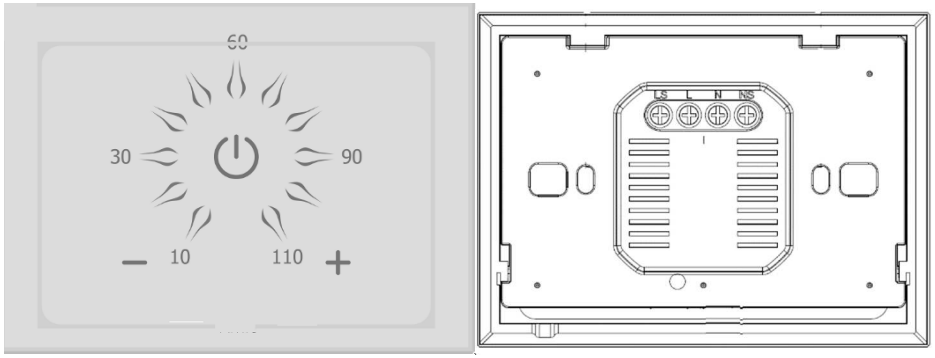
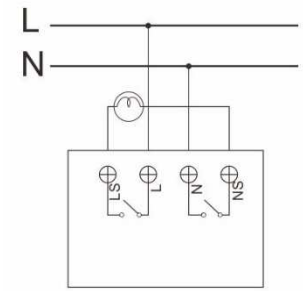
GPB-7000
Gerber Prime Boiler Control Panel





Note: The power cord must meet 1.25mm² or 16AWG or better

This Gerber Prime Boiler GPB-7000 is a security enabled wireless device, based on Z-Wave Plus technology. Z-Wave Plus™ enabled devices displaying the Z-Wave Plus™ logo can also be used with it regardless of the manufacturer, and can also be used in other manufacturer's Z-Wave™ enabled networks. Remote On/Off control of the switch is possible with other manufacturer's wireless Controller. GPB-7000 is designed to act as a repeater. Repeaters will re-transmit the RF signal to ensure that the signal is received by its intended destination by routing the signal around obstacles and radio dead spots. Because GPB-7000 supports Security Command Class, it can learn with Secured controller. Its functionality and supported command classes is identical when included as a secure and non-secure device.

GPB-7000 is able to detect instance wattage (3840/EU, 1920/US) and overload current (16A) of connected lights or appliances. When detecting overload state, the switch will be turned off and its On/Off function will be lockout of which LED will flash quickly. However, disconnect and re-connect the switch will reset its overload condition to normal status.

Safety Precautions and Installation

- Avoid installing the unit in storming or raining weather.
- Be sure to isolate or switch off power source before installing or maintenance.
- Do ensure that the power supply circuit protected by a 16A circuit breaker or suitable equivalent fuse.

IMPORTANT

- Installation must be performed by skilled technicians who are informed about the standards and technical requirements of the appliance and its proper installation.
- Check your local codes as they apply to your situation. If the house wiring is of aluminum, consult with an electrician about proper wiring methods.

Before proceeding with the installation, TURN OFF THE POWER TO THE LIGHTING CIRCUIT AT THE CIRCUIT BREAKER OR FUSE BOX TO AVOID ELECTRICAL SHOCK.

Adding to Z-Wave™ Network

In the front casing, there are thee touch buttons with LED indicator, " "、"+"、"−", which is used to toggle switch on and off or carry out inclusion, exclusion, reset. When first power is applied, its LED flashes on and off alternately and repeatedly at 2 second intervals. It implies that it has not been assigned a node ID.

Smart Start

Before adding GPB-7000 into the Z-wave network, the controller should scan its QR code. Then connect the AC power to GPB-7000, the learning procedure will progress automatically.

Note: Unlike "inclusion" function as shown in the table below, the execution of smart start is free from pressing the On/Off button on the Switch.

