

HITACHI

Technical Bulletin

Premium Zoning Kit for
airCore 700 (ANZ)

Model

GC-AZKP

GC-ZKT

PC-ARFG2-Z

THM-R2A

New Products Information

Distributed to √ Areas:

| | | | | | |
|------------------|---|---------|--|--------|--|
| All Areas | | Oceania | | Europe | |
| ANZ | √ | India | | NA | |
| ASEAN and others | | ME | | LA | |
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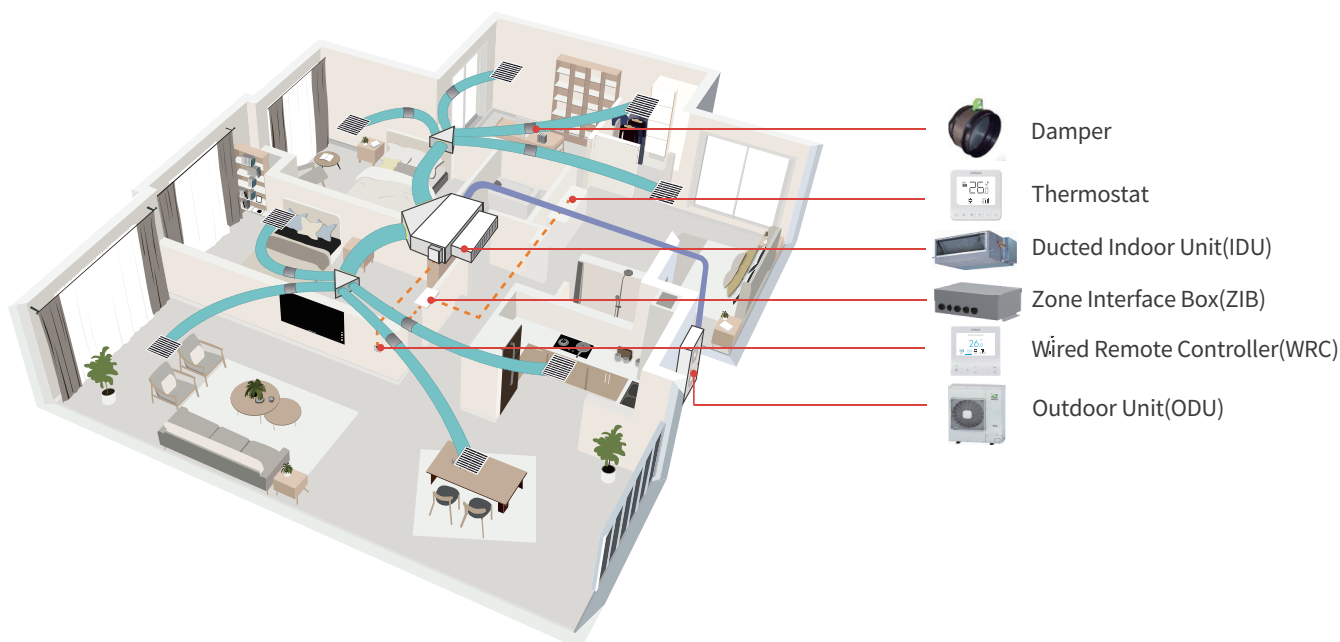
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Summary

This Technical Bulletin informs the launch of Premium Zoning Kit, including Wired Remote Controller (PC-ARFG2-Z, hereinafter referred to as WRC), Zone Interface Box (GC-AZKP, hereinafter referred to as ZIB), and Thermostat (GC-ZKT).

Description

1. Premium Zoning Kit Features



The Premium Zoning Kit can be used on airCore 700 MESP or HESP ducted type indoor units, to control dampers in each ducts connected to the air outlet of the indoor unit. The dampers can be turned on when there is an air conditioning demand, and turned off when there is no air conditioning demand.

By controlling the damper angle, the airflow rate of each zone can be selected in three taps (High/Med/Low).

