

AIRSTAGE

AIR CONDITIONER

Wall mounted type

FUJITSU

REFRIGERANT **R32**
INVERTER

SERVICE MANUAL

INDOOR



ASUH09KMAS
ASUH12KMAS

OUTDOOR



AOUH09KMAS1
AOUH12KMAS1

FUJITSU GENERAL LIMITED

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Notices:

- Product specifications and design are subject to change without notice for future improvement.
- For further details, please check with our authorized dealer.

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1. GENERAL INFORMATION

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1. GENERAL INFORMATION

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1. Specifications

1-1. Indoor unit

| Type | | | | Wall mounted | | | |
|--|------------------------|-----------------------------|-----------|---|-------------------|--------------|------------|
| | | | | Inverter, Heat pump | | | |
| Model name | | | | ASUH09KMAS | ASUH12KMAS | | |
| Power supply intake | | | | Outdoor unit | | | |
| System power supply | | Voltage | | 208/230 | | | |
| | | Frequency | | 60 | | | |
| | | Available voltage range | | 187—253 | | | |
| Indoor unit power supply (from outdoor unit) | | | | 208/230 | | | |
| Capacity | Cooling | Rated | kW | 2.64 | 3.52 | | |
| | | | Btu/h | 9,000 | 12,000 | | |
| | | Min.—Max. | kW | 0.90—3.55 | 0.90—4.05 | | |
| | | | Btu/h | 3,100—12,100 | 3,100—13,800 | | |
| | Heating | 47°FDB (Outdoor temp.) | Rated | kW | 3.52 | 4.10 | |
| | | | | Btu/h | 12,000 | 14,000 | |
| | | | Min.—Max. | kW | 0.82—5.30 | 0.82—5.80 | |
| | | | | Btu/h | 2,800—18,100 | 2,800—19,800 | |
| | | 17°FDB (Outdoor temp.)*1 | Rated | kW | 2.16 | 2.55 | |
| | | | | Btu/h | 7,400 | 8,700 | |
| | | | Max. | kW | 3.68 | 3.88 | |
| | | | | Btu/h | 12,600 | 13,200 | |
| | | 5°FDB (Outdoor temp.)*2 | Rated | kW | 3.02 | 3.10 | |
| | | | | Btu/h | 10,300 | 10,600 | |
| | | | Max. | kW | 3.02 | 3.10 | |
| | | | | Btu/h | 10,300 | 10,600 | |
| Input power | Cooling | Rated | kW | 0.55 | | 0.89 | |
| | | | | Min.—Max. | | 0.13—0.94 | 0.13—1.24 |
| | Heating | 47°FDB (Outdoor temp.) | | Rated | 0.76 | | 0.95 |
| | | | | | Min.—Max. | | 0.14—1.61 |
| | | 17°FDB (Outdoor temp.)*1 | | Rated | 0.67 | | 0.82 |
| | | | | | Max. | | 1.41 |
| | | 5°FDB (Outdoor temp.)*2 | | Rated | 1.30 | | 1.30 |
| | | | | | Max. | | 1.30 |
| | Fan | | | W | 22.9 | | |
| | | | | | 14.1 | | |
| | | | | | 8.8 | | |
| | | | | | 4.0 | | |
| Current | | Cooling | Rated | A | 2.9 | | 4.3 |
| | | Heating | | | 3.8 | | 4.6 |
| EER2 | | Cooling | | Btu/hW | 16.4 | | 13.5 |
| COP2 | | Heating | | kW/kW | 4.64 | | 4.32 |
| SEER2 | | Cooling | | Btu/hW | 30.0 | | 27.5 |
| HSPF2 | | Heating | | | 12.6 | | 11.2 |
| Power factor | | Cooling | | % | 82.5 | | 90.0 |
| | | Heating | | | 87.0 | | 89.8 |
| Moisture removal | | | | pints/h (L/h) | 2.9 (1.38) | | 3.7 (1.73) |
| Maximum operating current*3 | | Cooling | | A | 6.4 | | 6.9 |
| | | Heating | | | 9.4 | | |
| Fan | Airflow rate | Cooling | HIGH | CFM (m³/h) | 400 (680) | | |
| | | | MED | | 324 (550) | | |
| | | | LOW | | 253 (430) | | |
| | | | QUIET | | 153 (260) | | |
| | | Heating | HIGH | | 441 (750) | | |
| | | | MED | | 371 (630) | | |
| | | | LOW | | 300 (510) | | |
| | | | QUIET | | 188 (320) | | |
| | Type × Qty | | | | Crossflow fan × 1 | | |
| | Motor output | | W | | 49 | | |
| Sound pressure level*4 | Cooling | HIGH | dB (A) | 40 | | | |
| | | | | MED | 35 | | |
| | | | | LOW | 30 | | |
| | | | | QUIET | 19 | | |
| | Heating | HIGH | | 42 | | | |
| | | | | MED | 38 | | |
| | | | | LOW | 33 | | |
| | | | | QUIET | 21 | | |
| Heat exchanger type | Dimensions (H × W × D) | | in (mm) | Main 1: 8-1/4 × 26-5/16 × 1-1/16 (210 × 668 × 26.6) Main 2: 4-7/16 × 26-5/16 × 13/16 (112 × 668 × 20.0) Sub: 3-5/16 × 26-5/16 × 1/2 (84 × 668 × 13.3) | | | |
| | Fin pitch | | FPI | Main1: 21 Main2: 23 Sub: 18 | | | |
| | Rows × Stages | | | Main1: 2 × 10 Main2: 2 × 7 Sub: 1 × 4 | | | |
| | Pipe type | | | Copper tube | | | |
| | Fin type | | | Aluminum | | | |
| Enclosure | Material | | | Polystyrene | | | |
| | Color | | | White | | | |
| Dimensions (H × W × D) | Net | | in (mm) | Approximate color of Munsell N9.25/ 10-5/8 × 32-13/16 × 8-3/4 (270 × 834 × 222) | | | |
| | Gross | | | 10-7/8 × 36 × 13-1/16 (277 × 914 × 332) | | | |
| Weight | Net | | lb (kg) | 22 (10) | | | |
| | Gross | | | 28 (12.5) | | | |

| Type | | | | Wall mounted | |
|------------------------|--------------|---------|---------|---|------------|
| | | | | Inverter, Heat pump | |
| Model name | | | | ASUH09KMAS | ASUH12KMAS |
| Connection pipe | Size | Liquid | in (mm) | Ø1/4 (Ø6.35) | |
| | | Gas | | Ø3/8 (Ø9.52) | |
| Drain hose | Method | | | Flare | |
| | Material | | | Polyvinyl chloride | |
| | Tip diameter | | | Ø17/32 (Ø13.8) (I.D.), Ø19/32 to 21/32 (Ø15 to 16.8) (O.D.) | |
| Operation range | | Cooling | °F (°C) | 64 to 90 (18 to 32) | |
| | | | %RH | 80 or less | |
| | | Heating | °F (°C) | 60 to 86 (16 to 30) | |
| Remote controller type | | | | Wireless (Option: Wired, Mobile app*5 [AIRSTAGE Mobile]) | |

NOTES:

- Specifications are based on the following conditions:
 - Cooling: Indoor temperature of 80°FDB/67°F WB (26.67°CDB/19.44°CWB), and outdoor temperature of 95°FDB/75°F WB (35°CDB/23.9°CWB).
 - Heating: Indoor temperature of 70°FDB/60°F WB (21.11°CDB/15.56°CWB), and outdoor temperature of 47°FDB/43°F WB (8.33°CDB/6.11°CWB).
 - *1: Heating (17°F): Indoor temperature of 70°FDB/60°F WB (21.11°CDB/15.56°CWB), and outdoor temperature of 17°FDB/15°F WB (-8.33°CDB/-9.44°CWB).
 - *2: Heating (5°F): Indoor temperature of 70°FDB/60°F WB (21.11°CDB/15.56°CWB), and outdoor temperature of 5°FDB/4°F WB (-15.0°CDB/-15.56°CWB).
 - Test conditions are based on AHRI 210/240 2023.
 - Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *3: Maximum current:
 - The maximum value when operated within the operation range.
 - The total current of indoor unit and outdoor unit.
- *4: Sound pressure level:
 - Measured values in manufacturer's anechoic chamber.
 - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.
- *5: Available on Google Play™ store or on App Store®.

1-2. Outdoor unit

| Type | | | | Inverter, Heat pump | |
|-------------------------|------------------------|------------------------|--|--|---------------|
| Model name | | | | AOUH09KMAS1 | AOUH12KMAS1 |
| Power supply | | | | 208/230 V~ 60 Hz | |
| Power supply intake | | | | Outdoor unit | |
| Available voltage range | | | | 187—253 V | |
| Starting current | | | A | 3.8 | 4.6 |
| Fan | Airflow rate | Cooling | CFM (m³/h) | 901 (1,530) | 1,042 (1,770) |
| | | Heating | | 889 (1,510) | 1,065 (1,810) |
| | Type × Qty | | | Propeller fan × 1 | |
| Motor output | | W | 23 | | |
| Sound pressure level* | | Cooling | dB (A) | 44 | 48 |
| | | Heating | | 47 | 50 |
| Heat exchanger type | | Dimensions (H × W × D) | in (mm) | Main 1: 19-13/16 × 34-11/16 × 11/16 (504 × 881 × 18.19) Main 2: 19-13/16 × 33-1/2 × 11/16 (504 × 851 × 18.19) | |
| | | Fin pitch | FPI | Main 1: 20 Main 2: 20 | |
| | | Rows × Stages | | Main 1: 1 × 24 Main 2: 1 × 24 | |
| | | Pipe type | | Copper tube | |
| | | Fin type | Type (Material) | Aluminum | |
| | | | Surface treatment | PC fin | |
| | | Compressor | | Type | DC rotary |
| | | Motor output | W | 900 | |
| Refrigerant | | Type | R32 | | |
| | | Charge | lb oz | 1 lb 14 oz | |
| | | | g | 850 | |
| Refrigerant oil | | Type | RB68A | | |
| | | Amount | in³ (cm³) | 20.7 (340) | |
| Enclosure | | Material | Steel sheet | | |
| | | Color | Beige Approximate color of Munsell 10YR 7.5/1.0 | | |
| Dimensions (H × W × D) | | Net | in (mm) | 21-5/16 × 31-7/16 × 11-7/16 (542 × 799 × 290) | |
| | | Gross | | 23-11/16 × 37 × 14-3/4 (602 × 940 × 375) | |
| Weight | | Net | lb (kg) | 71 (32) | |
| | | Gross | | 77 (35) | |
| Connection pipe | Size | Liquid | in (mm) | Ø1/4 (Ø6.35) | |
| | | Gas | | Ø3/8 (Ø9.52) | |
| | Method | | ft (m) | Flare | |
| | Pre-charge length | | | 49 (15) | |
| | Min. length | | | 10 (3) | |
| | Max. length | | | 66 (20) | |
| | Max. height difference | | | 49 (15) | |
| Operation range | | Cooling | °F (°C) | 14 to 122 (-10 to 50) | |
| | | Heating | | 5 to 75 (-15 to 24) | |
| Drain hose | | Material | Polypropylene | | |
| | | Tip diameter | in (mm) | Ø1/2 (Ø13.0) (I.D.) Ø5/8 to Ø11/16 (Ø16.0 to Ø16.8) (O.D.) | |

NOTES:

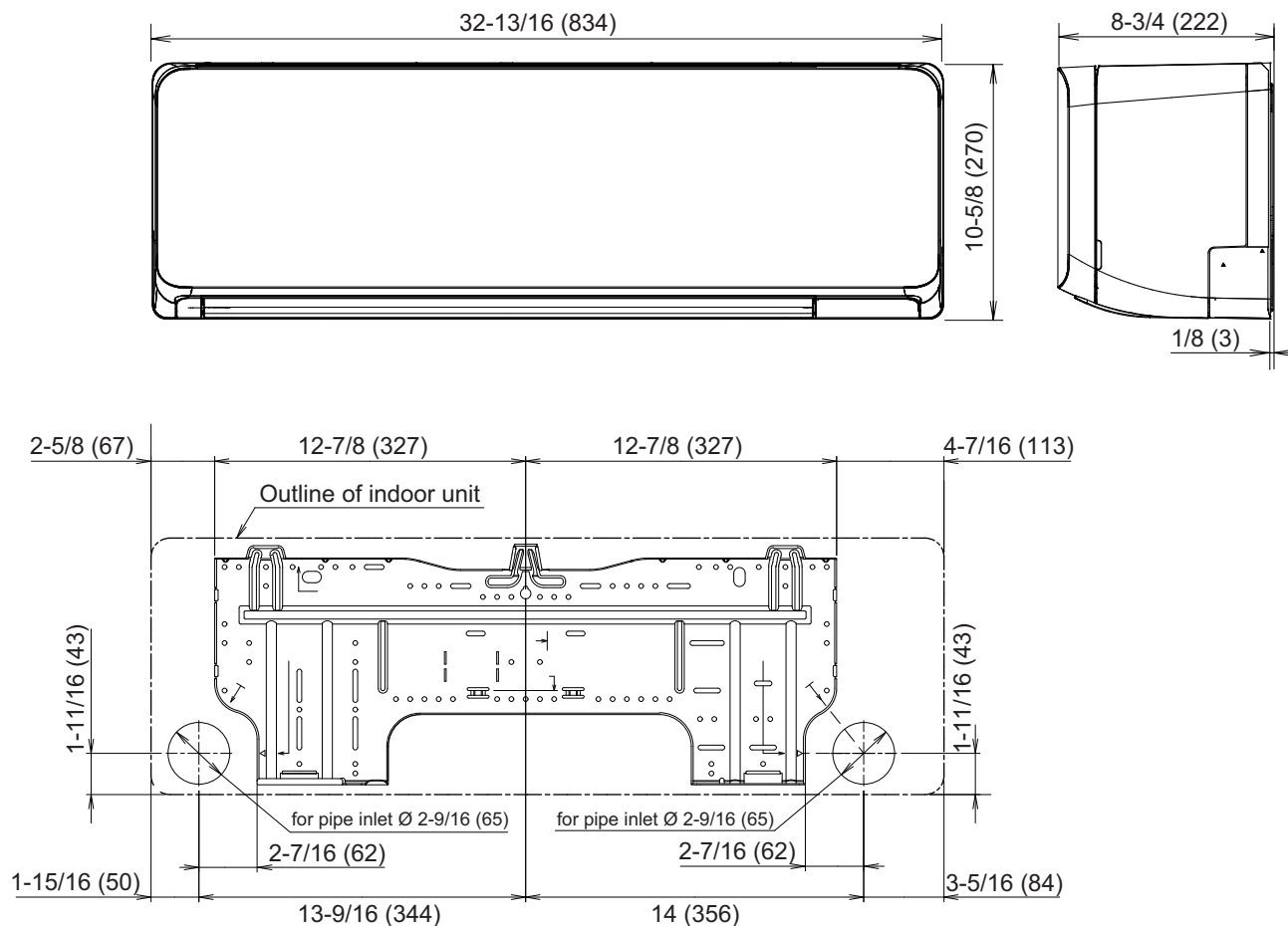
- Specifications are based on the following conditions:
 - Cooling: Indoor temperature of 80°FDB (26.67°CDB)/67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB)/75°FWB (23.9°CWB).
 - Heating: Indoor temperature of 70°FDB (21.11°CDB)/59°FWB (15°CWB), and outdoor temperature of 47°FDB (8.33°CDB)/43°FWB (6.11°CWB).
 - Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *: Sound pressure level
 - Measured values in manufacturer's semi-anechoic chamber.
 - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.

2. Dimensions

2-1. Indoor unit

■ Models: ASUH09KMAS and ASUH12KMAS

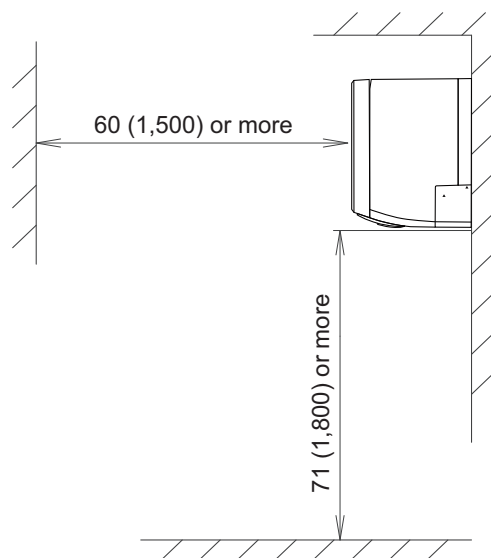
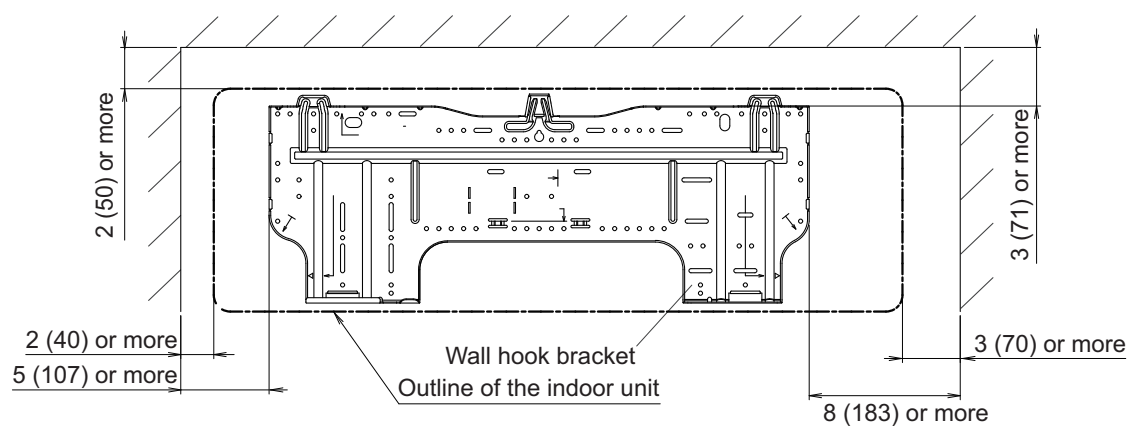
Unit: in (mm)



● Installation space requirement

Provide sufficient installation space for product safety.

Unit: in (mm)

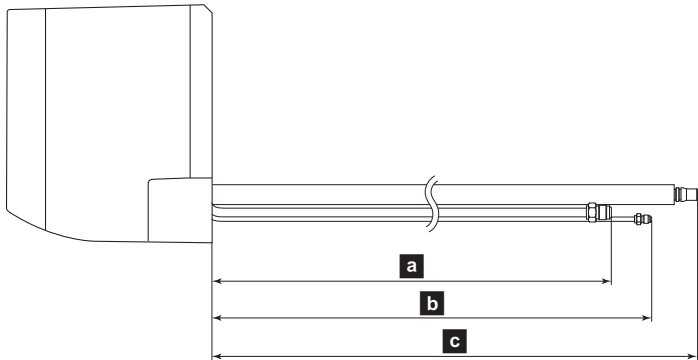


■ Pipe exit length from the rear

Design the system considering the length of the pipes or hose exiting from the rear of the indoor unit.

NOTE: Detailed shapes of the indoor unit and the tip of each pipe or hose may vary depending on the model.

Unit: in (mm)

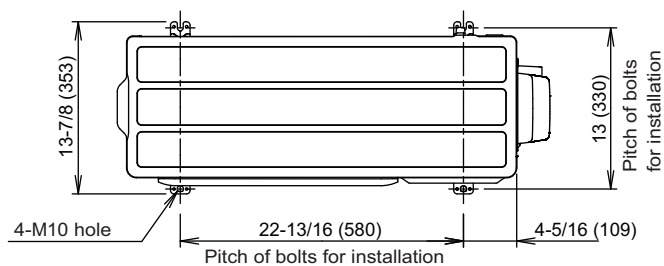


| Model name | Approximate length | | |
|---------------|--------------------|----------------------|---------------------|
| | a Gas pipe | b Liquid pipe | c Drain hose |
| ASUH09-12KMAS | 14-15/16 (380) | 16-15/16 (430) | 19-1/8 (485) |

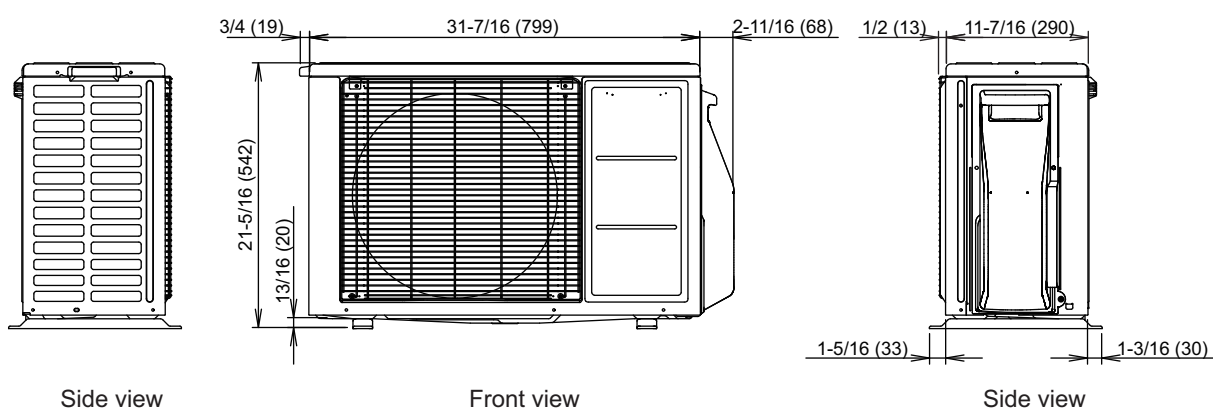
2-2. Outdoor unit

■ Models: AOUH09KMAS1 and AOUH12KMAS1

Unit: in (mm)



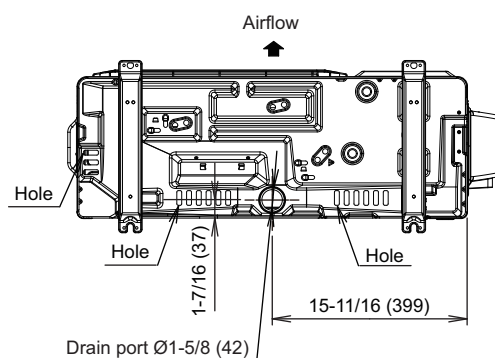
Top view



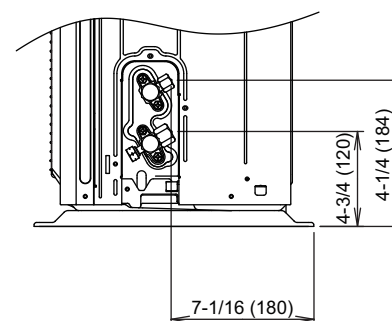
Side view

Front view

Side view



Bottom view



Side view (Valve part)

2. TECHNICAL DATA AND PARTS LIST

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2. TECHNICAL DATA AND PARTS LIST

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1. Precautions

When you start servicing, pay attention to the following points. For detailed precautions, refer to the installation manual of the products.

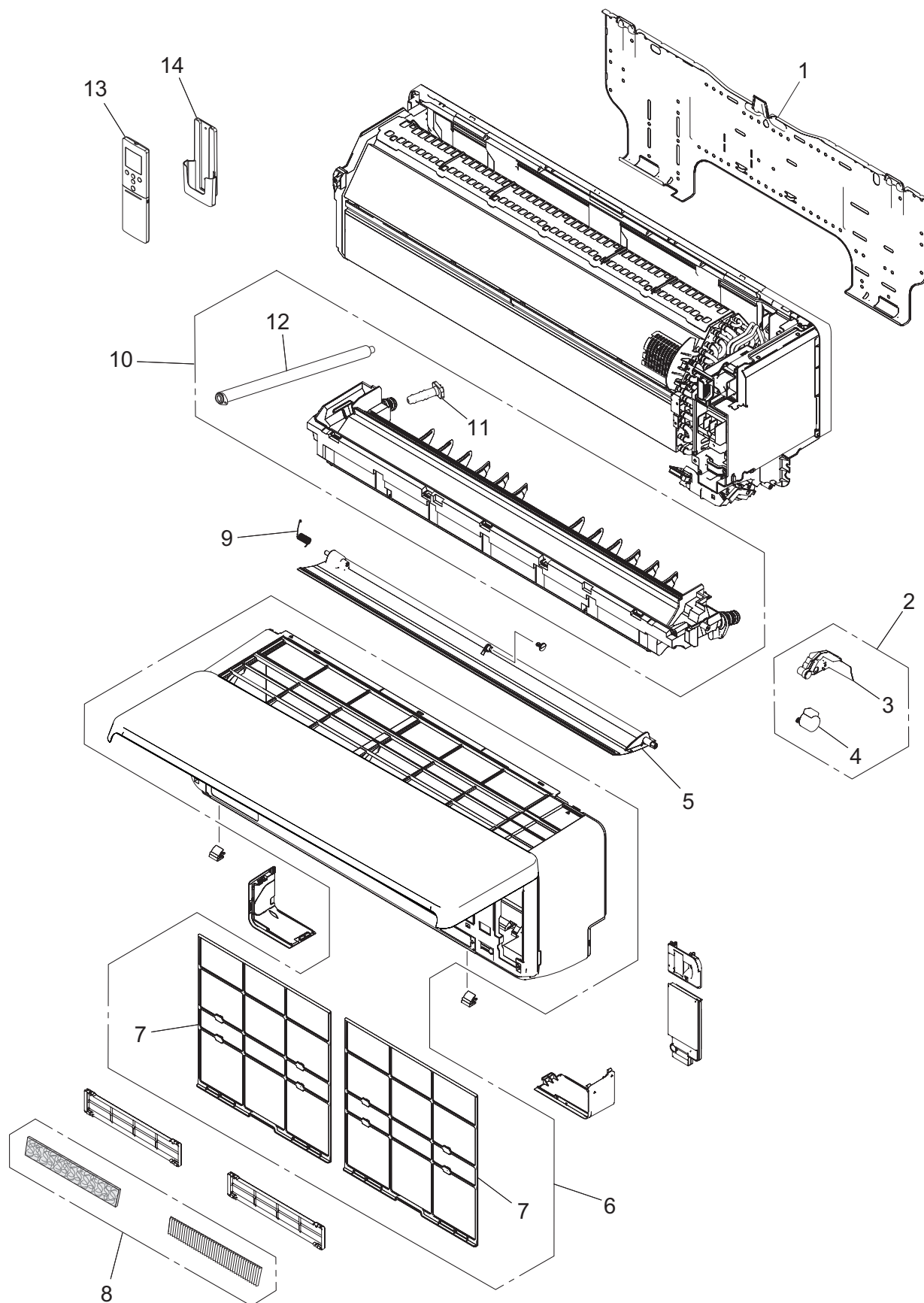
CAUTION

- Service personnel
 - Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
 - Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
 - Servicing shall be performed only as recommended by the manufacturer.
 - Work
 - Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. When repairing the refrigerant system, refer to the precautions written in the installation manual of the products before you start servicing.
 - Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
 - All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.
 - Work in confined spaces shall be avoided.
 - The area around the workspace shall be sectioned off.
 - Ensure that the conditions within the area have been made safe by control of flammable material.
 - Electric shock may occur. After turning off the power, always wait 5 minutes before touching electrical components.
 - Do not touch the fins of the heat exchanger. Touching the heat exchanger fins could result in damage to the fins or personal injury such as skin rupture.
 - Do not place any other electrical products or household belongings under the product.
 - Condensation dripping from the product might get them wet, and may cause damage or malfunction to the property.
 - Checking for presence of refrigerant
 - The area shall be checked with an appropriate refrigerant leak detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
 - Ensure that the leak detector being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
-
- Service parts information and design are subject to change without notice for product improvement.
 - For the latest information of the service parts, refer to our Service Portal.
<https://fujitsu-general.force.com/portal/>
 - Precise figure of the service parts listed in this manual may differ from the actual service parts.

2. Indoor unit parts list

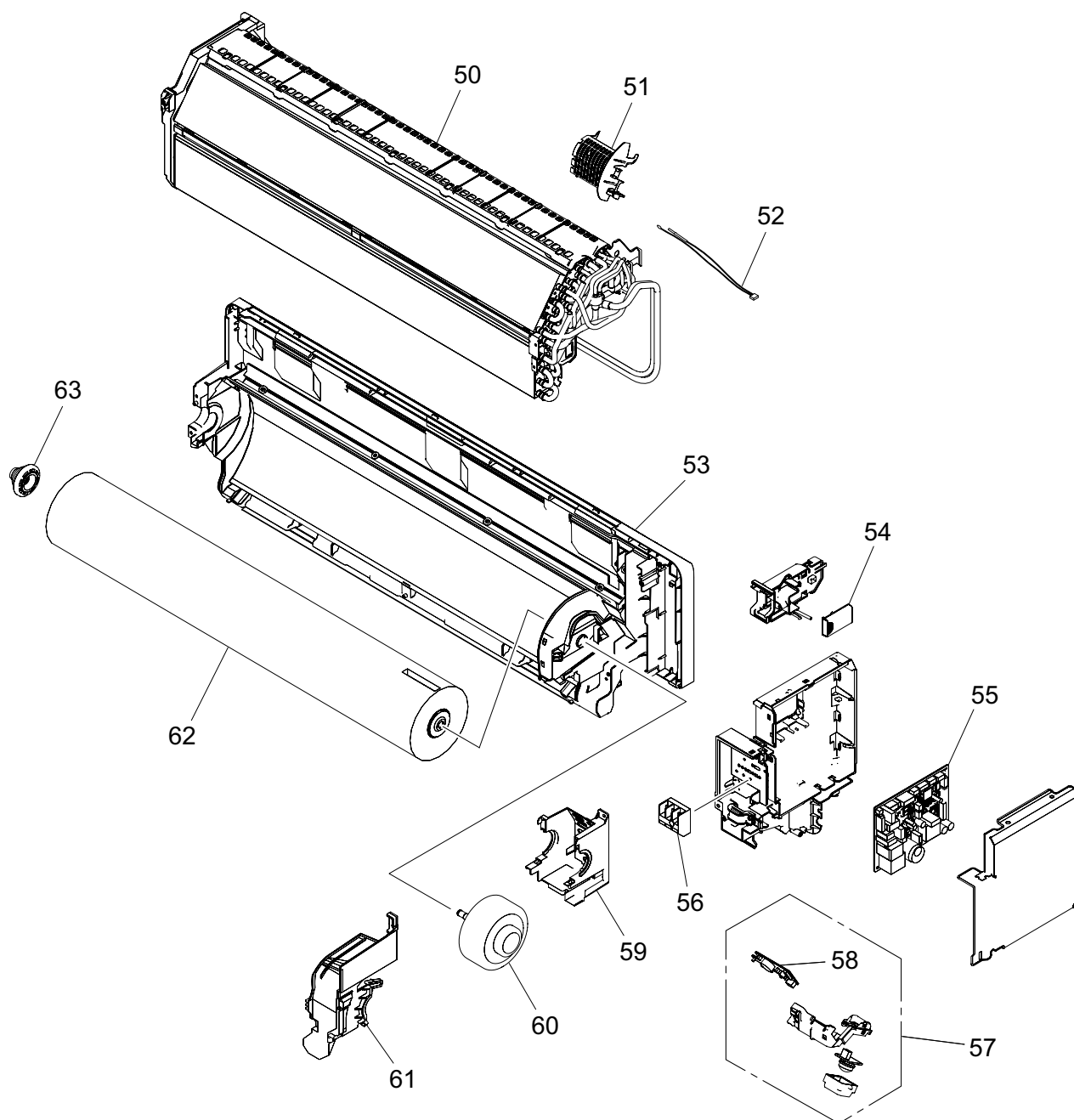
2-1. Models: ASUH09KMAS and ASUH12KMAS

■ Exterior parts



| Item no. | Part no. | Part name |
|----------|------------|----------------------------|
| 1 | 9388142005 | Bracket panel |
| 2 | 9387714036 | Stepping motor holder assy |
| 3 | 9387456004 | Stepping motor holder |
| 4 | 9901011047 | Stepping motor |
| 5 | 9387479003 | Horizontal louver assy |
| 6 | 9384977526 | Front panel total assy |
| 7 | 9387473032 | Air filter |
| 8 | 9317250009 | Air clean filter assy |
| 9 | 9387471007 | Louver spring |
| 10 | 9387590241 | Drain pan total assy |
| 11 | 9316177017 | Drain cap |
| 12 | 9316904002 | Drain hose assy |
| 13 | 9362256087 | Remote controller |
| 14 | 9318912005 | Remote controller holder |

■ Base, evaporator, and control unit

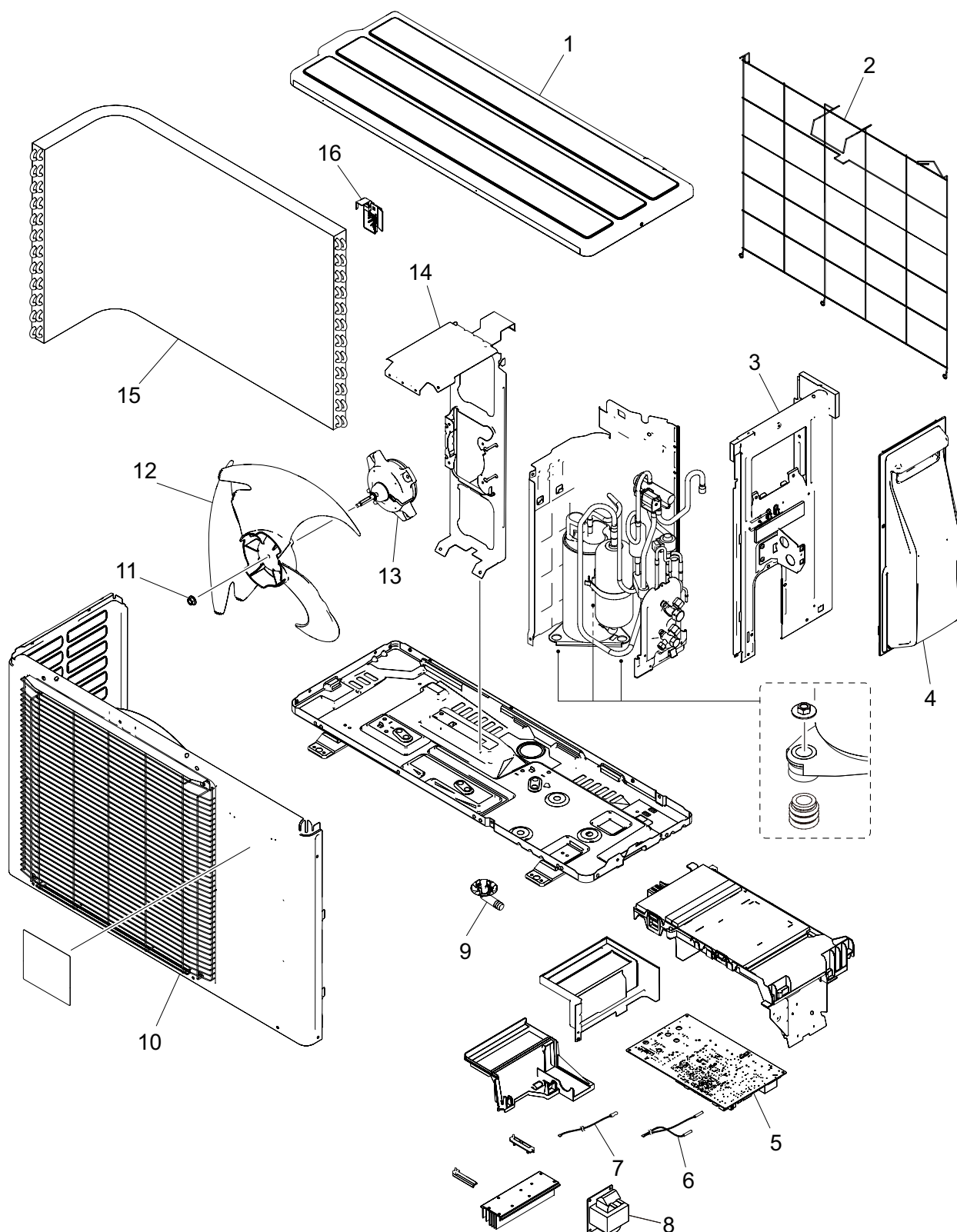


| Item no. | Part no. | Part name |
|----------|------------|--|
| 50 | 9387593846 | Evaporator total assy |
| 51 | 9387467000 | Room thermistor holder |
| 52 | 9901160035 | Thermistor assy |
| 53 | 9387587265 | Base assy |
| 54 | 9300506014 | WLAN Adapter sub assy |
| 55 | 9712546127 | Main PCB (09 model) |
| | 9712546134 | Main PCB (12 model) |
| 56 | 9901013010 | Terminal block 3P |
| 57 | 9711146199 | Indicator assy |
| 58 | 9711147073 | Indicator PCB |
| 59 | 9384500014 | Motor case sub assy |
| 60 | 9604224034 | DC fan motor |
| 61 | 9387713022 | Motor cover assy |
| 62 | 9387055047 | Crossflow fan assy |
| 63 | 9333628004 | Bearing D assy |
| — | 9901010071 | Wire with connector (CN75 on Main PCB—Wireless LAN adapter) |
| — | 9709509081 | Wire with terminal (E1 on Main PCB—Earth terminal) |

3. Outdoor unit parts list

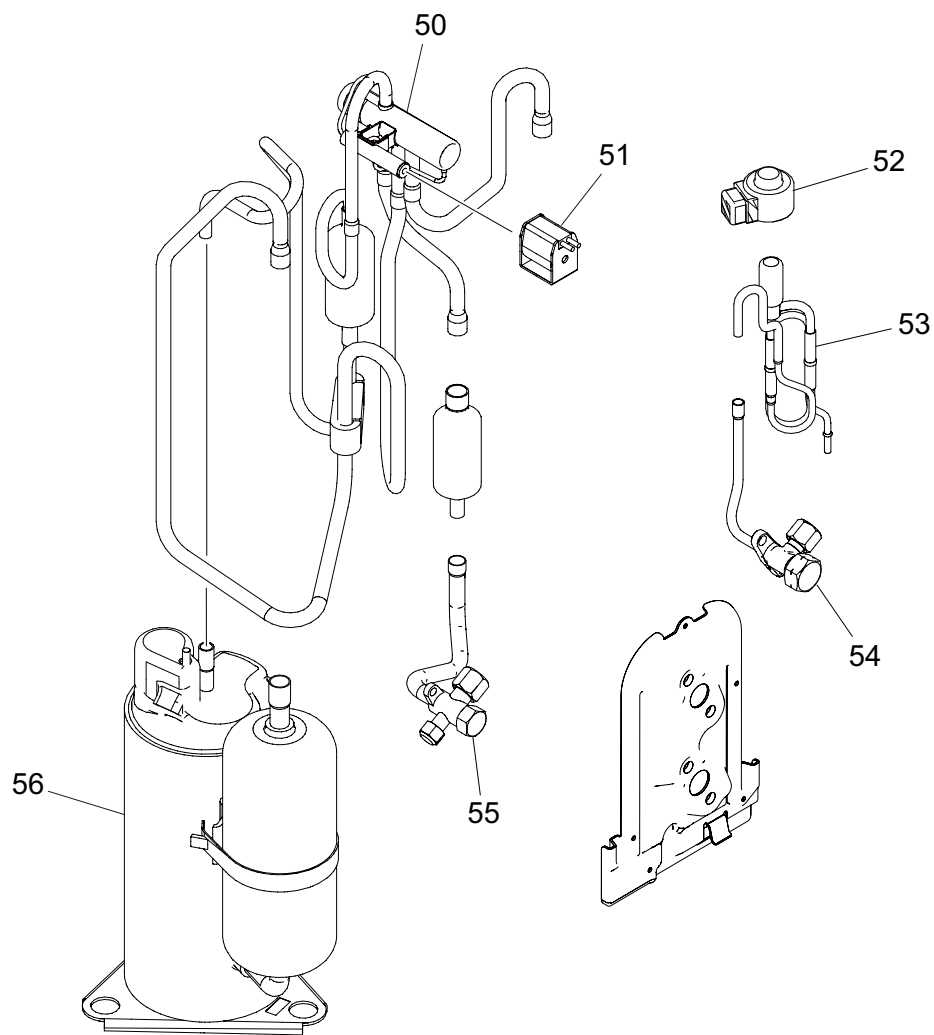
3-1. Models: AOUH09KMAS1 and AOUH12KMAS1