The table below lists an operation summary of basic Z-Wave functions. Please refer to the instructions for your Z-Wave™ Certificated Primary Controller to access the Setup function, and to Add/Remove/associate devices

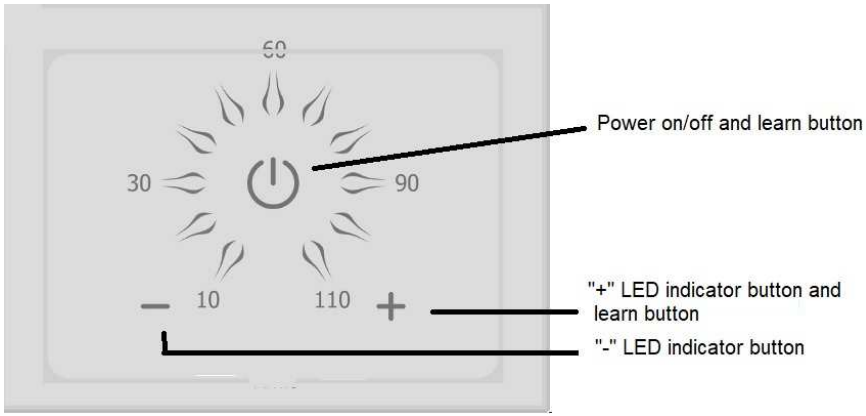
Function	Description	Annotation
No node ID	The Z-Wave Controller does not allocate a node ID to the Switch.	LED 2-second on, 2-second off
Add	1.Put your Z-Wave controller into inclusion mode by following the instructions provided by the controller manufacturer.	
	2. Press and hold "⏻" button first, then press "+" button three times within 2 seconds will enter inclusion mode.	"⏻"LED blink three times.
Remove	1.Put your Z-Wave controller into exclusion mode by following the instructions provided by the controller manufacturer.	
	2. Press and hold "⏻" button first, then press "+" button three times within 2 seconds will enter exclusion mode.	"⏻"LED blink three times.
	3. Node ID has been excluded.	
Reset	1. Press and hold "⏻" button first, then press "+" button three times within 2 seconds will enter inclusion mode.	Use this procedure only in the event that the primary controller is lost or otherwise inoperable.
	2.Within 1 second, press "+" button again and hold for 5 seconds.	
	3. IDs are excluded.	LED 2-second on, 2-second off
※Adding a node ID allocated by Z-Wave Controller means inclusion. Removing a node ID allocated by Z-Wave Controller means exclusion. ※Failed or success in including/excluding the node ID can be viewed from the Z-Wave Controller.		

LED Indication

To distinguish what mode the switch is in, view from the LED for identification.

State Type	LED Indication
Normal	Under normal operation, short pressing "⏻" button will turn On and Off. When switch turns on, green LED lights up, whereas turns off, red LED is lights up.
No node ID	Under normal operation, when the Switch has not been allocated a node ID, the "⏻" LED flashes on and off alternately at 2-second intervals.
Learning	When GPB-7000 enter include or exclude mode by pressing the combination of "⏻" button and "+" button , "⏻" LED will flashes three times 0.5 second intervals.
Overload	When overload state occurs, the switch is disabled of which "⏻" LED flashes on and off alternately at 0.2 second intervals. Overload state can be cleared by disconnecting and reconnecting the Switch to the wall outlet.

Overview



Installation and Operation

1. Plug this switch into a wall box near the load to be controlled.
2. Connects the load to the switch. Make sure the load to be controlled cannot exceed 16A (Resistive Load).
3. Press the button or switch on the load to the ON position.
4. To manually turn ON the switch, short press the “ ” button. The green “ ” LED will turn ON, and the blue timer LEDs will also turn ON. Every passed 10 minutes will change one blue LED as a green LED. When all the blue LEDs changes, all the green LEDs will blink twice and turn off. Then the switch turns off and green “ ” LED changes to red “ ” LED.
5. To manually turn OFF the Switch, short press the “ ” button. The red LED will turn ON and the load connected to the switch will also turn OFF.
6. Every short press “+” button, there will be increasing one more blue LED. When arrives to the intended timer, stop pressing and all the blue LEDs will blink twice. Or you can press and hold “+” button, there will be increasing one more blue LED every half second. Every blue LED represents 10 minutes working time of switch. The maximum time is 110 minutes, and the default is 60 minutes.
7. Every short press “−” button, there will be decreasing one blue LED. This means the working time of switch decrease 10 minutes. The minimum time is 10 minutes. Or you can press and hold “−” button, there will be decreasing one blue LED every half second.
8. After switch is turned on for a while, you can still decrease (or increase) the working time by pressing “−” button (or “+” button). When all the blue LEDs decreases to off, the switch will turn off.