Premium zoning kit supports up to eight thermostats (optional) for users to easily set from each zone. The optional remote sensor (THM-R2A) can be used to detect actual room temperature with or without thermostat. Users can set a target temperature and the zoning kit will automatically determine the appropriate damper angle or to turn OFF the zone damper.

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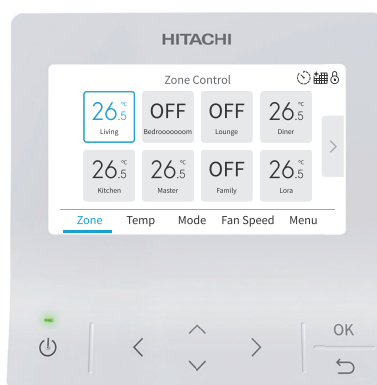
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2. Features

Zone interface box with WRC and thermostat are applied for monitoring and controlling of ducted units and dampers. The main features are listed below:

- Management of up to eight zones

All zones can be set ON/OFF freely according to the diversified demands, by new method of damper motor control, premium zoning kit can control current ON/OFF type damper with angle control(the action time of damper should be set and the eight dampers of that should be the same.), able to offer user setting airflow rate to three taps (high/mid/low+auto) when zone is ON.



- Built-in transformer

It's convenient for installation that the ZIB has a built-in 32VA transformer to supply AC 24V power for up to eight ON/OFF type damper motors simultaneously.

- Temperature control

Premium zoning kit can detect each zone's actual room temperature, and control damper to achieve user setting temperature which can be set through WRC or thermostat.



- Zone auto fan

User can set zone airflow rate control mode to "Auto", then zoning kit will automatically control damper angle based on difference between room temperature actual value and set value.

IDU fan tap will also be managed automatically by premium zoning kit, manual setting by user is not needed.

- Zone labeling

All zones and remote sensors' name can be freely changed according to the zone application, which is convenient for user to identify which zone they are operating on(the name can contain up to 12 characters).

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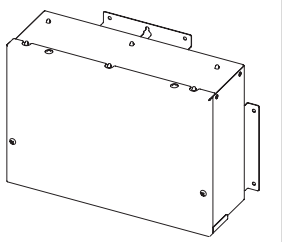
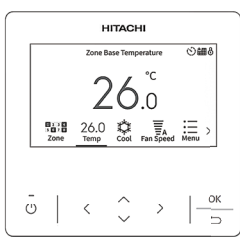
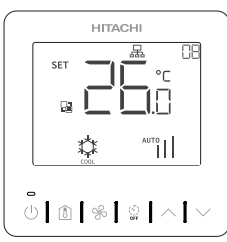
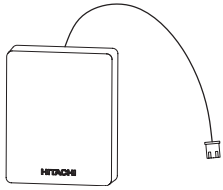
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- Simple timer and operation schedule

Simple Timer programs your zoning system to Run/Stop after a pre-set number of hours.

Operation Schedule program makes it easy to program system Run/Stop status, setting temperature, zone ON/OFF on schedule at the specified date and time in one day with up to 5 times from Monday to Sunday. This function can provide more comfortable and convenient experience in compliance with users' living habits.

3. Component Parts

| | | | | |
|------------------------------------|---|---|--|---|
| Component Parts |  |  |  |  |
| | Zone Interface Box | Wired Remote Controller | Thermostat (optional) | Remote Sensor (optional) |
| Model | GC-AZKP | PC-ARFG2-Z | GC-ZKT | THM-R2A |
| Dimension (Width × Height × Depth) | 324mm × 226mm × 110mm | 120mm × 120mm × 16.5mm (thinnest part) 120mm × 120mm × 21.5mm (thickest part) | 90mm × 90mm × 15.5mm (thinnest part) 90mm × 90mm × 18.5mm (thickest part) | 50mm × 50mm × 15mm (wire: 8m) |

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4. Compatible Indoor & Outdoor Units