■ Exterior parts and Chassis



| Item no. | Part no. | Part name |
|----------|------------|----------------------------|
| 1 | 9322556028 | Top panel assy |
| 2 | 9377840004 | Protective net assy |
| 3 | 9322552259 | Cabinet right assy |
| 4 | 9322570055 | Switch cover assy |
| 5 | 9709689622 | Main PCB (09 model) |
| | 9709689639 | Main PCB (12 model) |
| 6 | 9900727062 | Thermistor assy |
| 7 | 9900565145 | Thermistor (Outdoor temp.) |
| 8 | 9900583019 | Reactor assy |
| 9 | 9322144003 | Drain pipe |
| 10 | 9322555199 | Front panel assy |
| 11 | 0700103070 | Nut |
| 12 | 9322136008 | Propeller fan |
| 13 | 9603553005 | DC fan motor |
| 14 | 9322553010 | Motor bracket assy |
| 15 | 9323834019 | Heat exchanger unit |
| 16 | 9322138002 | Thermistor holder |

■ Compressor


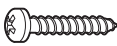


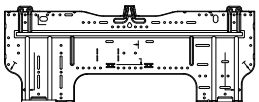
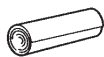
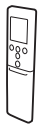


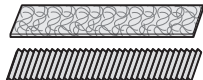

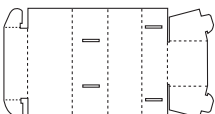


| Item no. | Part no. | Part name |
|----------|------------|------------------------|
| 50 | 9322444011 | 4-way valve assy |
| 51 | 9970110160 | Solenoid |
| 52 | 9970222016 | Expansion valve coil |
| 53 | 9322463029 | Pulse motor valve assy |
| 54 | 9322474001 | 2-way valve assy |
| 55 | 9322475008 | 3-way valve assy |
| 56 | 9322427007 | Compressor assy |

4. Accessories




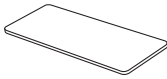
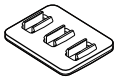
4-1. Indoor unit

■ Models: ASUH09KMAS and ASUH12KMAS

| Part name | Exterior | Qty | Part name | Exterior | Qty |
|--------------------------|---|-----|-----------------------|---|-----|
| Operation manual |  | 1 | Tapping screw (large) |  | 5 |
| Installation manual |  | 1 | Tapping screw (small) |  | 2 |
| Wall hook bracket |  | 1 | Cloth tape |  | 1 |
| Remote controller |  | 1 | Filter holder |  | 2 |
| Remote controller holder |  | 1 | Air cleaning filters |  | 1 |
| Battery |  | 2 | Installation spacer |  | 1 |

4-2. Outdoor unit


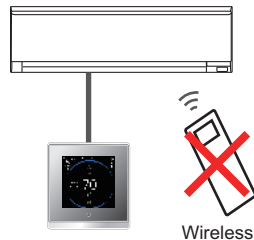

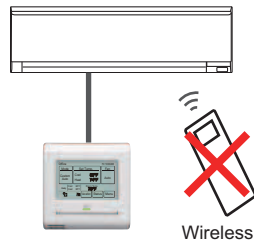
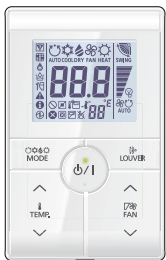

■ Models: AOUH09KMAS1 and AOUH12KMAS1

| Part name | Exterior | Qty | Part name | Exterior | Qty |
|---------------------|---|-----|------------------|---|-----|
| Installation manual |  | 1 | Cable tie |  | 2 |
| Drain pipe |  | 1 | Protection label |  | 1 |
| Drain cap |  | 5 | | | |

5. Optional parts

5-1. Indoor unit

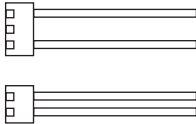


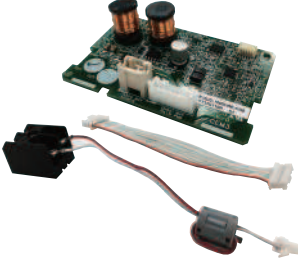

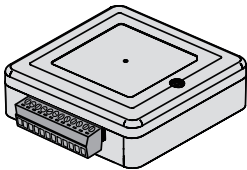


■ Controllers

| Exterior | Part name | Model name | Summary |
|---|---------------------------------------|------------|--|
|  | Wired Remote Controller (Touch Panel) | UTY-RVRU | <p>Remote controller that provides the functions you need in a sleek design that uniquely transforms itself to blend with any interior.</p> <p>Optional Communication Kit is necessary for installation.</p> <p>NOTE: When this remote controller is connected, wireless remote controller cannot be used.</p>  <p>Wireless RC</p> |
|  | Wired Remote Controller (Touch Panel) | UTY-RNRUZ* | <p>Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room.</p> <p>Optional Communication Kit is necessary for installation.</p> <p>NOTE: When this remote controller is connected, wireless remote controller cannot be used.</p>  <p>Wireless RC</p> |
|  | Simple Remote Controller | UTY-RSRY | <p>Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode.</p> <p>Optional Communication Kit is necessary for installation.</p> |
|  | Simple Remote Controller | UTY-RHRY | <p>Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting.</p> <p>Optional Communication Kit is necessary for installation.</p> |

NOTES:

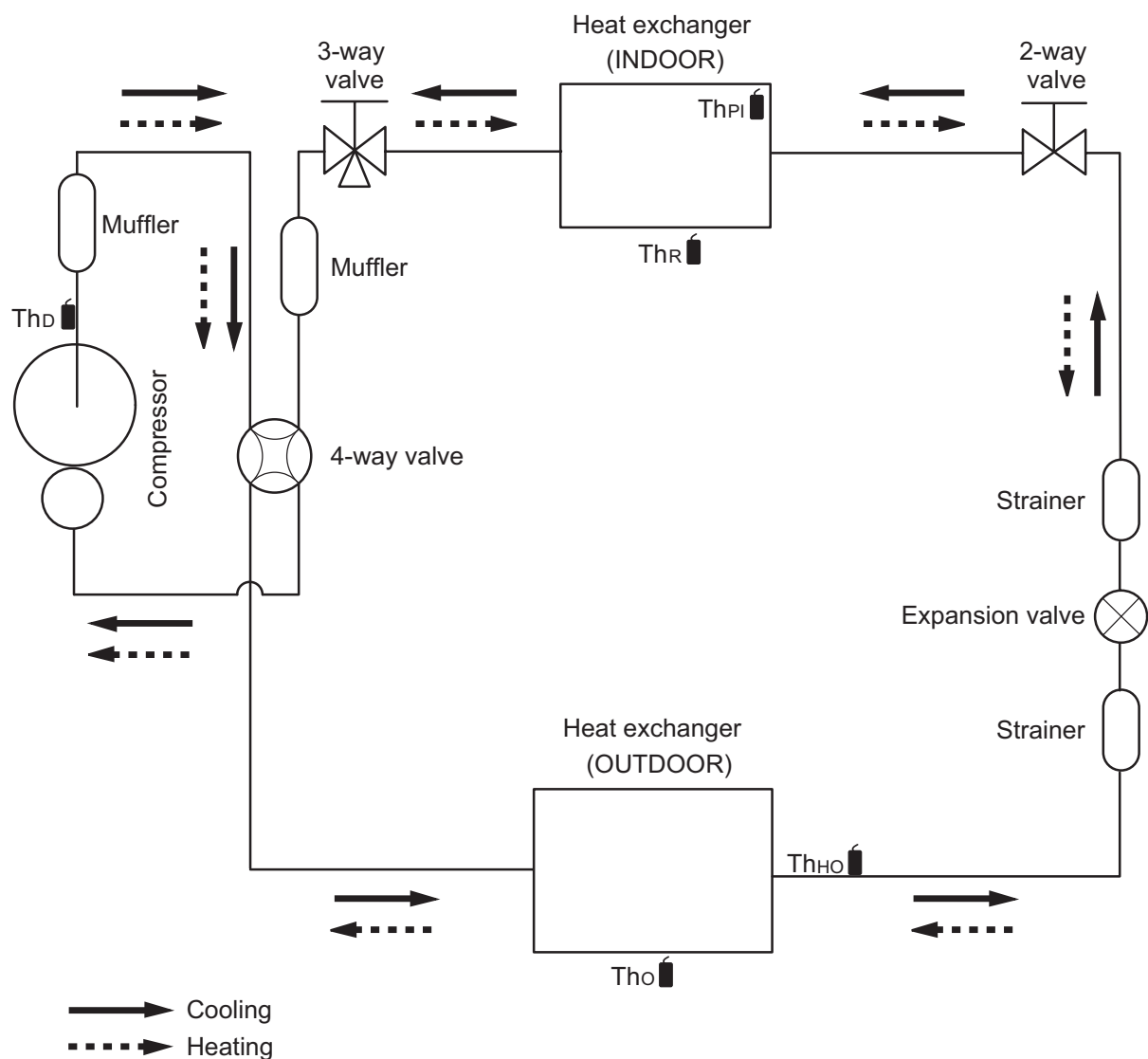
- Available functions may differ by the remote controller. For details, refer to the operation manual.
- When using the group controlling system of the Wired Remote Controller, using WLAN Adapter is prohibited.

Others

| Exterior | Part name | Model name | Summary |
|---|-------------------------------|------------|---|
|  | External Connect Kit | UTY-XWZX | Use to connect with various peripheral devices and air conditioner PCB. Connecting point: CN46 and CN47 on Main PCB |
|  | External Connect Kit | UTY-XWZXZ5 | Required when external device is connected. Connecting point: CN46 and CN47 on Main PCB |
|  | External Input and Output PCB | UTY-XCSXZ2 | Use to connect with external devices and air conditioner PCB. Optional External Connect Kit might be required to connect locally purchased devices via this PCB. Connecting point: CN65 on Main PCB |
|  | Communication Kit | UTY-TWRXZ2 | Use to connect Non-polar 2-core wired remote controller. Connecting point: CN13 |
|  | Modbus Converter | UTY-VMSX | For connection between indoor unit with UART interface and a Modbus open network. Connecting point: CN65 on Main PCB |
|  | Thermostat Converter | UTY-TTRXZ* | This converter can control Fujitsu General products using a third-party thermostat controller. Optional Communication Kit is necessary for installation. |
|  | Network Converter | UTY-VTGX | This converter is required when connecting single split system to VRF network system. Optional Communication Kit is necessary for installation. |
|  | External Switch Controller | UTY-TERX | Air conditioner switching can be controlled by connecting other external sensor switches. Optional Communication Kit is necessary for installation. |

6. Refrigerant system diagrams

6-1. Models: AOUH09KMAS1 and AOUH12KMAS1

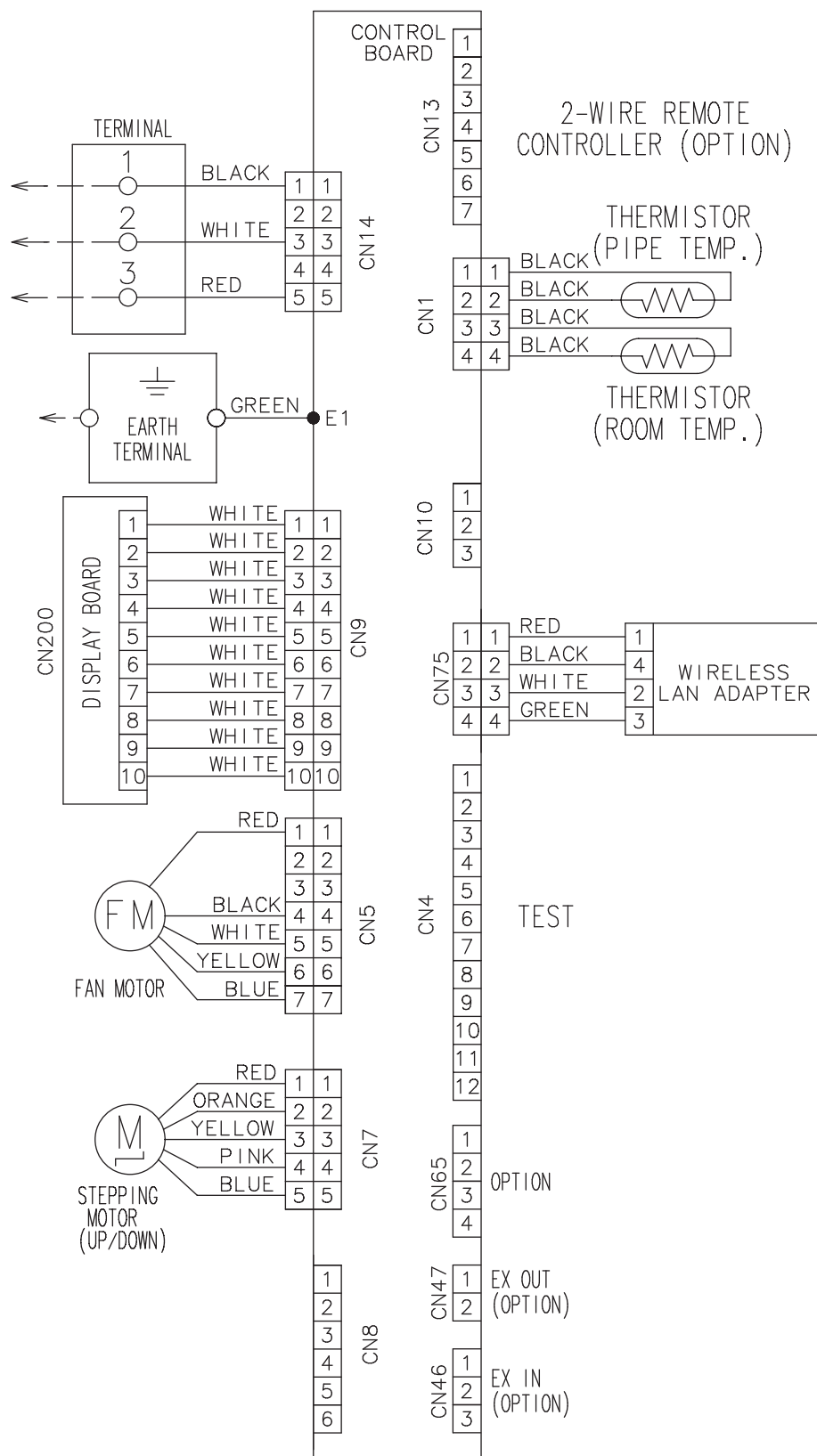


- ThD** : Thermistor (Discharge temperature)
ThO : Thermistor (Outdoor temperature)
ThHO : Thermistor (Heat exchanger out temperature)
ThPI : Thermistor (Pipe temperature)
ThR : Thermistor (Room temperature)

7. Wiring diagrams

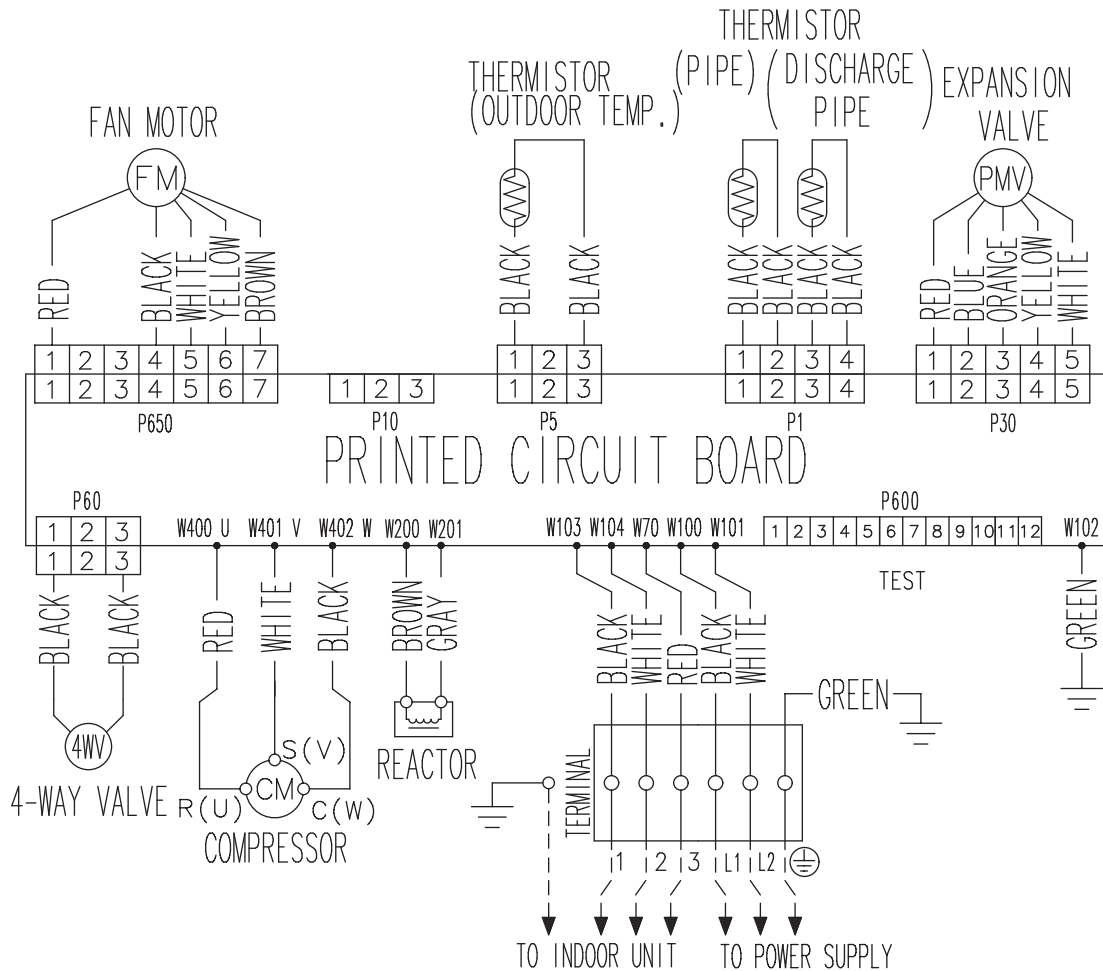
7-1. Indoor unit

■ Models: ASUH09KMAS and ASUH12KMAS



7-2. Outdoor unit

■ Models: AOUH09KMAS1 and AOUH12KMAS1

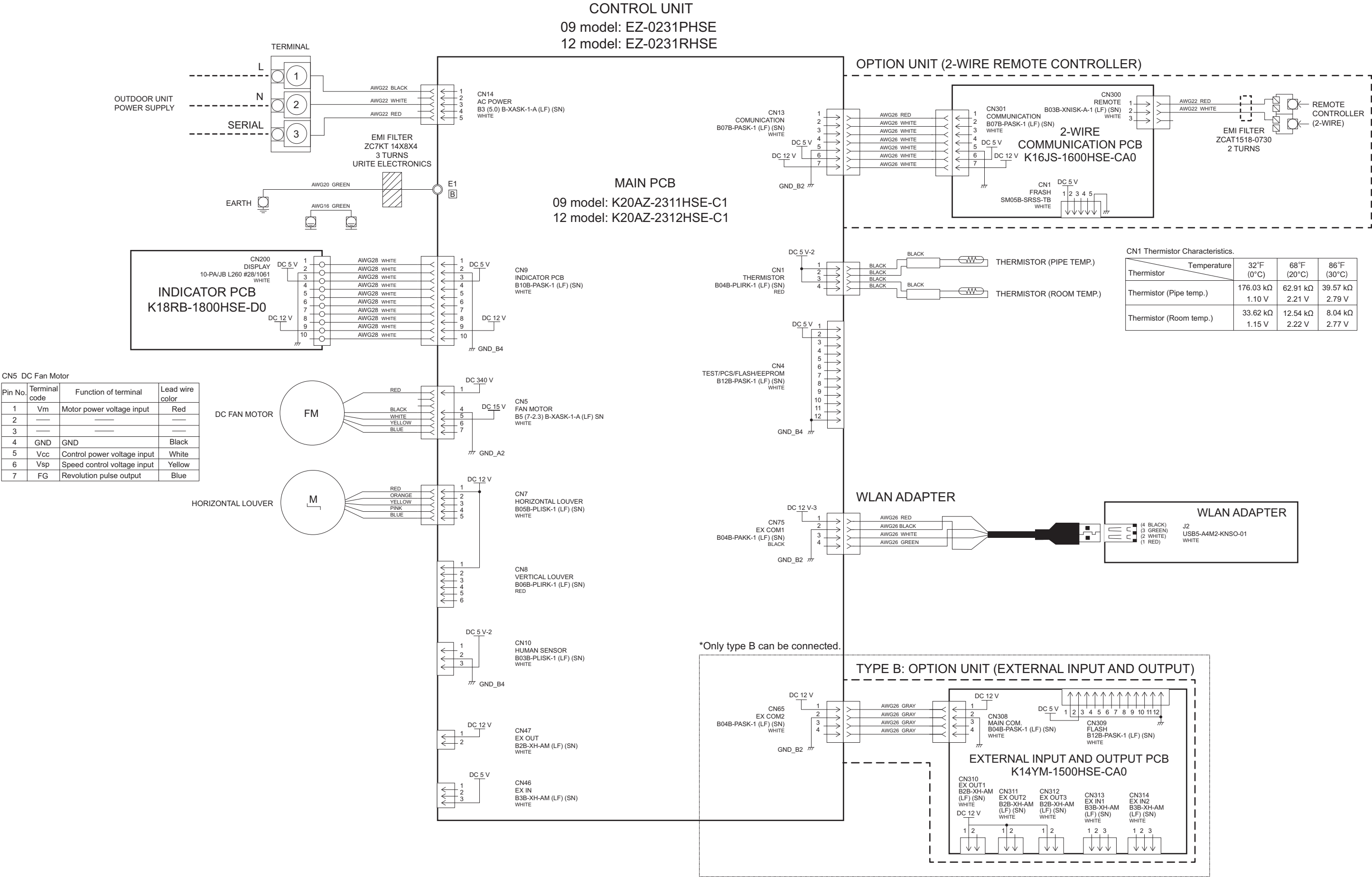


8. PC board diagrams

8-1. Models: ASUH09KMAS and ASUH12KMAS

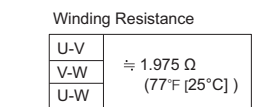
TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



TECHNICAL DATA AND PARTS LIST

TEST/PCS/FLASH/EEPROM
P600
B12B-PASK-1 (LF) (SN)
WHITE



| Pin No. | Terminal code | Function of terminal | Lead wire color |
|---------|---------------|-----------------------------|-----------------|
| 1 | Vm | Motor power voltage input | Red |
| 2 | — | — | — |
| 3 | — | — | — |
| 4 | GND | GND | Black |
| 5 | Vcc | Control power voltage input | White |
| 6 | Vsp | Speed control voltage input | Yellow |
| 7 | FG | Revolution pulse output | Brown |

| Thermistor | Temperature | 32°F (0°C) | 68°F (20°C) | 86°F (30°C) |
|------------------------------|-------------|---------------------|--------------------|--------------------|
| Thermistor (Pipe temp.) | | 16.05 kΩ 1.14 V | 5.98 kΩ 2.21 V | 3.84 kΩ 2.77 V |
| Thermistor (Discharge temp.) | | 168.60 kΩ 0.36 V | 62.55 kΩ 0.86 V | 40.01 kΩ 1.23 V |

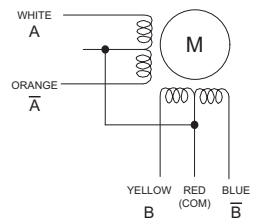
| P5 Thermistor Characteristics. | | | |
|--------------------------------|--------------------|--------------------|-------------------|
| Thermistor \ Temperature | 32°F (0°C) | 68°F (20°C) | 86°F (30°C) |
| Thermistor (Outdoor temp.) | 35.21 kΩ 2.61 V | 12.64 kΩ 3.76 V | 7.97 kΩ 4.14 V |

| | |
|---------------------------------------|--|
| P30 Expansion Valve Coil | |
| Recommended Drive Condition | |
| Unipolar Drive, 1-2 Phase Excitation. | |
| 1 (Red) - 2 (Blue) | Coil resistance $\approx 46.0 \Omega$ (68°F [20°C]) |
| 1 (Red) - 3 (Orange) | |
| 1 (Red) - 4 (Yellow) | |
| 1 (Red) - 5 (White) | |

Recommended drive condition: Unipolar drive, 1-2 phase excitation.

| Phase No. (Symbol) | Lead wire colors | Switching mode | | | | | | | |
|-----------------------|------------------|----------------|-----|-----|-----|-----|-----|-----|-----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| A | White | On | On | Off | Off | Off | Off | On | On |
| B | Yellow | Off | On | On | On | Off | Off | Off | Off |
| \bar{A} | Orange | Off | Off | Off | On | On | On | Off | Off |
| \bar{B} | Blue | Off | Off | Off | Off | Off | On | On | On |

The movement mode
 1→2→3→4→5→6→7→8: Valve close
 8→7→6→5→4→3→2→1: Valve open



3. TROUBLESHOOTING

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3. TROUBLESHOOTING

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1. Error code

When a problem occurs in the system or the connected device, the error content is notified by displaying the code.

NOTE: This function is only available in a system with indoor or IR receiver units equipped with indicator lamps to show the error content.

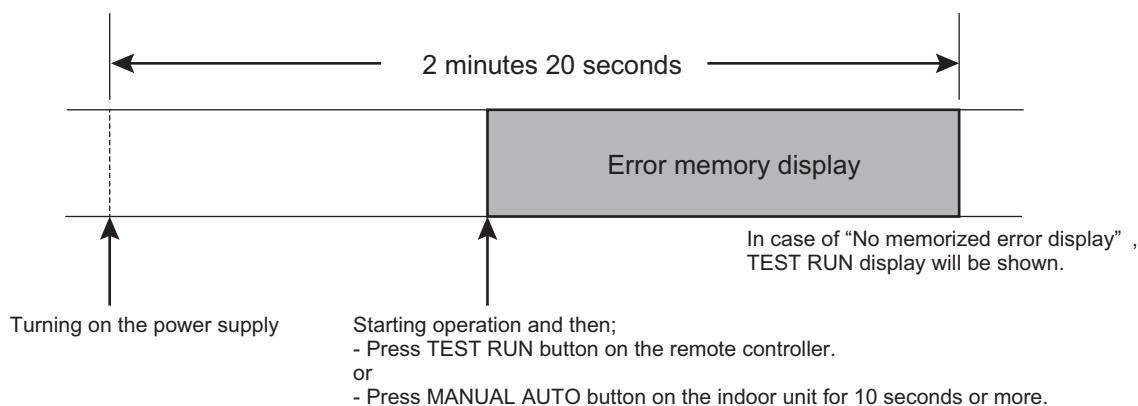
Errors, once displayed, will be automatically stored in the PC board of the indoor unit. Even if the power is disconnected, the memory containing the error history will not be erased.

If another error occurs later, the stored error memory will be updated automatically and replaced with the new one. (Previous error will be erased.)

1-1. How to check the error memory

When an error occurs, the operation lamp (Green) and the timer lamp (Orange) indicate the error content by blinking. To check the error memory, follow the procedures below.

1. Stop the operation of the air conditioner, and then disconnect the power supply.
2. Reconnect the power supply.
3. In one of the following two methods, the memorized error is only displayed during the “3 minutes ST”^{*} state period.
 - Start the operation and then press the TEST RUN button on the remote controller.
 - Press the MANUAL AUTO button on the indoor unit for 10 seconds or more.



^{*}: The “3 minutes ST” period lasts 2 minutes and 20 seconds after turning on the power supply.

1-2. How to erase the error memory

The error memory can be erased in one of the following two methods.

- Manual erase: Pressing the MANUAL AUTO button on the indoor unit while the “Error memory display” is being shown. (Short beep emits for about 3 seconds.)
- Automatic erase: After continuing the normal operation of the air conditioner without error for 2 hours or longer after displaying the error memory as described in [How to check the error memory](#). (Except FAN operation mode.)

1-3. Error code table (Indoor unit and wired remote controller)

The operation, timer, and economy indicators operate according to the error contents.

For confirmation of the error contents, refer the flashing pattern as follows.

| Error contents | Indoor unit display | | | Wired remote controller display |
|--|-----------------------|--------------------|---------------------|---------------------------------|
| | Operation [I] (Green) | Timer [⌚] (Orange) | Economy [E] (Green) | |
| E: 11.X. Serial communication error (Serial reverse transfer error) (Outdoor unit) | 1 times | 1 times | Continuous | 11 |
| E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit) | 1 times | 1 times | Continuous | 11 |
| E: 12.X. Wired remote controller communication error (Indoor unit) | 1 times | 2 times | Continuous | 12 |
| E: 18.X. External communication error (Indoor unit) | 1 times | 8 times | Continuous | 18 |
| E: 22.X. Indoor unit capacity error (Indoor unit) | 2 times | 2 times | Continuous | 22 |
| E: 23.X. Combination error (Outdoor unit) | 2 times | 3 times | Continuous | 23 |
| E: 26.X. Address setting error in wired remote controller (Indoor unit) | 2 times | 6 times | Continuous | 26 |
| E: 29.X. Connected unit number error (Indoor unit) | 2 times | 9 times | Continuous | 29 |
| E: 32.X. Indoor unit main PCB error (Indoor unit) | 3 times | 2 times | Continuous | 32 |
| E: 33.X. Indoor unit motor electricity consumption detection error (Indoor unit) | 3 times | 3 times | Continuous | 33 |
| E: 35.X. MANUAL AUTO button error (Indoor unit) | 3 times | 5 times | Continuous | 35 |
| E: 39.X. Indoor unit power supply error for fan motor (Indoor unit) | 3 times | 9 times | Continuous | 39 |
| E: 3A.X. Indoor unit communication circuit (wired remote controller) error | 3 times | 10 times | Continuous | 3A |
| E: 41.X. Room temperature sensor error (Indoor unit) | 4 times | 1 times | Continuous | 41 |
| E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit) | 4 times | 2 times | Continuous | 42 |
| E: 51.X. Indoor unit fan motor error (Indoor unit) | 5 times | 1 times | Continuous | 51 |
| E: 5U.X. Indoor unit error | 5 times | 15 times | Continuous | 5U |
| E: 62.X. Outdoor unit main PCB error (Outdoor unit) | 6 times | 2 times | Continuous | 62 |
| E: 64.X. PFC circuit error (Outdoor unit) | 6 times | 4 times | Continuous | 64 |
| E: 65.X. IPM error (Outdoor unit) | 6 times | 5 times | Continuous | 65 |
| E: 71.X. Discharge thermistor error (Outdoor unit) | 7 times | 1 times | Continuous | 71 |
| E: 73.X. Outdoor unit heat exchanger liquid outlet thermistor error (Outdoor unit) | 7 times | 3 times | Continuous | 73 |
| E: 74.X. Outdoor temperature thermistor error (Outdoor unit) | 7 times | 4 times | Continuous | 74 |
| E: 84.X. Current sensor error (Outdoor unit) | 8 times | 4 times | Continuous | 84 |
| E: 94.X. Over current error (Outdoor unit) | 9 times | 4 times | Continuous | 94 |
| E: 95.X. Compressor motor control error (Outdoor unit) | 9 times | 5 times | Continuous | 95 |
| E: 97.X. Outdoor unit fan motor error (Outdoor unit) | 9 times | 7 times | Continuous | 97 |
| E: 99.X. 4-way valve error (Outdoor unit) | 9 times | 9 times | Continuous | 99 |

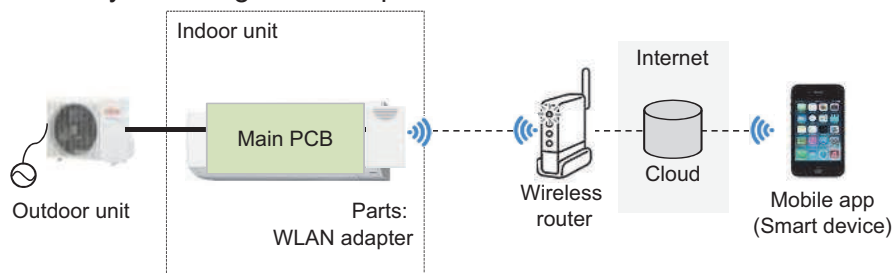
| Error contents | Indoor unit display | | | Wired remote controller display |
|---|-----------------------|--------------------|---------------------|---------------------------------|
| | Operation [I] (Green) | Timer [⌚] (Orange) | Economy [E] (Green) | |
| E: A1.X. Discharge temperature error (Outdoor unit) | 10 times | 1 times | Continuous | A1 |

TROUBLESHOOTING

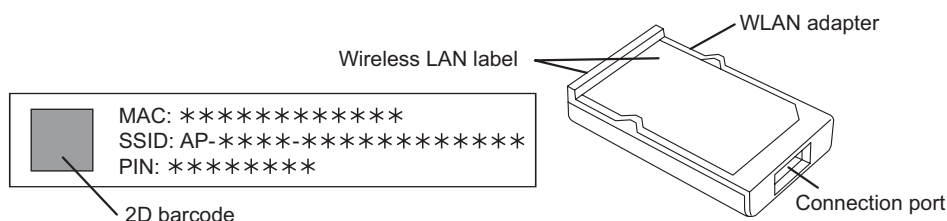
TROUBLESHOOTING

1-4. Error code table (Wireless LAN indicator)

- Wireless LAN control system diagram example



- Name of parts



- Wireless LAN indicator lamps


For confirmation of the error contents, refer to the following flashing patterns.


Wireless LAN indicator lamp (orange) on the indoor unit operate according to the error contents.

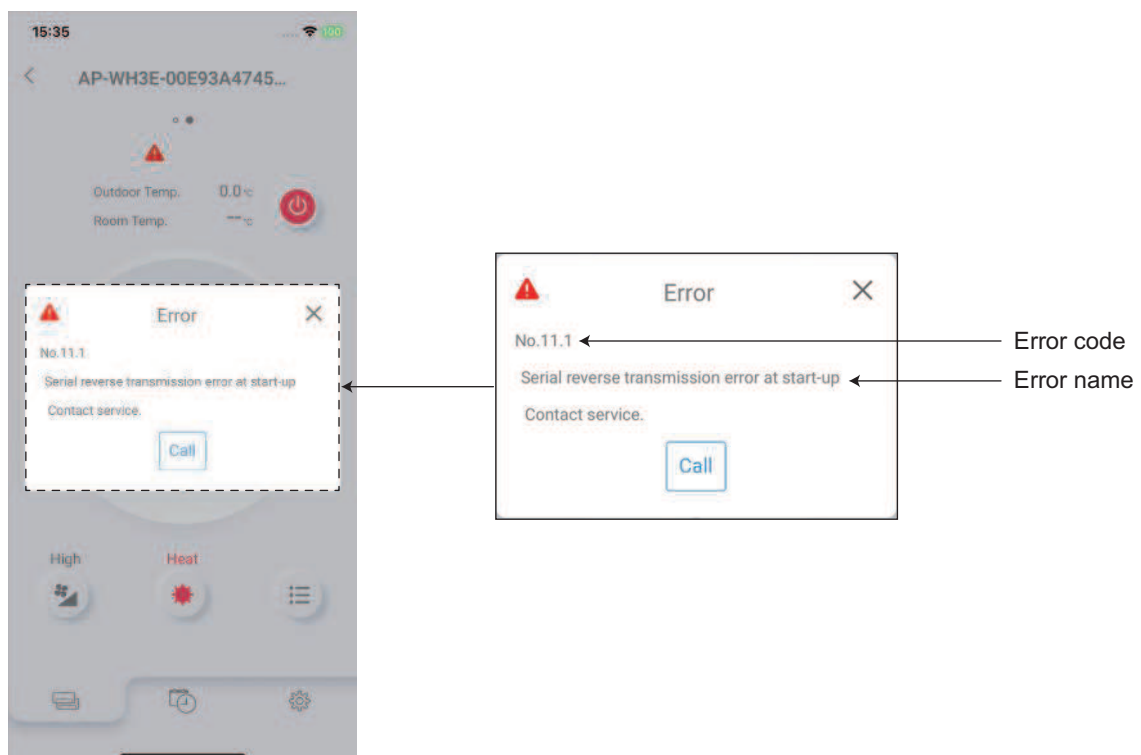
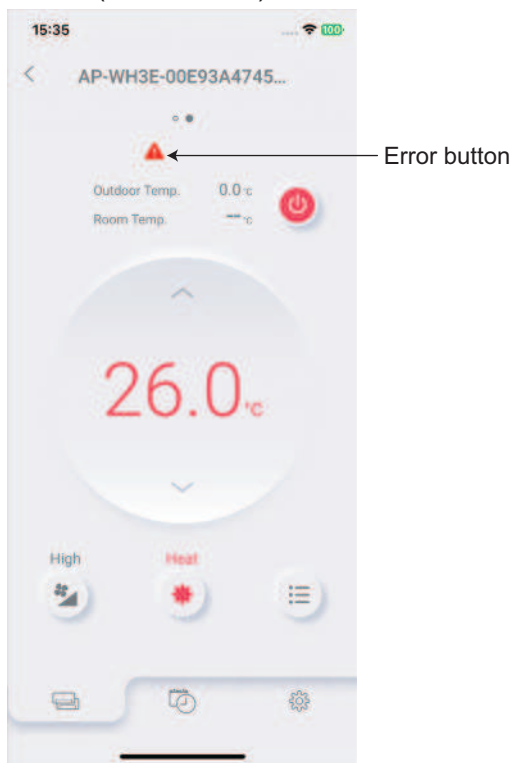
| Error contents | Wireless LAN indicator lamp (orange) | Error code |
|--|--------------------------------------|------------|
| E: 18.X. External communication error between indoor unit and wireless LAN adapter | Flashing slowly | 18 |
| Network communication error between wireless LAN router and wireless LAN adapter | Flashing slowly | No error |
| E: 18.X. Communication error | Flashing slowly | 18 |
| E: 18.X. Wireless LAN adapter non-energized | Off | 18 |

Flashing slowly: Repeating 7 seconds on/2 seconds off

1-5. How to check the error code on Mobile app

If there is an abnormality on the air conditioning, refer to  as follows.

When the  (error button) on the home screen is tapped, error code and error name is displayed.