Programming

1. Basic Command Class / Binary Switch Command Class
GPB-7000 will respond to BASIC and BINARY commands that are part of the Z-Wave system.

1-1 BASIC_GET / BINARY_SWITCH_GET
Upon receipt of the following commands from a Z-Wave Controller, GPB-7000 will report its On/Off state to the node asked.

Basic Get Command: [Command Class Basic, Basic Get]
Basic Report Command: Report OFF: [Command Class Basic, Basic Report, Value = 0(0x00)] Report ON:[Command Class Basic, Basic Report, Value = 255(0xFF)]

Binary Switch Get Command:[Command Class Switch Binary, Switch Binary Get]
Binary Switch Report Command: Report OFF:[Command Class Switch Binary, Switch Binary Report, Value =0(0x00)] Report ON:[Command Class Switch Binary, Switch Binary Report, Value = 255(0xFF)]

1-2 BASIC_SET / SWITCH_BINARY_SET
Upon receipt of the following commands from a Z-Wave Controller, the load attached to GPB-7000will turn on or off.

[Command Class Basic, Basic Set, Value = 1~99, 255(0xFF)]: the load attached to the switch turns on.
[Command Class Basic, Basic Set, Value = 0(0x00)]: the load attached to the switch turns off.
[Command Class Switch Binary, Switch Binary Set, Value = 1~99, (255)0xFF]: the load attached to the switch turns on.
[Command Class Switch Binary, Switch Binary Set, Value = 0(0x00)]: the load attached to the switch turns off.

1. **Z-Wave’s Groups (Association Command Class Version 2)**

The Switch can be set to send reports to associated Z-Wave devices. It supports one association group with one node support for Grouping 1. For group 1, the Switch will report its latest status to Z-Wave Controller.

Grouping 1 includes, SWITCH_BINARY_REPORT, METER_REPORT, ALARM_REPORT and DEVICE_RESET_LOCALLY_NOTIFICATION.

2-1 Auto report to Grouping 1 (Maximum Node 5)

2-1-1 On/Off Event Report

When “on” or “off ” state has been changed, it will send Binary Switch Report to the node of Grouping 1.

Binary Switch Report

ON:[Command Class Switch Binary, Switch Binary Report, Value =255(0xFF)] OFF:[Command Class Switch Binary, Switch Binary Report, Value =0(0x00)]

2-1-2 Instant Power Consumption vary over 5% report

When the power consumption of load vary over 5%, it will send Meter report to the nodes of Grouping 1.

Meter Report Command: [Command Class Meter，Meter Report，Rate Type = 0x01，Meter Type = 0x01，Precision = 1， Scale = 0x02， Size = 4，Meter Value(W)

2-1-3 Overload alarm report

When GPB-7000detects the current is more than 16A, it will send Alarm Report to Group 1 node. After detecting overload state and sending this alarm report, GPB-7000 will turn off the relay automatically and lockout the “ ” button. The only thing to do is disconnecting GPB-7000 and reduce the load. Then reconnect GPB-7000 and it will work again.

The content of Alarm Report

Alarm report command: **[Command_Class_Alarm, Alarm_Report, Alarm Type = 0x08, Alarm Level = 0xFF]**

2-2 Response to Meter Get Command

The switch will report its (1) instant Power Consumption (Watt) or (2) accumulated power consumption(KWH) or (3) AC load Voltage (V) or (4) AC load current (I) (5) load power factor (PF) to Z-Wave Controller after receive the Meter Get Command from Z-Wave Controller.

2-2-1 Instant Power Consumption (Watt) of load

When receiving Meter Get Command, it will report Meter Report Command to the node asked.

Meter Get Command: [Command Class Meter, Meter Get, Scale =0x02(W)]
Meter Report Command: [Command Class Meter，Meter Report，Rate Type = 0x01，Meter Type = 0x01，Precision = 1，Scale = 2，Size = 4，Meter Value(W)]

Example:

Scale = 0x02 (W)
Precision = 1
Size = 4 Bytes (W)
Meter Value 1 = 0x00 (W)
Meter Value 2 = 0x00 (W)
Meter Value 3 = 0x03 (W)
Meter Value 4 = 0xEA (W)
Meter(W) = Meter Value 3 *256 + Meter Value 4 = 100.2W

2-2-2 Accumulated Power Consumption (KW/h)

When receiving Meter Get Command, it will report Meter Report Command to the node.

