</i>		
FLOOR MAX Select the maximum floor temperature. This protects the floor covering from over heating. Applies when there is a floor sensor.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
WARM WEATHER SHUT DOWN Select the outdoor temperature at which the heating is shut off.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
COLD WEATHER SHUT DOWN Select the outdoor temperature at which the cooling is shut off.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
HEAT PUMP BALANCE POINT Select the outdoor temperature at which the heat pump is shut off and the backup heat source is operated exclusively.	Off, 10 to 70°F Off, -12.0 to 21.0°C	Off

Setup - Sensors

Setting	Range	Default
SENSOR 1 Select the type of sensor connected to S1 and Com wiring terminals.	Off, Room, Floor	Off
SENSOR 2 Select the type of sensor connected to S2 and Com wiring terminals.	Off, Room, Floor, Outdoor	Off
SENSOR 3 Select the type of sensor connected to S3 and Com wiring terminals.	Off, Room, Floor, Humidity	Off
INTERNAL ROOM SENSOR Select if the internal room temperature sensor is on or off. Only available when Sensor 1, 2 or 3 is set to read a room or floor sensor.	Off, On	On
INTERNAL HUMIDITY SENSOR Select if the internal humidity sensor is on or off. Only available when Sensor 3 is set to read an external humidity sensor.	Off, On	On
ROOM OFFSET Manual offset correction of the room temperature measurement.	Off, -5 to +5°F -3.0 to 3.0°C	Off
FLOOR OFFSET Manual offset correction of the floor temperature measurement.	Off, -5 to +5°F -3.0 to 3.0°C	Off
HUMIDITY OFFSET Manual offset correction of the relative humidity measurement.	Off, -10% to +10%	Off

Setup - Alerts

Setting	Range	Default
ROOM HOT WARNING Error on home screen if the room exceeds this temperature.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
ROOM COLD WARNING Error on home screen if the room falls below this temperature.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
LOW HUMIDITY WARNING Error on home screen if the humidity falls below this threshold.	Off, 5 to 95%	Off
HIGH HUMIDITY WARNING Error on home screen if the humidity exceeds this threshold.	Off, 5 to 95%	Off
AUXILIARY HEAT RUN TIME WARNING Error on home screen if the auxiliary heat W1 or W2 runs continuously for longer than this setting. This setting only applies for heat pump systems.	Off, 1 to 24 hours	Off
AIR FILTER CHANGE WARNING Error on home screen to change the air filter when the fan exceeds this run time.	Off, 200 to 2000 hours	Off
UV LAMP CHANGE WARNING Error on home screen to change the UV disinfectant lamp when it exceeds this run time.	Off, 10,000 to 50,000 hours	Off

Setup - Relays (1 of 3)

Setting	Range	Default
HEATING TYPE Select between conventional heating or heat pump.	Conventional, Heat Pump	Conventional
EQUIPMENT Select the number of stages of the heating and cooling equipment.	Conventional 1 Heat/1 Cool, 1 Heat/2 Cool, 2 Heat/1 Cool, 2 Heat/2 Cool,	1 Heat/ 1 Cool
	Heat Pump 1 HP, 1 HP/1 Aux, 1 HP/2 Aux, 2 HP, 2 HP/1 Aux, 2 HP/2 Aux	1 HP/1 Aux
RADIANT FLOOR HEATING Select if the first stage W1 heats a radiant floor.	Yes or No	No
HEAT 1 DIFFERENTIAL Select when the first stage heating turns on. Turn on point is the Heat To setting minus the differential.	0.9 to 2.0°F 0.5 to 1.05°C	1.4°F 0.75°C
HEAT 2 DIFFERENTIAL Select when the second stage heating turns on. Turn on point is the Heat To setting minus the differential. This setting is available when there are at least 2 heating stages.	1.0 to 10.0°F 0.6 to 5.6°C	2.0°F 1.2°C
HEAT 2 DELAY Select the time delay when the second stage heating turns on. The time delay starts counting after the first stage heating is turned on. This setting is available when there are at least 2 heating stages.	0 to 180 minutes	1 minute
HEAT 3 DIFFERENTIAL Select when the third stage heating turns on. Turn on point is the Heat To setting minus the differential. This setting is available when a heat pump is selected and there are at least 3 heating stages.	1.0 to 10.0°F 0.6 to 5.6°C	2.5°F 1.4°C
HEAT 3 DELAY Select the time delay when the third stage heating turns on. The time delay starts counting after the second stage heating is turned on. This setting is available when a heat pump is selected and there are at least 3 heating stages.	0 to 180 minutes	1 minute
HEAT 4 DIFFERENTIAL Select when the fourth stage heating turns on. Turn on point is the Heat To setting minus the differential. This setting is available when a heat pump is selected and there are 4 heating stages.	1.0 to 10.0°F 0.6 to 5.6°C	3.0°F 1.8°C

