

AIR CONDITIONER

**Wall mounted type**

# DESIGN & TECHNICAL MANUAL

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INDOOR



RSH09KHCBN  
RSH12KHCBN  
RSH14KHCBN

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OUTDOOR



ROH09KHCBN



ROH12KHCBN  
ROH14KHCBN

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- Product specifications and design are subject to change without notice for future improvement.
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# **Part 1. INDOOR UNIT**

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**WALL MOUNTED TYPE:**

**RSH09KHCBN**

**RSH12KHCBN**

**RSH14KHCBN**

# 1. Specifications

| Type   |                        |                         |                   | Wall mounted  |              |              |           |      |
|--|------------------------|-------------------------|-------------------|---|--------------|--------------|-----------|------|
|  |                        |                         |                   | Inverter, Heat pump   |              |              |           |      |
| Model name                                   |                        |                         |                   | RSH09KHCBN  | RSH12KHCBN   | RSH14KHCBN   |           |      |
| Power supply intake                          |                        |                         |                   | Outdoor unit  |              |              |           |      |
| System power supply                          |                        | Voltage                 |                   | 230   |              |              |           |      |
|  |                        | Frequency               |                   | 50  |              |              |           |      |
|  |                        | Available voltage range |                   | 207—253   |              |              |           |      |
| Indoor unit power supply (from outdoor unit) |                        |                         |                   | 230   |              |              |           |      |
| Capacity                                     | Cooling                | Rated                   | kW                | 2.5   | 3.5          | 4.2          |           |      |
|  |                        |                         | Btu/h             | 8,500   | 11,900       | 14,300       |           |      |
|  |                        | Min.—Max.               | kW                | 0.7—4.7   | 0.7—5.1      | 0.8—5.9      |           |      |
|  |                        |                         | Btu/h             | 2,400—16,000  | 2,400—17,400 | 2,700—20,100 |           |      |
|  | Heating                | Rated                   | kW                | 3.2   | 4.0          | 5.4          |           |      |
|  |                        |                         | Btu/h             | 10,900  | 13,600       | 18,400       |           |      |
|  |                        | Min.—Max.               | kW                | 0.7—7.7   | 0.7—8.4      | 0.8—9.0      |           |      |
|  |                        |                         | Btu/h             | 2,400—26,300  | 2,400—28,700 | 2,700—30,700 |           |      |
| Input power                                  | Cooling                | Rated                   | kW                | 0.42  | 0.68         | 0.88         |           |      |
|  |                        |                         |                   | Min.—Max.   | 0.12—1.11    | 0.12—1.30    | 0.12—1.65 |      |
|  | Heating                | Rated                   | kW                | 0.54  | 0.74         | 1.11         |           |      |
|  |                        |                         |                   | Min.—Max.   | 0.11—2.15    | 0.12—2.40    | 0.13—2.58 |      |
|  | Fan                    | HIGH                    | MED—HIGH          | W   | 25.0         | 27.8         | 33.2      |      |
|  |                        |                         |                   |   | MED          | 21.1         | 22.3      | 28.6 |
|  |                        |                         |                   |   | MED—LOW      | 17.5         |           |      |
|  |                        |                         |                   |   | LOW          | 14.3         |           |      |
|  |                        |                         |                   |   | QUIET        | 11.1         |           |      |
|  |                        |                         |                   |   | QUIET        | 3.8          |           |      |
|  | Current                | Cooling                 | Rated             | A   | 2.0          | 3.1          | 3.9       |      |
|  |                        | Heating                 |                   |   | 2.5          | 3.4          | 5.0       |      |
| Energy efficiency class                      |                        | Cooling                 |                   | A+++  |              |              |           |      |
|  |                        | Heating (Average)       |                   | A+++  |              |              |           |      |
| Pdesign                                      | Cooling                |                         | kW                | 2.5   | 3.5          | 4.2          |           |      |
|  | Heating (Average)      |                         | kW                | 2.5   | 3.6          | 4.2          |           |      |
| SEER   | Cooling                |                         | kWh/kWh           | 10.9  | 10.6         | 9.9          |           |      |
| SCOP   | Heating (Average)      |                         | kWh/kWh           | 5.3   |              |              |           |      |
| Annual energy consumption                    | QCE                    |                         | kWh/a             | 80  | 115          | 148          |           |      |
|  | QHE (Average)          |                         | kWh/a             | 658   | 939          | 1,109        |           |      |
| EER  | Cooling                |                         | kW/kW             | 5.95  | 5.15         | 4.77         |           |      |
| COP  | Heating                |                         | kW/kW             | 5.93  | 5.41         | 4.86         |           |      |
| Sensible capacity                            | Cooling                |                         | kW                | 2.50  | 3.23         | 3.70         |           |      |
|  | Heating                |                         | kW                | 93.6  | 95.7         | 97.3         |           |      |
| Power factor                                 | Cooling                |                         | %                 | 95.0  | 96.0         | 97.6         |           |      |
|  | Heating                |                         | %                 | 95.0  | 96.0         | 97.6         |           |      |
| Moisture removal                             |                        |                         | L/h (pints/h)     | 1.50 (2.6)  | 1.95 (3.4)   | 2.20 (3.9)   |           |      |
| Maximum operating current*1                  |                        | Cooling                 |                   | A   |              |              |           |      |
|  |                        | Heating                 |                   | A   |              |              |           |      |
| Fan  | Airflow rate           | Cooling                 | m <sup>3</sup> /h | HIGH  | 800          | 830          | 890       |      |
|  |                        |                         |                   | MED—HIGH  | 740          | 760          | 840       |      |
|  |                        |                         |                   | MED   | 690          |              |           |      |
|  |                        |                         |                   | MED—LOW   | 640          |              |           |      |
|  |                        |                         |                   | LOW   | 580          |              |           |      |
|  |                        |                         |                   | QUIET   | 350          |              |           |      |
|  |                        | Heating                 | m <sup>3</sup> /h | HIGH  | 900          | 940          | 940       |      |
|  |                        |                         |                   | MED—HIGH  | 800          | 860          | 860       |      |
|  |                        |                         |                   | MED   | 690          | 780          | 780       |      |
|  |                        |                         |                   | MED—LOW   | 640          | 710          | 710       |      |
|  |                        |                         |                   | LOW   | 580          | 640          | 640       |      |
|  |                        |                         |                   | QUIET   | 290          | 390          | 390       |      |
|  | Type × Qty             |                         | Crossflow fan × 1 |   |              |              |           |      |
|  | Motor output           |                         | W                 |   | 61           |              |           |      |
|  | Sound pressure level*2 | Cooling                 | dB (A)            | dB (A)  | 42           | 43           | 45        |      |
|  |                        |                         |                   |   | MED—HIGH     | 40           | 42        | 42   |
| MED  |                        |                         |                   |   | 37           | 40           | 40        |      |
| MED—LOW                                      |                        |                         |                   |   | 35           | 38           | 38        |      |
| LOW  |                        |                         |                   |   | 33           | 35           | 35        |      |
| QUIET  |                        |                         |                   |   | 23           | 26           | 26        |      |
| Heating                                      |                        | dB (A)                  | dB (A)            | HIGH  | 44           | 46           | 46        |      |
|  |                        |                         |                   | MED—HIGH  | 40           | 42           | 42        |      |
|  |                        |                         |                   | MED   | 36           | 39           | 39        |      |
|  |                        |                         |                   | MED—LOW   | 34           | 36           | 36        |      |
|  |                        |                         |                   | LOW   | 32           | 34           | 34        |      |
|  |                        |                         |                   | QUIET   | 19           | 23           | 23        |      |
| Sound power level                            | Cooling                | HIGH                    | dB (A)            | 57  | 58           | 60           |           |      |
|  | Heating                |                         |                   | 59  | 60           | 60           |           |      |
| Heat exchanger                               | Dimensions (H × W × D) |                         | mm                | Main: 384 × 720 × 30.0<br>Sub 1: 84 × 720 × 13.3<br>Sub 2: 126 × 720 × 13.3 |              |              |           |      |
|  | Fin pitch              |                         |                   | Main: 1.2<br>Sub 1: 1.4<br>Sub 2: 1.4                                       |              |              |           |      |
|  | Rows × Stages          |                         |                   | Main: 3 × 24<br>Sub 1: 1 × 4<br>Sub 2: 1 × 6                                |              |              |           |      |
|  | Pipe type              |                         |                   | Copper tube   |              |              |           |      |
|  | Fin type               |                         |                   | Aluminum  |              |              |           |      |
|  | Material               |                         |                   | Polystyrene   |              |              |           |      |
| Enclosure                                    |                        | White                   |                   |   |              |              |           |      |
| Dimensions (H × W × D)                       |                        | Net                     |                   | Approximate color of Munsell N9.25/<br>295 × 894 × 280                      |              |              |           |      |
|  |                        | Gross                   |                   | 360 × 990 × 370   |              |              |           |      |

