Installation, Operation and Maintenance W561 WiFi Thermostat



Compatible With

- 1-stage heating
- Supports included floor sensor for radiant floor heating applications

A 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. Keen this Manuel for future reference

Keep this Manual for future reference.



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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. Watts[®] 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.

A 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



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

🛦 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

- Watts or jeweler screwdriver
- Phillips head screwdriver

Installation Location

Materials Required

• 18 AWG LVT Solid Wire (Low Voltage Connections)



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.

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

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 W561 WiFi Thermostat operates a radiant floor heating system. The thermostat uses the built-in air temperature sensor.

T1

Mechanical

Legend

B1 = Boiler BP = Boiler Pump PS = System Pump T1 = W561 WiFi Thermostat V1 = Zone Valve ZVC1 = Zone Valve Control 304V or 306V





The W561 WiFi Thermostat operates a radiant floor heating system based upon the floor temperature sensor, included. The built-in air sensor is disabled.

Mechanical

Legend





The W561 WiFi Thermostat 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





The W561 WiFi Thermostat operates a baseboard/radiator using an air temperature sensor. The air temperature sensor can be either built-in and/or external.





Heating Operation

The heating setpoint can be set from 40 to $95^{\circ}F$ (4.5 to $35^{\circ}C$). 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 $40^{\circ}F$ (4.5°C), regardless of operating mode.

Regular Heating

W1 relay is on when the air temperature falls 1.5°F (1°C) below the Heat To setting. When the temperature reaches the Heat To setting, the relay turns off.

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

Room Sensor and Averaging

The thermostat can measure room temperature between -46 to 212°F (-43 to 100°C). 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

The thermostat can measure floor temperature between -46 to $212^{\circ}F$ (-43 to $100^{\circ}C$). If a floor sensor is connected, floor minimum and maximum settings are available. The floor heating setpoint is adjustable from 40 to $100^{\circ}F$ (4.5 to $38.0^{\circ}C$).

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.

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

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 or cooling has operated either daily or monthly.	0 to 24 (daily) 0 to 744 (monthly)	0 hours



Toggl	e between Daily
and M	Ionthly 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 OUTDOOR DISPLAY Select if the outdoor temperature is visible when the display is inactive.	Off or On	Off

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 \blacktriangle 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.

WiFi

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 Watts.com/terms-of-use. 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.

		Tu	torial				WIFI				NETV	VORK	SSID					
Before first using WiFi features of this product, you must accept the Terms of Use available at https://www.watts.com/terms- of-use by pressing AGREE below. If you do not accept these terms, this product can still be used without WiFi features.							Off On					Sele fro	ct a netw m the lis	vork st: e	•			
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information.

utomatically from the Internet or manually.

WiFi and Connectivity Troubleshooting

WiFi Connection Status

Press \Rightarrow > WiFi > WiFi:On > (1) to view the thermostat connection status.



(1) WiFi Signal Strength

- The WiFi signal must measure between 0 and -69 dB to have a reliable connection to the Watts[®] cloud.
- A WiFi extender is recommended to be installed if the WiFi signal is between -70 to -100 dB.

(2) Internet Connected

• The WiFi information screen will show Internet Connected when the thermostat is connected to the router and there is a connection to the Internet.

(3) IoT Connected

• The thermostat connection status will show IoT Connected when connected to the Watts Cloud and the thermostat is ready to be registered to the app.

If IoT is not connected, please follow these steps:

Check Password

- Double check that you are using the correct WiFi network and password.
- The password is limited to 32 characters, and can include upper and lower case letters, numbers, special characters and spaces. A space counts as a character.
- The thermostat supports WPA2-Personal password security.

Power Off and On

• Power the thermostat off. Next, power the router off, wait 10 seconds, then power

on and wait for the Internet status to be on. Then power the thermostat on.

Check Router & Firewall

Consult the router manual or Internet Service Provider (ISP) for assistance with router setup with these configurations:

- The router must provide a 2.4 GHz signal. The thermostat is not compatible with 5 GHz networks.
- The router is using WPA2-Personal security.
- The router has DHCP enabled with enough available addresses for all Internet devices.
- The router firewall is not blocking the outbound UDP or TCP ports: 53, 123, 443, 8883.
- The router firewall is not blocking connections to *.azure-devices.net
- The router firewall is not blocking the thermostat based upon a MAC filter list.

Network Troubleshooting

- tekmar provides free access to a network troubleshooting tool called **RouteThis Helps**.
- Download the app from the App Store or Google Play Store to your mobile device.
- Enter code "TEKM" and click "Network scan". The app will provide further instructions.

Create a WiFi Hotspot

- If you are unable to connect to the WiFi network, try creating a WiFi Hotspot on your mobile device to bypass the router.
- Apple^{®*} iOS WiFi hotspot instructions https://support.apple.com/en-us/ HT204023
- Android^{™**} WiFi hotspot instructions https://support.google.com/android/ answer/9059108
- If the thermostat displays IoT connected when using the WiFi Hotspot, please contact your Internet Service Provider (ISP) or IT professional for assistance with the router.