Setup - Relays (2 of 3)

Setting	Range	Default
<p>HEAT 4 DELAY</p> <p>Select the time delay when the fourth stage heating turns on. The time delay starts counting after the third stage heating is turned on. This setting is available when a heat pump is selected and there are at least 4 heating stages.</p>	0 to 180 minutes	1 minute
<p>COOL 1 DIFFERENTIAL</p> <p>Select when the first stage cooling turns on. Turn on point is the Cool To setting plus the differential.</p>	0.9 to 2.0°F 0.5 to 1.05°C	1.4°F 0.75°C
<p>COOL 2 DIFFERENTIAL</p> <p>Select when the second stage cooling turns on. Turn on point is the Cool To setting plus the differential. This setting is available when there are two cooling stages.</p>	1.0 to 10.0°F 0.6 to 5.6°C	2.0°F 1.2°C
<p>COOL 2 DELAY</p> <p>Select the time delay when the second stage cooling turns on. The delay time starts counting after the first stage cooling is turned on. This setting is available when there are two cooling stages.</p>	0 to 180 minutes	1 minute
<p>Y MIN RUN TIME</p> <p>Select the minimum time the cooling compressor must run before shutting off. This helps prevent compressor failure.</p>	0:30 to 10:00 minutes	2:00 minutes
<p>Y MIN OFF TIME</p> <p>Select the minimum time the cooling compressor must be off before turning back on. This helps prevent compressor failure.</p>	0:30 to 10:00 minutes	5:00 minutes
<p>DUAL FUEL</p> <p>Select dual fuel on if the heat pump has 100% backup using a furnace or hydronic fan coil. The setting is available for heat pump systems with auxiliary heat.</p>	Off or On	Off
<p>ACCESSORY RELAY 1</p> <p>Select the type of equipment that the accessory relay 1 operates.</p>	Off, Humidifier, Dehumidifier, Ventilation, HP Loop Valve	Off
<p>ACCESSORY RELAY 2</p> <p>Select the type of equipment that the accessory relay 2 operates. This setting is only available for conventional heating systems.</p>	Off, Humidifier, Dehumidifier	Off

Setup - Relays (3 of 3)

Setting	Range	Default
<p>HEAT PUMP REVERSING VALVE</p> <p>Select O for heat pumps designed for normally heating operation. Select B for heat pumps designed for normally cooling operation. This setting is only available for heat pump systems.</p>	O (Orange), B (Blue)	O
<p>FAN RELAY</p> <p>Select which relays require fan operation. Combinations with W1 are not available when Radiant Floor Heating is set to yes.</p>	G only, With Y With Y and W1, With Y and W2, With Y, W1 and W2	G only
<p>FAN WITH HRV/ERV</p> <p>Select if the HVAC system fan should turn on together with the HRV or ERV ventilation fan.</p>	Off or On	Off
<p>HUMIDIFIER TYPE</p> <p>Select the type of humidifier. This setting is available when Accessory 1 or 2 is set to Humidifier.</p>	Evaporative, Steam, Stand Alone	Steam
<p>WINDOW PROTECTION</p> <p>Select if the relative humidity setpoint should automatically adjust with outdoor temperature to prevent frost on windows. This setting is available when Accessory 1 or 2 is set to Humidifier and a wired outdoor sensor is installed.</p>	Off or On	Off
<p>WINDOW QUALITY</p> <p>The window quality determines the amount that the relative humidity setting is lowered during cold outdoor weather. Choose the highest number of panes installed and best quality as a starting point. If window condensation appears, lower the setting until condensation stops forming. This setting is available when Accessory 1 or 2 is set to Humidifier and a wired outdoor sensor is installed.</p>	1 Pane 2 Pane 3 Pane Poor Average Better	2 Pane Average
<p>DEHUMIDIFIER TYPE</p> <p>Select the type of dehumidifier. This setting is available when Accessory 1 or 2 is set to Dehumidifier.</p>	DX Coil, Stand Alone	DX Coil
<p>HEAT-COOL TIME INTERLOCK</p> <p>When operating in Mode Auto, select the amount of time to wait between switching from heating to cooling and vice versa.</p>	0 to 180 minutes	10 minutes