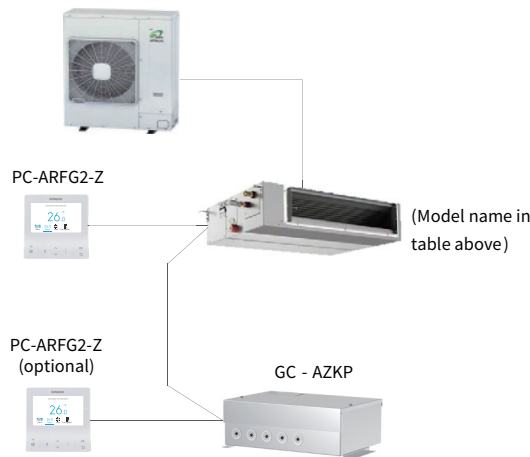
The Premium Zoning Kit is developed for airCore 700 MESP and HESP ducted type indoor units as listed below:

| Capacity | | airCore 700 Indoor Unit | |
|----------|---------|-------------------------|----------------|
| | | MESP Ducted | HESP Ducted |
| 2.0 HP | 5.0 kW | PPIM-2.0UFA1NQ | / |
| 2.5 HP | 6.0 kW | PPIM-2.5UFA1NQ | / |
| 3.0 HP | 7.1 kW | PPIM-3.0UFA1NQ | PPIH-3.0UFA1NQ |
| 4.0 HP | 10.0 kW | PPIM-4.0UFA1NQ | PPIH-4.0UFA1NQ |
| 5.0 HP | 12.5 kW | PPIM-5.0UFA1NQ | PPIH-5.0UFA1NQ |
| 6.0 HP | 14.0 kW | PPIM-6.0UFA1NQ | PPIH-6.0UFA1NQ |
| 6.5 HP | 16.0 kW | / | PPIH-6.5UFA1NQ |

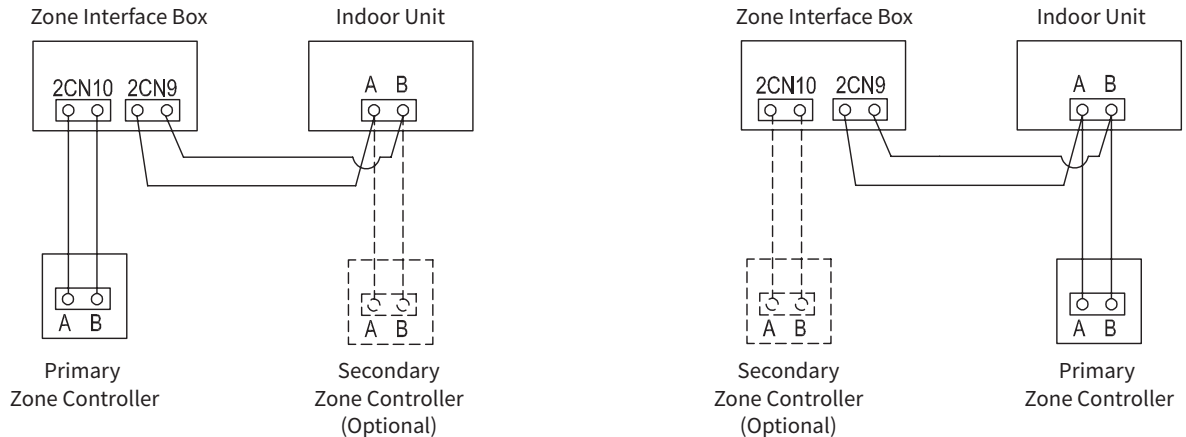
The combination method between the premium zoning kit and indoor unit should only be one premium zoning kit corresponding to one set of IDU+ODU (as below), any other combination connection methods should not be used.

Premium zoning kit can not support the previous zoning kit, whose model name as below:

- Zone interface box: HZBB10NESQ
- Zone controller: PC-ARFZ



Communication cable among WRC, indoor unit, and ZIB as below:



NOTE:

- Communication cable is not needed between ZIB and outdoor unit.

