



Powerley

Thermostat

SKU: PWLY-7828-A1





Quickstart

This is a **HVAC-Thermostat** for **U.S. / Canada / Mexico**. Please make sure the internal battery is fully charged. To add this device to your network execute the following action:
Z-Wave Inclusion Process First, be sure your Energy Bridge has power and the green light is illuminated. Follow the in-app instructions along with the steps below to include your Thermostat. To put your thermostat into inclusion mode, press and hold Mode for 5 seconds. CONNECT will scroll across the thermostat display once in inclusion mode. SUCCESS will scroll across the thermostat display once included. FAIL will scroll across the thermostat display if inclusion is unsuccessful, or if process takes longer than 1 minute. See the next page for troubleshooting. To learn more about which Z-Wave command classes this thermostat supports, visit: www.powerley.com/thermostat/command-classes

Attention: This manual is automatically generated from [Z-Wave Alliance](#) Product data and may be incomplete. Please refer to the [Manufacturers Manual](#) for more information.

Important safety information

Please read this manual carefully. Failure to follow the recommendations in this manual may be dangerous or may violate the law. The manufacturer, importer, distributor and seller shall not be liable for any loss or damage resulting from failure to comply with the instructions in this manual or any other material. Use this equipment only for its intended purpose. Follow the disposal instructions. Do not dispose of electronic equipment or batteries in a fire or near open heat sources.

What is Z-Wave?

Z-Wave is the international wireless protocol for communication in the Smart Home. This device is suited for use in the region mentioned in the Quickstart section.

Z-Wave ensures a reliable communication by reconfirming every message (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.



This device and every other certified Z-Wave device can be **used together with any other certified Z-Wave device regardless of brand and origin** as long as both are suited for the same frequency range.

If a device supports **secure communication** it will communicate with other devices secure as long as this device provides the same or a higher level of security. Otherwise it will automatically turn into a lower level of security to maintain backward compatibility.

For more information about Z-Wave technology, devices, white papers etc. please refer to www.z-wave.info.

Product Description

Residential energy usage is driven by the home's heating and cooling system, and Powerley provides the connectivity to understand usage of the home's HVAC and control remotely or automatically with the Powerley Thermostat. The Powerley Thermostat uses the Z-Wave protocol and can be seamlessly integrated into the connected home via the Powerley Energy Bridge to facilitate communication and control between the devices. The thermostat provides the user with the ability to remotely control home temperature and also allows Powerley to optimize the HVAC system's use balancing energy usage and comfort. The device also provides for the ability to facilitate Demand Response events, including allowing the consumer to choose whether or not to participate in the event via push notifications.

Prepare for Installation / Reset

Please read the user manual before installing the product.

In order to include (add) a Z-Wave device to a network it **must be in factory default state**. Please make sure to reset the device into factory default. You can do this by performing an Exclusion operation as described below in the manual. Every Z-Wave controller is able to perform this operation however it is recommended to use the primary controller of the previous network to make sure the very device is excluded properly from this network.

Reset to factory default

This device also allows to be reset without any involvement of a Z-Wave controller. This procedure should only be used when the primary controller is inoperable.

Factory Reset Please use Factory Reset only when the network primary controller is missing or otherwise inoperable. To reset to factory defaults, turn the thermostat off by pressing Mode repeatedly until OFF scrolls across the display, then press and hold the down and up Setpoint arrows at the same time for 5 sec. If successful, RESET will scroll across the display and the device will be restored to its default settings. NOTE: If a reset to factory default settings is performed, all settings including Z-Wave configuration parameter values and temperature setpoints will return to default values: Heat: 68 Cool: 78 Measure: Fahrenheit Swing: +/- 1 Multi-stage temp differential: 3 System Type: 2-stage conventional heating & cooling

Inclusion/Exclusion

On factory default the device does not belong to any Z-Wave network. The device needs to be **added to an existing wireless network** to communicate with the devices of this network. This process is called **Inclusion**.