Setup - Humidity

Set the lowest relative humidity level.

Range is 10 to 80%

Default is 40%

Available when Accessory 1 or 2 operates a humidifier.

The image shows a mobile application screen titled "Humidity". It features two input fields: "Humidify To: 40%" and "Dehumidify To: 60%". A back arrow icon is located at the bottom left of the screen. Lines connect the text on the left to the "Humidify To" field and the text on the right to the "Dehumidify To" field.

Set the highest relative humidity level.

Range is 20 to 90%

Default is 60%

Available when Accessory 1 or 2 operates a dehumidifier.

Setup - HRV / ERV Ventilation

VENTILATION FAN

Wake	30 min/hr
Leave	Auto
Return	45 min/hr
Sleep	Auto

When a programmable schedule is used, there is a ventilation setting for each time period.

The ventilation fan runs for the set amount of time per hour.

VENTILATION Wake

On
45 min/hr
30 min/hr
15 min/hr
Off

Sequence of Operation

Heating and Cooling Operation

- The Heat On symbol is shown on the display when the thermostat is heating.
- Heating for freeze protection is provided whenever the air or floor temperature falls below 40°F (4.5°C), regardless of operating mode.
- The Cool On symbol is shown on the display when the thermostat is cooling.

The thermostat supports two heating system types: 1) conventional, or 2) heat pump.

Conventional Systems

A conventional heating system includes: furnaces, air conditioners, hydronic heating systems with baseboards, radiant floors, or fan coils and electric heating.

The thermostat supports up to two heating stages, two cooling stages, a fan and two accessory relays.

EQUIPMENT SETTING	1H/1C	1H/2C	2H/1C	2H/2C
First stage heating	W1	W1	W1	W1
Second stage heating	-	-	W2	W2
First stage cooling	Y1	Y1	Y1	Y1
Second stage cooling	-	Y2	-	Y2
Fan	G			
Accessory 1	Choice of: Humidifier, Dehumidifier, HRV/ERV			
Accessory 2	Choice of: Humidifier, Dehumidifier			

Heat Pump Systems

A heat pump system may include additional heat sources as backup. The thermostat supports up to four heating stages, two cooling stages, a reversing valve, a fan and one accessory relay.

EQUIPMENT SETTING	1HP	1HP/1AUX	1HP/2AUX	2HP	2HP/1AUX	2HP/2AUX
First stage heating	Y1	Y1	Y1	Y1	Y1	Y1
Second stage heating	-	W1	W1	Y2	Y2	Y2
Third stage heating	-	-	W2	-	W1	W1
Fourth stage heating	-	-	-	-	-	W2
First stage cooling	Y1	Y1	Y1	Y1	Y1	Y1
Second stage cooling	-	-	-	Y2	Y2	Y2
Fan	G					
Accessory 1	Choice of: Humidifier, Dehumidifier, HRV/ERV ventilator					
Accessory 2	Reversing valve O relay remains closed during cooling. Reversing valve B relay remains closed during heating.					

When radiant floor heating is installed, it is always the first stage of heating, followed by the heat pump, and lastly any backup heating. This allows the floor to remain warm in the heating season.