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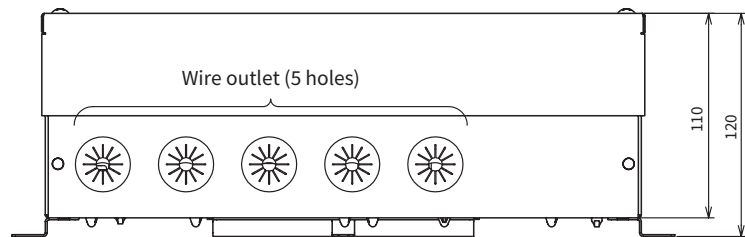
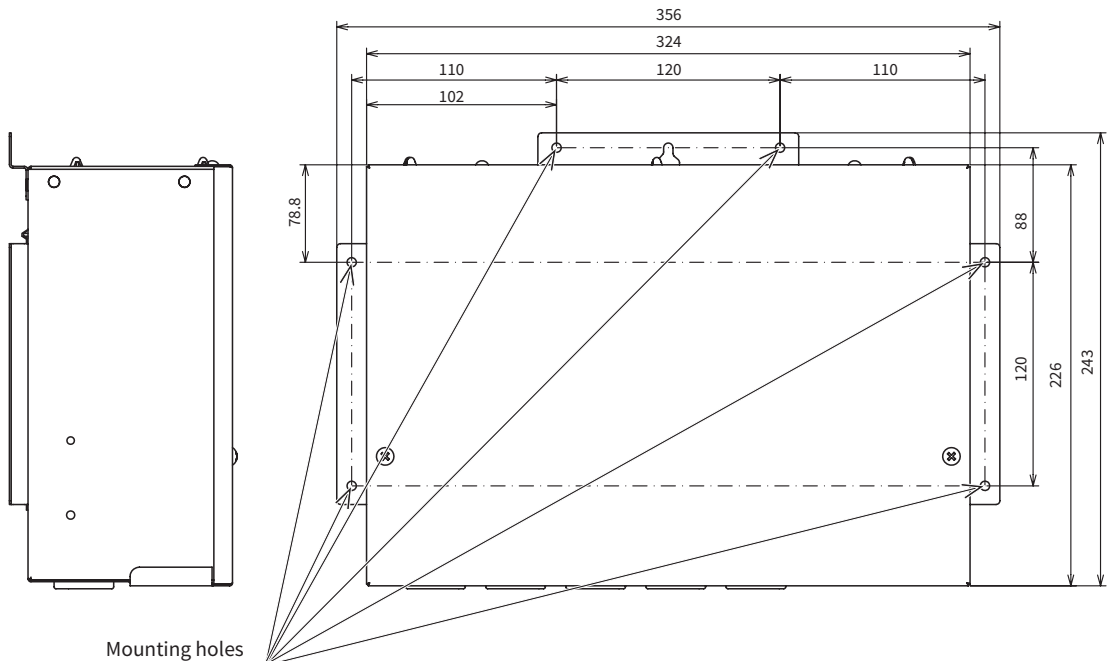
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5. Appearance

- Zone Interface Box (GC-AZKP)



(mm)



