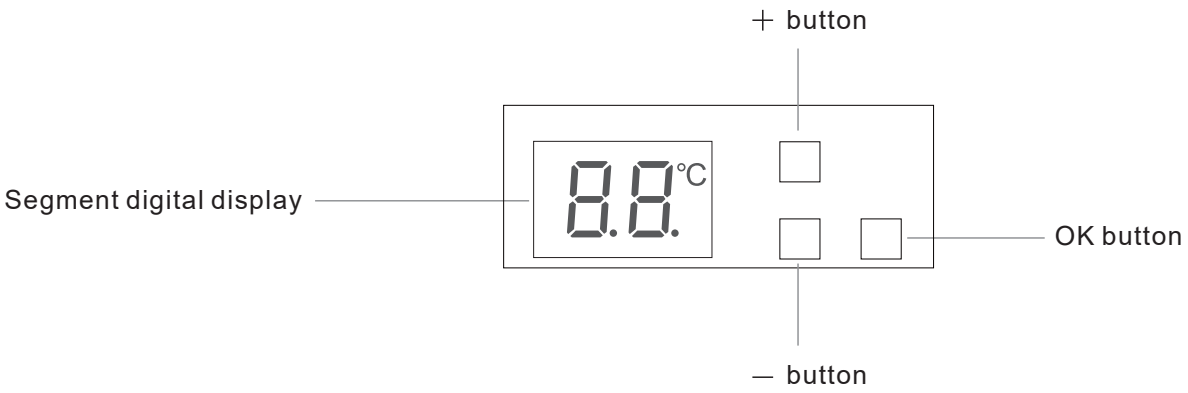
Namron Panelovn Zigbee Instruction Manual

Revised 04.01.2022

Important: *Read All Instructions Prior to Installation*

Function introduction



Safety & Warnings

• DO NOT install with power applied to device.
• DO NOT expose the device to moisture.

1. Product Data

Radio Frequency	2.4GHz
Operation Mode	OFF, MANUAL,AUTO
Measurement range	0°C to +60°C
Set Temperature Range	5°C to 35°C
Hysterersis	0.5°C to 2°C
Ambient Temperature	0°C to 40°C (during operation)

• The Zigbee heating panel is a wireless heating device, which complies to Zigbee 3.0 wireless protocol standards. The thermostat has 3 operation modes which can be controlled manually and locally or through remote controlled through Zigbee gateway controller.

• All setup is performed via supported IEEE 802.15.4-based control platforms and other Zigbee3.0 compatible control systems.

• Operation Modes: OFF, MANUAL,AUTO
• Measurement range: 0°C to +60°C
• WARNING: Electrical power must be switched off during installation

2. Basic Function Introduction

2.1 Switch Operation modes

Short press “OK” button to switch operation modes.

Manual:  (”MA”), the temperature can be set by APP and manually. After switch from another mode to this mode,  icon will flash slowly for 5 seconds then the display will show the set temperature.

Auto:  (”AU”), only when the device is added to a Zigbee network, the temperature of a time period can be set through APP. After switch from another mode to this mode,  icon will flash slowly for 5 seconds then the display will show the set temperature.

The sequence of operation modes is as follows: Manual, Auto.

2.2 Modify Set Temperature

Under Manual modes, short press or hold the button “+”, “-” to modify the set temperature. The temperature can also be configured through the corresponding at tribute of Thermostat Cluster (0x0201).

Under Auto mode, the temperature can only be configured through the command SetWeeklySchedule of Thermostat Cluster (0x0201). Please refer to the chapter Thermostat-0x0201(Server) for detailed information.

2.3 Weekly Schedule

The weekly schedule will be executed under Auto mode, and it can not be modified through buttons, it can only be configured through the command SetWeeklySchedule, the default configuration is as follows:

Monday-Friday: 7:30 30℃,12:00 25℃,18:00 28℃,22:00 20℃

Saturday-Sunday: 7:30 35℃,12:00 30℃,18:00 25℃,22:00 29℃

2.4 Adding to a Zigbee Network or Removed from a Zigbee Network

Adding to a Zigbee Network: make sure the device has not been added to any Zigbee network, hold “OK” button for over 5 seconds, the device will enter network pairing mode and search nearby network for 3 minutes, the network icon  flashes slowly, once added to a network successfully, the network icon will turn on for 3 seconds (OFF status) or stay solid on (non-OFF status), or reset power of the device, it will enter network pairing mode automatically and search nearby network.

Removed from a Zigbee Network: hold “OK” button for over 5 seconds, the device will be removed from the Zigbee network, and the configuration parameters will not be cleared.

