

AIR CONDITIONER

**Duct type**

# SERVICE MANUAL

---

INDOOR



ARXG36KHTAP  
ARXG45KHTAP  
ARXG54KHTAP

OUTDOOR



AOYG36KRTA



AOYG45KRTA  
AOYG54KRTA

**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                         |              |                        |                   | Duct  |               |               |
|------------------------------|--------------|------------------------|-------------------|---|---------------|---------------|
|                              |              |                        |                   | Inverter heat pump  |               |               |
| Model name                   |              |                        |                   | ARXG36KHTAP   | ARXG45KHTAP   | ARXG54KHTAP   |
| Power supply                 |              |                        |                   | 3N 400 V ~ 50 Hz  |               |               |
| Power supply intake          |              |                        |                   | Outdoor unit  |               |               |
| Available voltage range      |              |                        |                   | 342—457 V   |               |               |
| Capacity                     | Cooling      | Rated                  | kW                | 9.5   | 12.1          | 13.4          |
|                              |              |                        | Btu/h             | 32,400  | 41,300        | 45,700        |
|                              |              | Min.—Max.              | kW                | 2.8—11.2  | 4.0—14.0      | 4.5—14.5      |
|                              | Heating      | Rated                  | Btu/h             | 9,600—38,200  | 13,600—47,800 | 15,400—49,500 |
|                              |              |                        | kW                | 10.8  | 13.5          | 15.5          |
|                              |              | Min.—Max.              | kW                | 2.7—12.7  | 4.2—16.2      | 4.7—16.5      |
|                              |              |                        | Btu/h             | 9,200—43,300  | 14,300—55,300 | 16,000—56,300 |
| Input power                  | Cooling      | Rated                  | kW                | 2.86  | 3.53          | 4.42          |
|                              |              |                        |                   | 4.12  | 4.88          | 5.23          |
|                              | Heating      | Rated                  | kW                | 2.48  | 3.37          | 3.89          |
|                              |              |                        |                   | 4.53  | 4.74          | 4.83          |
|                              | Fan          | HIGH                   | W                 | 150   | 225           | 225           |
|                              |              |                        |                   | 90  | 135           | 135           |
|                              |              |                        |                   | 60  | 90            | 90            |
|                              |              |                        |                   | 45  | 70            | 70            |
| Current                      | Cooling      | Rated                  | A                 | 5.50  | 6.60          | 8.00          |
|                              | Heating      |                        |                   | 4.90  | 6.40          | 7.20          |
| Power factor                 | Cooling      |                        | %                 | 75.0  | 77.2          | 80.4          |
|                              | Heating      |                        |                   | 73.9  | 76.6          | 78.4          |
| EER                          | Cooling      |                        | kW/kW             | 3.32  | 3.43          | 3.03          |
| COP                          | Heating      |                        | kW/kW             | 4.35  | 4.01          | 3.98          |
| Moisture removal             |              |                        | L/h (pints/h)     | 2.0 (3.5)   | 2.6 (4.6)     | 3.7 (6.5)     |
| Maximum operating current *1 |              | Cooling                | A                 | 10.5  |               | 14.0          |
|                              |              | Heating                |                   | 10.5  |               | 14.0          |
| Fan                          | Airflow rate | Cooling                | m <sup>3</sup> /h | HIGH  | 2,050         | 2,550         |
|                              |              |                        |                   | MED   | 1,640         | 2,040         |
|                              |              |                        |                   | LOW   | 1,330         | 1,650         |
|                              |              |                        |                   | QUIET   | 1,070         | 1,430         |
|                              |              | Heating                | HIGH              | 1,850   | 2,550         |               |
|                              |              |                        | MED               | 1,640   | 2,040         |               |
|                              |              |                        | LOW               | 1,330   | 1,650         |               |
|                              |              |                        | QUIET             | 1,070   | 1,430         |               |
|                              | Type × Q'ty  |                        | Sirocco fan × 3   |   |               |               |
|                              | Motor output |                        | W                 | 375   |               |               |
| Static pressure range        |              |                        | Pa                | 30 to 200   |               |               |
| Sound pressure level *2      |              | Cooling                | dB (A)            | HIGH  | 36            | 39            |
|                              |              |                        |                   | MED   | 31            | 35            |
|                              |              |                        |                   | LOW   | 28            | 31            |
|                              |              |                        |                   | QUIET   | 26            | 29            |
|                              |              | Heating                | HIGH              | 33  | 39            |               |
|                              |              |                        | MED               | 31  | 35            |               |
|                              |              |                        | LOW               | 28  | 31            |               |
|                              |              |                        | QUIET             | 26  | 29            |               |
| Sound power level            |              | Cooling                | dB (A)            | 64  | 67            |               |
| Heating                      | 63           | 69                     |                   |   |               |               |
| Heat exchanger type          |              | Dimensions (H × W × D) |                   | 420 × 1,158 × 39.9  |               |               |
|                              |              | Fin pitch              |                   | 1.4   |               |               |
|                              |              | Rows × Stages          |                   | 3 × 20  |               |               |
|                              |              | Pipe type              |                   | Copper  |               |               |
|                              |              | Fin type               |                   | Aluminum  |               |               |
| Enclosure                    |              | Material               |                   | Steel sheet   |               |               |
|                              |              | Color                  |                   | —   |               |               |
| Dimensions (H × W × D)       |              | Net                    |                   | 300 × 1,400 × 700   |               |               |
|                              |              | Gross                  |                   | 400 × 1,638 × 875   |               |               |
| Weight                       |              | Net                    |                   | 46  |               |               |
|                              |              | Gross                  |                   | 56  |               |               |
| Connection pipe              |              | Size                   | Liquid            | mm (in)   |               |               |
|                              |              |                        |                   | Gas   | Ø 9.52 (3/8)  |               |
| Method                       |              | Flare                  |                   |   |               |               |
| Drain hose                   |              | Material               |                   | PVC   |               |               |
|                              |              | Size                   |                   | mm  |               |               |
| Operation range              |              | Cooling                | °C                | Ø 25 (I.D.), Ø 32 (O.D.)  |               |               |
|                              |              |                        | %RH               | 18 to 32  |               |               |
| Remote control (Option)      |              | Heating                | °C                | 80 or less  |               |               |
|                              |              |                        | %RH               | 16 to 30  |               |               |
|                              |              |                        |                   | Wired remote controller, Wireless remote controller, Mobile app*3 (FGLair™) |               |               |

| Type  | Duct               |             |             |
|---|--------------------|-------------|-------------|
|   | Inverter heat pump |             |             |
| Model name  | ARXG36KHTAP        | ARXG45KHTAP | ARXG54KHTAP |
| <p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• Specifications are based on the following conditions: <ul style="list-style-type: none"> <li>– Cooling: Indoor temperature of 27 °CDB/19 °CWB, and outdoor temperature of 35 °CDB/24 °CWB.</li> <li>– Heating: Indoor temperature of 20 °CDB/15 °CWB, and outdoor temperature of 7 °CDB/6 °CWB.</li> <li>– Pipe length: 5 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)</li> <li>– Standard static pressure; 36 type: 47 Pa, 45 and 54 types: 60 Pa</li> </ul> </li> <li>• Protective function might work when using it outside the operation range.</li> <li>• *1: Maximum operating current is the total current of the indoor unit and the outdoor unit.</li> <li>• *2: Sound pressure level: <ul style="list-style-type: none"> <li>– Measured values in manufacturer's anechoic chamber.</li> <li>– Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.</li> </ul> </li> <li>• *3: Available on Google Play™ store or on App Store®. Optional WLAN adapter is also required. For details, refer to the setting manual.</li> <li>• This data is based on EN 14511 standard.</li> </ul> |                    |             |             |



| Specifications for Erp Lot10 |                   |             |                 |
|------------------------------|-------------------|-------------|-----------------|
| Model name                   |                   | ARXG36KHTAP |                 |
| Energy efficiency class      | Cooling           |             | A <sup>++</sup> |
|                              | Heating (Average) |             | A <sup>+</sup>  |
| Pdesign                      | Cooling           | kW          | 9.5 (35°C)      |
|                              | Heating (Average) |             | 8.7 (-10°C)     |
| SEER                         | Cooling           | kWh/kWh     | 6.10            |
| SCOP                         | Heating (Average) |             | 4.20            |
| Annual energy consumption    | QCE               | kWh/a       | 544             |
|                              | QHE (Average)     |             | 2,898           |

# 1-2. Outdoor unit

| Type                    |              |                                 |                   | Inverter heat pump                                   |               |
|-------------------------|--------------|---------------------------------|-------------------|--|---------------|
| <b>Model name</b>       |              |                                 |                   | <b>AOYG36KRTA</b>                                    |               |
| Power supply            |              |                                 |                   | 3N 400 V ~ 50 Hz                                     |               |
| Power supply intake     |              |                                 |                   | Outdoor unit   |               |
| Available voltage range |              |                                 |                   | 342—457 V  |               |
| Starting current        |              |                                 |                   | 5.5  |               |
| Fan                     | Airflow rate | Cooling                         | m <sup>3</sup> /h | 3,750  |               |
|                         |              | Heating                         |                   | 3,750  |               |
|                         | Type × Q'ty  |                                 |                   | Propeller × 1  |               |
|                         | Motor output |                                 | W                 | 100  |               |
| Sound pressure level *1 |              | Cooling                         | dB (A)            | 55   |               |
|                         |              | Heating                         |                   | 55   |               |
| Sound power level       |              | Cooling                         | dB (A)            | 70   |               |
|                         |              | Heating                         |                   | 70   |               |
| Heat exchanger type     |              | Dimensions (H × W × D)          | mm                | Main1: 756 × 905 × 18.20<br>Main2: 756 × 905 × 18.20 |               |
|                         |              | Fin pitch                       |                   | Main1: 1.45<br>Main2: 1.45                           |               |
|                         |              | Rows × Stages                   |                   | Main1: 1 × 36<br>Main2: 1 × 36                       |               |
|                         |              | Pipe type                       |                   | Copper   |               |
|                         |              | Fin                             | Type (Material)   |  | Aluminum      |
|                         |              |                                 | Surface treatment |  | Blue fin      |
| Compressor              | Type         |                                 |                   | DC twin rotary                                       |               |
|                         | Motor output | W                               |                   | 1,500  |               |
| Refrigerant             |              | Type (Global warming potential) |                   | R32 (675)  |               |
|                         |              | Factory charge                  | g                 | 1,900  |               |
| Refrigerant oil         |              | Type                            |                   | FW68D  |               |
|                         |              | Amount                          | cm <sup>3</sup>   | 600  |               |
| Enclosure               |              | Material                        |                   | Steel sheet  |               |
|                         |              | Color                           |                   | Beige<br>Approximate color of Munsell 10YR 7.5/1.0   |               |
| Dimensions (H × W × D)  |              | Net                             | mm                | 788 × 940 × 320                                      |               |
|                         |              | Gross                           |                   | 966 × 1,027 × 445                                    |               |
| Weight                  |              | Net                             | kg                | 53   |               |
|                         |              | Gross                           |                   | 62   |               |
| Connection pipe         |              | Size                            | mm (in)           | Liquid   | Ø 9.52 (3/8)  |
|                         |              |                                 |                   | Gas  | Ø 15.88 (5/8) |
|                         |              | Method                          |                   |  | Flare         |
|                         |              | Pre-charge length               |                   | m  | 30            |
|                         |              | Max. length                     |                   |  | 50            |
|                         |              | Max. height difference          |                   |  | 30            |
| Operation range         |              | Cooling                         | °C                | -15 to 46  |               |
|                         |              | Heating                         |                   | -15 to 24  |               |
| Drain hose              |              | Material                        |                   | LDPE   |               |
|                         |              | Tip diameter                    | mm                | Ø 13.0 (I. D.), Ø 16.0 to Ø 16.7 (O. D.)             |               |

**NOTES:**

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 27 °CDB/19 °CWB, and outdoor temperature of 35 °CDB/24 °CWB.
  - Heating: Indoor temperature of 20 °CDB/15 °CWB, and outdoor temperature of 7 °CDB/6 °CWB.
  - Pipe length: 5.0 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- \*1: 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.
- This data is based on EN 14511 standard.

| Type                    |              |  |                    | Inverter heat pump   |   |            |  |  |
|-------------------------|--------------|--|--------------------|--|---|------------|--|--|
| Model name              |              |  |                    | AOYG45KRTA   |   | AOYG54KRTA |  |  |
| Power supply            |              |  |                    | 3N 400 V ~ 50 Hz   |   |            |  |  |
| Power supply intake     |              |  |                    | Outdoor unit   |   |            |  |  |
| Available voltage range |              |  |                    | 342—457 V  |   |            |  |  |
| Starting current        |              |  |                    | 6.6  |   | 8.0        |  |  |
| Fan                     | Airflow rate | Cooling                                  | m <sup>3</sup> /h  | 4,450  |   |            |  |  |
|                         |              | Heating                                  |                    | 4,450  |   |            |  |  |
|                         | Type × Q'ty  |  |                    |  | Propeller × 1                                 |            |  |  |
| Motor output            |              |  | W                  | 120  |   |            |  |  |
| Sound pressure level *1 |              | Cooling                                  | dB (A)             | 57   |   |            |  |  |
|                         |              | Heating                                  |                    | 57   |   | 59         |  |  |
| Sound power level       |              | Cooling                                  | dB (A)             | 71   |   | 73         |  |  |
|                         |              | Heating                                  |                    | 71   |   | 73         |  |  |
| Heat exchanger type     |              | Dimensions (H × W × D)                   |                    | Main1: 966 × 905 × 18.20<br>Main2: 966 × 905 × 18.20<br>Sub: 966 × 543 × 18.20 |   |            |  |  |
|                         |              | Fin pitch                                |                    | Main1: 1.45<br>Main2: 1.45<br>Sub: 1.45  |   |            |  |  |
|                         |              | Rows × Stages                            |                    |  | Main1: 1 × 46<br>Main2: 1 × 46<br>Sub: 1 × 46 |            |  |  |
|                         |              | Pipe type                                |                    |  | Copper  |            |  |  |
|                         |              | Fin                                      |                    | Type (Material)  | Aluminum                                      |            |  |  |
|                         |              | Surface treatment                        |                    | Blue fin   |   |            |  |  |
| Compressor              |              | Type × Q'ty                              | DC Twin rotary × 1 |  |   |            |  |  |
|                         |              | Motor output                             |                    | W  |   |            |  |  |
| Refrigerant             |              | Type (Global warming potential)          |                    | R32 (675)  |   |            |  |  |
|                         |              | Factory charge                           |                    | g  |   |            |  |  |
| Refrigerant oil         |              | Type                                     |                    | RmM68AF  |   |            |  |  |
|                         |              | Amount                                   |                    | cm <sup>3</sup>  |   |            |  |  |
| Enclosure               |              | Material                                 |                    | Steel sheet  |   |            |  |  |
|                         |              | Color                                    |                    | Beige<br>Approximate color of Munsell 10YR 7.5/1.0                             |   |            |  |  |
| Dimensions (H × W × D)  |              | Net                                      |                    | mm   |   |            |  |  |
|                         |              | Gross                                    |                    | 998 × 940 × 320<br>1,176 × 1,027 × 445   |   |            |  |  |
| Weight                  |              | Net                                      |                    | kg   |   |            |  |  |
|                         |              | Gross                                    |                    | 67<br>77   |   |            |  |  |
| Connection pipe         |              | Size                                     |                    | Liquid   | mm (in)                                       |            |  |  |
|                         |              |  |                    | Gas  | Ø 9.52 (3/8)<br>Ø 15.88 (5/8)                 |            |  |  |
|                         |              | Method                                   |                    |  | Flare   |            |  |  |
|                         |              | Pre-charge length                        |                    | m  |   |            |  |  |
|                         |              | Max. length                              |                    | 30   |   |            |  |  |
| Max. height difference  |              | 50                                       |                    |  |   |            |  |  |
| Operation range         |              | Cooling                                  |                    | °C   |   |            |  |  |
|                         |              | Heating                                  |                    | -15 to 46<br>-15 to 24   |   |            |  |  |
| Drain hose              |              | Material                                 |                    | LDPE   |   |            |  |  |
|                         |              | Tip diameter                             |                    | mm   |   |            |  |  |
|                         |              | Ø 13.0 (I. D.), Ø 16.0 to Ø 16.7 (O. D.) |                    |  |   |            |  |  |

**NOTES:**

- Specifications are based on the following conditions:
  - Cooling: Indoor temperature of 27 °CDB/19 °CWB, and outdoor temperature of 35 °CDB/24 °CWB.
  - Heating: Indoor temperature of 20 °CDB/15 °CWB, and outdoor temperature of 7 °CDB/6 °CWB.
  - Pipe length: 5.0 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- \*1: 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.
- This data is based on EN 14511 standard.

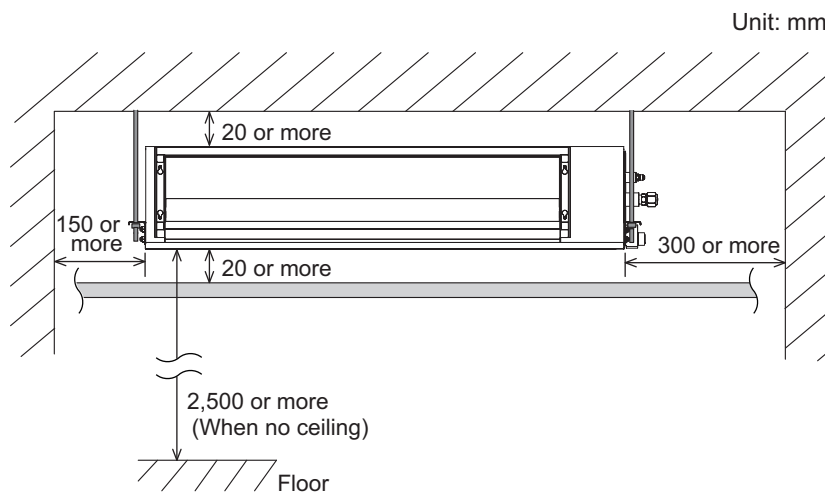


## ■ Installation space requirement

Provide sufficient installation space for product safety.

**NOTE:** The detailed component shape depends on the model.

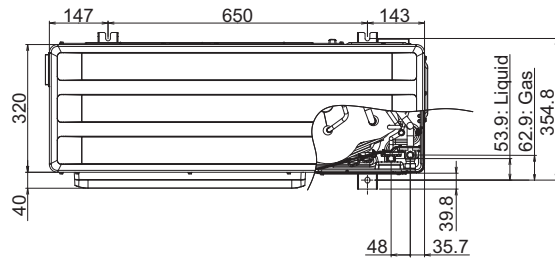
### ● Models: ARXG36KHTAP, ARXG45KHTAP, and ARXG54KHTAP



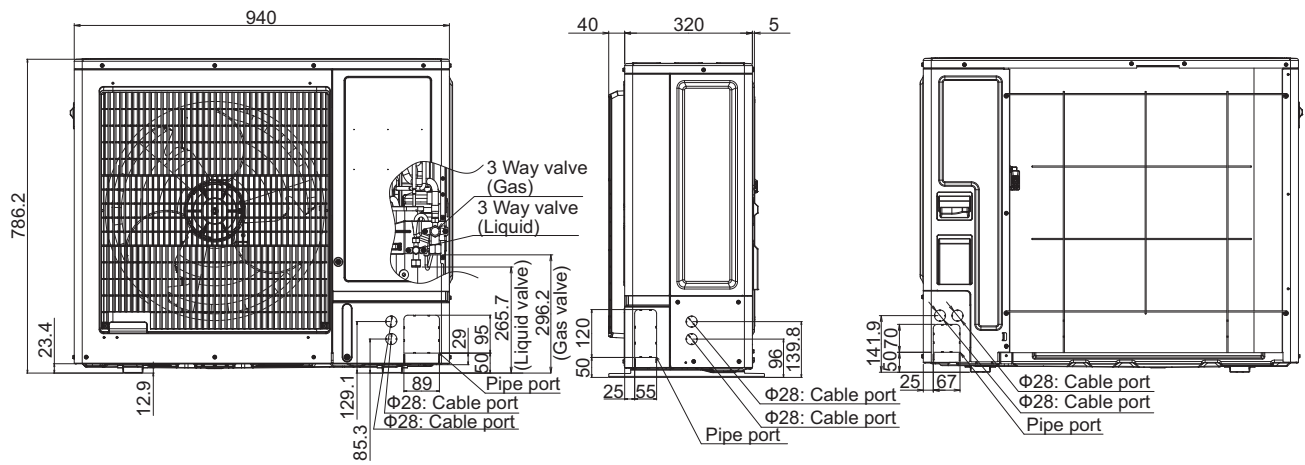
## 2-2. Outdoor unit

### Models: AOYG36KRTA

Unit: mm



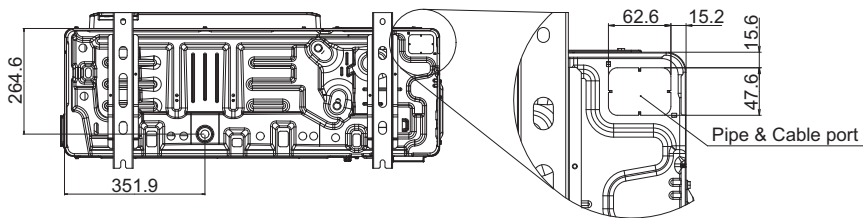
Top view



Front view

Side view

Rear view



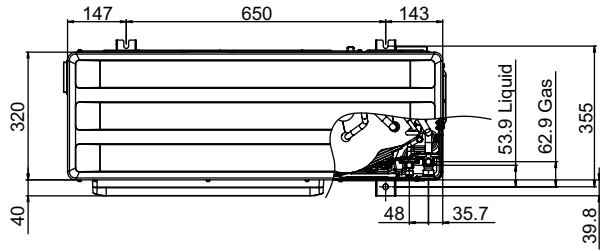
Bottom view

Models: AOYG45KRTA and AOYG54KRTA

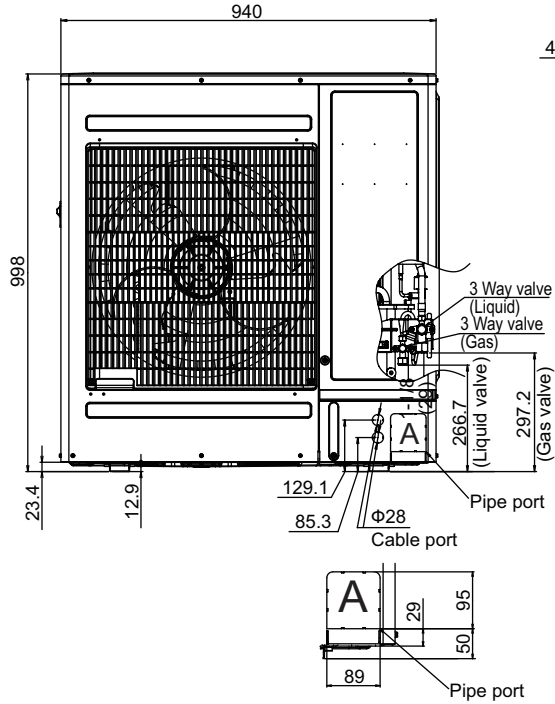
Unit: mm

GENERAL INFORMATION

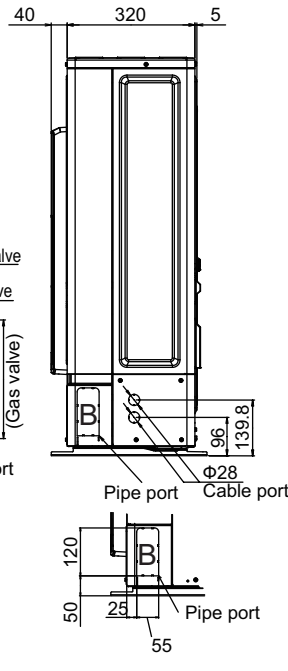
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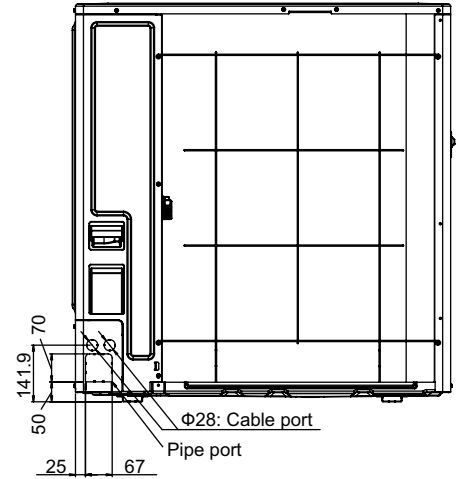
Top view



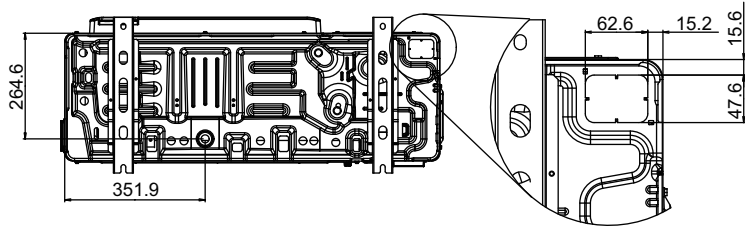
Front view



Side view



Rear view



Bottom view

Pipe & Cable port





## **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 detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
    - Ensure that the leak detection equipment 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.

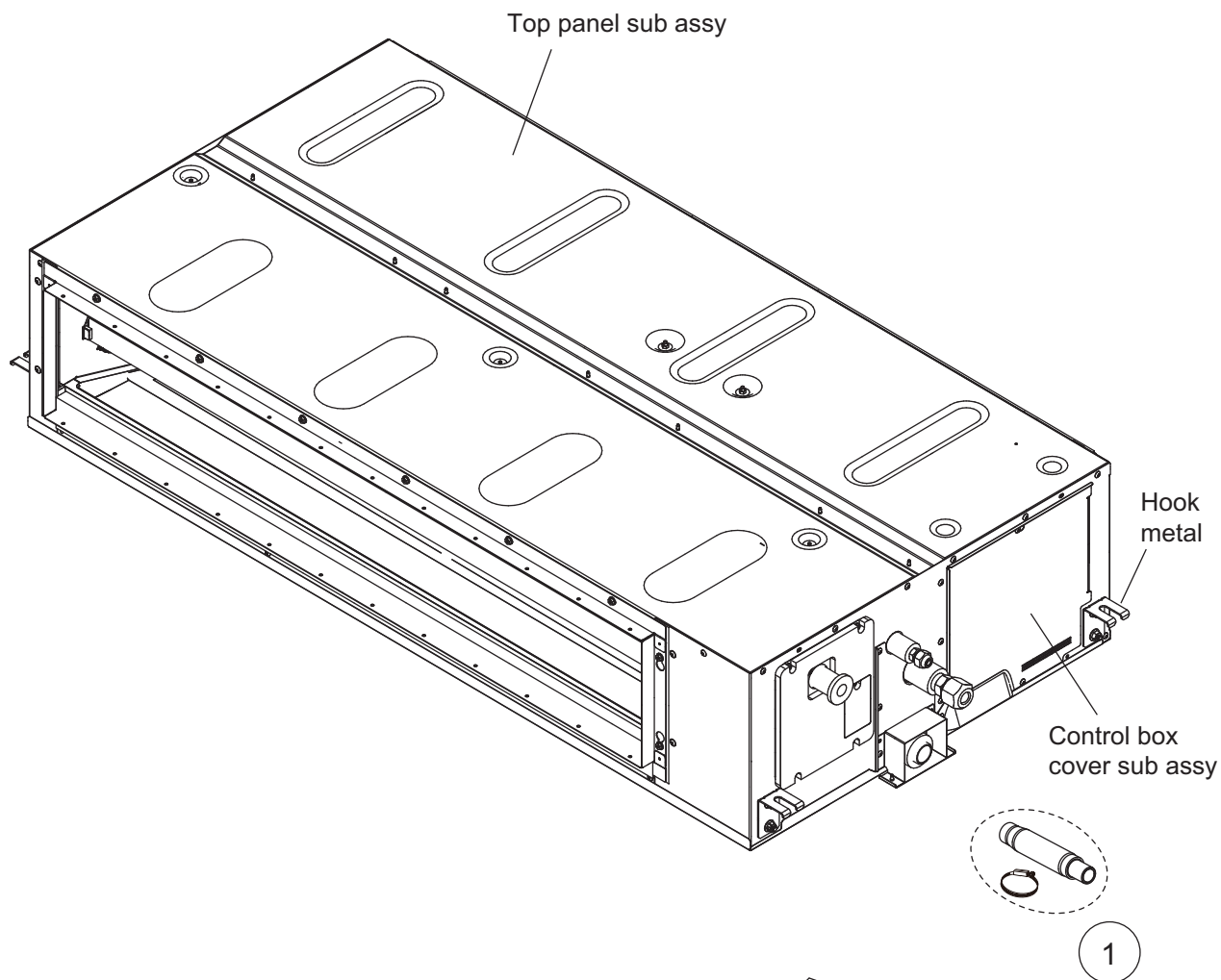
## 2. Indoor unit parts list

### 2-1. Models: ARXG36KHTAP, ARXG45KHTAP, and ARXG54KHTAP

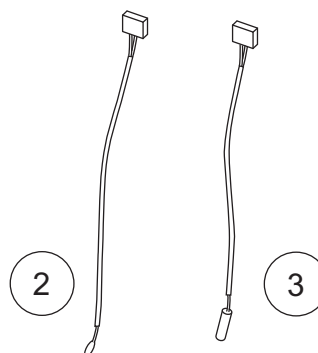
#### ■ Thermistors

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AND PARTS LIST

TECHNICAL DATA  
AND PARTS LIST



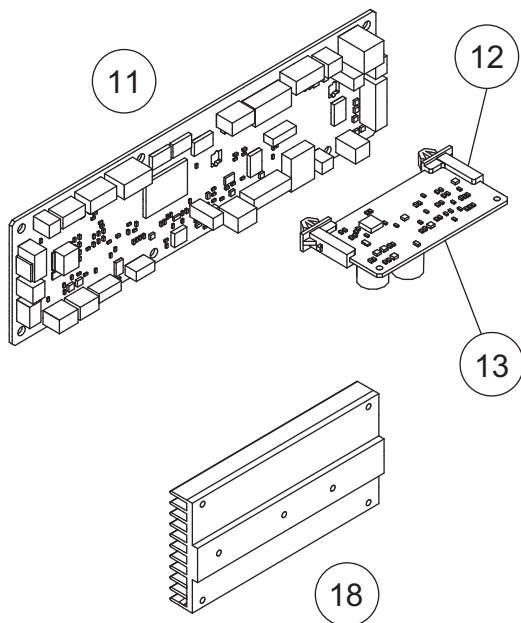
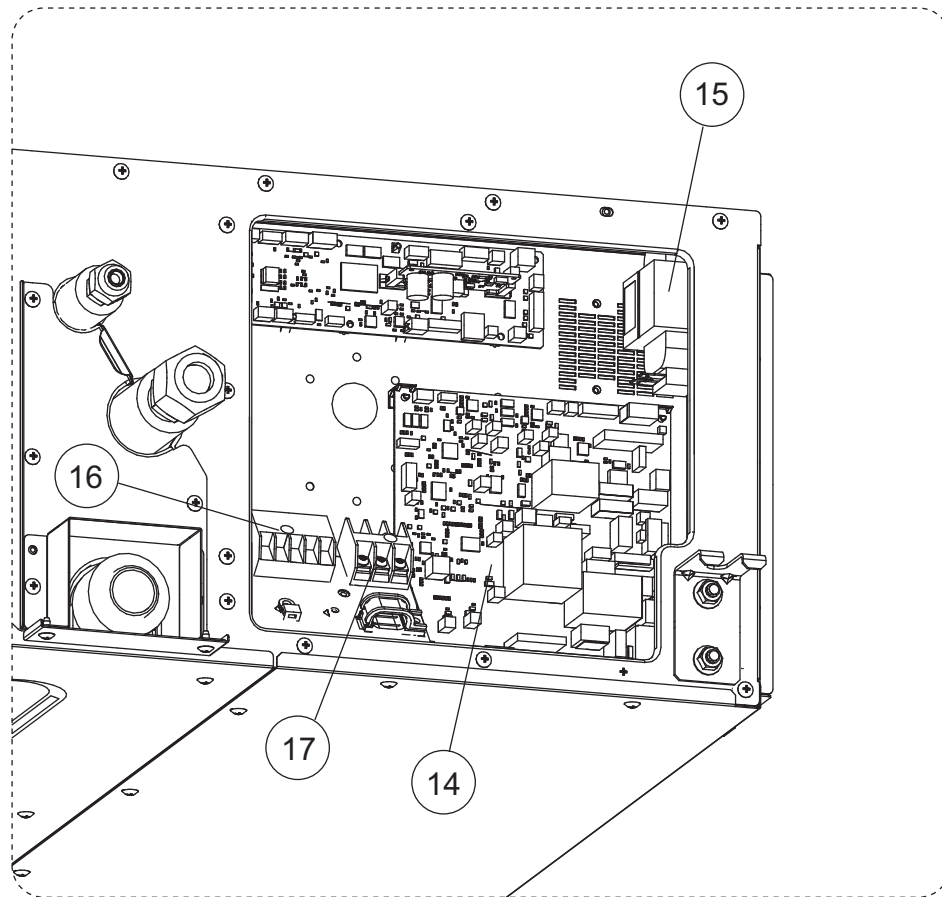
| Ref. | Description     | Part number |
|------|-----------------|-------------|
| 1    | Hose sub assy   | 9378450196  |
| 2    | Room thermistor | 9703299278  |
| 3    | Pipe thermistor | 9900892005  |