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- Wired Remote Controller



- Thermostat



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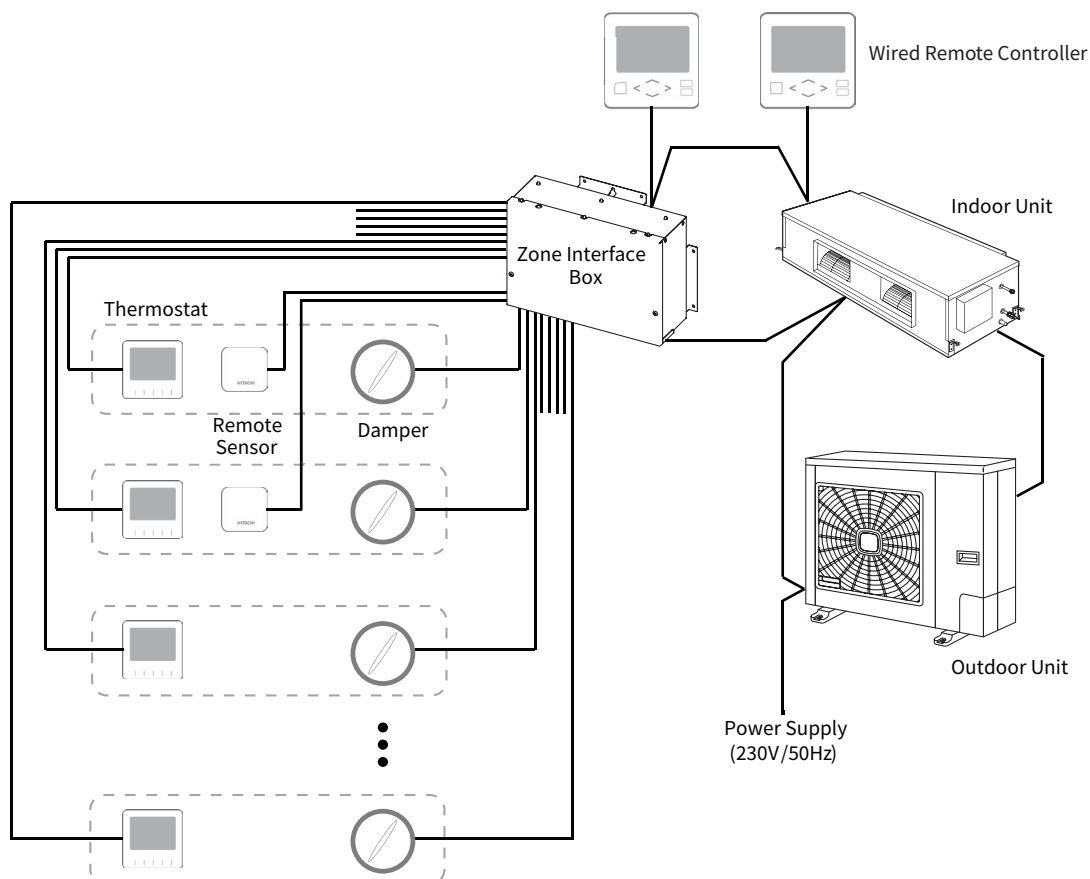
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6. Example for System Configuration



NOTES:

- Control functions are available with at least one WRC (PC-ARFG2-Z) being connected. Zone control functions are not available with other types of WRCs.
- Any types of central controller cannot be connected.
- Only one ZIB can be connected in one zoning system.
- One ZIB can only support one indoor unit.
- One ZIB can control up to eight zone damper motors.
- Up to two WRCs(PC-ARFG2-Z) can be connected in one system.
- Up to two remote sensors can be connected in one system.
- Up to eight thermostats can be connected in one system.
- Careful attention must be given to assure that the airflow rate through the indoor fan coil unit is within the allowable range as specified in the technical catalogue of indoor unit.

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7. Functions Summary

After ZIB (GC-AZKP) is connected, WRC (PC-ARFG2-Z) will automatically display the options for the zone control functions. The following list shows the main features of the premium zoning kit.