1-6. Error code table (Mobile app)

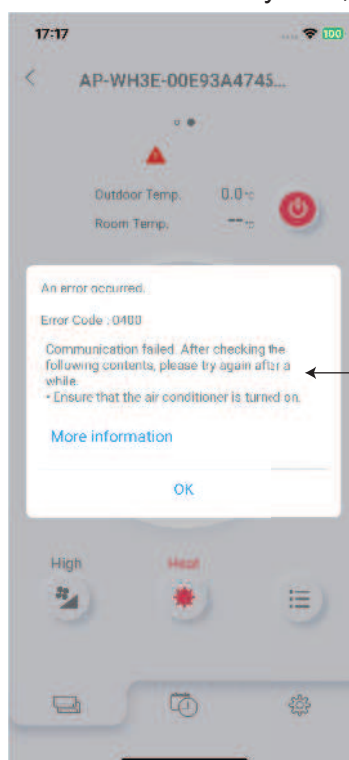
| Error message | Error contents | Error code |
|--|--|------------|
| Serial reverse transmission error at start-up | E: 11.X. Serial communication error (Serial reverse transfer error) (Outdoor unit) | 11.1 |
| Serial reverse transmission error during operation | | 11.2 |
| Serial forward transmission error at start-up | E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit) | 11.3 |
| Serial forward transmission error during operation | | 11.4 |
| Wired remote controller communication error | E: 12.X. Wired remote controller communication error (Indoor unit) | 12.1 |
| Wired remote controller signal error | | 12.2 |
| Excess number of devices in wired remote controller system | | 12.3 |
| Wired remote controller system start-up error | | 12.4 |
| External communication 1 error | E: 18.X. External communication error (Indoor unit) | 18.1 |
| Indoor unit capacity error | E: 22.X. Indoor unit capacity error (Indoor unit) | 22.1 |
| Connection forbidden (series error) | E: 23.X. Combination error (Outdoor unit) | 23.1 |
| Unit combination error | | 23.2 |
| Address duplication in wired remote controller system | E: 26.X. Address setting error in wired remote controller (Indoor unit) | 26.4 |
| Address setting error in wired remote controller system | | 26.5 |
| Connection unit number error (indoor unit in wired remote controller system) | E: 29.X. Connected unit number error (Indoor unit) | 29.1 |
| Indoor unit PCB model information error | E: 32.X. Indoor unit main PCB error (Indoor unit) | 32.1 |
| Constant correction control error | | 32.6 |
| Indoor unit motor electricity consumption detection microcomputers error | E: 33.X. Indoor unit motor electricity consumption detection error (Indoor unit) | 33.2 |
| Indoor unit manual auto switch error | E: 35.X. MANUAL AUTO button error (Indoor unit) | 35.1 |
| Indoor unit power supply error for fan motor 1 | E: 39.X. Indoor unit power supply error for fan motor (Indoor unit) | 39.1 |
| Indoor unit communication circuit (wired remote controller) microcomputers communication error | E: 3A.X. Indoor unit communication circuit (wired remote controller) error | 3A.1 |
| Indoor unit suction air temp. thermistor error | E: 41.X. Room temperature sensor error (Indoor unit) | 41.1 |
| Indoor unit heat ex. middle temp. thermistor error | E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit) | 42.2 |
| Indoor unit fan motor 1 lock error | E: 51.X. Indoor unit fan motor error (Indoor unit) | 51.1 |
| Indoor unit fan motor 1 rotation speed error | | 51.2 |
| Outdoor unit PCB model information error | E: 62.X. Outdoor unit main PCB error (Outdoor unit) | 62.1 |
| Outdoor unit PCB microcomputer communication error | | 62.2 |
| Outdoor unit abnormal voltage error (permanent stop) | E: 64.X. PFC circuit error (Outdoor unit) | 64.1 |
| Outdoor unit abnormal voltage error (automatic restore) | | 64.3 |
| Outdoor unit over current error (permanent stop) | | 64.4 |
| Outdoor unit PFC hardware error | | 64.8 |
| Outdoor unit trip terminal L error | E: 65.X. IPM error (Outdoor unit) | 65.3 |
| Outdoor unit discharge temp. thermistor 1 error | E: 71.X. Discharge thermistor error (Outdoor unit) | 71.1 |
| Outdoor unit heat ex. liquid temp. thermistor error | E: 73.X. Outdoor unit heat exchanger liquid outlet thermistor error (Outdoor unit) | 73.3 |

| Error message | Error contents | Error code |
|---|--|------------|
| Outside air temp. thermistor error | E: 74.X. Outdoor temperature thermistor error (Outdoor unit) | 74.1 |
| Outdoor unit current sensor 1 error (permanent stop) | E: 84.X. Current sensor error (Outdoor unit) | 84.1 |
| Outdoor unit trip detection | E: 94.X. Over current error (Outdoor unit) | 94.1 |
| Outdoor unit compressor rotor position detection error (permanent stop) | E: 95.X. Compressor motor control error (Outdoor unit) | 95.1 |
| Outdoor unit fan motor 1 power source duty error | E: 97.X. Outdoor unit fan motor error (Outdoor unit) | 97.3 |
| Outdoor unit 4-way valve error | E: 99.X. 4-way valve error (Outdoor unit) | 99.1 |
| Outdoor unit discharge temperature 1 error (permanent stop) | E: A1.X. Discharge temperature error (Outdoor unit) | A1.1 |

1-7. Error message for wireless LAN control (Mobile app)

■ Error display

If there is an abnormality on the wireless control system, refer to error messages as follows.



← Error message

■ Error message list

• Registration error

| Error code | Error message | Cause |
|------------|--|--|
| | | Solution |
| 2400 | <p>Communication failed. After checking the following contents, please try again after a while.</p> <ul style="list-style-type: none"> Ensure that the air conditioner is turned on. | <p>Communication with the air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | <p>Failed because the smartphone could not connect to the air conditioner.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ol style="list-style-type: none"> Check that the 2D barcode is for the air conditioner to be registered. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. Retry the connection step procedure for the air conditioner registration displayed in the application to set the lamp to the blinking state. When lighting or blinking <ol style="list-style-type: none"> Check that the 2D barcode is for the air conditioner to be registered. Check that the wireless LAN setting of smartphone is set to ON. |
| 2930 | <p>Cannot connect to your air conditioner. Check if the WiFi setting of the mobile device is turned on.</p> <p>When problems are not resolved, there may be other causes. Tap the link below to check other solutions.</p> | <p>Failed because the smartphone could not connect to the air conditioner.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ol style="list-style-type: none"> Check that the 2D barcode is for the air conditioner to be registered. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. Retry the connection step procedure for the air conditioner registration displayed in the application to set the lamp to the blinking state. When lighting or blinking <ol style="list-style-type: none"> Check that the 2D barcode is for the air conditioner to be registered. Check that the wireless LAN setting of smartphone is set to ON. |
| | | <p>Failed because the smartphone could not connect to the air conditioner.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ol style="list-style-type: none"> Check that the 2D barcode is for the air conditioner to be registered. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. Retry the connection step procedure for the air conditioner registration displayed in the application to set the lamp to the blinking state. When lighting or blinking <ol style="list-style-type: none"> Check that the 2D barcode is for the air conditioner to be registered. Check that the wireless LAN setting of smartphone is set to ON. |

| Error code | Error message | Cause |
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| | | Solution |
| 2931 | WLAN adapter password is wrong. Enter it again. When problems are not resolved, there may be other causes. Tap the link below to check other solutions. | Failed because the smartphone could not connect to the air conditioner. Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. <ul style="list-style-type: none"> • When not lighting <ol style="list-style-type: none"> 1. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. 2. Check that the power plug of the air conditioner main unit is plugged in. 3. Retry the connection step procedure for the air conditioner registration displayed in the application to set the lamp to the blinking state. • When lighting or blinking <ol style="list-style-type: none"> 1. Check that the entered SSID and PIN numbers of WLAN Adapter are correct. 2. Check that the wireless LAN setting of smartphone is set to ON. |
| | | <ul style="list-style-type: none"> • Registration failed because the smartphone cannot connect to the network. • Connection to the WLAN Adapter was disconnected during processing. |
| 2932 2933 | Failed to connect to wireless router. Check if the WiFi setting of the mobile device is turned on. When problems are not resolved, there may be other causes. Tap the link below to check other solutions. | <ol style="list-style-type: none"> 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. |
| 2934 | Wi-Fi router password is wrong. Tap "From the beginning" to enter it again. When problems are not resolved, there may be other causes. Tap the link below to check other solutions. | <ul style="list-style-type: none"> • The wireless router password is not correct. • The air conditioner is not connected to the same wireless router as the smartphone. |
| | | Check the following contents and operate again. <ol style="list-style-type: none"> 1. Check that the wireless router password is correct. 2. Check that the smartphone and the air conditioner are connected to the same wireless router. 3. The wireless router encryption method WPA3 is not supported. Check if SSID other than WPA3 is selected. 4. Check that the local network setting of the smartphone is "Enabled". (Only for smartphones with iOS14 or later) |
| 2935 2937 2939 2941 | Failed to register the air conditioner. Make sure the wireless router is connected to the Internet, and then tap "Re-register" to perform the registration process again. When problems are not resolved, there may be other causes. Tap the link below to check other solutions. | Registration failed because the air conditioner cannot connect to the Internet. Check the following contents and operate again. <ol style="list-style-type: none"> 1. Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. 2. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router. 3. Check that the MAC address filter and privacy separator settings are not "enabled" on the wireless router. |

| Error code | Error message | Cause |
|--------------|---|---|
| | | Solution |
| 2936 2940 | Air conditioner registration failed. Tap "Re-register" and conduct the registration processing again. If not successful after multiple attempts, tap "From the beginning" and then initialize the WLAN and start over from the beginning. | <ul style="list-style-type: none"> The air conditioner you are trying to register is already registered to another account. Registration failed because the air conditioner cannot connect to the Internet. Immediately after turning on the power of the air conditioner, wait for about 5 minutes before registering it. |
| | | Check the following contents and operate again. <ol style="list-style-type: none"> Tap "Re-register" and conduct the registration processing again. Delete from another account or initialize the WLAN Adapter. Check that the wireless router is turned on. Check that wireless router is connected to the Internet. If not connected, reboot the wireless router. When rebooting does not solve the problem, contact the manufacturer of the wireless router. Check that the MAC address filter and privacy separator settings are not "enabled" on the wireless router. |
| 2938 | Registration failed because the air conditioner could not connect to the Internet. Perform the WPS connection procedure again and confirm that the WLAN lamp on the indoor unit or LED2 on the WLAN adapter is lit before registering. When problems are not resolved, there may be other causes. Tap the link below to check other solutions. | <ul style="list-style-type: none"> Registration failed because the air conditioner cannot connect to the Internet. Registration failed because the air conditioner is not connected to the same wireless router as the smartphone. |
| | | Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again. <ul style="list-style-type: none"> When not lighting <ol style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. Check that the wireless router is turned on. Retry the connection step procedure for the air conditioner registration displayed in the application and complete WPS connection with wireless router to set the lamp to the blinking state. When lighting <ol style="list-style-type: none"> Check that the air conditioner and the smartphone are connected to the same wireless router. Check that the local network setting of the smartphone is "Enabled". (Only for smartphones with iOS14 or later) |
| 2942 | Your mobile device is not connected to WiFi. Connect to the target wireless router through the OS WiFi setting and restart the procedure. <ol style="list-style-type: none"> Open the Wi-Fi setting screen of your device. Connect your mobile device to the {ssid}. Return to the application screen and tap "Re-register". When problems are not resolved, there may be other causes. Tap the link below to check other solutions. | Registration failed because the air conditioner cannot connect to the Internet. |
| | | Check the following contents and operate again. <ol style="list-style-type: none"> Check that the wireless LAN setting of smartphone is set to ON. Check that the smartphone is connected to the Internet. Set the connection setting with the wireless router to Auto Connection in the smartphone settings. Check that the wireless router is turned on. |

| Error code | Error message | Cause |
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| | | Solution |
| 2944 | Communication failed. | Registration may have failed because a problem occurred in communication with the server (cloud). Wait for a while and then operate again. |
| 2946 | The connected air conditioner cannot use the Direct control. | Your air conditioner does not support Direct Control. Operate the air conditioner with Cloud Control. |
| 2947 | Already reached the max number of air conditioners per user. | The number of air conditioners that can be registered on AIRSTAGE Mobile has reached the maximum limit. Check the number of air conditioners registered on AIRSTAGE Mobile. (Maximum number of registered units: 50 units for Cloud Control, 50 units for Direct Control) Delete the unused air conditioners on the "Air conditioner editing" screen before registration. |
| 2949 | The number of air conditioners registered by the entered user has reached the upper limit, so registration is not possible. | The number of sub users that can be registered has reached the maximum limit. Check the number of registered sub users. (Maximum number of registered sub users: 4 sub users) Delete the unused sub users on the "Sub User Registration" screen. |
| 2953 | The specified air conditioner is already registered. To Reregister, delete the air conditioner information on the air conditioner edit screen and initialize the wireless LAN adapter with the remote control. | The specified air conditioner was already registered. Check that the specified air conditioner is displayed on the air conditioner list screen. To register again, delete the air conditioner on the air conditioner editing screen. |
| 2954 | The wireless router to which the mobile device and the wireless LAN adapter are connected must be the same. Follow the steps below. 1. Please open the Wi-Fi setting screen of the mobile device. 2. Connect your mobile device to the wireless router that you pressed the automatic connection button. 3. Return to the app screen and tap "OK". | The air conditioner and the smartphone are not connected to the same wireless router network. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. 4. Check that the air conditioner and the smartphone are connected to the same wireless router. |

• Sign in error

| Error code | Error message | Cause |
|--------------------------------------|--|---|
| | | Solution |
| 4010 4410 4610 4810 4910 | Communication failed. After checking the following contents, please try again after a while. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | Various settings could not be completed because communication with the server (cloud) failed. Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. |
| 4100 | The account you are currently signed in to may have been deleted. If necessary, please create the account again. | Token has been disabled because the signed-in account has been deleted or certain amount of time has elapsed. Restart the application and check that you can sign in. If you cannot sign in, create the account again. |
| 4101 | The session has expired. Please sign in again to continue. | Token has been disabled because the signed-in account has been deleted or certain amount of time has elapsed. Restart the application and check that you can sign in. If you cannot sign in, create the account again. |
| 4102 | Your session has expired. Please sign in again. *If you cannot sign in, your account may have been deleted. If necessary, please create an account again. | Token has been disabled because the signed-in account has been deleted or certain amount of time has elapsed. Restart the application and check that you can sign in. If you cannot sign in, create the account again. |
| 4110 | Failed to connect to the server. Some functions can be used with Direct Control. Do you want to switch to direct control? | <ul style="list-style-type: none"> Communication with the server (cloud) failed at sign in. Registration process of Account registration procedure verification email has not been completed. Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. 4. Tap the link of Account registration procedure verification email and check that registration process has completed. |
| 4111 | Failed to read the device. Since some functions are available in Direct control, switch to Direct control. | Air conditioner information could not be obtained because communication with the server (cloud) failed after sign in. Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. |
| 4112 | Failed to connect to the server. Some functions are limited. | <ul style="list-style-type: none"> Communication with the server (cloud) failed at sign in. Registration process of Account registration procedure verification email has not been completed. Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. 4. Tap the link of Account registration procedure verification email and check that registration process has completed. |
| 4113 | Failed to connect to the server. Would you like to sign in again? Yes: Sign in again No: Return to the sign-in screen | Air conditioner information could not be obtained because communication with the server (cloud) failed after sign in. Check the following contents and sign in again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. |

| Error code | Error message | Cause |
|------------|--|--|
| | | Solution |
| 4420 | Loading of user information failed. Check the following contents. • Check that your mobile device is connected to the internet. | User information or temperature unit information could not be obtained because communication with the server (cloud) failed. |
| | | Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. |
| 4530 | Password update failed. Please check if the entered current password is correct. | Password update failed because the entered password was not correct. |
| | | Check that the entered "Current password" is correct and operate again. |
| 4920 | Loading of time zone failed. Check the following contents. • Check that your mobile device is connected to the internet. | Time zone information could not be obtained because communication with server (cloud) failed. |
| | | Check the following contents and operate again. 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. |

• General error

| Error code | Error message | Cause |
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| | | Solution |
| 0100 0200 0300 0400 0500 0501 0600 0601 0800 0900 1000 1200 1400 1500 3200 5500 5700 5900 6200 | Communication failed. After checking the following contents, please try again after a while. <ul style="list-style-type: none"> Ensure that the air conditioner is turned on. | <p>Communication with the air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> |
| 0810 0811 0812 1510 1511 1512 3010 5510 5520 5530 6001 6002 6003 6010 6011 6012 6013 6310 | Communication failed. After checking the following contents, please try again after a while. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <ul style="list-style-type: none"> Various settings could not be completed because communication with the server (cloud) failed. Air conditioner information could not be obtained because communication with server (cloud) failed. <p>Check the following contents and operate again.</p> <ol style="list-style-type: none"> Check that the wireless LAN setting of smartphone is set to ON. Check that the smartphone is connected to the Internet. Check that the wireless router is turned on. |

| Error code | Error message | Cause |
|------------|--|--|
| | | Solution |
| 0820 | Loading of outdoor low noise timer failed. Check the following contents. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>The outdoor unit low noise timer information could not be obtained because communication with the server (cloud) failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | |
| 1520 | Loading of weekly timer failed. Check the following contents. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>The weekly timer setting information could not be obtained because communication with the server (cloud) failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the lamp lights and then operate again. If the lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | |

| Error code | Error message | Cause |
|------------|--|--|
| | | Solution |
| 1720 | Loading of error history failed. Check the following contents. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>The error history information could not be obtained because communication with the server (cloud) failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Or check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| 3110 | Communication failure prevented the group movement processing from being conducted. After checking the following contents, please try again after a while. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |

| Error code | Error message | Cause |
|------------|---|---|
| | | Solution |
| 3111 | <p>Communication failure prevented the group creation processing from being conducted. After checking the following contents, please try again after a while.</p> <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| 3112 | <p>Communication failure prevented the group name change processing from being conducted. After checking the following contents, please try again after a while.</p> <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |

| Error code | Error message | Cause |
|------------|---|---|
| | | Solution |
| 3113 | <p>Communication failure prevented the group deletion processing from being conducted. After checking the following contents, please try again after a while.</p> <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| 3114 | <p>The room temperature display indoor unit setting could not be made due to a communication failure. After checking the following contents, please try again after a while.</p> <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |

| Error code | Error message | Cause |
|--------------|--|---|
| | | Solution |
| 3115 | Some device group move processing could not be conducted due to communication failure. After checking the following contents, please try again after a while. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Air conditioner group setting has not been completed because communication with air conditioner failed.</p> <p>Check the following contents depending on the status of indoor unit wireless LAN indicator lamp or WLAN Adapter LED 2 and operate again.</p> <ul style="list-style-type: none"> When not lighting <ul style="list-style-type: none"> Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. When lighting <p>Use a smartphone to check that the wireless router to which the air conditioner is connected is connected to the Internet. If the smartphone cannot connect to the Internet, reboot the wireless router. When rebooting the wireless router does not solve the problem, contact the manufacturer of the wireless router.</p> When blinking <p>Wait for a while until the indicator lamp lights and then operate again. If the indicator lamp is still blinking after waiting for a while, check that the wireless router is turned on.</p> |
| | | |
| 5320 | Loading of air conditioner information failed. Check the following contents. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Air conditioner information could not be obtained because communication with server (cloud) failed.</p> <ol style="list-style-type: none"> Check that the wireless LAN setting of smartphone is set to ON. Check that the smartphone is connected to the Internet. Check that the wireless router is turned on. |
| | | |
| 5531 5540 | New firmware update failed. | <p>Firmware update failed.</p> <p>Check the following contents and operate again.</p> <ol style="list-style-type: none"> Check that the wireless LAN setting of smartphone is set to ON. Check that the smartphone is connected to the Internet. Check that the wireless router is turned on. Refer to the operation manual of air conditioner and check the indicator lamp state of air conditioner indoor unit. |
| | | |
| 5601 | Failed to get the air conditioner information. | <p>Failed to obtain air conditioner information by Direct Control.</p> <p>Sign in again.</p> |
| | | |
| 5602 | Failed to add the air conditioner. | <p>Failed to add air conditioner by Direct Control.</p> <p>Check the following contents and operate again.</p> <ol style="list-style-type: none"> When 2D barcode label is used, scan 2D barcode label again. When 2D barcode label is not used, check that the entered SSID or PIN code is correct. |
| | | |
| 5630 | Device disconnection failed. After checking the following contents, please try again after a while. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | <p>Failed to disconnect the connection with air conditioner by Direct Control.</p> <p>Check the following contents and operate again.</p> <ol style="list-style-type: none"> Check that the smartphone is connected with the air conditioner. Check that the Electrical panel (Switch breaker) to the air conditioner is turned on. Check that the power plug of the air conditioner main unit is plugged in. |
| | | |

| Error code | Error message | Cause |
|------------|---|---|
| | | Solution |
| 6201 | Failed to update the screen. After checking the following contents, please try again after a while. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | Various settings could not be completed because communication with the server (cloud) failed. Check the following contents and operate again. |
| | | 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. |
| 7610 | Communication failed. Check the following contents. <ul style="list-style-type: none"> Ensure that your mobile device is connected to the internet. | Various settings could not be completed because communication with the server (cloud) failed. Check the following contents and operate again. |
| | | 1. Check that the wireless LAN setting of smartphone is set to ON. 2. Check that the smartphone is connected to the Internet. 3. Check that the wireless router is turned on. |

2. Troubleshooting with error code

2-1. E: 11.X. Serial communication error (Serial reverse transfer error) (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 1 time flash |
| | | Timer indicator | 1 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 11 |
| Detective actuator | Outdoor unit | Main PCB | When the indoor unit cannot receive the serial signal from outdoor unit more than 2 minutes after power on, or the indoor unit cannot receive the serial signal more than 15 seconds during normal operation. |
| | | Fan motor | |
| Forecast of cause | | | Connection failure |
| | | | External cause |
| | | | Main PCB failure |
| | | | Outdoor unit fan motor failure |

Check point 1. Reset the power and operate

Does error indication show again?

→ If no, go to "Check point 1-2".



Check point 2. Check connection

Check any loose or removed connection line of indoor unit and outdoor unit.

Check connection condition is control unit. (If there is loose connector, open cable or mis-wiring.)

→ If there is an abnormal condition, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 3. Check the voltage of power supply

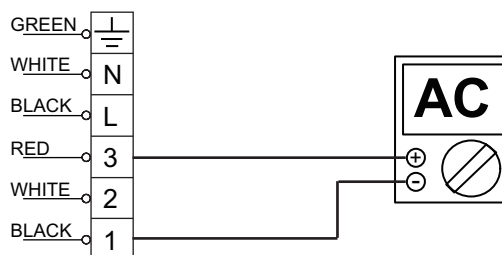
Check the voltage of power supply

Check if AC 207 V (AC 230 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L—N.



Check point 4. Check serial signal (Reverse transfer signal)

Check serial signal (Reverse transfer signal)



- Check if indicated value swings between AC 90 V and AC 270 V at the outdoor unit terminal 1 —3.
- If it is abnormal, check the parts below.
 - Outdoor unit fan motor
- If outdoor fan motor is abnormal, replace outdoor unit fan motor and main PCB.
- If the checked parts are normal, replace the main PCB.



End

Check point 1-2. Check external cause such as noise

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).



End

2-2. E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit)

| | | | |
|--------------------|-------------|---------------------|--|
| Indicator | Indoor unit | Operation indicator | 1 time flash |
| | | Timer indicator | 1 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 11 |
| Detective actuator | Indoor unit | Main PCB | When the outdoor unit cannot receive the serial signal from indoor unit more than 10seconds. |
| | | Fan motor | |
| Forecast of cause | | | Connection failure |
| | | | External cause |
| | | | Main PCB failure |
| | | | Indoor unit fan motor failure |

Check point 1. Reset the power and operate

Does error indication show again?

→ If no, go to "Check point 1-2".



Check point 2. Check connection

Check any loose or removed connection line of indoor unit and outdoor unit.

Check connection condition is control unit. (If there is loose connector, open cable or mis-wiring.)

→ If there is an abnormal condition, correct it by referring to the installation manual or the *DESIGN & TECHNICAL MANUAL*.



Check point 3. Check the voltage of power supply

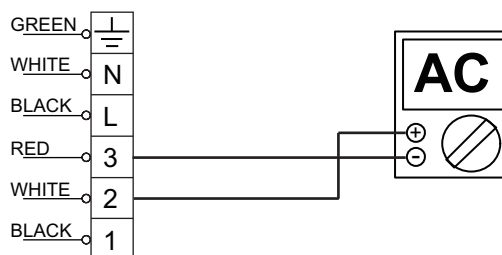
Check the voltage of power supply

Check if AC 207 V (AC 230 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L—N.



Check point 4. Check serial signal (reverse transfer signal)

Check serial signal (Forward transfer signal)



- Check if indicated value swings between AC 30 V and AC 130 V at outdoor unit terminal 2—3.
- If it is abnormal, replace main PCB.
- If it is abnormal, check indoor unit fan motor. (Indoor unit fan motor in ["Service parts information"](#) on page 03-71)
- If indoor unit fan motor is abnormal, replace indoor unit fan motor and main PCB.



End

Check point 1-2. Check external cause such as noise

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).



End

2-3. E: 12.X. Wired remote controller communication error (Indoor unit)

| | | | |
|--------------------|----------------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 1 time flash |
| | | Timer indicator | 2 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 12 |
| Detective actuator | Indoor unit | Main PCB | When the indoor unit cannot receive the signal from Wired remote controller more than 1 minute during normal operation. |
| | Wired remote control | | |
| Forecast of cause | | | Connection failure |
| | | | Wired remote control failure |
| | | | Main PCB failure |
| | | | Communication kit |

Check point 1. Check the connection of terminal

After turning off the power, check & correct the followings.

- Check the connection of terminal between remote controller and indoor unit, and check if there is a disconnection of the cable.



Check point 2. Check connection

Check voltage at CN300 (terminal 1—3) of Communication Kit. (Power supply to the remote controller)
Upon correcting the removed connector or mis-wiring, reset the power.



- If it is DC 12 V, remote controller is failure. (Main PCB is normal)
 - Replace Remote Control
- If it is DC 0 V, main PCB is failure. (Check remote controller once again)
 - Replace main PCB



End

2-4. E: 18.X. External communication error (Indoor unit)

| | | | |
|--------------------|-------------|------------------------------|--|
| Indicator | Indoor unit | Operation indicator | 1 time flash |
| | | Timer indicator | 8 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 18 |
| Detective actuator | Indoor unit | External communication error | After receiving a signal from the external input and output PCB, the same signal has not been received for 15 seconds. |
| Forecast of cause | | | Connection failure |
| | | | WLAN Adapter failure |
| | | | Main PCB |

Check point 1. Check the connection

- Check any loose or removed connection between the main PCB to the WLAN Adapter.
-> If there is an abnormal condition, correct it by refer to the installation manual or the "DESIGN & TECHNICAL MANUAL".
- Check the connection condition on the WLAN Adapter and the main PCB (If there is loose connector, open cable or mis-wiring.)



Check point 2. Replace the WLAN Adapter

If check point 1 do not improve the symptom, change WLAN Adapter.



Check point 3. Replace the main PCB

If check point 2 do not improve the symptom, replace the main PCB.



End

2-5. E: 22.X. Indoor unit capacity error (Indoor unit)

| | | | |
|--------------------|----------------------|---------------------|--|
| Indicator | Indoor unit | Operation indicator | 2 time flash |
| | | Timer indicator | 2 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 22 |
| Detective actuator | Indoor unit main PCB | | When the total capacity of the indoor units does not match outdoor unit capacity while 3 minutes after power on. |
| Forecast of cause | | | Indoor unit selection is incorrect. |
| | | | Main PCB failure |

Check point 1. Check the total capacity of indoor units

Check the total capacity of the indoor units.

→ If abnormal condition is found, correct it referring to the installation manual or DESIGN & TECHNICAL MANUAL.



Check point 2. Replace the main PCB

If check point 1 does not improve the symptom, replace the main PCB.



End

2-6. E: 23.X. Combination error (Outdoor unit)

| | | | |
|--------------------|-------------|--|------------------|
| Indicator | Indoor unit | Operation indicator | 2 time flash |
| | | Timer indicator | 3 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 23 |
| Detective actuator | Indoor unit | The outdoor unit receives the serial signal of applied refrigerant information from indoor unit. | |
| Forecast of cause | | Incorrect indoor unit is selected. | |

Check point 1. Check the type of indoor unit

- Check the type of the connected indoor unit.
-> If there is an abnormal condition, correct it by refer to the installation manual or the "DESIGN & TECHNICAL MANAL".



Check point 2. Replace the main PCB

If check point 1 do not improve the symptom, replace the main PCB of the outdoor unit.



End

2-7. E: 26.X. Address setting error in wired remote controller (Indoor unit)

| | | | |
|--------------------|----------------------------------|---|------------------|
| Indicator | Indoor unit | Operation indicator | 2 time flash |
| | | Timer indicator | 6 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 26 |
| Detective actuator | Wired remote controller (2-wire) | <ul style="list-style-type: none"> When the address number set by auto setting and manual setting are mixed in one remote controller group When the duplicated address number exists in one remote controller group | |
| | Indoor unit controller PCB | | |
| Forecast of cause | | Wrong wiring of remote controller group | |
| | | Wrong remote controller address setting | |
| | | Indoor unit main PCB failure | |
| | | Remote controller failure | |

Check point 1. Wire installation

- Check the wire connection in the remote controller group (For installation method, refer to installation manual)
-> If there is an abnormal condition, correct it by refer to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 2. Wrong remote controller group setting

- The given address number by auto setting (00) and the manual set number (except 00) are not existing in one remote controller group.
- The remote controller address setting by UI is not existing same address.
- The duplicate address number is not existing in one remote controller group.



Check point 3. Check indoor unit main PCB

- Check if main PCB is damaged.
- Change main PCB and check the error after setting remote controller address.



End

2-8. E: 29.X. Connected unit number error (Indoor unit)

| | | | |
|--------------------|----------------------------------|---|------------------|
| Indicator | Indoor unit | Operation indicator | 2 time flash |
| | | Timer indicator | 9 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 29 |
| Detective actuator | Wired remote controller (2-wire) | When the number of the connected indoor unit exceeds the limitation. | |
| | Indoor unit main PCB | | |
| Forecast of cause | | Wrong wiring of indoor unit or remote controller | |
| | | Number of indoor unit or remote controller in remote controller group | |
| | | Indoor unit main PCB failure | |

Check point 1. Wire installation

- Wrong number of connected indoor unit
-> If there is an abnormal condition, correct it by refer to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 2. Check indoor unit main PCB

- Check if main PCB is damaged.
- Change main PCB and check the error after setting remote controller address.



End

2-9. E: 32.X. Indoor unit main PCB error (Indoor unit)

| | | | |
|--------------------|-------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 3 time flash |
| | | Timer indicator | 2 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 32 |
| Detective actuator | Indoor unit | Main PCB | When power is on and there is some below case. 1. When model information of EEPROM is incorrect. 2. When the access to EEPROM failed. |
| Forecast of cause | | | External cause |
| | | | Defective connection of electrical components |
| | | | Main PCB failure |

Check point 1. Reset power supply and operate

Does error indication show again?

→ If no, go to "Check point 1-2".



Check point 2. Check Indoor unit electrical components

- Check all connectors. (loose connector or incorrect wiring)
- Check any shortage or corrosion on PCB.



Check point 3. Replace the main PCB

Replace the main PCB.



End

Check point 1-2. Check external cause such as noise

- Check if the ground connection is proper.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).



End

NOTE: EEPROM

EEPROM (Electrically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if the power is turned off. It can change the contents electronically. To change the contents, it uses higher voltage than normal, and it cannot change a partial contents. (Rewriting shall be done upon erasing the all contents.) There is a limit in a number of rewriting.

2-10. E: 33.X. Indoor unit motor electricity consumption detection error (Indoor unit)

| | | | |
|--------------------|---|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 3 time flash |
| | | Timer indicator | 3 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 33 |
| Detective actuator | Indoor unit motor electricity consumption detection | | When the voltage value or the current value of the motor go beyond the limits |
| Forecast of cause | | | Fan motor failure |
| | | | Main PCB failure |

Check point 1. Check the rotation of fan

Rotate the fan by hand when the operation is off. (Check if fan is caught, drop off or locked motor)
→ If fan or bearing is abnormal, replace it.



Check point 2. Check ambient temperature around the motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat.)
→ Upon the temperature coming down, restart operation.



Check point 3. Check indoor unit fan motor

Check indoor unit fan motor. (Refer to indoor unit fan motor in ["Service parts information"](#) on page 03-71.)
→ If indoor unit fan motor is abnormal, replace it.



Check point 4. Replace the main PCB

If check point 1-3 does not improve the symptom, replace the main PCB.



End

2-11. E: 35.X. MANUAL AUTO button error (Indoor unit)

| | | | |
|--------------------|----------------------------|---------------------|--|
| Indicator | Indoor unit | Operation indicator | 3 time flash |
| | | Timer indicator | 5 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 35 |
| Detective actuator | Indoor unit controller PCB | | When the MANUAL AUTO button becomes on for consecutive 60 or more seconds. |
| | Indicator PCB | | |
| | Manual auto switch | | |
| Forecast of cause | | | MANUAL AUTO button failure |
| | | | Controller PCB and indicator PCB failure |

Check point 1. Check the MANUAL AUTO button

- Check if MANUAL AUTO button is kept pressed.
- Check ON/OFF switching operation by using a meter.



If MANUAL AUTO button is disabled (ON/OFF switching), replace it.



Check point 2. Replace the main PCB and indicator PCB

If Check Point 1 does not improve the symptom, replace the main PCB and indicator PCB.



End

2-12. E: 39.X. Indoor unit power supply error for fan motor (Indoor unit)

| | | | |
|--------------------|----------------------|------------------------------|---|
| Indicator | Indoor unit | Operation indicator | 3 time flash |
| | | Timer indicator | 9 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 39 |
| Detective actuator | Indoor unit main PCB | | <ul style="list-style-type: none"> When a momentary power cut off When do not start fan motor |
| Forecast of cause | | External cause | |
| | | Connector connection failure | |
| | | Main PCB failure | |

Check point 1. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 2. Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 3. Replace the main PCB

If check point 1 to 2 do not improve the symptom, replace the main PCB.



End

2-13. E: 3A.X. Indoor unit communication circuit (wired remote controller) error

| | | | |
|--------------------|------------------------------------|--|------------------|
| Indicator | Indoor unit | Operation indicator | 3 time flash |
| | | Timer indicator | 10 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 3A |
| Detective actuator | Wired remote controller (2-wire) | Detect the communication error of microcomputer and communication PCB. | |
| | Indoor unit controller PCB circuit | | |
| Forecast of cause | | Communication PCB defective | |
| | | Indoor unit main PCB defective | |

Check point 1. Check the connection of terminal

- After turning off the power supply, check and correct the followings
Indoor unit - Check the connection the communication PCB and the main PCB



Check Point 2 : Replace the communication PCB

If the Check point 1 is ok, replace the communication PCB



Check Point 3 : Replace the main PCB

If condition is doesn't change, replace the main PCB



End

2-14. E: 41.X. Room temperature sensor error (Indoor unit)

| | | | |
|--------------------|-----------------------------|--|------------------|
| Indicator | Indoor unit | Operation indicator | 4 time flash |
| | | Timer indicator | 1 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 41 |
| Detective actuator | Indoor unit main PCB | Room temperature thermistor is open or short is detected always. | |
| | Room temperature thermistor | | |
| Forecast of cause | | Connector failure | |
| | | Thermistor failure | |
| | | Main PCB failure | |

Check point 1. Check connection of connector

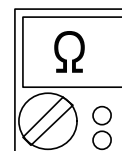
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the room thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-79.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of each indoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-15.



If the voltage does not appear, replace main PCB.



End

2-15. E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)

| | | | | |
|--------------------|---------------------------------------|---------------------|---|------------------------------|
| Indicator | Indoor unit | Operation indicator | 4 time flash | |
| | | Timer indicator | 2 time flash | |
| | | Economy indicator | Continuous flash | |
| | | Error code | E: 42 | |
| Detective actuator | Indoor unit main PCB | | When heat exchanger temperature thermistor open or short circuit is detected. | |
| | Heat exchanger temperature thermistor | | | |
| Forecast of cause | | | | Connector connection failure |
| | | | | Thermistor failure |
| | | | | Main PCB failure |

Check point 1. Check connection of connector

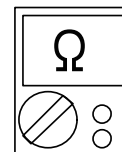
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the heat exchanger thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-79.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of each indoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-15.



If the voltage does not appear, replace main PCB.



End

2-16. E: 51.X. Indoor unit fan motor error (Indoor unit)

| | | | |
|--------------------|-------------|--|--|
| Indicator | Indoor unit | Operation indicator | 5 time flash |
| | | Timer indicator | 1 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 51 |
| Detective actuator | Indoor unit | Main PCB | When the actual rotation number of the indoor unit fan motor is below 1/3 of the target rotation number continuously for more than 56 seconds. |
| | | Fan motor | |
| Forecast of cause | | Fan rotation failure | |
| | | Fan motor winding open | |
| | | Motor protection by surrounding temperature rise | |
| | | Control PCB failure | |
| | | Indoor unit fan motor failure | |

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.



Check point 2. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat)
→ Upon the temperature coming down, restart operation.



Check point 3. Check indoor unit fan motor

Check Indoor unit fan motor. (Refer to indoor unit fan motor in ["Service parts information"](#) on page 03-71.)
→ If Indoor unit fan motor is abnormal, replace Indoor unit fan motor.



Check point 4. Replace the main PCB

If Check Point 1 to 3 do not improve the symptom, replace the main PCB.



End

2-17. E: 5U.X. Indoor unit error

| | | | |
|-----------|-------------|---------------------|------------------|
| Indicator | Indoor unit | Operation indicator | 5 time flash |
| | | Timer indicator | 15 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 5U |

Check point. Check following error code.

E: 11.X. Serial communication error (Serial reverse transfer error) (Outdoor unit)

E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit)

E: 12.X. Wired remote controller communication error (Indoor unit)

E: 18.X. External communication error (Indoor unit)

E: 22.X. Indoor unit capacity error (Indoor unit)

E: 23.X. Combination error (Outdoor unit)

E: 26.X. Address setting error in wired remote controller (Indoor unit)

E: 29.X. Connected unit number error (Indoor unit)

E: 32.X. Indoor unit main PCB error (Indoor unit)

E: 33.X. Indoor unit motor electricity consumption detection error (Indoor unit)

E: 35.X. MANUAL AUTO button error (Indoor unit)

E: 39.X. Indoor unit power supply error for fan motor (Indoor unit)

E: 3A.X. Indoor unit communication circuit (wired remote controller) error

E: 41.X. Room temperature sensor error (Indoor unit)

E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)

E: 51.X. Indoor unit fan motor error (Indoor unit)



End

2-18. E: 62.X. Outdoor unit main PCB error (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 6 time flash |
| | | Timer indicator | 2 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 62 |
| Detective actuator | Outdoor unit | Main PCB | Access to EEPROM failed due to some cause after outdoor unit started. |
| Forecast of cause | | | External cause (Noise, temporary open, voltage drop) |
| | | | Main PCB failure |

Check point 1. Reset power supply and operate

Does error indication show again?

If no, go to "Check point 1-2".



Check point 2. Replace the main PCB

Replace the main PCB.



End

Check point 1-2. Check external cause

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.



End

2-19. E: 64.X. PFC circuit error (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 6 time flash |
| | | Timer indicator | 4 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 64 |
| Detective actuator | Outdoor unit | Main PCB | <ul style="list-style-type: none"> When inverter input DC voltage is higher than 415 V for over 3 seconds, the compressor stops. If the same operation is repeated 5 times, the compressor stops permanently. |
| Forecast of cause | | | External cause |
| | | | Connector connection failure |
| | | | Main PCB failure |

Check point 1. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 2. Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 3. Replace the main PCB

If check point 1 to 2 do not improve the symptom, replace the main PCB.



End

2-20. E: 65.X. IPM error (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|--|
| Indicator | Indoor unit | Operation indicator | 6 time flash |
| | | Timer indicator | 5 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 65 |
| Detective actuator | Outdoor unit | Main PCB | 1. When more than normal operating current to IPM in main PCB flows, the compressor stops. 2. After the compressor restarts, if the same operation is repeated within 40 seconds, the compressor stops again. 3. If 1. and 2. repeats 5 times, the compressor stops permanently. |
| | | Compressor | |
| | | Fan motor | |
| Forecast of cause | | | Defective connection of electrical components |
| | | | Outdoor fan operation failure |
| | | | Outdoor heat exchanger clogged |
| | | | Compressor failure |
| | | | Main PCB failure |

Check point 1. Check connections of outdoor unit electrical components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 2. Check outdoor fan and heat exchanger

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of outdoor heat exchanger?
- Is the fan rotating by hand when operation is off?

→ If the fan motor is locked, replace it.



Check point 3. Check outdoor fan

Check outdoor fan motor. (Refer to "[E: 97.X. Outdoor unit fan motor error \(Outdoor unit\)](#)" on page 03-51.)

→ If the fan motor is failure, replace it.



Check point 4. Check compressor

Check compressor. (Refer to inverter compressor in "[Service parts information](#)".)



Check point 5. Replace main PCB

If Check point 1 to 4 do not improve the symptom, change main PCB.