| Type                   |              |        |   | Wall mounted   |            |            |
|------------------------|--------------|--------|---|--|------------|------------|
|                        |              |        |   | Inverter, Heat pump                                      |            |            |
| Model name             |              |        |   | RSH09KHCBN   | RSH12KHCBN | RSH14KHCBN |
| Weight                 | Net          |        | kg  | 14.5   |            |            |
|                        | Gross        |        |   | 18.0   |            |            |
| Connection pipe        | Size         | Liquid | mm (in)   | Ø6.35 (Ø1/4)   |            |            |
|                        |              | Gas    |   | Ø9.52 (Ø3/8)   |            |            |
|                        | Method       |        |   | Flare  |            |            |
| Drain hose             | Material     |        | Polypropylene + Linear low-density polyethylene |  |            |            |
|                        | Tip diameter |        | mm  | Ø13.8 (I.D.), Ø15.8 to Ø16.7 (O.D.)                      |            |            |
| Operation range        | Cooling      |        | °C  | 18 to 32   |            |            |
|                        |              |        | %RH   | 80 or less   |            |            |
|                        | Heating      |        | °C  | 16 to 30   |            |            |
| Remote controller type |              |        |   | Wireless (Option: Wired, Mobile app*3 [AIRSTAGE Mobile]) |            |            |

**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: Maximum operating current is the total current of the indoor unit and the outdoor unit.
- \*2: 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.
- \*3: Available on Google Play™ store or on App Store®.
- This data is based on EN 14511 standard.

## 2. Wireless LAN control

By installing mobile app on a smart device, several functions can be controlled from outside the house.

### 2-1. System requirement

Before using this function, prepare the following items:

- **Wireless router:**

|                           |  |
|---------------------------|--|
| Wireless LAN standard     | IEEE802.11b/g/n  |
| Frequency bands*          | <ul style="list-style-type: none"> <li>• U.S.A., Canada: 2.4 GHz (1ch—11ch)</li> <li>• Other countries: 2.4 GHz (1ch—13ch)</li> </ul>                                |
| Network security standard | <ul style="list-style-type: none"> <li>• Open</li> <li>• WEP</li> <li>• WPA (PSK)</li> <li>• WPA2 Personal (PSK)</li> <li>• WPS for same-LAN registration</li> </ul> |

\*: Usable only in the country or region where you purchased the product.

To check whether your wireless router complies with the network security standards listed above, refer to the operation manual.

- **Smartphone:**

|                                |          |   |
|--------------------------------|----------|---|
| App-compliant operating system | iOS      | Check the latest version of supported OS at Google Play store or App Store. |
|                                | Android™ |   |

- **AIRSTAGE Mobile (mobile application):**

Mobile app is available on Google Play store or on App Store.

After installation of mobile app, user registration is required. For user registration and setup information, refer to Setting Manual attached with the product.

For the latest version of the wireless LAN control manuals, refer to the following web site.