Factory Reset: hold the three buttons “OK”, “+”, “-” simultaneously for over 5 seconds, the display will show  (”rE”) flashing 3 times, then the temperature will be restored to 19℃, which means the device has been reset to factory default successfully and removed from the Zigbee network, and the configuration parameters will be cleared.

2.5 Display Auto Off

When Display Auto Off mode is activated, the display will go off status if there is no operation within 30 seconds.

When the Display Auto Off function is not activated, hold the two buttons “OK”, “-” simultaneously for over 5 seconds until all icons on the display flash 3 times slowly, the Display Auto Off mode will be activated.

When the Display Auto Off function is activated, hold the two buttons “OK”, “-” simultaneously for over 5 seconds, during the process all icons on the display flash slowly, until all icons on the display go off, the Display Auto Off mode will be deactivated.

The Display Auto Off mode can also be configured through the proprietary attribute DisplayAutoOffActivate (0x1001) of Thermostat Cluster (0x0201).

2.6 Self Check Function Test

Reset power of the device, within 10 seconds, press and hold both “OK” and “-” buttons simultaneously for 4 seconds, the “H” cursor will turn on and stay solid on, which means the device has entered self check function test.

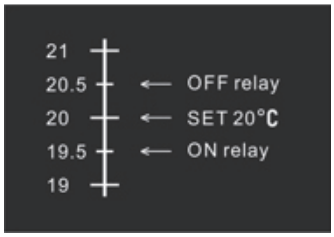
Short press “+” button	Manual switching on/off TRIAC

Short press “-” button	Display the sensing room temperature of the temperature sensor head, when the sensing room temperature is over 50°C, the display will show 50°C, when the sensing room temperature is lower than 0°C (including the situation that the temperature sensor head falls off or short circuit), the display will show error indication: E1, and the display will show the real sensing temperature under other situations.
Short press “OK” button	Check whether the device has memory function: the display will show 11.

2.7 Hysterersis (0.5°C by default)

To prevent the undulation of sensor temperature when the sensor temperature is approaching the set temperature, which will cause that the controller may keep switching on/off the TRIAC. Here hysterersis enables the controller to control the TRIAC only when the value tolerance between the sensor temperature and the set temperature within a set range, this value can be set.

For instance, when the set temperature is 20°C, and hysterersis is set as 0.5 °C, following figure shows how the TRIAC works.



This value can also be configured through the proprietary attribute Hysterersis (0x100A) of Thermostat Cluster (0x0201).

2.8 Window Open Detect (Off by default)

On normal operation interface, hold both “+” and “OK” button simultaneously for 5 seconds to enter Window Open Detect setting, icon flashes, the digital display will show (”ON”) or (”OF”), short press “+” or “-” button to select “ON” or “OF”. If “ON” is selected, the Window Open Detect mode will be activated. If “OF” is selected, the Window Open Detect mode will be deactivated. After setting completed, if there is no operation within 5 seconds or short press “OK” button directly, the setting will be saved and the display will return to normal operation interface. By factory default, the Window Open Detect mode is off, the user needs to activate it by himself. This function can also be configured through the proprietary attribute WindowOpenCheck (0x1009) of Thermostat Cluster (0x0201).

When Window Open Detect mode is activated, the icon will stay solid on.

Once the device is powered on and working stable, if the temperature decreases to 5°C within 10 minutes, the window open mark will be enabled, the proprietary attribute Window Open flag (0x100B) of Thermostat Cluster (0x0201) will be set to value 1 (Window is opened), the set temperature will be switch to 7°C, then the icon will flash slowly.

After window open mark is enabled, if the temperature increases by 2°C, or if power of the device is reset, or short press any button, the proprietary attribute Window Open flag (0x100B) of Thermostat Cluster (0x0201) will be reset, then the device will return to previous operation mode.

Note: the device will collect the Window Open Detect temperature, this function will work better when the device is installed beside the window or door.

2.9 Temp compensation

The displayed temperature may has big tolerance caused by the sensor or other factors, so it is necessary to do temp compensation with temperature sensor.

This value can also be configured through the attribute LocalTemperatureCalibration (0x0010) of Thermostat Cluster (0x0201).

2.10 RePower status

Device state after reset power of the device.

If set as “last status”, device will go to the status before power failure after power on again.
If set as “default”, device will go to default mode after power on again.
This status can also be configured through the proprietary attribute PowerUpStatus (0x1004) of Thermostat Cluster (0x0201).

2.11 Operate Brightness

The segment digital display brightness when operate the device.
This brightness can also be configured through the proprietary attribute OperateDisplayBrightness (0x1000) of Thermostat Cluster (0x0201).