End

2-21. E: 71.X. Discharge thermistor error (Outdoor unit)

| | | | |
|--------------------|---------------------------------------|--|------------------|
| Indicator | Indoor unit | Operation indicator | 7 time flash |
| | | Timer indicator | 1 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 71 |
| Detective actuator | Outdoor unit main PCB | When discharge pipe temperature thermistor open or short circuit is detected at power on or while running the compressor | |
| | Discharge pipe temperature thermistor | | |
| Forecast of cause | | Connector failure | |
| | | Thermistor failure | |
| | | Main PCB failure | |

Check point 1. Check connection of connector

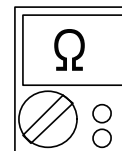
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the discharge temperature thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-79.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-15.



If the voltage does not appear, replace main PCB.



End

2-22. E: 73.X. Outdoor unit heat exchanger liquid outlet thermistor error (Outdoor unit)

| | | | |
|--------------------|---------------------------------------|--|------------------|
| Indicator | Indoor unit | Operation indicator | 7 time flash |
| | | Timer indicator | 3 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 73 |
| Detective actuator | Outdoor unit main PCB | When heat exchanger temperature thermistor open or short circuit is detected at power on or while running the compressor | |
| | Heat exchanger temperature thermistor | | |
| Forecast of cause | | Connector failure | |
| | | Thermistor failure | |
| | | Main PCB failure | |

Check point 1. Check connection of connector

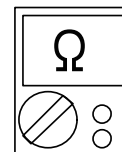
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the outdoor unit heat exchanger thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-79.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-15.

If the voltage does not appear, replace main PCB.



End

2-23. E: 74.X. Outdoor temperature thermistor error (Outdoor unit)

| | | | |
|--------------------|--------------------------------|---|------------------|
| Indicator | Indoor unit | Operation indicator | 7 time flash |
| | | Timer indicator | 4 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 74 |
| Detective actuator | Outdoor unit main PCB | When outdoor temperature thermistor open or short circuit is detected at power on or while running the compressor | |
| | Outdoor temperature thermistor | | |
| Forecast of cause | | Connector failure | |
| | | Thermistor failure | |
| | | Main PCB failure | |

Check point 1. Check connection of connector

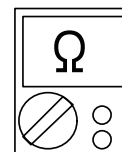
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the outdoor temperature thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-79.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-15.



If the voltage does not appear, replace main PCB.



End

2-24. E: 84.X. Current sensor error (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|--|
| Indicator | Indoor unit | Operation indicator | 8 time flash |
| | | Timer indicator | 4 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 84 |
| Detective actuator | Outdoor unit | Main PCB | When input current sensor has detected 0 A, while inverter compressor is operating at higher than 56 rps, after 1 minute upon starting the compressor. (Except during the defrost operation) |
| Forecast of cause | | | Defective connection of electrical components |
| | | | External cause |
| | | | Main PCB failure |

Check point 1. Reset power supply and operate

Does error indication show again?

If no, go to "Check point 1-2".



Check point 2. Check connections of outdoor unit electrical components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

Upon correcting the removed connector or miswiring, reset the power.



Check point 3. Replace the main PCB

If Check point 1, 2 do not improve the symptom, replace the main PCB.



End

Check point 1-2. Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



End

2-25. E: 94.X. Over current error (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 9 time flash |
| | | Timer indicator | 4 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 94 |
| Detective actuator | Outdoor unit | Main PCB | Protection stop by over-current generation after inverter compressor start processing completed generated consecutively 10 times. NOTE: The number of generations is reset when the compressor starts up. |
| | | Compressor | |
| Forecast of cause | | | Outdoor unit fan operation defective, foreign matter on heat-exchanger, excessive rise of ambient temperature |
| | | | Main PCB failure |
| | | | Inverter compressor failure (lock, winding short) |

Check point 1. Check the outdoor unit fan operation, heat-exchanger, ambient temperature

- No obstructions in air passages?
- Heat exchange fins clogged
- Outdoor unit fan motor check
- Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?



Check point 2. Replace main PCB

If Check point 1 do not improve the symptom, change main PCB.



Check point 3. Replace compressor

If Check point 2 do not improve the symptom, change compressor.



End

2-26. E: 95.X. Compressor motor control error (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 9 time flash |
| | | Timer indicator | 5 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 95 |
| Detective actuator | Outdoor unit | Main PCB | <div>1. When running the compressor, if the detected rotor location is out of phase with actual rotor location more than 90°, the compressor stops.</div> <div>2. After the compressor restarts, if the same operation is repeated within 40 seconds, the compressor stops again.</div> <div>3. If 1. and 2. repeats 5 times, the compressor stops permanently.</div> |
| | | Compressor | |
| Forecast of cause | | | Defective connection of electrical components |
| | | | Main PCB failure |
| | | | Compressor failure |

Check point 1. Check Noise from Compressor

Turn on Power and check operation noise.
→ If an abnormal noise show, replace compressor.



Check point 2. Check connection of around the compressor components

For compressor terminal, main PCB

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open. (Refer to inverter compressor in ["Service parts information"](#) on page 03-71.)

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 3. Replace the main PCB

If Check point 1, 2 do not improve the symptom, replace the main PCB.



Check point 4. Replace compressor

If Check point 3 do not improve the symptom, change compressor.



End

2-27. E: 97.X. Outdoor unit fan motor error (Outdoor unit)

| | | | |
|--------------------|--------------|---------------------|--|
| Indicator | Indoor unit | Operation indicator | 9 time flash |
| | | Timer indicator | 7 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 97 |
| Detective actuator | Outdoor unit | Main PCB | <div>1. When outdoor fan rotation speed is less than 100 rpm in 20 seconds after fan motor starts, fan motor stops.</div> <div>2. After fan motor restarts, if the same operation within 60 seconds is repeated 3 times in a row, compressor and fan motor stops.</div> <div>3. If 1. and 2. repeats 5 times in a row, compressor and fan motor stops permanently.</div> |
| | | Fan motor | |
| Forecast of cause | | | Fan rotation failure |
| | | | Motor protection by surrounding temperature rise |
| | | | Main PCB failure |
| | | | Outdoor unit fan motor |

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.



Check point 2. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat)
→ Upon the temperature coming down, restart operation.



Check point 3. Check outdoor unit fan motor

Check outdoor unit fan motor. (Refer to outdoor unit fan motor in "[Service parts information](#)" on page 03-71.)
→ If outdoor unit fan motor is abnormal, replace outdoor unit fan motor and main PCB.



Check point 4. Check output voltage of main PCB

Check outdoor unit circuit diagram and the voltage. (Measure at main PCB side connector)

NOTE: For details of wiring diagram, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-15.



| Read wire | DC voltage |
|-------------|--------------|
| Red—Black | 306 to 374 V |
| White—Black | 15 ±1.5 V |

→ If the voltage is not correct, replace Main PCB.



End

2-28. E: 99.X. 4-way valve error (Outdoor unit)

| | | | |
|--------------------|---------------------------------------|---------------------|---|
| Indicator | Indoor unit | Operation indicator | 9 time flash |
| | | Timer indicator | 9 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: 99 |
| Detective actuator | Indoor unit | main PCB | When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops. Indoor heat exchanger temp. - Room temp. > 20°F (10°C) (Cooling or Dry operation) Indoor heat exchanger temp. - Room temp. < -20°F (-10°C) (Heating operation) If the same operation is repeated 5 times, the compressor stops permanently. |
| | Heat exchanger temperature thermistor | | |
| | Room temperature thermistor | | |
| | 4-way valve | | |
| Forecast of cause | | | Connector connection failure |
| | | | Thermistor failure |
| | | | Coil failure |
| | | | 4-way valve failure |
| | | | Main PCB failure |

Check point 1. Check connection of connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 2. Check each thermistor

- Isn't it fallen off the holder?
- Is there a cable pinched?

Check characteristics of room thermistor and indoor unit heat exchanger thermistor.

For the thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-79.

→ If defective, replace the thermistor.



Check point 3. Check the solenoid coil and 4-way valve

NOTE: Refer solenoid coil and 4-way valve in "[Service parts information](#)" on page 03-71.

- **Solenoid coil**
Remove P60 from PCB and check the resistance value of coil. Resistance value is 2.085 kΩ (at 68°F [20°C]).
→ If it is open or abnormal resistance value, replace solenoid coil.
- **4-way valve**
Check each piping temperature, and the location of the valve by the temperature difference.
If the value location is not proper, replace 4-way valve.

**Check point 4. Replace main PCB**

If Check Point 1 to 3 do not improve the symptom, replace main PCB.



End

2-29. E: A1.X. Discharge temperature error (Outdoor unit)

| | | | |
|--------------------|----------------------------------|--|------------------|
| Indicator | Indoor unit | Operation indicator | 10 time flash |
| | | Timer indicator | 1 time flash |
| | | Economy indicator | Continuous flash |
| | | Error code | E: A1 |
| Detective actuator | Outdoor unit main PCB | Protection stop by discharge temperature $\geq 230^{\circ}\text{F}$ (110°C) during compressor operation generated 2 times within 24 hours. | |
| | Discharge temperature thermistor | | |
| Forecast of cause | | 3-way valve not opened | |
| | | EEV or capillary tube defective, strainer clogged | |
| | | Outdoor unit operation failure, foreign matter on heat exchanger | |
| | | Discharge temperature thermistor failure | |
| | | Insufficient refrigerant | |
| | | Main PCB failure | |

Check point 1. Check if 3-way valve is open

If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling operation, check gas side of the 3-way valve.
For heating operation, check liquid side of the 3-way valve.



Check point 2. Check any of the electronic expansion valve (EEV), capillary tube, or strainer, or all

- Check if EEV open or there is a capillary tube defect.
Refer to outdoor unit Electronic Expansion Valve (EEV) or Capillary tube in "[Service parts information](#)" on page 03-71.
- Check the strainer clogging.



Check point 3. Check the outdoor unit fan and heat exchanger

- Check for foreign object at heat exchanger
- Check if fan can be rotated by hand.
- Check the motor. (Refer to outdoor unit fan motor in "[Service parts information](#)" on page 03-71.)



Check point 4. Check the discharge thermistor

The discharge temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.)

NOTE: For the characteristics of the thermistor, refer to "[Thermistor resistance values](#)" on page 03-79.



Check point 5. Check the refrigerant amount

Check the refrigerant leakage.



Check point 6. Replace the main PCB

If check point 1 to 5 do not improve the symptom, replace the main PCB.



End

3. Troubleshooting without error code

3-1. Indoor unit—No power

| | |
|-------------------|---------------------------------|
| Forecast of cause | Power supply failure |
| | External cause |
| | Electrical components defective |

Check point 1. Check installation condition

- Isn't the breaker down?
- Check loose or removed connection cable.

-> If abnormal condition is found, correct it by referring to the installation manual or the *DESIGN & TECHNICAL MANUAL*.



Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 3. Check electrical components

Check the voltage of power supply.

Check if AC 207 to 253 V appears at outdoor unit terminal L—N.

-> If no, go to "[Check point 1](#)" and "[Check point 2](#)".



- Check fuse in the Filter PCB.
If fuse is open, check if the wiring between terminal and filter PCB is loose, and replace the Filter PCB.
- Check varistor in the Filter PCB.
If varistor is defective, there is a possibility of an abnormal power supply.
Check the correct power supply and replace the Filter PCB.
Upon checking the normal power supply, replace the Filter PCB.



End

3-2. Outdoor unit—No power

| | |
|-------------------|---------------------------------|
| Forecast of cause | Power supply failure |
| | External cause |
| | Electrical components defective |

Check point 1. Check installation condition

- Is the circuit breaker on or off?
- Check loose or removed connection cable.

→ If abnormal condition is found, correct it by referring to the installation manual or the *DESIGN & TECHNICAL MANUAL*.



Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 3. Check electrical components

Check the voltage of power supply.

Check if AC 207 to 253 V appears at outdoor unit terminal L—N

→ If no, go to "[Check point 1](#)" and "[Check point 2](#)".



- Check fuse in main PCB.
If fuse is open, check if the wiring between terminal and main PCB is loose, and replace the Main PCB.
- Check varistor in the Main PCB.
If varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace the Main PCB.
→ Upon checking the normal power supply, replace the Main PCB.



Check point 4. Replace the main PCB

If check point 1 to 3 do not improve the symptom, replace the main PCB.



End

3-3. No operation (Power is on)

| | |
|-------------------|---------------------------------|
| Forecast of cause | Setting/ Connection failure |
| | External cause |
| | Electrical components defective |

Check point 1. Check indoor and outdoor installation condition

- Indoor unit:
 - Check incorrect wiring between indoor unit and remote controller.
 - Check if there is an open cable connection.
 - Are these indoor unit, outdoor unit, and remote controller suitable model names to connect?
- > If there is some abnormal condition, correct it by referring to the installation manual and "DESIGN & TECHNICAL MANUAL".



Turn off the power and check correct followings.

- Is there loose or removed communication line of indoor unit and outdoor unit?



Check point 2. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 3. Check wired remote controller and controller PCB

Check voltage at CN13 (terminal 1—3) of main PCB.

(Power supply to remote controller)

- If it is DC 12 V, remote controller is failure. (The controller PCB is normal)
-> Replace remote controller.
- If it is DC 0 V, controller PCB is failure. (Check the remote controller once again)
-> Replace controller PCB.



Check point 4. Replace main PCB

If check point 1 to 3 do not improve the symptom, change main PCB.



End

3-4. No cooling/No heating

| | |
|-------------------|---|
| Forecast of cause | Indoor unit error |
| | Outdoor unit error |
| | Effect by surrounding environment |
| | Connection pipe/Connection wire failure |
| | Refrigeration cycle failure |

Check point 1. Check Indoor unit

- Does Indoor unit fan run in the HIGH mode?
- Is air filter dirty?
- Is heat exchanger clogged?
- Check if energy save function is operated.



Check point 2. Check outdoor unit operation

- Check if outdoor unit is operating.
- Check any objects that obstruct the air flow route.
- Check if heat exchanger is clogged.
- Is the valve open?



Check point 3. Check site condition

- Is capacity of Indoor unit fitted to the room size?
- Any windows open or direct sunlight?



Check point 4. Check indoor/outdoor installation condition

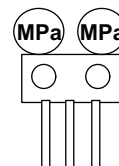
- Check connection pipe (specified pipe length and pipe diameter?)
- Check any loose or removed communication line.

→ If there is an abnormal condition, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 5. Check Refrigeration cycle

- Check if strainer is clogged (Refer to the figure below).
- Measure gas pressure, and if there is a leakage, correct it.
- Check if EEV open or there is a capillary tube defect.
Refer to outdoor unit Electronic Expansion Valve (EEV) or Capillary tube in ["Service parts information"](#) on page 03-71.
- Check compressor.
Refer to compressor in ["Service parts information"](#) on page 03-71.
Refer to inverter compressor in ["Service parts information"](#) on page 03-71.



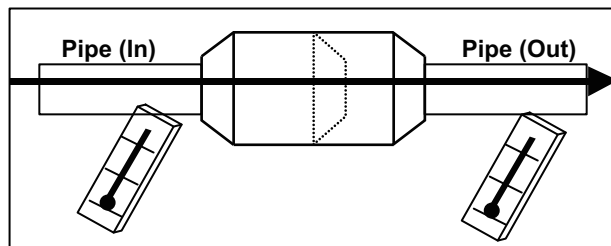
NOTE: When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.



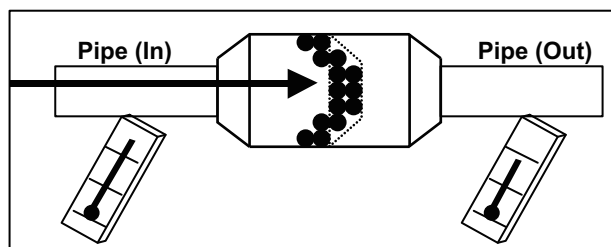
End

NOTES:

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



3-5. Abnormal noise

| | |
|-------------------|--|
| Forecast of cause | Abnormal installation (indoor unit/outdoor unit) |
| | Fan failure (indoor unit/outdoor unit) |
| | Compressor failure (outdoor) |

Diagnosis method when abnormal noise is occurred

Abnormal noise is coming from Indoor unit.
(Check and correct followings)



- Is main unit installed in stable condition?
- Is the installation of air suction grille and front panel normal?



- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?



End

Abnormal noise is coming from Outdoor unit.
(Check and correct followings)



- Is main unit installed in stable condition?
- Is fan guard installed normally?



- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?



Check if vibration noise by loose bolt or contact noise of piping is happening.



Is compressor locked?

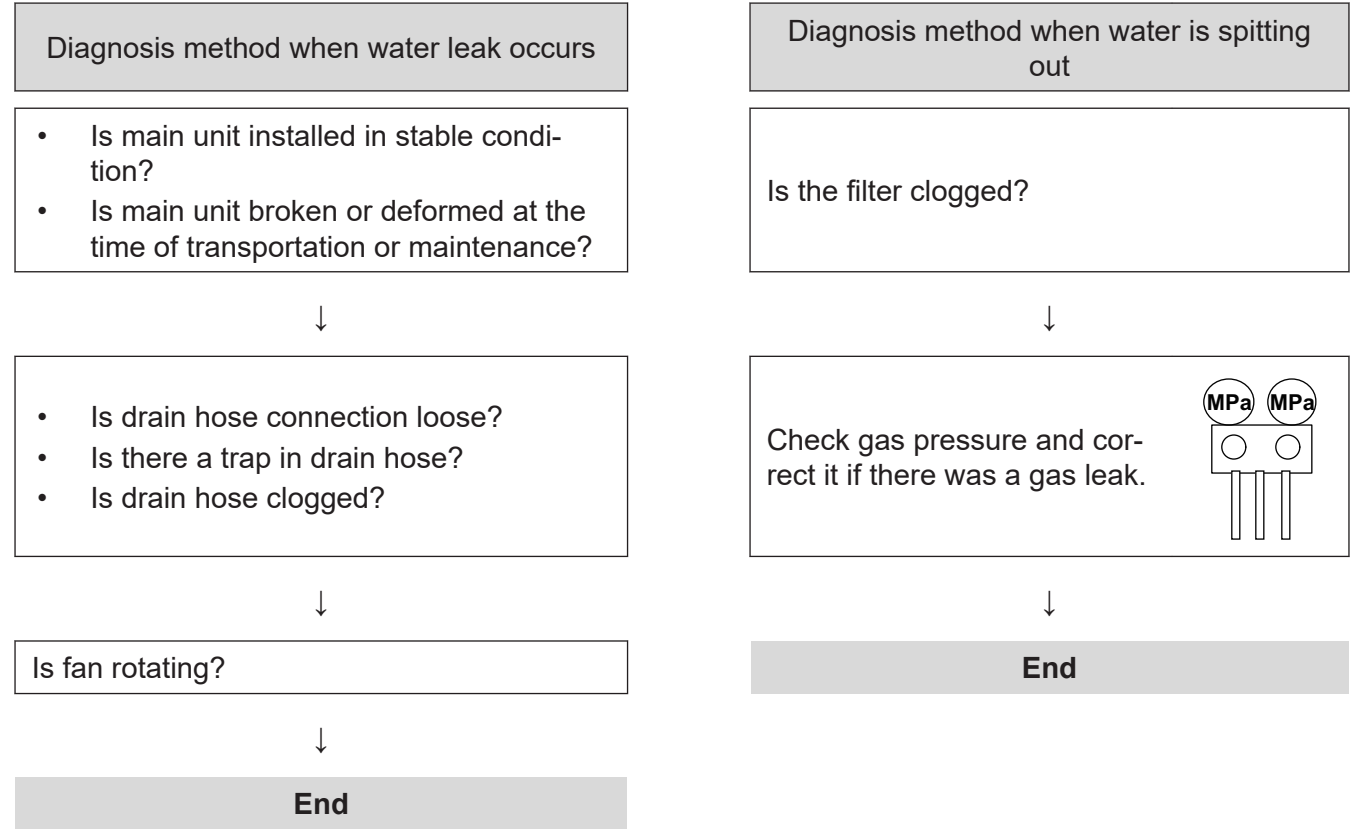
- Check Compressor
Refer to compressor and inverter compressor in "[Service parts information](#)" on page 03-71.



End

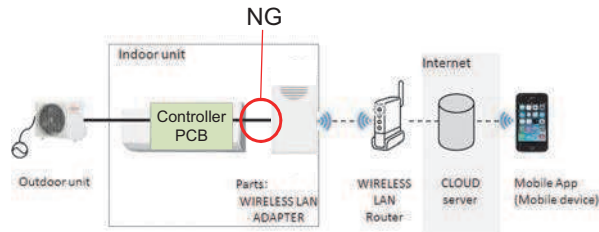
3-6. Water leaking

| | |
|-------------------|------------------------|
| Forecast of cause | Erroneous installation |
| | Drain hose failure |



4. Troubleshooting with error code (For wireless LAN adapter)

4-1. E: 18.X. External communication error between indoor unit and wireless LAN adapter

| | | | |
|--------------------|--------------------------|------------------------|---|
| Indicator | Indoor unit | Operation indicator | 1 time flash |
| | | Timer indicator | 8 time flash |
| | | Economy indicator | Continuous flash |
| | | Wireless LAN indicator | Flashing slowly |
| | | Error code | E: 18 |
| | Mobile app | | E: 18.1 |
| Detective actuator | Wireless LAN adapter PCB | | After receiving a signal from the wireless LAN adapter, the same signal has not been received for 15 seconds. |
| | Controller PCB | | |
| | | |  |
| Forecast of cause | | | Connection between indoor unit and wireless LAN adapter failure |
| | | | Wireless LAN adapter PCB failure |
| | | | Controller PCB failure |

Check point 1. Check the connection

- Check any loose or removed connection of between the wireless LAN adapter PCB and controller PCB.
-> If there is abnormal condition, correct it.
- Check the connection condition on the controller PCB.
-> If there is loose connector, open cable or mis-wiring, correct it.



Check point 2. Replace wireless LAN adapter.

If check point 1 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.
After replacing the adapter, perform the pairing on the Mobile app.

For the method of the Mobile app, refer to ["Mobile app setting method"](#) on page 03-69.



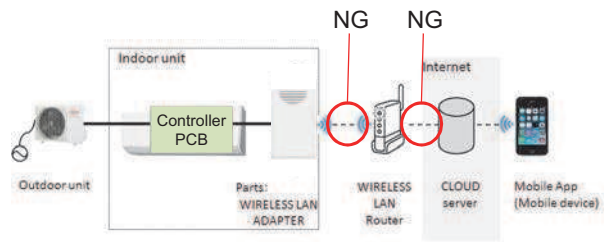
Check point 3. Replace controller PCB

If check point 1 to 2 do not improve the symptom, replace the controller PCB.



End

4-2. Network communication error between wireless LAN router and wireless LAN adapter

| | | | |
|--------------------|---|---|-----------------|
| Indicator | Indoor unit | Operation indicator | No indication |
| | | Timer indicator | No indication |
| | | Economy indicator | No indication |
| | | Wireless LAN indicator | Flashing slowly |
| | | Error code | — |
| | Mobile app | | No indication |
| Detective actuator | Wireless LAN router | When the not connection between wireless LAN adapter and wireless LAN router.  | |
| | Wireless LAN adapter PCB | | |
| Forecast of cause | Connection cable failure of wireless LAN router | | |
| | Connection between wireless LAN adapter and wireless LAN router failure | | |
| | Wireless LAN router failure | | |
| | Wireless LAN adapter PCB failure | | |

Check point 1. Check the connection cable

Check the connection cable on the wireless LAN router.

-> If there is loose connector, open cable or mis-wiring, correct it.



Check point 2. Check the connection status.

Check the connection status to the Internet and wireless LAN router.

-> If the wireless LAN router is not connected to the Internet, check the transmission between wireless LAN products (ex. PC or game console, etc.) other than air conditioner and wireless LAN router.

If no, go to ["Check point 2-2"](#).



Check point 3. Turn on the power again of air conditioner.

If check point 1 to 2 do not improve the symptom, turn on the power of the air conditioner again and wait for 60 seconds.



Check point 4. Replace wireless LAN adapter.

If check point 3 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.

After replacing the adapter, perform the pairing on the Mobile app.

For the method of the Mobile app, refer to "[Mobile app setting method](#)" on page 03-69.

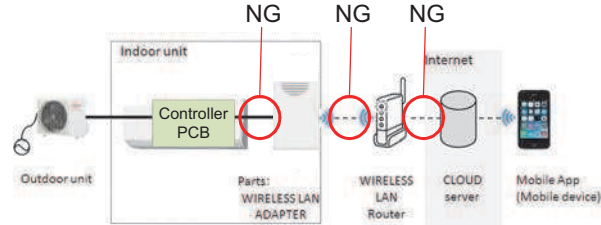
**End****Check point 2-2. Check the transmission state**

Check the wireless transmission state of the wireless LAN router (indicator lamp status).

-> If the wireless transmission from the wireless LAN router has not been outgoing, inquire to the wireless LAN router maker.

**End**

4-3. E: 18.X. Communication error

| | | | |
|--------------------|----------------------------|--|------------------|
| Indicator | Indoor unit | Operation indicator | 1 time flash |
| | | Timer indicator | 8 time flash |
| | | Economy indicator | Continuous flash |
| | | Wireless LAN indicator | Flashing slowly |
| | | Error code | E: 18 |
| | Mobile app | E: 18.1 | |
| Detective actuator | Wireless LAN router | <p>When the external communication error between indoor unit and wireless LAN adapter and network communication error between wireless LAN router and wireless LAN adapter has occurred simultaneously.</p>  | |
| | Wireless LAN adapter PCB | | |
| | Indoor unit controller PCB | | |
| Forecast of cause | | Connection cable failure of wireless LAN router | |
| | | Wireless LAN router failure | |
| | | Connection between indoor unit and wireless LAN adapter failure | |
| | | Connection between wireless LAN adapter and wireless LAN router failure | |
| | | Wireless LAN adapter PCB failure | |
| | | Controller PCB failure | |

Check point 1. Check the connection

- Check any loose or removed connection of between the wireless LAN adapter PCB and controller PCB.
-> If there is abnormal condition, correct it.
- Check the connection condition on the controller PCB.
-> If there is loose connector, open cable or mis-wiring, correct it.



Check point 2. Replace wireless LAN adapter.

If check point 1 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.
After replacing the adapter, perform the pairing on the Mobile app.

For the method of the Mobile app, refer to ["Mobile app setting method"](#) on page 03-69.



Check point 3. Replace controller PCB

If check point 1 to 2 do not improve the symptom, replace the controller PCB.



Check point 4. Check the connection cable

Check the connection cable on the wireless LAN router.

-> If there is loose connector, open cable or mis-wiring, correct it.

**Check point 5. Check the connection status.**

Check the connection status to the Internet and wireless LAN router.

-> If the wireless LAN router is not connected to the Internet, check the transmission between wireless LAN products (ex. PC or game console, etc.) other than air conditioner and wireless LAN router.

If no, go to ["Check point 5-2"](#).

**Check point 6. Turn on the power again of air conditioner.**

If check point 1 to 2 do not improve the symptom, turn on the power of the air conditioner again and wait for 60 seconds.

**Check point 7. Replace wireless LAN adapter.**

If check point 3 do not improve the symptom, replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.

After replacing the adapter, perform the pairing on the Mobile app.

For the method of the Mobile app, refer to ["Mobile app setting method"](#) on page 03-69.



End

Check point 5-2. Check the transmission state

Check the wireless transmission state of the wireless LAN router (indicator lamp status).

-> If the wireless transmission from the wireless LAN router has not been outgoing, inquire to the wireless LAN router maker.



End

4-4. E: 18.X. Wireless LAN adapter non-energized

| | | | |
|--------------------|----------------------------|---|------------------------------------|
| Indicator | Indoor unit | Operation indicator | 1 time flash |
| | | Timer indicator | 8 time flash |
| | | Economy indicator | Continuous flash |
| | | Wireless LAN indicator | No indication |
| | | Error code | E: 18 |
| | Mobile app | No indication | |
| Detective actuator | Indoor unit controller PCB | When the voltage (DC 12 V) does not output from the controller PCB. | |
| | Wireless LAN adapter PCB | | |
| Forecast of cause | | | Indoor unit controller PCB failure |
| | | | Wireless LAN adapter PCB failure |
| | | | Wiring connection failure |

Check point 1. Check the connection.

- Check any loose or removed connection of between the wireless LAN adapter PCB and controller PCB.
-> If there is abnormal condition, correct it.
- Check the connection condition on the controller PCB.
-> If there is loose connector, open cable or mis-wiring, correct it.



Check point 2. Check the wireless LAN adapter PCB and the controller PCB

Check voltage at CN13 (terminal 1—3) of main PCB.

(Power supply to remote controller)

- If it is DC 0 V, controller PCB is failure.
-> Replace controller PCB.
- If it is DC 12 V, wireless LAN adapter PCB is failure.
-> Replace the wireless LAN adapter and cancel the registration of air conditioner on the Mobile app.

After replacing the adapter, perform the pairing on the Mobile app.

For the method of the Mobile app, refer to ["Mobile app setting method"](#) on page 03-69.



End


4-5. Mobile app setting method

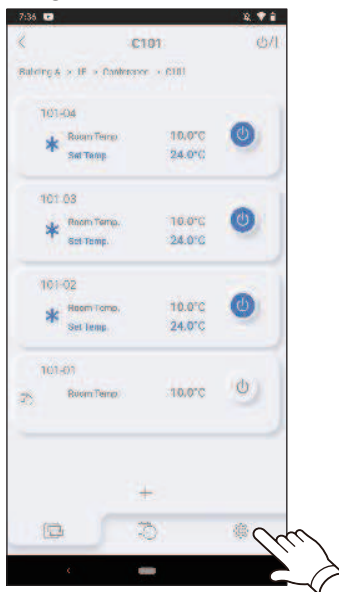
■ Air conditioner delete method

When the wireless LAN adapter is replaced, delete of all air conditioner is necessary on the mobile app.

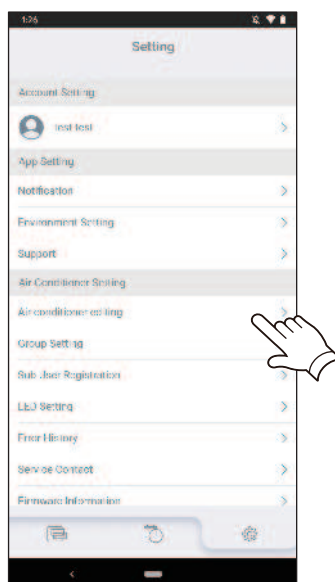
1. Launch the mobile app.



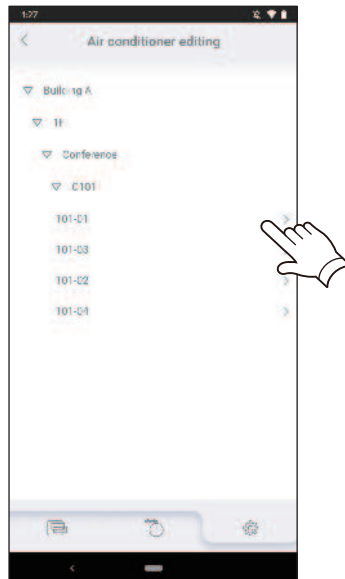
2. Tap the  icon to display the Setting screen.



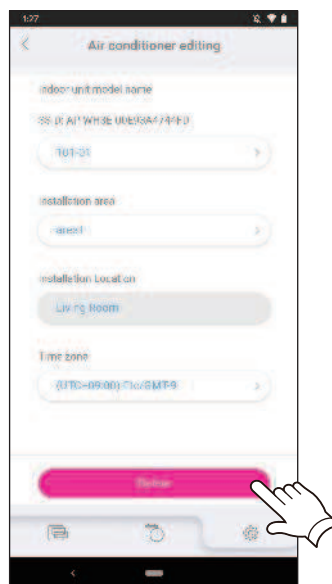
3. Tap the “Air conditioner editing”.



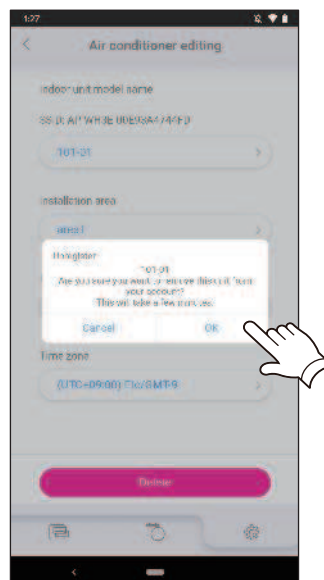
4. Tap the air conditioner to be deleted.



5. Tap the Delete button.



6. Tap the OK button.

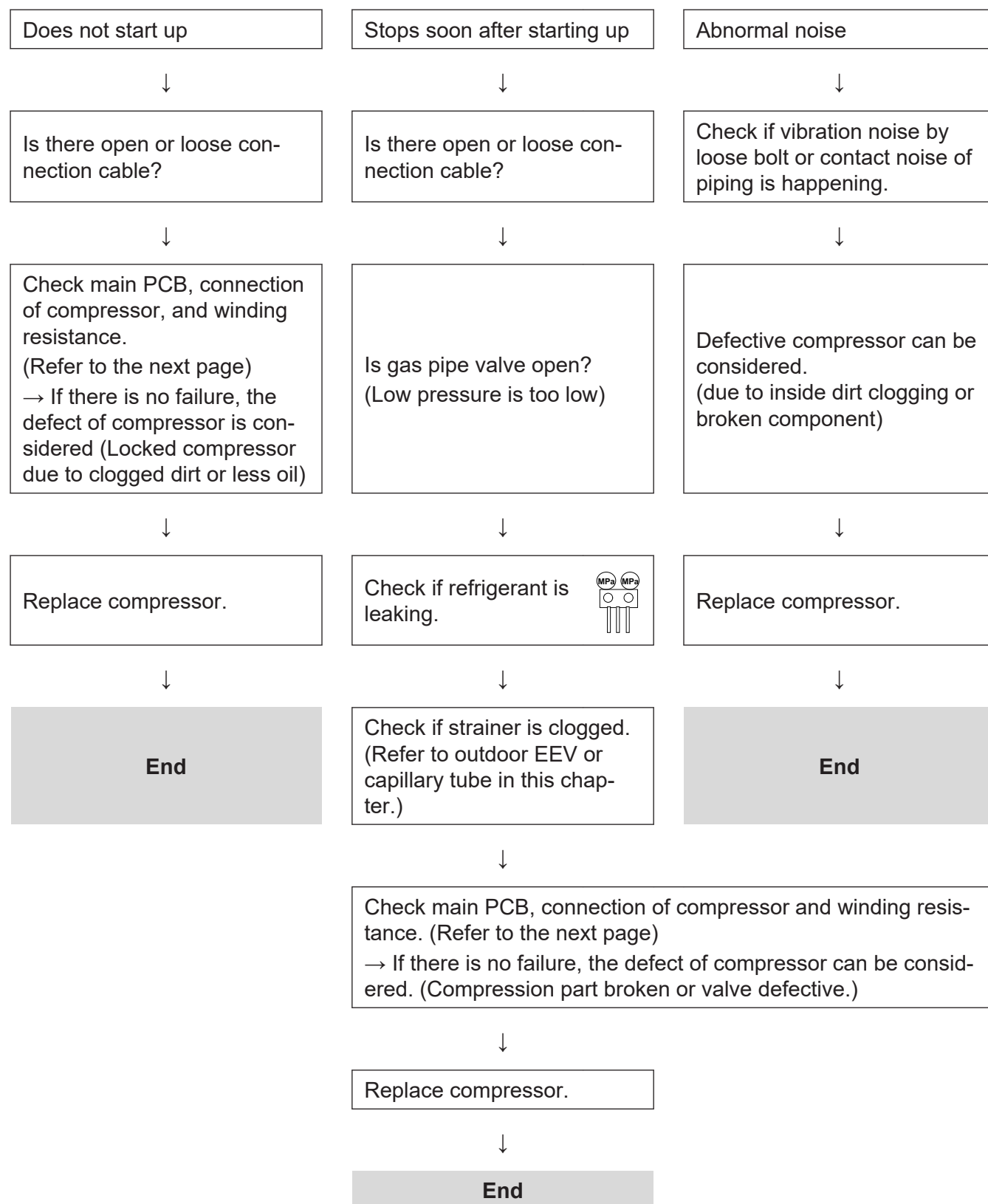


7. Deletion of the air conditioner registered in the mobile app is completed.

5. Service parts information

5-1. Compressor

Diagnosis method of compressor (If outdoor unit LED displays error, refer to troubleshooting)

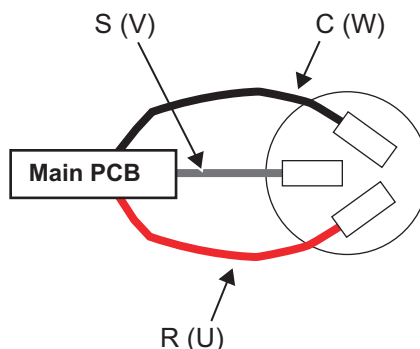


5-2. Inverter compressor

Check point 1. Check the terminal connection.

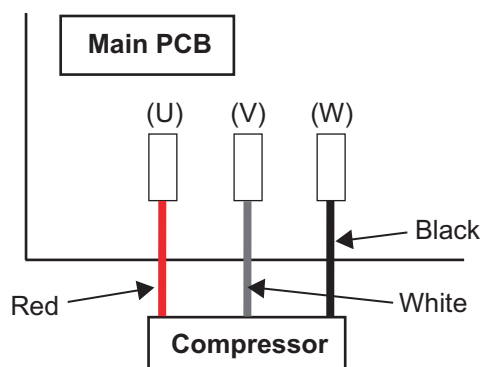
- Check the following terminal connections of the compressor. (Loosening or incorrect wiring.)

R (U): Red
S (V): White
C (W): Black



- Check the following terminal connections of the Main PCB. (Loosening or incorrect wiring.)

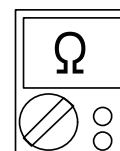
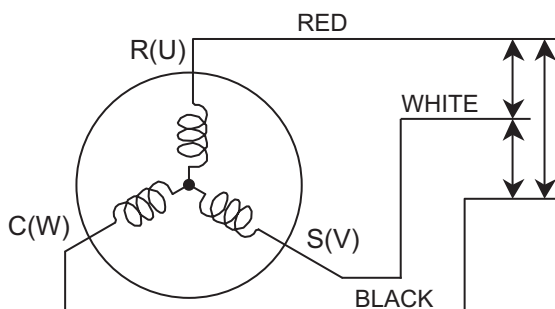
W400 (U): Red
W401 (V): White
W402 (W): Black



Check point 2. Check the winding resistance.

Check the winding resistance of each terminal.

Resistance value: $1.975 \Omega \pm 7\%$ at 77°F (25°C)



→ If the resistance value is 0Ω or infinite, replace the compressor.



Check point 3. Replace the Inverter PCB.

If check point 1 to 2 do not improve the symptom, replace the Inverter PCB.

5-3. Outdoor unit Electronic Expansion Valve (EEV)

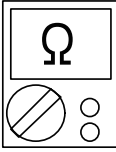
Check point 1. Check connections

Check connection of connector. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-15.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

| Read wire | Resistance value |
|--------------------|---|
| 1 (Red)—2 (Blue) | $46 \Omega \pm 3.7 \Omega$ at 68°F (20°C)  |
| 1 (Red)—3 (Orange) | |
| 1 (Red)—4 (Yellow) | |
| 1 (Red)—5 (White) | |

→ If Resistance value is abnormal, replace EEV.

Check point 3. Check Voltage from main PCB

Remove connector and check voltage (DC 12 V)

→ If it does not appear, replace main PCB.