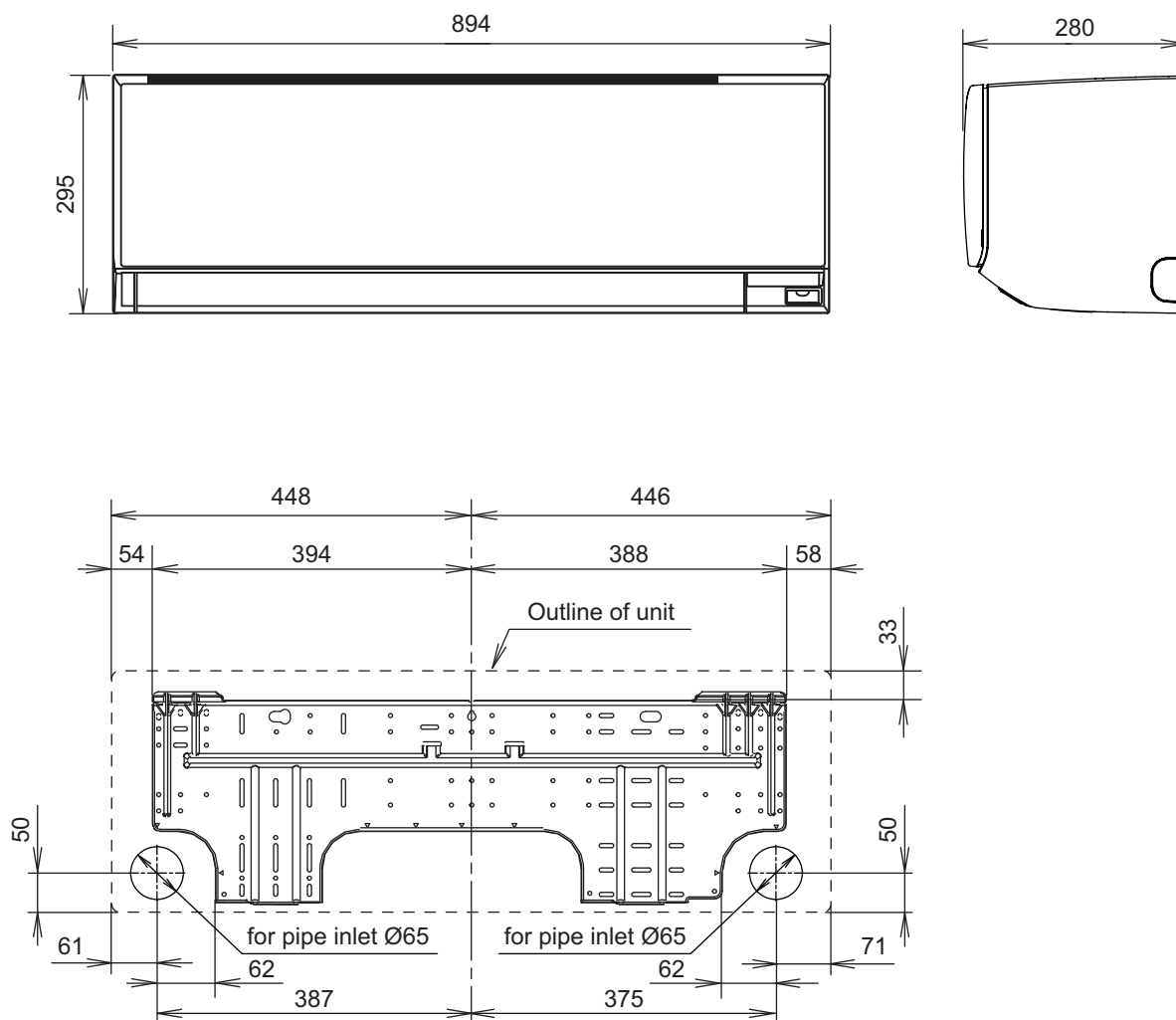
<https://www.fujitsu-general.com/global/support/>



### 3. Dimensions

#### 3-1. Models: RSH09KHCBN, RSH12KHCBN, and RSH14KHCBN

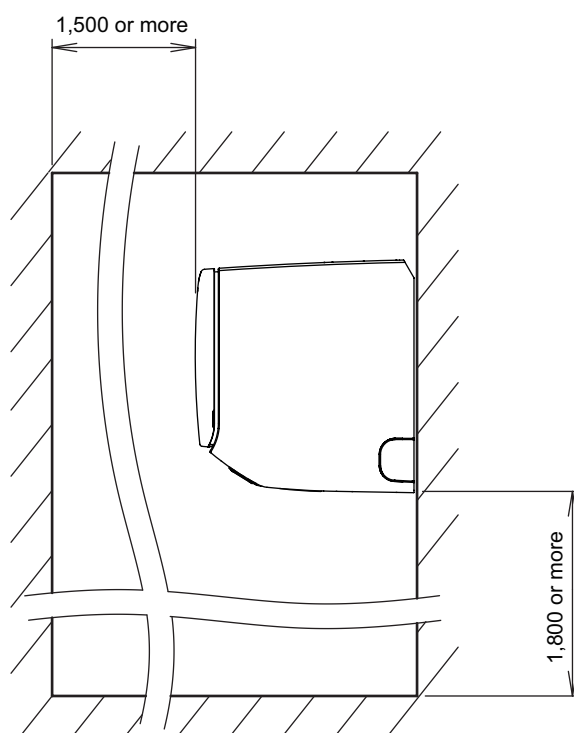
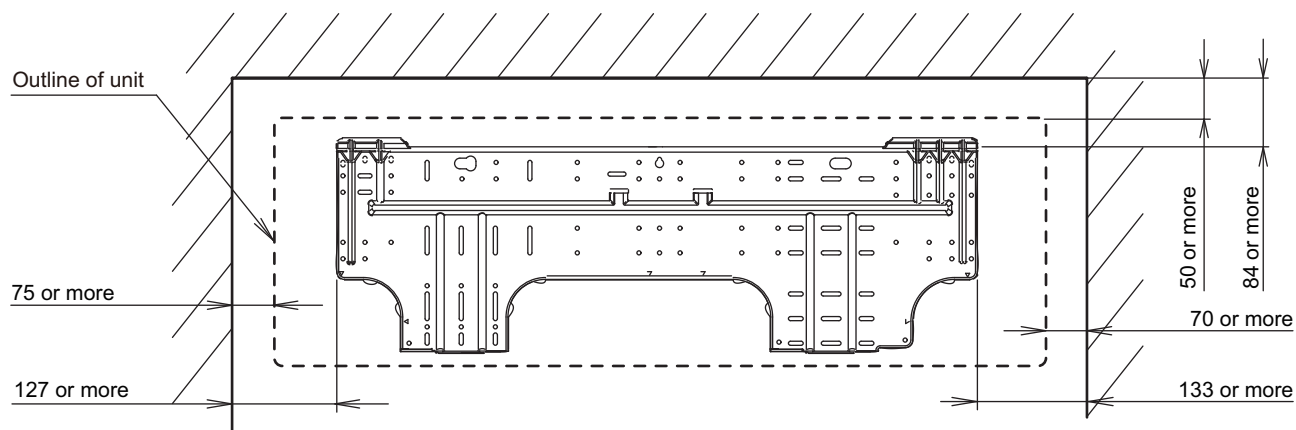
Unit: mm