EQUIPMENT SETTING	1HP	1HP/1AUX	1HP/2AUX	2HP	2HP/1AUX	2HP/2AUX
First stage heating	Y1	W1	W1	Y1	W1	W1
Second stage heating	-	Y1	Y1	Y2	Y1	Y1
Third stage heating	-	-	W2	-	Y2	Y2
Fourth stage heating	-	-	-	-	-	W2
First stage cooling	Y1	Y1	Y1	Y1	Y1	Y1
Second stage cooling	-	-	-	Y2	Y2	Y2
Fan	G					
Accessory 1	Choice of: Humidifier, Dehumidifier, HRV/ERV ventilator					
Accessory 2	Reversing valve O or B. O relay remains closed during heating operation. B relay remains closed during cooling operation.					

Heating Differentials

Each heating stage has an adjustable differential and time delay setting to determine when the stage turns on. The heating stages Heat 4 to Heat 1 shut off are when they reach 1.5, 1.0, 0.5, and 0.0°F (0.75, 0.5, 0.25, and 0.0°C) of the Heat To setting respectively.

Radiant Floor Heating

Radiant floor heating is operated differently than other heating types due to the large time delays to heat and cool the slab. When Radiant Floor Heating is selected in the setup menu, the W1 relay operates using Pulse Width Modulation. This improves comfort for radiant systems with high mass floors.

- 100% on time at Heat To setting - 1.5°F
- 50% on time at Heat To setting
- 0% on time at Heat To setting + 1.5°F

Room Sensor and Averaging

The room temperature can be measured using a combination of the built-in and auxiliary sensors.

- Built-in room sensor only
- Built-in room sensor with auxiliary room sensor(s) (temperature is averaged)
- Auxiliary room sensor only

Floor Sensor for Radiant Floor Heating

If a floor sensor is connected, floor minimum and maximum settings are available.

For a combination of air and floor temperature control, leave the internal air sensor on in the setup menu. A floor minimum can be used to prevent a fast drop in temperature caused by receding solar exposure. This operation is recommended for areas heated by afternoon sun through large windows. When the sun sets, it can take a long time for the floors to get warm again. This may cause the room to cool off too much in the early evening. A floor minimum setting can help with this condition by maintaining a floor minimum temperature. Keep in mind the floor minimum temperature will override the air temperature, and if set too high, may overheat the room.

A floor maximum is recommended for rooms with hardwood floors. Setting floor minimum and maximum temperatures is a way of enhancing the comfort of the living space while protecting floor coverings.

If there are more than one floor temperature sensors, the temperature is averaged.

Cooling Differentials

The first and second stage cooling have adjustable differentials and time delay setting to determine when the stage turns on, and shut off when the room temperature reaches 0.5 and 0.0°F (0.25 and 0.0°C) above the Cool To setting respectively.

Heat Pump Balance Point

An air source heat pump's Coefficient of Performance (COP) declines with falling outdoor air temperature. The Balance Point is the outdoor temperature at which it is more economical to shut off the heat pump (relays Y1 and Y2) and operate the backup heating equipment (relays W1 and W2). This feature requires an Outdoor Sensor 070.

Dual Fuel

Dual fuel systems include a heat pump together with a backup heat source such as a furnace or a hydronic fan coil. When Dual Fuel is set to on, the heat pump (relays Y1 and Y2) is shut off whenever the backup heating equipment (relays W1 and W2) is operating.

Warm Weather Shut Down (WWSD)

The heating system can automatically shut off based upon the outdoor temperature and the WWSD setting. This provides a convenient way to shut off the heating system. The WWSD requires an Outdoor Sensor 070.

Cold Weather Shut Down (CWSD)

The cooling system can automatically shut off based upon the outdoor temperature and CWSD setting. This prevents unwanted cooling during the winter. The CWSD requires an Outdoor Sensor 070.

Relative Humidity Operation

Relative Humidity Sensor

The thermostat includes an internal relative humidity (RH) sensor and has the option to connect to an external RH sensor. The installer has the option to disable the internal RH sensor when an external RH sensor is installed. When both the internal and external RH sensors are enabled, the RH reading is averaged.