■ Main PC board

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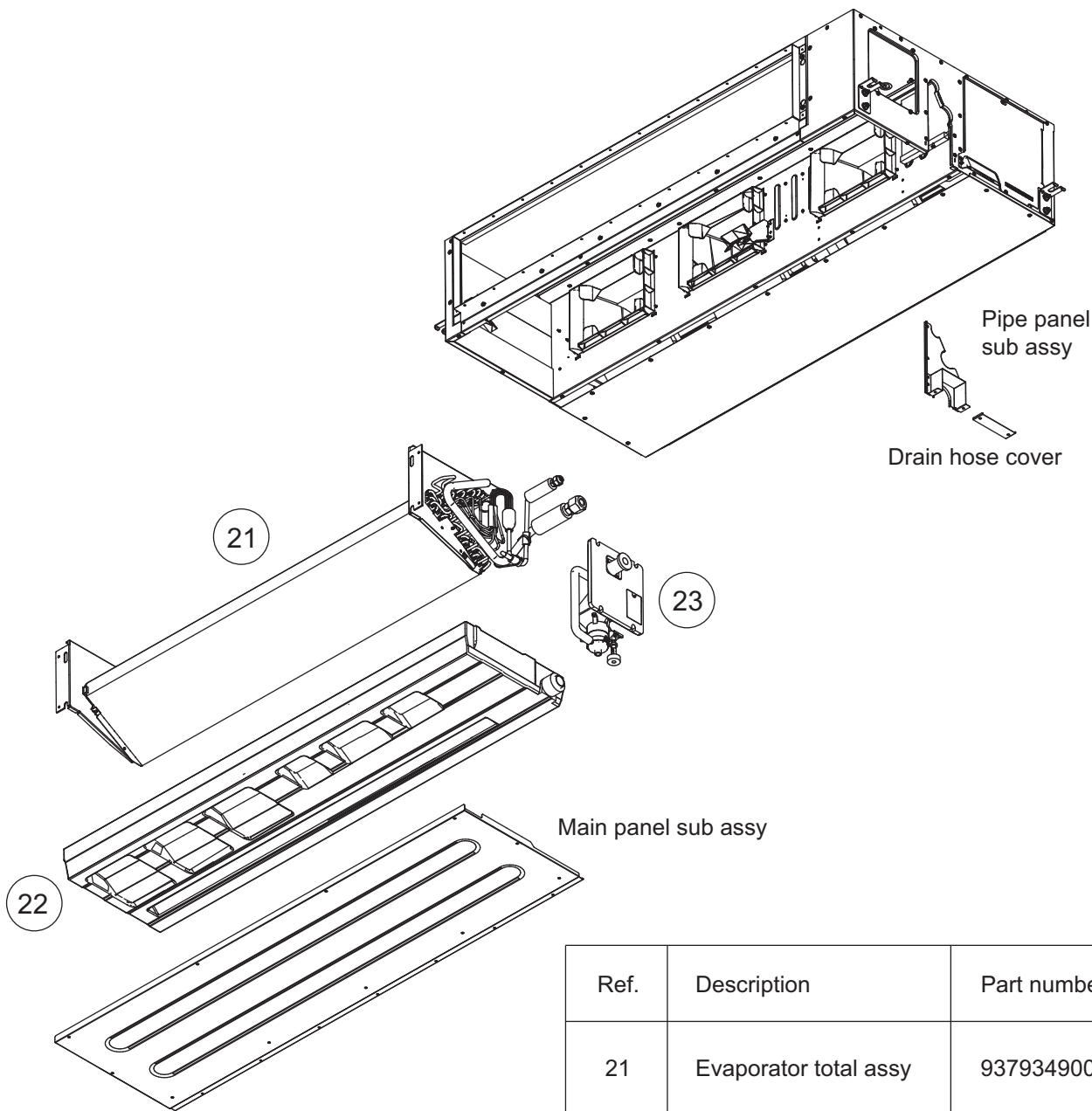


| Ref. | Description        | Part number |
|------|--------------------|-------------|
| 11   | Main PCB (36KHTAP) | 9710995941  |
| 11   | Main PCB (45KHTAP) | 9710995958  |
| 11   | Main PCB (54KHTAP) | 9710995729  |
| 12   | Holder             | 0600063023  |
| 13   | Communication PCB  | 9710019005  |
| 14   | Power Supply PCB   | 9710261008  |
| 15   | Reactor Assy       | 9900898014  |
| 16   | Terminal (Remote)  | 9900896003  |
| 17   | Terminal (Power)   | 9900568009  |
| 18   | Heatsink           | 9381518005  |

# Evaporator

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AND PARTS LIST

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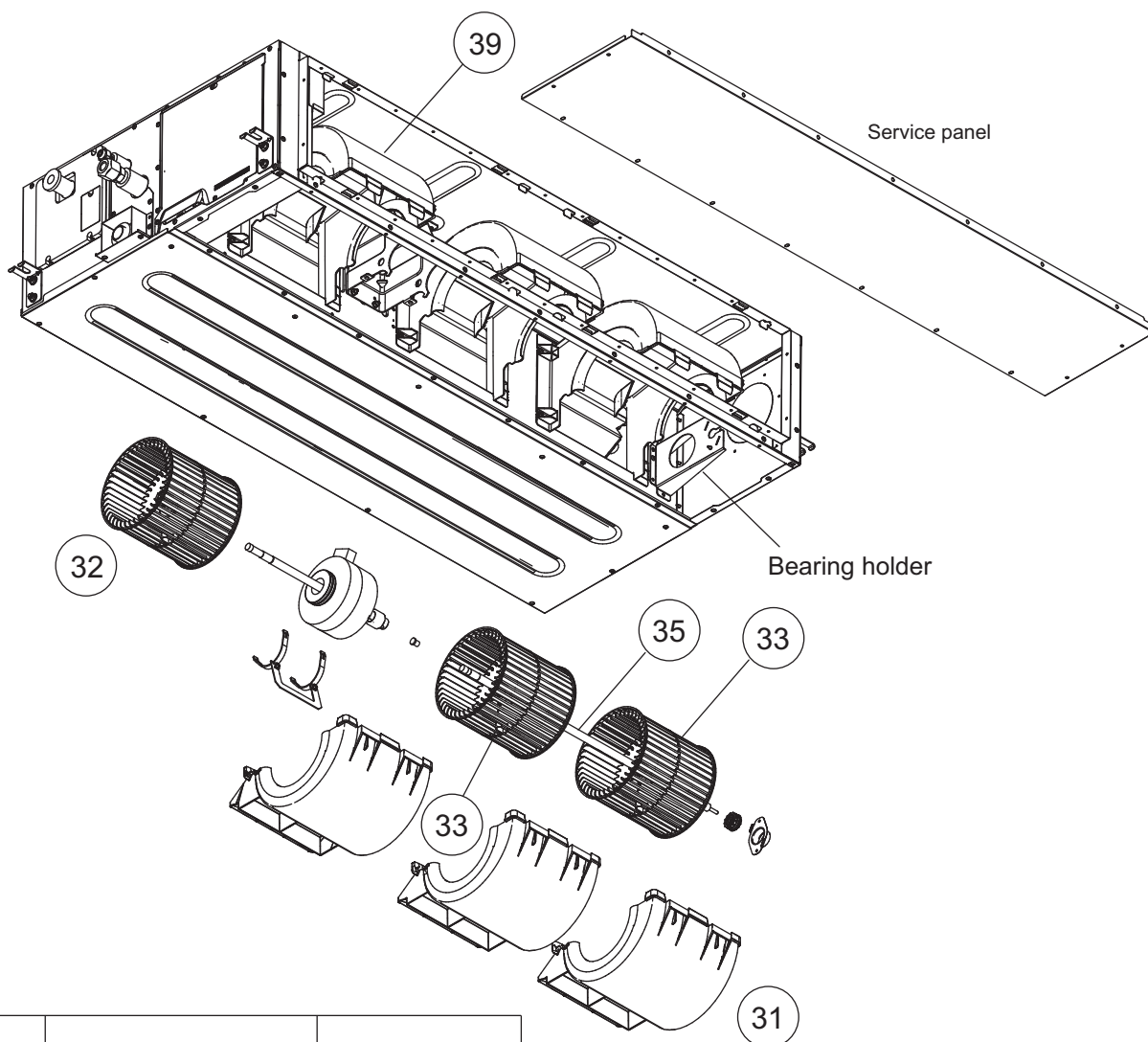


| Ref. | Description           | Part number |
|------|-----------------------|-------------|
| 21   | Evaporator total assy | 9379349000  |
| 22   | Drain Pan Sub Assy    | 9381752003  |
| 23   | Drain Pump Sub Assy   | 9381766017  |
| 24   | Float Switch          | 9900465070  |
| 25   | Pump Assy             | 9900890018  |
| 26   | Drain Hose            | 9381576005  |
| 27   | Drain Port            | 9381565009  |
| 28   | Drain Cap             | 9381578009  |

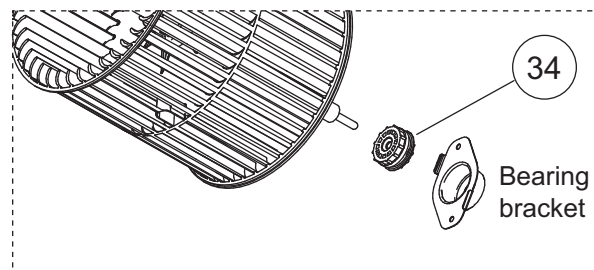
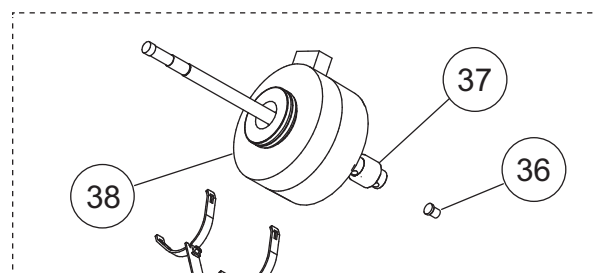
# ■ Casing and fan

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AND PARTS LIST



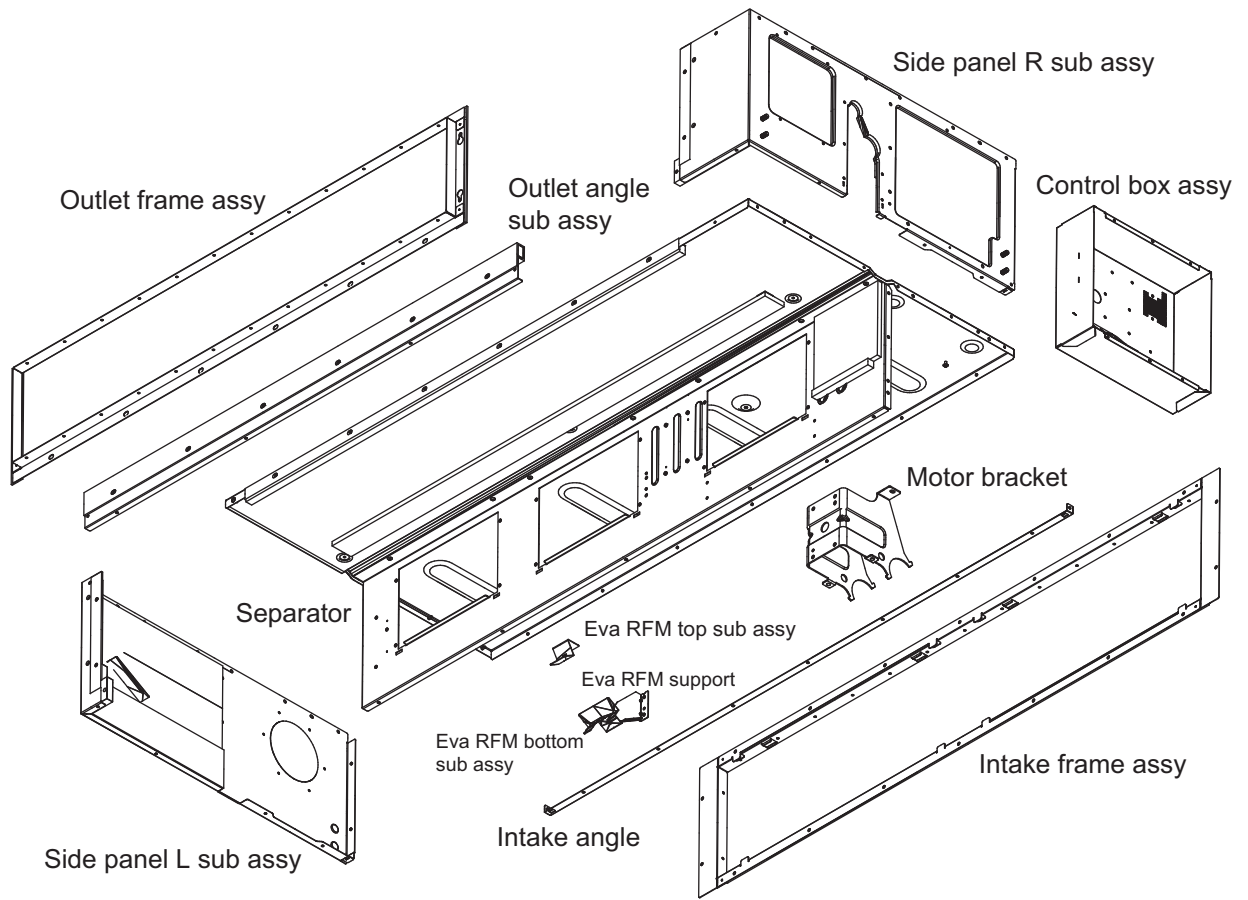
| Ref. | Description       | Part number |
|------|-------------------|-------------|
| 31   | Casing B Sub Assy | 9381829002  |
| 32   | Sirocco Fan Assy  | 9381302000  |
| 33   | Sirocco Fan Assy  | 9381302017  |
| 34   | Bearing B Assy    | 9357921006  |
| 35   | Shaft Assy        | 9381052028  |
| 36   | Shaft Cap         | 9381814015  |
| 37   | Joint Assy        | 9378038035  |
| 38   | Fan motor         | 9603480011  |
| 39   | Casing A          | 9381587001  |



# ■ Chassis

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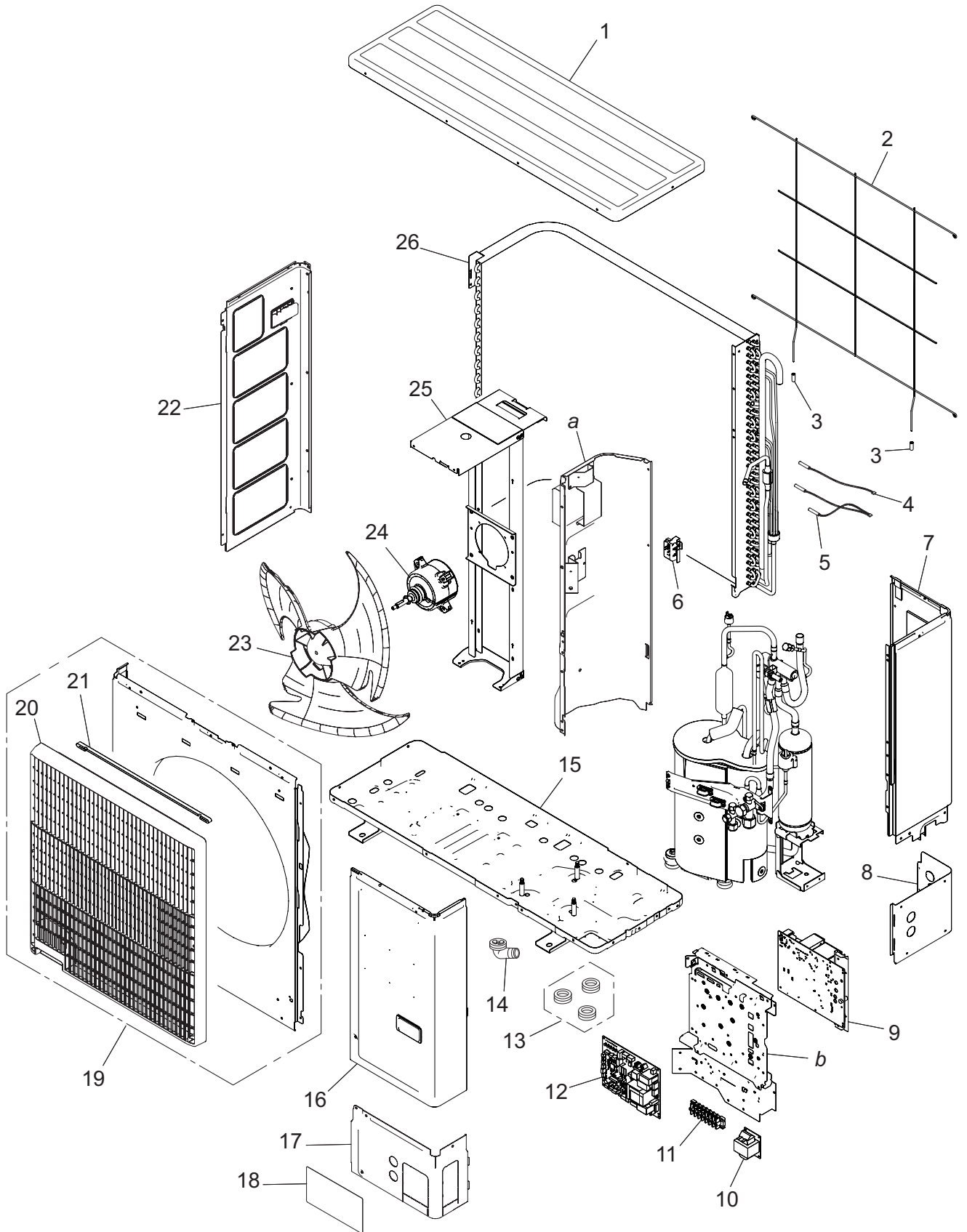
### 3. Outdoor unit parts list

#### 3-1. Model: AOYG36KRTA

##### ■ Exterior parts and chassis

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AND PARTS LIST

TECHNICAL DATA  
AND PARTS LIST

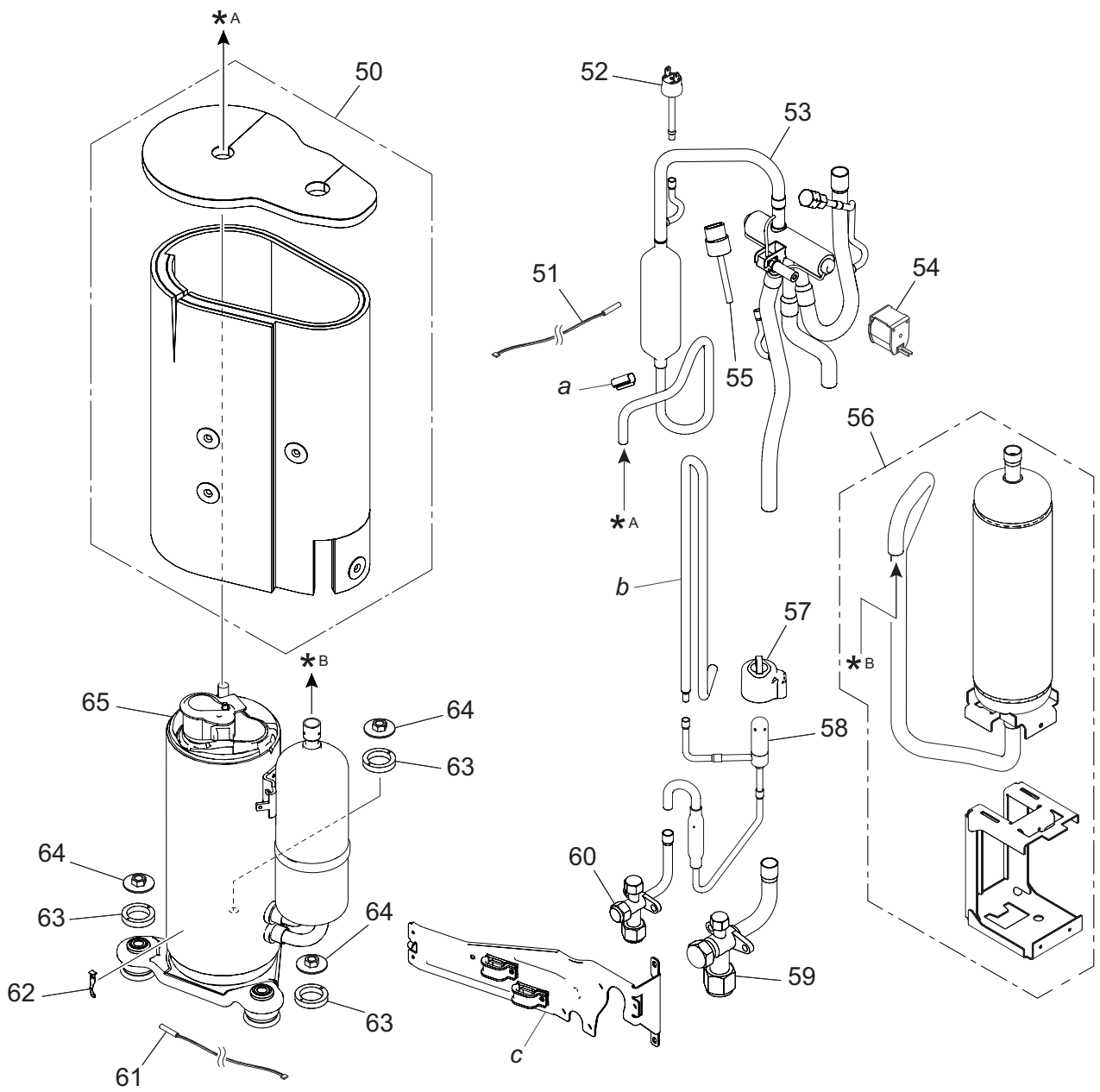


| Item no. | Part no.     | Part name                   | Service part |
|----------|--------------|-----------------------------|--------------|
| 1        | 9383880001   | Top panel assy              | ◆            |
| 2        | 9383779008   | Protective net              | ◆            |
| 3        | 9375361013   | Net rubber                  | ◆            |
| 4        | 9900984038   | Thermistor (Heat exchanger) | ◆            |
| 5        | 9900727154   | Thermistor assy             | ◆            |
| 6        | 9383607004   | Thermo holder               | ◆            |
| 7        | 9383874000   | Right panel sub assy        | ◆            |
| 8        | 9383879005   | Rear pipe cover             | ◆            |
| 9        | 9709684139   | Inverter PCB                | ◆            |
| 10       | 9900634025   | Reactor assy                | ◆            |
| 11       | 9901053016   | Terminal                    | ◆            |
| 12       | 9711431318   | Main PCB (Service)          | ◆            |
| 13       | 313166024302 | Drain cap                   | ◆            |
| 14       | 9303029015   | Drain assy                  | ◆            |
| 15       | 9350255009   | Base assy (Service)         | ◆            |
| 16       | 9383876004   | Service panel sub assy      | ◆            |
| 17       | 9383878008   | Front pipe cover            | ◆            |
| 18       | 9351355005   | Emblem rear                 | ◆            |
| 19       | 9383863004   | Front panel assy            | ◆            |
| 20       | 9383604003   | Blow grille                 | ◆            |
| 21       | 9383689000   | Blow grille insulation      | ◆            |
| 22       | 9383882005   | Left panel sub assy         | ◆            |
| 23       | 9383336003   | Propeller fan               | ◆            |
| 24       | 9603732011   | Brushless motor             | ◆            |
| 25       | 9383862007   | Motor bracket assy          | ◆            |
| 26       | 9374420612   | Condenser sub assy          | ◆            |
| <i>a</i> | —            | Separate wall assy          | —            |
| <i>b</i> | —            | Control box unit            | —            |

# Compressor

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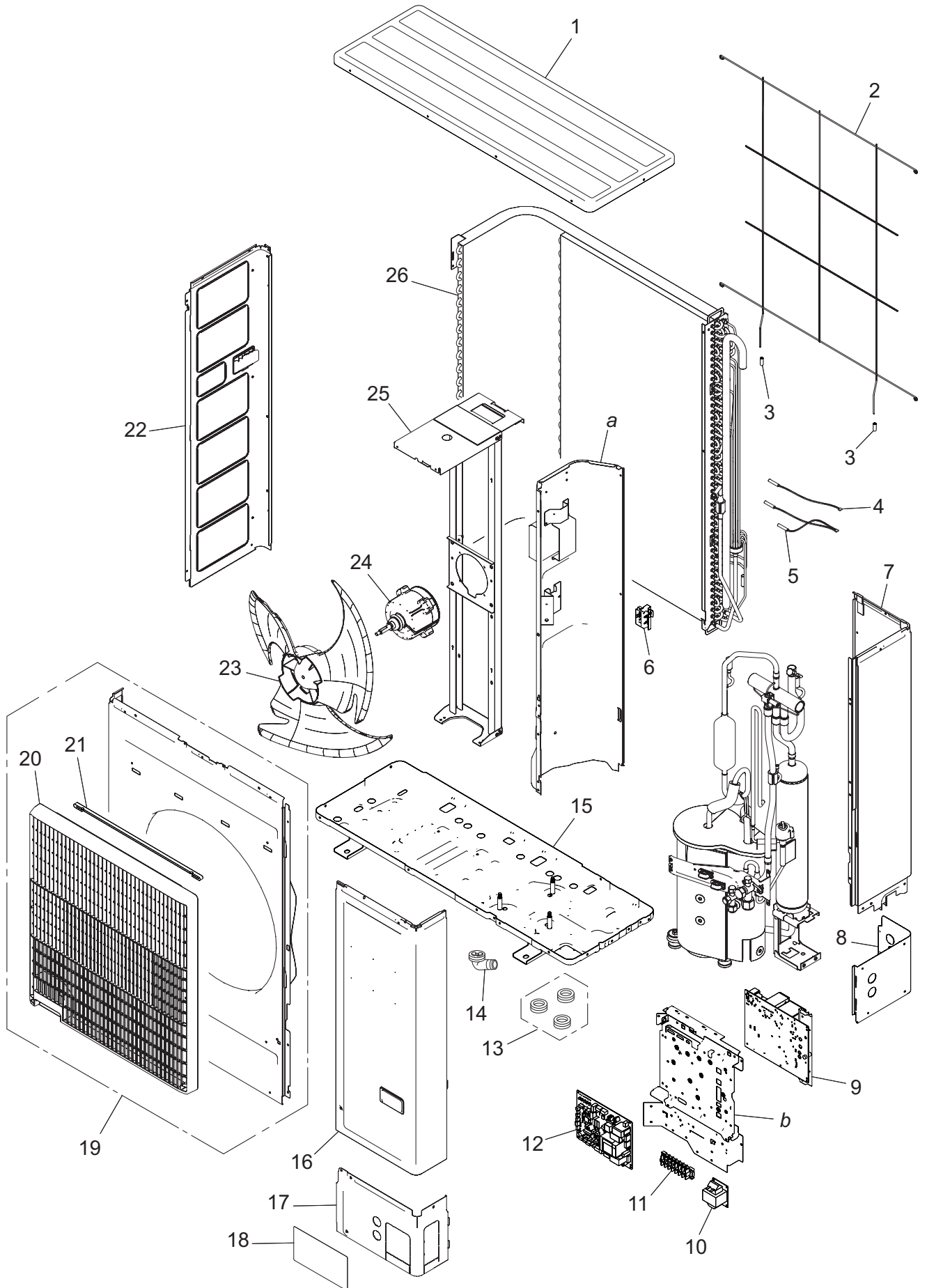
| Item no. | Part no.   | Part name                  | Service part |
|----------|------------|----------------------------|--------------|
| 50       | 9383858000 | Sound insulation unit      | ◆            |
| 51       | 9900565091 | Thermistor (Outdoor temp.) | ◆            |
| 52       | 9900186029 | Pressure switch            | ◆            |
| 53       | 9374425631 | 4-way valve assy           | ◆            |
| 54       | 9970194016 | Solenoid                   | ◆            |
| 55       | 9970158018 | Sensor                     | ◆            |
| 56       | 9384848017 | Accumulator assy (service) | ◆            |
| 57       | 9970209000 | Expansion valve coil       | ◆            |
| 58       | 9370947328 | Expansion valve assy       | ◆            |
| 59       | 9379079013 | 3-way valve assy           | ◆            |
| 60       | 9377958037 | 3-way valve assy           | ◆            |
| 61       | 9900985035 | Thermistor (Compressor)    | ◆            |
| 62       | 9810028006 | Thermistor stopper         | ◆            |
| 63       | 9379179072 | Rubber washer E            | ◆            |
| 64       | 9377973016 | Special nut                | ◆            |
| 65       | 9383821011 | Compressor assy            | ◆            |
| <i>a</i> | —          | Thermostat holder          | —            |
| <i>b</i> | —          | Joint pipe D               | —            |
| <i>c</i> | —          | Wiring fixation unit       | —            |

### 3-2. Models: AOYG45KRTA and AOYG54KRTA

#### ■ Exterior parts and chassis

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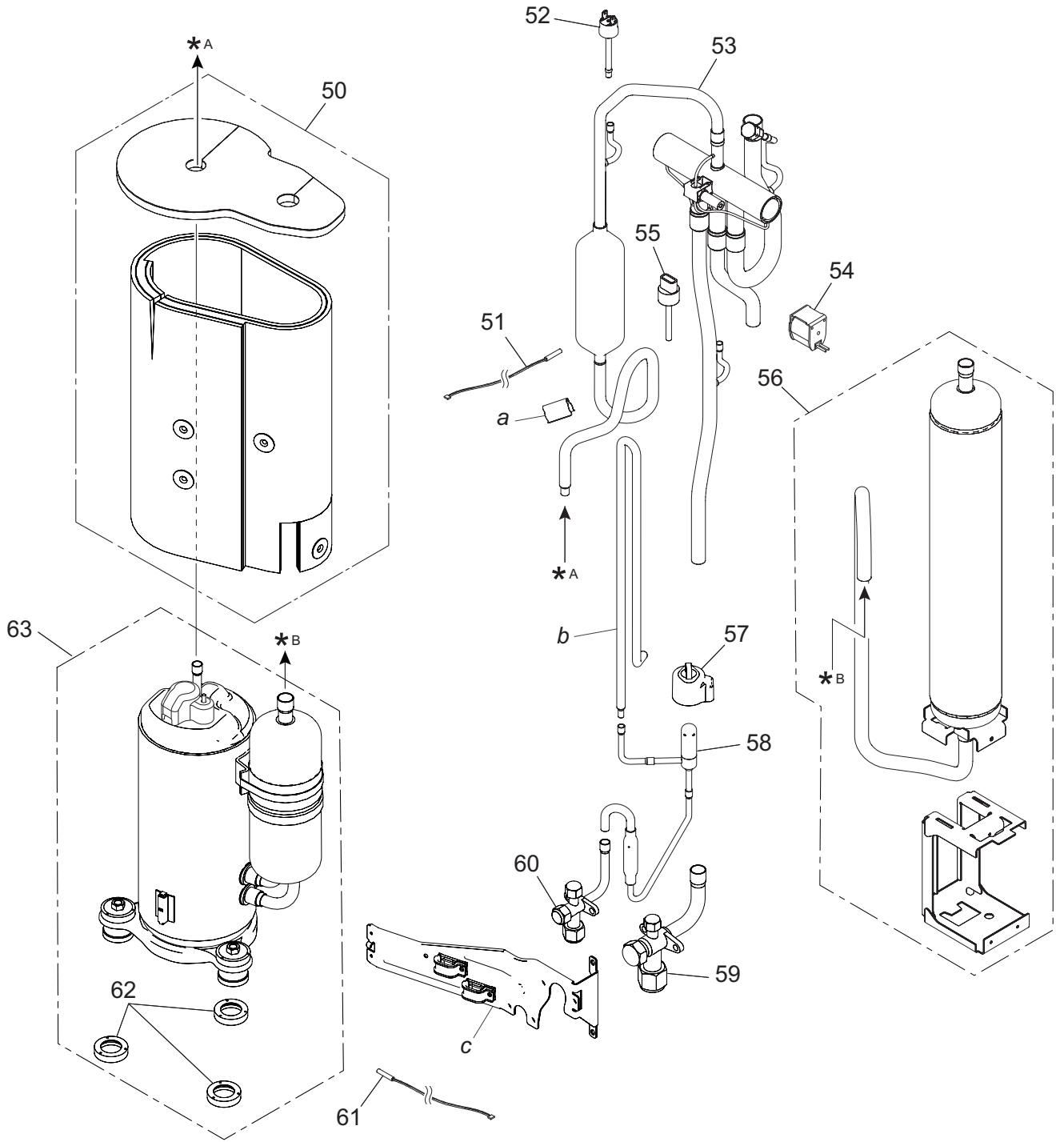


| Item no. | Part no.     | Part name                         | Service part |
|----------|--------------|-----------------------------------|--------------|
| 1        | 9383880001   | Top panel assy                    | ◆            |
| 2        | 9381013005   | Protective net                    | ◆            |
| 3        | 9375361013   | Net rubber                        | ◆            |
| 4        | 9900984038   | Thermistor (Heat exchanger)       | ◆            |
| 5        | 9900727154   | Thermistor assy                   | ◆            |
| 6        | 9383607004   | Thermo holder                     | ◆            |
| 7        | 9383874017   | Right panel sub assy              | ◆            |
| 8        | 9383879005   | Rear pipe cover                   | ◆            |
| 9        | 9709684146   | Inverter PCB                      | ◆            |
| 10       | 9900634025   | Reactor assy                      | ◆            |
| 11       | 9901053016   | Terminal                          | ◆            |
| 12       | 9711431325   | Main PCB (Service) (for 45 model) | ◆            |
|          | 9711431356   | Main PCB (Service) (for 54 model) | ◆            |
| 13       | 313166024302 | Drain cap                         | ◆            |
| 14       | 9303029015   | Drain assy                        | ◆            |
| 15       | 9350255009   | Base assy (Service)               | ◆            |
| 16       | 9383876011   | Service panel sub assy            | ◆            |
| 17       | 9383878008   | Front pipe cover                  | ◆            |
| 18       | 9351355005   | Emblem rear                       | ◆            |
| 19       | 9383863011   | Front panel assy                  | ◆            |
| 20       | 9383604003   | Blow grille                       | ◆            |
| 21       | 9383689000   | Blow grille insulation            | ◆            |
| 22       | 9383882012   | Left panel sub assy               | ◆            |
| 23       | 9383336003   | Propeller fan                     | ◆            |
| 24       | 9603733018   | Brushless motor                   | ◆            |
| 25       | 9383862014   | Motor bracket assy                | ◆            |
| 26       | 9374420605   | Condenser sub assy                | ◆            |
| <i>a</i> | —            | Separate wall assy                | —            |
| <i>b</i> | —            | Control box unit                  | —            |