## ■ Installation space requirement

Provide sufficient installation space for product safety.

Unit: mm

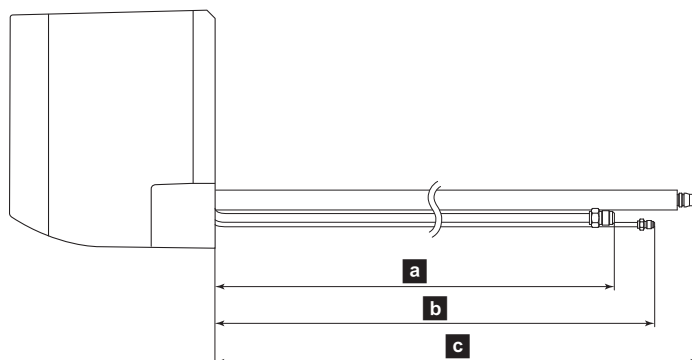


## 3-2. Pipe exit length from the rear

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

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

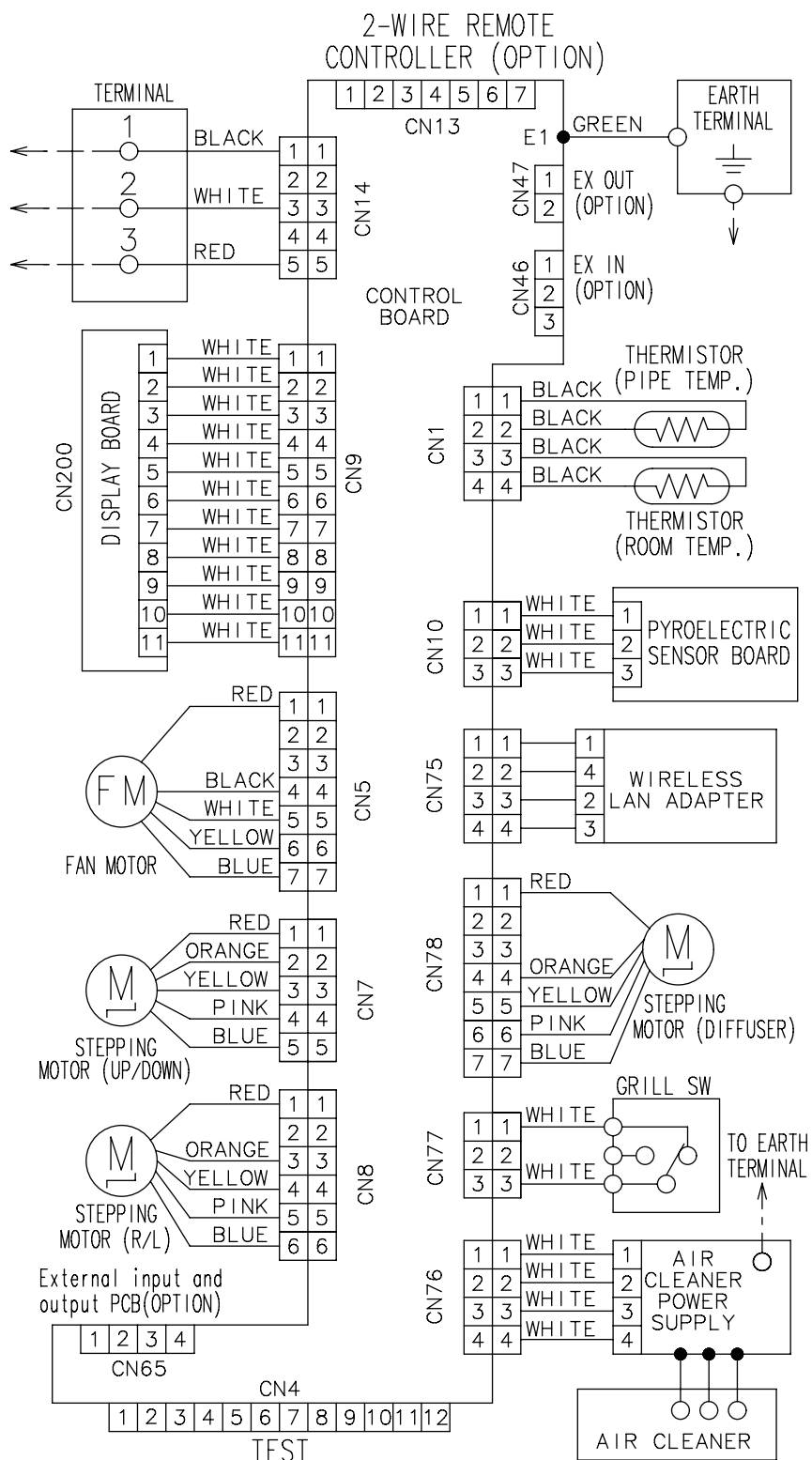
Unit: mm



| Model name    | Approximate length |                      |                     |
|---------------|--------------------|----------------------|---------------------|
|               | <b>a</b> Gas pipe  | <b>b</b> Liquid pipe | <b>c</b> Drain hose |
| RSH09-14KHCBN | 615                | 660                  | 420                 |

# 4. Wiring diagrams

## 4-1. Models: RSH09KHCBN, RSH12KHCBN, and RSH14KHCBN





## 5-2. Heating capacity

NOTE: Values mentioned in the table are calculated based on the maximum capacity.