Check point 4. Check noise at start up

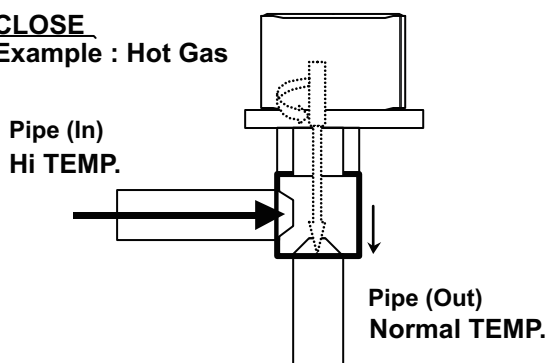
Turn on the power and check the operation noise.

→ If an abnormal noise does not show, replace main PCB.

Check point 5. Check Opening and Closing Operation of Valve

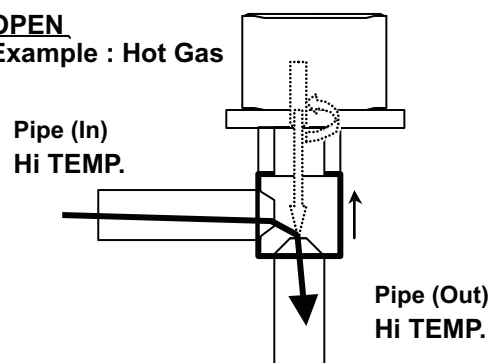
When valve is closed, it has a temp. difference between inlet and outlet

CLOSE
Example : Hot Gas



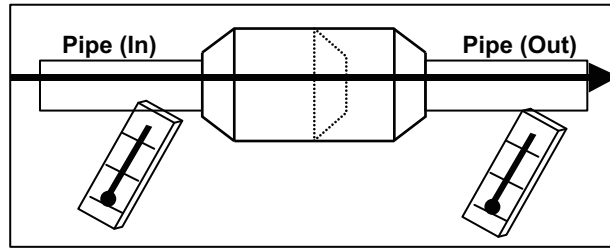
If it is open, it has no temp. difference between inlet and outlet

OPEN
Example : Hot Gas

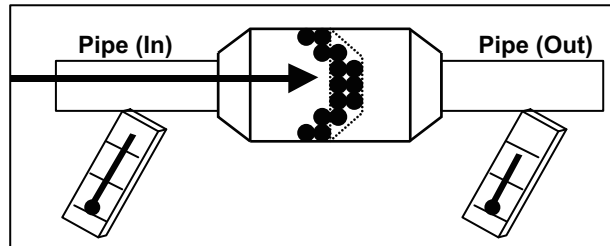


Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



5-4. Indoor unit fan motor

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

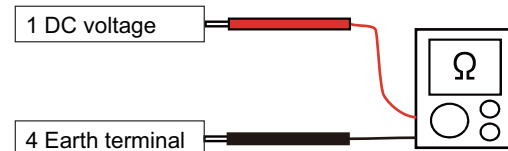
Check point 2. Check resistance of indoor fan motor

Refer to below. Circuit-test “Vm” and “GND” terminal

NOTE: Vm: DC voltage, GND: Earth terminal

→ If they are short-circuited (below 300 kΩ), replace indoor fan motor and controller PCB.

| Pin number (wire color) | Terminal function (symbol) |
|----------------------------|-------------------------------|
| 1 (Red) | DC voltage (Vm) |
| 2 | No function |
| 3 | No function |
| 4 (Black) | Earth terminal (GND) |
| 5 (White) | Control voltage (Vcc) |
| 6 (Yellow) | Speed command (Vsp) |
| 7 (Blue) | Feed back (FG) |



5-5. Outdoor unit fan motor

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

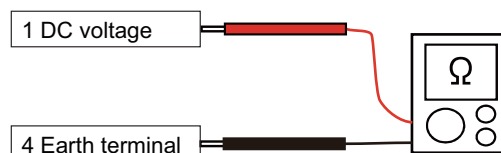
Check point 2. Check resistance of outdoor fan motor (P650)

Refer to below. Circuit-test “Vm” and “GND” terminal

NOTE: Vm: DC voltage, GND: Earth terminal

→ If they are short-circuited (below 300 kΩ), replace outdoor fan motor and controller PCB.

| Pin number (wire color) | Terminal function (symbol) |
|----------------------------|-------------------------------|
| 1 (Red) | DC voltage (Vm) |
| 2 | No function |
| 3 | No function |
| 4 (Black) | Earth terminal (GND) |
| 5 (White) | Control voltage (Vcc) |
| 6 (Yellow) | Speed command (Vsp) |
| 7 (Brown) | Feed back (FG) |

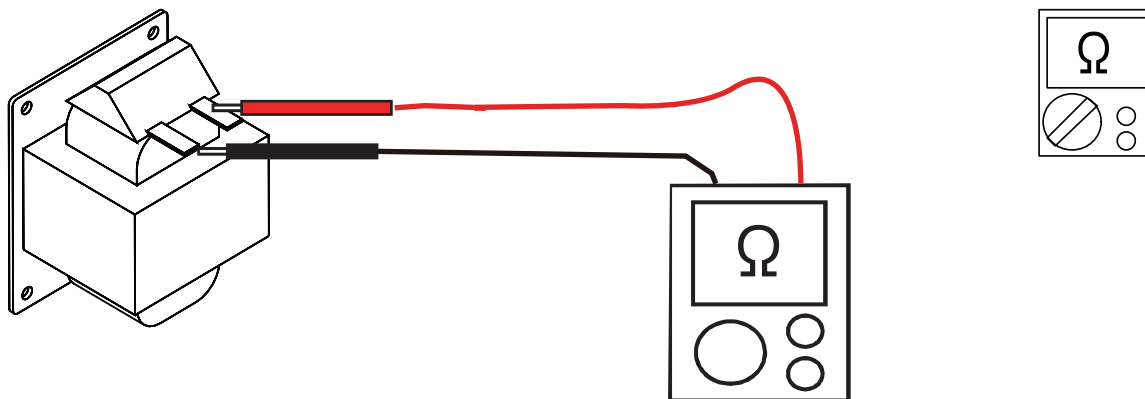


5-6. Reactor assy

Check point 1. Appearance check

No fissures, breaks, damage, etc. at the body and winding section, terminals section?

Check point 2. Electric check



- Set the tester to the "Resistance" mode, and check for open/short between both ends of the reactor wire (or connector).
- Judge the result of 1. as follows:

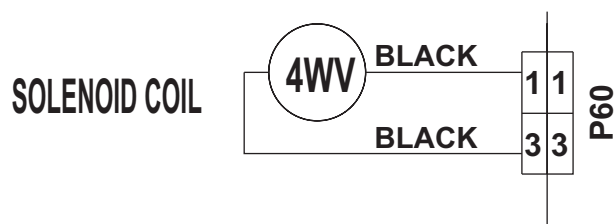
| | |
|-------|-----------------|
| Short | Normal |
| Open | Abnormal (open) |

NOTE: Reference value of DC resistance of reactor used:
415.9 mΩ at 77°F (25°C)

5-7. 4-way valve coil (solenoid coil)/4-way valve

Check point 1. Check connection

- Check the connection of connector P60.



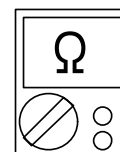
Check Point 2 : Check solenoid coil

Remove P60 from PCB and check the resistance value of coil.

Resistance value $\approx 2.085 \text{ k}\Omega$

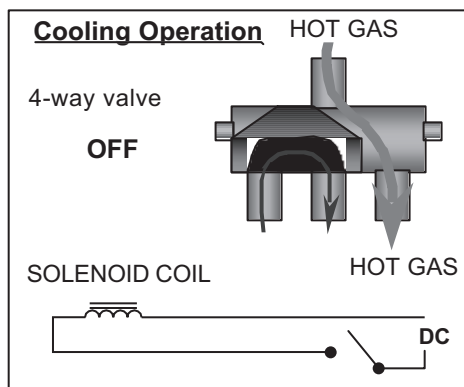
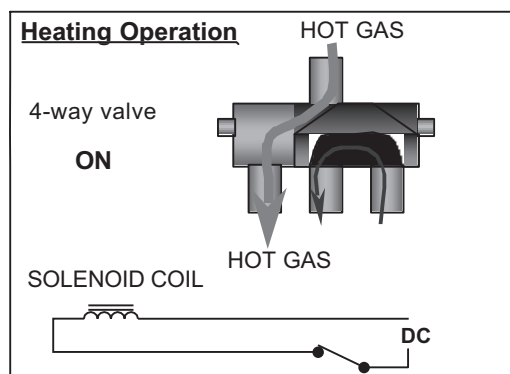


→ If it is Open or abnormal resistance value, replace solenoid coil.



Check Point 3: Check the 4-way valve operation

Check each piping temperature, and confirm the location of the valve by the temperature difference



→ If the valve location is not proper, replace the 4-way valve.



Check Point 4: Replace Main PCB

If none of Checks 1 to 3 apply, replace the Main PCB.

6. Thermistor resistance values

6-1. Indoor unit

■ Room temperature thermistor

| Temperature °F (°C) | Resistance (kΩ) | Voltage (V) |
|---------------------|-----------------|-------------|
| 14.0 (-10.0) | 58.25 | 0.73 |
| 23.0 (-5.0) | 44.03 | 0.93 |
| 32.0 (0.0) | 33.62 | 1.15 |
| 41.0 (5.0) | 25.93 | 1.39 |
| 50.0 (10.0) | 20.18 | 1.66 |
| 59.0 (15.0) | 15.84 | 1.94 |
| 68.0 (20.0) | 12.54 | 2.22 |
| 77.0 (25.0) | 10.00 | 2.50 |
| 86.0 (30.0) | 8.04 | 2.77 |
| 95.0 (35.0) | 6.51 | 3.03 |
| 104.0 (40.0) | 5.30 | 3.27 |
| 113.0 (45.0) | 4.35 | 3.49 |

■ Heat exchanger temperature thermistor

| Temperature °F (°C) | Resistance (kΩ) | Voltage (V) |
|---------------------|-----------------|-------------|
| -22.0 (-30.0) | 1,131.91 | 0.21 |
| -13.0 (-25.0) | 804.52 | 0.29 |
| -4.0 (-20.0) | 579.59 | 0.40 |
| 5.0 (-15.0) | 422.89 | 0.53 |
| 14.0 (-10.0) | 312.27 | 0.69 |
| 23.0 (-5.0) | 233.21 | 0.88 |
| 32.0 (0.0) | 176.03 | 1.10 |
| 41.0 (5.0) | 134.23 | 1.36 |
| 50.0 (10.0) | 103.34 | 1.63 |
| 59.0 (15.0) | 80.28 | 1.92 |
| 68.0 (20.0) | 62.91 | 2.21 |
| 77.0 (25.0) | 49.70 | 2.51 |
| 86.0 (30.0) | 39.57 | 2.79 |
| 95.0 (35.0) | 31.74 | 3.06 |
| 104.0 (40.0) | 25.64 | 3.30 |
| 113.0 (45.0) | 20.85 | 3.53 |
| 122.0 (50.0) | 17.06 | 3.73 |
| 131.0 (55.0) | 14.05 | 3.90 |
| 140.0 (60.0) | 11.64 | 4.05 |
| 149.0 (65.0) | 9.69 | 4.19 |

6-2. Outdoor unit

■ Discharge temperature thermistor

| Temperature °F (°C) | Resistance (kΩ) | Voltage (V) |
|---------------------|-----------------|-------------|
| -22.0 (-30.0) | 1,000.13 | 0.06 |
| -12.0 (-25.0) | 720.28 | 0.09 |
| -4.0 (-20.0) | 525.51 | 0.12 |
| 5.0 (-15.0) | 388.12 | 0.16 |
| 14.0 (-10.0) | 289.97 | 0.22 |
| 23.0 (-5.0) | 219.01 | 0.28 |
| 32.0 (0.0) | 167.12 | 0.36 |
| 41.0 (5.0) | 128.77 | 0.46 |
| 50.0 (10.0) | 100.14 | 0.58 |
| 59.0 (15.0) | 78.56 | 0.71 |
| 68.0 (20.0) | 62.14 | 0.87 |
| 77.0 (25.0) | 49.54 | 1.04 |
| 86.0 (30.0) | 39.79 | 1.23 |
| 95.0 (35.0) | 32.19 | 1.44 |
| 104.0 (40.0) | 26.22 | 1.66 |
| 113.0 (45.0) | 21.49 | 1.89 |
| 122.0 (50.0) | 17.73 | 2.12 |
| 131.0 (55.0) | 14.71 | 2.35 |
| 140.0 (60.0) | 12.27 | 2.57 |
| 149.0 (65.0) | 10.29 | 2.79 |
| 158.0 (70.0) | 8.68 | 3.00 |
| 167.0 (75.0) | 7.35 | 3.19 |
| 176.0 (80.0) | 6.26 | 3.38 |
| 185.0 (85.0) | 5.35 | 3.54 |
| 194.0 (90.0) | 4.60 | 3.69 |
| 203.0 (95.0) | 3.96 | 3.83 |
| 212.0 (100.0) | 3.43 | 3.96 |
| 221.0 (105.0) | 2.98 | 4.07 |
| 230.0 (110.0) | 2.60 | 4.17 |
| 239.0 (115.0) | 2.28 | 4.26 |
| 248.0 (120.0) | 2.00 | 4.33 |

■ Heat exchanger temperature thermistor

| Temperature °F (°C) | Resistance (kΩ) | Voltage (V) |
|---------------------|-----------------|-------------|
| -22.0 (-30.0) | 95.58 | 0.24 |
| -12.0 (-25.0) | 68.90 | 0.32 |
| -4.0 (-20.0) | 50.31 | 0.43 |
| 5.0 (-15.0) | 37.19 | 0.57 |
| 14.0 (-10.0) | 27.81 | 0.73 |
| 23.0 (-5.0) | 21.02 | 0.92 |
| 32.0 (0.0) | 16.05 | 1.14 |
| 41.0 (5.0) | 12.38 | 1.39 |
| 50.0 (10.0) | 9.63 | 1.65 |
| 59.0 (15.0) | 7.56 | 1.93 |
| 68.0 (20.0) | 5.98 | 2.21 |
| 77.0 (25.0) | 4.77 | 2.49 |
| 86.0 (30.0) | 3.84 | 2.77 |
| 95.0 (35.0) | 3.11 | 3.02 |
| 104.0 (40.0) | 2.53 | 3.26 |
| 113.0 (45.0) | 2.08 | 3.48 |
| 122.0 (50.0) | 1.71 | 3.68 |
| 131.0 (55.0) | 1.42 | 3.85 |
| 140.0 (60.0) | 1.19 | 4.00 |
| 149.0 (65.0) | 1.00 | 4.13 |
| 158.0 (70.0) | 0.84 | 4.25 |
| 167.0 (75.0) | 0.71 | 4.35 |
| 176.0 (80.0) | 0.61 | 4.43 |

■ Outdoor temperature thermistor

| Temperature °F (°C) | Resistance (kΩ) | Voltage (V) |
|---------------------|-----------------|-------------|
| -22.0 (-30.0) | 224.33 | 0.73 |
| -12.0 (-25.0) | 159.71 | 0.97 |
| -4.0 (-20.0) | 115.24 | 1.25 |
| 5.0 (-15.0) | 84.21 | 1.56 |
| 14.0 (-10.0) | 62.28 | 1.90 |
| 23.0 (-5.0) | 46.58 | 2.26 |
| 32.0 (0.0) | 35.21 | 2.61 |
| 41.0 (5.0) | 26.88 | 2.94 |
| 50.0 (10.0) | 20.72 | 3.25 |
| 59.0 (15.0) | 16.12 | 3.52 |
| 68.0 (20.0) | 12.64 | 3.76 |
| 77.0 (25.0) | 10.00 | 3.97 |
| 86.0 (30.0) | 7.97 | 4.14 |
| 95.0 (35.0) | 6.40 | 4.28 |
| 104.0 (40.0) | 5.18 | 4.41 |
| 113.0 (45.0) | 4.21 | 4.51 |
| 122.0 (50.0) | 3.45 | 4.59 |
| 131.0 (55.0) | 2.85 | 4.65 |

4. CONTROL AND FUNCTIONS

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4. CONTROL AND FUNCTIONS

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1. Rotation number control of compressor

1-1. Cooling operation

A sensor (room temperature thermistor) built in the indoor unit body will usually perceive difference or variation between a set temperature and present room temperature, and controls the operation rotation number of the compressor.

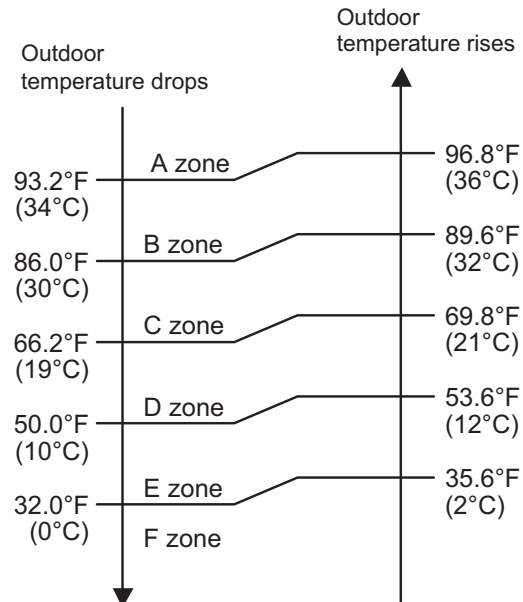
- If the room temperature is 11°F (6.0°C) higher than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 2°F (1.0°C) lower than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +11°F (6.0°C) to -2°F (1.0°C) of the setting temperature, the rotation number of compressor is controlled within the range shown in the table below. However, the maximum rotation number is limited in the range shown in the figure below based on the indoor fan mode and the outdoor temperature.

• Rotation number range of compressor

Unit: rps

| Model name | Minimum rotation number | Maximum rotation number |
|------------|-------------------------|-------------------------|
| ASUH09KMAS | 12 | 67 |
| ASUH12KMAS | 12 | 83 |

- Limit of maximum speed based on outdoor temperature



Unit: rps

| Model name | Outdoor temperature zone | Indoor unit fan mode | | | |
|------------|--------------------------|----------------------|-----|-----|-------|
| | | HIGH | MED | LOW | QUIET |
| ASUH09KMAS | A zone | 67 | 38 | 26 | 18 |
| | B zone | 67 | 38 | 26 | 18 |
| | C zone | 67 | 38 | 26 | 18 |
| | D zone | 47 | 36 | 24 | 16 |
| | E zone | 47 | 36 | 24 | 16 |
| | F zone | 47 | 36 | 24 | 16 |
| ASUH12KMAS | A zone | 83 | 42 | 30 | 18 |
| | B zone | 83 | 42 | 30 | 18 |
| | C zone | 83 | 42 | 30 | 18 |
| | D zone | 58 | 40 | 28 | 16 |
| | E zone | 58 | 40 | 28 | 16 |
| | F zone | 58 | 40 | 28 | 16 |

1-2. Heating operation

A sensor (room temperature thermistor) built in indoor unit body will usually perceive difference or variation between setting temperature and present room temperature, and controls operation rotation number of compressor.

- If the room temperature is 11°F (6.0°C) lower than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 2°F (1.0°C) higher than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +2°F (1.0°C) to -11°F (6.0°C) of the setting temperature, the rotation number of compressor is controlled within the range shown below.

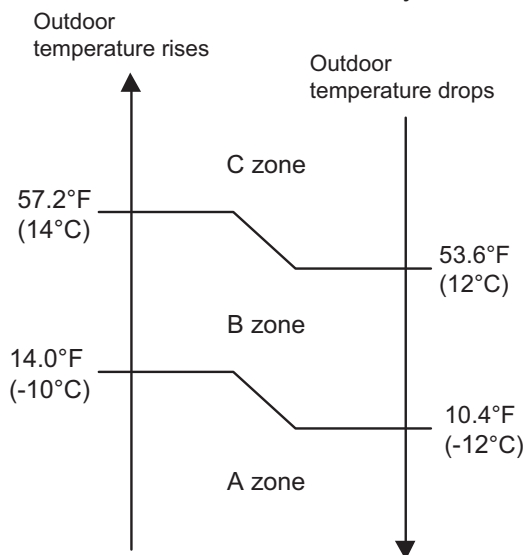
- **Rotation number range of compressor**

Unit: rps

| Model name | Minimum rotation number | Maximum rotation number |
|--------------------------|-------------------------|-------------------------|
| ASUH09KMAS ASUH12KMAS | 12 | 110 |

- **Limit of maximum speed based on outdoor temperature**

In heating operation, maximum rotation number is defined by outdoor temperature and fan mode.



Unit: rps

| Model name | Outdoor temperature zone | Indoor unit fan mode | | | |
|--------------------------|--------------------------|----------------------|-----|-----|-------|
| | | HIGH | MED | LOW | QUIET |
| ASUH09KMAS ASUH12KMAS | A zone | 110 | 110 | 77 | 67 |
| | B zone | 110 | 110 | 72 | 62 |
| | C zone | 89 | 89 | 62 | 40 |

1-3. Dry operation

The rotation number of compressor shall change according to the temperature, set temperature, and room temperature variation which the room temperature sensor of the indoor unit has detected as shown in the table below.

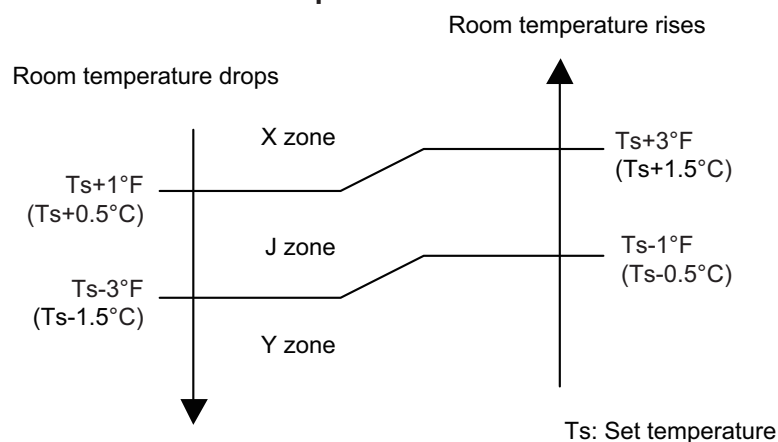
Zone is defined by set temperature and room temperature.

- **Rotation number range of compressor**

Unit: rps

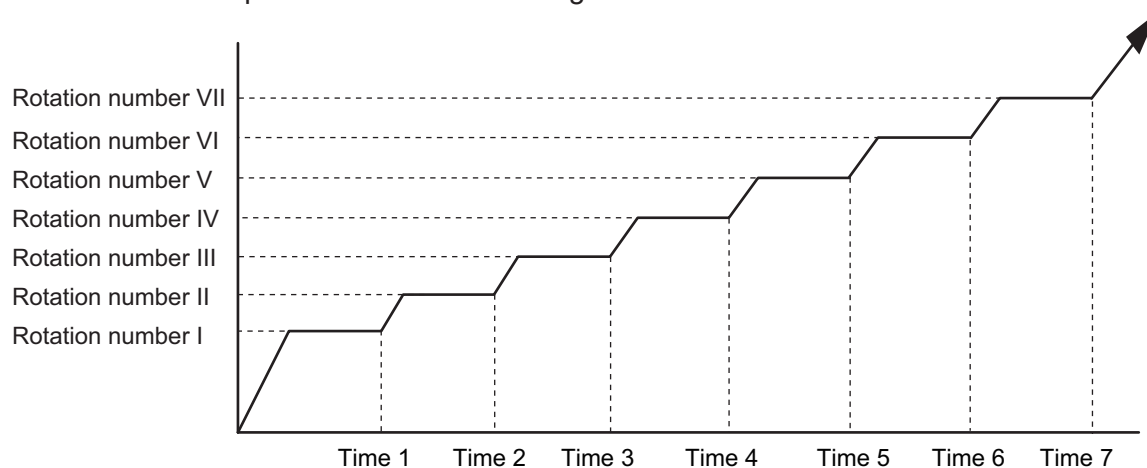
| Model name | Outdoor temperature zone | Operating rotation number |
|--------------------------|--------------------------|---------------------------|
| ASUH09KMAS ASUH12KMAS | X zone | 18 |
| | J zone | 16 |
| | Y zone | 0 |

- **Compressor control based on room temperature**



1-4. Rotation number of compressor at normal start-up

Rotation number of compressor soon after starting is controlled as below.



| Rotation number (rps) | I | II | III | IV | V | VI | VII |
|-----------------------|----|-----|-----|-----|-----|-----|-----|
| | 45 | 56 | 68 | 77 | 84 | 93 | 103 |
| Time (sec) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | 60 | 140 | 170 | 220 | 280 | 360 | 430 |

1-5. Limitation of compressor rotation number by outdoor temperature

The minimum rotation number of compressor is limited by outdoor temperature as below.

- **Cooling/Dry mode**

| | |
|-------------------|--------|
| 100.4°F (38°C) | F zone |
| 66.2°F (19°C) | E zone |
| 50.0°F (10°C) | D zone |
| 32.0°F (0°C) | C zone |
| 14.0°F (-10°C) | B zone |
| | A zone |

| Model name | Outdoor temperature zone | Limitation of compressor rotation number |
|----------------------------|--------------------------|--|
| AOUH09KMAS1 AOUH12KMAS1 | A zone | 36 rps |
| | B zone | 36 rps |
| | C zone | 28 rps |
| | D zone | 1 rps |
| | E zone | 1 rps |
| | F zone | 20 rps |

- **Heating mode**

| | |
|--------------------|--------|
| 66.2°F (19°C) | F zone |
| 41.0°F (5°C) | E zone |
| 32.0°F (0°C) | D zone |
| 5.0°F (-15°C) | C zone |
| -13.0°F (-25°C) | B zone |
| | A zone |

| Model name | Outdoor temperature zone | Limitation of compressor rotation number |
|----------------------------|--------------------------|--|
| AOUH09KMAS1 AOUH12KMAS1 | A zone | 25 rps |
| | B zone | 25 rps |
| | C zone | 17 rps |
| | D zone | 14 rps |
| | E zone | 14 rps |
| | F zone | 1 rps |

2. Auto changeover operation

When the air conditioner is set to AUTO mode by remote controller, operation starts in the optimum mode from among heating, cooling, dry and monitoring modes. During operation, the optimum mode is automatically switched in accordance with temperature changes. The temperature can be set between 64.4°F (18°C) and 86.0°F (30°C) in 1.8°F (1.0°C) steps.

- When operation starts, indoor fan and outdoor fan are operated for around 1 minute. Room temperature and outdoor temperature are sensed, and the operation mode is selected in accordance with the table below.

| Room temperature | Operation mode |
|---|----------------|
| $T_r > T_s + 3.6^{\circ}\text{F} (2^{\circ}\text{C})$ | Cooling |
| $T_s + 3.6^{\circ}\text{F} (2^{\circ}\text{C}) \geq T_r \geq T_s - 3.6^{\circ}\text{F} (2^{\circ}\text{C})$ | Middle zone |
| $T_r < T_s - 3.6^{\circ}\text{F} (2^{\circ}\text{C})$ | Heating |

Tr: Room temperature

Ts: Setting temperature

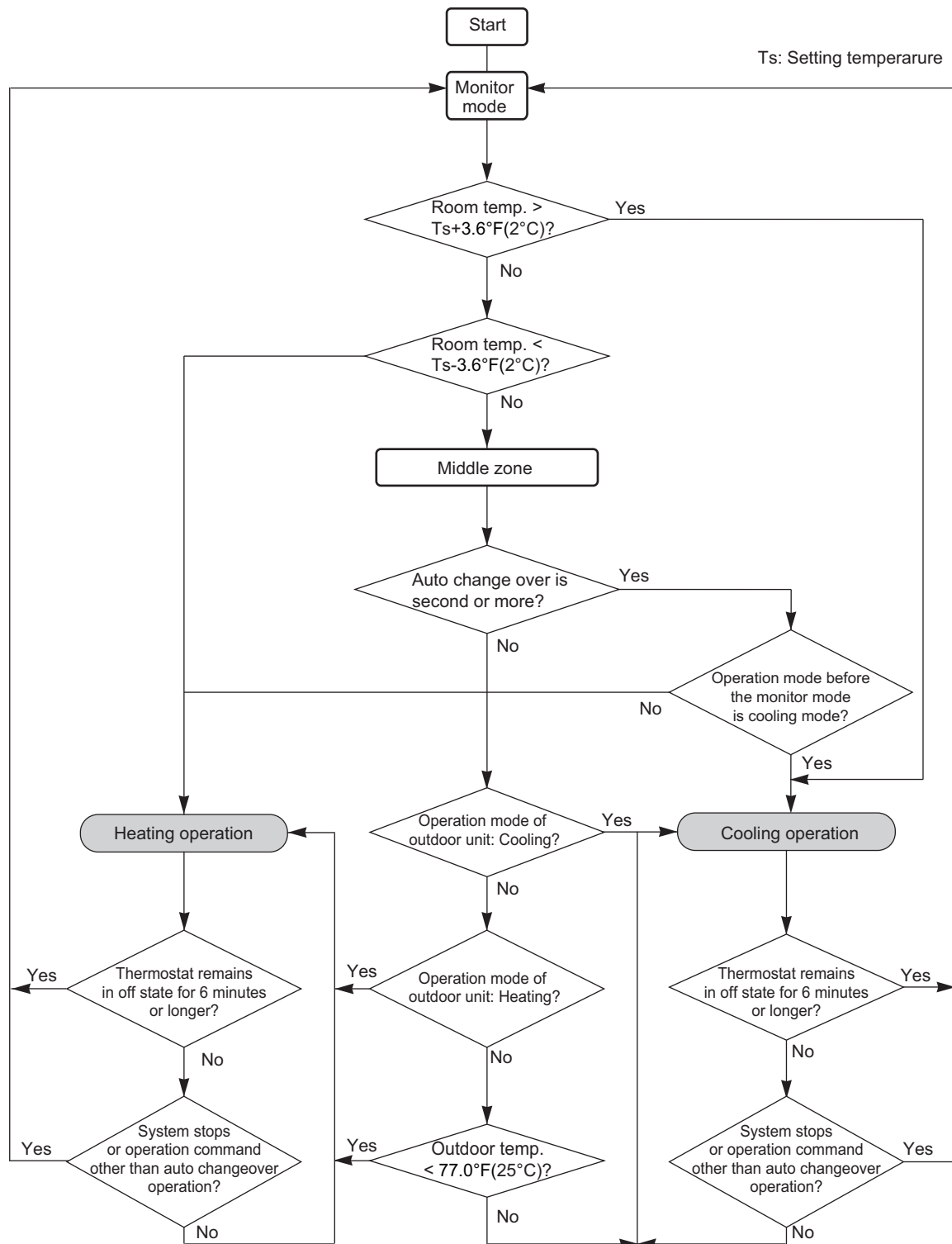
NOTE: When the operation mode is middle zone, indoor unit operation mode is selected as below.

- Same operation mode is selected as outdoor unit.
If outdoor unit is operating in cooling and heating mode, indoor unit will be operated by the same operation mode.
- Selected by outdoor temperature.
If outdoor unit is operating in other than cooling and heating mode, indoor unit will be operated according to the outdoor temperature as below.

| Outdoor temp. | Operation mode |
|-------------------------|----------------|
| 77.0°F (25°C) or more | Cooling |
| Less than 77.0°F (25°C) | Heating |

- When the compressor was stopped for 6 consecutive minutes by temperature control function after the cooling or heating mode was selected as above, operation is switched to monitoring mode and the operation mode selection is done again.
- When the middle zone is selected on the predetermining of the operation mode, the operation mode before the changing to the monitoring mode is selected.

Operation flow chart



CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

3. Fan control

Tr: Room temperature

Ts: Setting temperature

3-1. Indoor fan control

■ Fan speed

Indoor fan speed is defined as below.

| Operation mode | Fan mode | Speed (rpm) |
|----------------|---------------------|----------------------------|
| Heating | POWERFUL | 1,290 |
| | HIGH | 1,220 |
| | MED | 1,060 |
| | LOW | 900 |
| | QUIET | 630 |
| | Cool air prevention | 550 |
| | S-LOW | 470 |
| Cooling/Fan | POWERFUL | 1,200 |
| | HIGH | 1,130 |
| | MED | 950 |
| | LOW | 790 |
| | QUIET | 550 |
| | Soft quiet | 490* ¹ |
| | S-LOW | 470* ² |
| Dry | | X zone: 550 J zone: 550 |

*1: Fan mode only

*2: Cooling mode only

■ Fan operation

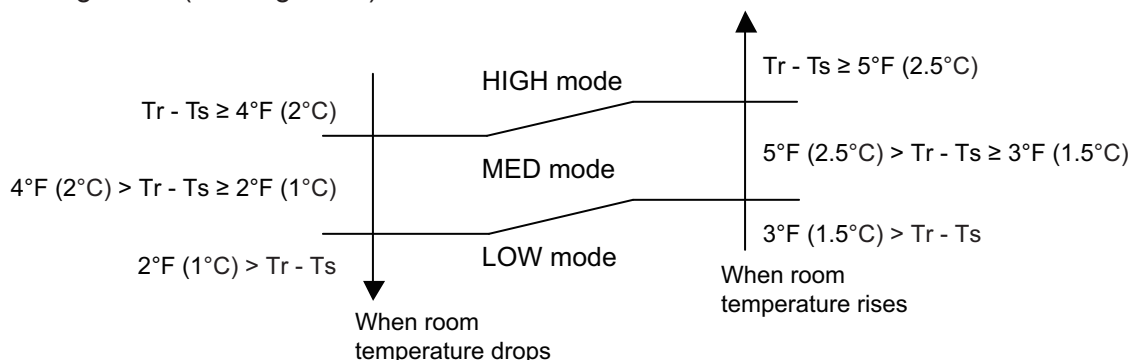
Airflow can be switched in 5 steps such as AUTO, QUIET, LOW, MED, HIGH while indoor unit fan only runs.

When fan mode is set at AUTO, it operates on MED fan speed.

Cooling operation

Switch the airflow AUTO, and indoor fan motor will run according to room temperature, as below.
On the other hand, if switched in HIGH—QUIET, indoor motor will run at a constant airflow of COOL operation modes QUIET, LOW, MED, HIGH as shown in “Fan speed” above.

Airflow change over (Cooling: Auto)



Dry operation

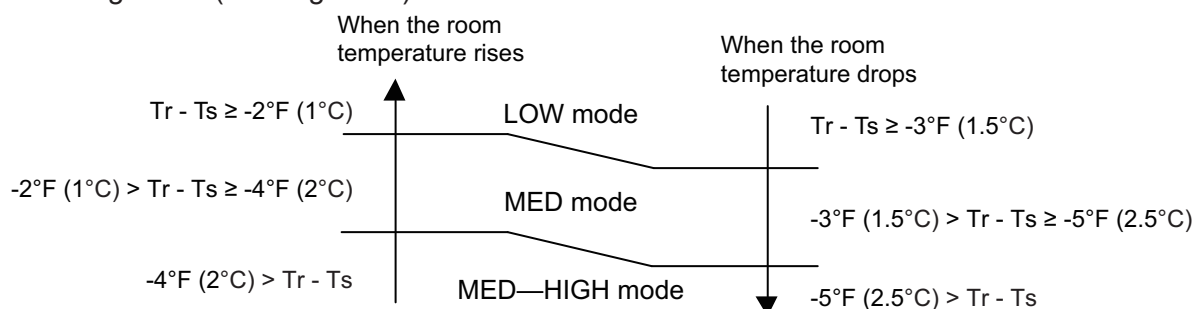
During dry operation, fan speed setting can not be changed as shown in “Fan speed” above.

Heating operation

Switch the airflow AUTO, and the indoor fan motor will run according to a room temperature, as below.

On the other hand, if switched in HIGH—QUIET, the indoor motor will run at a constant airflow of HEAT operation modes QUIET, LOW, MED, HIGH as shown in “Fan speed” above.

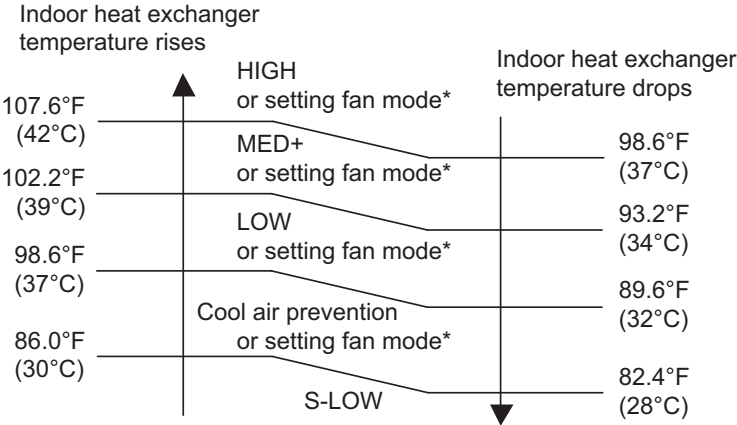
Airflow change over (Heating: Auto)



■ Cool air prevention control (heating mode)

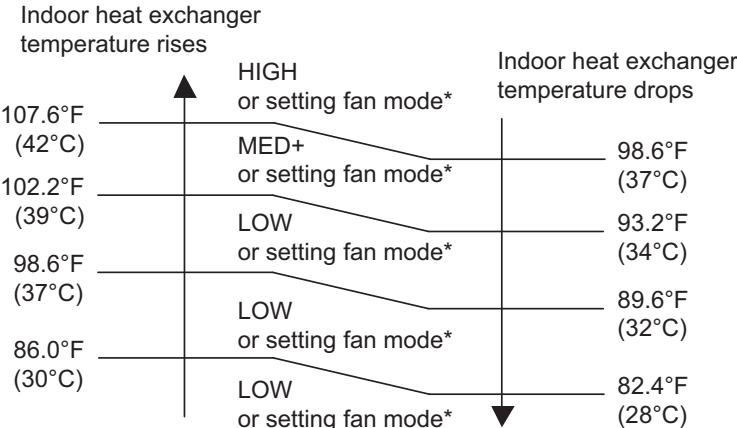
The maximum value of the indoor fan speed is set as shown below, based on the detected temperature by the indoor heat exchanger sensor on heating mode.

• Normal operation



*: Lower speed is selected.

7 minutes later:

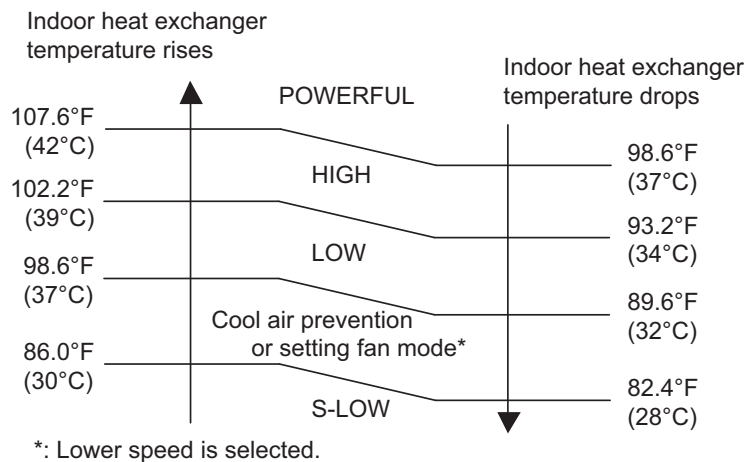


*: Lower speed is selected.