# Compressor

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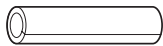
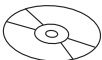
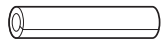







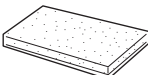

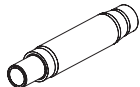


| Item no. | Part no.   | Part name                  | Service part |
|----------|------------|----------------------------|--------------|
| 50       | 9383858017 | Sound insulation unit      | ◆            |
| 51       | 9900565091 | Thermistor (Outdoor temp.) | ◆            |
| 52       | 9900186029 | Pressure switch            | ◆            |
| 53       | 9374425624 | 4-way valve assy           | ◆            |
| 54       | 9970194016 | Solenoid                   | ◆            |
| 55       | 9970158018 | Sensor                     | ◆            |
| 56       | 9384848000 | Accumulator assy (Service) | ◆            |
| 57       | 9970209000 | Expansion valve coil       | ◆            |
| 58       | 9370947311 | Expansion valve assy       | ◆            |
| 59       | 9379079013 | 3-way valve assy           | ◆            |
| 60       | 9377958037 | 3-way valve assy           | ◆            |
| 61       | 9900985028 | Thermistor (Compressor)    | ◆            |
| 62       | 9379179089 | Rubber washer F            | ◆            |
| 63       | 9383851131 | Compressor unit            | ◆            |
| <i>a</i> | —          | Thermistor spring          | —            |
| <i>b</i> | —          | Joint pipe D               | —            |
| <i>c</i> | —          | Wiring fixation unit       | —            |

## 4. Accessories





### 4-1. Indoor unit

#### ■ Models: ARXG36KHTAP, ARXG45KHTAP, and ARXG54KHTAP

| Part name                           | Exterior  | Q'ty | Part name                       | Exterior  | Q'ty |
|-------------------------------------|---|------|---------------------------------|---|------|
| Operating manual                    |    | 1    | Coupler heat insulation (large) |    | 1    |
| Operating manual (CD-ROM)           |    | 1    | Coupler heat insulation (small) |    | 1    |
| Installation manual                 |    | 1    | Cable tie (large)               |    | 4    |
| M10 nut A (with flange)             |    | 4    | Cable tie (medium)              |    | 1    |
| M10 nut B (with spring lock washer) |    | 4    | Cable tie (small)               |    | 1    |
| Washer                              |  | 8    | Drain hose insulation           |   | 1    |
| Hose band                           |  | 1    | Drain hose                      |  | 1    |

### 4-2. Outdoor unit

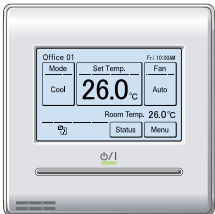
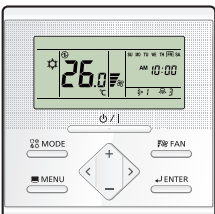
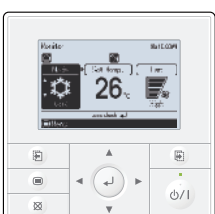
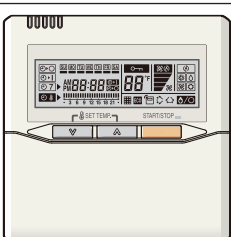

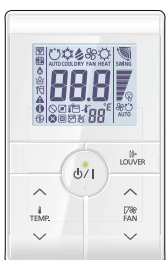
#### ■ Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA


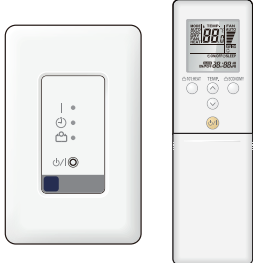
| Part name           | Exterior  | Q'ty | Part name      | Exterior  | Q'ty |
|---------------------|---|------|----------------|---|------|
| Installation manual |  | 1    | Drain cap      |  | 3    |
| Drain pipe          |  | 1    | One-touch bush |  | 2    |

## 5. Optional parts

### 5-1. Indoor unit


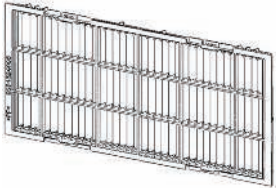
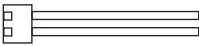
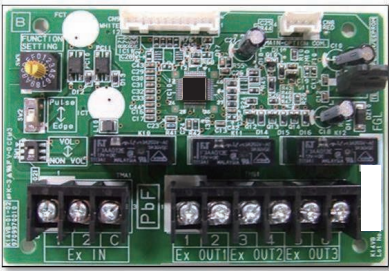
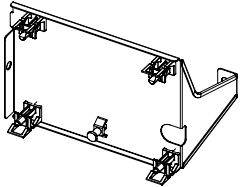
#### ■ Controllers





| Exterior  | Part name                | Model name | Summary  |
|---|--------------------------|------------|--|
|    | Wired remote controller  | UTU-RNRYZ* | Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room.<br>Wire type: Non-polar 2-wire  |
|    | Wired remote controller  | UTU-RLRY   | High visibility and easy operation. Room temperature can be accurately controlled using the built-in thermo sensor.<br>Wire type: Non-polar 2-wire                     |
|   | Wired remote controller  | UTU-RVNYM  | Large and full-dot liquid crystal screen, wide and large keys easy to press, user-intuitive arrow key.<br>Wire type: Polar 3-wire                                      |
|  | Wired remote controller  | UTU-RNNYM  | Room temperature can be controlled by detecting the temperature accurately with built-in thermo sensor.<br>Wire type: Polar 3-wire                                     |
|  | Simple remote controller | UTU-RSRY   | Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode.<br>Wire type: Non-polar 2-wire |
|  | Simple remote controller | UTU-RHRY   | Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting.<br>Wire type: Non-polar 2-wire                 |

| Exterior  | Part name                                       | Model name | Summary  |
|---|---|------------|--|
|  | Simple remote controller                        | UTY-RSNYM  | Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode.<br>Wire type: Polar 3-wire |
|  | IR receiver kit with wireless remote controller | UTY-LBTYM  | Unit control is performed by wireless remote controller.   |

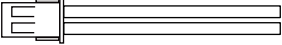
**NOTE:** Available functions may differ by the remote controller. For details, refer to the operation manual.

## Others

| Exterior  | Part name                             | Model name | Summary   |
|---|---------------------------------------|------------|---|
|   | Remote sensor unit                    | UTY-XSZX   | Thermo-sensor for sensing the temperature of arbitrary place in the room.                           |
|  | Long-life filter                      | UTD-LFNA   | Long-life filter can be mounted to the indoor unit.   |
|  | External connect kit                  | UTY-XWZXZG | Use to connect with various peripheral devices and air conditioner PCB.<br>For control output port. |
|  | External input and output PCB         | UTY-XCSX   | Use to connect with external devices and air conditioner PCB.                                       |
|  | External input and output PCB bracket | UTZ-GXNA   | For installing the External input and output PCB.   |

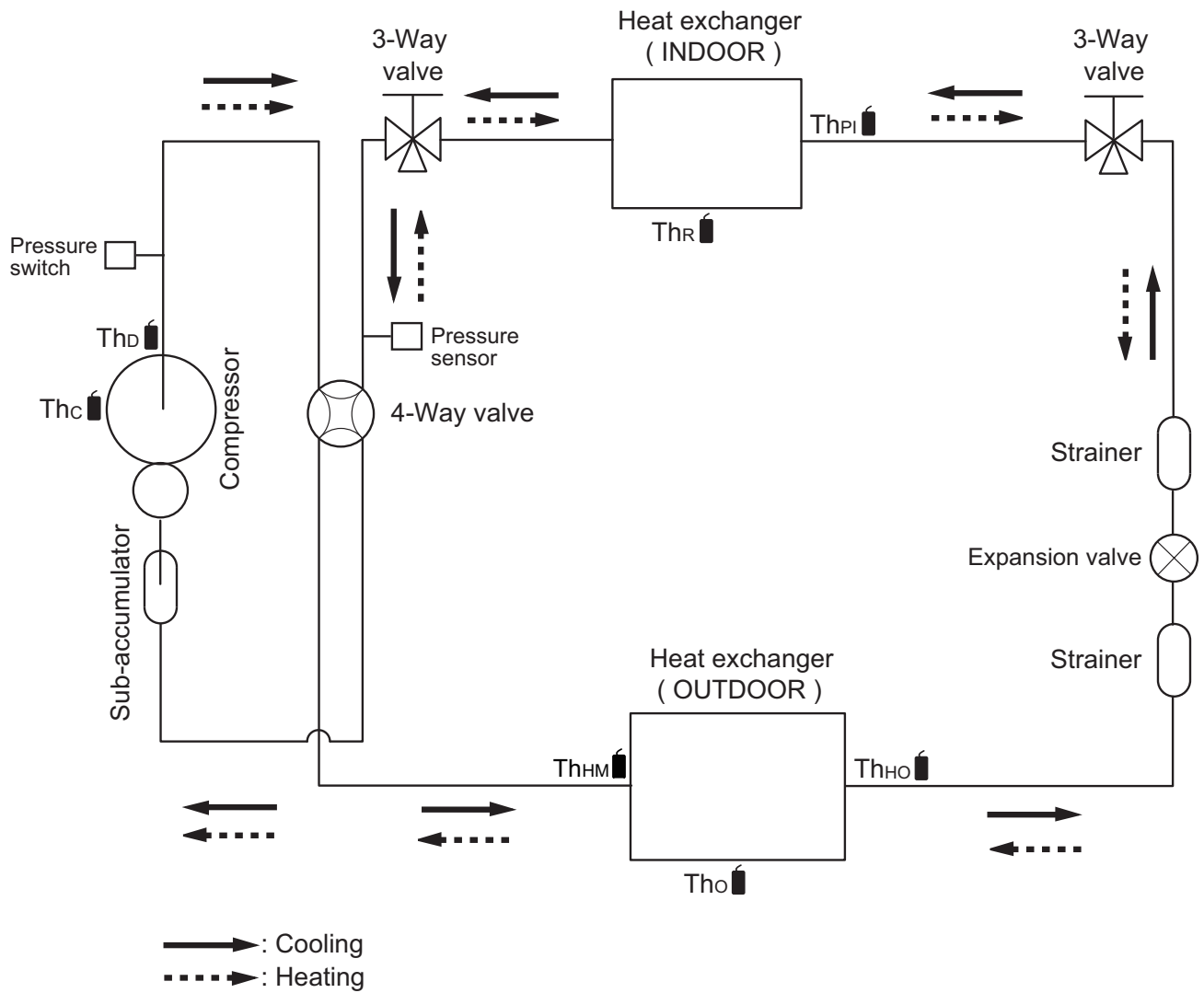
| Exterior  | Part name                  | Model name | Summary  |
|---|----------------------------|------------|--|
|  | Wireless LAN adapter       | UTY-TFNXZ1 | Remotely manage an air conditioning system using mobile devices such as smartphones and tablets. |
|  | Modbus converter           | UTY-VMSX   | For connection between indoor unit with UART interface and a Modbus open network.                |
|  | KNX converter              | UTY-VKSX   | For connection between indoor unit with UART interface and a KNX open network.                   |
|  | External switch controller | UTY-TERX   | Air conditioner switching can be controlled by connecting other external sensor switches.        |

## 5-2. Outdoor unit

| Exterior  | Part name            | Model name | Summary   |
|---|----------------------|------------|---|
|  | External connect kit | UTY-XWZXZ3 | Use to operate the external input and output functions of outdoor unit. |

## 6. Refrigerant system diagrams

### 6-1. Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA



- Th<sub>c</sub> : Thermistor (Compressor temperature)
- Th<sub>D</sub> : Thermistor (Discharge temperature)
- Th<sub>HM</sub> : Thermistor (Heat Exchanger Med temperature)
- Th<sub>O</sub> : Thermistor (Outdoor temperature)
- Th<sub>HO</sub> : Thermistor (Heat Exchanger Out temperature)
- Th<sub>R</sub> : Thermistor (Room temperature)
- Th<sub>PI</sub> : Thermistor (Pipe temperature)

TECHNICAL DATA  
AND PARTS LIST

TECHNICAL DATA  
AND PARTS LIST

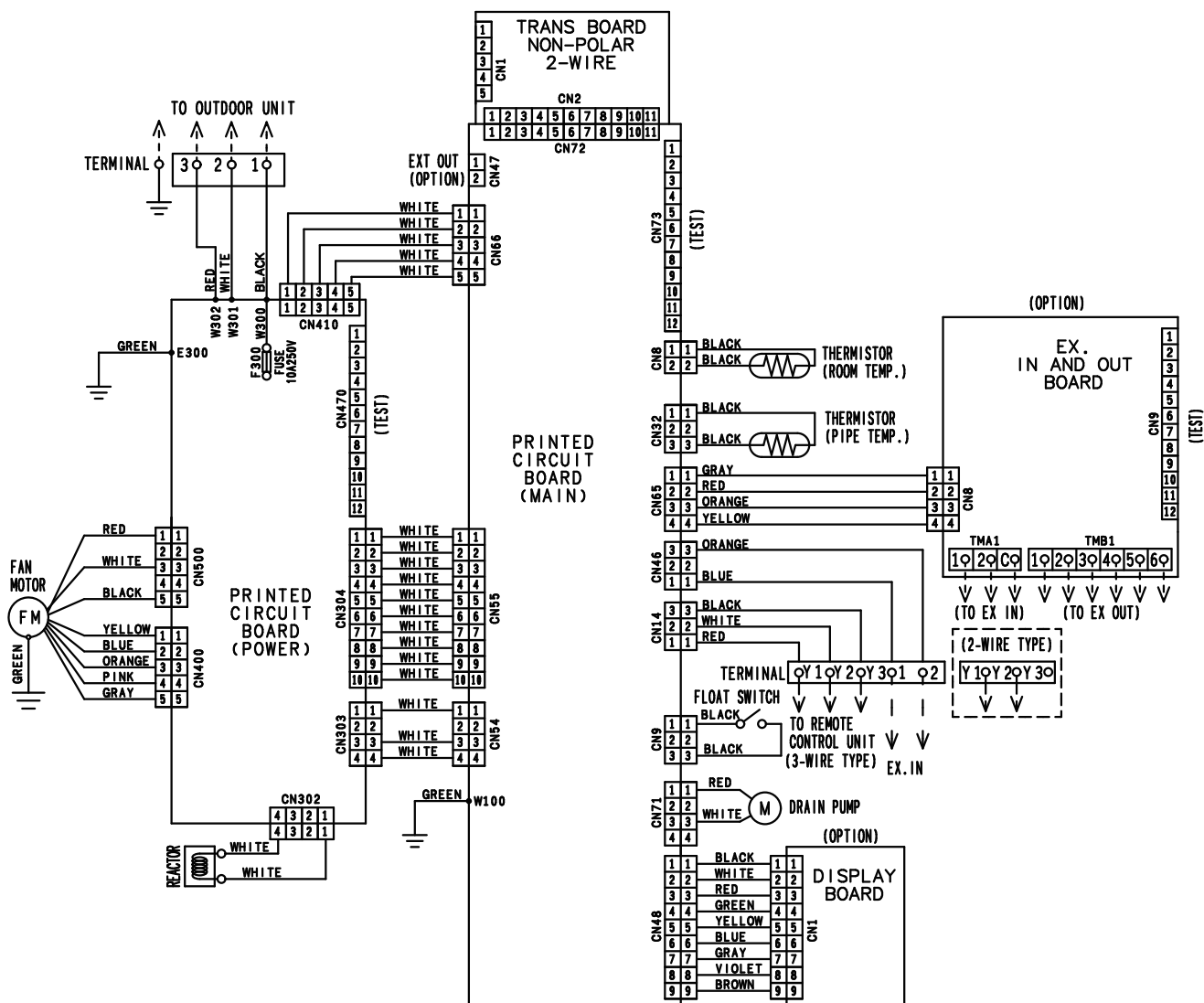
# 7. Wiring diagrams

## 7-1. Indoor unit

■ Models: ARXG36KHTAP, ARXG45KHTAP, and ARXG54KHTAP

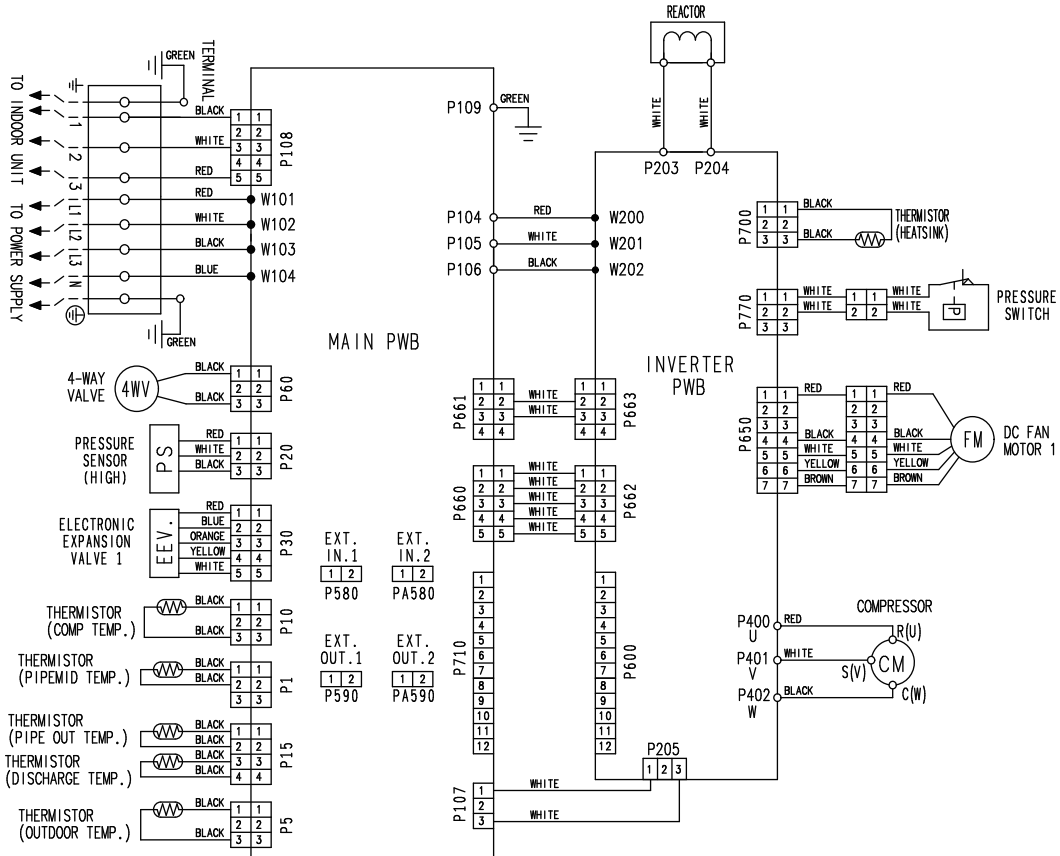
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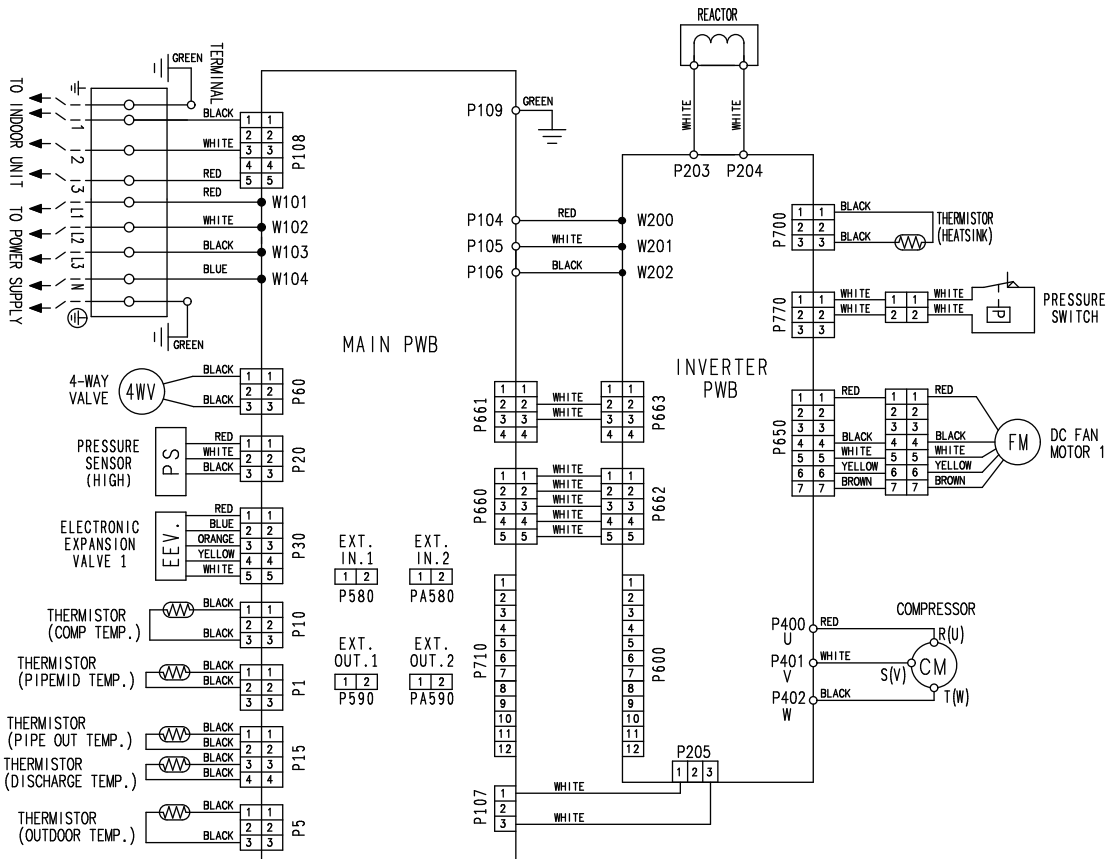


# 7-2. Outdoor unit

## Model: AOYG36KRTA



## Models: AOYG45KRTA and AOYG54KRTA



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AND PARTS LIST

TECHNICAL DATA  
AND PARTS LIST

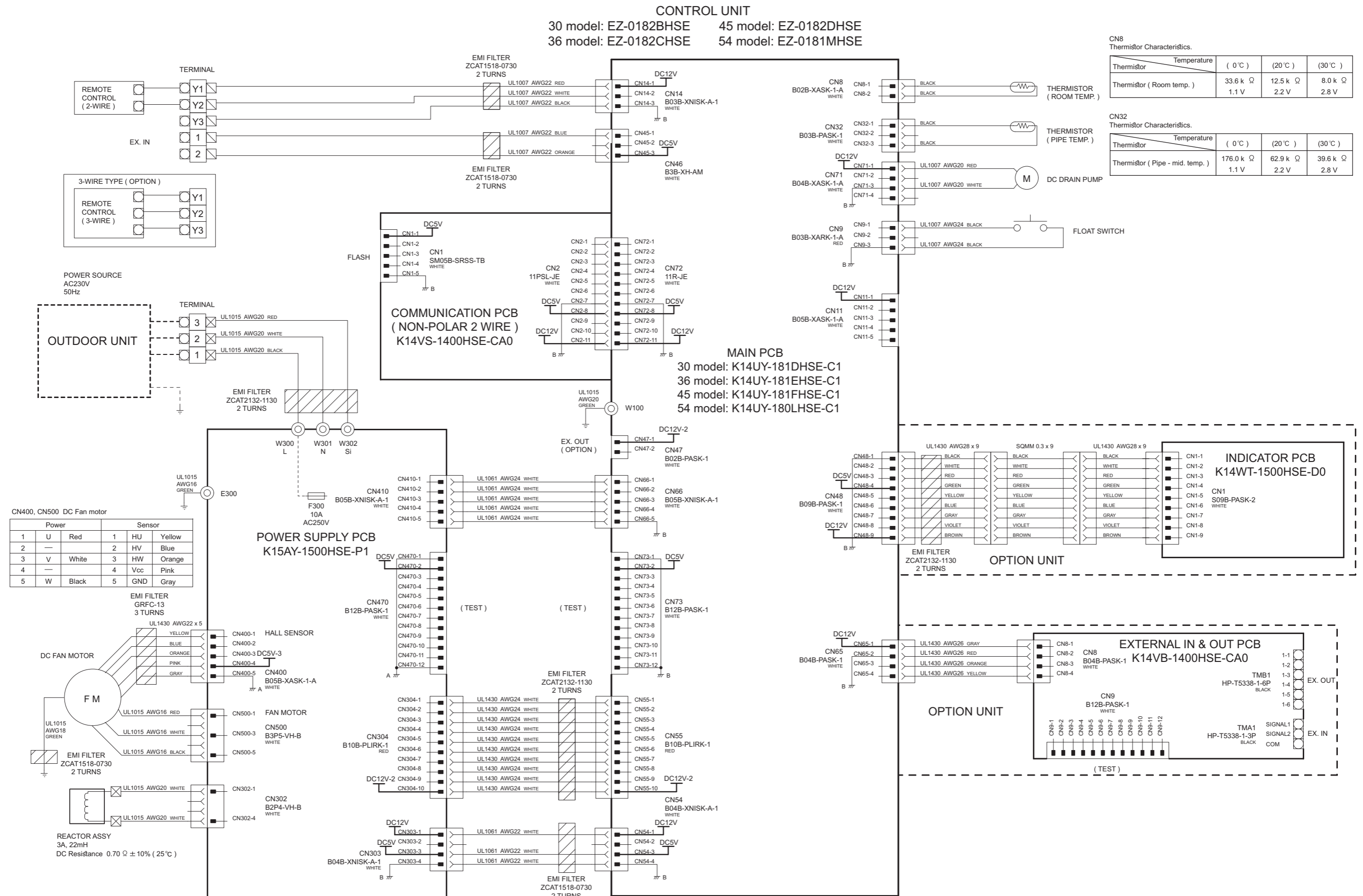


# 8. PC board diagrams

## 8-1. Models: ARXG36KHTAP, ARXG45KHTAP, and ARXG54KHTAP

TECHNICAL DATA AND PARTS LIST

TECHNICAL DATA AND PARTS LIST

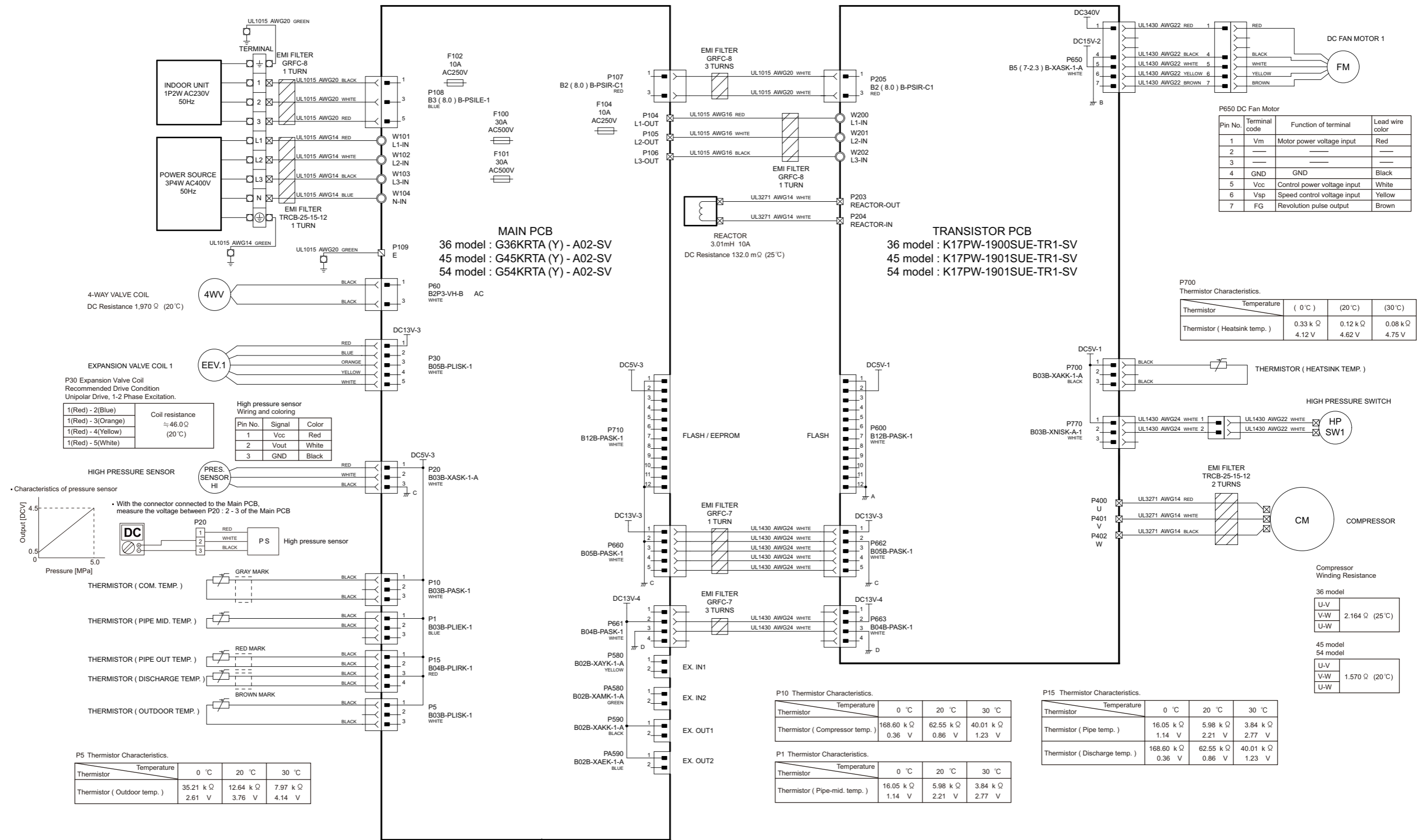


# 8-2. Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA

TECHNICAL DATA AND PARTS LIST

TECHNICAL DATA AND PARTS LIST

INVERTER ASSEMBLY  
 36 model : EZ-0190HUE  
 45 model : EZ-0191HUE  
 54 model : EZ-0191HUE



## 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 LED lamps to indicate the error content.

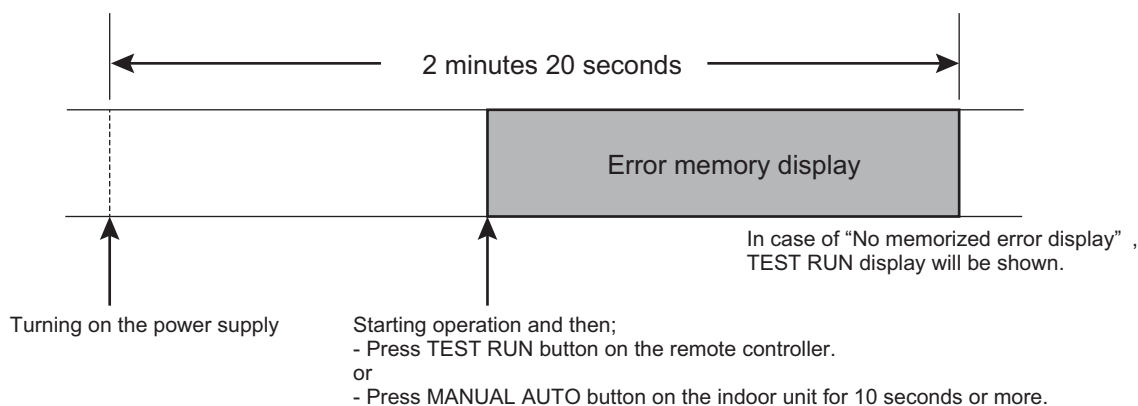
Errors, once displayed, will be automatically stored in the PC board of the indoor unit. Even if the power is disconnected, the memory containing the error history will not be erased.

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”<sup>\*</sup> 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 (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  | Wired remote controller display |
|---|---------------------------------|
| E: 11. Serial communication error (Serial reverse transfer error) (Outdoor unit)  | 11                              |
| E: 11. Serial communication error (Serial forward transfer error) (Indoor unit)   | 11                              |
| E: 12. Wired remote controller communication error (Indoor unit)                  | 12                              |
| E: 15. Automatic air flow adjustment error (Indoor unit)                          | 15                              |
| E: 18. External communication error (Indoor unit)                                 | 18                              |
| E: 23. Combination error (Outdoor unit)   | 23                              |
| E: 32. Indoor unit main PCB error (Indoor unit)                                   | 32                              |
| E: 33. Indoor unit motor electricity consumption detection error (Indoor unit)    | 33                              |
| E: 35. MANUAL AUTO button error (Indoor unit)                                     | 35                              |
| E: 39. Indoor unit power supply error for fan motor (Indoor unit)                 | 39                              |
| E: 3A. Indoor unit communication circuit (wired remote controller) error          | 3A                              |
| E: 41. Room temperature sensor error (Indoor unit)                                | 41                              |
| E: 42. Indoor unit heat exchanger sensor error (Indoor unit)                      | 42                              |
| E: 51. Indoor unit fan motor error (Indoor unit)                                  | 51                              |
| E: 53. Drain pump error (Indoor unit)   | 53                              |
| E: 62. Outdoor unit main PCB error (Outdoor unit)                                 | 62                              |
| E: 63. Inverter error (Outdoor unit)  | 63                              |
| E: 64. PFC circuit error (Outdoor unit)   | 64                              |
| E: 65. Trip terminal L error (Outdoor unit)                                       | 65                              |
| E: 71. Discharge thermistor error (Outdoor unit)                                  | 71                              |
| E: 72. Compressor thermistor error (Outdoor unit)                                 | 72                              |
| E: 73. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit) | 73                              |
| E: 74. Outdoor temperature thermistor error (Outdoor unit)                        | 74                              |
| E: 77. Heat sink thermistor error (Outdoor unit)                                  | 77                              |
| E: 84. Current sensor error (Outdoor unit)  | 84                              |
| E: 86. Pressure sensor error (Outdoor unit)                                       | 86                              |
| E: 94. Trip detection (Outdoor unit)  | 94                              |
| E: 95. Compressor motor control error (Outdoor unit)                              | 95                              |
| E: 97. Outdoor unit fan motor error (Outdoor unit)                                | 97                              |
| E: 99. 4-way valve error (Outdoor unit)   | 99                              |
| E: A1. Discharge temperature error (Outdoor unit)                                 | A1                              |
| E: A3. Compressor temperature error (Outdoor unit)                                | A3                              |
| E: AC. Heat sink temperature error (Outdoor unit)                                 | AC                              |



# 1-4. Error code table (Outdoor unit: for 36/45/54 model only)

The operation status is determined by the lighting up and blinking of the LED lamp.