### ■ Model: RSH09KHCBN

| AFR                 |      | m <sup>3</sup> /h  |      |      |      |      |      | 900  |      |      |      |      |  |
|---------------------|------|--------------------|------|------|------|------|------|------|------|------|------|------|--|
|                     |      | Indoor temperature |      |      |      |      |      |      |      |      |      |      |  |
| Outdoor temperature | °CDB | °CWB               | 16   |      | 18   |      | 20   |      | 22   |      | 24   |      |  |
|                     |      |                    | TC   | IP   | TC   | IP   | TC   | IP   | TC   | IP   | TC   | IP   |  |
|                     |      |                    | kW   |      | kW   |      | kW   |      | kW   |      | kW   |      |  |
| -30                 | -    | -                  | 3.42 | 2.02 | 3.33 | 2.06 | 3.24 | 2.10 | 3.15 | 2.14 | 3.06 | 2.18 |  |
| -25                 | -26  | -                  | 4.22 | 2.02 | 4.11 | 2.06 | 4.00 | 2.10 | 3.89 | 2.14 | 3.78 | 2.18 |  |
| -20                 | -21  | -                  | 4.57 | 2.02 | 4.45 | 2.06 | 4.33 | 2.10 | 4.21 | 2.14 | 4.09 | 2.18 |  |
| -15                 | -16  | -                  | 5.17 | 2.06 | 5.04 | 2.10 | 4.90 | 2.15 | 4.76 | 2.19 | 4.63 | 2.23 |  |
| -10                 | -11  | -                  | 5.76 | 1.98 | 5.61 | 2.02 | 5.46 | 2.06 | 5.31 | 2.10 | 5.15 | 2.14 |  |
| -5                  | -7   | -                  | 6.37 | 1.95 | 6.21 | 1.99 | 6.04 | 2.03 | 5.87 | 2.07 | 5.70 | 2.11 |  |
| 0                   | -2   | -                  | 7.03 | 2.01 | 6.84 | 2.05 | 6.66 | 2.09 | 6.48 | 2.13 | 6.29 | 2.17 |  |
| 5                   | 3    | -                  | 7.68 | 2.06 | 7.48 | 2.10 | 7.28 | 2.15 | 7.08 | 2.19 | 6.88 | 2.23 |  |
| 7                   | 6    | -                  | 8.13 | 2.06 | 7.91 | 2.10 | 7.70 | 2.15 | 7.49 | 2.19 | 7.27 | 2.23 |  |
| 10                  | 8    | -                  | 8.28 | 2.06 | 8.07 | 2.10 | 7.85 | 2.15 | 7.63 | 2.19 | 7.42 | 2.23 |  |
| 15                  | 10   | -                  | 8.59 | 2.04 | 8.36 | 2.09 | 8.14 | 2.13 | 7.92 | 2.17 | 7.69 | 2.21 |  |
| 20                  | 15   | -                  | 8.07 | 1.62 | 7.86 | 1.65 | 7.65 | 1.69 | 7.44 | 1.72 | 7.23 | 1.75 |  |
| 24                  | 18   | -                  | 8.37 | 1.62 | 8.15 | 1.65 | 7.93 | 1.69 | 7.71 | 1.72 | 7.49 | 1.75 |  |

### ■ Model: RSH12KHCBN

| AFR                 |      | m <sup>3</sup> /h  |      |      |      |      |      | 900  |      |      |      |      |  |
|---------------------|------|--------------------|------|------|------|------|------|------|------|------|------|------|--|
|                     |      | Indoor temperature |      |      |      |      |      |      |      |      |      |      |  |
| Outdoor temperature | °CDB | °CWB               | 16   |      | 18   |      | 20   |      | 22   |      | 24   |      |  |
|                     |      |                    | TC   | IP   | TC   | IP   | TC   | IP   | TC   | IP   | TC   | IP   |  |
|                     |      |                    | kW   |      | kW   |      | kW   |      | kW   |      | kW   |      |  |
| -30                 | -    | -                  | 4.04 | 2.40 | 3.94 | 2.45 | 3.83 | 2.50 | 3.72 | 2.55 | 3.62 | 2.60 |  |
| -25                 | -26  | -                  | 4.85 | 2.54 | 4.73 | 2.59 | 4.60 | 2.65 | 4.47 | 2.70 | 4.35 | 2.75 |  |
| -20                 | -21  | -                  | 5.74 | 2.69 | 5.59 | 2.74 | 5.44 | 2.80 | 5.29 | 2.85 | 5.14 | 2.91 |  |
| -15                 | -16  | -                  | 6.44 | 2.69 | 6.27 | 2.74 | 6.10 | 2.80 | 5.93 | 2.85 | 5.76 | 2.91 |  |
| -10                 | -11  | -                  | 7.19 | 2.68 | 7.00 | 2.73 | 6.81 | 2.79 | 6.62 | 2.84 | 6.44 | 2.89 |  |
| -5                  | -7   | -                  | 7.85 | 2.61 | 7.64 | 2.66 | 7.44 | 2.72 | 7.23 | 2.77 | 7.03 | 2.82 |  |
| 0                   | -2   | -                  | 8.37 | 2.46 | 8.15 | 2.50 | 7.93 | 2.56 | 7.71 | 2.61 | 7.49 | 2.66 |  |
| 5                   | 3    | -                  | 8.89 | 2.30 | 8.65 | 2.35 | 8.42 | 2.40 | 8.19 | 2.45 | 7.95 | 2.49 |  |
| 7                   | 6    | -                  | 8.86 | 2.30 | 8.63 | 2.35 | 8.40 | 2.40 | 8.17 | 2.45 | 7.94 | 2.49 |  |
| 10                  | 8    | -                  | 8.95 | 2.26 | 8.71 | 2.30 | 8.48 | 2.35 | 8.03 | 2.39 | 8.01 | 2.44 |  |
| 15                  | 10   | -                  | 8.80 | 2.02 | 8.57 | 2.06 | 8.34 | 2.10 | 8.03 | 2.14 | 7.88 | 2.18 |  |
| 20                  | 15   | -                  | 8.22 | 1.56 | 8.01 | 1.60 | 7.79 | 1.63 | 7.57 | 1.66 | 7.36 | 1.69 |  |
| 24                  | 18   | -                  | 8.47 | 1.57 | 8.25 | 1.61 | 8.03 | 1.64 | 7.81 | 1.67 | 7.59 | 1.70 |  |