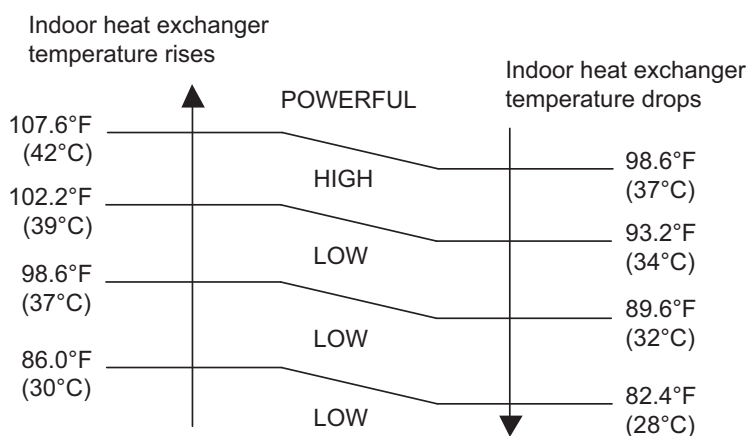
CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

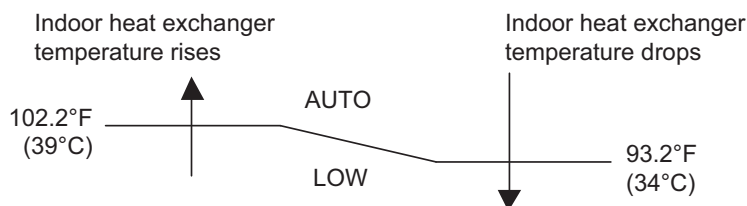
- **Powerful operation**



7 minutes later:

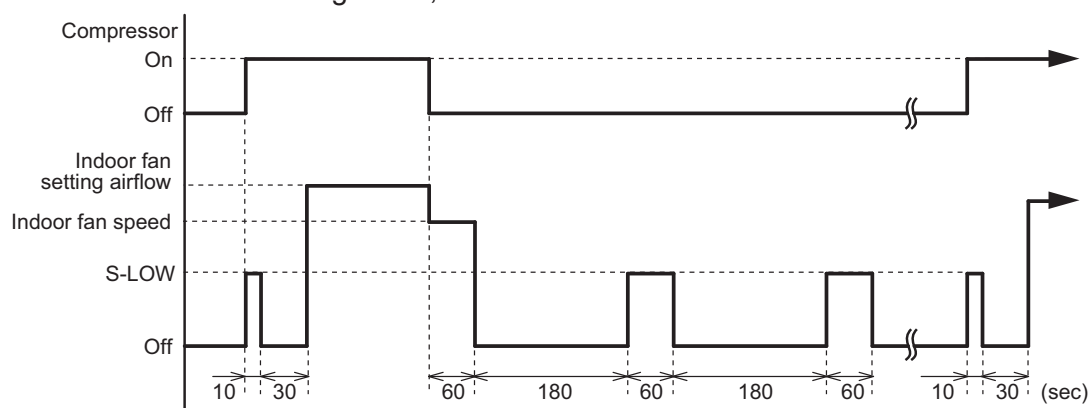


- **MIN. HEAT operation**



■ Moisture return prevention control (cooling and dry mode)

Switch the airflow AUTO at cooling mode, and the indoor fan motor will run as shown below.



3-2. Outdoor fan control

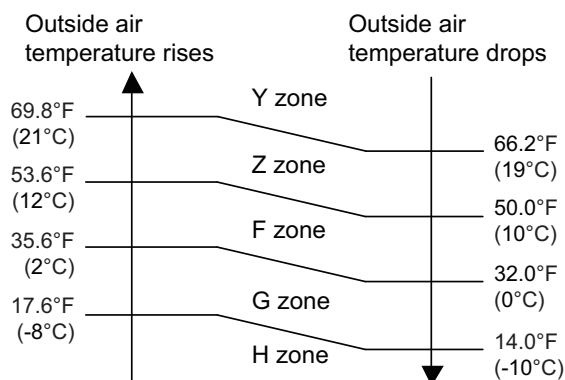
■ Outdoor fan motor

This outdoor unit has a DC fan motor. (Control method is different between AC and DC motors.)

■ Fan speed

Fan speed is defined by outdoor temperature and compressor frequency.

- **Outside air temperature zone selection**



Unit: rpm

| Fan step | Cooling | Heating | Dry | Cooling or dry at low outdoor temp. | | | |
|----------|---------|---------|--------|-------------------------------------|--------|--------|--------|
| | Y zone | | Y zone | Z zone | F zone | G zone | H zone |
| S-HIGH2 | — | 1,120 | — | — | — | — | — |
| S-HIGH1 | 990 | 1,120 | — | — | — | — | — |
| HIGH | 990 | 1,120 | — | — | — | — | — |
| 10 | — | 940 | — | — | — | — | — |
| 9 | 990 | 940 | 990 | 990 | 990 | 990 | 990 |
| 8 | 920 | 940 | 780 | 630 | 300 | 280 | 280 |
| 7 | 920 | 940 | 780 | 630 | 300 | 280 | 280 |
| 6 | 920 | 800 | 780 | 630 | 300 | 280 | 280 |
| 5 | 810 | 740 | 760 | 610 | 270 | 250 | 250 |
| 4 | 810 | 690 | 630 | 450 | 240 | 220 | 220 |
| 3 | 670 | 500 | 490 | 310 | 220 | 200 | 200 |
| 2 | 570 | 500 | 390 | 200 | 220 | 200 | 200 |
| 1 | 520 | 500 | 360 | 200 | 200 | 200 | 200 |

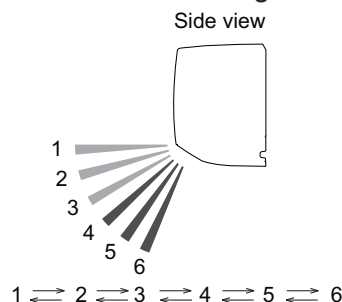
NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.

Fan speed after defrost control: 1,120 rpm

4. Louver control

4-1. Horizontal louver control

Each time the button is pressed, the airflow direction range will change as below:



- Remote controller display is not changed.
- Up/down airflow direction is set automatically as shown, in accordance with the type of operation selected.

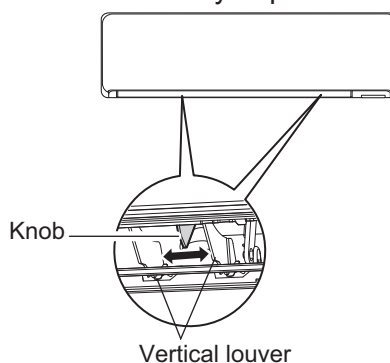
Cooling / Dry mode : Horizontal flow 1

Heating mode : Downward flow 6

- During AUTO operation, for the first a few minutes after beginning operation, airflow will be horizontal 1; the air direction cannot be adjusted during this period. The airflow direction setting will temporarily become 1 when the temperature of the airflow is low at the start of the Heating mode.
- After beginning of AUTO/HEAT mode operated and automatic defrosting operation, the airflow will be horizontal 1. However, the airflow direction cannot be adjusted at beginning AUTO operation mode.

4-2. Vertical louver adjustment

Move the vertical louvers to adjust airflow direction you prefer.



4-3. Swing operation

- To select up/down airflow swing operation
When the swing signal is received, the horizontal louver starts to swing.
 - Swinging range
 - Cooling mode/dry mode/fan mode (1 to 3): 1 ↔ 4
 - Heating mode/fan mode (4 to 6): 3 ↔ 6
 - When the indoor fan is S-LOW or stop mode, the swing operation is interrupted and it stops at either upper end or bottom end.
- To select left/right airflow swing operation
No function

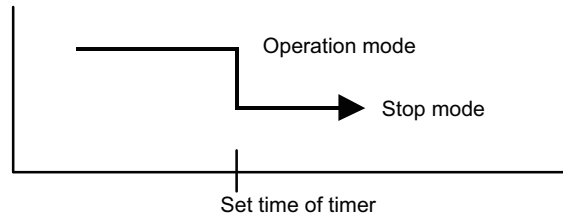
5. Timer operation control

5-1. Wireless remote control

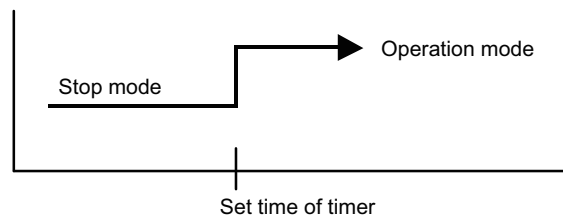
| On/Off timer | Program timer | Sleep timer | Weekly timer |
|--------------|---------------|-------------|--------------|
| ○ | ○ | ○ | — |

■ On/Off timer

- Off timer: When the clock reaches the set timer, the air conditioner will be turned off.

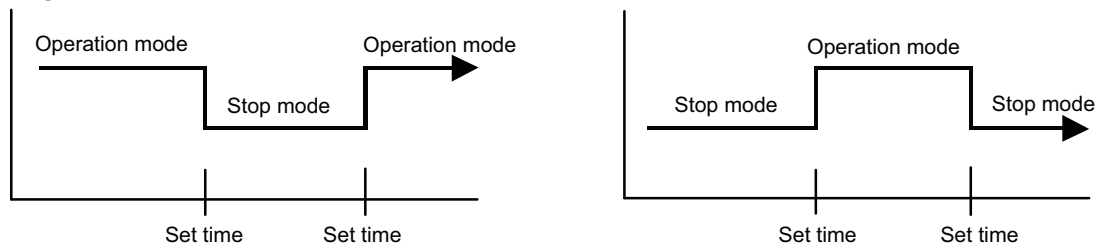


- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



■ Program timer

- The program timer allows the off timer and the on timer to be used in combination one time.



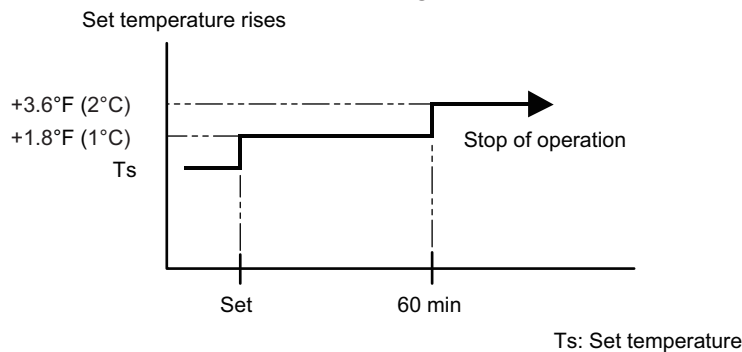
- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

■ Sleep timer

If the sleep timer is set, the room temperature is monitored and the operation is stopped automatically. If the operation mode or the set temperature is change after the sleep timer is set, the operation is continued according to the changed setting of the sleep timer from that time on.

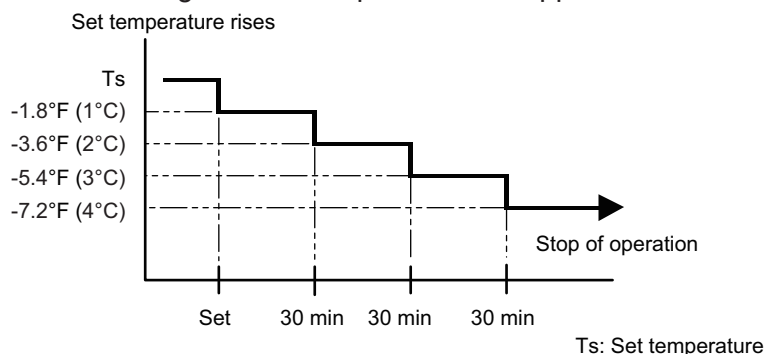
- In the cooling operation mode

When the sleep timer is set, the setting temperature is increased 1.8°F (1°C). It increases the setting temperature another 1.8°F (1°C) after 1 hour. After that, the setting temperature is not changed and the operation is stopped at the setting time.



- In the heating operation mode

When the sleep timer is set, the setting temperature is decreased 1.8°F (1°C). It decreases the setting temperature another 1.8°F (1°C) every 30 minutes. Upon lowering 7.2°F (4°C), the setting temperature is not changed and the operation is stopped at the setting time.



5-2. Wired remote control

For details of timer control for wired remote controller, refer to *Operating Manual* for each controller.

6. Defrost operation control

Tn: Outdoor unit heat exchanger temperature

Ta: Outdoor temperature

Tn10: Temperature at 10 minutes after compressor start

Tnb: Temperature before 5 minutes

• Triggering condition

The defrost operation starts when outdoor unit heat exchanger temperature sensor detects the temperature lower than the values shown below.

– 1st time defrosting after starting operation

| Compressor integrating operation time | Less than 17 min. | 17 to 57 min. | More than 57 min. |
|---------------------------------------|-------------------|---|--|
| Condition | Does not operate | $T_n \leq 15.8^{\circ}\text{F} (-9^{\circ}\text{C})$ and $T_n - T_a \geq 9.0^{\circ}\text{F} (5^{\circ}\text{C})$ | $T_n \leq 23.0^{\circ}\text{F} (-5^{\circ}\text{C})$ |

– 2nd time and after

| Compressor integrating operation time | Less than 40 min. | More than 40 min. |
|---------------------------------------|-------------------|---|
| Condition | Does not operate | $T_n - T_{n10} < -9.0^{\circ}\text{F} (-5^{\circ}\text{C})$ ($T_n \leq 21.2^{\circ}\text{F} [-6^{\circ}\text{C}]$) $T_n - T_{nb} < -3.6^{\circ}\text{F} (-2^{\circ}\text{C})$ ($T_n \leq 21.2^{\circ}\text{F} [-6^{\circ}\text{C}]$) $T_n \leq 1.4^{\circ}\text{F} (-17^{\circ}\text{C})$ ($T_a \geq 14.0^{\circ}\text{F} [-10^{\circ}\text{C}]$) $T_n \leq 19.4^{\circ}\text{F} (-7^{\circ}\text{C})$ or $T_n \leq -4.0^{\circ}\text{F} (-20^{\circ}\text{C})$ ($T_a < 14.0^{\circ}\text{F} [-10^{\circ}\text{C}]$) |

– Integrating defrost (Constant monitoring)

| Compressor integrating operation time | More than 240 min. (For long continuous operation) | More than 215 min. (For long continuous operation) | Less than 10 min.* (For intermittent operation) |
|---------------------------------------|--|--|---|
| Condition | $T_n \leq 26.6^{\circ}\text{F} (-3^{\circ}\text{C})$ | $T_n \leq 23.0^{\circ}\text{F} (-5^{\circ}\text{C})$ | Count of the compressor off: 40 times |

*: If the compressor continuous operation time is less than 10 minutes, the number of the compressor off is counted. If any defrost operated, the compressor off count is cleared.

• Release condition

The defrost operation is released when either one of the conditions below is satisfied.

| | |
|--|-----------------------|
| Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start) | 60.8°F (16°C) or more |
| Compressor operation time | 15 minutes |

6-1. Defrost operation in heating operation stopped

If the outdoor unit is frosted when stopping the heating operation, it stops after performing the automatic defrosting operation.

In this time, if the indoor unit operation lamp flashes slowly (6 sec on/2 sec off), the outdoor unit allow the heat exchanger to defrost, and then stop.

• Triggering condition

When all of the following conditions are satisfied in heating operation

- Compressor operation integrating time: 30 minutes or more
- Compressor continuous operation time: 10 minutes or more
- Outdoor unit heat exchanger temperature: 24.8°F (-4°C) or less

• Release condition

The defrost operation is released when either one of the conditions below is satisfied.

| | |
|---|-----------------------|
| Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start) | 60.8°F (16°C) or more |
| Compressor operation time | 15 minutes |

7. Various control

7-1. Auto restart

When the power was interrupted by a power failure etc. during operation, the operation contents at that time are memorized and when the power is recovered, operation is automatically started with the memorized operation contents.

| Operation contents memorized when the power is interrupted | |
|---|--|
| Operation mode | |
| Setting temperature | |
| Fan mode setting | |
| Timer mode and set time (set by wireless remote controller) | |
| Airflow direction setting | |
| Swing | |
| ECONOMY operation | |
| MIN. HEAT operation | |
| Remote control setting | |
| WLAN indicator lamp setting | |

7-2. MANUAL AUTO operation

When the wireless remote controller is lost or battery power dissipated, this function will work without the remote controller.

When MANUAL AUTO button is pressed more than 3 seconds and less than 10 seconds, MANUAL AUTO operation starts as shown in the table below. To stop operation, press the MANUAL AUTO button for 3 seconds.

| | |
|---------------------------|---|
| Operation mode | Auto changeover |
| Fan mode | AUTO |
| Timer mode | Continuous (no timer setting available) |
| Setting temperature | 75.2°F (24°C) |
| Horizontal louver setting | Standard |
| SWING | Off |
| ECONOMY | Off |

7-3. Forced cooling operation

The outdoor unit may not operate depending on the room temperature.

When FORCED COOLING OPERATION button is pressed more than 10 seconds, forced cooling operation starts as shown in the table below.

| | |
|---------------------------|---|
| Operation mode | Cooling |
| Fan mode | HIGH |
| Timer mode | Continuous (no timer setting available) |
| Setting temperature | 75.2°F (24°C) |
| Horizontal louver setting | Standard |
| Vertical louver setting | According to memory position |
| SWING | Off |
| ECONOMY | Off |

- During the forced cooling operation, it operates regardless of room temperature sensor.
- The operation indicator lamp and the timer indicator lamp blink simultaneously during the forced cooling operation.
They blink for 1 second ON and 1 second OFF on both the operation indicator lamp and the timer indicator lamp (same as test operation).

By performing one of the following action, test operation will be canceled:

- Pressing the remote controller START/STOP button
- Pressing FORCED COOLING OPERATION button for 3 seconds
- 60 minutes passed after starting forced cooling operation

NOTE: When HEAT operation is selected on the remote controller during forced cooling operation, heating test run will begin in about 3 minutes.

7-4. MIN. HEAT operation

MIN. HEAT operation performs as below setting when pressing MIN. HEAT button.

| | |
|---------------------|-------------------|
| Operation mode | Heating |
| Setting temperature | 50°F (10°C) |
| Fan mode | AUTO |
| LED display | Economy |
| Defrost operation | Operate as normal |

7-5. ECONOMY operation

The ECONOMY operation starts by pressing ECONOMY button on the remote controller.

The ECONOMY operation is almost the same operation as below settings.

| Mode | Cooling/Dry | Heating |
|--------------------|--------------------------------|--------------------------------|
| Target temperature | Setting temperature +2°F (1°C) | Setting temperature -2°F (1°C) |

7-6. POWERFUL operation

The POWERFUL operation starts by pressing POWERFUL button on the remote controller. The indoor unit and outdoor unit operate at maximum power as shown in the table below.

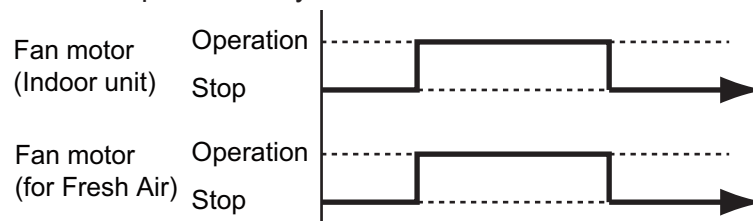
| Rotation number of compressor | | Maximum |
|---|---------|----------|
| Fan mode | | POWERFUL |
| Vertical airflow direction louver setting | Cooling | 3 |
| | Dry | |
| | Heating | 6 |

Release condition:

- Cooling/Dry
Room temperature \leq Setting temperature -1°F (-0.5°C) or Operation time has passed 20 minutes.
- Heating
Room temperature \geq Setting temperature $+1^{\circ}\text{F}$ ($+0.5^{\circ}\text{C}$) or Operation time has passed 20 minutes.

7-7. Fresh air control

The fan motor for Fresh Air is operated in synchronization with the indoor fan operation as below.



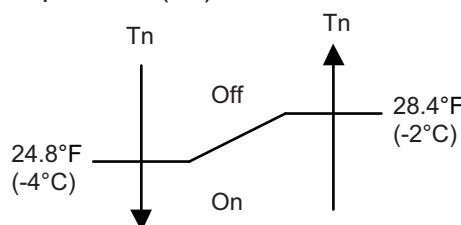
7-8. Compressor preheating operation

⚠ CAUTION

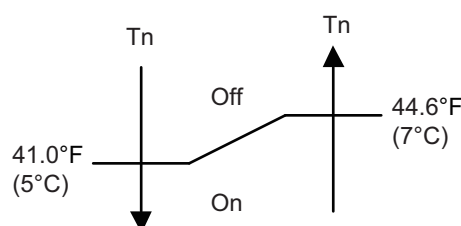
To perform the preheat operation, turn on the power for the outdoor unit at least 12 hours before the operation. Especially in cold climate regions, the compressor may fail if the outdoor unit is on for less than 12 hours.

Compressor preheating operation prevents the damage caused by the refrigerant in the compressor from soaking into the oil. By preheating the compressor, warm airflow is quickly discharged when the operation is started.

- **Triggering condition**
 - 30 minutes after compressor stopped.
 - Outdoor unit heat exchanger temperature (T_n)

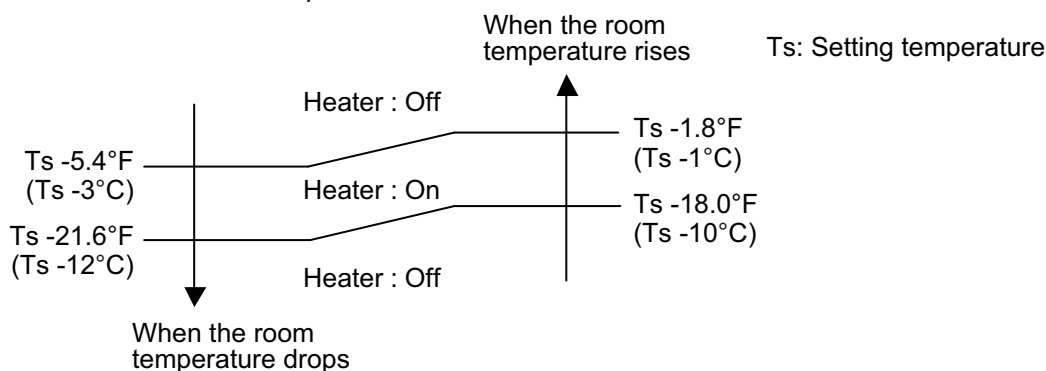


When the jumper wire (JM2) is disconnected:



7-9. External electrical heater control

The external electrical heater is operated as below.



NOTES:

- When the compressor stop, external electric heater is off.
- It operates only in heating mode and when the indoor fan operates. (However, S-LOW is excluded.)

7-10. Electronic expansion valve control

The most proper opening of the electronic expansion valve is calculated and controlled under the present operating condition based on the table below.

| Operation mode | Pulse range |
|------------------|---------------------------|
| Cooling/dry mode | Between 52 and 480 pulses |
| Heating mode | |

NOTE: At the time of supplying the power to the outdoor unit, the initialization of the electronic expansion valve is operated (528 pulses are input to the closing direction).

7-11. Prevention to restart for 3 minutes (3 minutes st)

When the compressor fails to start for the number of times below, it does not enter operation status for 3 minutes.

| | |
|------------------|----|
| Retry number | 50 |
| Retry set number | 3 |

When the compressor fails to start in the retry set number above, the compressor is stopped.

7-12. 4-way valve control

- If heating mode is selected at the compressor start, 4-way valve is energized for heating.
- When the air conditioner is switched between cooling and heating mode, compressor is stopped, and the 4-way valve is switched when the 140 seconds passes and the compressor is started.

7-13. Unit status monitoring and the detected value indication

The wired remote controller can monitor the indoor and outdoor units' status and display the detected result as a relevant ID.

For details of the display method, refer to the Chapter of "Display Sensor Values" in the *Installation Manual* of Wired Remote Controller (Touch Panel).

The status can be monitored and displayed on the wired remote controller by assigning an arbitrary ID. For available ID list, refer to the table below.

NOTE: Operating time for each part cannot be reset when the part is replaced. Take notes of the operating time before replacing to count the operating time of the replaced part.

| Available Sensor ID | | | | |
|------------------------|-----|---|--------------|---|
| Sensor ID | | Item | Unit | Remarks |
| 00: Indoor unit | | | | |
| 00 | 000 | Suction temp. | 01: °F or °C | |
| 00 | 001 | Room temp. | 01: °F or °C | When the wired remote controller thermistor is enabled, temperature of the wired remote controller thermistor is displayed. |
| 00 | 002 | Wired remote controller detected temp. | 01: °F or °C | |
| 00 | 006 | Heat exchanger middle temp. | 01: °F or °C | |
| 00 | 020 | Fan rotation number | 03: rpm | |
| 00 | 080 | Indoor unit total energized hours | 11: h | |
| 00 | 081 | Total filtering hours | 11: h | |
| 00 | 082 | Indoor unit fan total operation hours | 11: h | |
| 00 | 140 | Operation or Stop (External input) | 00: — | 0: Off, 1: On —: When the function setting 46 is not set NOTE: Available only for external input port of the indoor unit |
| 00 | 142 | Forced stop (External input) | 00: — | 0: Off, 1: On —: When the function setting 46 is not set NOTE: Available only for external input port of the indoor unit |
| 00 | 143 | Operation or Stop 2 (External input) | 00: — | 0: Off, 1: On —: When the function setting 46 is not set NOTE: Available only for external input port of the indoor unit |
| 00 | 155 | Operation or Stop On/Off (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 00 | 156 | Error On/Off (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 00 | 157 | Indoor unit fan interlocking On/Off (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 00 | 158 | Cooling thermostat On/Off (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |

| Available Sensor ID | | | | |
|-------------------------|-----|--|-------------------------|---|
| Sensor ID | | Item | Unit | Remarks |
| 00 | 159 | Requested cooling strength On/Off (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 00 | 160 | External heater On/Off (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 00 | 161 | Heating operation status (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 00 | 162 | External output command by remote controller (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 00 | 163 | Set-point temp. not reached in server room function On/Off (External output) | 00: — | 0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set. |
| 01: Outdoor unit | | | | |
| 01 | 001 | Discharge temp. | 01: °F or °C | |
| 01 | 003 | Heat exchanger middle temp. | 01: °F or °C | |
| 01 | 004 | Heat exchanger outlet temp. | 01: °F or °C | |
| 01 | 007 | Compressor temp. | 01: °F or °C | |
| 01 | 042 | Gas pipe pressure for outdoor unit | 02: MPa | |
| 01 | 050 | Fan 1 rotation number | 03: rpm | |
| 01 | 055 | Compressor rotation number | 04: rps | |
| 01 | 060 | Expansion valve (Upstream during heating) | 05: pls | |
| 01 | 080 | 4-way valve output status | 07: Cooling/ Heating | 0: Cooling, 1: Heating |
| 01 | 085 | Pressure switch (High pressure) | 08: On/Off | 0: Off (Close), 1: On (Open) |
| 01 | 100 | Operating current | 09: A | |
| 01 | 110 | Outdoor unit total power-on hours | 11: h | |
| 01 | 111 | Compressor total heating operation hours | 11: h | |
| 01 | 112 | Compressor total cooling operation hours | 11: h | |
| 01 | 113 | Compressor total operation hours | 11: h | |
| 01 | 114 | Outdoor unit fan 1 total operation hours | 11: h | |
| 01 | 145 | Outdoor low noise input (External input) | 00: — | 0: Off, 1: On |
| 01 | 146 | Outdoor peak cut (External input) | 00: — | 0: Off 1: Mode 4 (100%) 2: Mode 3 (75%) 3: Mode 2 (50%) 4: Mode 1 (Forced thermostat off) |
| 01 | 147 | Demand response (External input) | 00: — | 0: Normal, 1: DRM1, 2: DRM2, 3: DRM3 |
| 01 | 148 | Switching cooling and heating mode (External input) | 00: — | 0: Cooling, 1: Heating |
| 01 | 149 | Emergency stop (External input) | 00: — | 0: Off, 1: On |
| 01 | 155 | Compressor status (External output) | 00: — | 0: Off, 1: On |
| 01 | 156 | Error status (External output) | 00: — | 0: Off, 1: On |

8. Various protections

8-1. Discharge gas temperature over-rise prevention control

The discharge gas temperature sensor (discharge thermistor: outdoor unit side) detects the discharge gas temperature.

- When the discharge temperature becomes higher than the trigger condition, the compressor frequency is decreased as the table below, and it continues to decrease until the discharge temperature becomes lower than the trigger condition.
- When the discharge temperature becomes lower than the release condition, control of compressor frequency is released.
- When the discharge temperature becomes higher than the compressor protection temperature, the compressor is stopped and the indoor unit indicator lamp starts blinking.

| | |
|-----------------------------------|---------------------|
| Trigger condition | 219.2°F (104°C) |
| Rotation number of compressor | -20 rps/120 seconds |
| Release condition | 213.8°F (101°C) |
| Compressor protection temperature | 230.0°F (110°C) |

8-2. Anti-freezing control (cooling and dry mode)

The rotation number of compressor is decrease in cooling and dry mode when the indoor unit heat exchanger temperature sensor detects the temperature lower than the trigger condition.

When the indoor unit heat exchanger temperature reaches release condition, the anti-freezing control is stopped.

| | | |
|-------------------|--------------------------------------|---------------|
| Trigger condition | | 39.2°F (4°C) |
| Release condition | Outdoor temp. \geq 50°F (10°C)*1 | 44.6°F (7°C) |
| | Outdoor temp. \geq 53.6°F (12°C)*2 | |
| | Outdoor temp. $<$ 50°F (10°C)*1 | 55.4°F (13°C) |
| | Outdoor temp. $<$ 53.6°F (12°C)*2 | |

*1: During the outdoor temperature dropping

*2: During the outdoor temperature rising

8-3. Current release control

The rotation number of compressor is controlled so that the outdoor unit input current does not exceeds current limit value set according to the outdoor temperature.

The rotation number of compressor returns according to the operation mode, when the current becomes lower than the release value.

■ Model: AOUH09KMAS1

| Operation mode | Outdoor temp. (Ta) | Trigger condition | Release condition |
|----------------|--------------------------------------|-------------------|-------------------|
| Cooling | 122.0°F (50°C) ≤ Ta | 4.0 A | 3.5 A |
| | 114.8°F (46°C) ≤ Ta < 122.0°F (50°C) | 4.0 A | 3.5 A |
| | 104.0°F (40°C) ≤ Ta < 114.8°F (46°C) | 5.0 A | 4.5 A |
| | 53.6°F (12°C) ≤ Ta < 104.0°F (40°C) | 5.5 A | 5.0 A |
| | 35.6°F (2°C) ≤ Ta < 53.6°F (12°C) | 5.5 A | 5.0 A |
| | Ta < 35.6°F (2°C) | 5.5 A | 5.0 A |
| Heating | 62.6°F (17°C) ≤ Ta | 5.5 A | 5.0 A |
| | 53.6°F (12°C) ≤ Ta < 62.6°F (17°C) | 7.0 A | 6.5 A |
| | 41.0°F (5°C) ≤ Ta < 53.6°F (12°C) | 7.5 A | 7.0 A |
| | Ta < 41.0°F (5°C) | 8.5 A | 8.0 A |

■ Model: AOUH12KMAS1

| Operation mode | Outdoor temp. (Ta) | Trigger condition | Release condition |
|----------------|--------------------------------------|-------------------|-------------------|
| Cooling | 122.0°F (50°C) ≤ Ta | 4.0 A | 3.5 A |
| | 114.8°F (46°C) ≤ Ta < 122.0°F (50°C) | 4.0 A | 3.5 A |
| | 104.0°F (40°C) ≤ Ta < 114.8°F (46°C) | 5.0 A | 4.5 A |
| | 53.6°F (12°C) ≤ Ta < 104.0°F (40°C) | 6.0 A | 5.5 A |
| | 35.6°F (2°C) ≤ Ta < 53.6°F (12°C) | 6.0 A | 5.5 A |
| | Ta < 35.6°F (2°C) | 6.0 A | 5.5 A |
| Heating | 62.6°F (17°C) ≤ Ta | 5.5 A | 5.0 A |
| | 53.6°F (12°C) ≤ Ta < 62.6°F (17°C) | 7.0 A | 6.5 A |
| | 41.0°F (5°C) ≤ Ta < 53.6°F (12°C) | 7.5 A | 7.0 A |
| | Ta < 41.0°F (5°C) | 8.5 A | 8.0 A |

8-4. Cooling pressure over-rise protection

When the outdoor unit heat exchanger temperature reaches trigger condition below, the compressor is stopped and trouble display is performed.

| | |
|-------------------|----------------|
| Trigger condition | 149.0°F (65°C) |
|-------------------|----------------|

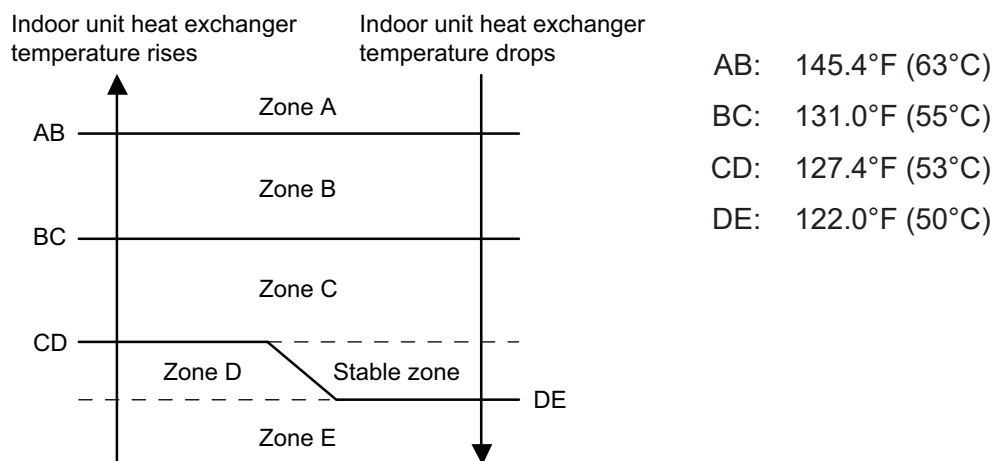
8-5. Low outdoor temperature protection

When the outdoor temperature sensor detects lower than the trigger condition below, the compressor is stopped.

| | |
|-------------------|--------------|
| Operation mode | Cooling/Dry |
| Trigger condition | 5°F (-15°C) |
| Release condition | 14°F (-10°C) |

8-6. High temperature and high pressure release control

The compressor is controlled as follows.



| Zone | Operation | |
|--------|--|------------------|
| Zone A | Compressor is stopped. | |
| Zone B | The rotation number of compressor is decreased. | -25 rps/120 sec. |
| Zone C | | -3 rps/60 sec. |
| Zone D | The protection is released and the operation is returned to normal mode. | |
| Zone E | | |

5. FIELD WORKING

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5. FIELD WORKING

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1. Function settings

To adjust the functions of this product according to the installation environment, various types of function settings are available.

NOTE: Incorrect settings can cause a product malfunction.

1-1. Function settings by using remote controller

Some function settings can be changed on the remote controller. After confirming the setting procedure and the content of each function setting, select appropriate functions for your installation environment.

■ Setting procedure by using wireless remote controller

The function number and the associated setting value are displayed on the LCD of the remote controller. Follow the instructions written in the local setup procedure supplied with the remote controller, and select appropriate setting according to the installation environment.

Before connecting the power supply of the indoor unit, reconfirm following items:

- Cover for the electrical enclosure on the outdoor unit is in place.
- There is no wiring mistake.
- Piping air tightness test and vacuuming have been performed firmly.
- All the necessary wiring work for outdoor unit has been finished.

After reconfirming the items listed above, connect the power supply of the indoor unit.

NOTES:

- Settings will not be changed if invalid numbers or setting values are selected.
- When optional wired remote controller is used, refer to the installation manual enclosed with the remote controller.

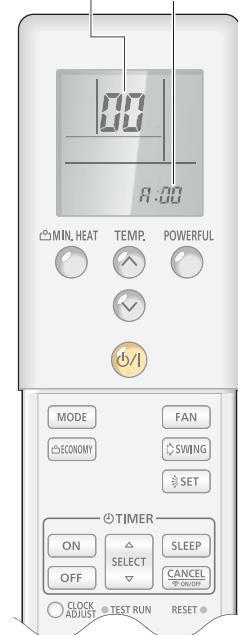
Entering function setting mode:

While pressing the POWERFUL button and TEMP. (Λ) button simultaneously, press the RESET button to enter the function setting mode.

Selecting the function number and setting value:

1. Press the MIN. HEAT button. TEMP. (Λ) (∇) buttons to select the function number. Press the MIN. HEAT button to switch between the left and right digits.
2. Press the POWERFUL button to proceed to value setting. To return the function number selection, press the POWERFUL button again.
3. Press the TEMP. (Λ) (∇) buttons to select the setting value. To switch between the left and right digits, press the MIN. HEAT button.
4. Press the MODE button once. Confirm that you hear the beep.
5. Press the START/STOP button to fix the function setting. Confirm that you hear the beep.
6. Press the RESET button to end the function setting mode.
7. After completing the function setting, be sure to disconnect the power supply and then reconnect it.

Function number
Setting value



⚠ CAUTION

After disconnecting the power supply, wait 30 seconds or more before reconnecting it. The function setting will not become active unless the power supply is disconnected and then reconnected.

NOTES:

- The air conditioner custom code is set to \overline{H} prior to shipment.
- If you do not know the air conditioner custom code setting, try each of the custom codes ($\overline{H} \rightarrow \overline{b} \rightarrow \overline{c} \rightarrow \overline{d}$) until you find the code that operates the air conditioner.

■ Contents of function setting

Each function setting listed in this section is adjustable in accordance with the installation environment.

NOTE: Setting will not be changed if invalid numbers or setting values are selected.

● Function setting list

| | Function no. | Functions |
|-----|--------------|---|
| 1) | 11 | Filter sign |
| 2) | 30/31 | Room temperature control for indoor unit sensor |
| 3) | 35/36 | Room temperature control for wired remote controller sensor |
| 4) | 40 | Auto restart |
| 5) | 42 | Room temperature sensor switching |
| 6) | 44 | Remote controller custom code |
| 7) | 46 | External input control |
| 8) | 48 | Room temperature sensor switching (Aux.) |
| 9) | 49 | Indoor unit fan control for energy saving for cooling |
| 10) | 60 | Switching functions for external output terminal |
| 11) | 61 | Control switching of external heaters |
| 12) | 62 | Operating temperature switching of external heaters |
| 13) | 66 | Outdoor temperature zone boundary temperature A |
| 14) | 67 | Outdoor temperature zone boundary temperature B |
| 15) | 71 | Standby time for auxiliary equipment operation |
| 16) | 72 | Heat pump backup setting |
| 17) | 73 | Emergency heat for external output terminal |
| 18) | 94 | Fixed operation mode switching |
| 19) | 95 | Heat insulation condition (building insulation) |

1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.

If the indication is not required, select "No indication" (03).

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|-----------------------------|-----------------|
| 11 | 00 | Standard (400 hours) | |
| | 01 | Long interval (1,000 hours) | |
| | 02 | Short interval (200 hours) | |
| | 03 | No indication | ◆ |

2) Room temperature control for indoor unit sensor

NOTE: Before performing this setting, refer to Function 95.

Depending on the installed environment, correction of the room temperature sensor may be required. Select the appropriate control setting according to the installed environment.

The temperature of the room temperature sensor is corrected as follows:

Corrected temp. = Temp. of the room temp. sensor - Correction temp. value

Example of correction:

When the temperature of the room temp. sensor is 78°F and the setting value is "03" (-2°F), the corrected temp. will be 80°F (78°F - [-2°F]).

The temperature correction values show the difference from the Standard setting "00" (manufacturer's recommended value).

*When Function 95-01 (High insulation) is set, the Standard setting "00" will be the same as "No correction 0.0°F (0.0°C)" (01).

| Function number | | Setting value | Setting description | | Factory setting |
|---------------------|---------------------|---------------|-----------------------------|------------------------------|-----------------|
| 30 (For cooling) | 31 (For heating) | 00 | Standard setting* | | ◆ |
| | | 01 | No correction 0.0°F (0.0°C) | | |
| | | 02 | -1°F (-0.5°C) | More cooling Less heating | |
| | | 03 | -2°F (-1.0°C) | | |
| | | 04 | -3°F (-1.5°C) | | |
| | | 05 | -4°F (-2.0°C) | | |
| | | 06 | -5°F (-2.5°C) | | |
| | | 07 | -6°F (-3.0°C) | | |
| | | 08 | -7°F (-3.5°C) | | |
| | | 09 | -8°F (-4.0°C) | | |
| | | 10 | +1°F (+0.5°C) | Less cooling More heating | |
| | | 11 | +2°F (+1.0°C) | | |
| | | 12 | +3°F (+1.5°C) | | |
| | | 13 | +4°F (+2.0°C) | | |
| | | 14 | +5°F (+2.5°C) | | |
| | | 15 | +6°F (+3.0°C) | | |
| | | 16 | +7°F (+3.5°C) | | |
| | | 17 | +8°F (+4.0°C) | | |

3) Room temperature control for wired remote controller sensor

NOTE: Before performing this setting, refer to Function 95.