Devices can also be removed from a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave network. This controller is turned into exclusion respective inclusion mode. Inclusion and Exclusion is then performed doing a special manual action right on the device.

Inclusion

Z-Wave Inclusion Process First, be sure your Energy Bridge has power and the green light is illuminated. Follow the in-app instructions along with the steps below to include your Thermostat. To put your thermostat into inclusion mode, press and hold Mode for 5 seconds. CONNECT will scroll across the thermostat display once in inclusion mode. SUCCESS will scroll across the thermostat display once included. FAIL will scroll across the thermostat display if inclusion is unsuccessful, or if process takes longer than 1 minute. See the next page for troubleshooting. To learn more about which Z-Wave command classes this thermostat supports, visit: www.powerley.com/thermostat/command-classes

Exclusion

Z-Wave Exclusion Process To exclude your Thermostat, press and hold Mode for 5 seconds to initiate Z-Wave exclusion process. DELETE will scroll across the thermostat display once in inclusion mode. To cancel the exclusion process, press Mode. To complete exclusion press either

of the up/down arrows. SUCCESS will scroll across the thermostat display once excluded. NOTE: Excluding the thermostat will restore it to the default state for Z-Wave and temperature set points.

Quick trouble shooting

Here are a few hints for network installation if things dont work as expected.

1. Make sure a device is in factory reset state before including. In doubt exclude before include.
2. If inclusion still fails, check if both devices use the same frequency.
3. Remove all dead devices from associations. Otherwise you will see severe delays.
4. Never use sleeping battery devices without a central controller.
5. Dont poll FLIRS devices.
6. Make sure to have enough mains powered device to benefit from the meshing

Association - one device controls an other device

Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called association. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called association groups and they are always related to certain events (e.g. button pressed, sensor triggers, ...). In case the event happens all devices stored in the respective association group will receive the same wireless command wireless command, typically a 'Basic Set' Command.

Association Groups:

Group Number	Maximum Nodes	Description
1	5	This thermostat supports a single Z-Wave Association Group (Group 1) called the u0022lifeline. All thermostat related commands are sent to the NodeID programmed in Group 1. Z-Wave commands that are sent to Group 1 include: Battery LevelThermostat heat set pointThermostat cool set pointDevice local reset notificationTemperatureHumidityFan modeFan mode current state of operationThermostat modeThermostat current state of operation

Configuration Parameters

Z-Wave products are supposed to work out of the box after inclusion, however certain configuration can adapt the function better to user needs or unlock further enhanced features.

IMPORTANT: Controllers may only allow configuring signed values. In order to set values in the range 128 ... 255 the value sent in the application shall be the desired value minus 256. For example: To set a parameter to 200 it may be needed to set a value of 200 minus 256 = minus 56. In case of a two byte value the same logic applies: Values greater than 32768 may needed to be given as negative values too.

Parameter 1: Display Units

This configuration setting controls the units of which the temperature is displayed in.

Size: 1 Byte, Default Value: 1

Setting Description

0	C
1	F

Parameter 10: OTA (Over The Air) programming error code

This configuration setting gives feedback on the status of an OTA programming update.

Size: 1 Byte, Default Value: 0

Setting	Description
0	No error
1	Battery low, reflashing not possible
2	OTA cancelled before completion
3	Fragment CRC error
4	Total image CRC error
5	External flash error
6	Fragment received out of order
7	Invalid firmware or manufacture ID
8	OTA session not properly initialized
9	Same image currently running
10	Time out during OTA download between fragments

Parameter 11: Display always on

*This configuration setting allows a user to turn the always-on display on or off. This functionality is dependent on a C-Wire connection. *Note: This setting can be modified in battery powered applications but affects are only seen in C-Wire powered applications.*

Size: 1 Byte, Default Value: 1

Setting	Description
0	Display off in C-Wire powered mode
1	Display on in C-Wire powered mode

Parameter 2: HVAC Settings

This configuration setting allows the user to set the HVAC system type the thermostat is controlling.