### ■ Model: RSH14KHCBN

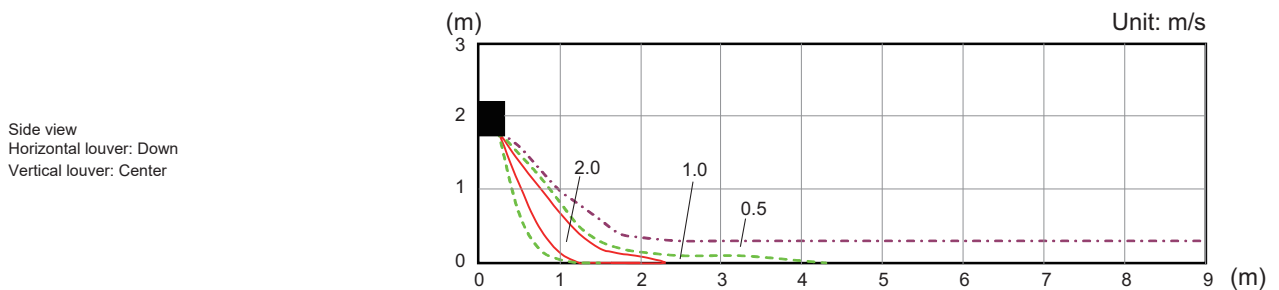
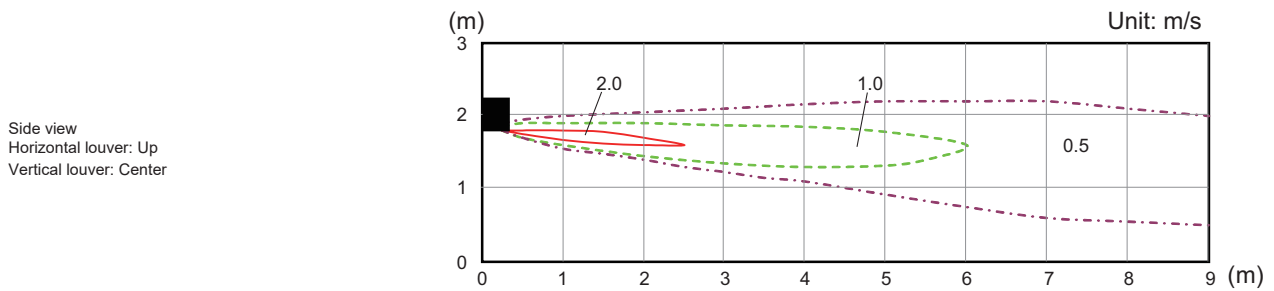
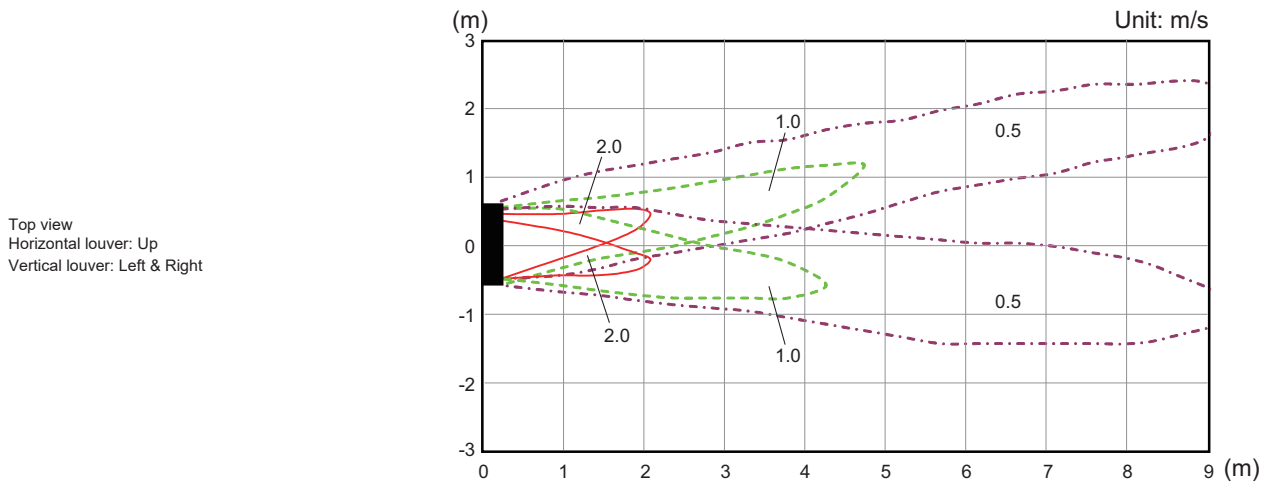
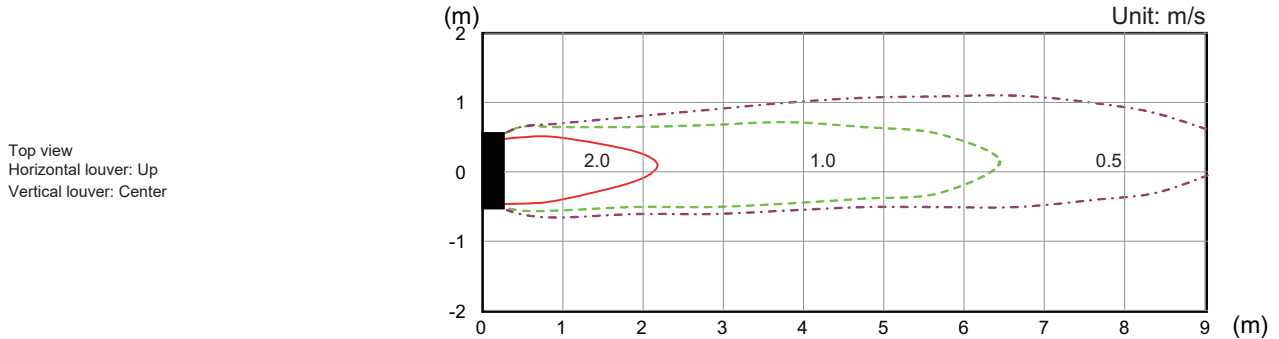
| AFR                 |      | m <sup>3</sup> /h  |      |      |      |      |      | 940  |      |      |      |      |  |
|---------------------|------|--------------------|------|------|------|------|------|------|------|------|------|------|--|
|                     |      | Indoor temperature |      |      |      |      |      |      |      |      |      |      |  |
| Outdoor temperature | °CDB | °CWB               | 16   |      | 18   |      | 20   |      | 22   |      | 24   |      |  |
|                     |      |                    | TC   | IP   | TC   | IP   | TC   | IP   | TC   | IP   | TC   | IP   |  |
|                     |      |                    | kW   |      | kW   |      | kW   |      | kW   |      | kW   |      |  |
| -30                 | -    | -                  | 4.67 | 2.74 | 4.55 | 2.79 | 4.43 | 2.85 | 4.31 | 2.90 | 4.19 | 2.96 |  |
| -25                 | -26  | -                  | 5.70 | 2.88 | 5.55 | 2.94 | 5.40 | 3.00 | 5.25 | 3.06 | 5.10 | 3.11 |  |
| -20                 | -21  | -                  | 6.57 | 3.12 | 6.40 | 3.18 | 6.23 | 3.25 | 6.06 | 3.31 | 5.89 | 3.37 |  |