Depending on the installed environment, correction of the wire remote temperature sensor may be required. Select the appropriate control setting according to the installed environment.

To change this setting, set Function 42 to “Both” (01).

Ensure that the Thermo Sensor icon is displayed on the remote controller screen.

*When Function 95-01 (High insulation) is set, the Standard setting “00” will be the same as “No correction 0.0°C” (01).

| Function number | | Setting value | Setting description | Factory setting |
|---------------------|---------------------|---------------|-----------------------------|------------------------------|
| 35 (For cooling) | 36 (For heating) | 00 | Standard setting* | ◆ |
| | | 01 | No correction 0.0°F (0.0°C) | |
| | | 02 | -1°F (-0.5°C) | More cooling Less heating |
| | | 03 | -2°F (-1.0°C) | |
| | | 04 | -3°F (-1.5°C) | |
| | | 05 | -4°F (-2.0°C) | |
| | | 06 | -5°F (-2.5°C) | |
| | | 07 | -6°F (-3.0°C) | |
| | | 08 | -7°F (-3.5°C) | |
| | | 09 | -8°F (-4.0°C) | |
| | | 10 | +1°F (+0.5°C) | Less cooling More heating |
| | | 11 | +2°F (+1.0°C) | |
| | | 12 | +3°F (+1.5°C) | |
| | | 13 | +4°F (+2.0°C) | |
| | | 14 | +5°F (+2.5°C) | |
| | | 15 | +6°F (+3.0°C) | |
| | | 16 | +7°F (+3.5°C) | |
| | | 17 | +8°F (+4.0°C) | |

4) Auto restart

Enables or disables automatic restart after a power interruption.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 40 | 00 | Enable | ◆ |
| | 01 | Disable | |

NOTE: Auto restart is an emergency function such as for power outage etc. Do not attempt to use this function in normal operation. Be sure to operate the unit by remote controller or external device.

5) Room temperature sensor switching

(Only for wired remote controller)

When using the wired remote controller temperature sensor, change the setting to “Both” (01).

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 42 | 00 | Indoor unit | ◆ |
| | 01 | Both | |

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and wired remote controller are active.

NOTE: Remote controller sensor must be turned on by using the remote controller.

6) Remote controller custom code

(Only for wireless remote controller)

The indoor unit custom code can be changed. Select the appropriate custom code.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 44 | 00 | A | ◆ |
| | 01 | B | |
| | 02 | C | |
| | 03 | D | |

7) External input control

“Operation/Stop” mode or “Forced stop” mode can be selected.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---|-----------------|
| 46 | 00 | Operation/Stop mode 1 (Remote controller enabled) | ◆ |
| | 01 | (Setting prohibited) | |
| | 02 | Forced stop mode | |
| | 03 | Operation/Stop mode 2 (Remote controller disabled) | |

8) Room temperature sensor switching (Aux.)

To use the temperature sensor on the wired remote controller only, change the setting to “Wired remote controller” (01).

This function will only work if the function setting 42 is set at “Both” (01).

When the setting value is set to “Both” (00), more suitable control of the room temperature is possible by setting function setting 30 and 31 too.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|-------------------------|-----------------|
| 48 | 00 | Both | ◆ |
| | 01 | Wired remote controller | |

9) Indoor unit fan control for energy saving for cooling

Enables or disables the power-saving function by controlling the indoor unit fan rotation when the outdoor unit is stopped during cooling operation.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 49 | 00 | Disable | |
| | 01 | Enable | |
| | 02 | Remote controller | ◆ |

00: When the outdoor unit is stopped, the indoor unit fan operates continuously following the setting on the remote controller.

01: When the outdoor unit is stopped, the indoor unit fan operates intermittently at a very low speed.

02: Enable or disable this function by remote controller setting.

NOTE: Set to “00” or “01” when connecting a remote controller that cannot set the Fan control for energy saving function or connecting a network converter. To confirm if the remote controller has this setting, refer to the operating manual of each remote controller.

10) Switching functions for external output terminal

Functions of the external output terminal can be switched. For details, refer to “External input and output”.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|----------------------------------|-----------------|
| 60 | 00 | Operation status | ◆ |
| | 01—04 | Cooling thermostat On | |
| | 05 | Heating operation | |
| | 06 | Operation/Stop | |
| | 07—08 | Cooling thermostat On | |
| | 09 | Error status | |
| | 10 | Indoor unit fan operation status | |
| | 11 | External heater | |

11) Control switching of external heaters

Sets the control method for external heater to be used.

For details, refer to “External heater output” in ["Details of control output function"](#) on page 05-22.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|--|-----------------|
| 61 | 00 | Auxiliary heater control 1 | ◆ |
| | 01 | Auxiliary heater control 2 | |
| | 02 | Heat pump prohibition control | |
| | 03 | Auxiliary heater control by outdoor temperature 1 | |
| | 04 | Auxiliary heater control by outdoor temperature 2 | |
| | 05 | Auxiliary heater control by outdoor temperature 3 | |
| | 06 | Auxiliary heat pump control | |
| | 07 | Auxiliary heat pump control by outdoor temperature 1 | |
| | 08 | Auxiliary heat pump control by outdoor temperature 2 | |
| | 09 | Auxiliary heat pump control by outdoor temperature 3 | |

12) Operating temperature switching of external heaters

Sets the temperature conditions when the external heater is ON.

For details, refer to “External heater output” in ["Details of control output function"](#) on page 05-22.

| Function number | Setting value | Setting description | | Factory setting |
|-----------------|---------------|---------------------|-----------------|-----------------|
| | | Heater: On | Heater: Off | |
| 62 | 00 | -5.4 °F (-3 °C) | -1.8 °F (-1 °C) | ◆ |
| | 01 | -3.6 °F (-2 °C) | -1.8 °F (-1 °C) | |
| | 02 | -3.6 °F (-2 °C) | -1.8 °F (-1 °C) | |
| | 03 | -5.4 °F (-3 °C) | -1.8 °F (-1 °C) | |
| | 04 | -7.2 °F (-4 °C) | -1.8 °F (-1 °C) | |
| | 05 | -9.0 °F (-5 °C) | -1.8 °F (-1 °C) | |

13) Outdoor temperature zone boundary temperature A

Setting required if changing of the outdoor temperature setting for heat pump prohibition zone is required when auxiliary heater control by outdoor temperature 1 and 2 are performed on the indoor unit.

For details, refer to "External heater output" in ["Details of control output function"](#) on page 05-22.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 66 | 00 | -4.0°F (-20°C) | ◆ |
| | 01 | -0.4°F (-18°C) | |
| | 02 | 3.2°F (-16°C) | |
| | 03 | 6.8°F (-14°C) | |
| | 04 | 10.4°F (-12°C) | |
| | 05 | 14.0°F (-10°C) | |
| | 06 | 17.6°F (-8°C) | |
| | 07 | 21.2°F (-6°C) | |
| | 08 | 24.8°F (-4°C) | |

14) Outdoor temperature zone boundary temperature B

Setting required if changing of the outdoor temperature setting for heat pump only zone is required when auxiliary heater control by outdoor temperature 1 and 3 is performed on the indoor unit.

For details, refer to "External heater output" in ["Details of control output function"](#) on page 05-22.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 67 | 00 | 42.8°F (6°C) | ◆ |
| | 01 | 14.0°F (-10°C) | |
| | 02 | 17.6°F (-8°C) | |
| | 03 | 21.2°F (-6°C) | |
| | 04 | 24.8°F (-4°C) | |
| | 05 | 28.4°F (-2°C) | |
| | 06 | 32.0°F (0°C) | |
| | 07 | 35.6°F (2°C) | |
| | 08 | 39.2°F (4°C) | |
| | 09 | 42.8°F (6°C) | |
| | 10 | 46.4°F (8°C) | |
| | 11 | 50.0°F (10°C) | |
| | 12 | 53.6°F (12°C) | |
| | 13 | 57.2°F (14°C) | |
| | 14 | 60.8°F (16°C) | |
| | 15 | 64.4°F (18°C) | |

15) Standby time for auxiliary equipment operation

Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.

For details, refer to ["Details of control output function"](#) on page 05-22.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 71 | 00 | Disable | ◆ |
| | 01 | 1 minute | |
| | 02 | 2 minutes | |
| | • | • | |
| | • | • | |
| | • | • | |
| | 98 | 98 minutes | |
| | 99 | 99 minutes | |

16) Heat pump backup setting

Enables or disables the heat pump backup operation.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 72 | 00 | Disable | ◆ |
| | 01 | Enable | |

17) Emergency heat for external output terminal

Enables or disables emergency heat input.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 73 | 00 | Disable | ◆ |
| | 01 | Enable | |

NOTE: When this function is used, IR Receiver Unit or Wired Remote Controller is necessary.

18) Fixed operation mode switching

Sets the operation mode to heat pump, heating only, or cooling only.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 94 | 00 | Heat pump | ◆ |
| | 01 | Heating only | |
| | 02 | Cooling only | |

19) Heat insulation condition (building insulation)

Heat insulation conditions differ according to the installed environment.

“Standard insulation” (00) allows system to rapidly respond to the cooling or heating load changes.

“High insulation” (01) is when the heat insulation structure of the building is high and does not require system to rapidly respond to cooling or heating load changes.

When “High insulation” (01) is selected:

- Overheating (overcooling) is prevented at the start-up.
- All room-temperature control settings (Function 30, 31, 35, and 36) will reset to “No correction 0.0°F (0.0°C)”.

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 95 | 00 | Standard insulation | ◆ |
| | 01 | High insulation | |

NOTE: When changing Function 95, perform this setting before other room-temperature control settings (Function 30, 31, 35, and 36). If Function 95 is not set first, room-temperature control settings (Function 30, 31, 35, and 36) will be reset and you must re-do them again.

1-2. Custom code setting for wireless remote controller

To interconnect the air conditioner and the wireless remote controller, assignment of the custom code for the wireless remote controller is required.

NOTE: Air conditioner cannot receive a signal if the air conditioner has not been set for the custom code.

When 2 or more air conditioners are installed in a room, and the remote controller is operating an air conditioner other than the one you wish to set, change the custom code of the remote controller to operate only the air conditioner you wish to set. (4 selections possible.)

Confirm the setting of the remote controller custom code and the function setting. If these do not match, the remote controller cannot be used to operate for the air conditioner.

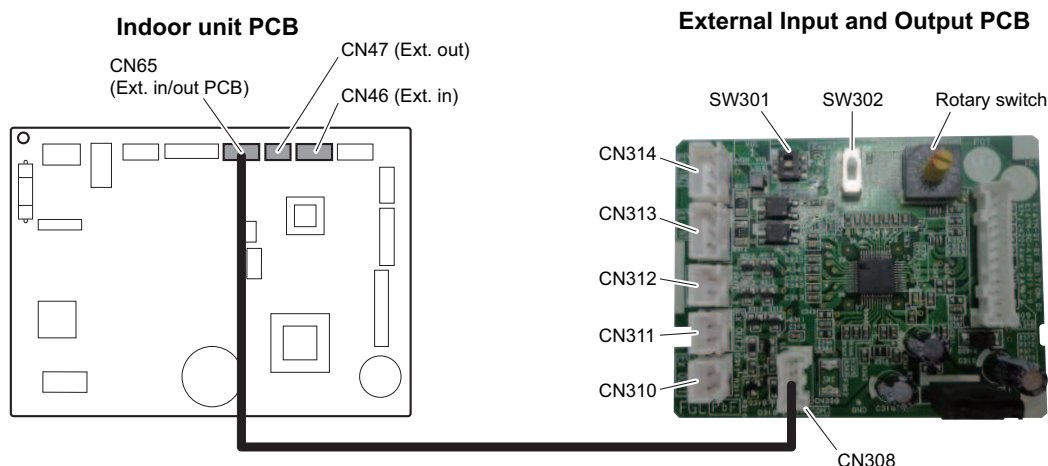
1. Press the START/STOP button until only the clock is displayed on the remote controller display.
2. Press the MODE button for at least 5 seconds to display the current custom code. (Initially set to \overline{A} .)
3. Press the TEMP. (\wedge) (\vee) buttons to change the custom code between $\overline{A} \rightarrow \overline{b} \rightarrow \overline{c} \rightarrow \overline{d}$. Match the code on the display to the air conditioner custom code. (Initially set to \overline{A} .)
4. Press the MODE button again to return to the clock display. The custom code will be changed.



NOTES:

- If no button is pressed within 30 seconds after the custom code is displayed, the system returns to the original clock indicator. In this case, start again from step 1.
- The air conditioner custom code is set to \overline{A} prior to shipment. To change the custom code, contact your retailer.
- If you do not know the assigned code for the air conditioner, try each of the custom code ($\overline{A} \rightarrow \overline{b} \rightarrow \overline{c} \rightarrow \overline{d}$) until you find the code which operates the air conditioner.

2. External input and output



| Connecting point | | Input/Output | Function | Input select | Input signal |
|--|-------------------------|--------------|----------------------------------|---------------------------|--------------|
| Indoor unit | CN46 | Input | Operation/Stop | Dry contact | Edge |
| | | | Forced stop | | |
| | CN47 | Output | Operation/Stop | — | — |
| | | | Error status | | |
| | | | Indoor unit fan operation status | | |
| | | | Cooling thermostat On | | |
| | | | Heating thermostat On | | |
| | | | External heater output | | |
| External Input and Output PCB (UTY-XCSXZ2) | CN313/CN314 | Input | Operation/Stop | Dry contact/Apply voltage | Edge/Pulse |
| | | | Forced stop | | |
| | | | Forced thermostat off | | Edge |
| | CN310 CN311 CN312 | Output | Operation status | — | — |
| | | | Error status | | |
| | | | Indoor unit fan operation status | | |
| | | | External heater output | | |
| | | | Remote controller output | | |
| | | | Cooling high/low output | | |
| | | | Heating thermostat On | | |

NOTE: For details of the switching function, refer to ["Setting of external input and output"](#) on page 05-16.

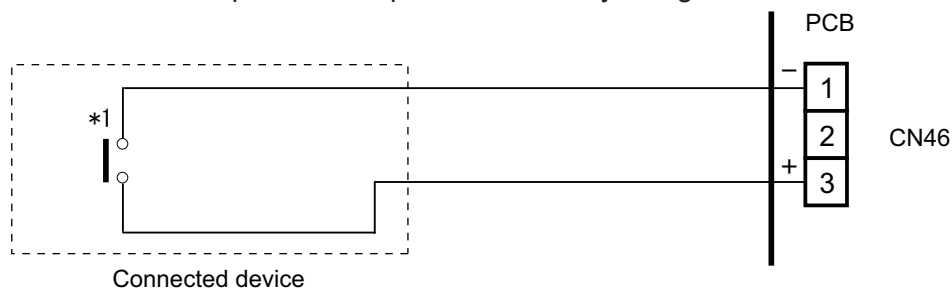
2-1. External input

With using external input function, some functions on this product can be controlled from an external device.

- "Operation/Stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.
- A twisted pair cable (22 AWG) should be used. Maximum length of cable is 492 ft (150 m).
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

Indoor unit

Indoor unit functions such as Operation/Stop can be done by using indoor unit connectors.



*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

External Input and Output PCB

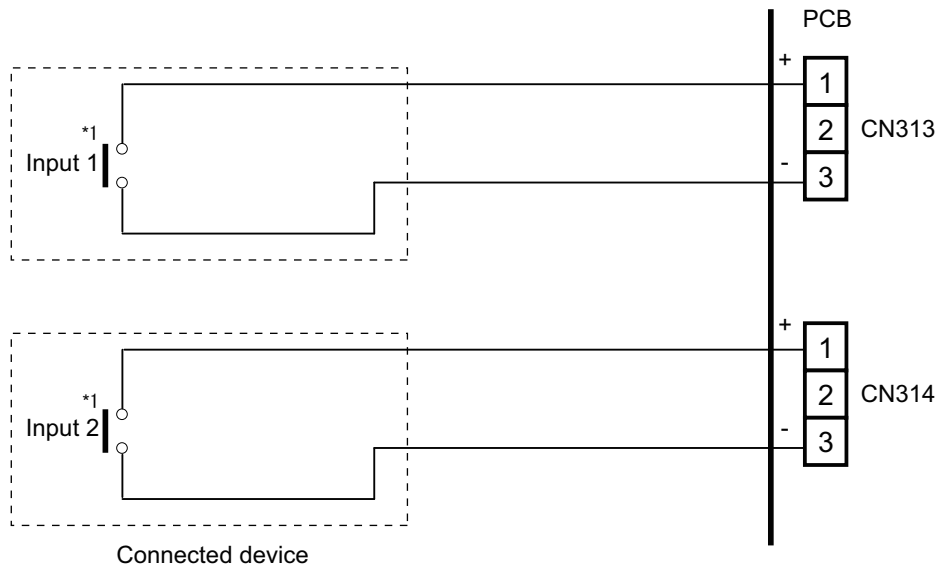
The indoor unit Operation/Stop can be set by using the input connector on the PCB.

• Input select

Use either one of these types of connectors according to the application. (Both types of connectors cannot be used simultaneously.)

– Dry contact

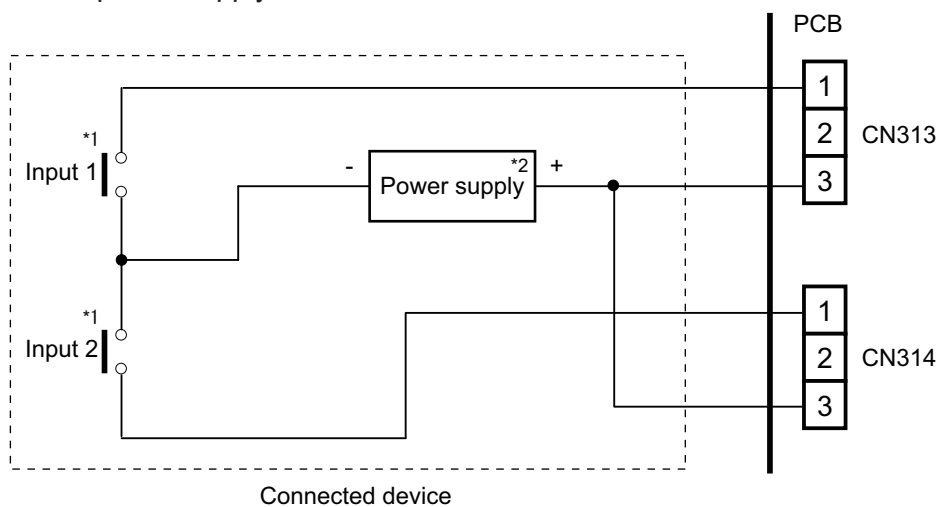
In case of internal power supply, set the slide switch of SW301 to "NON VOL" side.



*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

– Apply voltage

In case of external power supply, set the slide switch of SW301 to "VOL" side.



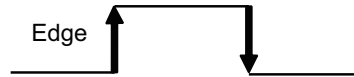
*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

*2: Make the power supply DC 12 V to 24 V, 10 mA or more.

■ Input signal type

- **Indoor unit**

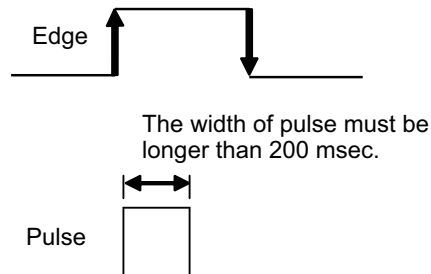
Input signal type is only "Edge".



- **External Input and Output PCB**

The input signal type can be selected.

Signal type (edge or pulse) can be switched by the DIP switch 2 (SW302) on the External Input and Output PCB.



NOTE: The input signal supports the following switch type:

- Edge: Alternate type switch
- Pulse: Momentary type switch

2-2. External output

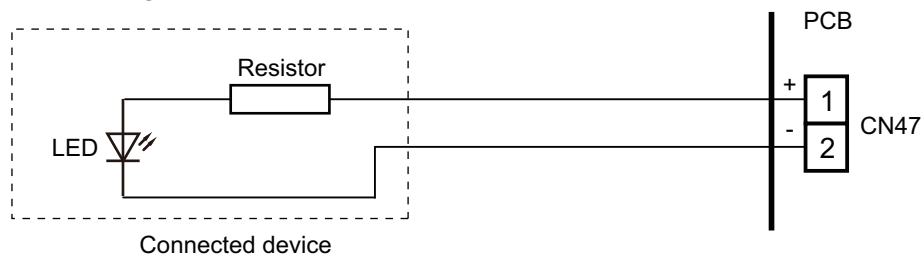
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

Indoor unit

- A twisted pair cable (22 AWG) should be used. Maximum length of cable is 82 ft (25 m).
- Output voltage: High DC 12 V \pm 2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to ["Setting of external input and output"](#) on page 05-16.

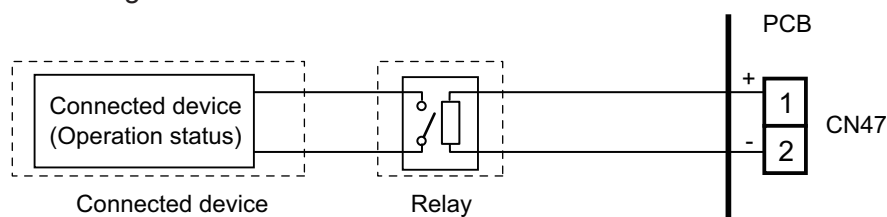
- **When indicator, etc. are connected directly**

Example: Function setting number 60 is set to "00"



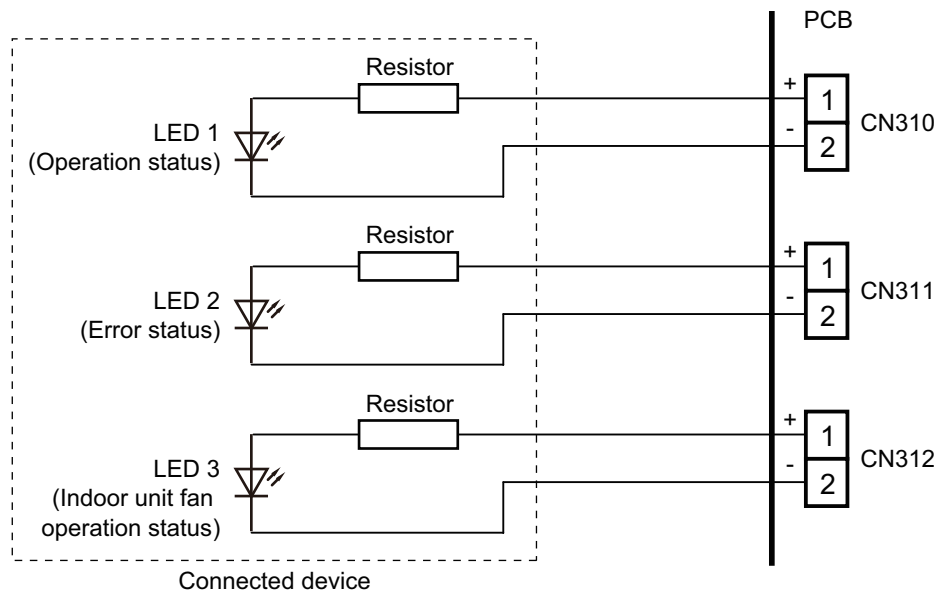
- **When connecting with a device equipped with a power supply**

Example: Function setting number 60 is set to "00"

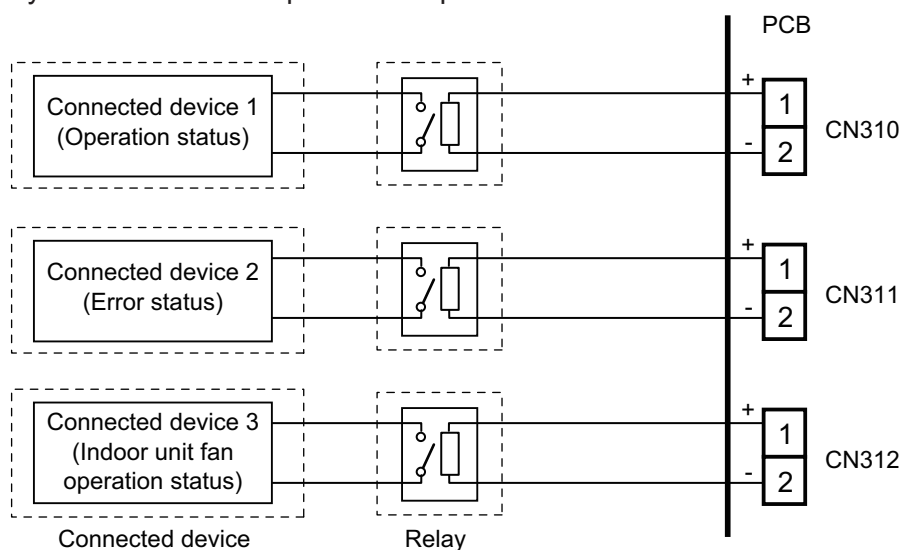


External Input and Output PCB

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 82 ft (25 m).
- Output voltage: High DC 12 V \pm 2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to ["Setting of external input and output"](#) on page 05-16.
- **When indicator or other components are connected directly:**
Example: Rotary SW on External Input and Output PCB is set to "1".



- **When connecting with a device equipped with a power supply:**
Example: Rotary SW on External Input and Output PCB is set to "1".



2-3. Setting of external input and output

- Indoor unit

| Input | | |
|------------------|----------------------------|---------------------------------------|
| Connection point | Function setting number 46 | Function |
| CN46 | 00 | Operation/Stop mode 1 (R.C. enabled) |
| | 01 | (Setting prohibited) |
| | 02 | Forced stop mode |
| | 03 | Operation/Stop mode 2 (R.C. disabled) |

| Output | | |
|------------------|----------------------------|----------------------------------|
| Connection point | Function setting number 60 | Function |
| CN47 | 00 | Operation/Stop |
| | 01 to 04 | Cooling thermostat On |
| | 05 | Heating thermostat On |
| | 06 | Operation/Stop |
| | 07 to 08 | Cooling thermostat On |
| | 09 | Error status |
| | 10 | Indoor unit fan operation status |
| | 11 | External heater output |

• External Input and Output PCB

| Switch setting | | Ex IN | | Ex OUT | | |
|----------------|--------|-------------------------|---------------|-------------------------|----------------------------------|----------------------------------|
| Rotary switch | SW302 | CN313 | CN314 | CN310 | CN311 | CN312 |
| 1 | Edge | Operation/Stop | Not available | Operation/Stop | Error status | Indoor unit fan operation status |
| | Pulse | Operation | Stop | | | |
| 2 | Edge*1 | Forced thermostat off | Not available | Error status | Indoor unit fan operation status | External heater output |
| 3 | | Mechanical cooling off | Not available | Error status | Indoor unit fan operation status | External heater output |
| 4 | | Forced thermostat off | Not available | Error status | Remote controller output | External heater output |
| 5 | | Mechanical cooling on*2 | Not available | Cooling high/low output | Remote controller output | External heater output |
| 6 | | Mechanical cooling on*2 | Not available | Error status | Remote controller output | Cooling high/low output |
| 7 | | Forced thermostat off | Not available | Error status | Indoor unit fan operation status | External heater output |
| 8 | | Forced thermostat off | Not available | Error status | Indoor unit fan operation status | Heating thermostat on |
| 9 | | Mechanical cooling off | Not available | Error status | Heating thermostat on | External heater output |
| A | | Forced thermostat off | Not available | Heating thermostat on | Remote controller output | External heater output |
| B | | Forced thermostat off | Not available | Operation/Stop | Indoor unit fan operation status | External heater output |
| C | | Forced thermostat off | Not available | Operation/Stop | Error status | External heater output |
| D | | Forced thermostat off | Not available | Operation/Stop | Indoor unit fan operation status | Error status |

NOTES:

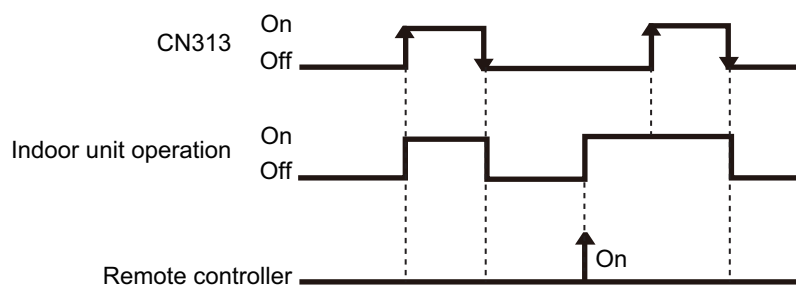
- When the rotary switch is selected to "1", the operation of the connector input of the indoor unit and the External Input and Output PCB input are the same. The operation content depends on the setting of function setting number 46.
- *1: The external input other than "Operation/Stop" is available only when the SW302 is set to "Edge".
- *2: The external input of "Mechanical cooling on" is available only when the function setting number 60 is set to "03" or "04".

2-4. Details of control input function

■ Operation/Stop mode 1

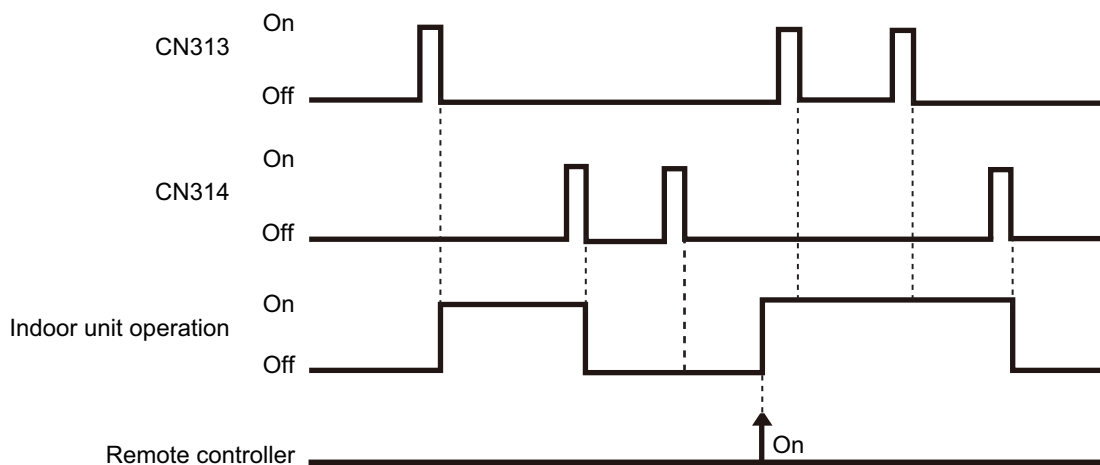
- In the case of "Edge" input

| Function setting | External Input and Output PCB | | External input | | Input signal | Command |
|------------------|-------------------------------|-------|-------------------------------|-------|--------------|-----------|
| | Rotary switch | SW302 | | | | |
| 46-00 | — | | Input of indoor unit | CN46 | Off → On | Operation |
| | — | | Input of indoor unit | CN46 | On → Off | Stop |
| | 1 | Edge | External Input and Output PCB | CN313 | Off → On | Operation |
| | | | | | On → Off | Stop |



- In the case of "Pulse" input

| Function setting | External Input and Output PCB | | External input | | Input signal | Command |
|------------------|-------------------------------|-------|-------------------------------|-------|--------------|-----------|
| | Rotary switch | SW302 | | | | |
| 46-00 | 1 | Pulse | External Input and Output PCB | CN313 | Pulse | Operation |
| | | | | CN314 | | Stop |



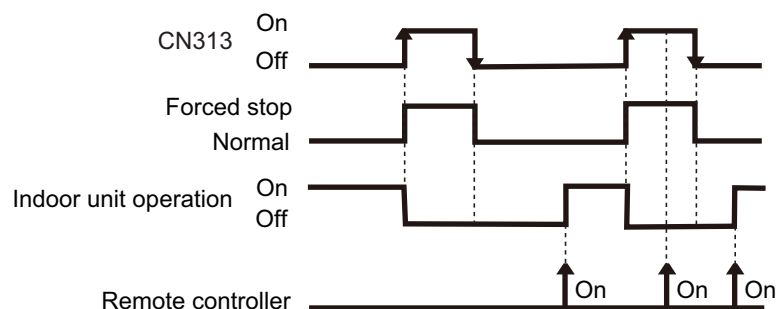
NOTES:

- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

■ Forced stop

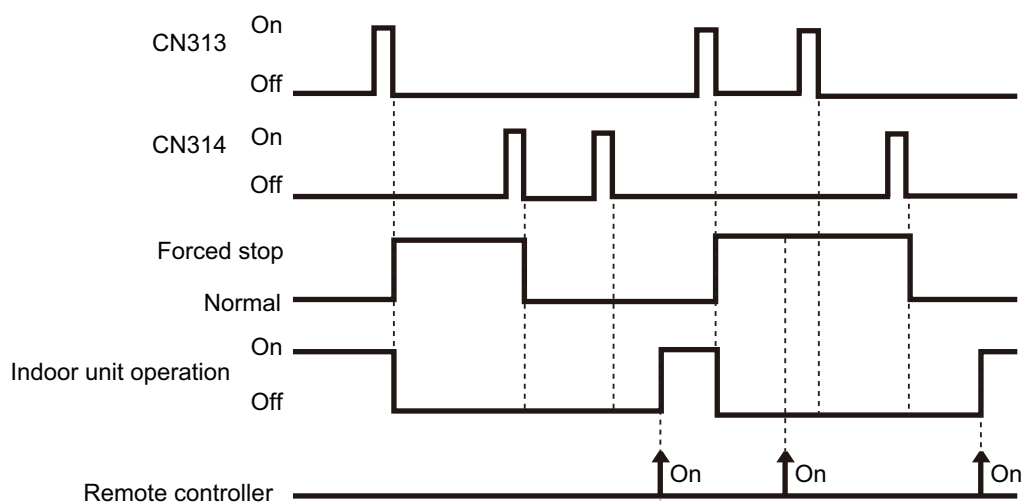
- In the case of "Edge" input

| Function setting | External Input and Output PCB | | External input | | Input signal | Command |
|------------------|-------------------------------|-------|-------------------------------|-------|--------------|-----------------------------|
| | Rotary switch | SW302 | | | | |
| 46-02 | — | | Input of indoor unit | CN46 | Off → On | Forced stop (R.C. disabled) |
| | | | | | On → Off | Normal (R.C. enabled) |
| | 1 | Edge | External Input and Output PCB | CN313 | Off → On | Forced stop (R.C. disabled) |
| | | | | | On → Off | Normal (R.C. enabled) |



- In the case of "Pulse" input

| Function setting | External Input and Output PCB | | External input | | Input signal | Command |
|------------------|-------------------------------|-------|-------------------------------|-------|--------------|-----------------------------|
| | Rotary switch | SW302 | | | | |
| 46-02 | 1 | Pulse | External Input and Output PCB | CN313 | Pulse | Forced stop (R.C. disabled) |
| | | | | CN314 | | Normal (R.C. enabled) |



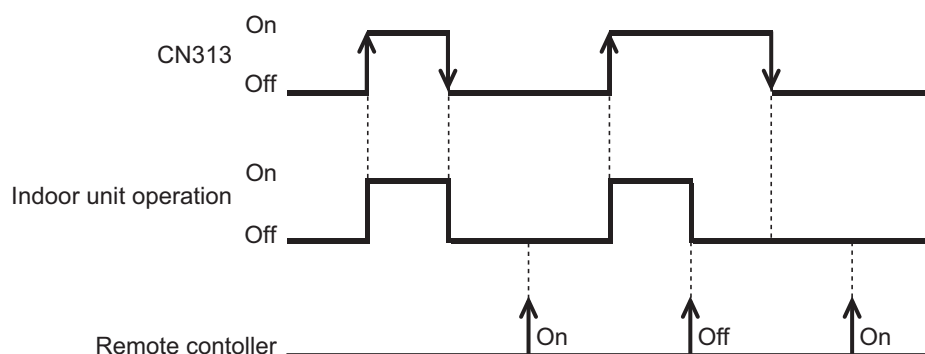
NOTES:

- When the forced stop is triggered, indoor unit stops and Operation/Stop operation by the remote controller is restricted.
- When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Operation/Stop mode 2

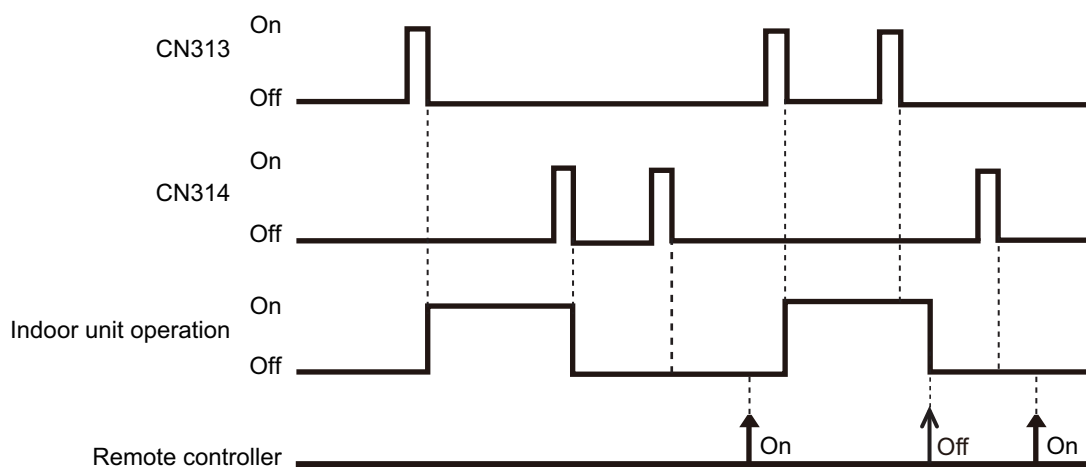
- In the case of “Edge” input

| Function setting | External Input and Output PCB | | External input | | Input signal | Command |
|------------------|-------------------------------|-------|-------------------------------|-------|--------------|--------------------------|
| | Rotary switch | SW302 | | | | |
| 46-03 | — | | Input of indoor unit | CN46 | Off → On | Operation (R.C. enabled) |
| | | | | | On → Off | Stop (R.C. disabled) |
| | 1 | Edge | External Input and Output PCB | CN313 | Off → On | Operation (R.C. enabled) |
| | | | | | On → Off | Stop (R.C. disabled) |



- In the case of “Pulse” input

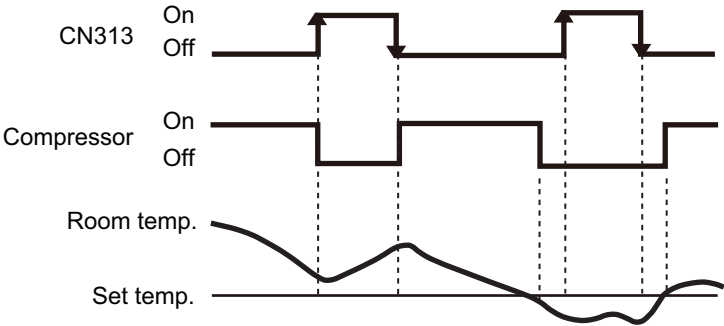
| Function setting | External Input and Output PCB | | External input | | Input signal | Command |
|------------------|-------------------------------|-------|-------------------------------|-------|--------------|--------------------------|
| | Rotary switch | SW302 | | | | |
| 46-03 | 1 | Pulse | External Input and Output PCB | CN313 | Pulse | Operation (R.C. enabled) |
| | | | | CN314 | | Stop (R.C. disabled) |



NOTE: When “Operation/Stop” mode 2 function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Forced thermostat off

| External Input and Output PCB | External input | | Input signal | Command |
|-------------------------------|-------------------------------|-------|--------------|------------------|
| Rotary switch | | | | |
| 2, B, C, D | External Input and Output PCB | CN313 | Off → On | Thermostat off |
| | | | On → Off | Normal operation |
| 4, 7, 8, A | External Input and Output PCB | CN313 | Off → On | Thermostat off |
| | | | On → Off | Normal operation |

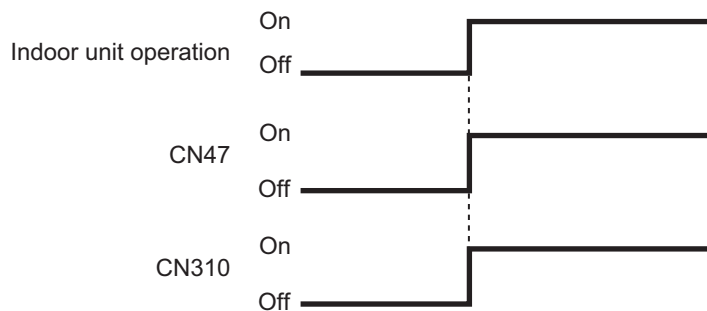


2-5. Details of control output function

■ Operation status

| Function setting | External Input and Output PCB | External output | | Output signal | Status |
|------------------|-------------------------------|-------------------------------|-------|---------------|-----------|
| | Rotary switch | | | | |
| 60-00 60-06 | 1, 2, 8 | Output of indoor unit | CN47 | Off → On | Operation |
| | | | | On → Off | Stop |
| — | 1, B, C, D | External Input and Output PCB | CN310 | Off → On | Operation |
| | | | | On → Off | Stop |

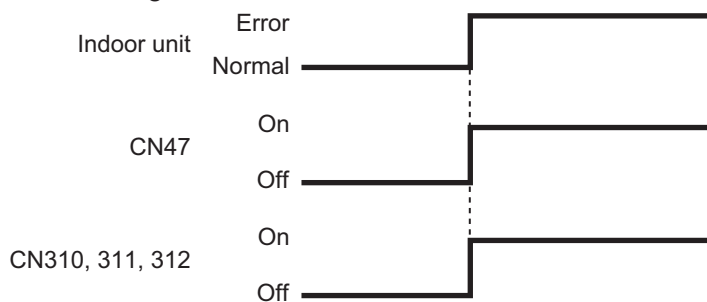
The output is low when the unit is stopped.