Humidifier Operation

The thermostat controls the relative humidity (RH) by operating either the Accessory 1 or Accessory 2 relays. This is an installer configurable setting. When the RH is below the Humidify To setting by 3%, the Accessory 1 or 2 relay is closed to operate a humidifier. The humidifier is shut off when the RH reaches the Humidify To setting.

The thermostat can operate 3 types of humidifiers:

- Stand Alone
 - The humidifier is not connected to the HVAC system.
 - The thermostat Mode can be set to Heat, Cool, Auto or Off.
- Steam
 - The steam humidifier is ducted to the HVAC system.
 - The thermostat Mode can be set to Heat, Cool, Auto or Off.
 - Requires the system fan to turn on when operating.
- Evaporative
 - A drum style humidifier which requires the heating system to operate to evaporate the water.
 - This system requires the system fan to operate.
 - The thermostat Mode must be set to Heat or Auto.

Humidifier Window Protection

During cold weather, condensation will form on windows when the relative humidity (RH) is too high.

The optional window protection feature automatically calculates the indoor dew point based upon the outdoor temperature and the quality of the windows installed. The humidifier is then operated to the highest possible RH that is below the Humidify To setting. This feature requires a wired outdoor sensor to be installed.

Dehumidifier Operation

The thermostat controls the relative humidity (RH) by operating either the Accessory 1 or Accessory 2 relay. This is an installer configurable setting. When the RH is above the Dehumidify To setting by 3%, the Accessory 1 or 2 relay is closed to operate the dehumidifier. The dehumidifier is shut off when the RH reaches the Dehumidify To setting.

The thermostat can operate 2 types of dehumidifiers:

- Stand Alone
 - The dehumidifier is not connected to the HVAC system.
 - The thermostat Mode can be set to Heat, Cool, Auto or Off.
- DX Coil
 - The HVAC cooling system is used for dehumidification.
 - The Accessory 1 or Accessory 2 relay activates the DHUM operation on the air handling unit to operate the system fan at low speed.
 - The cooling compressor Y1 and Y2 relays are operated. The chilled DX coil condenses moisture from the air.
 - The cooling system can over cool the room temperature by 2°F (1°C) during dehumidification.

HRV / ERV Ventilator Operation

Ventilation with fresh outdoor air is important for maintaining indoor air quality. The thermostat can operate a heat recovery ventilator (HRV) or energy recovery ventilator (ERV) on a timer by closing the Accessory 1 relay to operate the ventilator fan at low speed.

Heat Pump Loop Valve Operation

The thermostat supports water-to-air heat pump systems that absorb or reject heat to a hydronic building loop. Whenever the heat pump compressor Y1 or Y2 relay is turned on, the Accessory 1 relay closes to open a hydronic zone valve. This allows variable speed pumps on the hydronic loop to operate at lower speeds when the heat pump is off, thereby saving electrical energy.

