Installation & Operation Manual WiFi Thermostat 561



561_D 11/16

Zoning

Replaces: 10/16

Introduction

The WiFi Thermostat 561 provides precise temperature control of a one-stage heating system. When connected to the Internet, the mobile app and website allows you to control the thermostat remotely. The thermostat and mobile app include an away feature that overrides the schedule to lower the temperature and increase energy savings. The thermostat is designed to support radiant floor heating and optional floor sensors can be installed to enhance comfort and protect floor coverings.



Features

- Mobile app for iOS and Android
- · Supports optional floor sensor
- Automatic software updates
- Outdoor temperature
- · Local weather
- Email error and warning notifications
- · Time clock updated from Internet
- 7 day programmable schedule
- Away energy savings mode
- · Early start
- Energy monitoring
- · English/Français/Español languages
- 3.5" color touchscreen
- Selectable background colors



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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.



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



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.

A WARNING





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 tekmarControls.com

A WARNING

- It is the installer's responsibility to ensure that this thermostat is safely installed according to all applicable codes and standards.
- Improper installation and operation of this thermostat could result in damage to the equipment and possibly even personal injury or death.
- This thermostat 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 warranty.

Installation

Preparation

Tools Required

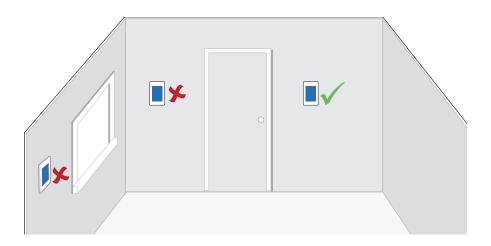
- tekmar or jeweler screwdriver
- Phillips head screwdriver
- · Wire stripper

- Drill (for wall anchor)
- 3/16" drill bit (for wall anchor)

Materials Required

18 AWG LVT Solid Wire (Low Voltage Connections)

Installation Location

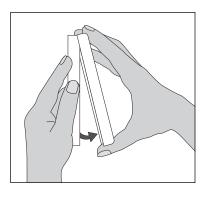


NOTICE

Consider the following:

- · Interior Wall.
- Keep dry. Avoid potential leakage onto the control.
- Relative Humidity less than 90%. Non-condensing environment.
- No exposure to extreme temperatures beyond 32-122°F (0-50°C).
- No draft, direct sun, or other cause for inaccurate temperature readings.
- Away from equipment, appliances, or other sources of electrical interference.
- Easy access for wiring, viewing, and adjusting the display screen.
- Approximately 5 feet (1.5 m) off the finished floor.
- The maximum length of wire is 500 feet (150 m).
- Strip wire to 3/8" (10 mm) for all terminal connections.
- Use standard 8 conductor, 18 AWG wire.

Removing The Thermostat Base



While holding the base section in one hand, pull the lower half of the display front towards you to pivot it away from the base.

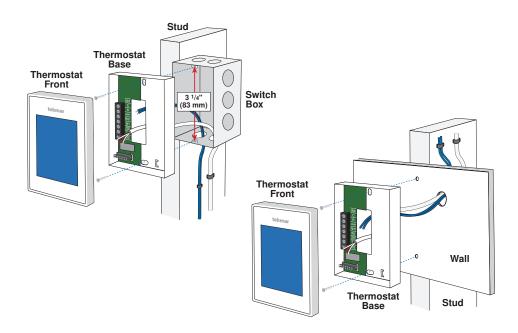
Mounting The Thermostat

A WARNING



To prevent the risk of personal injury and/or death, make sure power is not applied to the thermostat until it is fully installed and ready for final testing. All work must be done with power to the circuit being worked on turned off.

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



The WiFi Thermostat 561 operates a radiant floor heating system. The thermostat uses the built-in air temperature sensor.

Mechanical-

Legend

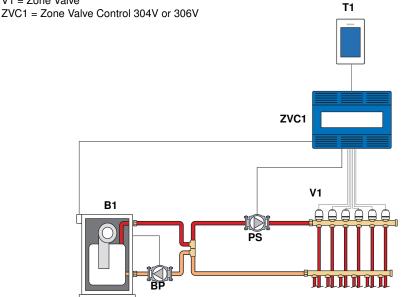
B1 = Boiler

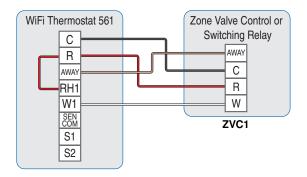
BP = Boiler Pump

PS = System Pump

T1 = WiFi Thermostat 561

V1 = Zone Valve





The WiFi Thermostat 561 operates a radiant floor heating system based upon the floor temperature sensor. The built-in air sensor is disabled.