| Function | Description |
|--|--|
| Zone Type Identification | <ul style="list-style-type: none"> Common zone: zone without damper(this zone will not be able to be controlled) Enabled zone: zone with damper. Spill zone: special enabled zone, damper might be automatically opened to ensure IDU's minimum airflow rate. |
| Zone Airflow Setting | Input each zone's airflow (0~999 L/s). |
| Damper Angle Control | Damper motor operating time input, achieving damper angle control, to offer user to control airflow rate of each enabled zone. |
| Individual Zone Temp. Detection | <p>Sensor in the thermostat will be automatically assigned to its zone. Following five sensors can be assigned to individual zone manually:</p> <ul style="list-style-type: none"> RCS1: Temperature Sensor of primary WRC RCS2: Temperature Sensor of secondary WRC (optional) TS1: Remote Sensor 1 connected to ZIB (THM2, optional) TS2: Remote Sensor 2 connected to ZIB (THM3, optional) IDUS: Inlet Air Temperature Thermistor of IDU |
| Zone Auto Fan | Control each zone's damper angle (high/mid/low) based on difference between its target room temperature and actual room temperature. IDU's fan tap will automatically operate based on each zone's damper angle & ON/OFF status, no need user's manual set. |
| Zoning Labeling | Rename zones' name & the five sensors name. |
| Temperature Control | Control each zone's room temperature by determining damper's ON/OFF or damper's angle (when set zone fan tap to "Auto"). |
| Zone Status Set & Display | WRC can set & display all zones' status. Thermostat can set & display its zone's status. |
| Damper Angle Auto Linkage with IDU ESP | When IDU operating auto ESP, zoning kit will adjust damper's angle of Low/Med/High tap to achieve precise control based on IDU ESP value. |
| Linkage Control Of Setting Temp. | All zone's setting temp(Tsz, on thermostat or WRC's individual zone setting screen) will be limited by base zone base temperature(Ts, displayed on WRC's main screen): $Tsz \in [Ts \pm 3^{\circ}C]$, but will still follow IDU's setting temperature limitation. |
| One Button To Open All Zone | Service can set all zone damper to open by one button through WRC. |
| Operation Schedule And Simple Timer | Control each zone's ON/OFF with weekly schedule. Each zone can set simple timer through thermostat. |
| Keypad Lock | Keypad lock on WRC and thermostat. |

NOTES:

- Following function or optional parts for IDU will be not supported after zoning kit is connected(at least, but not all):
 - Dual setting
 - Emergency cooling/heating
 - Some function selection and input/output setting(such as EE/EF, or o1, please see IOM of premium zoning kit for detailed information
 - Panel with louver
 - Electricity heater or reheat coil
 - Human sensor
 - Other WRC, central controller, or IR receiver for wireless controller
- Premium zoning kit need following settings to achieve higher air volume control accuracy.
 - Function selection C8: manually set from 00 to 01.
 - Airflow requirement of each zone (0~999, L/s).
 - IDU's minimum airflow rate: calculate method: IDU's minimum airflow rate = airflow of IDU's lowest fan tap ÷ airflow of IDU's highest fan tap and manually set through WRC.

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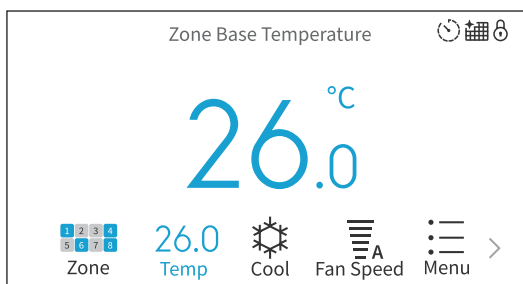
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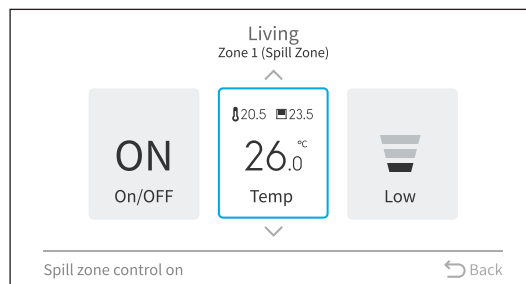
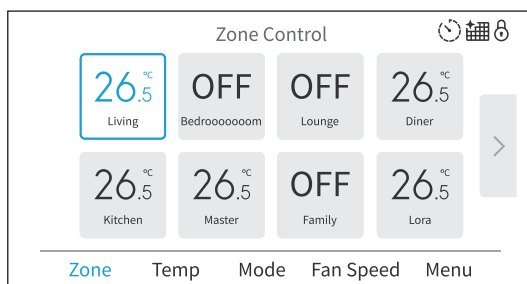
- Damper timing: damper blade operating time between ON and OFF status.
- Strongly suggest set IDU ESP mode to "ESP Auto Setting" or "ESP Manual Setting", instead of "ESP Standard Setting".