After check that ERROR LED lamp blinks, press the ENTER button once.

**NOTE:** For the positions of LED lamp and buttons, refer to "Function settings for outdoor unit" in Chapter 5. FIELD WORKING on page 05-9.

| Error contents  | POWER/<br>MODE | ERROR | PUMP<br>DOWN | LOW NOISE |    | PEAK CUT |    |    |
|---|----------------|-------|--------------|-----------|----|----------|----|----|
|   |                |       | L1           | L2        | L3 | L4       | L5 | L6 |
| E: 11. Serial communication error (Serial forward transfer error) (Indoor unit)   | ■ 2            | ●     | ■ 1          | ■ 1       | ○  | ○        | ●  | ●  |
| E: 11. Serial communication error (Serial forward transfer error) (Indoor unit)   | ■ 2            | ●     | ■ 1          | ■ 1       | ○  | ●        | ○  | ○  |
| E: 12. Wired remote controller communication error (Indoor unit)                  | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 15. Automatic air flow adjustment error (Indoor unit)                          | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 18. External communication error (Indoor unit)                                 | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 23. Combination error (Outdoor unit)   | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 32. Indoor unit main PCB error (Indoor unit)                                   | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 33. Indoor unit motor electricity consumption detection error (Indoor unit)    | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 35. MANUAL AUTO button error (Indoor unit)                                     | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 39. Indoor unit power supply error for fan motor (Indoor unit)                 | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 3A. Indoor unit communication circuit (wired remote controller) error          | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 41. Room temperature sensor error (Indoor unit)                                | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 42. Indoor unit heat exchanger sensor error (Indoor unit)                      | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 51. Indoor unit fan motor error (Indoor unit)                                  | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 53. Drain pump error (Indoor unit)   | ■ 2            | ●     | ■ 5          | ■ 15      | ○  | ○        | ○  | ●  |
| E: 62. Outdoor unit main PCB error (Outdoor unit)                                 | ■ 2            | ●     | ■ 6          | ■ 2       | ○  | ○        | ○  | ●  |
| E: 63. Inverter error (Outdoor unit)  | ■ 2            | ●     | ■ 6          | ■ 3       | ○  | ○        | ○  | ●  |
| E: 65. Trip terminal L error (Outdoor unit)                                       | ■ 2            | ●     | ■ 6          | ■ 5       | ○  | ○        | ●  | ●  |
| E: 71. Discharge thermistor error (Outdoor unit)                                  | ■ 2            | ●     | ■ 7          | ■ 1       | ○  | ○        | ○  | ●  |
| E: 72. Compressor thermistor error (Outdoor unit)                                 | ■ 2            | ●     | ■ 7          | ■ 2       | ○  | ○        | ○  | ●  |
| E: 73. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit) | ■ 2            | ●     | ■ 7          | ■ 3       | ○  | ○        | ●  | ○  |
| E: 74. Outdoor temperature thermistor error (Outdoor unit)                        | ■ 2            | ●     | ■ 7          | ■ 4       | ○  | ○        | ○  | ●  |
| E: 77. Heat sink thermistor error (Outdoor unit)                                  | ■ 2            | ●     | ■ 7          | ■ 7       | ○  | ○        | ○  | ●  |

| Error contents                                       | POWER/<br>MODE | ERROR | PUMP<br>DOWN | LOW NOISE |    | PEAK CUT |    |    |
|--|----------------|-------|--------------|-----------|----|----------|----|----|
|  |                |       | L1           | L2        | L3 | L4       | L5 | L6 |
| E: 84. Current sensor error (Outdoor unit)           | ■ 2            | ●     | ■ 8          | ■ 4       | ○  | ○        | ○  | ●  |
| E: 86. Pressure sensor error (Outdoor unit)          | ■ 2            | ●     | ■ 8          | ■ 6       | ○  | ●        | ●  | ○  |
| E: 94. Trip detection (Outdoor unit)                 | ■ 2            | ●     | ■ 9          | ■ 4       | ○  | ○        | ○  | ●  |
| E: 95. Compressor motor control error (Outdoor unit) | ■ 2            | ●     | ■ 9          | ■ 5       | ○  | ○        | ○  | ●  |
| E: 97. Outdoor unit fan motor error (Outdoor unit)   | ■ 2            | ●     | ■ 9          | ■ 7       | ○  | ○        | ●  | ●  |
| E: 99. 4-way valve error (Outdoor unit)              | ■ 2            | ●     | ■ 9          | ■ 9       | ○  | ○        | ○  | ●  |
| E: A1. Discharge temperature error (Outdoor unit)    | ■ 2            | ●     | ■ 10         | ■ 1       | ○  | ○        | ○  | ●  |
| E: A3. Compressor temperature error (Outdoor unit)   | ■ 2            | ●     | ■ 10         | ■ 3       | ○  | ○        | ○  | ●  |
| E: AC. Heat sink temperature error (Outdoor unit)    | ■ 2            | ●     | ■ 10         | ■ 12      | ○  | ○        | ●  | ●  |

● : Light on    ○ : Light off    ■ (n) : n Times blinking

## 2. Troubleshooting with error code

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

| Indicator          | Wired remote controller | 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.)

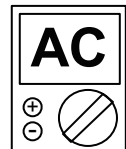
→ If there is an abnormal condition, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 3. Check the voltage of power supply

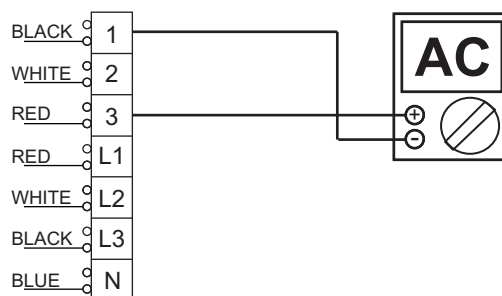
Check the voltage of power supply

Check if AC 198 V (AC 220 V -10%) to AC 264 V (AC 240 V +10%) appears at outdoor unit terminal L1 - 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 in "[Service parts information](#)" on page 03-50
- 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. Serial communication error (Serial forward transfer error) (Indoor unit)

| Indicator          | Wired remote controller | Error code | E: 11   |
|--------------------|-------------------------|------------|---|
| Detective actuator | Indoor unit             | Main PCB   | When the outdoor unit cannot receive the serial signal from indoor unit more than 10 seconds. |
| Forecast of cause  |                         |            | Connection failure  |
|                    |                         |            | External cause  |
|                    |                         |            | Main PCB 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.)

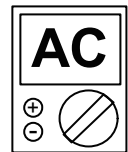
→ If there is an abnormal condition, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 3. Check the voltage of power supply

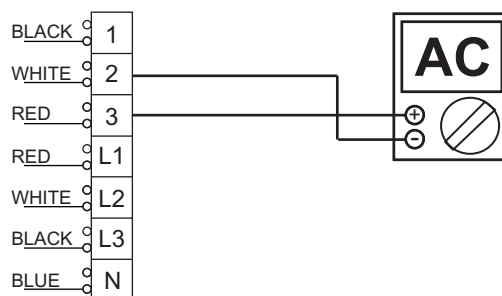
Check the voltage of power supply

Check if AC 198 V (AC 220 V -10%) to AC 264 V (AC 240 V +10%) appears at outdoor unit terminal L1 - N.



## Check point 4. Check serial signal (Forward 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.



**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. Wired remote controller communication error (Indoor unit)

| Indicator          | Wired remote controller | Error code | E: 12   |
|--------------------|-------------------------|------------|---|
| Detective actuator | Indoor unit             | Main PCB   | When the indoor unit cannot receive the signal from wired remote controller more than following time during normal operation. <ul style="list-style-type: none"> <li>3-wire type: 1 minute</li> <li>2-wire type: 2.5 minutes</li> </ul> |
|                    | Wired remote control    |            |   |
| Forecast of cause  |                         |            | Terminal connection abnormal  |
|                    |                         |            | Wired remote control failure  |
|                    |                         |            | Main PCB failure  |

Check point 1. Check the connection of terminal

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

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



Check Point 2 : Check Wired remote controller and main PCB

Check voltage at CN14 of main PCB (terminal 1—3, terminal 1—2). (Power supply to the remote controller)

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



- If it is DC 13 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: 15. Automatic air flow adjustment error (Indoor unit)

| Indicator          | Wired remote controller | Error code | E: 15   |
|--------------------|-------------------------|------------|---|
| Detective actuator | Indoor unit             | Main PCB   | <ul style="list-style-type: none"> <li>On automatic airflow adjustment operation, when the fan speed other than 0rpm is detected at the 0rpm operation.</li> <li>On automatic airflow adjustment operation, when the fan speed is not reach the target speed, after 2 minutes from the fan started.</li> <li>On automatic airflow adjustment operation operation, when the 750 W of input power is detected.</li> </ul> |
| Forecast of cause  |                         |            | Fan rotation failure  |
|                    |                         |            | Fan motor winding open  |
|                    |                         |            | Indoor unit main PCB  |

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 03-50.)  
→ If indoor unit fan motor is abnormal, replace it.



Check point 4. Replace main PCB

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



**End**



## 2-5. E: 18. External communication error (Indoor unit)

|                    |                         |                              |  |
|--------------------|-------------------------|------------------------------|--|
| Indicator          | Wired remote controller | 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   |
|                    |                         |                              | External input and output PCB failure  |
|                    |                         |                              | Main PCB   |

### Check point 1. Check the connection

- Check any loose or removed connection between the main PCB to the external input and output PCB.  
-> 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 external input and output PCB and the main PCB (If there is loose connector, open cable or mis-wiring.)



### Check point 2. Replace the external input and output PCB

If check point 1 do not improve the symptom, change external input and output PCB.



### Check point 3. Replace main PCB

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



**End**

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

|                    |                         |  |       |
|--------------------|-------------------------|--|-------|
| Indicator          | Wired remote controller | 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 main PCB

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



**End**

## 2-7. E: 32. Indoor unit main PCB error (Indoor unit)

|                    |                         |            |   |
|--------------------|-------------------------|------------|---|
| Indicator          | Wired remote controller | Error code | E: 32   |
| Detective actuator | Indoor unit             | main PCB   | When power is on and there is some below case.<br>1. When model information of EEPROM is incorrect.<br>2. When the access to EEPROM failed. |
| Forecast of cause  |                         |            | External cause  |
|                    |                         |            | Defective connection of electric 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 electric components

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



Check point 3. Replace main PCB

Change 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.

## 2-8. E: 33. Indoor unit motor electricity consumption detection error (Indoor unit)

|                    |   |            |   |
|--------------------|---|------------|---|
| Indicator          | Wired remote controller                             | 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 03-50.)  
→ If indoor unit fan motor is abnormal, replace it.



Check point 4. Replace main PCB

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



**End**

## 2-9. E: 35. MANUAL AUTO button error (Indoor unit)

|                    |                            |            |  |
|--------------------|----------------------------|------------|--|
| Indicator          | Wired remote controller    | 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 main PCB and indicator PCB

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



**End**

## 2-10. E: 39. Indoor unit power supply error for fan motor (Indoor unit)

| Indicator          | Wired remote controller | Error code | E: 39   |
|--------------------|-------------------------|------------|---|
| Detective actuator | Indoor unit main PCB    |            | <ul style="list-style-type: none"> <li>When a momentary power cut off</li> <li>When do not start fan motor</li> </ul> |
| 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 main PCB

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



**End**

## 2-11. E: 3A. Indoor unit communication circuit (wired remote controller) error

| Indicator          | Wired remote controller            | 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**

## 2-12. E: 41. Room temperature sensor error (Indoor unit)

|                    |                             |  |       |
|--------------------|-----------------------------|--|-------|
| Indicator          | Wired remote controller     | 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

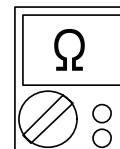
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> 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 03-60.
- 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 02-21.

If the voltage does not appear, replace main PCB.



**End**



## 2-13. E: 42. Indoor unit heat exchanger sensor error (Indoor unit)

| Indicator          | Wired remote controller | Error code                            | E: 42   |
|--------------------|-------------------------|---------------------------------------|---|
| Detective actuator | Indoor unit main PCB    | Heat exchanger temperature thermistor | When heat exchanger temperature thermistor open or short circuit is detected. |
|                    |                         |                                       |   |
| Forecast of cause  |                         |                                       | Connector connection failure  |
|                    |                         |                                       | Thermistor failure  |
|                    |                         |                                       | Main PCB failure  |

### Check point 1. Check connection of connector

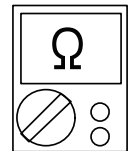
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> 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 03-60.
- If thermistor is either open or shorted, replace it and reset the power.

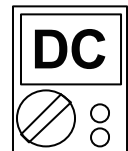


### Check point 3. Check voltage of main PCB

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 02-21.

If the voltage does not appear, replace main PCB.



**End**

## 2-14. E: 51. Indoor unit fan motor error (Indoor unit)

|                    |                         |            |  |
|--------------------|-------------------------|------------|--|
| Indicator          | Wired remote controller | Error code | E: 51  |
| Detective actuator | Indoor unit             | main PCB   | When the condition that actual frequency of indoor fan is below 1/3 of target frequency is continued 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 03-50.)  
→ If Indoor unit fan motor is abnormal, replace Indoor unit fan motor.



### Check point 4. Replace main PCB

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



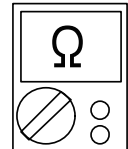
**End**

## 2-15. E: 53. Drain pump error (Indoor unit)

| Indicator          | Wired remote controller              | Error code | E: 53  |
|--------------------|--------------------------------------|------------|--|
| Detective actuator | Indoor unit main PCB<br>Float switch |            | When Float switch is ON for more than 3 minutes. |
| Forecast of cause  |                                      |            | Float switch failure                             |
|                    |                                      |            | Shorted connector/wire failure                   |
|                    |                                      |            | Main PCB failure                                 |
|                    |                                      |            | Drain pump failure                               |
|                    |                                      |            | Hose clogging                                    |

### Check point 1. Check float switch

- Check operation of float switch. (any blocking by dust, etc.)
- Remove float switch and check ON/OFF switching operation by using a meter.



-> If float switch is abnormal, replace it.



### Check point 2. Check connector and wire

Check loose contact of CN9 and shorted wire (pinched wire).  
-> Replace float switch if the wire is abnormal



### Check point 3. Check drain hose

Check drain hose.  
-> If there is hose clogging. Please clear the clog.



### Check point 4. Replace drain pump

If check point 1 to 3 do not improve the symptom, replace drain pump.



### Check point 5. Replace main PCB

If check point 4 do not improve the symptom, replace main PCB.



**End**

## 2-16. E: 62. Outdoor unit main PCB error (Outdoor unit)

|                    |                         |            |  |
|--------------------|-------------------------|------------|--|
| Indicator          | Wired remote controller | 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)<br>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 main PCB

Change 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**

## 2-17. E: 63. Inverter error (Outdoor unit)

|                    |                         |              |   |
|--------------------|-------------------------|--------------|---|
| Indicator          | Wired remote controller | Error code   | E: 63   |
| Detective actuator | Outdoor unit            | Inverter PCB | Error information received from inverter PCB              |
| Forecast of cause  |                         |              | External cause  |
|                    |                         |              | Power supply to inverter PCB wiring disconnection or open |
|                    |                         |              | Inverter PCB failure                                      |

Check point 1. Turn the power on again?

Error displayed again?

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



Check point 2. Check the wiring (power supply to inverter PCB)

- Connector and wiring connection state check
- Cable open check



Check point 3. Replace inverter PCB

Replace inverter 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**

## 2-18. E: 64. PFC circuit error (Outdoor unit)

| Indicator          | Wired remote controller | Error code | E: 64   |
|--------------------|-------------------------|------------|---|
| Detective actuator | Outdoor unit            | Main PCB   | <ul style="list-style-type: none"> <li>When inverter input DC voltage is higher than 420 V for over 3 seconds, the compressor stops.</li> <li>If the same operation is repeated 5 times, the compressor stops permanently.</li> </ul> |
| 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 main PCB

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



**End**

## 2-19. E: 65. Trip terminal L error (Outdoor unit)

|                    |                         |            |  |
|--------------------|-------------------------|------------|--|
| Indicator          | Wired remote controller | Error code | E: 65  |
| Detective actuator | Outdoor unit            | Main PCB   | When the signal from FO terminal of IPM is "L" (0 V) during the compressor stopping. |
| Forecast of cause  |                         |            | Main PCB failure   |

Check point 1. Check main PCB

Replace the outdoor unit main PCB.



**End**

## 2-20. E: 71. Discharge thermistor error (Outdoor unit)

|                    |                                       |  |       |
|--------------------|---------------------------------------|--|-------|
| Indicator          | Wired remote controller               | 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

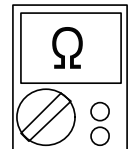
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ 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 03-60.
- If thermistor is either open or shorted, replace it and reset the power.

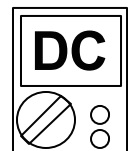


### Check point 3. Check voltage of main PCB

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 02-21.

If the voltage does not appear, replace main PCB.



**End**



## 2-21. E: 72. Compressor thermistor error (Outdoor unit)

|                    |                                   |  |                    |
|--------------------|-----------------------------------|--|--------------------|
| Indicator          | Wired remote controller           | Error code   | E: 72              |
| Detective actuator | Outdoor unit main PCB             | When compressor temperature thermistor open or short circuit is detected at power on or while running the compressor |                    |
|                    | Compressor temperature thermistor |  |                    |
| Forecast of cause  |                                   |  | Connector failure  |
|                    |                                   |  | Thermistor failure |
|                    |                                   |  | Main PCB failure   |

### Check point 1. Check connection of connector

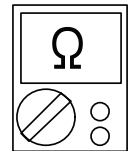
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

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



### Check point 2. Remove connector and check thermistor resistance value

- For the compressor thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-60.
- If thermistor is either open or shorted, replace it and reset the power.

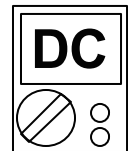


### Check point 3. Check voltage of main PCB

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 02-21.

If the voltage does not appear, replace main PCB.



**End**

## 2-22. E: 73. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit)

| Indicator          | Wired remote controller                      | Error code | E: 73   |
|--------------------|--|------------|---|
| Detective actuator | Heat exchanger liquid temperature thermistor |            | • Heat exchanger liquid temperature thermistor short or open detected |
|                    | Heat exchanger middle temperature thermistor |            | • Heat exchanger middle temperature thermistor short or open detected |
| Forecast of cause  |  |            | Connector failure   |
|                    |  |            | Thermistor failure  |
|                    |  |            | Main PCB failure  |

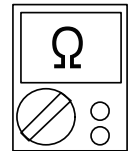
Check Point 1 : Check the connector connection and cable open

- Connector connection state check
- Cable open check



Check Point 2 : Check the thermistor

- For the outdoor unit heat exchanger thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-60.
- 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 02-21.

If the voltage does not appear, replace main PCB.



End

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

|                    |                                |   |                    |
|--------------------|--------------------------------|---|--------------------|
| Indicator          | Wired remote controller        | 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

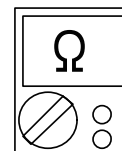
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> 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 03-60.
- 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 02-21.

If the voltage does not appear, replace main PCB.



**End**

## 2-24. E: 77. Heat sink thermistor error (Outdoor unit)

| Indicator          | Wired remote controller          | Error code  | E: 77                |
|--------------------|----------------------------------|---|----------------------|
| Detective actuator | Heat sink temperature thermistor | Heat sink temperature thermistor short or open detected |                      |
| Forecast of cause  |                                  |   | Connector failure    |
|                    |                                  |   | Thermistor failure   |
|                    |                                  |   | Inverter PCB failure |

### Check point 1. Check connection of connector

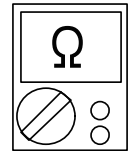
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

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



### Check point 2. Remove connector and check thermistor resistance value

- For the Heat sink thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-60.
- If thermistor is either open or shorted, replace it and reset the power.

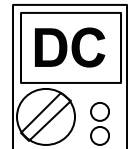


### Check point 3. Check voltage of inverter PCB

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 02-21.

If the voltage does not appear, replace inverter PCB.



**End**

## 2-25. E: 84. Current sensor error (Outdoor unit)

|                    |                         |            |  |
|--------------------|-------------------------|------------|--|
| Indicator          | Wired remote controller | 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 50 rps, after 1 minute upon starting the compressor. (Except during the defrost operation) |
| Forecast of cause  |                         |            | Defective connection of electric 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 main PCB

If Check point 1, 2 do not improve the symptom, change 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**

## 2-26. E: 86. Pressure sensor error (Outdoor unit)

|                    |                         |  |                              |
|--------------------|-------------------------|--|------------------------------|
| Indicator          | Wired remote controller | Error code   | E: 86                        |
| Detective actuator | Outdoor unit main PCB   | 30 seconds or more after power-on, when pressure sensor detection value detects the condition below continuously for 30 seconds or more.<br>$P_s \leq 0$ or $P_s \geq 5$ [MPa] |                              |
|                    | High pressure switch    |  |                              |
| Forecast of cause  |                         |  | Connector connection failure |
|                    |                         |  | Pressure sensor failure      |
|                    |                         |  | Main PCB failure             |

### Check point 1. Check connection of the pressure sensor

- 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 output voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V  $\pm$  5%).

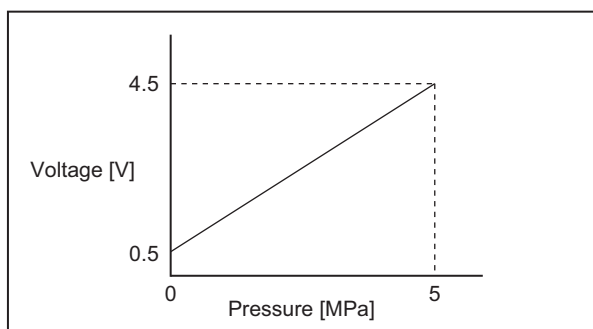
**NOTE:** For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-21.

If the voltage is not correct, replace main PCB.



### Check point 3. Check output voltage of pressure sensor

Make sure circuit diagram of outdoor unit and check terminal voltage. Voltage is refer to the following graph.



If the voltage is not correct, replace pressure sensor.



**End**

## 2-27. E: 94. Trip detection (Outdoor unit)

| Indicator          | Wired remote controller | Error code   | E: 94   |
|--------------------|-------------------------|--------------|---|
| Detective actuator | Outdoor unit            | Inverter PCB | Protection stop by over-current generation after inverter compressor start processing completed generated consecutively 10 times.<br><b>NOTE:</b> The number of generations is reset when the compressor starts up. |
|                    |                         | Main PCB     |   |
|                    |                         | 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)   |
|                    |                         |              | Inverter PCB  |

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 inverter PCB

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



Check point 3. Replace main PCB

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



Check point 4. Replace compressor

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



**End**

## 2-28. E: 95. Compressor motor control error (Outdoor unit)

|                    |                         |            |  |
|--------------------|-------------------------|------------|--|
| Indicator          | Wired remote controller | Error code | E: 95  |
| Detective actuator | Outdoor unit            | Main PCB   | "Protection stop by "overcurrent generation at inverter compressor starting" restart" generated consecutively 10 times x 3 sets (total 30 times) |
|                    |                         | Compressor |  |
| Forecast of cause  |                         |            | Defective connection of electric 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 03-50.)

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



### Check point 3. Replace main PCB

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



### Check point 4. Replace compressor

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



**End**



## 2-29. E: 97. Outdoor unit fan motor error (Outdoor unit)

| Indicator          | Wired remote controller | Error code | E: 97  |
|--------------------|-------------------------|------------|--|
| Detective actuator | Outdoor unit            | Main PCB   | <ol style="list-style-type: none"> <li>When outdoor fan rotation speed is less than 100 rpm in 20 seconds after fan motor starts, fan motor stops.</li> <li>After fan motor restarts, if the same operation within 60 seconds is repeated 3 times in a row, compressor and fan motor stops.</li> <li>If 1. and 2. repeats 5 times in a row, compressor and fan motor stops permanently.</li> </ol> |
|                    |                         | 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 03-50.)  
→ 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 02-21.



| Read wire   | DC voltage                                     |
|-------------|--|
| Red—Black   | 360 V (DC 340 V -10%) to 374 V (DC 340 V +10%) |
| White—Black | 15 ± 1.5 V                                     |

-> If the voltage is not correct, replace Main PCB.



**End**

## 2-30. E: 99. 4-way valve error (Outdoor unit)

| Indicator          | Wired remote controller               | 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.<br>Indoor heat exchanger temp. - Room temp. > 10 °C (Cooling or Dry operation)<br>Indoor heat exchanger temp. - Room temp. < -10 °C (Heating operation)<br>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  |                                       |                  | Air filter clogged   |
|                    |                                       |                  | Connector connection failure   |
|                    |                                       |                  | Thermistor failure   |
|                    |                                       |                  | Coil failure   |
|                    |                                       |                  | 4-way valve failure  |
|                    |                                       | Main PCB failure |  |

### Check point 1. Check air filter condition

Check air filter dirty.

→ If the air filter dirty, clean up the air filter.



### Check point 2. 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 3. 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 03-60.

→ If defective, replace the thermistor.



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

**NOTE:** Refer solenoid coil and 4-way valve in "[Service parts information](#)" on page 03-50.

- **Solenoid coil**  
Remove P60 from PCB and check the resistance value of coil. Resistance value is 1.97 kΩ.  
→ 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 5. Replace main PCB**

If Check Point 1 to 4 do not improve the symptom, replace main PCB.



**End**

## 2-31. E: A1. Discharge temperature error (Outdoor unit)

| Indicator          | Wired remote controller          | Error code | E: A1   |
|--------------------|----------------------------------|------------|---|
| Detective actuator | Outdoor unit main PCB            |            | Protection stop by discharge temperature $\geq 110$ °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 03-50.
- 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 03-50.)



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 03-60.



Check point 5. Check the refrigerant amount

Check the refrigerant leakage.



Check point 6. Replace main PCB

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



**End**

## 2-32. E: A3. Compressor temperature error (Outdoor unit)

| Indicator          | Wired remote controller           | Error code | E: A3  |
|--------------------|-----------------------------------|------------|--|
| Detective actuator | Outdoor unit main PCB             |            | Protection stop by compressor temperature $\geq 108$ °C during compressor operation generated 2 times within 24 hours. |
|                    | Compressor temperature thermistor |            |  |
| Forecast of cause  |                                   |            | 3-way valve not opened   |
|                    |                                   |            | EEV defective, strainer clogged  |
|                    |                                   |            | Outdoor unit operation failure, foreign matter on heat exchanger   |
|                    |                                   |            | Compressor 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 the electronic expansion valve (EEV) and strainer

- Check if EEV open.  
Refer to outdoor unit Electronic Expansion Valve (EEV) in "[Service parts information](#)" on page 03-50.
- 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 03-50.)



Check point 4. Check the compressor thermistor

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

**NOTE:** For the characteristics of the thermistor, refer to "[Thermistor resistance values](#)" on page 03-60.



Check point 5. Check the refrigerant amount

Check the refrigerant leakage.



Check point 6. Replace main PCB

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



**End**

## 2-33. E: AC. Heat sink temperature error (Outdoor unit)

| Indicator          | Wired remote controller          | Error code | E: AC   |
|--------------------|----------------------------------|------------|---|
| Detective actuator | Outdoor unit inverter PCB        |            | Protection stop by heat sink temperature $\geq 80$ °C during heat sink operation generated 2 times within 24 hours. |
|                    | Heat sink temperature thermistor |            |   |
| Forecast of cause  |                                  |            | Foreign matter on heat sink, heat sink dirty  |
|                    |                                  |            | Foreign matter on heat exchanger, excessive ambient temperature rise  |
|                    |                                  |            | Heat sink temp. thermistor defective  |

Check point 1. Check the heat sink state

Heat sink foreign matter, soiling check



Check point 2. Check the foreign matter and ambient temperature of heat exchanger

- Heat exchange foreign matter check
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?



Check point 3. Check the heat sink temperature thermistor

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

**NOTE:** For the characteristics of the thermistor, refer to "[Thermistor resistance values](#)" on page 03-60.



Check point 4. Replace inverter PCB

Replace inverter 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 198 to 264 V appears at outdoor unit terminal L—N.

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



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



**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.

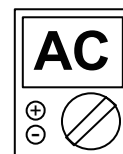


### Check point 3. Check electrical components

Check the voltage of power supply.

Check if AC 198 to 264 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 fuse.



### Check point 4. Replace main PCB

If check point 1 to 3 do not improve the symptom, change 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 numbers 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 CN14 (terminal 1—3) of main PCB.

(Power supply to remote controller)

- If it is DC 13V, 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

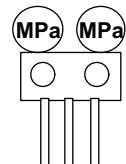
- Check connection pipe (specified pipe length and pipe diameter?)
- Check any loose or removed communication line.

→ 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 03-50.
- Check compressor.  
Refer to compressor in "[Service parts information](#)" on page 03-50.  
Refer to inverter compressor in "[Service parts information](#)" on page 03-50.



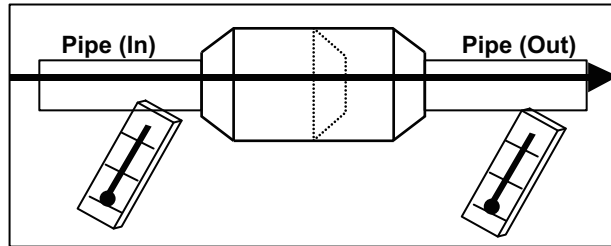
**NOTE:** When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.



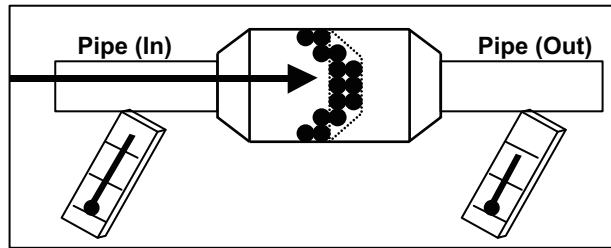
**End**

**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 03-50.



**End**

### 3-6. Water leaking

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

#### Diagnosis method when water leak occurs

- Is main unit installed in stable condition?
- Is main unit broken or deformed at the time of transportation or maintenance?



- Is drain hose connection loose?
- Is there a trap in drain hose?
- Is drain hose clogged?



Is fan rotating?



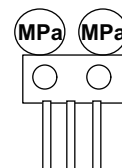
**End**

#### Diagnosis method when water is spitting out

Is the filter clogged?



Check gas pressure and correct it if there was a gas leak.



**End**

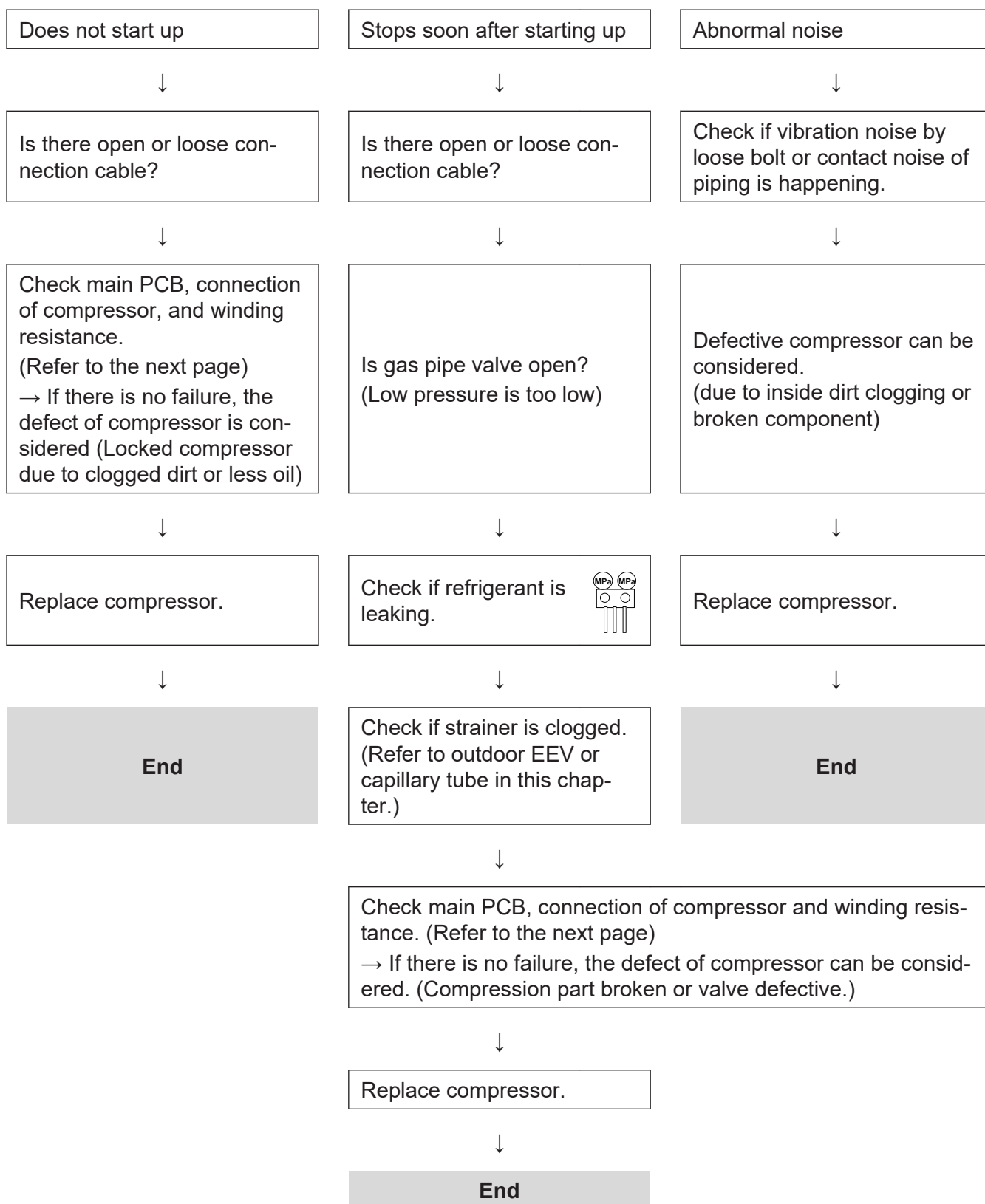
TROUBLESHOOTING

TROUBLESHOOTING

## 4. Service parts information

### 4-1. Compressor

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



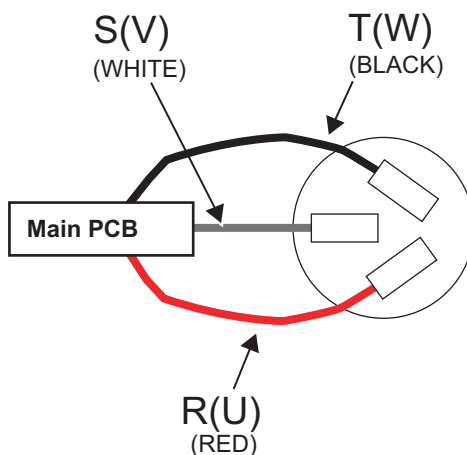


## 4-2. Inverter compressor

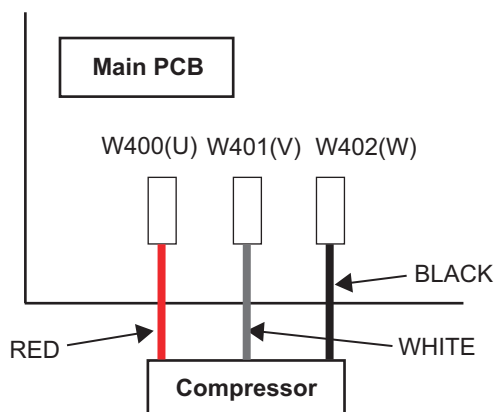
### ■ Model: AOYG36KRTA

#### Check point 1. Check connection

- Check terminal connection of compressor (loose or incorrect wiring)



- Check terminal connection of main PCB (loose or incorrect wiring)

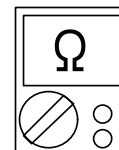
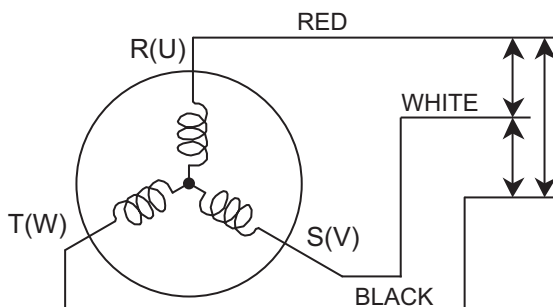


↓

#### Check point 2. Check winding resistance

Check winding resistance of each terminal.