Mechanical-

Legend

B1 = Boiler

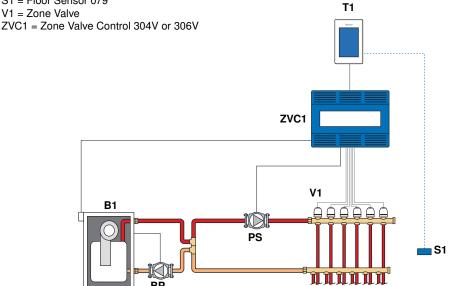
BP = Boiler Pump

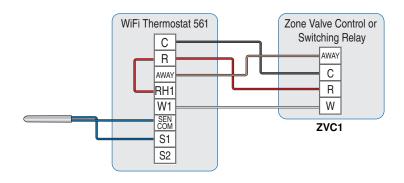
PS = System Pump

T1 = WiFi Thermostat 561

S1 = Floor Sensor 079

V1 = Zone Valve





The WiFi Thermostat 561 operates a radiant floor heating system. The thermostat uses both air and floor temperature sensors. The air temperature sensor can be either built-in and/or external.

Mechanical-

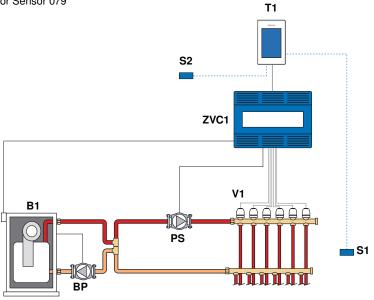
Legend

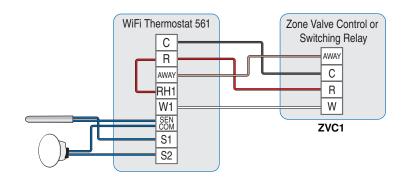
B1 = Boiler S2 = Optional Indoor Sensor 084

BP = Boiler Pump V1 = Zone Valve

PS = System Pump ZVC1 = Zone Valve Control 304V or 306V

T1 = WiFi Thermostat 561 S1 = Floor Sensor 079





The WiFi Thermostat 561 operates a baseboard/radiator using an air temperature sensor. The air temperature sensor can be either built-in and/or external.

Mechanical

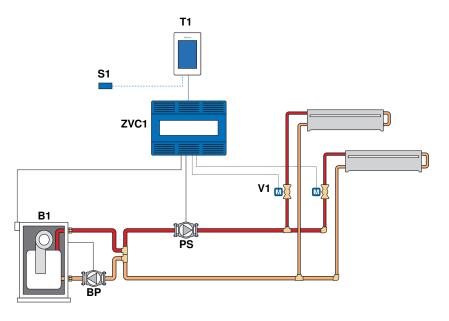
Legend

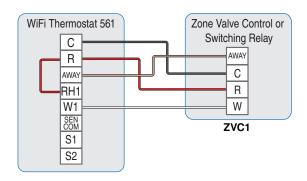
B1 = Boiler S1 = Optional Indoor Sensor 084

BP = Boiler Pump V1 = Zone Valve

PS = System Pump ZVC1 = Zone Valve Control 304V or 306V

T1 = WiFi Thermostat 561





Sequence of Operation

Heating 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.

Regular Heating

W1 relay is on when the air temperature falls $1.5^{\circ}F$ ($1^{\circ}C$) below the Heat To setting. When the temperature reaches the Heat To setting, the relay turns off. The W2 relay turns on based on settings selected in the Setup menu. W2 turns off when the air temperature is $0.5^{\circ}F$ ($0.25^{\circ}C$) below the Heat To setting.

Radiant Floor Heating

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

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.

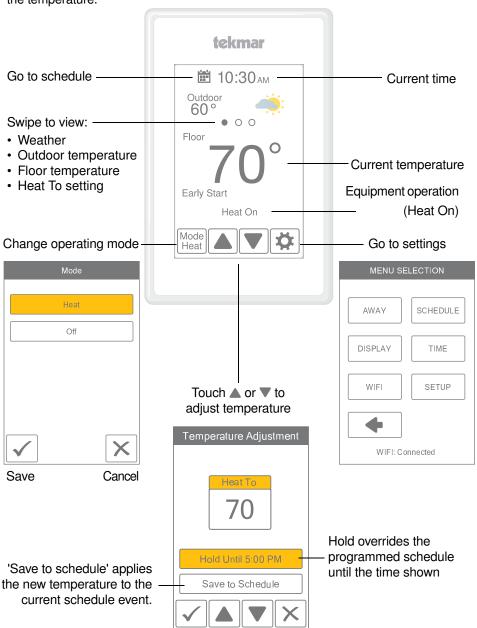
Warm Weather Shut Down (WWSD)

The heating system can automatically shut off based upon the outdoor temperature and the WWSD setting. This provides a convenient way to shut off radiant floor heating.