Size: 1 Byte, Default Value: 1

Setting	Description
0	1 Stage Conventional
1	2 Stage Conventional
2	Heat Pump w/ O-Wire
3	Heat Pump w/ B-Wire
4	Heat Pump w/ O-Wire & aux heating
5	Heat Pump w/ B-Wire & aux heating

Parameter 3: ECO Mode

this configuration setting displays if the thermostat is currently operating in ECO Mode.
Size: 1 Byte, Default Value: 0

Setting Description

0	Off
1	On

Parameter 4: Thermostat Default Settings

This configuration setting controls factory reset of the physical device.
Size: 1 Byte, Default Value: 0

Setting	Description
0	No Change
1	Restore Thermostat Factory Settings (minus z-wave)

Parameter 5: Temperature Calibration

Your thermostat was accurately calibrated at the factory, however, you can change the display temperature to match that of a previous thermostat, or to match another thermostat already in your home. The range of change is from -5F to 5F.
Size: 1 Byte, Default Value: 0

Setting	Description
0 - 5	0 - 5F; 0-2.8C
251 - 255	(-5)-(-1)F; (-1) - (-2.8)C

Parameter 6: LED Dimming (If applicable)

This configuration setting controls brightness of the LED display in the thermostat.
Size: 1 Byte, Default Value: 3

Setting Description

0	Low
1	Medium
2	High
3	Auto

Parameter 7: Demand Response Mode

This configuration setting controls the LED indicator light to signify the thermostat setpoint is part of a utility-set Demand Response Event.

Size: 1 Byte, Default Value: 0

Setting Description

0	Off
1	On

Parameter 8: Swing Setting

This configuration setting allows the user to control at what setpoint variance the HVAC system turns on at. The thermostat swing temperature is in units of 1 degrees Fahrenheit.

Size: 1 Byte, Default Value: 1

Setting Description

0 - 10	0 - 10F; 0 - 5.6C
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Parameter 9: Differential Setting

The Differential is the number of degrees between the room temperature and the target temperature at which the 2nd stage will engage to bring the room temperature back to the target. The default is 3F. The programmable range is 0-10F.

Size: 1 Byte, Default Value: 3

Setting Description

0 - 10	0 - 10F; 0 - 5.6C
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Technical Data

Hardware Platform	ZM5202
Device Type	Thermostat - HVAC
Network Operation	Listening Sleeping Slave
Firmware Version	HW: 1 FW: 4.05:01.10
Z-Wave Version	6.51.10
Certification ID	ZC10-17065620
Z-Wave Product Id	0x028c.0xa55a.0x0001

Sensors	Humidity
Thermostat HVAC Systems Supported	Heat PumpMulti StageSingle Stage
Thermostat Power Source	BatteryPower Stealing (hard-wired 24V)
Color	White
Communications Protocol	Z-Wave Serial API
Firmware Updatable	Updatable by Manufacturer
Thermostat Modes	CoolEnergy Save CoolEnergy Save HeatHeat
Frequency	XXfrequency
Maximum transmission power	XXantenna

Supported Command Classes

- Association Grp Info
- Association V2
- Basic
- Battery
- Configuration
- Device Reset Locally
- Firmware Update Md V2
- Manufacturer Specific
- Powerlevel
- Sensor Multilevel V5
- Thermostat Fan Mode
- Thermostat Fan State
- Thermostat Mode V2
- Thermostat Operating State V2
- Thermostat Setpoint
- Version V2
- Zwaveplus Info V2

Explanation of Z-Wave specific terms

- **Controller** — is a Z-Wave device with capabilities to manage the network. Controllers are typically Gateways, Remote Controls or battery operated wall controllers.
- **Slave** — is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** — is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Inclusion** — is the process of adding new Z-Wave devices into a network.
- **Exclusion** — is the process of removing Z-Wave devices from the network.
- **Association** — is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** — is a special wireless message issued by a Z-Wave device to announces that is able to communicate.

- **Node Information Frame** — is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.

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