2.12 Child Lock

The Child Lock can be activated or deactivated by holding the two buttons “+”, “-” simultaneously on normal operation interface.
When Child Lock function is not activated, hold “+” and “-” buttons simultaneously for over 5 seconds, until (“CC”) flashes slowly, release the buttons, then the Child Lock function is activated. Once Child Lock function is activated, short press any button, (”CC”) will flash 3 times slowly.
When Child Lock function is activated, hold “+” and “-” buttons simultaneously for over 5 seconds, during the process, (“CC”) flashes slowly, until (”CC”) goes off, then the Child Lock function is deactivated. Once Child Lock function is activated, short press any button, (”CC”) will flash 3 times slowly.
The Child Lock can also be configured through the attribute KeypadLockout of Thermostat User Interface Configuration - 0x0204.

2.13 Internal Over Heat Protection

A: If the PCB temperature is over a temperature between 85°C~90°C after the device software has been forced to work for 30 seconds, the device will work normally for another 30 seconds, then it will be forced to stop working for 40 seconds, the device status will alternate between working normally for 30 seconds and stop working for 40 seconds, and the alternating will cycle and last for around 10 minutes, then the software will evaluate again.
B: If the PCB temperature is over 90°C during operation, the device will stop heating, after the PCB temperature is lower than 85°C, the software will evaluate again.
The Over Heat mark can also be configured through the proprietary attribute (0x2002) of Thermostat Cluster (0x0201).

2.14 Over Load Alarm Function

If over load is detected, the device will turn off the TRIAC output, different versions are with different over load threshold:
1000W version: over load threshold is 1500W
800W version: over load threshold is 1200W
600W version: over load threshold is 900W
400W version: over load threshold is 600W
If alarm occurs, the output will be turned off, display shows slow flashing of (”AL”) , the alarm can be cancelled by holding OK button for over 5 seconds or by Zigbee gateway.
To configure whether to enable or disable Over Load Alarm, please refer to the parts Alarm-0x0009 and Electrical Measurement-0x0b04.

2.15 Compensation for the Set Temperature

Set Temperature Value (°C)	Under 10	10-21	22-25	26-29	30-35
Real Set Temperature Value (°C)	Original value	Original value+3	Original value+5	Original value+7	Original value+8

3. Zigbee Interface

3.2 Application Endpoint #1 –Thermostat

Cluster	supported	Description
0x0000	server	**Basic** Provides basic information about the device, such as the manufacturer ID, vendor and model name, stack profile, ZCL version, production date, hardware revision etc. Allows a factory reset of attributes, without the device leaving the network.
0x0003	server	**Identify** Allows to put the endpoint into identify mode. Useful for identifying/locating devices and required for Finding & Binding.
0x0004	server	**Groups** Allows adding this endpoint to one or more groups. Afterwards the endpoint can be addressed using the group address. This is also a prerequisite for scenes. You may also query group membership and delete group associations.
0x0005	server	**Scenes** Allows storing one or more scenes per group, where each scene consists of a pre-set on/off state value. You may either store the current values as a scene, or provide scene settings when adding a scene, or delete scenes.
0x0201	server	**Thermostat**
0x0702	server	**Simple Meter**
0x0b04	server	**Electrical Measurement** Measure power, voltage, current
0x0009	server	**Alarm** Device related alarm
0x0019	Client	**OTA Upgrade** Pull-oriented firmware upgrade. Searches the network for mating servers and allows the server to control all stages of the upgrade process, including which image to download, when to download, at what rate and when to install the downloaded image.
0x000a	Server	**Time**
0x0204	Server	**Thermostat User Interface Configuration**

3.2.1 Basic -0x0000 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	INT8U, read-only	**ZCLVersion** 0x03
0x0001	INT8U , read-only	**ApplicationVersion** This is the firmware version number of the application
0x0002	INT8U , read-only	**StackVersion**
0x0003	INT8U , read-only	**HWVersion** Hardware version 1
0x0004	string, read-only	**ManufacturerName** “NAMRON AS”
0x0005	string, read-only	**ModelIdentifier** “5401392 & 5401396”/“5401393 & 5401397”/“5401394 & 5401398”/“5401395 & 5401399”

0x0006	string, read-only	**DateCode** NULL
0x0007	ENUM8, read-only	**PowerSource** Device power supply, fixed value 0x01 Mains (single phase)
0x0008	ENUM8, read-only	**GenericDevice-Class** 0XFF
0x0009	ENUM8, read-only	GenericDevice-Type 0XFF
0x000A	octstr read-only	ProductCode 00
0x000B	string, read-only	ProductURL NULL
0x4000	string, read-only	Sw build id 6.9.1.0_r4

Command supported:

Command	Description
0x00	**Reset to Factory Defaults Command** On receipt of this command, the device resets all the attributes of all its clusters to their factory defaults. Note that networking functionality, bindings, groups, or other persistent data are not affected by this command.