Resistance value: 2.164  $\Omega$  at 25 °C



→ If the resistance value is 0  $\Omega$  or infinite, replace compressor.

↓

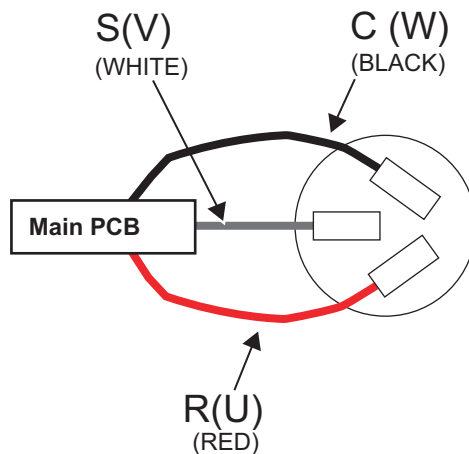
#### Check point 3. Replace inverter PCB

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

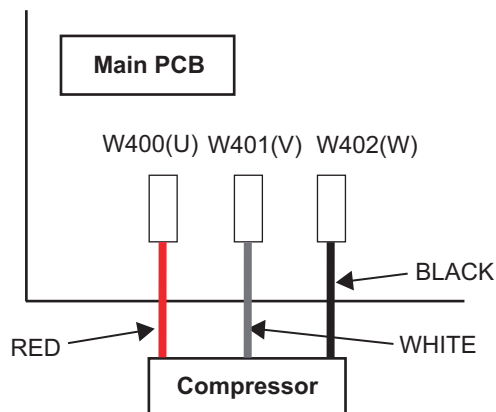
## Models: AOYG45KRTA and AOYG54KRTA

### Check point 1. Check connection

- Check terminal connection of compressor (loose or incorrect wiring)



- Check terminal connection of main PCB (loose or incorrect wiring)

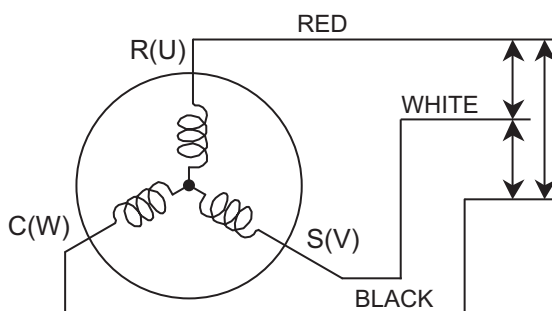
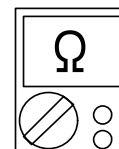


↓

### Check point 2. Check winding resistance

Check winding resistance of each terminal.

Resistance value: 1.570  $\Omega$  at 20 °C



→ If the resistance value is 0  $\Omega$  or infinite, replace compressor.

↓

Check point 3. Replace inverter PCB

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

## 4-3. Outdoor unit Electronic Expansion Valve (EEV)

### ■ Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA

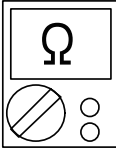
#### Check point 1. Check connections

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 02-21.

#### Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

| Read wire          | Resistance value   |
|--------------------|--|
| 1(Red) - 2(Blue)   | $46 \Omega \pm 3 \Omega$<br>at 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

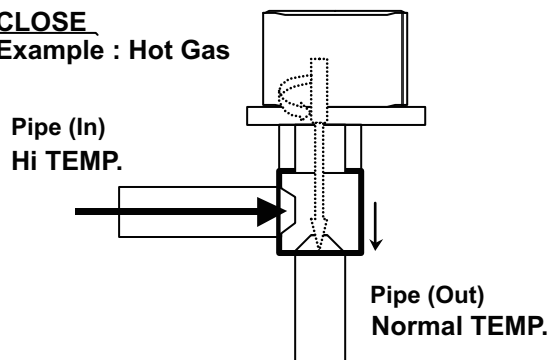
Turn on the power and check the operation noise.

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

#### Check point 5. Check Opening and Closing Operation of Valve

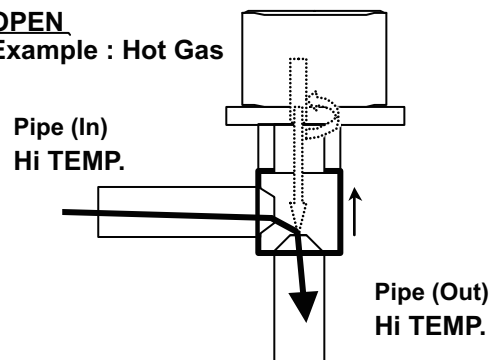
When valve is closed, it has a temp. difference between inlet and outlet

**CLOSE**  
Example : Hot Gas



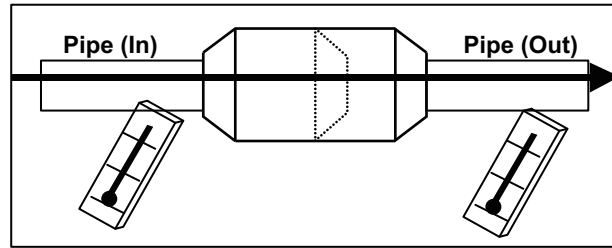
If it is open, it has no temp. difference between inlet and outlet

**OPEN**  
Example : Hot Gas

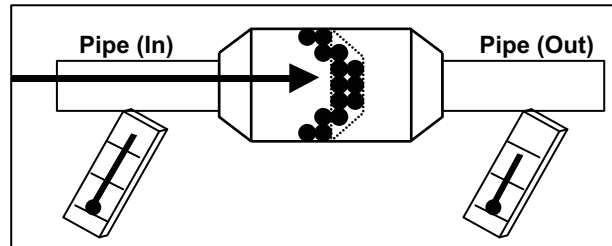


## Check point 6. Check strainer

- 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.



## 4-4. Indoor unit fan motor

### ■ Models: ARXG36KHTAP, ARXG45KHTAP, and ARXG54KHTAP

#### **⚠ WARNING**

When you approach this part, please cut off the power supply and wait for a while until DC voltage has been discharged.

#### Check point 1. Check rotation of fan

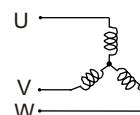
Rotate the fan by hand when operation is off.  
(Check if fan is caught, dropped off or locked motor)  
→ If fan or bearing is abnormal, replace it.

#### Check point 2. Check resistance of indoor fan motor

Refer to below. Circuit-test " Winding coil resistance U, V, W."

→ If they are other resistance value, replace outdoor fan motor.

| Pin number<br>(wire color) | Terminal function<br>(symbol) |
|----------------------------|-------------------------------|
| U (Red) - W (Black)        | 3.5 Ω                         |
| V (White) - U (Red)        |                               |
| W (Black) - V (White)      |                               |



## 4-5. Outdoor unit fan motor

### ■ Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA

#### 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.

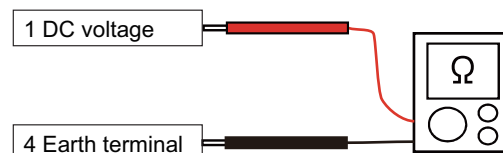
#### Check point 2. Check resistance of outdoor fan motor

Refer to below. Circuit-test "Vm" and "GND" terminal

**NOTE:** Vm: DC voltage, GND: Earth terminal

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

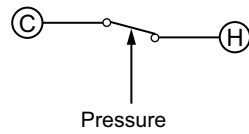
| Pin number<br>(wire color) | Terminal function<br>(symbol) |
|----------------------------|-------------------------------|
| 1 (Red)                    | DC voltage (Vm)               |
| 2                          | No function                   |
| 3                          | No function      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



## 4-6. Pressure switch

### ■ Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA

- Type of contact



- Characteristics of pressure switch

| Pressure switch 1     |                |
|-----------------------|----------------|
| Contact: Short → Open | 4.2 — 4.05 MPa |
| Contact: Open → Short | 3.2 ± 0.15 MPa |

36/45/54 model: P770

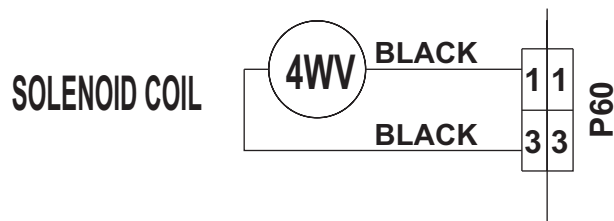


## 4-7. 4-way valve coil (solenoid coil)/4-way valve

### ■ Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA

#### Check point 1. Check connection

- Check the connection of connector P60.

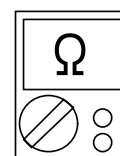
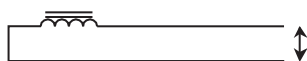


↓

#### Check Point 2 : Check solenoid coil

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

Resistance Value  $\approx 1.97 \text{ k}\Omega$

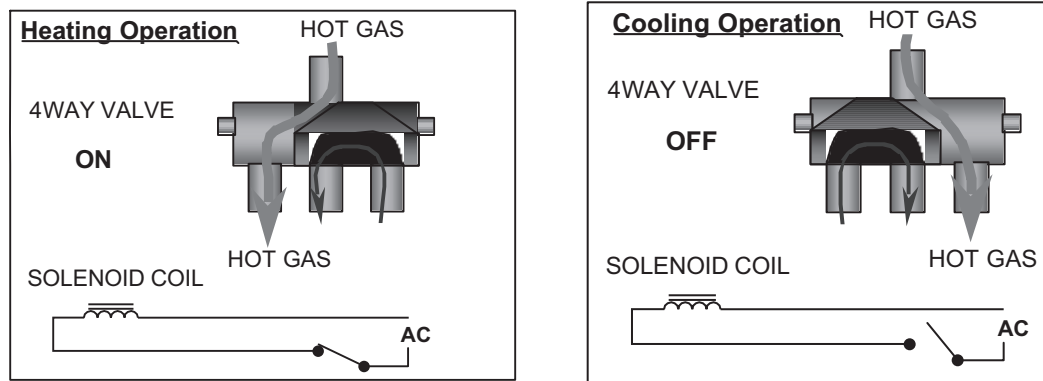


→ If it is Open or abnormal resistance value, replace solenoid coil.

↓

#### Check Point 3: Check operation of 4 way valve

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



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

↓

#### Check Point 4: Replace main PCB

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

## 5. Thermistor resistance values

### 5-1. Indoor unit

#### ■ Room temperature thermistor

| Temperature (°C) | Resistance (kΩ) | Voltage (V) |
|------------------|-----------------|-------------|
| -10.0            | 58.25           | 0.73        |
| -5.0             | 44.03           | 0.93        |
| 0.0              | 33.62           | 1.15        |
| 5.0              | 25.93           | 1.39        |
| 10.0             | 20.18           | 1.66        |
| 15.0             | 15.84           | 1.94        |
| 20.0             | 12.54           | 2.22        |
| 25.0             | 10.00           | 2.50        |
| 30.0             | 8.04            | 2.77        |
| 35.0             | 6.51            | 3.03        |
| 40.0             | 5.30            | 3.27        |
| 45.0             | 4.35            | 3.49        |

#### ■ Heat exchanger temperature thermistor

| Temperature (°C) | Resistance (kΩ) | Voltage (V) |
|------------------|-----------------|-------------|
| -30.0            | 1,131.91        | 0.21        |
| -25.0            | 804.52          | 0.29        |
| -20.0            | 579.59          | 0.40        |
| -15.0            | 422.89          | 0.53        |
| -10.0            | 312.27          | 0.69        |
| -5.0             | 233.21          | 0.88        |
| 0.0              | 176.03          | 1.10        |
| 5.0              | 134.23          | 1.36        |
| 10.0             | 103.34          | 1.63        |
| 15.0             | 80.28           | 1.92        |
| 20.0             | 62.91           | 2.21        |
| 25.0             | 49.70           | 2.51        |
| 30.0             | 39.57           | 2.79        |
| 35.0             | 31.74           | 3.06        |
| 40.0             | 25.64           | 3.30        |
| 45.0             | 20.85           | 3.53        |
| 50.0             | 17.06           | 3.73        |
| 55.0             | 14.05           | 3.90        |
| 60.0             | 11.64           | 4.02        |
| 65.0             | 9.69            | 4.19        |

## 5-2. Outdoor unit

### ■ Heatsink thermistor

| Temperature (°C) | Resistance (kΩ) | Voltage (V) |
|------------------|-----------------|-------------|
| -30.0            | 94.26           | 0.08        |
| -25.0            | 67.95           | 0.11        |
| -20.0            | 49.62           | 0.15        |
| -15.0            | 36.68           | 0.20        |
| -10.0            | 27.42           | 0.26        |
| -5.0             | 20.73           | 0.34        |
| 0.0              | 15.83           | 0.43        |
| 5.0              | 12.21           | 0.55        |
| 10.0             | 9.50            | 0.68        |
| 15.0             | 7.46            | 0.84        |
| 20.0             | 5.90            | 1.01        |
| 25.0             | 4.71            | 1.21        |
| 30.0             | 3.78            | 1.42        |
| 35.0             | 3.06            | 1.64        |
| 40.0             | 2.50            | 1.88        |
| 45.0             | 2.05            | 2.11        |
| 50.0             | 1.69            | 2.35        |
| 55.0             | 1.40            | 2.58        |
| 60.0             | 1.17            | 2.81        |
| 65.0             | 0.98            | 3.02        |
| 70.0             | 0.83            | 3.22        |
| 75.0             | 0.70            | 3.41        |
| 80.0             | 0.60            | 3.58        |
| 85.0             | 0.51            | 3.73        |
| 90.0             | 0.44            | 3.87        |
| 95.0             | 0.38            | 3.99        |
| 100.0            | 0.33            | 4.10        |

## ■ Discharge temperature thermistor

| Temperature (°C) | Resistance (kΩ) | Voltage (V) |
|------------------|-----------------|-------------|
| -30.0            | 1,013.11        | 0.06        |
| -25.0            | 729.09          | 0.09        |
| -20.0            | 531.56          | 0.12        |
| -15.0            | 392.31          | 0.16        |
| -10.0            | 292.91          | 0.21        |
| -5.0             | 221.09          | 0.28        |
| 0.0              | 168.60          | 0.36        |
| 5.0              | 129.84          | 0.46        |
| 10.0             | 100.91          | 0.57        |
| 15.0             | 79.12           | 0.71        |
| 20.0             | 62.55           | 0.86        |
| 25.0             | 49.84           | 1.03        |
| 30.0             | 40.01           | 1.23        |
| 35.0             | 32.35           | 1.43        |
| 40.0             | 26.34           | 1.65        |
| 45.0             | 21.58           | 1.88        |
| 50.0             | 17.79           | 2.11        |
| 55.0             | 14.75           | 2.34        |
| 60.0             | 12.30           | 2.57        |
| 65.0             | 10.32           | 2.79        |
| 70.0             | 8.70            | 3.00        |
| 75.0             | 7.36            | 3.19        |
| 80.0             | 6.27            | 3.37        |
| 85.0             | 5.36            | 3.54        |
| 90.0             | 4.60            | 3.69        |
| 95.0             | 3.96            | 3.83        |
| 100.0            | 3.43            | 3.96        |
| 105.0            | 2.98            | 4.07        |
| 110.0            | 2.60            | 4.17        |
| 115.0            | 2.27            | 4.26        |
| 120.0            | 2.00            | 4.33        |

## ■ Compressor temperature thermistor

| Temperature (°C) | Resistance (kΩ) | Voltage (V) |
|------------------|-----------------|-------------|
| -30.0            | 1,013.11        | 0.06        |
| -25.0            | 729.09          | 0.09        |
| -20.0            | 531.56          | 0.12        |
| -15.0            | 392.31          | 0.16        |
| -10.0            | 292.91          | 0.21        |
| -5.0             | 221.09          | 0.28        |
| 0.0              | 168.60          | 0.36        |
| 5.0              | 129.84          | 0.46        |
| 10.0             | 100.91          | 0.57        |
| 15.0             | 79.12           | 0.71        |
| 20.0             | 62.55           | 0.86        |
| 25.0             | 49.84           | 1.03        |
| 30.0             | 40.01           | 1.23        |
| 35.0             | 32.35           | 1.43        |
| 40.0             | 26.34           | 1.65        |
| 45.0             | 21.58           | 1.88        |
| 50.0             | 17.79           | 2.11        |
| 55.0             | 14.75           | 2.34        |
| 60.0             | 12.30           | 2.57        |
| 65.0             | 10.32           | 2.79        |
| 70.0             | 8.70            | 3.00        |
| 75.0             | 7.36            | 3.19        |
| 80.0             | 6.27            | 3.37        |
| 85.0             | 5.36            | 3.54        |
| 90.0             | 4.60            | 3.69        |
| 95.0             | 3.96            | 3.83        |
| 100.0            | 3.43            | 3.96        |
| 105.0            | 2.98            | 4.07        |
| 110.0            | 2.60            | 4.17        |
| 115.0            | 2.27            | 4.26        |
| 120.0            | 2.00            | 4.33        |

## ■ Heat exchanger temperature thermistor

| Temperature (°C) | Resistance (kΩ) | Voltage (V) |
|------------------|-----------------|-------------|
| -30.0            | 95.58           | 0.24        |
| -25.0            | 68.90           | 0.32        |
| -20.0            | 50.31           | 0.43        |
| -15.0            | 37.19           | 0.57        |
| -10.0            | 27.81           | 0.73        |
| -5.0             | 21.02           | 0.92        |
| 0.0              | 16.05           | 1.14        |
| 5.0              | 12.38           | 1.39        |
| 10.0             | 9.63            | 1.65        |
| 15.0             | 7.56            | 1.93        |
| 20.0             | 5.98            | 2.21        |
| 25.0             | 4.77            | 2.49        |
| 30.0             | 3.84            | 2.77        |
| 35.0             | 3.11            | 3.02        |
| 40.0             | 2.53            | 3.26        |
| 45.0             | 2.08            | 3.48        |
| 50.0             | 1.71            | 3.68        |
| 55.0             | 1.42            | 3.85        |
| 60.0             | 1.19            | 4.00        |
| 65.0             | 1.00            | 4.13        |
| 70.0             | 0.84            | 4.25        |
| 75.0             | 0.71            | 4.35        |
| 80.0             | 0.61            | 4.43        |

## ■ Outdoor temperature thermistor

| Temperature (°C) | Resistance (kΩ) | Voltage (V) |
|------------------|-----------------|-------------|
| -30.0            | 224.33          | 0.73        |
| -25.0            | 159.71          | 0.97        |
| -20.0            | 115.24          | 1.25        |
| -15.0            | 84.21           | 1.56        |
| -10.0            | 62.28           | 1.90        |
| -5.0             | 46.58           | 2.26        |
| 0.0              | 35.21           | 2.61        |
| 5.0              | 26.88           | 2.94        |
| 10.0             | 20.72           | 3.25        |
| 15.0             | 16.12           | 3.52        |
| 20.0             | 12.64           | 3.76        |
| 25.0             | 10.00           | 3.97        |
| 30.0             | 7.97            | 4.14        |
| 35.0             | 6.40            | 4.28        |
| 40.0             | 5.18            | 4.41        |
| 45.0             | 4.21            | 4.51        |
| 50.0             | 3.45            | 4.59        |
| 55.0             | 2.85            | 4.65        |

## **4. CONTROL AND FUNCTIONS**

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## 4. CONTROL AND FUNCTIONS

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# 1. Compressor frequency control

## 1-1. Cooling operation

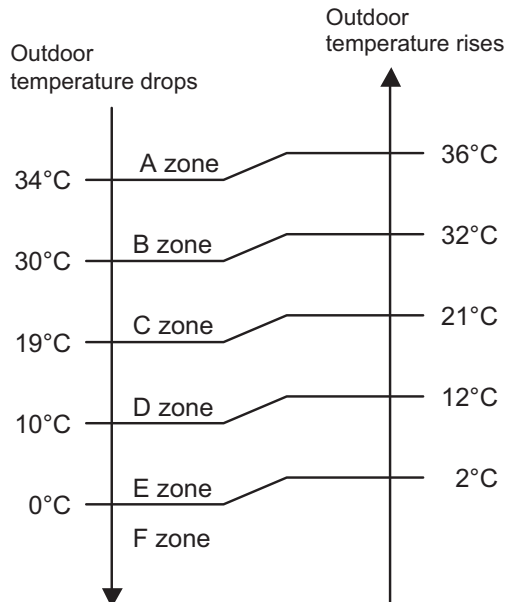
A sensor (room temperature thermistor) built in the indoor unit body will usually perceive difference or variation between a set temperature and present room temperature, and controls the operation frequency of the compressor.

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

- **Compressor frequency range**

| Model name                 | Minimum frequency | Maximum frequency |
|----------------------------|-------------------|-------------------|
| ARXG36KHTAP                | 15 rps            | 98 rps            |
| ARXG45KHTAP<br>ARXG54KHTAP | 17 rps            | 95 rps            |

• Limit of maximum speed based on outdoor temperature



Unit: rps

| Model name                 | Outdoor temperature zone | Indoor unit fan mode |     |     |       |
|----------------------------|--------------------------|----------------------|-----|-----|-------|
|                            |                          | HIGH                 | MED | LOW | QUIET |
| ARXG36KHTAP                | A zone                   | 98                   | 79  | 64  | 44    |
|                            | B zone                   | 98                   | 79  | 64  | 44    |
|                            | C zone                   | 85                   | 64  | 54  | 44    |
|                            | D zone                   | 64                   | 54  | 44  | 36    |
|                            | E zone                   | 64                   | 54  | 44  | 36    |
|                            | F zone                   | 64                   | 54  | 44  | 36    |
| ARXG45KHTAP<br>ARXG54KHTAP | A zone                   | 95                   | 66  | 51  | 33    |
|                            | B zone                   | 95                   | 66  | 51  | 33    |
|                            | C zone                   | 80                   | 51  | 41  | 33    |
|                            | D zone                   | 56                   | 41  | 35  | 27    |
|                            | E zone                   | 56                   | 41  | 35  | 27    |
|                            | F zone                   | 56                   | 41  | 35  | 27    |

CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

## 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 frequency of compressor.

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

- **Compressor frequency range**

Unit: rps

| Model name                 | Minimum frequency | Maximum frequency |
|----------------------------|-------------------|-------------------|
| ARXG36KHTAP                | 15 rps            | 120 rps           |
| ARXG45KHTAP<br>ARXG54KHTAP | 17 rps            | 120 rps           |

## 1-3. Dry operation

The compressor rotation frequency 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.

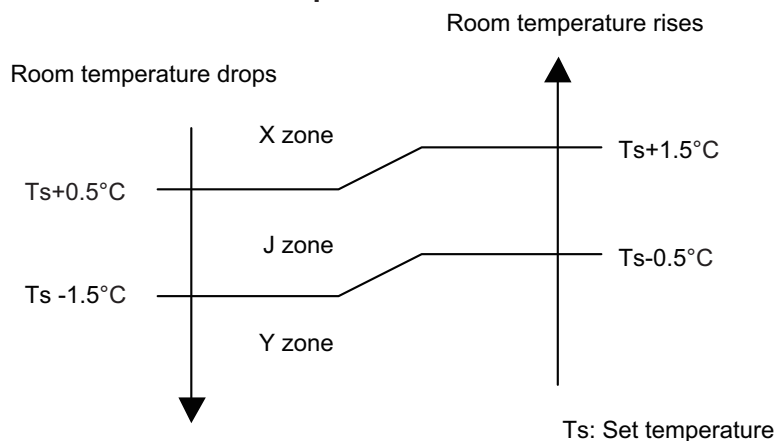
Zone is defined by set temperature and room temperature.

- **Compressor frequency range**

Unit: rps

| Model name                 | Outdoor temperature zone | Operating frequency |
|----------------------------|--------------------------|---------------------|
| ARXG36KHTAP                | X zone                   | 44                  |
|                            | J zone                   | 44                  |
|                            | Y zone                   | 0                   |
| ARXG45KHTAP<br>ARXG54KHTAP | X zone                   | 33                  |
|                            | J zone                   | 33                  |
|                            | Y zone                   | 0                   |

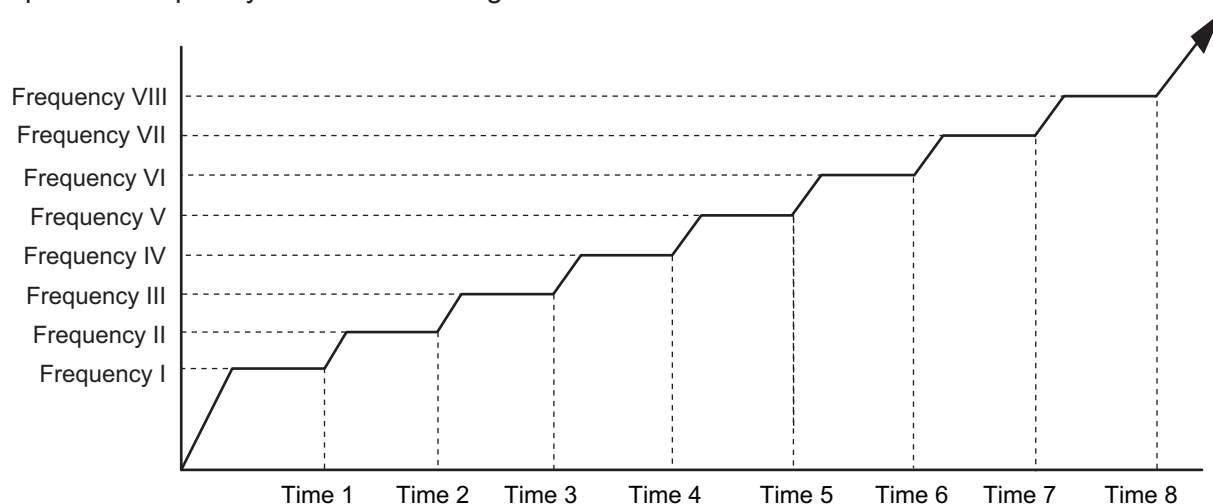
- **Compressor control based on room temperature**



## 1-4. Compressor frequency at normal start-up

### ■ Model: AOYG36KRTA

Compressor frequency soon after starting is controlled as below.



- Normal operation

|                 |    |     |     |     |     |     |     |      |
|-----------------|----|-----|-----|-----|-----|-----|-----|------|
| Frequency (rps) | I  | II  | III | IV  | V   | VI  | VII | VIII |
|                 | 25 | 42  | 53  | 61  | 65  | 75  | 85  | 92   |
| Time (sec)      | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8    |
|                 | 90 | 150 | 270 | 330 | 390 | 450 | 570 | 630  |

- Special operation

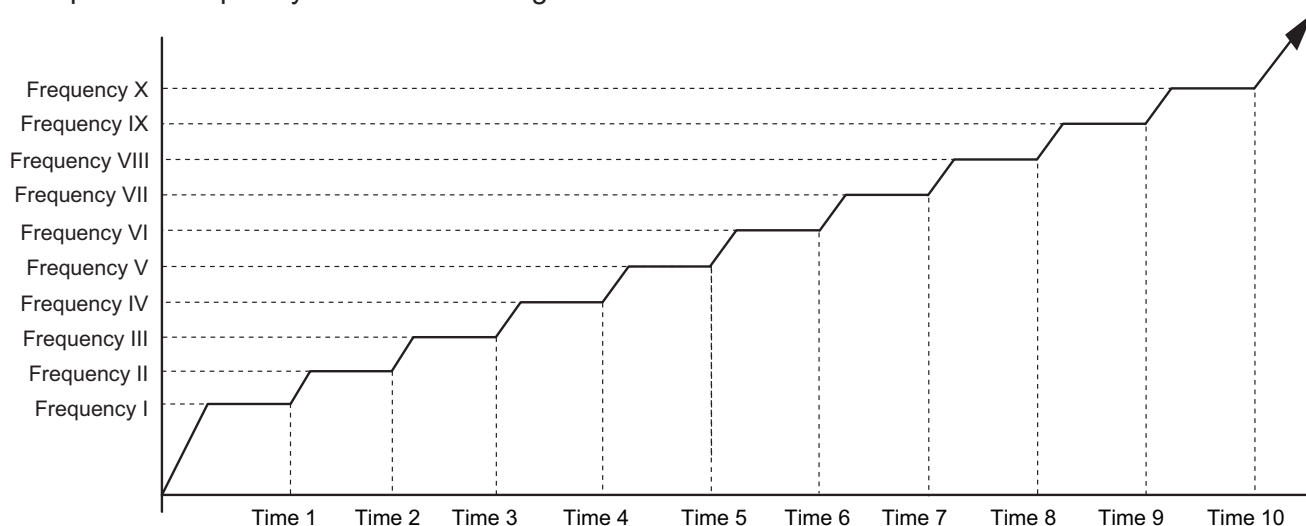
|                 |     |     |     |     |     |     |     |       |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-------|
| Frequency (rps) | I   | II  | III | IV  | V   | VI  | VII | VIII  |
|                 | 25  | 42  | 53  | 61  | 65  | 75  | 85  | 92    |
| Time (sec)      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8     |
|                 | 225 | 305 | 605 | 665 | 725 | 785 | 855 | 1,000 |

#### NOTES:

- Normal operation:
  - Cooling and dry mode
    - Below 3 hours from the compressor stop and the compressor thermistor  $\geq 15\text{ }^{\circ}\text{C}$
    - After defrost operation
  - Other than when the compressor starts for the first time since the breaker turns on
- Special operation:
  - Other than the normal operation condition
  - When the compressor starts for the first time since the breaker turns on

## Models: AOYG45KRTA and AOYG54KRTA

Compressor frequency soon after starting is controlled as below.



- Normal operation

|                 |    |     |     |     |     |     |     |      |     |     |
|-----------------|----|-----|-----|-----|-----|-----|-----|------|-----|-----|
| Frequency (rps) | I  | II  | III | IV  | V   | VI  | VII | VIII | IX  | X   |
|                 | 41 | 46  | 51  | 57  | 60  | 72  | 81  | 91   | 100 | 110 |
| Time (sec)      | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8    | 9   | 10  |
|                 | 60 | 120 | 180 | 240 | 360 | 420 | 480 | 540  | 600 | 660 |

- Special operation

|                 |     |     |     |     |     |     |     |      |     |       |
|-----------------|-----|-----|-----|-----|-----|-----|-----|------|-----|-------|
| Frequency (rps) | I   | II  | III | IV  | V   | VI  | VII | VIII | IX  | X     |
|                 | 41  | 46  | 51  | 57  | 60  | 72  | 81  | 91   | 100 | 110   |
| Time (sec)      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8    | 9   | 10    |
|                 | 120 | 185 | 245 | 305 | 605 | 665 | 725 | 785  | 845 | 1,000 |

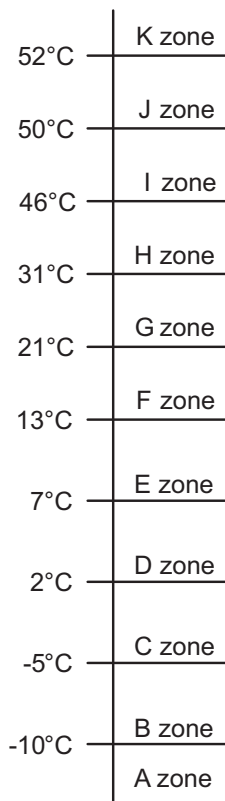
### NOTES:

- Normal operation:
  - Cooling and dry mode
    - Below 3 hours from the compressor stop and the compressor thermistor  $\geq 15\text{ }^{\circ}\text{C}$
    - After defrost operation
  - Other than when the compressor starts for the first time since the breaker turns on
- Special operation:
  - Other than the normal operation condition
  - When the compressor starts for the first time since the breaker turns on

## 1-5. Compressor frequency limitation by outdoor temperature

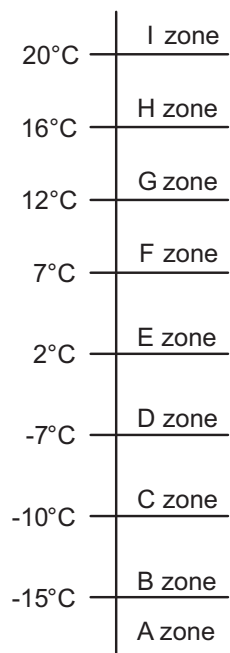
The minimum compressor frequency is limited by outdoor temperature as below.