Meter Get Command: [Command Class Meter, Meter Get, Scale = 0x00 KW/h)]
Meter Report Command: [Command Class Meter，Meter Report，Rate Type = 0x01，Meter Type = 0x01，Precision = 2，Scale = 0，Size = 4，Meter Value(KWh)]

Example:
Scale = 0x00 (KWh)
Precision = 2
Size = 4 Bytes (KW/h)
Meter Value 1 = 0x00(KWh)
Meter Value 2 = 0x01(KWh)

Meter Value 3 = 0x38(KWh)
Meter Value 4 = 0xA3(KWh)

Accumulated power consumption (KW/h) = (Meter Value 2*65536) + (Meter Value 3*256) + (Meter Value 4) = 800.35 (KW/h)

2-2-3 Clearing accumulated power consumption

Meter Reset Command: [Command Class Meter, Meter Reset]

2-2-4 AC load Voltage (V)

When receiving Meter Get Command, it will report Meter Report Command to the node.

Meter Get Command: [Command Class Meter, Meter Get, Scale =0x04(V)]

Meter Report Command: [Command Class Meter，Meter Report，Rate Type = 0x01，Meter Type = 0x01， Precision = 1，Scale = 4，Size = 2，Meter Value(V)]

Example:
Scale = 0x04 (V)
Precision = 1
Size = 2 Bytes (V)
Meter Value 1 = 0x09(V)
Meter Value 2 = 0x01(V)
AC load Voltage = (Meter Value 1*256) +(Meter Value 2)= 230.5 (V)

2-2-5 AC load current (Ⅰ)

When receiving Meter Get Command, it will report Meter Report Command to the node.

Meter Get Command: [Command Class Meter, Meter Get, Scale =0x05(I)]
Meter Report Command: [Command Class Meter，Meter Report，Rate Type = 0x01，Meter Type = 0x01， Precision = 2，Scale = 5，Size = 2，Meter Value(I)]

Example:
Scale = 0x05 (I)
Precision = 2
Size = 2 Bytes (I)
Meter Value 1 = 0x01(I)
Meter Value 2 = 0x21(I)
AC load current = (Meter Value 1*256) +(Meter Value 2) = 2.89 (A)

2-2-6 load power factor (PF)

When receiving Meter Get Command, it will report Meter Report Command to the node.

Meter Get Command: [Command Class Meter, Meter Get, Scale =0x06(PF)]
Meter Report Command: [Command Class Meter，Meter Report，Rate Type = 0x01，Meter Type = 0x01， Precision = 2，Scale = 6，Size = 1，Meter Value(PF)

Example:
Scale = 0x06 (PF)
Precision = 2
Size = 1 (PF)
Meter Value 1 = 0x63(PF) (It means that the load power factor is 0.99)

3. Z-Wave's Configuration

Configuration Parameter	Function	Size (Byte)	Value	Unit	Default	Description
1	Manual Switch Report mode	1	0-1		1	0 : Disable 1 : Enable
2	switch Working Timer	1	1-11	10min	6	6*10min=1 hour
3	Watt Meter Report Period	2	0x01-0x7FFF	5s	720	720*5s=3600s=1 hour
4	KWH Meter Report Period	2	0x01-0x7FFF	10min	6	6*10min=1 hour
5	Threshold of current for Load caution	2	10-1500	0.01A	1500	1500*0.01A = 15A
6	Threshold of KWh for Load caution	2	1-10000	1KWh	10000	10000*1KWh= 10000KWh
7	Watt differential report mode	1	0-1		1	0: Disable 1: Enable

3-1 Manual switch report mode

When GPB-7000 is turned on or turned off, it will send a Switch_Binary_report to the nodes of group1. If the setting value is 0, it will disable sending the report.

3-2 switch Working Timer

This is a working time for the switch from turn to turn off. The maximum setting value is from 11(11*10min=110min), and the default value is 6.

3-3 Watt Meter Report Period:

If the setting is configured for 1hour (set value =720), the GPB-7000 will report its instant power consumption every 1 hour to Group1 node. The maximum interval to report its instant power consumption is 45 hours (5s*32767/3600=45hr).