3.2.2 Scenes 0x0005 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	int8u, read-only	**SceneCount** Holds the total number of scenes (across all groups) currently stored on the device.
0x0001	int8u, read-only	**CurrentScene** If the SceneValid attribute is true, this attribute, together with the CurrentGroup attribute,indicates the currently active scene.
0x0002	int16u, read-only	**CurrentGroup** If the SceneValid attribute is true, this attribute, together with the CurrentScene attribute,indicates the currently active scene.
0x0003	bool, read-only	**SceneValid** If true, the scene identified by CurrentGroup and CurrentScene is currently active, i.e. all device attribute values match the values in the scene field set.
0x0004	bitmap8 , read-only	**NameSupport**

Command supported:

Command	Description
0x00	**Add Scene** Adds a scene with or without a scene field set
0x01	**View Scene** Returns the scene field set, name and transition times for a scene.

0x02	**Remove Scene** Removes a scene from the scene table.
0x03	**Remove All Scenes** Removes all scenes that belong to a particular group.
0x04	**Store Scene** Stores the device's current state as a scene or updates a previously stored scene accordingly
0x05	**Recall Scene** Reverts the device's current state using the values from the previously stored field set.

3.2.3 Groups-0x0004 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	bitmap8, read-only	**NameSupport** 0, not supported

Command supported:

Command	Description
0x00	**Add Group** Adds the endpoint to a group.
0x01	**View Group** Determines whether the device belongs to a group and returns the group name, if supported
0x02	**Get Group Membership** Returns the set of groups this endpoint belongs to
0x03	**Remove Group** Removes this endpoint from the specified group. Also removes all scenes that refer to this group.
0x04	**Remove All Groups** Removes this endpoint from all groups. Also removes all scenes that refer to any of the existing groups.
0x05	**Add Group if Identifying** Adds this endpoint to the group, if the endpoint is identifying.

3.2.4 Thermostat-0x0201(Server)

Attributes supported:

Attribute	Type	Description
0x0000	int16S , read-only, reportable	**LocalTemperature Attribute** This is room temperature, the maximum resolution this format allows is 0.01 ºC.
0x0010	Int8S , reportable	**LocalTemperatureCalibration** Room temperature calibration, range is -30-30, the maximum resolution this format allows 0.1°C. Default value: 0
0x0011	int16S , reportable	**OccupiedCoolingSetpoint** This system is not invalid.
0x0012	int16S , reportable	**OccupiedHeatingSetpoint** Range is 500-3500,the maximum resolution this format allows is 0.01 ºC. Default is 0xbb8(30.00ºC) Note: only Dry mode and Manual mode can set through this attribute.

0x001B	Enum8, reportable	**ControlSequenceOfOperation** Set device supported operation type, here only supports Heating Only(0x02)
0x001C	Enum8, reportable	**System Mode** System operation mode, supports 0x00(off) 0x04(heat)
0x0029	Map16, read-only, reportable	**HVAC relay state/ ThermostatRunningState** Indicates the relay on/off status, here only supports bit0(Heat State)
0x0020	Enum8, reportable	**StartOfWeek**
0x0021	Int8u, read-only, reportable	**NumberOfWeeklyTransitions** Fixed 7, 7 transitions
0x0022	Int8u, read-only, reportable	**NumberOfDailyTransitions** Fixed 4, 4 time periods

Proprietary Attributes:

Attribute	Type	Manufacturer code	Description
0x1000	ENUM8, reportable	0x1224	**OperateDisplayBrightnesss** Segment digital display brightness: Value: 1~7, default brightness is 1
0x1001	ENUM8 reportable	0x1224	**DisplayAutoOffActivation** 0, deactivated (default) 1, activated
0x1004	ENUM8 reportable	0x1224	**PowerUpStatus** The mode after reset power of the device: Value=0 : manual mode after power up, set temperature 19ºC Value=1 : last status before power off (Default)
0x1009	ENUM8 reportable	0x1224	**WindowOpenCheck** 0: enable 1: disable
0x100A	INT8U reportable	0x1224	**Hysterersis** Hysterersis setting, range is 5-50, unit is 0.1ºC, default value is 5
0x100B	ENUM8, Reportable Read only	0x1224	**Window Open flag** 0: Window is not opened 1: Window is opened
0x2002	ENUM8, Reportable Read only	0x1224	**Internal Over Heat Mark** 0: no 1: temperature over 85ºC and lower than 90ºC 2: temperature over 90ºC