■ Error status

| Function setting | External Input and Output PCB | External output | | Output signal | Status |
|------------------|-------------------------------|-------------------------------|-------|---------------|--------|
| | Rotary switch | | | | |
| 60-09 | — | Output of indoor unit | CN47 | Off → On | Error |
| | | | | On → Off | Normal |
| — | 2, 3, 4, 6, 7, 8, 9 | External Input and Output PCB | CN310 | Off → On | Error |
| | | | | On → Off | Normal |
| — | 1, C | External Input and Output PCB | CN311 | Off → On | Error |
| | | | | On → Off | Normal |
| — | D | External Input and Output PCB | CN312 | Off → On | Error |
| | | | | On → Off | Normal |

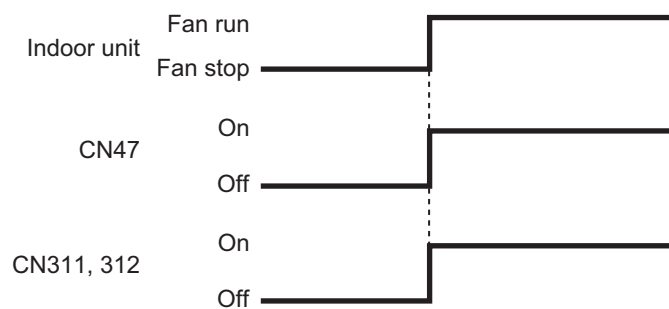
The output is on when an error is generated for the indoor unit.



Indoor unit fan operation status

| Function setting | External Input and Output PCB | External output | | Output signal | Status |
|------------------|-------------------------------|-------------------------------|-------|---------------|----------|
| | Rotary switch | | | | |
| 60-10 | C | Output of indoor unit | CN47 | Off → On | Fan run |
| | | | | On → Off | Fan stop |
| — | 2, 3, 7, 8, B, D | External Input and Output PCB | CN311 | Off → On | Fan run |
| | | | | On → Off | Fan stop |
| — | 1 | External Input and Output PCB | CN312 | Off → On | Fan run |
| | | | | On → Off | Fan stop |

| Output signal | Condition |
|---------------|--|
| On | The indoor unit fan is operating. |
| Off | The fan is stopped or during cold air prevention. During thermostat off when in dry mode operation. |



■ External heater output

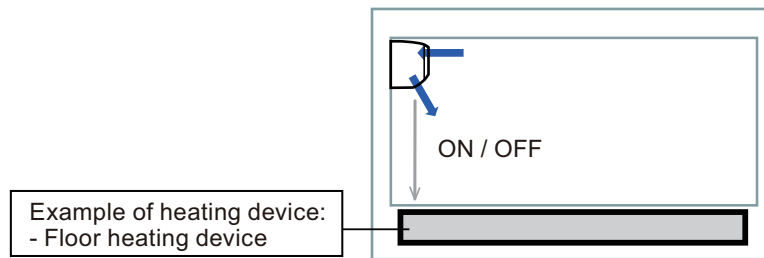
| Control | Primary heater | Auxiliary heater | Function setting |
|--|-----------------|------------------|---|
| | | | Indoor unit |
| | | | Control switching external heaters No. 61 |
| Auxiliary heater control 1 | Heat pump | External device* | 61-00 |
| Auxiliary heater control 2 | Heat pump | External device | 61-01 |
| Heat pump prohibition control | External device | None | 61-02 |
| Auxiliary heater control by outdoor temperature 1 | Heat pump | External device | 61-03 |
| Auxiliary heater control by outdoor temperature 2 | Heat Pump | External device | 61-04 |
| Auxiliary heater control by outdoor temperature 3 | Heat Pump | External device | 61-05 |
| Auxiliary heat pump control | External device | Heat pump | 61-06 |
| Auxiliary heat pump control by outdoor temperature 1 | External device | Heat pump | 61-07 |
| Auxiliary heat pump control by outdoor temperature 2 | External device | Heat pump | 61-08 |
| Auxiliary heat pump control by outdoor temperature 3 | External device | Heat pump | 61-09 |

NOTES:

- After turning off the heater, 3 minutes of standby time is required by next power-on of the heater.
- For items marked “—” in the table, any of validate or invalidate of the setting are acceptable.
- *: External device means Hot water, Electrical heater, etc.

● Installation configuration of individual connection

External heating device is installed individually. (No use of indoor unit fan)

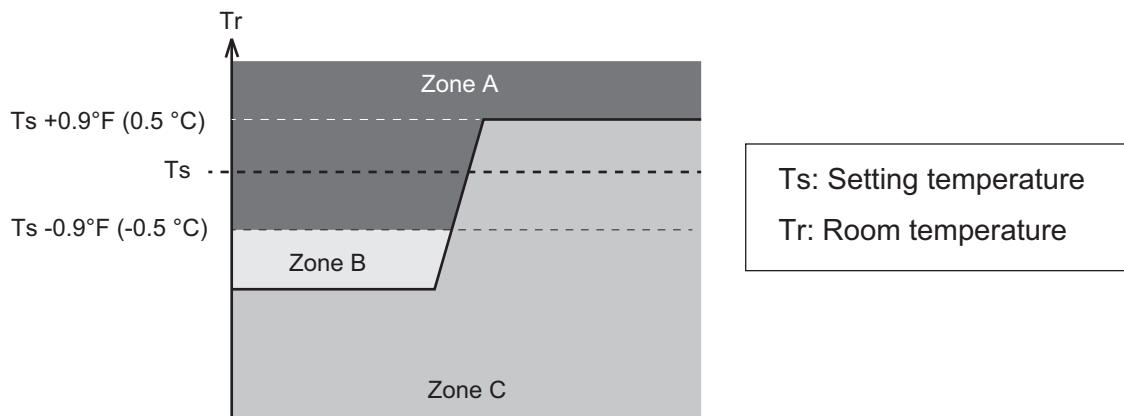


⚠ WARNING

- Design and install an external heater appropriately, with consideration for its protection and local codes.
- Inappropriate designing and installation of external heater may cause a fire by emitted heat from the external heater.
- Fujitsu General Ltd. is not responsible for inappropriate designing or installation of external heating device.

● Auxiliary equipment control by room temperature

Auxiliary equipment control is switchable by room temperature. Auxiliary equipment switching is performed for each room temperature divided to following 3 zones.



| Zone | Application | When temperature dropping | | When temperature rising | |
|------|--|---------------------------|-----------|-------------------------|-----------|
| | | Primary | Auxiliary | Primary | Auxiliary |
| A | Both of primary and auxiliary equipment is unnecessary. | Off | Off | Off | Off |
| B | Primary heater only. When room temperature stays in zone B for a long time, auxiliary equipment also operates. | On | Off*1 | — | — |
| C | Auxiliary equipment also operates. | On | On*2 | On | On*2 |

*1: For standby time for auxiliary equipment operation, refer to indoor unit function number 71 "[Contents of function setting](#)" on page 05-2.

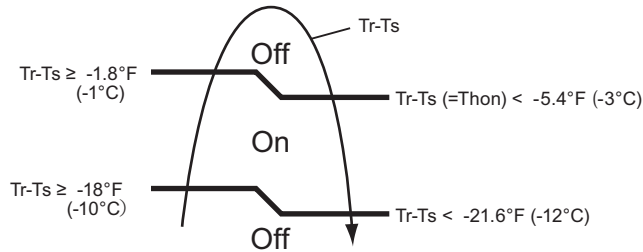
*2: When indoor unit function number 61 is set to "00", auxiliary equipment operates according to the following conditions.

- $T_s - T_r > 21.6\text{ }^{\circ}\text{F}$ ($-12.0\text{ }^{\circ}\text{C}$): Auxiliary equipment turn off.
- $T_s - T_r > 18.0\text{ }^{\circ}\text{F}$ ($-10.0\text{ }^{\circ}\text{C}$): Auxiliary equipment turn on.

● Auxiliary heater control 1

| Operation | Condition |
|------------|--|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off Fan stop protection |

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

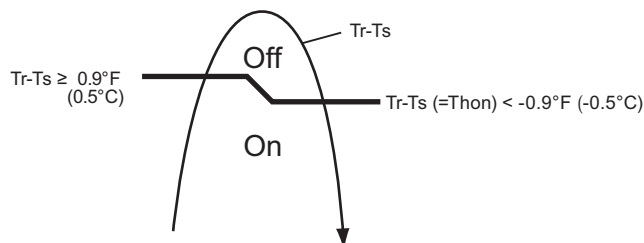
Example: When set temperature (Ts) is 72°F (22°C) (Factory setting),

- and room temperature (Tr) increases above 53.6°F (12°C), signal output is on.
- and room temperature (Tr) increases above 69.8°F (21°C), signal output is off.
- and room temperature (Tr) decreases below 66.2°F (19°C), signal output is on.
- and room temperature (Tr) decreases below 50°F (10°C), signal output is off.

● Auxiliary heater control 2

| Operation | Condition |
|------------|--|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off Fan stop protection |

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".



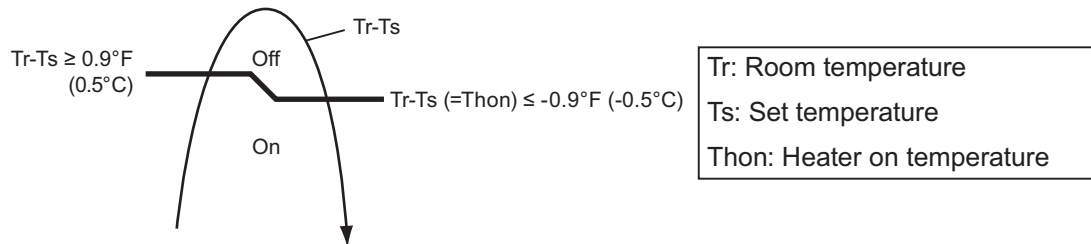
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

● Heat pump prohibition control

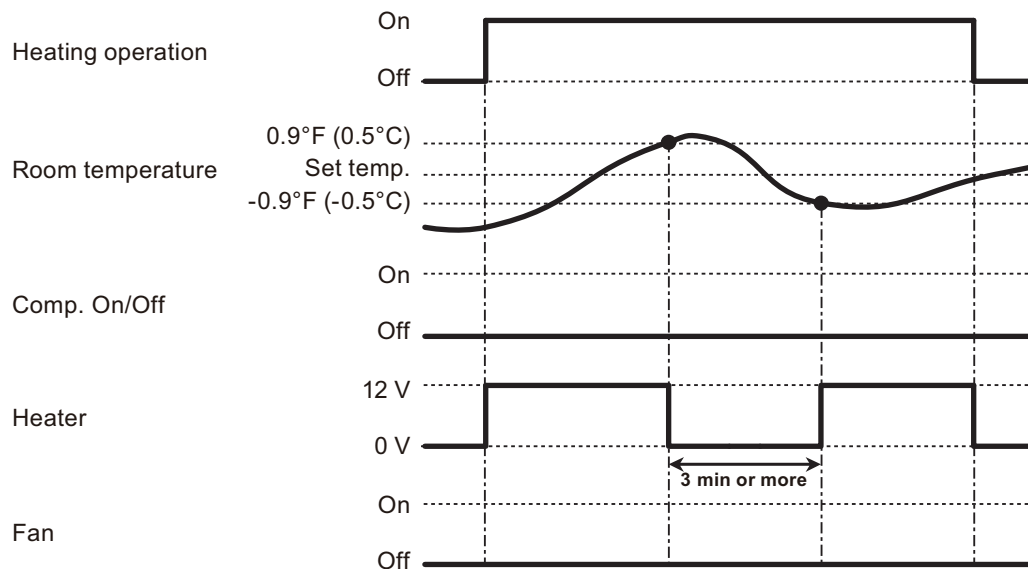
Perform heating by external heater only. Indoor unit is continuous thermostat off.

| Operation | Condition |
|------------|---|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off |

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".



• Operation status



NOTE: In following operations, compressor will be on.

- Other than heating
- Test run

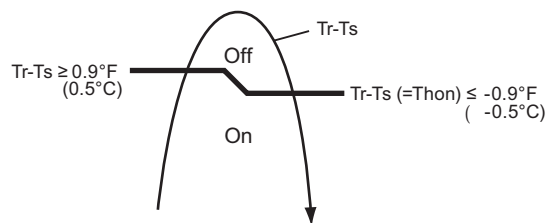
● Auxiliary heater control by outdoor temperature 1

This control selects heat pump or external heater according to the outdoor temperature. When outdoor temperature is high, the heating is performed by using heat pump only.

| Operation | Condition |
|------------|--|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off Heat pump only zone |

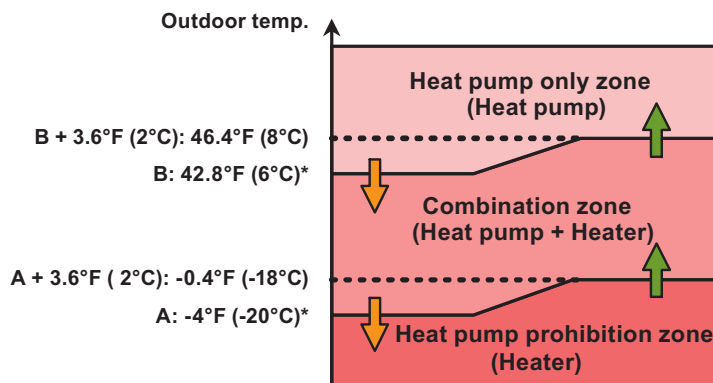
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".
- Outdoor temperature zone boundary A and B: Adjustable individually by function setting number 66 and 67.

• External heater output



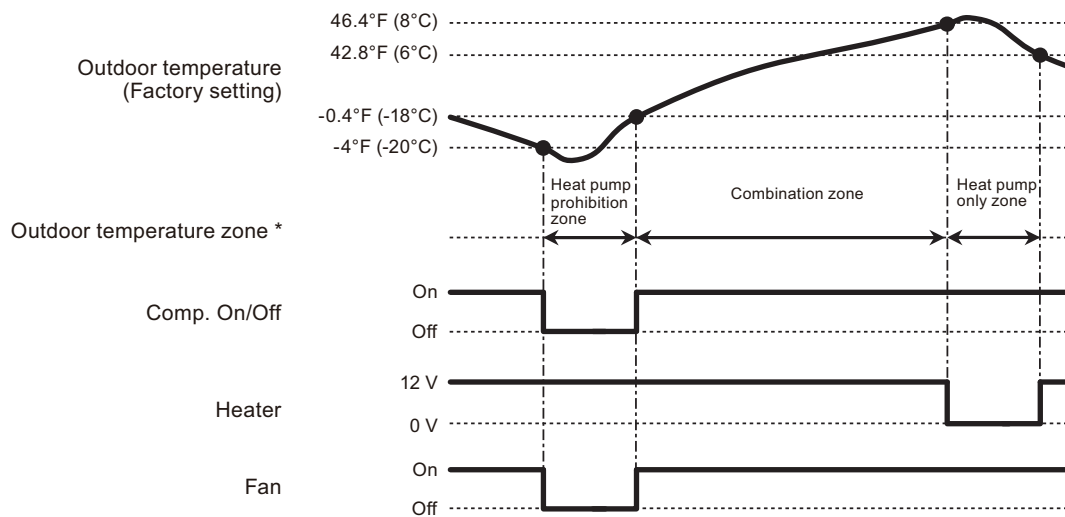
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

• Outdoor temperature zone



*: Adjustable by function setting 66 and 67

- Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

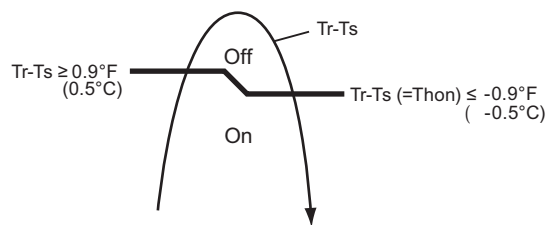
● Auxiliary heater control by outdoor temperature 2

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

| Operation | Condition |
|------------|---|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off |

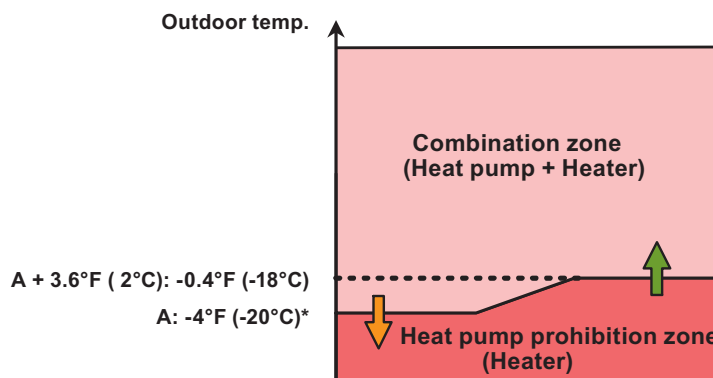
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.
- Outdoor temperature zone boundary A: Adjustable by function setting number 66.

• External heater output



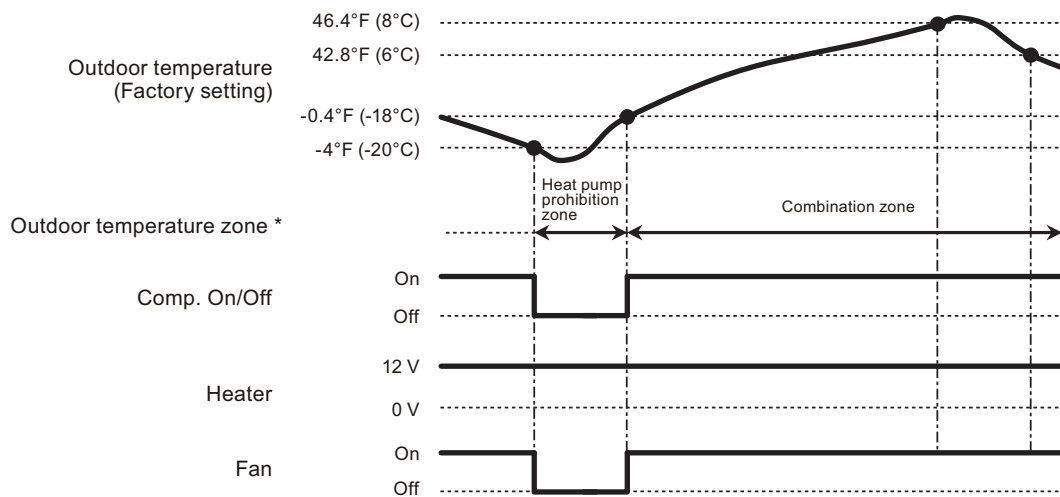
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

• Outdoor temperature zone



*: Adjustable by function setting 66

- Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

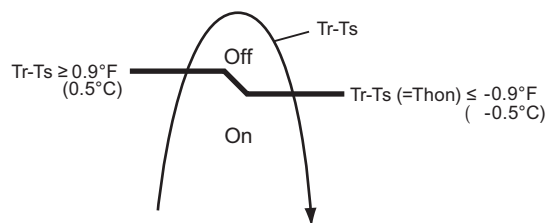
● Auxiliary heater control by outdoor temperature 3

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

| Operation | Condition |
|------------|---|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off |

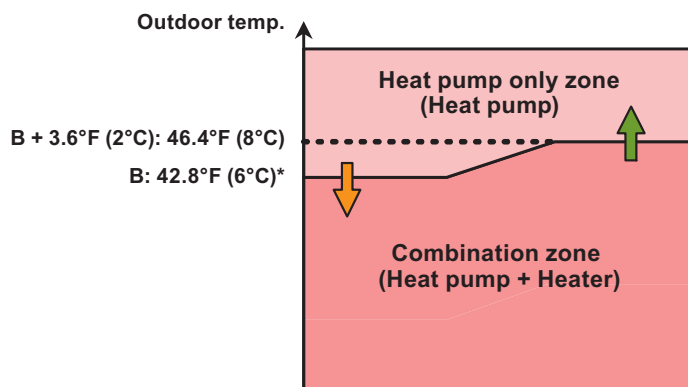
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".
- Outdoor temperature zone boundary B: Adjustable by function setting number 37.

• External heater output



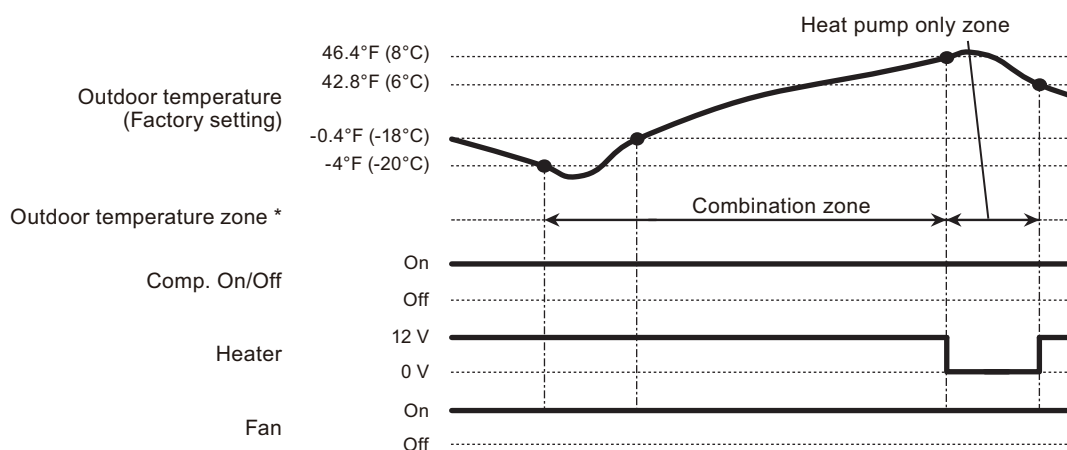
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

• Outdoor temperature zone



*: Adjustable by function setting 67

• Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

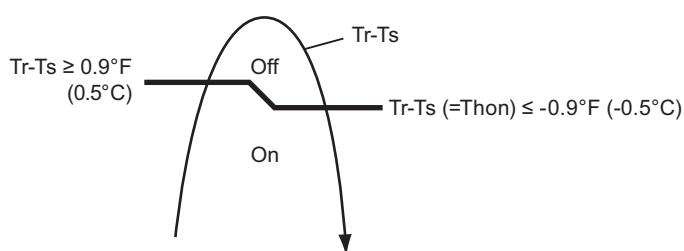
- Other than heating
- Test run

● Auxiliary heat pump control

• External heater output

| Operation | Condition |
|------------|---|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off |

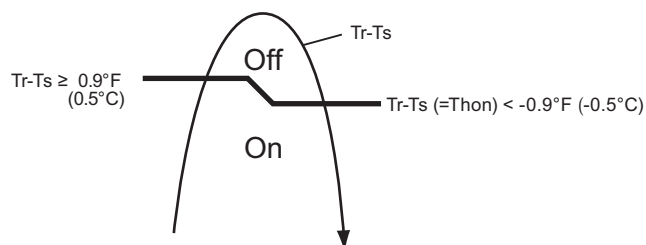
- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting "Thon".



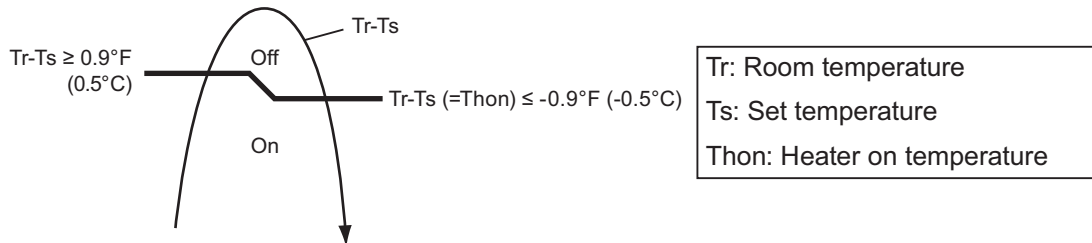
Tr: Room temperature
Ts: Set temperature
Thon: Heater on temperature

● Auxiliary heat pump control by outdoor temperature 1

• External heater output

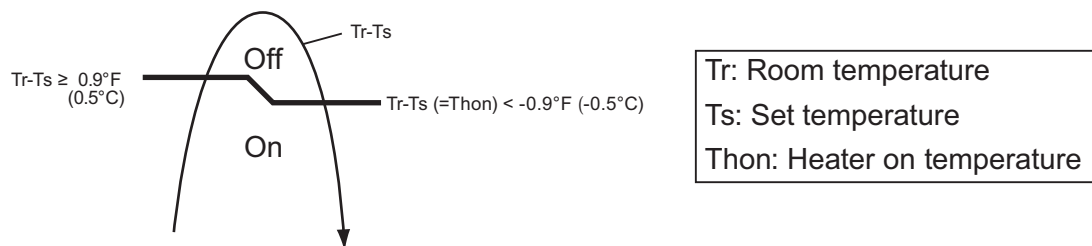
| Operation | Condition |
|------------|---|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off |

- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)

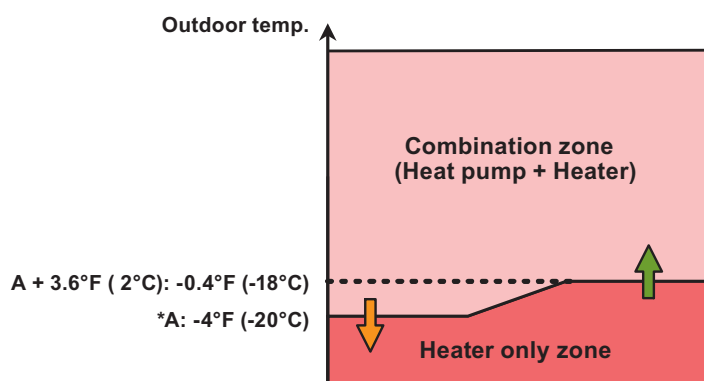


• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting “Thon”.

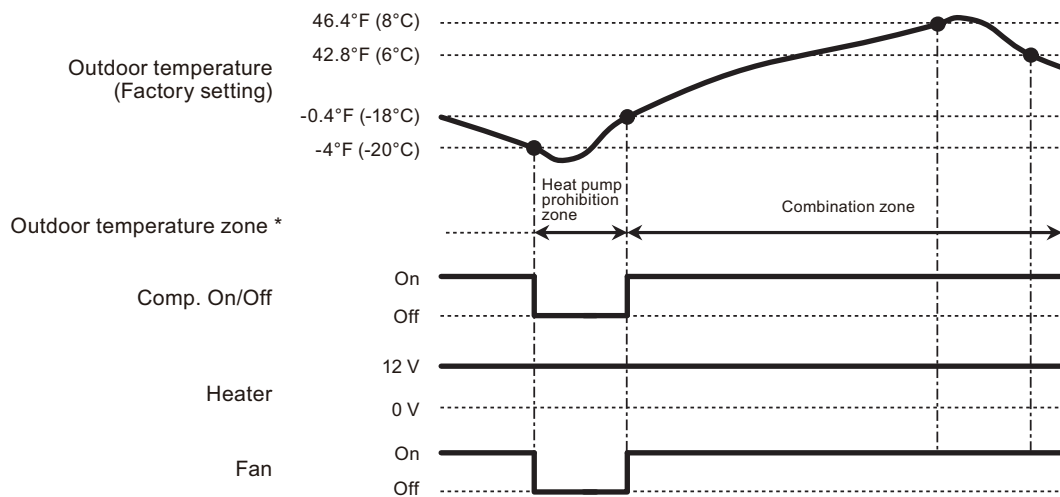


• Outdoor temperature zone



*: Adjustable by function setting 66

- Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

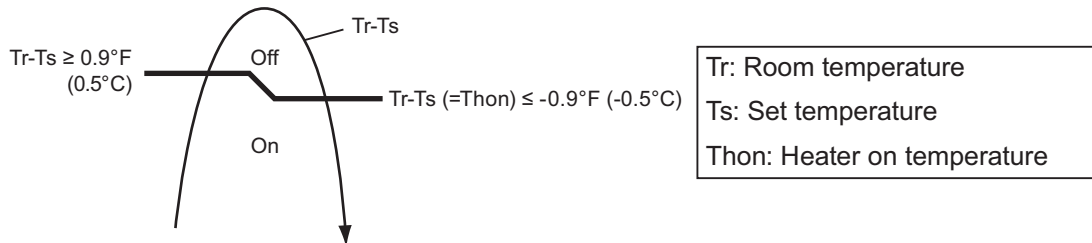
- Other than heating
- Test run

● Auxiliary heat pump control by outdoor temperature 2

• External heater output

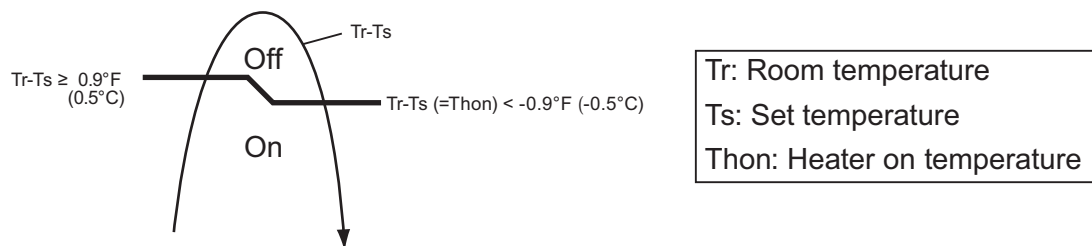
| Operation | Condition |
|------------|---|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off |

- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)

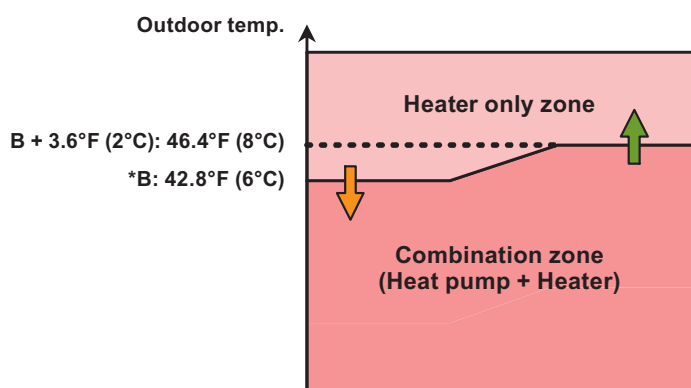


• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting “Thon”.

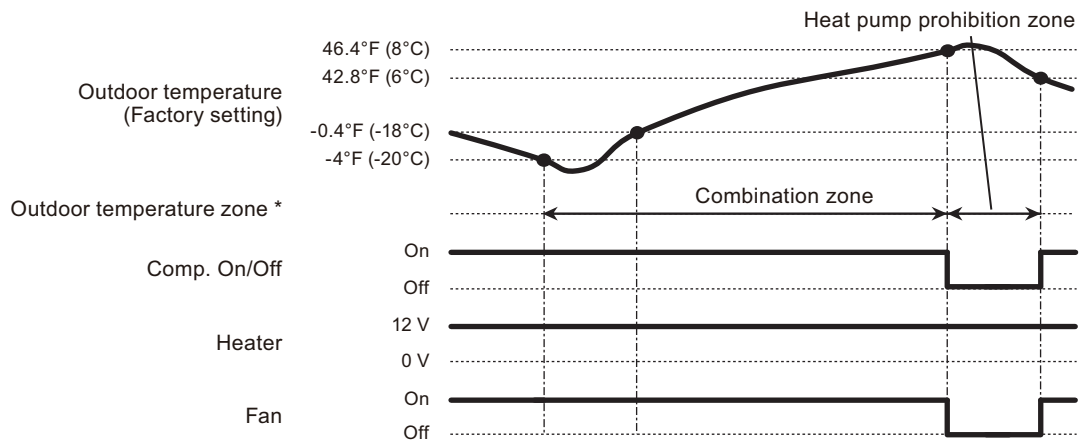


• Outdoor temperature zone



*: Adjustable by function setting 67

- Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

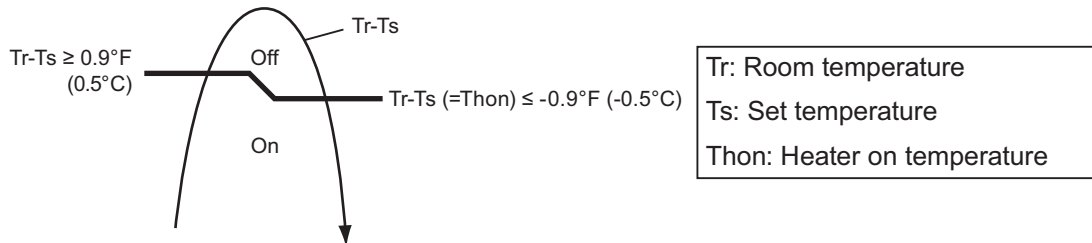
- Other than heating
- Test run

● Auxiliary heat pump control by outdoor temperature 3

• External heater output

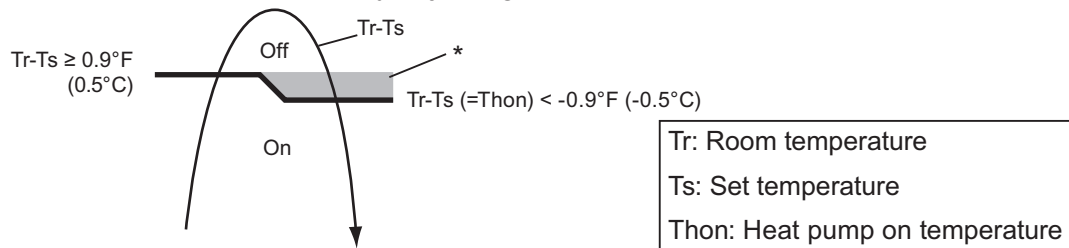
| Operation | Condition |
|------------|---|
| Heater on | Heater is on as shown in following diagram of heating temperature. |
| Heater off | <ul style="list-style-type: none"> Heater is off as shown in following diagram of heating temperature. Other than heating mode Error occurred Forced thermostat off |

- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



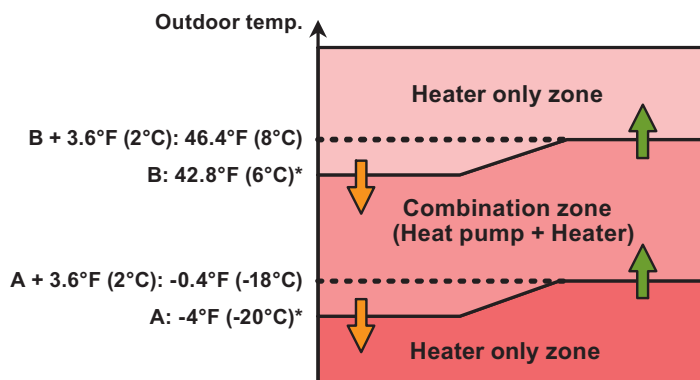
• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting “Thon”.



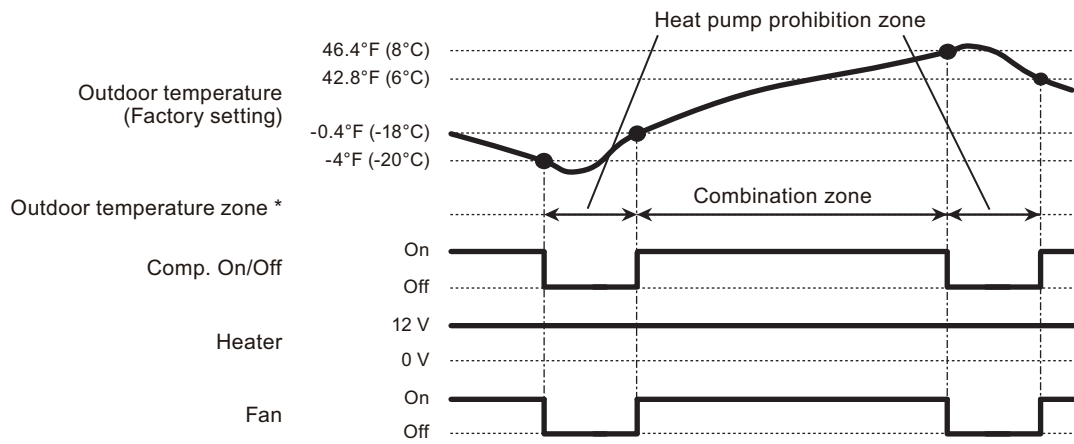
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

• Outdoor temperature zone



*: Adjustable by function setting 66 and 67

- Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

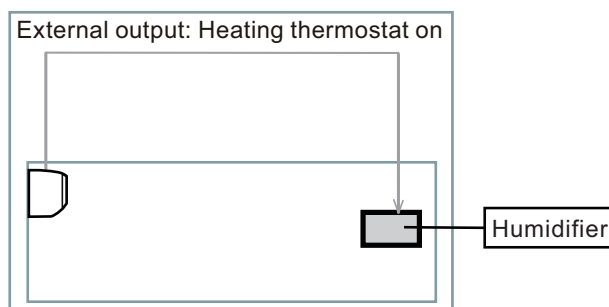
NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

■ Heating thermostat on for humidifier

| Situation | Indoor unit | | | | |
|----------------------------------|-------------|------------------------------|-----------|-----------------------|----------------------------------|
| | Mode | Function setting | Rotary SW | External output | |
| | | Heating thermostat on no. 60 | | Heating thermostat on | Indoor unit fan operation status |
| Example of individual connection | 5 | 60-05 | 7 | CN47 | Not used |
| | 6 | 60-06 | 8 | CN312 | |
| | 7 | 60-07 | 9 | CN311 | |
| | 8 | 60-08 | A | CN310 | |

- **Example of individual connection**



- **Operation status**

The heating thermostat output for CNB01 (1-2 or 1-3 or 1- or 1-5) will be on when comp on or external heater on.

The heating thermostat output will be off when comp off and external heater off.