8. Details of Control Functions

- Zone control by WRC
 - Set zone base temperature on main screen

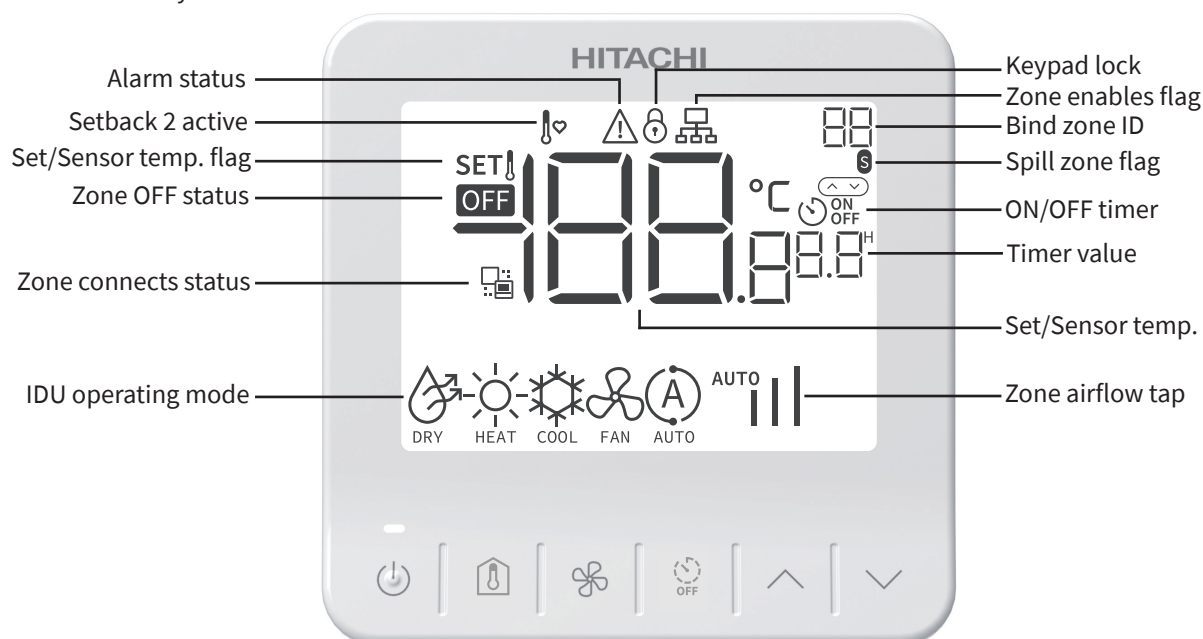


- Choose individual zone and set its status



NOTE:

- For spill zone, the damper status might not follow user's setting.
- Zone control by thermostat
 - Thermostat only can set its zone's status.



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● Operation schedule

Indoor unit run/stop status, zone base temperature, zone ON/OFF on schedule can be set at the WRC and up to five times in one day from Monday to Sunday.

| Monday Schedule | | | | Mon 07:34 |
|-----------------|----------|-----------|------|-----------|
| ON Time | OFF Time | Set Temp. | Zone | |
| 1 08:00 | ~ 10:00 | 26.0 °C | | |
| 2 12:00 | ~ 06:00 | 26.0 °C | | |
| 3 06:00 | ~ 10:00 | 26.0 °C | | |
| 4 --:-- | ~ --:-- | -- °C | | |
| 5 --:-- | ~ --:-- | -- °C | | |

OK Enter to setup zone Back

| Mon 1 | |
|-----------|--------|
| Zone | Status |
| Bedroom 1 | ON |
| Bedroom 2 | OFF |
| Living | OFF |
| Hallway | -- |
| Master | OFF |

OK Select Back

● Zone auto fan

When the zone airflow tap is set to auto mode, zoning kit can control zone airflow tap with three taps according to the temperature difference between the zone's setting temperature and room temperature.