| -15                 | -16  | -                  | 7.49 | 3.36 | 7.30 | 3.43 | 7.10 | 3.50 | 6.90 | 3.57 | 6.71 | 3.63 |  |
| -10                 | -11  | -                  | 8.18 | 3.41 | 7.96 | 3.48 | 7.75 | 3.56 | 7.54 | 3.62 | 7.32 | 3.69 |  |
| -5                  | -7   | -                  | 8.63 | 3.29 | 8.41 | 3.36 | 8.18 | 3.43 | 7.96 | 3.49 | 7.73 | 3.56 |  |
| 0                   | -2   | -                  | 8.74 | 2.90 | 8.51 | 2.96 | 8.29 | 3.02 | 8.06 | 3.08 | 7.83 | 3.14 |  |
| 5                   | 3    | -                  | 8.85 | 2.51 | 8.62 | 2.56 | 8.39 | 2.62 | 8.16 | 2.67 | 7.93 | 2.72 |  |
| 7                   | 6    | -                  | 9.50 | 2.48 | 9.25 | 2.53 | 9.00 | 2.58 | 8.75 | 2.63 | 8.50 | 2.68 |  |
| 10                  | 8    | -                  | 9.11 | 2.27 | 8.87 | 2.32 | 8.63 | 2.37 | 8.32 | 2.42 | 8.15 | 2.46 |  |
| 15                  | 10   | -                  | 8.97 | 2.00 | 8.73 | 2.04 | 8.50 | 2.08 | 8.27 | 2.12 | 8.03 | 2.16 |  |
| 20                  | 15   | -                  | 8.85 | 1.74 | 8.62 | 1.77 | 8.39 | 1.81 | 8.16 | 1.84 | 7.93 | 1.88 |  |
| 24                  | 18   | -                  | 8.78 | 1.57 | 8.55 | 1.61 | 8.32 | 1.64 | 8.09 | 1.67 | 7.86 | 1.70 |  |