Error Messages

Description
<p>COMMUNICATION ERROR</p> <p>Communication between the display module and the HVAC Interface Module is interrupted. This error clears automatically once communication is re-established.</p> <p>This error can occur if the power supply voltage to the HVAC Interface Module is low. Check the voltage with a volt meter and that the transformer VA rating is enough to power all the equipment.</p>
<p>MEMORY ERROR</p> <p>The thermostat memory settings are corrupted. To clear, load the factory defaults in the Toolbox menu. The thermostat will not operate any heating or cooling equipment while this error message is present.</p>
<p>INTERNAL ROOM SENSOR FAULT</p> <p>Due to an open or short circuit, the thermostat is unable to read the internal room temperature sensor. If sensor 1, 2 or 3 is set to room the thermostat continues to operate, otherwise operation stops.</p> <p>The error cannot be field repaired. Contact your tekmar sales representative for warranty or repair procedures.</p>
<p>INTERNAL HUMIDITY SENSOR FAULT</p> <p>Due to an open or short circuit, the thermostat is unable to read the internal humidity sensor. The thermostat stops controlling the humidifier or dehumidifier unless an external humidity sensor is installed on Sensor 3.</p> <p>The error cannot be field repaired. Contact your tekmar sales representative for warranty or repair procedures.</p>
<p>SENSOR 1 FAULT</p> <p>Due to an open or short circuit, the thermostat is unable to read the sensor wired to S1 and Com. The thermostat stops normal operation if sensor 1 is the only active room or floor sensor or if a floor maximum temperature has been set.</p> <p>Check the auxiliary sensor wire for short circuits according to the sensor installation manual. It may be necessary to replace the auxiliary sensor. Once the error has been corrected, the error message automatically clears.</p>
<p>SENSOR 2 FAULT</p> <p>Due to an open or short circuit, the thermostat is unable to read the sensor wired to S2 and Com. The thermostat stops normal operation if sensor 2 is the only active room or floor sensor or if a floor maximum temperature has been set.</p> <p>Check the auxiliary sensor wire for short circuits according to the sensor installation manual. It may be necessary to replace the auxiliary sensor. Once the error has been corrected, the error message automatically clears.</p>
<p>SENSOR 3 FAULT</p> <p>Due to an open or short circuit, the thermostat is unable to read the sensor wired to S3 and Com. The thermostat stops normal operation if sensor 3 is the only active room sensor or if a floor maximum temperature has been set.</p> <p>Check the auxiliary sensor wire for short circuits according to the sensor installation manual. It may be necessary to replace the auxiliary sensor. Once the error has been corrected, the error message automatically clears.</p>

Description
<p>WATER LEAK DETECTOR WARNING</p> <p>A water leak has been detected and the water line has been shut off. The warning will automatically clear once the water leak detector has been reset.</p>
<p>ROOM HOT WARNING</p> <p>The room temperature is above the Room Hot Warning setting in the Alerts menu. The warning will automatically clear once the room temperature falls below the setting.</p>
<p>ROOM COLD WARNING</p> <p>The room temperature is below the Room Cold Warning setting in the Alerts menu. The warning will automatically clear once the room temperature rises above the setting.</p>
<p>LOW HUMIDITY WARNING</p> <p>The relative humidity is below the Low Humidity Warning setting in the Alerts menu. The warning will automatically clear once the relative humidity rises above the setting.</p>
<p>HIGH HUMIDITY WARNING</p> <p>The relative humidity is above the High Humidity Warning setting in the Alerts menu. The warning will automatically clear once the relative humidity falls below the setting.</p>
<p>AUXILIARY HEAT RUN TIME WARNING</p> <p>The auxiliary heat has been operating continuously longer than the Aux Heat Run Time Warning setting in the Alerts menu. The error clears when the auxiliary heat turns off. There may be problem with your heat pump. Contact your heating professional for service.</p>
<p>CHANGE AIR FILTER WARNING</p> <p>The fan run time has exceeded the Change Air Filter setting in the Alerts menu and requires replacement. To clear the warning, press the Air Filter Replaced button.</p>
<p>CHANGE UV LAMP WARNING</p> <p>The UV lamp run time has exceeded the UV Lamp setting in the Alerts menu and requires replacement. To clear the warning, press the UV Lamp Replaced button.</p>

Technical Data

Thermostat 565	
Literature	ES-T-565, IOM-T-565, UserManual-T-565, JobRecord-T-565
Packaged weight	1.3 lb. (600 g)
Dimensions	Display: 4½" H x 2¾" W x 9/16" D (114 x 70 x 14 mm) HVAC Interface Module: 7¼" H x 4¼" W x 1¼" D (188 x 112 x 31 mm)
Display	3.5" color touchscreen
Enclosure	Display: White or Black PVC plastic, NEMA type 1 HVAC Interface Module: Blue PVC plastic, NEMA type 1
Approvals	Meets Class B: ICES & FCC Part 15
Ambient conditions	Display: Indoor use only, -4 to 122°F (-20 to 50°C), RH ≤90% non-condensing HVAC Interface Module: -40 to 122°F (-40 to 50°C), RH ≤90% non-condensing, outdoor use requires mounting in a NEMA 3 enclosure
Environmental	Do not use in presence of ammonia (animal barns).
Power supply	21-30 V (ac), 6 VA, Class 2
Relays	30 V (ac) 2 A, Class 2 Circuits
Humidity sensor	0 to 90% ±4% RH
RH Output	3.3 V (dc) humidity sensor power, 3.0 mA maximum
Temperature sensor	NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) β=3892
Optional sensors	tekmar type # 070, 072, 073, 076, 077, 079, 084, 086, 087
Languages	English/Français/Español
Warranty	3 Year Limited Warranty