- Cooling/Dry mode



| Model name               | Outdoor temperature zone | Limitation of compressor frequency |
|--------------------------|--------------------------|------------------------------------|
| AOYG36KRTA               | A zone                   | 55 rps                             |
|                          | B zone                   | 52 rps                             |
|                          | C zone                   | 47 rps                             |
|                          | D zone                   | 39 rps                             |
|                          | E zone                   | 33 rps                             |
|                          | F zone                   | 25 rps                             |
|                          | G zone                   | 18 rps                             |
|                          | H zone                   | 20 rps                             |
|                          | I zone                   | 20 rps                             |
|                          | J zone                   | 21 rps                             |
|                          | K zone                   | 24 rps                             |
| AOYG45KRTA<br>AOYG54KRTA | A zone                   | 50 rps                             |
|                          | B zone                   | 47 rps                             |
|                          | C zone                   | 40 rps                             |
|                          | D zone                   | 30 rps                             |
|                          | E zone                   | 22 rps                             |
|                          | F zone                   | 20 rps                             |
|                          | G zone                   | 16 rps                             |
|                          | H zone                   | 16 rps                             |
|                          | I zone                   | 17 rps                             |
|                          | J zone                   | 23 rps                             |
|                          | K zone                   | 28 rps                             |

- Heating mode



| Model name               | Outdoor temperature zone | Limitation of compressor frequency |
|--------------------------|--------------------------|------------------------------------|
| AOYG36KRTA               | A zone                   | 58 rps                             |
|                          | B zone                   | 52 rps                             |
|                          | C zone                   | 43 rps                             |
|                          | D zone                   | 38 rps                             |
|                          | E zone                   | 28 rps                             |
|                          | F zone                   | 23 rps                             |
|                          | G zone                   | 20 rps                             |
|                          | H zone                   | 17 rps                             |
|                          | I zone                   | 17 rps                             |
| AOYG45KRTA<br>AOYG54KRTA | A zone                   | 46 rps                             |
|                          | B zone                   | 42 rps                             |
|                          | C zone                   | 35 rps                             |
|                          | D zone                   | 32 rps                             |
|                          | E zone                   | 23 rps                             |
|                          | F zone                   | 20 rps                             |
|                          | G zone                   | 17 rps                             |
|                          | H zone                   | 13 rps                             |
|                          | I zone                   | 16 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 18°C and 30°C in 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 |
|--|----------------|
| $Tr > Ts + 2^{\circ}\text{C}$                                | Cooling        |
| $Ts + 2^{\circ}\text{C} \geq Tr \geq Ts - 2^{\circ}\text{C}$ | Middle zone    |
| $Tr < Ts - 2^{\circ}\text{C}$                                | 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.

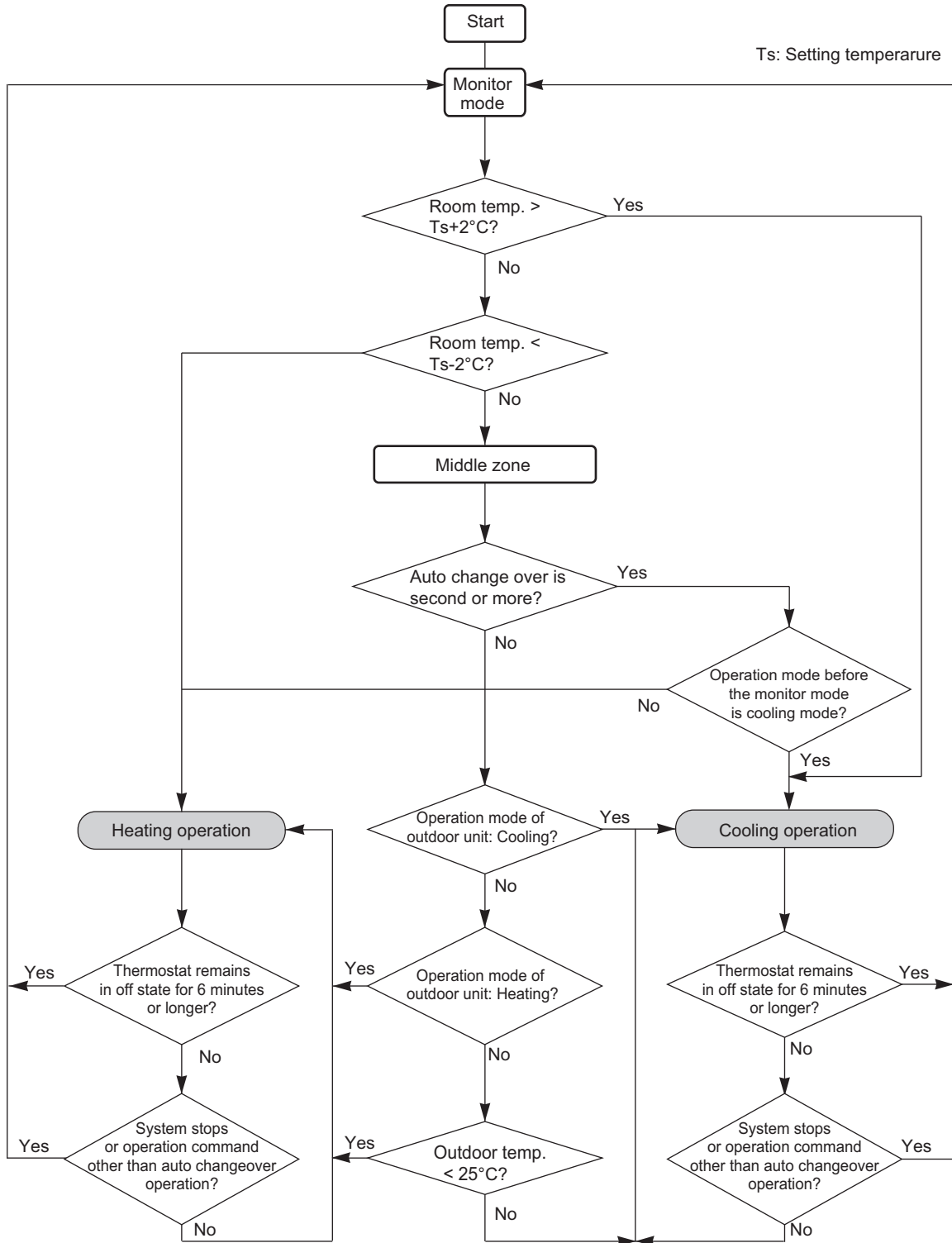
| Outdoor temp.  | Operation mode |
|----------------|----------------|
| 25°C or more   | Cooling        |
| Less than 25°C | Heating        |

- 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

Ts: Setting temperature



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)                |                            |
|----------------|------------|----------------------------|----------------------------|
|                |            | ARXG36KHTAP                | ARXG45KHTAP<br>ARXG54KHTAP |
| Heating        | HIGH       | 900                        | 1,130                      |
|                | MED        | 800                        | 930                        |
|                | LOW        | 660                        | 780                        |
|                | QUIET      | 560                        | 700                        |
|                | S-LOW      | 420                        | 420                        |
| Cooling/Fan    | HIGH       | 980                        | 1,130                      |
|                | MED        | 800                        | 930                        |
|                | LOW        | 660                        | 780                        |
|                | QUIET      | 560                        | 700                        |
|                | Soft quiet | 480* <sup>1</sup>          | 560* <sup>1</sup>          |
|                | S-LOW      | 420* <sup>2</sup>          | 420* <sup>2</sup>          |
| Dry            |            | X zone: 560<br>J zone: 560 | X zone: 700<br>J zone: 700 |

\*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.

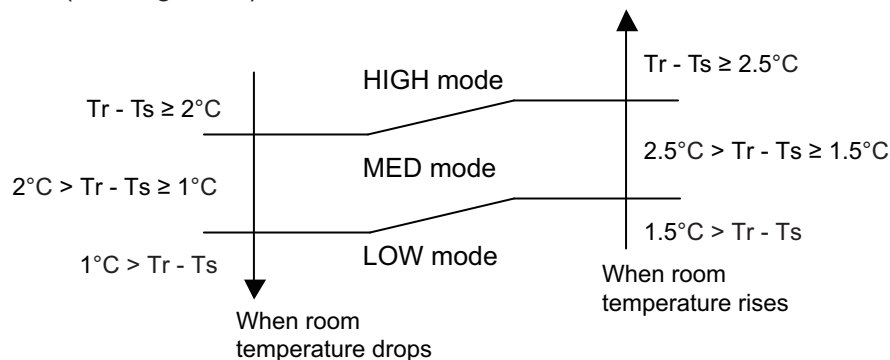
When fan mode is set at AUTO, it operates on MED fan speed.

##### ■ 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

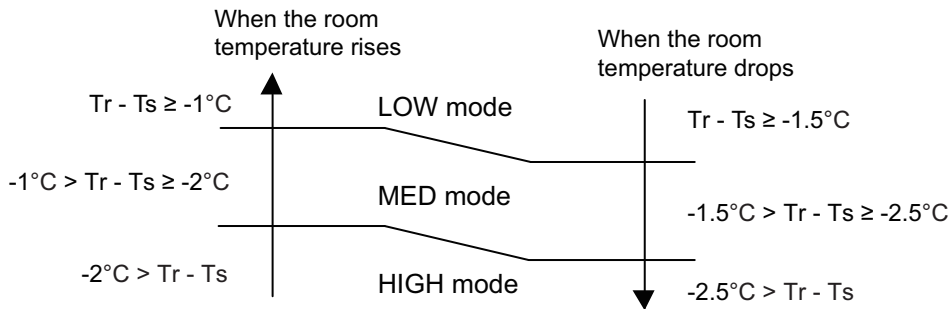
During dry operation, fan speed setting can not be changed as shown in “Fan speed” above.

## ■ 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.

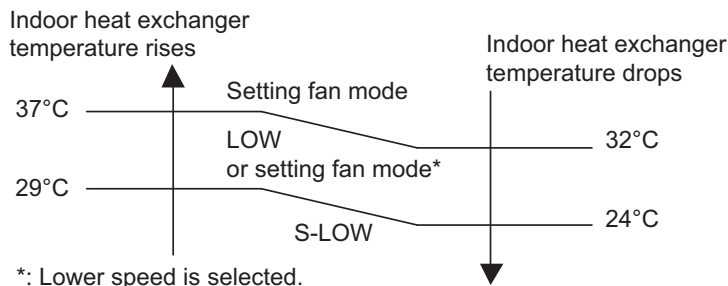
Airflow change over (Heating: Auto)



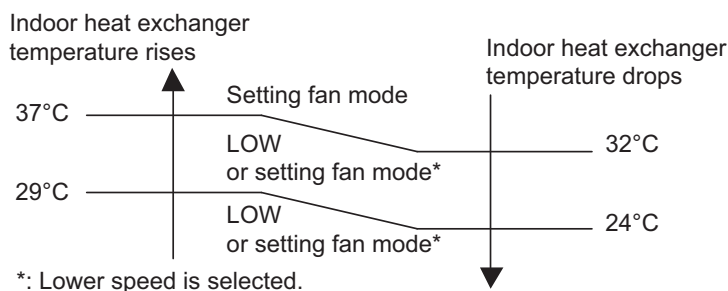
## ■ Cool air prevention control (heating mode)

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.

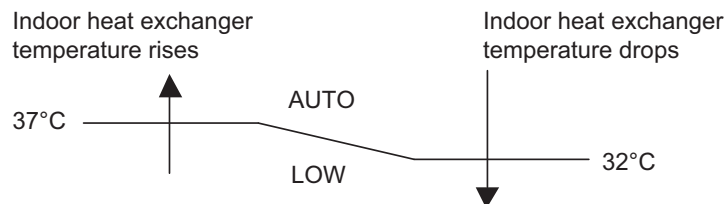
### • Normal operation



13 minutes later:

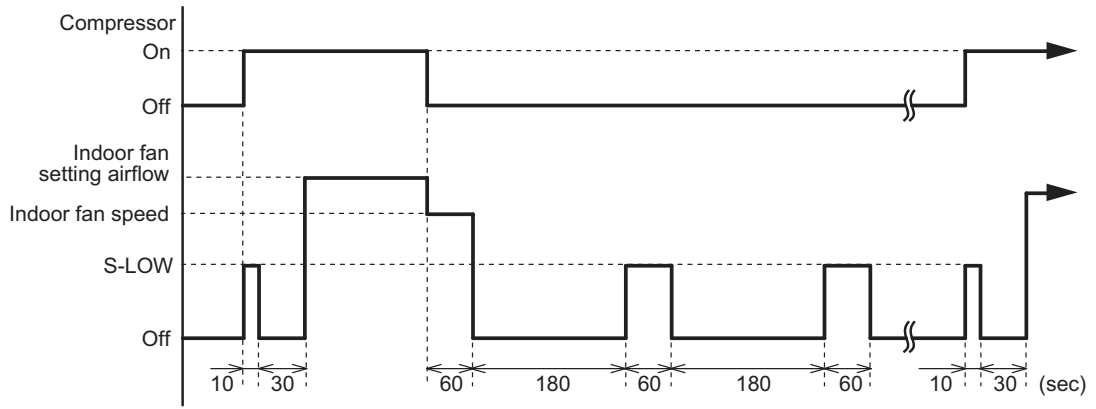


### • 10 °C HEAT operation



## 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.



CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

## 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

#### ● Model: AOYG36KRTA

Fan speed is defined by outdoor temperature and compressor frequency.

Unit: rpm

| Fan step | Cooling or dry | Heating |
|----------|----------------|---------|
| 13       | 830            | —       |
| 12       | 830            | —       |
| 11       | 740            | —       |
| 10       | 700            | 830     |
| 9        | 650            | 740     |
| 8        | 570            | 690     |
| 7        | 570            | 620     |
| 6        | 570            | 590     |
| 5        | 570            | 480     |
| 4        | 540            | 410     |
| 3        | 480            | 340     |
| 2        | 400            | 270     |
| 1        | 270            | 200     |
| S-HIGH   | —              | 830     |

- When the compressor frequency increases, the outdoor fan speed also changes to the higher speed.
- When the compressor frequency decreases, the outdoor fan speed also changes to the lower speed.

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

Fan speed after defrost control: 830 rpm

## ● Models: AOYG45KRTA and AOYG54KRTA

Fan speed is defined by outdoor temperature and compressor frequency.

Unit: rpm

| Fan step | Cooling or dry | Heating |
|----------|----------------|---------|
| 13       | 990            | —       |
| 12       | 920            | —       |
| 11       | 860            | —       |
| 10       | 800            | 990     |
| 9        | 740            | 900     |
| 8        | 650            | 820     |
| 7        | 600            | 740     |
| 6        | 530            | 650     |
| 5        | 490            | 540     |
| 4        | 400            | 460     |
| 3        | 330            | 380     |
| 2        | 270            | 290     |
| 1        | 200            | 200     |
| S-HIGH   | —              | 990     |

- When the compressor frequency increases, the outdoor fan speed also changes to the higher speed.
- When the compressor frequency decreases, the outdoor fan speed also changes to the lower speed.

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

Fan speed after defrost control: 990 rpm

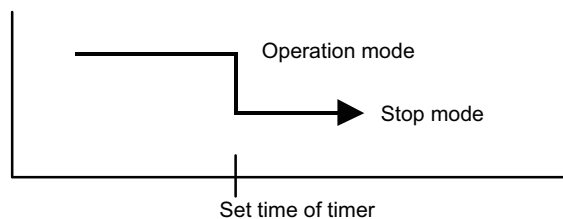
## 4. Timer operation control

### 4-1. Wireless remote control

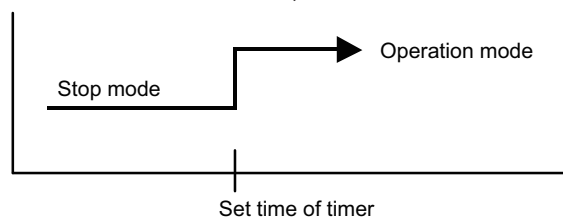
| On/Off timer | Program timer | Sleep timer | Weekly timer |
|--------------|---------------|-------------|--------------|
| ○            | ○             | ○           | —            |

#### ■ On/Off timer

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

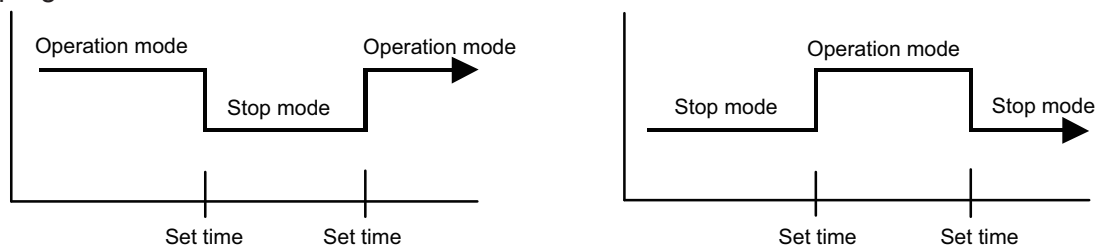


- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



#### ■ Program timer

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



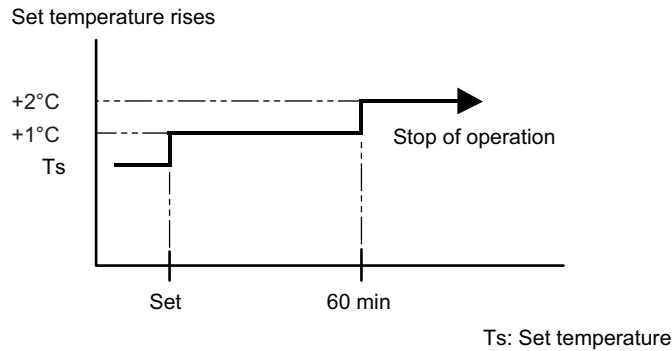
- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

## ■ 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.

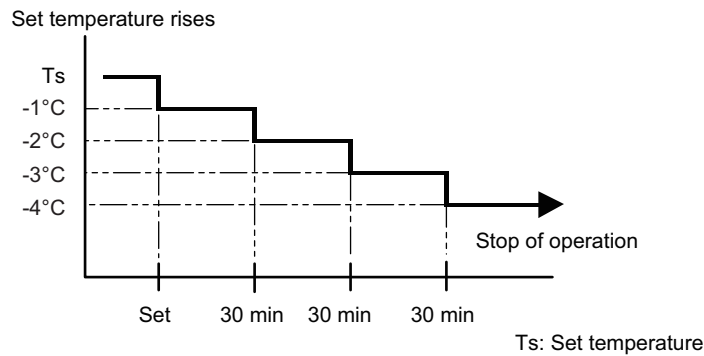
- In the cooling operation mode

When the sleep timer is set, the setting temperature is increased 1°C. It increases the setting temperature another 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°C. It decreases the setting temperature another 1°C every 30 minutes. Upon lowering 4°C, the setting temperature is not changed and the operation is stopped at the setting time.



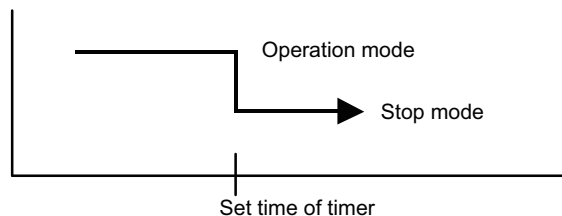


## 4-2. Wired remote control

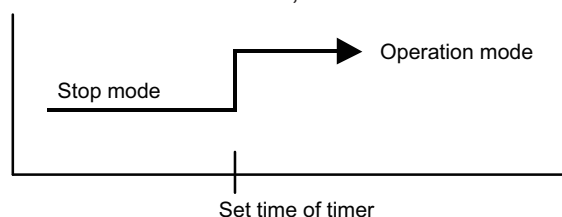
| On/Off timer | Program timer | Sleep timer | Weekly timer | Temperature set back timer |
|--------------|---------------|-------------|--------------|----------------------------|
| ○            | ○             | ○           | ○            | ○                          |

### ■ On/Off timer

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

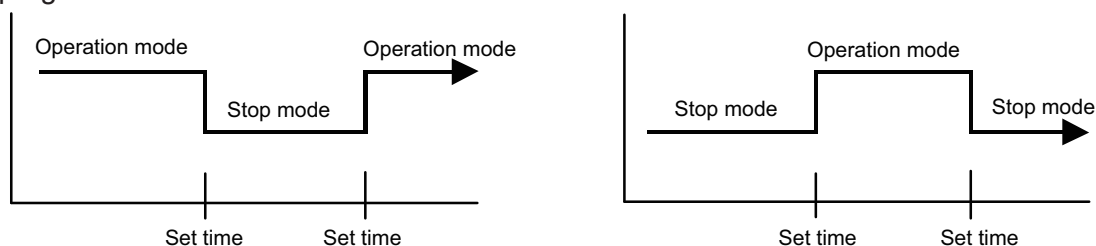


- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



### ■ Program timer

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



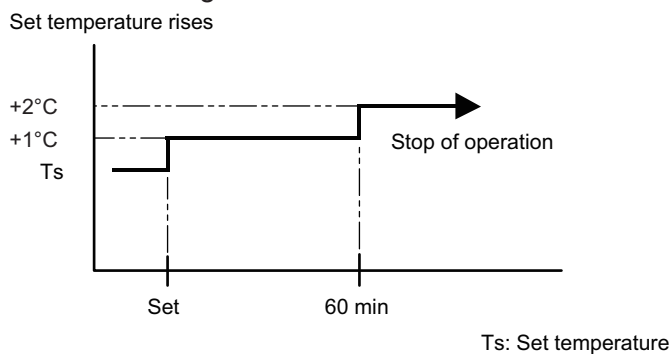
- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

## ■ 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.

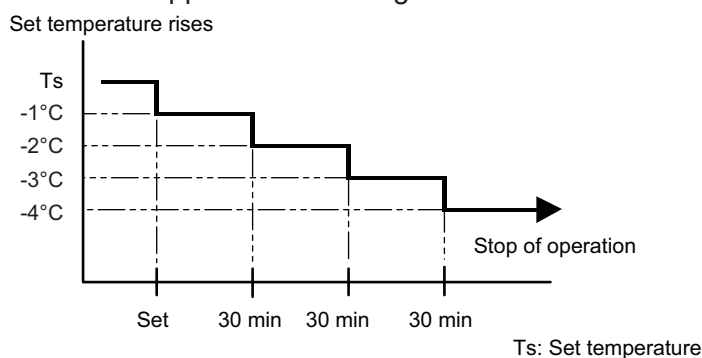
- In the cooling operation mode

When the sleep timer is set, the setting temperature is increased 1°C. It increases the setting temperature another 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°C. It decreases the setting temperature another 1°C every 30 minutes. Upon lowering 4°C, the setting temperature is not changed and the operation is stopped at the setting time.



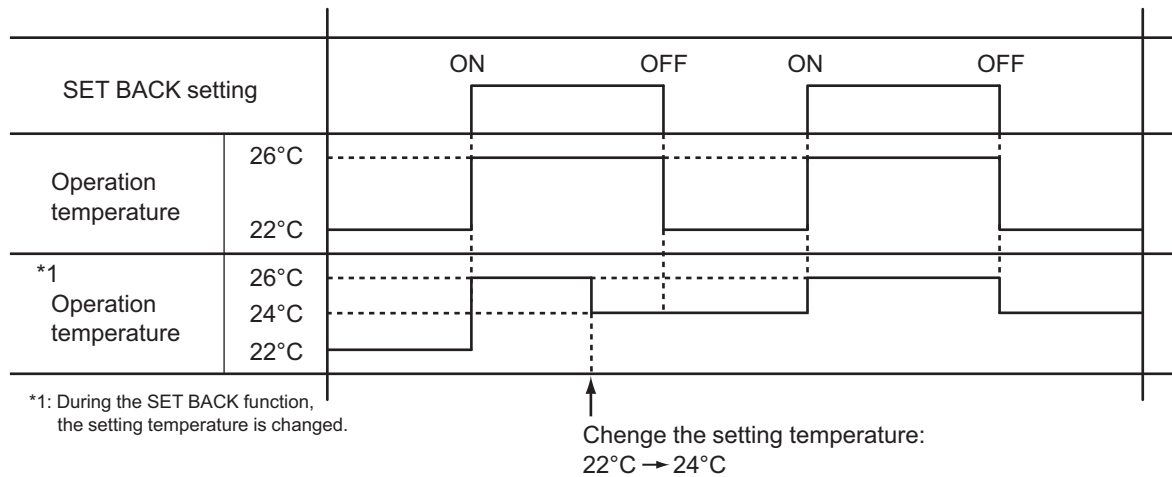
## ■ Weekly timer

On and off timer can be combined, and up to 4 reservations per day and 28 reservations per week. Before setting the program, set the week and time of the air conditioner at first. If the week and time are not set, the weekly timer will not operate correctly at the setting time.

## ■ Temperature set back timer

- The SET BACK timer only changes the set temperature for 7 days, it cannot be used to start or stop air conditioner operation.
- The SET BACK timer can be set to operate up to two times per day but only one temperature setting can be used.
- During COOLING/DRY mode, the air conditioner will operate at a minimum of 18°C even if the SET BACK temperature is set to 17°C or lower.

Case of SET BACK timer on the Cooling operation. (Setting temperature :22°C, SET BACK temperature :26°C)



## 5. 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  | $T_n \leq -9^\circ\text{C}$ and $T_n - T_a \geq 5$ deg | $T_n \leq -5^\circ\text{C}$ |

#### – 2nd time and after

|                                       |                   |  |
|---------------------------------------|-------------------|--|
| Compressor integrating operation time | Less than 35 min. | More than 35 min.  |
| Condition                             | Does not operate  | $T_n - T_{n10} < -5$ deg ( $T_n \leq -10^\circ\text{C}$ )<br>$T_n - T_{nb} < -2$ deg ( $T_n \leq -10^\circ\text{C}$ )<br>$T_n \leq -25^\circ\text{C}$ ( $T_a \geq -20^\circ\text{C}$ )<br>$T_n \leq T_a - 7^\circ\text{C}$ or $T_n \leq -25^\circ\text{C}$ ( $T_a < -20^\circ\text{C}$ ) |

#### – 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                             | $T_n \leq -3^\circ\text{C}$                        | $T_n \leq -5^\circ\text{C}$                        | 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) | 12°C or more |
| Compressor operation time  | 15 minutes   |

## 5-1. 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: -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<br>(after 1 minute or later since compressor start) | 12°C or more |
| Compressor operation time   | 15 minutes   |

## 6. Various control

### 6-1. 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) |  |
| ECONOMY operation   |  |
| 10 °C HEAT operation  |  |

### 6-2. 10 °C HEAT operation

10 °C HEAT operation performs as below setting when pressing 10 °C HEAT button.

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

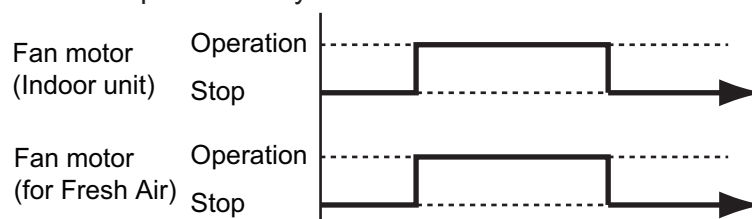
### 6-3. ECONOMY operation

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 +1°C | Setting temperature -1°C |

### 6-4. Fresh air control

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



## 6-5. Compressor preheating

By preheating the compressor, warm airflow is quickly discharged when the operation is started.

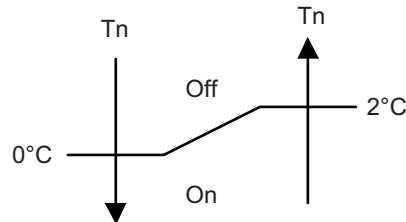
- **Triggering condition 1**

- Outdoor temperature  $\leq 20^{\circ}\text{C}$

When outdoor temperature reaches  $26^{\circ}\text{C}$ , compressor preheating stops.

- 30 minutes after compressor stopped

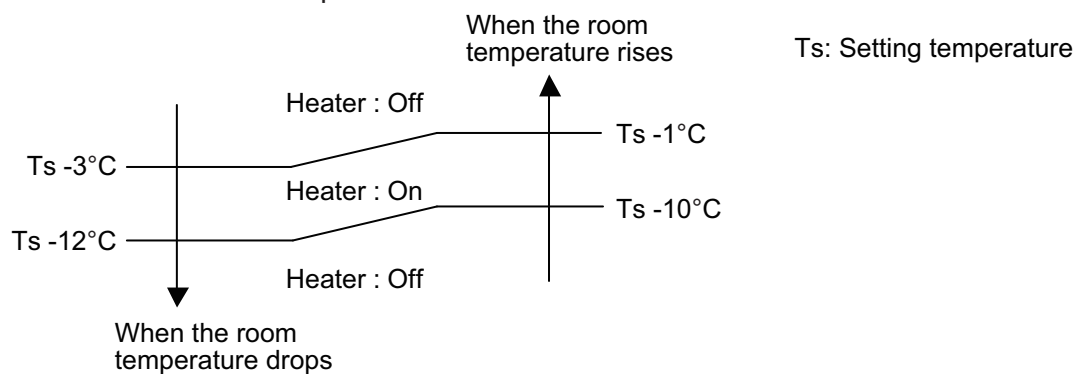
- **Triggering condition 2**



Tn: Outdoor unit heat exchanger temp.

## 6-6. 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.)

## 6-7. 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 47 and 480 pulses |
| Heating mode     | Between 39 and 480 pulses |

**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).

## 6-8. Drain pump control

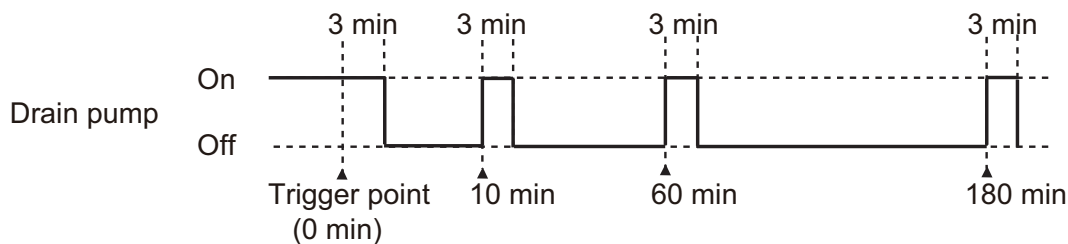
### ■ Drain control for cooling operation

#### ● During the compressor in operation

- **Triggering condition**  
The thermostat is turned on during cooling or dry mode.
- **Operation details**  
The drain pump is turned on.
- **Release condition**
  - The thermostat is turned off.  
Refer to "When the compressor is not in operation" for the operation after release.
  - The compressor is stopped.  
Refer to "When the compressor is not in operation" for the operation after release.
  - The operation is switched to heating mode.  
Refer to "When the compressor is not in operation" for the operation after release.
  - The float switch is turned on.  
Refer to "Overflow control" for the operation after release.
  - The compressor is stopped by Anti-freezing control.  
Refer to "The compressor is stopped by Anti-freezing control" for the operation after release.

#### ● When the compressor is not in operation

- **Triggering condition**
  - The thermostat is turned off.
  - The compressor is stopped.
  - The operation is switched to heating mode.
  - The float switch is turned off.
- **Operation details**
  - Count 180 minutes.
  - Start drain pump intermittent operation.



- **Release condition**
  - 3 minutes drain pump operation is finished after 180 minutes count.
  - The operation is switched to cooling or dry mode.  
Refer to "During the compressor in operation" for the operation after release.
  - The float switch is turned on.  
Refer to "Overflow control" for the operation after release.
- **Operation after release**  
The drain pump is turned off and the air conditioner operate according the settings.

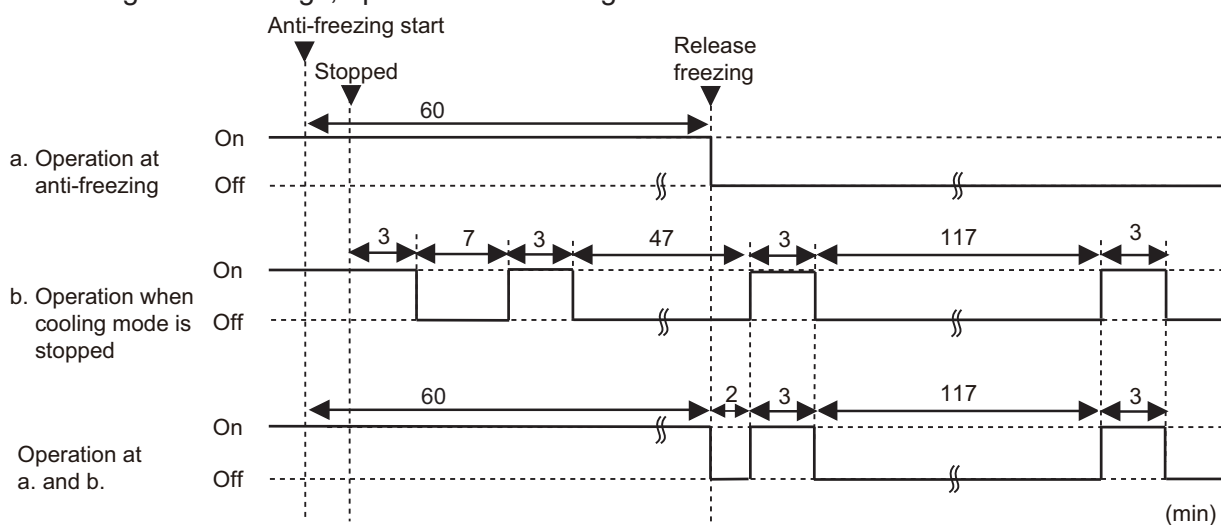


## ● Overflow control

- **Triggering condition**  
The float switch is turned on.
- **Operation details**
  - The drain pump is turned on.
  - When the operation mode is cooling or dry, operate the followings.
    - The compressor is stopped.
    - Then indoor fan control is turned off.
- **Release condition**
  - The float switch is turned off.
    - In the case that on the cooling or dry mode the thermostat is on, refer to "[During the compressor in operation](#)" for the operation after release.
    - In other case, refer to "[When the compressor is not in operation](#)" for the operation after release.
  - 3 minutes passed
- **Operation after release**  
The compressor stopps permanently.