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^{*} Apple and App Store are trademarks of Apple Inc.

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.

> 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.	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 100°F Off, 4.5 to 38.0°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	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
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 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
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
FLOOR OFFSET Manual offset correction of the floor temperature measurement.	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	No,	No
Select if the first stage W1 heats a radiant floor.	Yes	-

Error Messages

When an error occurs an email notification will be sent to the registered Watts Home mobile or account owner.

Description

INTERNET UNAVAILABLE

The thermostat has a WiFi connection to the router but is unable to communicate to the Internet. Steps to clear the error include: 1) power off and on the router, 2) power off and on the thermostat.

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 Watts 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 Cold Warning setting in the Alerts menu. The warning will automatically clear once the room temperature rises above the setting.

Technical Data

W561 WiFi Thermostat One Stage Heat				
Literature	Submittal, Installation and Operating Manual, User Manual, Job Record, Watts Home Manual			
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 \leq 90% non-condensing			
Power supply	15 to 30 V (ac/dc), 2 VA standby, Class 2			
Relays	30V (ac/dc), 2 A, Class 2 circuits			
Sensor	NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) β=3892			
– Included	079			
- Optional	tekmar type # 070, 072, 073, 076, 077, 084			
Communications	WiFi 802.11n, 2.4 GHz, WPA2 encryption			
Mobile app	Apple iOS 12 or higher, Android 10 or higher			

Notes

Notes

Hydronic System Electronic Controls and Thermostats Limited Warranty

Watts Regulator Co. (the Company) warrants its hydronic system electronic controls and thermostats (the Product) to be free from defects in materials and workmanship under normal usage for a period of one year from the documented date of installation of the Product. In the event of defects within the warranty period, the Company will replace the Product without charge. This remedy is the sole and exclusive remedy for breach of warranty. This warranty is transferable to subsequent owners.

Under this Limited Warranty, the Company will provide the following:

In order to make a claim, you must:

- (a) Provide the Company with sufficient details relating to the nature of the defect, the installation, the history of operation, and any repairs that may have been made.
- (b) At the Company's discretion and at the owner's expense, ship the Product to the Company or the Company's local representative or distributor.
- (c) Provide proof that the Product was installed in accordance with the applicable Product Installation Manual and any special written design or installation guidelines by the Company for this project.
- (d) Provide proof that the Product was installed in accordance with the National Electrical Code (NEC) or the Canadian Electrical Code (CEC), and all applicable local building and electrical codes.
- (e) Provide a retail sales receipt or proof of purchase.
- The following are not covered by this Limited Warranty:
- (a) Any incidental or consequential damage, including inconvenience, loss of time or loss of income.
- (b) Any labor or materials required to repair or replace the Product that are not authorized in writing by the Company.
- (c) Any labor or materials required to remove, repair or replace materials other than the Products.

(d) Any freight or delivery costs related to the Product or any related electrical products.

The Company assumes no responsibility under this Limited Warranty for any damage to the Product caused by any trades people, visitors on the job site, or damage caused as a result of post-installation work. This Limited Warranty shall be invalidated by any abuse, misuse, misapplication or improper installation of the Products. The staff at the Company is available to answer any questions regarding the proper installation or application of the Product at this toll-free phone number: 800-276-2419 (USA/International) or 888-208-8927 (Canada). If you are ever in doubt about the correct installation procedure to follow, or if the Product appears to be damaged, you must call us before proceeding with the installation or proposed repair.

THE COMPANY DISCLAIMS ANY WARRANTY NOT PROVIDED HEREIN, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. THE COMPANY FURTHER DISCLAIMS ANY RESPONSIBILITY FOR SPECIAL, INDIRECT, SECONDARY, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING FROM OWNERSHIP OR USE OF THIS PRODUCT, INCLUDING INCONVENIENCE OR LOSS OF USE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE OF THIS DOCUMENT. NO AGENT OR REPRESENTATIVE OF THE COMPANY HAS ANY AUTHORITY TO EXTEND OR MODIFY THIS WARRANTY UNLESS SUCH EXTENSION OR MODIFICATION IS MADE IN WRITING BY A CORPORATE OFFICER.

Some states/provinces do not allow the exclusion or limitation of incidental or consequential damages and some states/provinces do not allow limitations on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state or province to province. SO FAR AS IS CONSISTENT WITH APPLICABLE STATE/PROVINCIAL LAW, ANY IMPLIED WARRANTIES THAT MAY NOT BE DISCLAIMED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF MANUFACTURE.

Effective: May 1, 2013. This warranty applies to all Products purchased after this date.

Need help? Go to our website or contact us.

Watts.com | radiant@wattswater.com | 1-800-276-2419



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