Limited Warranty and Product Return Procedure

Limited Warranty *The liability of tekmar under this warranty is limited. The Purchaser, by taking receipt of any tekmar product ("Product"), acknowledges the terms of the Limited Warranty in effect at the time of such Product sale and acknowledges that it has read and understands same.*

The tekmar Limited Warranty to the Purchaser on the Products sold hereunder is a manufacturer's pass-through warranty which the Purchaser is authorized to pass through to its customers. Under the Limited Warranty, each tekmar Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with tekmar's instructions, ordinary wear and tear excepted. The pass-through warranty period is for a period of twenty-four (24) months from the production date if the Product is not installed during that period, or twelve (12) months from the documented date of installation if installed within twenty-four (24) months from the production date.

The liability of tekmar under the Limited Warranty shall be limited to, at tekmar's sole discretion: the cost of parts and labor provided by tekmar to repair defects in materials and / or workmanship of the defective product; or to the exchange of the defective product for a warranty replacement product; or to the granting of credit limited to the original cost of the defective product, and such repair, exchange or credit shall be the sole remedy available from tekmar, and, without limiting the foregoing in any way, tekmar is not responsible, in contract, tort or strict product liability, for any other losses, costs, expenses, inconveniences, or damages, whether direct, indirect, special, secondary, incidental or consequential, arising from ownership or use of the product, or from defects in workmanship or materials, including any liability for fundamental breach of contract.

The pass-through Limited Warranty applies only to those defective Products returned to tekmar during the warranty period. This Limited Warranty does not cover the cost of the parts or labor to remove or transport the defective Product, or to reinstall the repaired or replacement Product, all such costs and expenses being subject to Purchaser's agreement and warranty with its customers.

Any representations or warranties about the Products made by Purchaser to its customers which are different from or in excess of the tekmar Limited Warranty are the Purchaser's sole responsibility and obligation. Purchaser shall indemnify and hold tekmar harmless from and against any and all claims, liabilities and damages of any kind or nature which arise out of or are related to any such representations or warranties by Purchaser to its customers.

The pass-through Limited Warranty does not apply if the returned Product has been damaged by negligence by persons other than tekmar, accident, fire, Act of God, abuse or misuse; or has been damaged by modifications, alterations or attachments made subsequent to purchase which have not been authorized by tekmar; or if the Product was not installed in compliance with tekmar's instructions and / or the local codes and ordinances; or if due to defective installation of the Product; or if the Product was not used in compliance with tekmar's instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH THE GOVERNING LAW ALLOWS PARTIES TO CONTRACTUALLY EXCLUDE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DURABILITY OR DESCRIPTION OF THE PRODUCT, ITS NON-INFRINGEMENT OF ANY RELEVANT PATENTS OR TRADEMARKS, AND ITS COMPLIANCE WITH OR NON-VIOLATION OF ANY APPLICABLE ENVIRONMENTAL, HEALTH OR SAFETY LEGISLATION; THE TERM OF ANY OTHER WARRANTY NOT HEREBY CONTRACTUALLY EXCLUDED IS LIMITED SUCH THAT IT SHALL NOT EXTEND BEYOND TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.

Product Warranty Return Procedure All Products that are believed to have defects in workmanship or materials must be returned, together with a written description of the defect, to the tekmar Representative assigned to the territory in which such Product is located. If tekmar receives an inquiry from someone other than a tekmar Representative, including an inquiry from Purchaser (if not a tekmar Representative) or Purchaser's customers, regarding a potential warranty claim, tekmar's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.

Need help? Go to our website or contact us.

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