## ● The compressor is stopped by Anti-freezing control

- **Triggering condition**  
During the compressor in operation, the compressor is stopped by Anti-freezing control.
- **Operation details**  
The drain pump is kept on in 60 minutes after Anti-freezing control released.
- **Release condition**  
60 minutes passed
- **Operation after release**  
According to the settings, operate the followings.



## 6-9. 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     | 30 |
| Retry set number | 3  |

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

## 6-10. 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 3 minutes passes and the compressor is started.

## 6-11. Peak cut operation

The current value is limited to reduce the power consumption by external input.

| Peak cut level              | Level 1               | Level 2 | Level 3 | Level 4 |
|-----------------------------|-----------------------|---------|---------|---------|
| Peak cut for rated capacity | Forced thermostat off | 50%     | 75%     | 100%    |

### NOTES:

- During defrost operation, peak cut operation becomes invalid.
- Even during the peak cut operation, the operations of current overload, economy, and low noise are effective and the outdoor unit operates by lowest current of them.

## 7. Various protections

### 7-1. 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 LED starts blinking.

|                                   |                     |
|-----------------------------------|---------------------|
| Trigger condition                 | 104°C               |
| Compressor frequency              | -14 rps/120 seconds |
| Release condition                 | 101°C               |
| Compressor protection temperature | 110°C               |

### 7-2. Anti-freezing control (cooling and dry mode)

The compressor frequency 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 | 4°C  |      |
| Release condition | Outdoor temp. $\geq 10^{\circ}\text{C}^{*1}$ | 7°C  |
|                   | Outdoor temp. $\geq 12^{\circ}\text{C}^{*2}$ |      |
|                   | Outdoor temp. $< 10^{\circ}\text{C}^{*1}$    | 13°C |
|                   | Outdoor temp. $< 12^{\circ}\text{C}^{*2}$    |      |

\*1: During the outdoor temperature dropping

\*2: During the outdoor temperature rising

## 7-3. Current release control

The compressor frequency is controlled so that the outdoor unit input current does not exceed current limit value set according to the outdoor temperature.

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

### ■ Model: AOYG36KRTA

| Operation mode | Outdoor temp. (Ta)                                       | Trigger condition | Release condition |
|----------------|--|-------------------|-------------------|
| Cooling        | $52^{\circ}\text{C} \leq \text{Ta}$                      | 3.5 A             | 3.0 A             |
|                | $50^{\circ}\text{C} \leq \text{Ta} < 52^{\circ}\text{C}$ | 5.5 A             | 5.0 A             |
|                | $42^{\circ}\text{C} \leq \text{Ta} < 50^{\circ}\text{C}$ | 6.0 A             | 5.5 A             |
|                | $2^{\circ}\text{C} \leq \text{Ta} < 42^{\circ}\text{C}$  | 7.5 A             | 7.0 A             |
|                | $\text{Ta} < 2^{\circ}\text{C}$                          | 8.5 A             | 8.0 A             |
| Heating        | $20^{\circ}\text{C} \leq \text{Ta}$                      | 5.5 A             | 5.0 A             |
|                | $16^{\circ}\text{C} \leq \text{Ta} < 20^{\circ}\text{C}$ | 6.0 A             | 5.5 A             |
|                | $12^{\circ}\text{C} \leq \text{Ta} < 16^{\circ}\text{C}$ | 7.0 A             | 6.5 A             |
|                | $2^{\circ}\text{C} \leq \text{Ta} < 12^{\circ}\text{C}$  | 7.5 A             | 7.0 A             |
|                | $\text{Ta} < 2^{\circ}\text{C}$                          | 8.5 A             | 8.0 A             |

### ■ Models: AOYG45KRTA and AOYG54KRTA

| Operation mode | Outdoor temp. (Ta)                                       | Trigger condition | Release condition |
|----------------|--|-------------------|-------------------|
| Cooling        | $52^{\circ}\text{C} \leq \text{Ta}$                      | 4.5 A             | 4.0 A             |
|                | $50^{\circ}\text{C} \leq \text{Ta} < 52^{\circ}\text{C}$ | 5.5 A             | 5.0 A             |
|                | $46^{\circ}\text{C} \leq \text{Ta} < 50^{\circ}\text{C}$ | 6.5 A             | 6.0 A             |
|                | $42^{\circ}\text{C} \leq \text{Ta} < 46^{\circ}\text{C}$ | 7.5 A             | 7.0 A             |
|                | $2^{\circ}\text{C} \leq \text{Ta} < 42^{\circ}\text{C}$  | 8.5 A             | 8.0 A             |
|                | $\text{Ta} < 2^{\circ}\text{C}$                          | 10.0 A            | 9.5 A             |
| Heating        | $20^{\circ}\text{C} \leq \text{Ta}$                      | 6.5 A             | 6.0 A             |
|                | $16^{\circ}\text{C} \leq \text{Ta} < 20^{\circ}\text{C}$ | 7.0 A             | 6.5 A             |
|                | $12^{\circ}\text{C} \leq \text{Ta} < 16^{\circ}\text{C}$ | 8.0 A             | 7.5 A             |
|                | $2^{\circ}\text{C} \leq \text{Ta} < 12^{\circ}\text{C}$  | 8.5 A             | 8.0 A             |
|                | $\text{Ta} < 2^{\circ}\text{C}$                          | 10.0 A            | 9.5 A             |

## 7-4. Indoor unit fan motor over temperature protection

When satisfy the following conditions, the protection works.

- After the 90 seconds from the fan operation, detect less than 300 rpm for 10 seconds.
- IPM trip protection works.
- Current overload protection works.

When detecting the above condition, recheck the condition after 6 minutes. When count the twice, the protection works.

- **Protection contents**

Reduce the static pressure 20 Pa. When it does not dissolve even the minimum static pressure condition, work the following operation.

- Fan motor error displayed when less than 300 rpm for 10 seconds is detected after the 90 seconds from the fan operation.
- Fan stop 40 seconds when IPM trip protection works.
- Fan stop 50 seconds when current overload protection works.

## 7-5. Compressor temperature protection

When the compressor temperature sensor detects higher than the trigger condition below, the compressor is stopped. When the compressor temperature sensor detects the release condition, the protection is released.

|                   |   |
|-------------------|---|
| Trigger condition | 108°C                                     |
| Release condition | 80°C<br>(3 minutes after compressor stop) |

## 7-6. High pressure protection

|                   |  |
|-------------------|--|
| Trigger condition | Pressure switch: Off (Open: Higher than 4.2 MPa)<br>Compressor stop  |
| Release condition | Pressure switch: On (Close: Lower than 3.2 MPa)<br>(3 minutes after compressor stop)<br>Compressor restart |

## 7-7. Low outdoor temperature protection

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

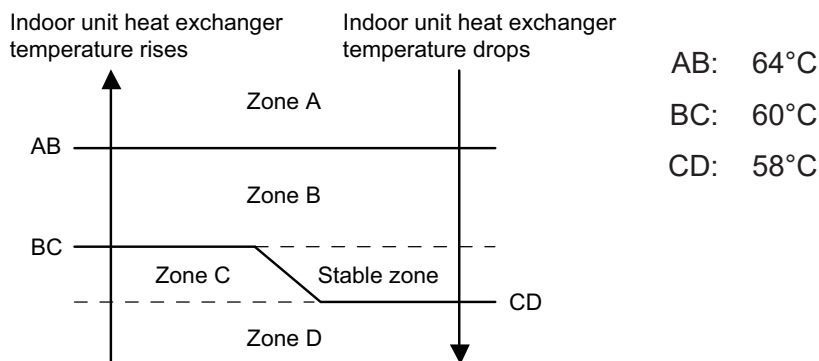
| Operation mode    | Cooling/Dry |
|-------------------|-------------|
| Trigger condition | -20°C       |
| Release condition | -15°C       |

## 7-8. High temperature and high pressure release control

The compressor is controlled as follows.

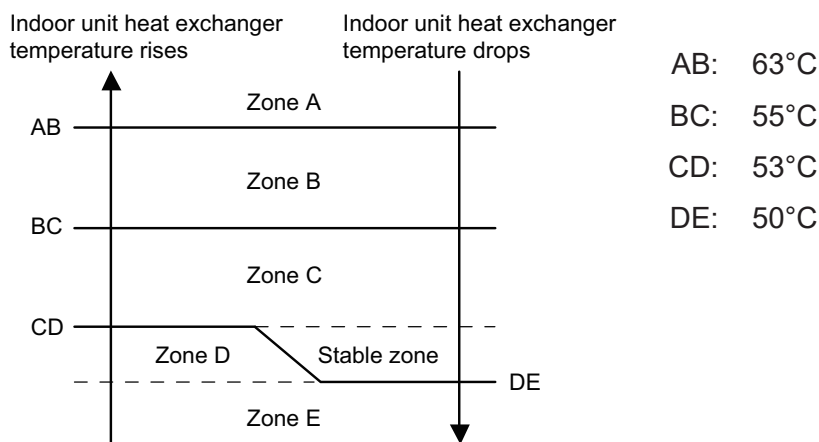
### ■ Models: AOYG36KRTA, AOYG45KRTA, and AOYG54KRTA

#### • Cooling mode



| Zone   | Operation  |                 |
|--------|--|-----------------|
| Zone A | Compressor is stopped.   |                 |
| Zone B | The compressor frequency is decreased.                                   | -7 rps/120 sec. |
| Zone C | The protection is released and the operation is returned to normal mode. |                 |
| Zone D |  |                 |

#### • Heating mode



| Zone   | Operation  |                  |
|--------|--|------------------|
| Zone A | Compressor is stopped.   |                  |
| Zone B | The compressor frequency is decreased.                                   | -15 rps/120 sec. |
| Zone C |  | -2 rps/120 sec.  |
| Zone D | The protection is released and the operation is returned to normal mode. |                  |
| Zone E |  |                  |

## 5. FILED WORKING

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## 5. FILED WORKING

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# 1. Function settings for indoor unit

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 on indoor unit

### ■ Models: ARXG36KHTAP, ARXG45KHTAP, and ARXG54KHTAP

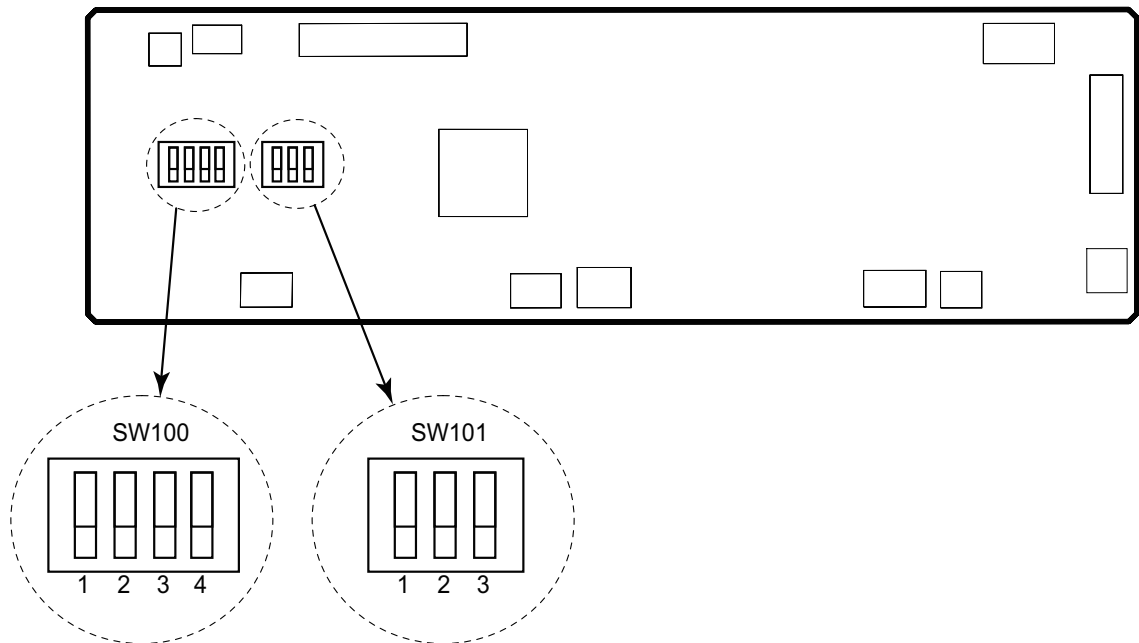
By using some components on the PCB, you can change the function settings.

#### Related components on the PCB and the applicable settings

| Component     |   | Setting content                   |
|---------------|---|-----------------------------------|
| DIP switch100 | 1 | Remote controller address setting |
|               | 2 |                                   |
|               | 3 |                                   |
|               | 4 |                                   |
| DIP switch101 | 1 | Setting change prohibited         |
|               | 2 | Setting change prohibited         |
|               | 3 | Fan delay setting                 |

### ● Component location

Components on the indoor unit main PCB used for the function settings are located as shown in the following figure.



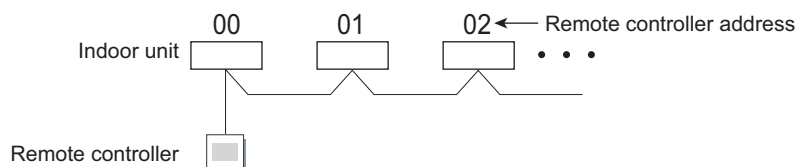
## ● DIP switch setting

- **Remote controller address setting (SW100)**

When operating a number of indoor units by using a wired remote controller, DIP switch setting for assigning unit number to each indoor unit is required.

DIP switches are normally set to make the unit number 00.

| Remote controller address | DIP switch number |     |     |     | Factory setting |
|---------------------------|-------------------|-----|-----|-----|-----------------|
|                           | 1                 | 2   | 3   | 4   |                 |
| 00                        | OFF               | OFF | OFF | OFF | ◆               |
| 01                        | ON                | OFF | OFF | OFF |                 |
| 02                        | OFF               | ON  | OFF | OFF |                 |
| 03                        | ON                | ON  | OFF | OFF |                 |
| 04                        | OFF               | OFF | ON  | OFF |                 |
| 05                        | ON                | OFF | ON  | OFF |                 |
| 06                        | OFF               | ON  | ON  | OFF |                 |
| 07                        | ON                | ON  | ON  | OFF |                 |
| 08                        | OFF               | OFF | OFF | ON  |                 |
| 09                        | ON                | OFF | OFF | ON  |                 |
| 10                        | OFF               | ON  | OFF | ON  |                 |
| 11                        | ON                | ON  | OFF | ON  |                 |
| 12                        | OFF               | OFF | ON  | ON  |                 |
| 13                        | ON                | OFF | ON  | ON  |                 |
| 14                        | OFF               | ON  | ON  | ON  |                 |
| 15                        | ON                | ON  | ON  | ON  |                 |



- **Switch 1: Setting change prohibited (SW101)**
- **Switch 2: Setting change prohibited (SW101)**
- **Switch 3: Fan delay setting (SW101)**

When the indoor unit is stopped while operating in conjunction with auxiliary heater, the indoor unit fan operation will continue for 1 minute.

| Switch 3 | Fan delay | Factory setting |
|----------|-----------|-----------------|
| ON       | Enabled   |                 |
| OFF      | Disabled  | ◆               |

## 1-2. 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 remote controller

Remote controller is not attached for this product. For details of the installing remote controller, refer to following information.

- Overview information: Operating manual of the remote controller
- Setting procedure: Installation manual of the remote controller

### ■ 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)  | 26           | Static pressure   |
| 3)  | 30/31        | Room temperature control for indoor unit sensor             |
| 4)  | 35/36        | Room temperature control for wired remote controller sensor |
| 5)  | 40           | Auto restart  |
| 6)  | 42           | Room temperature sensor switching                           |
| 7)  | 43           | Cold air prevention   |
| 8)  | 46           | External input control                                      |
| 9)  | 48           | Room temperature sensor switching (Aux.)                    |
| 10) | 49           | Indoor unit fan control for energy saving for cooling       |
| 11) | 60           | Switching functions for external output terminal            |

#### 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 (2,500 hours)       |                 |
|                 | 01            | Long interval (4,400 hours)  |                 |
|                 | 02            | Short interval (1,250 hours) |                 |
|                 | 03            | No indication                | ◆               |

## 2) Static pressure

Select the appropriate static pressure according to the installation conditions.

| Function number | Setting value | Setting description                              | Factory setting |
|-----------------|---------------|--|-----------------|
| 26              | 03            | 30 Pa  |                 |
|                 | 04            | 40 Pa  |                 |
|                 | 05            | 50 Pa  |                 |
|                 | 06            | 60 Pa  |                 |
|                 | 07            | 70 Pa  |                 |
|                 | 08            | 80 Pa  |                 |
|                 | 09            | 90 Pa  |                 |
|                 | 10            | 100 Pa   |                 |
|                 | 11            | 110 Pa   |                 |
|                 | 12            | 120 Pa   |                 |
|                 | 13            | 130 Pa   |                 |
|                 | 14            | 140 Pa   |                 |
|                 | 15            | 150 Pa   |                 |
|                 | 16            | 160 Pa   |                 |
|                 | 17            | 170 Pa   |                 |
|                 | 18            | 180 Pa   |                 |
|                 | 19            | 190 Pa   |                 |
|                 | 20            | 200 Pa   |                 |
|                 | 31            | Standard<br>(47 Pa: 36 type; 60 Pa: 45, 54 type) | ◆               |
|                 | 32            | Automatic airflow adjustment                     |                 |

**NOTE:** Range of static pressure is different by model.

If the static pressure is set above maximum range, the setting will be the same as the maximum.

**Example:**

For 45, 54 type models, setting "170 Pa" (17) to "200 Pa" (20) will be the same as "160 Pa" (16).

| Type name      | Setting of static pressure range |
|----------------|----------------------------------|
| 36 type        | 30 to 200 Pa                     |
| 45 and 54 type | 30 to 160 Pa                     |

### 3) Room temperature control for indoor unit sensor

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 26°C and the setting value is "03" (-1.0°C), corrected temp. will be 27°C (26°C - [-1.0°C]).

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

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

#### 4) Room temperature control for wired remote controller sensor

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.

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

#### 5) 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.

#### 6) 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.

## 7) Cold air prevention

This setting is to disable the cold air prevention function during heating operation. When disabled, the fan setting will always follow the setting on the remote controller. (Excluding defrost mode)

| Function number | Setting value | Setting description | Factory setting |
|-----------------|---------------|---------------------|-----------------|
| 43              | 00            | Enable              | ◆               |
|                 | 01            | Disable             |                 |

## 8) 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 | ◆               |
|                 | 01            | (Setting prohibited)  |                 |
|                 | 02            | Forced stop mode      |                 |
|                 | 03            | Operation/Stop mode 2 |                 |

## 9) 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 |                 |

## 10) 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.

### NOTES:

- As the factory setting, this setting is initially activated.
- 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.

**11) 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—08         | (Setting prohibited)             |                 |
|                 | 09            | Error status                     |                 |
|                 | 10            | Indoor unit fan operation status |                 |
|                 | 11            | External heater                  |                 |



## 2. Function settings for outdoor unit

Perform appropriate function setting locally according to the installation environment.

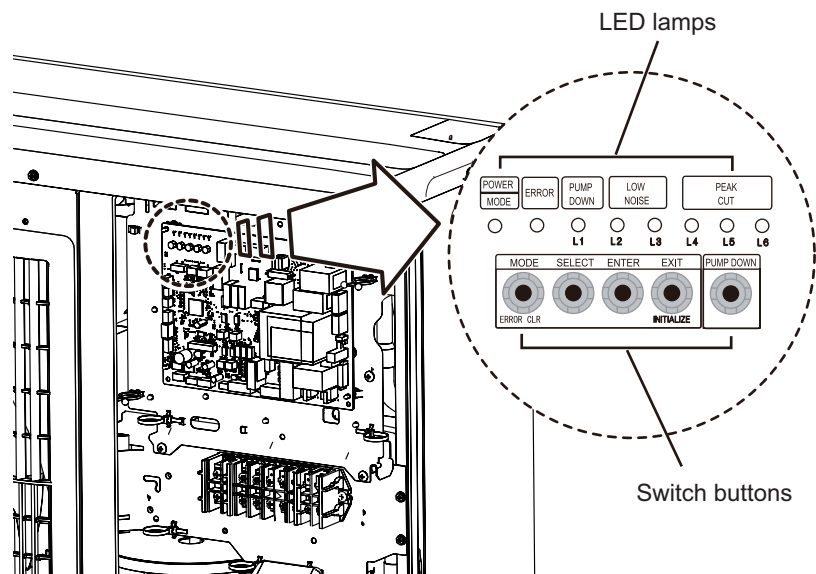
**NOTE:** Incorrect settings can cause a product malfunction.

### ⚠ CAUTION

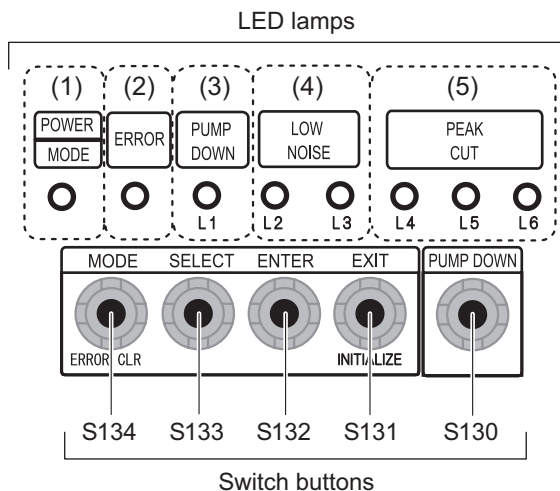
- Before setting up the switch buttons, discharge the static electricity from your body.
- Never touch the terminals or the patterns on the parts that are mounted on the PCB.

### 2-1. Control PCB and switch buttons location

Control PCB of the outdoor unit is located as shown in the following figure.



## Switch buttons and the functions



| LED lamp |                                |        | Function or operation method   |
|----------|--------------------------------|--------|--|
| (1)      | POWER/MODE                     | Green  | Lights on while power on.<br>Local setting in outdoor unit or error code is displayed with blink.                                |
| (2)      | ERROR                          | Red    | Blinks during error operation.   |
| (3)      | PUMP DOWN (L1)                 | Orange | Lights on during pump down operation.  |
| (4)      | LOW NOISE MODE (L2 and L3)     | Orange | Lights on during "Low noise mode" when local setting is activated. (Lighting pattern of L2 and L3 indicates low noise level.)    |
| (5)      | PEAK CUT MODE (L4, L5, and L6) | Orange | Lights on during "Peak cut mode" when local setting is activated. (Lighting pattern of L4, L5, and L6 indicates peak cut level.) |

| Switch button |           | Function or operation method  |
|---------------|-----------|---|
| S134          | MODE      | Switches between "Local setting" and "Error code display".                      |
| S133          | SELECT    | Switches between the individual "Local settings" and the "Error code displays". |
| S132          | ENTER     | Switches between the individual "Local settings" and the "Error code displays". |
| S131          | EXIT      | Returns to "Operation status display".  |
| S130          | PUMP DOWN | Starts the pump down operation.   |

FIELD WORKING

FIELD WORKING

## 2-2. Local setting procedure

**NOTE:** Before performing the function setting, be sure to stop the operation of the air conditioner.

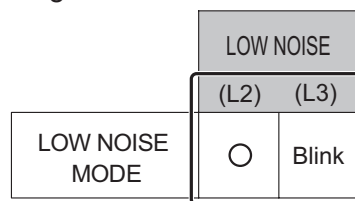
### ■ Low noise mode

1. Press the MODE switch button (S134) for 3 seconds or more to switch to “Local setting mode”.
2. After confirming the LED lamp of POWER/MODE blinks 9 times, press the ENTER switch button (S132).

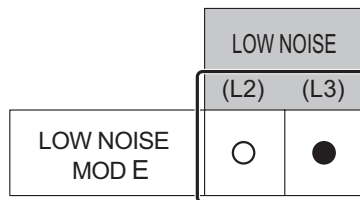
| POWER<br>MODE       | ERROR | PUMP<br>DOWN<br>(L1) | LOW NOISE<br>(L2) (L3) |   | PEAK CUT<br>(L4) (L5) (L6) |   |   |
|---------------------|-------|----------------------|------------------------|---|----------------------------|---|---|
| Blinks<br>(9 times) | ○     | ○                    | ○                      | ○ | ○                          | ○ | ○ |

Sign “○”: Lights off

3. Press the SELECT switch button (S133), and adjust the LED lamp as shown below. Then the LED lamp indicates the current setting.

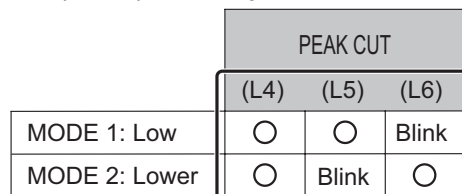


4. Press the ENTER switch button (S132).

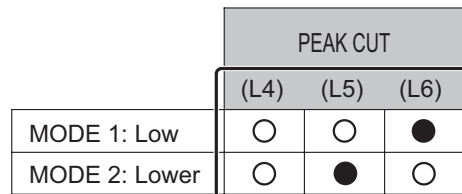


Sign “●”: Lights on

5. Press the SELECT switch button (S133), and adjust the LED lamps as shown below.



6. Press the ENTER switch button (S132) and fix it.



7. To return to “Operating status display (Normal operation)”, press the EXIT switch button (S131).

#### In case of missing how many times you pressed the SELECT and ENTER switch buttons:

1. To return to “Operation status display (Normal operation)”, press the EXIT switch button once.
2. Restart from the beginning of setting procedure.

**NOTE:** In case of missing how many times you pressed the SELECT and ENTER switch buttons, you must redo the setting procedure. Return to “Operation status display (Normal operation)” by pressing the EXIT switch button once, and restart from the beginning of the setting procedure.

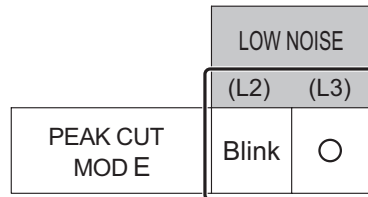
## ■ Peak cut mode

1. Press the MODE switch button (S134) for 3 seconds or more to switch to “Local setting mode”.
2. After confirming the LED lamp of POWER/MODE blinks 9 times, press the ENTER switch button (S132).

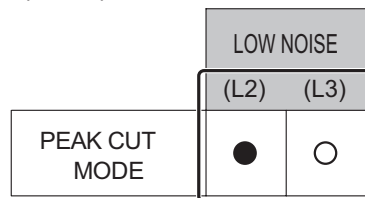
| POWER<br>MODE       | ERROR | PUMP<br>DOWN<br>(L1) | LOW NOISE |      | PEAK CUT |      |      |
|---------------------|-------|----------------------|-----------|------|----------|------|------|
|                     |       |                      | (L2)      | (L3) | (L4)     | (L5) | (L6) |
| Blinks<br>(9 times) | ○     | ○                    | ○         | ○    | ○        | ○    | ○    |

Sign “○”: Lights off

3. Press the SELECT switch button (S133), and adjust the LED lamp as shown below. Then the LED lamp indicates the current setting.



4. Press the ENTER switch button (S132).



Sign “●”: Lights on

5. Press the SELECT switch button (S133), and adjust the LED lamps as shown below.

|                            | PEAK CUT |       |       |
|----------------------------|----------|-------|-------|
|                            | (L4)     | (L5)  | (L6)  |
| 0 % of rated input ratio   | ○        | ○     | Blink |
| 50 % of rated input ratio  | ○        | Blink | ○     |
| 75 % of rated input ratio  | ○        | Blink | Blink |
| 100 % of rated input ratio | Blink    | ○     | ○     |

6. Press the ENTER switch button (S132) and fix it.

|                            | PEAK CUT |      |      |
|----------------------------|----------|------|------|
|                            | (L4)     | (L5) | (L6) |
| 0 % of rated input ratio   | ○        | ○    | ●    |
| 50 % of rated input ratio  | ○        | ●    | ○    |
| 75 % of rated input ratio  | ○        | ●    | ●    |
| 100 % of rated input ratio | ●        | ○    | ○    |

7. To return to “Operating status display (Normal operation)”, press the EXIT switch button (S131).

**NOTE:** When pressed number is lost during setting, you must redo the setting procedure. Return to “Operation status display (Normal operation)” by pressing the EXIT switch button once, and restart from the beginning of the setting procedure.

### 3. External input and output for indoor unit

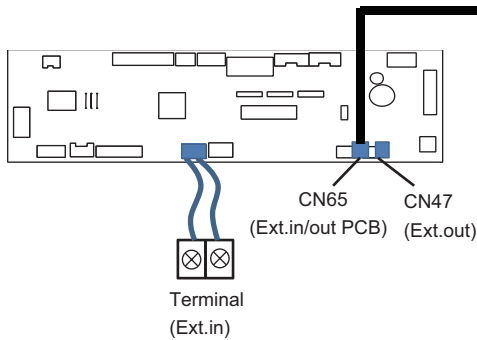


Fig. Indoor unit PCB

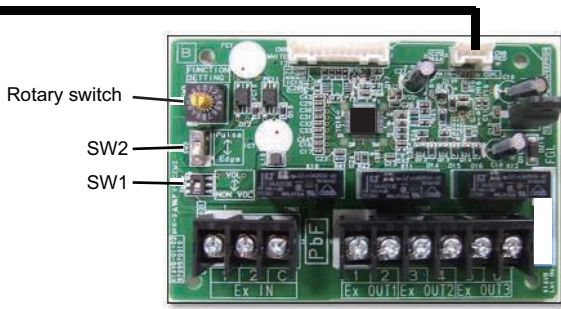


Fig. External input and output PCB

| PCB                                  | External input                | External output                  | Connector                        | Input select                  | Input signal   | External connect kit (Optional parts) |
|--------------------------------------|-------------------------------|----------------------------------|----------------------------------|-------------------------------|----------------|---------------------------------------|
| Indoor unit                          | Operation/Stop<br>Forced stop | —                                | Terminal                         | Dry contact                   | Edge           | —                                     |
|                                      | —                             | Operation status                 | CN47                             | —                             | —              | UTY-XWZXZG                            |
|                                      |                               | Error status                     |                                  |                               |                |                                       |
|                                      |                               | Indoor unit fan operation status |                                  |                               |                |                                       |
| External heater output               |                               |                                  |                                  |                               |                |                                       |
| External input and output (UTY-XCSX) | Operation/Stop                | —                                | Input 1/<br>Input 2              | Dry contact/<br>Apply voltage | Edge/<br>Pulse | —                                     |
|                                      | Forced thermostat off         |                                  | Input 1                          |                               | Edge           |                                       |
|                                      | —                             | Operation status                 | Output 1<br>Output 2<br>Output 3 | —                             | —              | —                                     |
|                                      |                               | Error status                     |                                  |                               |                |                                       |
| Indoor unit status                   |                               |                                  |                                  |                               |                |                                       |
| External heater output               |                               |                                  |                                  |                               |                |                                       |

FIELD WORKING

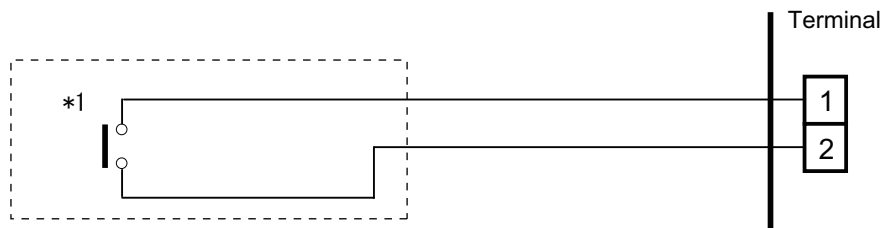
FIELD WORKING

#### 3-1. External input

- “Operation/Stop” mode or “Forced stop” mode can be selected with function setting of indoor unit.
- A twisted pair cable (22AWG) should be used. Maximum length of cable is 150 m.
- 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 terminals.



\*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

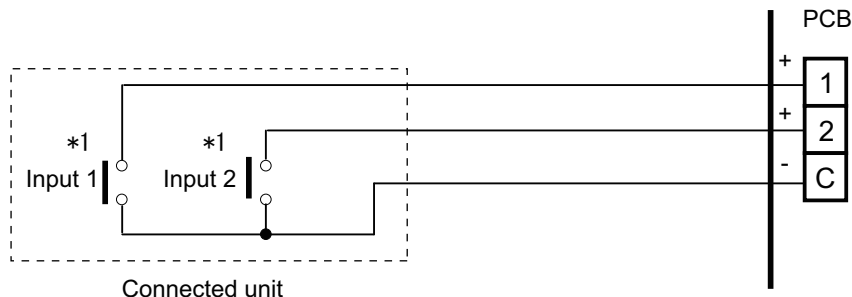
The indoor unit Operation/Stop can be set by using the input terminal on the PCB.

### Input select

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

- Dry contact

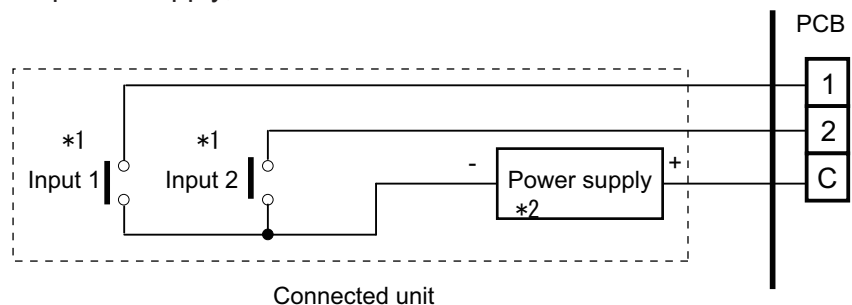
In case of internal power supply, set the slide switch of SW1 to "NON VOL" side.



\*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 SW1 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.