User Interface

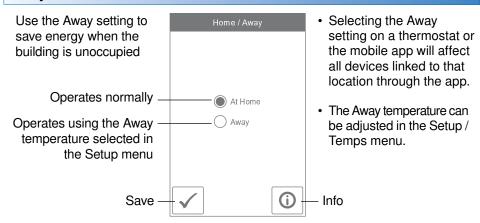
Home Screen

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

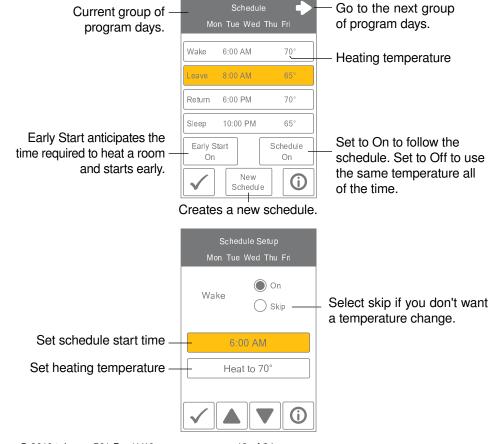


User Settings

Away



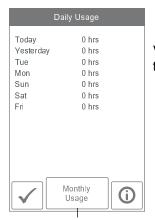




Display

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

Energy Use

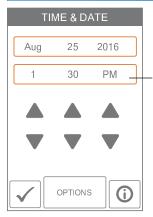


View each day's run time for heating.

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.	White, Blue, Black, 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

Time



When connected to the Internet, the time can be set automatically.

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
TIME SOURCE If Internet is available, the time source can be either automatically or manually set.	Automatic, Manual	Auto
TIME ZONE Select the local time zone.	Hawaii, Alaska, Pacific, Mountain, Central, Eastern, Atlantic, Newfoundland	Eastern
DAYLIGHT SAVING TIME Select the brightness when not in use.	Off, On	On

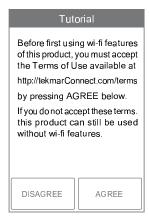
NOTICE

Incorrectly setting the time and date manually may prevent the thermostat from communicating to the mobile app. Automatic time source is recommended when using an Internet connection.

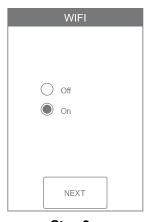
NOTICE

Before using the WiFi features of this product, you must accept the Terms of Use, as amended from time to time and available at tekmarConnect.com/terms. If you do not accept these terms, this product can still be used without WiFi features.

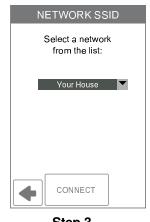
The thermostat includes a step by step tutorial to setup the WiFi connection.



Step 1
Agree to Terms of Use



Step 2 Turn on WiFi



Step 3
Enter wireless network name. It must support WPA2 security encryption.



Step 4Enter WiFi password.



Enter ZIP or postal code.
This determines your location for weather information



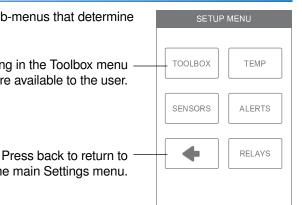
Select if the time is set automatically from the Internet or manually.

Installer Settings

Setup

The Setup menu contains five 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.