● Zone labeling

- Each zone name can be registered according to user's preference through WRC. And the zone name will be displayed on the zone's control screen once selected.

| Zone Labeling | |
|---------------|-----------|
| Item | Name |
| Zone 1 | Bedroom 1 |
| Zone 2 | Bedroom 2 |
| Zone 3 | Not Set |
| Zone 4 | Hallway |
| Zone 5 | Not Set |

OK Select Back

- The following 5 sensors can also be renamed:

- (1) RCS1: Temperature Sensor of primary WRC
- (2) RCS2: Temperature Sensor of secondary WRC (optional)
- (3) TS1: Remote Sensor 1 connected to ZIB (THM2, optional)
- (4) TS2: Remote Sensor 2 connected to ZIB (THM3, optional)
- (5) IDUS: Inlet Air Temperature Thermistor of IDU

| Zone Labeling | |
|---------------|-----------|
| Item | Name |
| Zone 6 | Bedroom 1 |
| Zone 7 | Bedroom 2 |
| Zone 8 | Not Set |
| RCS 1 | Hallway |
| RCS 2 | Not Set |

OK Select Back

| Zone Labeling | |
|---------------|-----------|
| Item | Name |
| TS 1 | Bedroom 1 |
| TS 2 | Bedroom 2 |
| IDUS | Not Set |

OK Select Back

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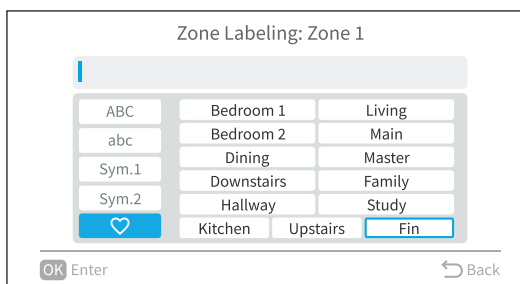
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- Commonly used zone names are provided for easy and quick settings.



- Temperature control

- Thermostat's built-in sensor will automatically be assigned to its zone.
- Sensor built in primary WRC, secondary WRC, indoor unit, and two remote sensors can be assigned to any enabled zone to detect the room temperature. One sensor can only be assigned to one enabled zone.

| Item | Name | Status |
|-------|-------------|------------|
| RCS 1 | Bedroom 1 | < Zone 1 > |
| RCS 2 | Bedroom 2 | N/A |
| TS1 | Main Room | N/A |
| TS2 | Hallway | N/A |
| IDUS | Living Room | N/A |

OK Confirm Back

- One zone can be assigned with multiple sensors according to the field installation.

9. Standard specification

- Zone Interface Box Hardware Specification

| Item | Specification |
|-------------------------|---|
| Dimensions (W×H×D) | 324mm × 226mm × 110mm |
| Net Weight | 3.95Kg |
| Installation Condition | Wall mount or mounting on surface |
| Ambient Temperature | -20°C~60°C |
| Ambient Humidity | 10%~95%(should not cause dew) |
| Power Supply | AC 230V/50Hz |
| Power Consumption | Standard Input 10W |
| Dampers Control | Up to 8 |
| Power Supply for Damper | AC 24V 32VA (per damper≤4 VA) |
| Thermostat Connection | Up to 8 thermostats, the max wire length of each thermostat is 50m. |

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● Damper Hardware Specification (Field-supplied)

| Item | Specification |
|--|-----------------|
| Voltage | AC 24V |
| Frequency | 50Hz |
| Maximum operating current (per damper) | 167mA or less |
| Maximum electric power (per damper) | 4VA or less |
| Cable Type | RJ12 or 3 wires |

NOTE:

- The ZIB is designed to operate with drive open and drive close type zone control motors only. Spring return motors cannot be used. Damper for each zone should share one damper timing.

10. Application Time

Start receiving order from Aug., 2023.

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