## 3-2. External output

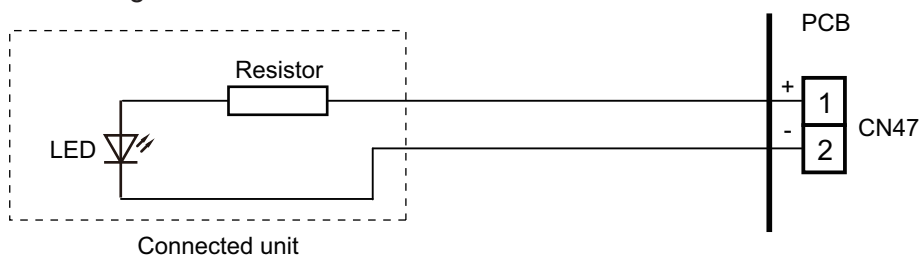
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

### ■ Indoor unit

- A twisted pair cable (22AWG) should be used. Maximum length of cable is 25 m.
- Output voltage: High DC 12 V  $\pm$  2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to [Chapter 3-3. "Combination of external input and output"](#) on page 05-16.

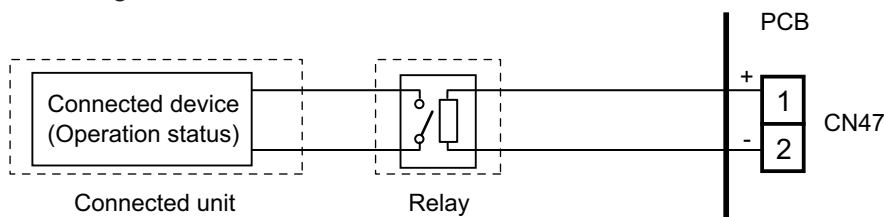
### ● When indicator, etc. are connected directly

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



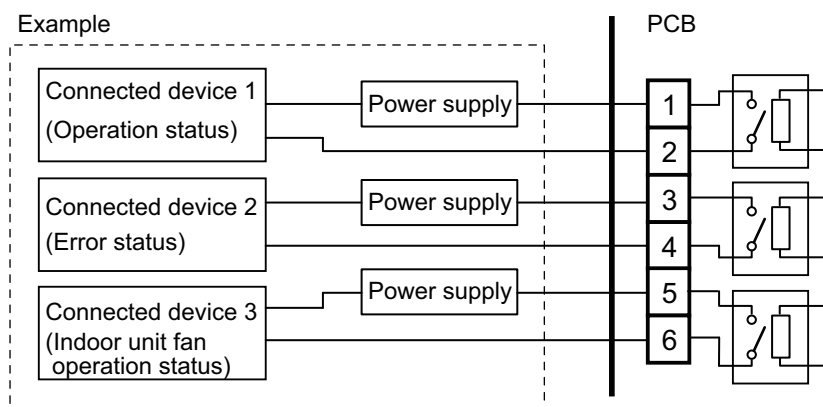
### ● When connecting with a device equipped with a power supply

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



### ■ External input and output PCB

- A twisted pair cable (22AWG) should be used.
- Permissible voltage and current: DC 5 V to 30 V / 3 A, AC 30 V to 250 V / 3 A
- For details, refer to [Chapter 3-3. "Combination of external input and output"](#) on page 05-16.



### 3-3. Combination of external input and output

By combining the function setting of the indoor unit and rotary switch setting of the External input and output PCB, you can select various combinations of functions.

Combination examples of external input and output are as follows:

| Mode | Function setting | External input and output PCB (Rotary SW) | External input       |                               |               |             |
|------|------------------|---|----------------------|-------------------------------|---------------|-------------|
|      |                  |   | Indoor unit Input    | External input and output PCB |               |             |
|      |                  |   | Terminal             | Input 1                       | Input 2       | Signal type |
| 0-1  | 60-00            | 1   | Operation/Stop       | Operation/Stop                | Not available | Edge        |
|      |                  |   |                      | Operation                     | Stop          | Pulse       |
| 0-2  | 60-00            | 2   | Operation/Stop       | Forced Thermostat OFF         | Not available | Edge        |
| 1—8  | 60-01 to 60-08   | 3 - 9, A                                  | (Setting prohibited) |                               |               |             |
| 9    | 60-09            | B   | Operation/Stop       | Forced Thermostat OFF         | Not available | Edge        |
| 10   | 60-10            | C   | Operation/Stop       | Forced Thermostat OFF         | Not available | Edge        |
| 11   | 60-11            | D   | Operation/Stop       | Forced Thermostat OFF         | Not available | Edge        |

| Mode | Function setting | External input and output PCB (Rotary SW) | External output                  |                               |                                  |                                  |
|------|------------------|---|----------------------------------|-------------------------------|----------------------------------|----------------------------------|
|      |                  |   | Indoor unit Output               | External input and output PCB |                                  |                                  |
|      |                  |   | CN47                             | Output 1                      | Output 2                         | Output 3                         |
| 0-1  | 60-00            | 1   | Operation/Stop                   | Operation/Stop                | Error status                     | Indoor unit fan operation status |
| 0-2  | 60-00            | 2   | Operation/Stop                   | Error status                  | Indoor unit fan operation status | External heater output           |
| 1—8  | 60-01 to 60-08   | 3 - 9, A                                  | (Setting prohibited)             |                               |                                  |                                  |
| 9    | 60-09            | B   | Error status                     | Operation/Stop                | Indoor unit fan operation status | External heater output           |
| 10   | 60-10            | C   | Indoor unit fan operation status | Operation/Stop                | Error status                     | External heater output           |
| 11   | 60-11            | D   | External heater output           | Operation/Stop                | Indoor unit fan operation status | Error status                     |

**NOTE:** Input of Operation/Stop depends on the setting of function setting 46.

00: Operation/Stop mode 1 (R.C. enabled)

01: (Setting prohibited)

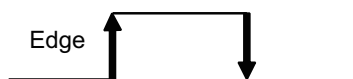
02: Forced stop

03: Operation/Stop mode 2 (R.C. disabled)

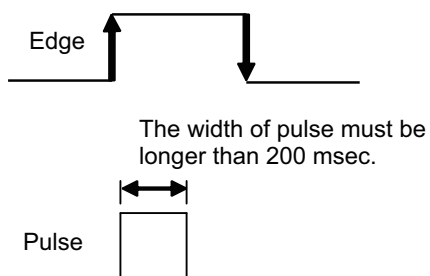


## Input signal type

- 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 (SW2) on the External input and output PCB.



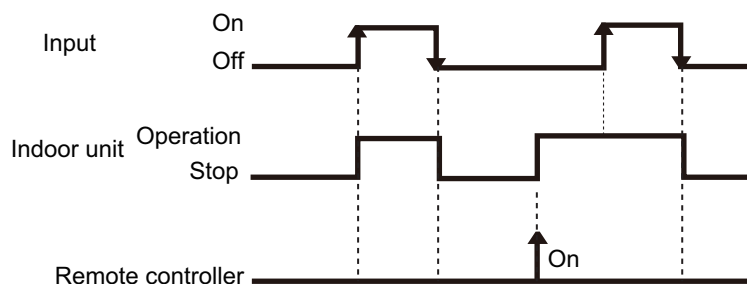
## 3-4. Details of function

### ■ Control input function

#### ● When function setting is "Operation/Stop" mode 1

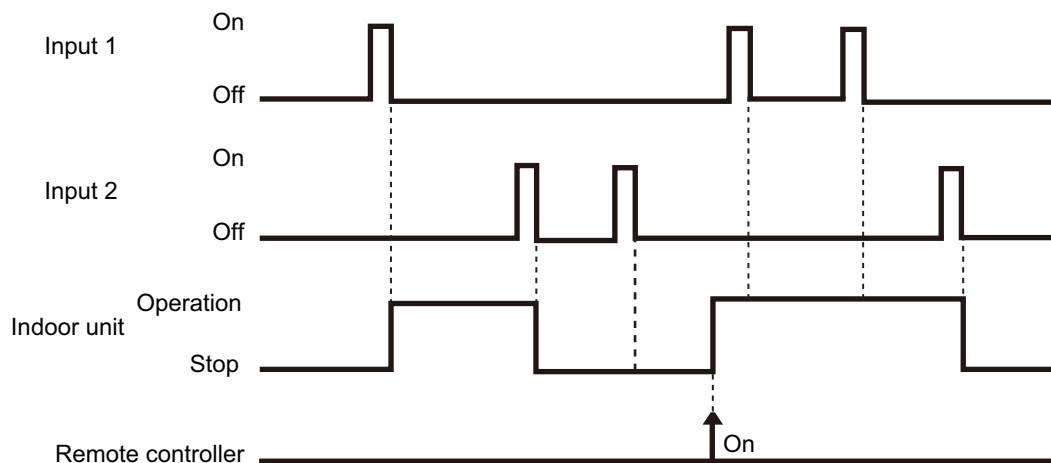
- In the case of "Edge" input

| Function setting / | Rotary SW of External input and output PCB | External input                |          | Input signal | Command   |
|--------------------|--|-------------------------------|----------|--------------|-----------|
| 46-00              | -  | Input of indoor unit          | Terminal | Off → On     | Operation |
|                    |  |                               |          | On → Off     | Stop      |
|                    | 60-00 / 1                                  | External input and output PCB | Input 1  | Off → On     | Operation |
|                    |  |                               |          | On → Off     | Stop      |



- In the case of "Pulse" input

| Function setting / | Rotary SW of External input and output PCB | External input                |         | Input signal | Command   |
|--------------------|--|-------------------------------|---------|--------------|-----------|
| 46-00              | 60-00 / 1                                  | External input and output PCB | Input 1 | Pulse        | Operation |
|                    |  |                               | Input 2 | Pulse        | Stop      |



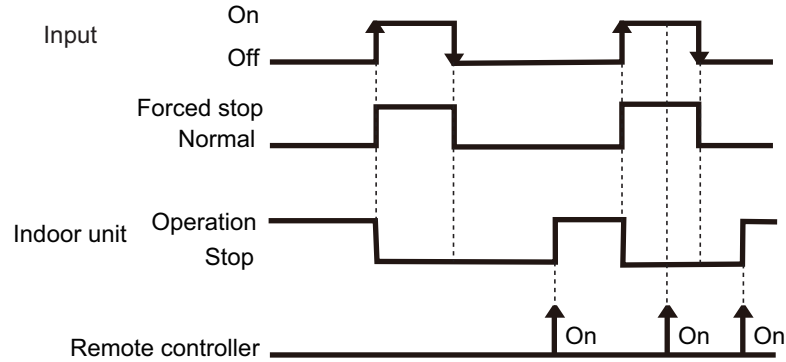
#### NOTES:

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

## ● When function setting is "Forced stop" mode

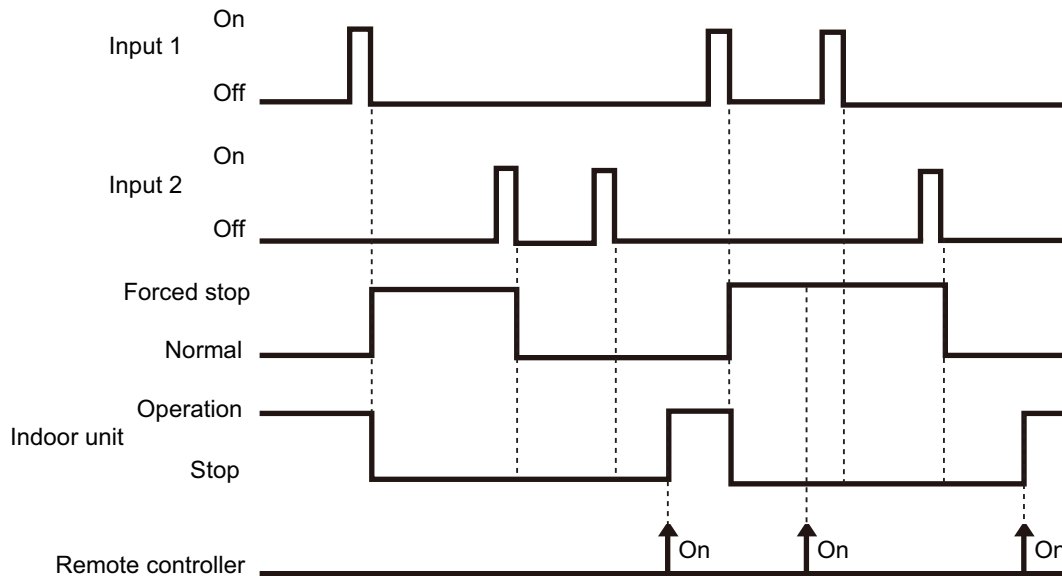
- In the case of "Edge" input

| Function setting / | Rotary SW of External input and output PCB | External input                |          | Input signal | Command     |
|--------------------|--|-------------------------------|----------|--------------|-------------|
| 46-02              | -  | Input of indoor unit          | Terminal | Off → On     | Forced stop |
|                    |  |                               |          | On → Off     | Normal      |
|                    | 60-00 / 1                                  | External input and output PCB | Input 1  | Off → On     | Forced stop |
|                    |  |                               |          | On → Off     | Normal      |



- In the case of "Pulse" input

| Function setting / | Rotary SW of External input and output PCB | External input                |         | Input signal | Command     |
|--------------------|--|-------------------------------|---------|--------------|-------------|
| 46-02              | 60-00 / 1                                  | External input and output PCB | Input 1 | Pulse        | Forced stop |
|                    |  |                               | Input 2 | Pulse        | Normal      |



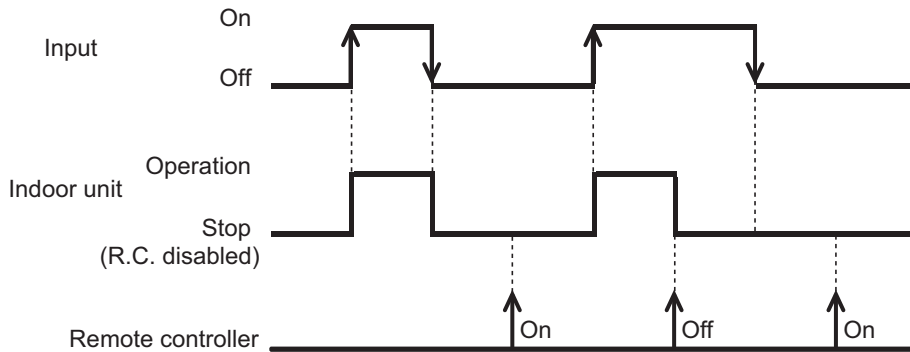
### NOTES:

- 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.

## ● When function setting is "Operation/Stop" mode 2

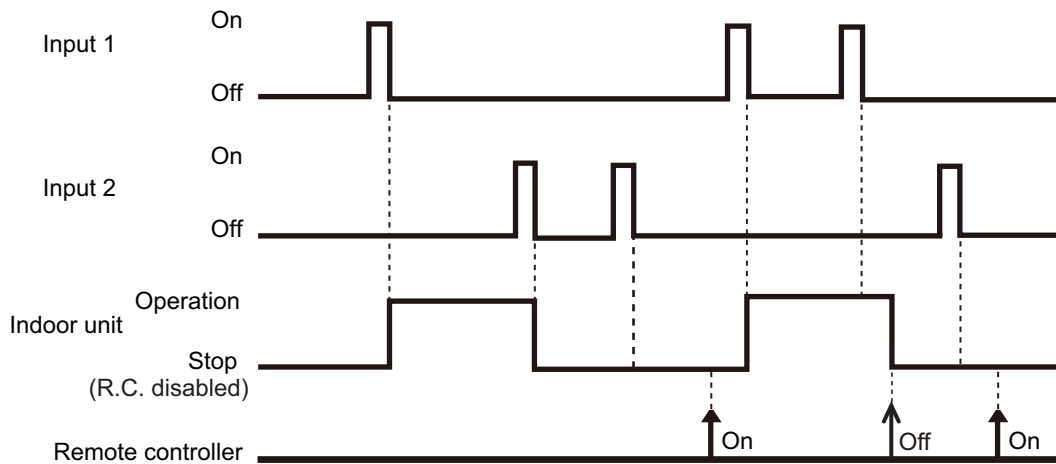
- In the case of "Edge" input

| Function setting / | Rotary SW of External input and output PCB | External input                |          | Input signal | Command              |
|--------------------|--|-------------------------------|----------|--------------|----------------------|
| 46-03              | -  | Input of indoor unit          | Terminal | Off → On     | Operation            |
|                    |  |                               |          | On → Off     | Stop (R.C. disabled) |
|                    | 60-00 / 1                                  | External input and output PCB | Input 1  | Off → On     | Operation            |
|                    |  |                               |          | On → Off     | Stop (R.C. disabled) |



- In the case of "Pulse" input

| Function setting / | Rotary SW of External input and output PCB | External input                |         | Input signal | Command              |
|--------------------|--|-------------------------------|---------|--------------|----------------------|
| 46-03              | 60-00 / 1                                  | External input and output PCB | Input 1 | Pulse        | Operation            |
|                    |  |                               | Input 2 | Pulse        | Stop (R.C. disabled) |



### NOTES:

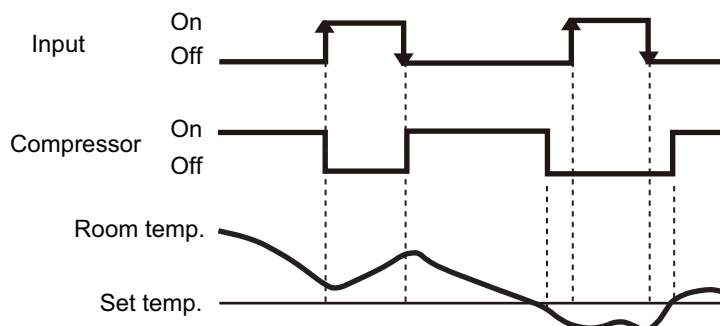
- When "Operation/Stop" mode 2 function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

FIELD WORKING

FIELD WORKING

## ■ Forced thermostat off function

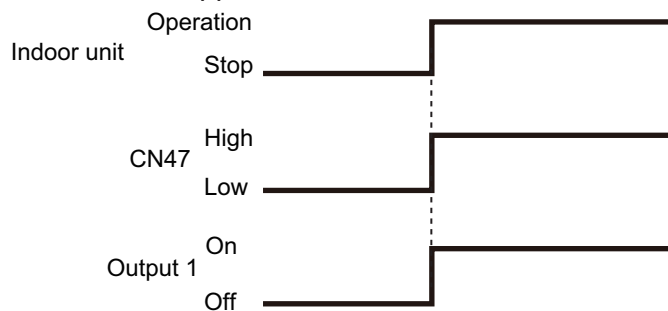
| Function setting / | Rotary SW of External input and output PCB       | External input                |         | Input signal | Command          |
|--------------------|--|-------------------------------|---------|--------------|------------------|
|                    | 60-00 / 2<br>60-09 / B<br>60-10 / C<br>60-11 / D | External input and output PCB | Input 1 | Off → On     | Thermostat off   |
|                    |  |                               |         | On → Off     | Normal operation |



## ■ Control output function

| Function setting / | Rotary SW of External input and output PCB       | External output               |          | Output signal            | Command           |
|--------------------|--|-------------------------------|----------|--------------------------|-------------------|
|                    | 60-00 / 1, 2                                     | Output of indoor unit         | CN47     | Low → High<br>High → Low | Operation<br>Stop |
|                    | 60-00 / 1<br>60-09 / B<br>60-10 / C<br>60-11 / D | External input and output PCB | Output 1 | Off → On                 | Operation         |
|                    |  |                               |          | On → Off                 | Stop              |

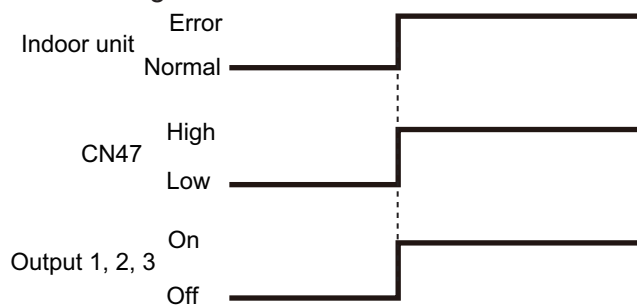
The output is low when the unit is stopped.



## ■ Error status

| Function setting /     | Rotary SW of External input and output PCB | External output               |          | Output signal | Command |
|------------------------|--|-------------------------------|----------|---------------|---------|
| 60-09 / B              |  | Output of indoor unit         | CN47     | Low → High    | Error   |
|                        |  |                               |          | High → Low    | Normal  |
| 60-00 / 2              |  | External input and output PCB | Output 1 | Off → On      | Error   |
|                        |  |                               |          | On → Off      | Normal  |
| 60-00 / 1<br>60-10 / C |  | External input and output PCB | Output 2 | Off → On      | Error   |
|                        |  |                               |          | On → Off      | Normal  |
| 60-11 / D              |  | External input and output PCB | Output 3 | Off → On      | Error   |
|                        |  |                               |          | On → Off      | Normal  |

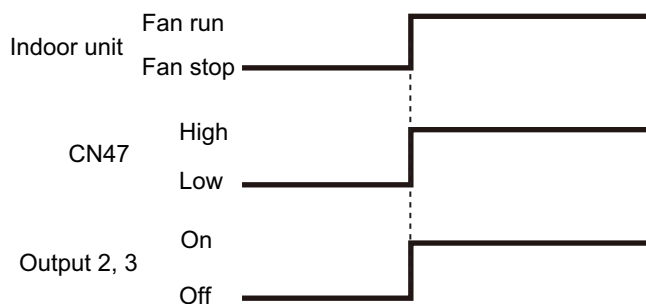
The output is ON when an error is generated for the indoor unit.



## ■ Indoor unit fan operation status

| Function setting /                  | Rotary SW of External input and output PCB | External output               |          | Output signal | Command  |
|-------------------------------------|--|-------------------------------|----------|---------------|----------|
| 60-10 / C                           |  | Output of indoor unit         | CN47     | Low → High    | Fan run  |
|                                     |  |                               |          | High → Low    | Fan stop |
| 60-00 / 2<br>60-09 / B<br>60-11 / D |  | External input and output PCB | Output 2 | Off → On      | Fan run  |
|                                     |  |                               |          | On → Off      | Fan stop |
| 60-00 / 1                           |  | External input and output PCB | Output 3 | Off → On      | Fan run  |
|                                     |  |                               |          | On → Off      | Fan stop |

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



## External heater output

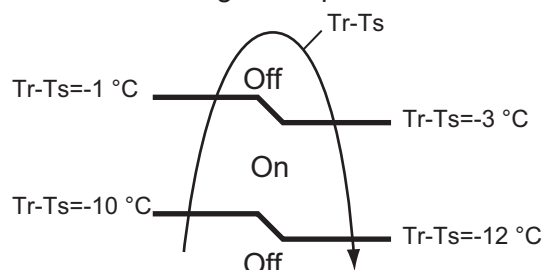
| Function setting / Rotary SW of External input and output PCB | External output                           | Output signal | Command    |
|---|---|---------------|------------|
| 60-11 / D   | Output of indoor unit<br>CN47             | Low → High    | Heater on  |
|   |   | High → Low    | Heater off |
| 60-00 / 2<br>60-09 / B<br>60-10 / C                           | External input and output PCB<br>Output 3 | Off → On      | Heater on  |
|   |   | On → Off      | Heater off |

| Output signal          | Condition   |
|------------------------|---|
| Low → High<br>Off → On | Heater turns on as shown in diagram of heating temperature  |
| High → Low<br>On → Off | Heater turns off as shown in diagram of heating temperature <ul style="list-style-type: none"> <li>• Other than Heating mode</li> <li>• Error occurred</li> <li>• Forced thermo off</li> <li>• Fan stop protection</li> </ul> |

Specifications of the signal output performance are as shown as follows:

**Example:** When set temperature ( $T_s$ ) is set at 22 °C;

- And room temperature ( $T_r$ ) increase above 12 °C, signal output is on.
- And  $T_r$  increase above 21 °C, signal output is off.
- And  $T_r$  decrease below 19 °C, signal output is on.
- And  $T_r$  decrease below 10 °C, signal output is off.



The output also turns off in defrost operation.

## 4. External input and output for outdoor unit

With using external input and output functions, this product can be operated inter-connectedly with an external device.

| Connector | Input          | Output            | Remarks   |
|-----------|----------------|-------------------|---|
| P580      | Low noise mode | —                 | See external input/output settings for details. |
| PA580     | Peak cut mode  | —                 |   |
| P590      | —              | —                 |   |
| PA590     | —              | Compressor status |   |

### 4-1. External input

With using external input function, on/off status of “Low noise mode” and “Peak cut mode” can be specified by the external signal.

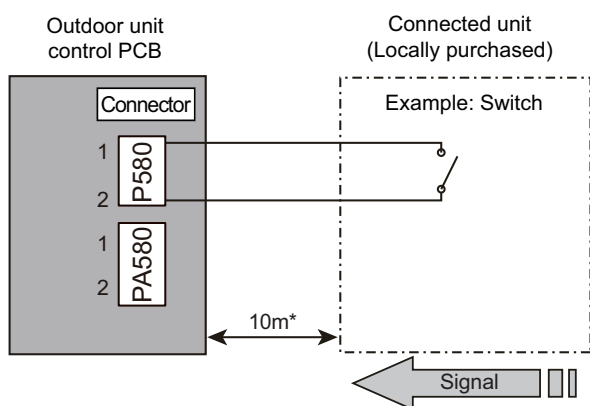
#### ■ Low noise mode

In following condition, the operating noise of the outdoor unit reduces comparing from the one in normal operating condition:

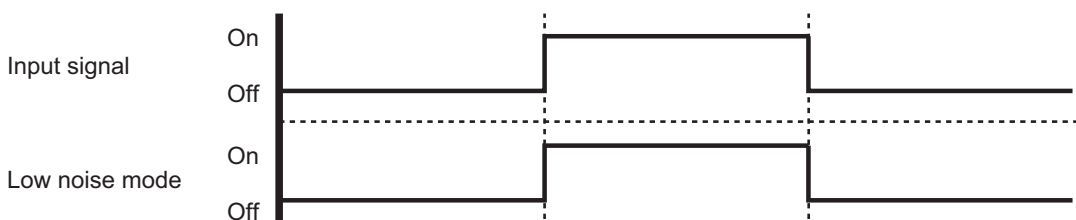
The air conditioner is set to the “Low noise mode” when closing the contact input of a commercial timer or on/off switch to a connector on the control PCB of the outdoor unit.

**NOTE:** Product performance may drop depending on some conditions such as the outdoor temperature.

#### • Circuit diagram example



- Contact capacity: DC 24 V or more, 10 mA or more.
- \*: Make the distance from the PCB to the connected unit within 10 m.
- Construct a circuit as shown in this figure with using optional parts mentioned below.
- Input signal: On in “Low noise mode”
- Input signal: Off in normal operation
- To set the level of “Low noise mode”, refer to ["Low noise mode"](#) on page 05-11.



#### • Optional part

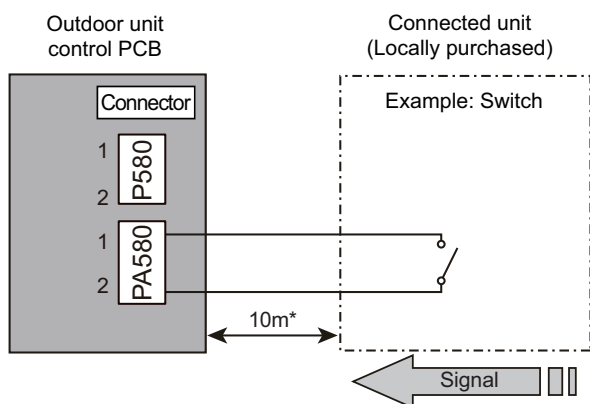
| Part name            | Model name | Exterior                |
|----------------------|------------|-------------------------|
| External connect kit | UTY-XWZXZ3 | External input wire<br> |



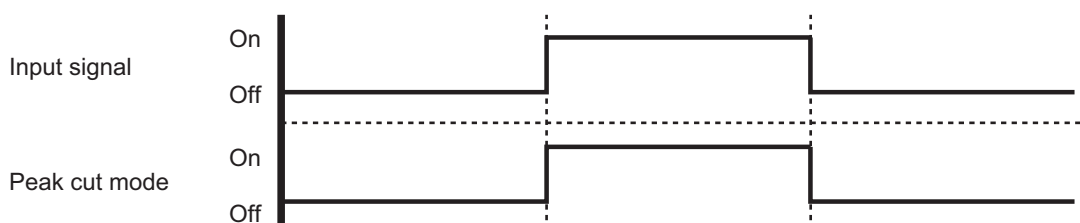
## ■ Peak cut mode

By performing following on-site work, operation that suppresses the current value can be enabled: The air conditioner is set to the “Peak cut mode” when closing the contact input of a commercial timer or on/off switch to a connector on the control PCB of the outdoor unit.

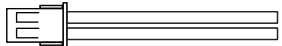
### • Circuit diagram example



- Contact capacity: DC 24 V or more, 10 mA or more.
- \*: Make the distance from the PCB to the connected unit within 10 m.
- Construct a circuit as shown in this figure with using optional parts mentioned below.
- Input signal: On in “Peak cut mode”
- Input signal: Off in normal operation
- To set the level of “Peak cut mode”, refer to "Peak cut mode" on page 05-12.



### • Optional part

| Part name            | Model name | Exterior   |
|----------------------|------------|--|
| External connect kit | UTY-XWZXZ3 | External input wire<br> |

FIELD WORKING

FIELD WORKING

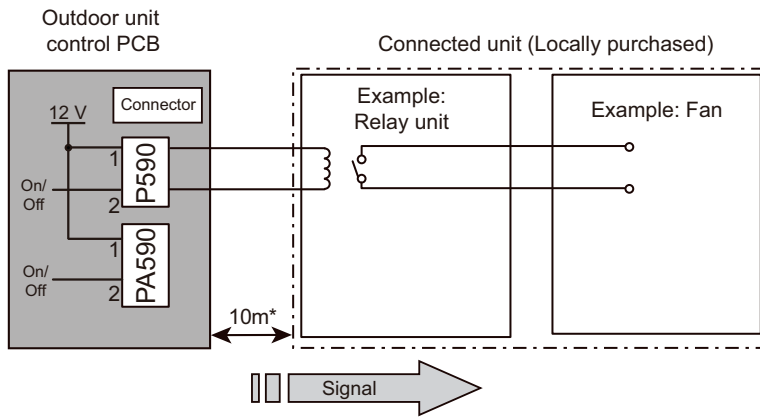
## 4-2. External output

With using external output function, some status signals are transmitted to the control PCB, and the related LED lamp indicates the status of this product.

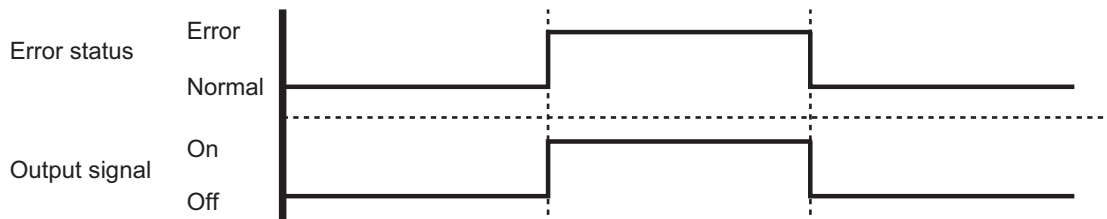
### ■ Error status output

Signal on air conditioner error status is generated when a malfunction occurs.

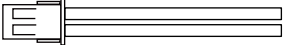
#### • Circuit diagram example



- Output voltage (Vcc): DC 12 V 50 mA or less
- \*: Make the distance from the PCB to the connected unit within 10 m.



#### • Optional part

| Part name            | Model name | Exterior  |
|----------------------|------------|---|
| External connect kit | UTY-XWZXZ3 | External output wire<br> |

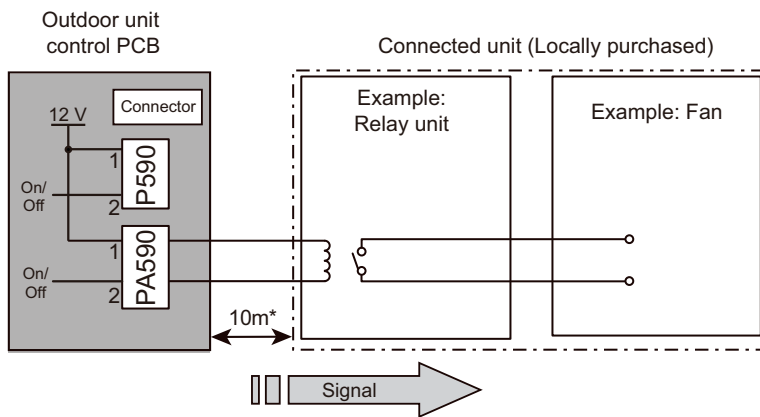
FIELD WORKING

FIELD WORKING

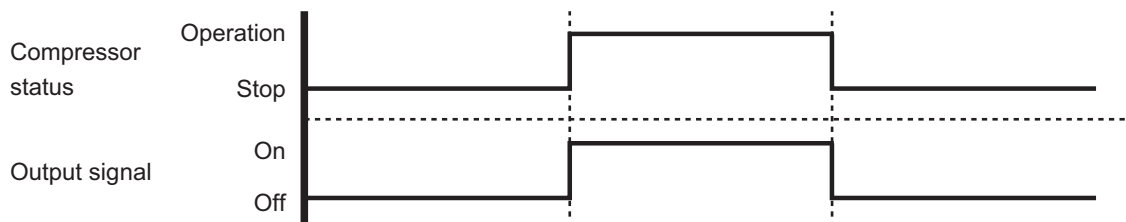
## ■ Compressor status output

Signal on compressor operation status is generated when the compressor is running.

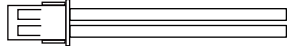
### • Circuit diagram example



- Output voltage (Vcc): DC 12 V 50 mA or less
- \*: Make the distance from the PCB to the connected unit within 10 m.



### • Optional part

| Part name            | Model name | Exterior  |
|----------------------|------------|---|
| External connect kit | UTY-XWZXZ3 | External output wire<br> |

FIELD WORKING

FIELD WORKING