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.	WWSD, W1	N/A
SOFTWARE VERSION Display the software version.	J1249A	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
Screen Page 1		
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
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
Screen Page 2		
HEAT TO AWAY Select the heating temperature when away.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off
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
WARM WEATHER SHUT DOWN Select the outdoor temperature at which the heating is shut off.	Off, 40 to 95°F Off, 4.5 to 35.0°C	Off

Setup - Sensors

Setting	Range	Default
SENSOR 1 Select the type of sensor connected to S1 and Comwiring terminals.	Off, Room, Floor	Off
SENSOR 2 Select the type of sensor connected to S2 and Comwiring terminals.	Off, Room, Floor, Outdoor	Off
INTERNAL ROOM SENSOR Select if the internal room temperature sensor is on or off. Only available when Sensor 1 or 2 is set to read a room or floor sensor.	Off, On	On
ROOM OFFSET Select if the internal room temperature sensor is on or off. Only available when Sensor 1 or 2 is set to read a room or floor sensor.	Off, -5 to +5°F -3.0 to 3.0°C	Off

Setup - Alerts

Setting	Range	Default
ROOM HOT WARNING Sends an email notification if the room exceeds this temperature.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off
ROOM COLD WARNING Sends an email notification if the room falls below this temperature.	Off, 40 to 100°F Off, 4.5 to 38.0°C	Off

Setup - Relays

Setting	Range	Default
RADIANT FLOOR HEATING Select if the first stage W1 heats a radiant floor.	No, Yes	No

tekmar Connect Web and Mobile App

To view and adjust the WiFi Thermostat using a mobile phone or tablet, download the tekmar Connect mobile app from the Apple® iTunes® Store or from the Google Play® Store. Alternatively, go to tekmarConnect.com for web browser access.

Add Thermostat to App



Step 1
Create a new account. Then login using your username and password.



Step 2 Add a Device



Step 3
On the thermostat, go to WiFi menu and press Register Device.



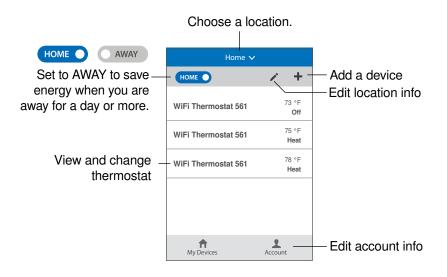
Step 4
Enter the 8 digit number from the thermostat into the mobile app. Then enter the thermostat's room name. The app supports multiple site locations. Enter the location for the thermostat.

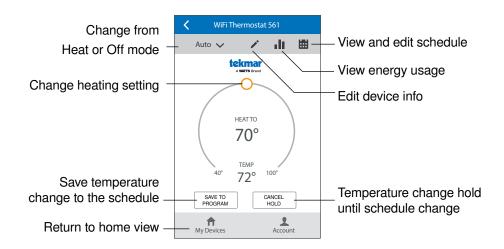


Step 5
Edit your account and save.



The thermostat is now listed on the My Devices page.





Troubleshooting

Error Messages

When an error occurs an email notification will be sent to the registered tekmar Connect mobile or web app account owner.

Description

MEMORY ERROR

The thermostat memory settings are corrupted. To clear, load the factory defaults in the Toolbox menu. The thermostat will not operate any heating equipment while this error message is present.

INTERNAL ROOM SENSOR FAULT

Due to an open or short circuit, the thermostat is unable to read the internal room temperature sensor. If sensor 1 or 2 is set to room the thermostat continues to operate, otherwise operation stops.

The error cannot be field repaired. Contact your tekmar sales representative for warranty or repair procedures.

SENSOR 1 FAULT

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. 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.

SENSOR 2 FAULT

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. 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.

ROOM HOT WARNING

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.

ROOM COLD WARNING

The room temperature is below the Room Hot Warning setting in the Alerts menu. The warning will automatically clear once the room temperature falls below the setting.

Technical Data

WiFi Thermostat 561 One Stage Heat		
Literature	561_C, 561_D, 561_J, 561_U	
Control	Microprocessor control. This is not a safety (limit) control.	
Packaged weight	0.6 lb. (270 g)	
Dimensions	4-5/8" H x 3" W x 15/16" D (118 x 76 x 24 mm)	
Enclosure	White PVC plastic, NEMA Type 1	
Approvals	Meets Class B: ICES & FCC Part 15	
Ambient conditions	Indoor use only, 32 to 122°F (0 to 50°C), RH ≤90% non-condensing	
Power supply	15 to 30 V (ac/dc), 2 VA standby, Class 2	
Relays	30 V (ac/dc), 2 A, Class 2 circuits	
Sensor	NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) β=3892	
- Included	None	
- Optional	tekmar type # 070, 072, 073, 076, 077, 079, 084	
Communications	WiFi 802.11n, 2.4 GHz, WPA2 encryption	
Mobile app	Apple iOS, Android	

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 passthrough 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 passthrough 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.

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information: Watts.com/prop65



All specifications are subject to change without notice

Tel: (250) 545-7749 • Fax: (250) 984-0815 tekmarControls.com