Command supported:

Command	Description
0x0000	**Setpoint Raise/Lower** Increase or decrease the set temperature according to current mode, unit is 0.1ºC Note: only Dry mode and Manual mode can be configured through this attribute.
0x0001	**SetWeeklySchedule** The time period setting under Auto mode. Number of Transitions for Sequence, it must be 4, which means 4 time points should be set. Mode for Sequence, it must be 1, which means only heat supported. The set time points, the latter one must be later than previous one. If a schedule of some day is configured, previous schedules will be covered. Note: the set value of the schedule configured by this command will be executed under Auto mode.
0x0002	**GetWeeklySchedule**

3.2.5 Simple Meter-0x0702 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	unsigned48, read-only, reportable	CurrentSummationDelivered Indicates the current amount of electrical energy delivered to the load.
0x0200	bitmap8, read-only	Status Flags indicating current device status, always is 0x00
0x0300	enum8 , read-only	UnitOfMeasure Unit of metering data, this is always kWh(0x00)
0x0301	Int24U, read-only	**Multiplier**
0x0303	map8 , read-only	SummationFormatting Decimal point at both left and right sides of the data, this is always 0x19
0x0306	bitmap8, read-only	MeteringDeviceType The metering data type, this is always Electric Metering (0x00)
0x0302	Int24U, read-only	**Divisor**

3.2.6 Electrical Measurement-0x0b04(Server)

Attributes supported:

Attribute	Type	Description
0x0000	bitmap32 , read-only	MeasurementType Indicates the physical entities that this devices is able to measure. Supports only bit0: Active measurement (AC)
0x0505	bitmap8, read-only	RMSVoltage Valid voltage of single phase, unit is V

0x0508	int16U , reportable, read-only	RMSCurrent Valid current of single phase, unit is A
0x050B	int16S , reportable read-only	ActivePower Valid power of single phase, unit is W
0x0600	int16U, read-only	ACVoltageMultiplier 0x01
0x0601	int16U, read-only	ACVoltageDivisor 0x0a used together with above attribute, real displayed voltage= RMSVoltage* ACVoltageMultiplier/ACVoltageDivisor
0x0602	int16U, read-only	ACCurrentMultiplier 0x01
0x0603	int16U, read-only	ACCurrentDivisor 0x3e8 (1000) used together with above attribute, real displayed current=RMSCurrent*ACCurrentMultiplier/ACCurrentDivisor
0x0604	int16U, read-only	ACPowerMultiplier 0x01
0x0605	int16U, read-only	ACPowerDivisor 0x0a (10) used together with above attribute, real displayed power=ActivePower * ACPowerMultiplier/ACPowerDivisor
0x0800	int16U,	ACAlarmsMask Specifies which configurable alarms may be generated, only Bit2: Active Power Overload whether to enable over load alarm or not
0x0803	int16U , reportable, read-only	ACActivePowerOverload Alarms when the load value is over a certain value, for the unit please refer to ActivePower

3.2.7 Alarm-0x0009(Server)
Please set the valid value of attribute ACAlarmsMask of Electrical Measurement, the Alarm Server cluster can generate the following commands:

CmdID	Description
0x00	**Alarm** Alarm code: Identifying code for the cause of the alarm, as given in the specification of the cluster whose attribute generated this alarm.

The over load alarm is according to ACAlarmsMask, alarm code is 2.
If the alarm is not cancelled, it will be reported every 1 minute.

The Alarm Server cluster can receive the following commands:

CmdID	Description
0x01	ResetAllAlarm

3.2.8 Time-0x000A(server)

The Time cluster is a general cluster for time it is based on a UTC time in seconds since 0 hrs 0 mins 0 sec on 1st January 2000. Refer to [Z2] for ZigBee specification of the time cluster.
The metering device will use this clusters as a server– provided that a suitable Time Server is available on the network (most likely on the Gateway/concentrator)

Attributes supported:

Attribute	Type	Description
0x0000	UTC	Time
0x0001	MAP8	TimeStatus 0x02 bit0:0, not master clock Bit1:1, Synchronized

3.2.9 OTA Upgrade-0x0019(Client)

OTA complies to standard Zigbee protocol.

3.2.10 Thermostat User Interface Configuration-0x0204(Server)

Attributes supported:

Attribute	Type	Description
0x0000	ENUM8, reportable	TemperatureDisplayMode 0x00 Temperature in °C only support
0x0001	ENUM8, reportable	KeypadLockout 0x00 No lockout 0x01 - 0x05 lockout

3.3 Application Endpoint #242 GreenPower

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