3-4 KWH Meter Report Period:

If the setting is configured for 1hour (set value =6), the GPB-7000 will report its Accumulated Power Consumption (KW/h) every 1 hour to Group1 node. The maximum interval to report its Accumulated Power Consumption (KW/h) is 227.55 days (10min*32767/1440=227.55 days).

3-5 Threshold of current for Load Caution

This is a warning when the current of load over the preset threshold value, if the setting value is 1500, when the load current of Relay1 over this value, GPB-7000 will send current meter report to warn the Group1 node, the Range of the setting value is from 10 to 1500, and the default value is 1500.

3-6 Threshold of KWh for Load Caution

This is a warning when the KWh of load over the preset threshold value, If the setting value is 10000, when the Accumulated Power Consumption of Relay1 over this value, GPB-7000 will send KWH meter report to warn the Group1 node, minimum value is 1KWh and default value is 10000 kWh.

3-7 Watt differential report mode:

Whenever the instant power consumption varies over 5%, it will report its instant power consumption to Group1 node. If the setting value is 0, it will disable sending the report.

4. Firmware update over the air (OTA)

GPB-7000 is based on 500 series SoC and supports Firmware Update Command Class, it can receives the updated firmware image sent by controller via the Z-wave RF media. It is a helpful and convenient way to improve some function if needed.

5. Command Classes

The Switch supports Command Classes including…

* COMMAND_CLASS_ZWAVEPLUS_INFO
* COMMAND_CLASS_VERSION
* COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2
* COMMAND_CLASS_SECURITY0
* COMMAND_CLASS_SECURITY2
* COMMAND_CLASS_DEVICE_RESET_LOCALLY
* COMMAND_CLASS_ASSOCIATION_V2
* COMMAND_CLASS_ASSOCIATION_GRP_INFO
* COMMAND_CLASS_POWERLEVEL
* COMMAND_CLASS_SWITCH_BINARY
* COMMAND_CLASS_BASIC
* COMMAND_CLASS_METER_V3
* COMMAND_CLASS_CONFIGURATION
* COMMAND_CLASS_ALARM
* COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2

Troubleshooting

Symptom	Cause of Failure	Recommendation
The switch does not work and the LED is off	1. The Switch is not plugged into the electrical outlet properly 2. The Switch break down	1. Check power connections 2. Don't open up the Switch and send it for repair.
The LED illuminates, but cannot turn ON or OFF the switch	1. Check if the load plugged into the Switch has its own ON/OFF switch 2. Not carry out association 3. Same frequency interference	1. Set the ON/OFF switch of the load attached to ON 2. Carry out association 3.Wait for a while to re-try
LED keep flashing, but cannot control	Overload occurs	Remove the load attached or check max. load cannot exceed 16.0A

Specification

Operating Voltage	100-240VAC 50/60Hz 16A
Rated Voltage	220-240Vac 50Hz (EU), 120Vac 60Hz (US), 230Vac 50Hz (IL), 100Vac 50/60Hz (JP)
Maximum Load	16A (Resistive Load)
Range	Minimum 40M in door and 100M in outdoor line of sight
Operating Temperature	0°C ~ 40°C (85% humidity)
Storage Temperature	-20 C ~ 60°C
Location	Indoor use only
Frequency Range	868.40MHz; 869.85MHz(EU) 908.40MHz; 916.00MHz(USA/Canada) 916MHz (Israel)

** Specifications are subject to change and improvement without notice.

FCC ID : 2AQO4GPB-7000

Warning:

1.Plug out to disconnect from power supply; Do not plug in line.

2. Do not exceed the max rating

Choosing a Suitable Location

1. Do not locate the switch facing direct sunlight, humid or dusty place.
2. The suitable ambient temperature for the Switch is 0°C~40°C.
3. Do not locate the Switch where exists combustible substances or any source of heat, e.g. fires, radiators, switch etc.
4. After putting it into use, the body of switch will become a little bit hot of which phenomenon is normal.

DANGER

Danger of electrocution!

All works on the device may be performed only by a qualified and licensed electrician. Observe national regulations.

Any works introducing changes into the configuration must be always performed with disconnected voltage.

Disposal

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.