# 6. Fan performance

## 6-1. Air velocity distributions

### ■ Model: RSH09KHCBN

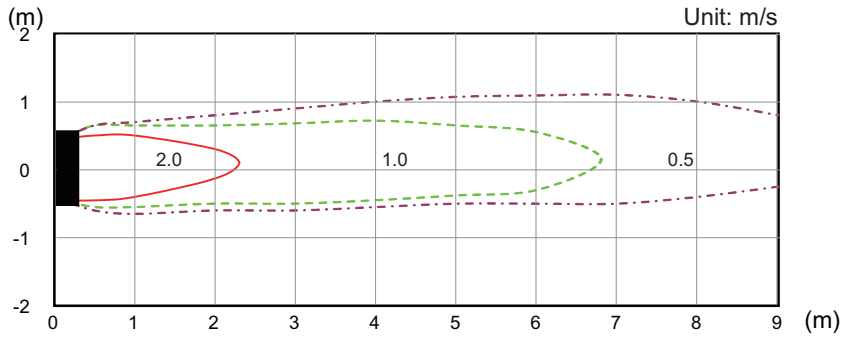
|                      |           |                |
|----------------------|-----------|----------------|
| Measuring conditions | Fan speed | Operation mode |
|                      | HIGH      | FAN            |



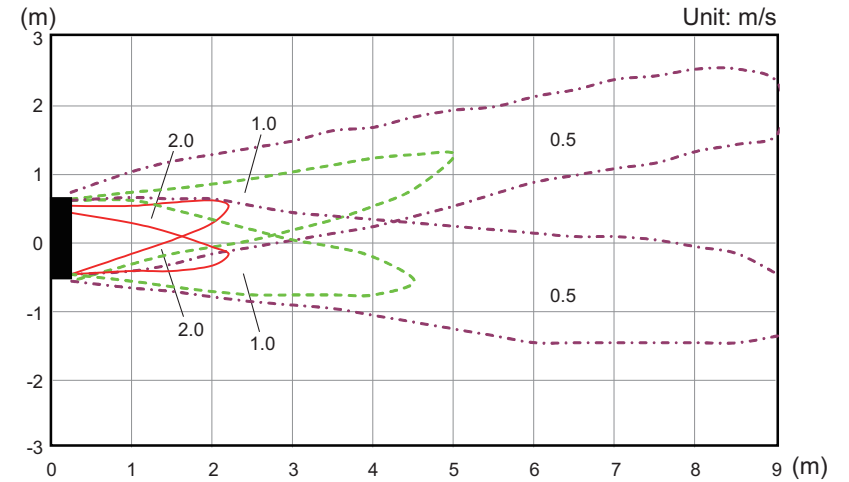
# Model: RSH12KHCBN

|                      |           |                |
|----------------------|-----------|----------------|
| Measuring conditions | Fan speed | Operation mode |
|                      | HIGH      | FAN            |

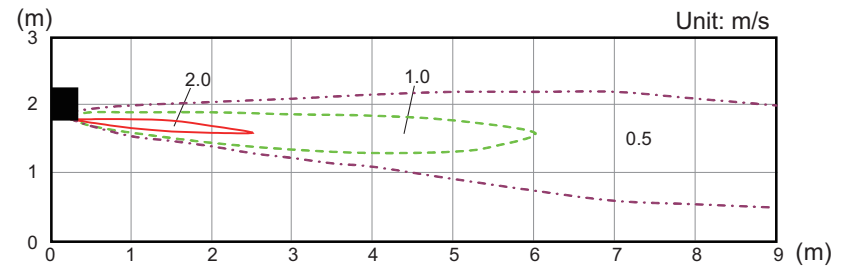
Top view  
Horizontal louver: Up  
Vertical louver: Center



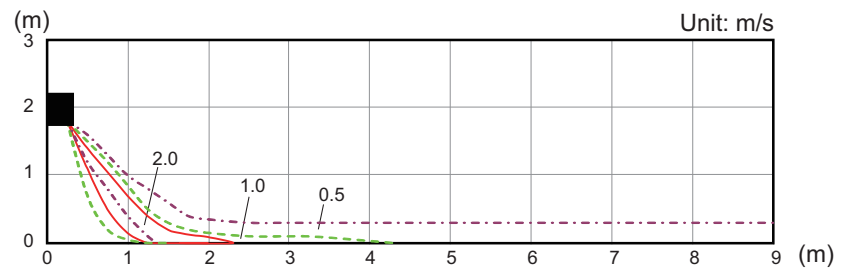
Top view  
Horizontal louver: Up  
Vertical louver: Left & Right



Side view  
Horizontal louver: Up  
Vertical louver: Center



Side view  
Horizontal louver: Down  
Vertical louver: Center

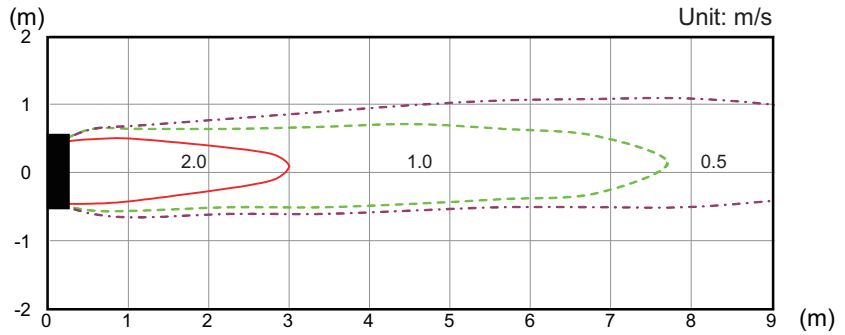




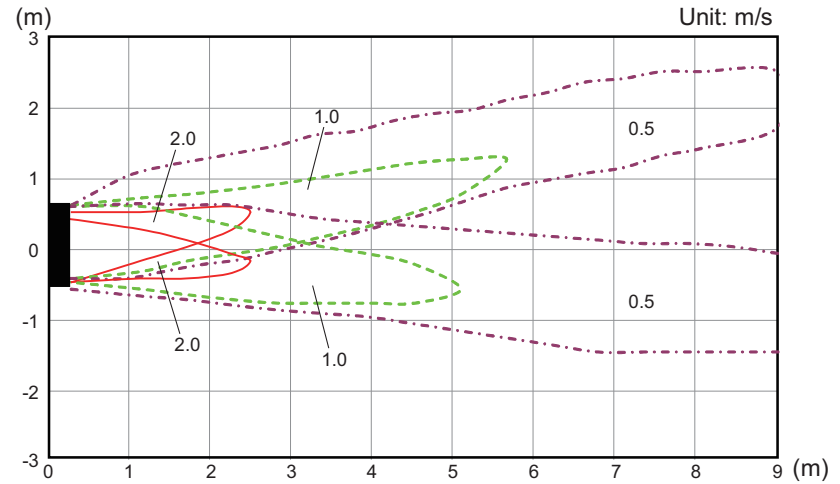
# Model: RSH14KHCBN

|                      |           |                |
|----------------------|-----------|----------------|
| Measuring conditions | Fan speed | Operation mode |
|                      | HIGH      | FAN            |

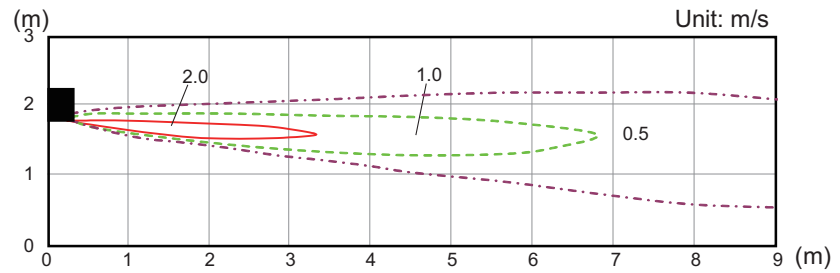
Top view  
Horizontal louver: Up  
Vertical louver: Center



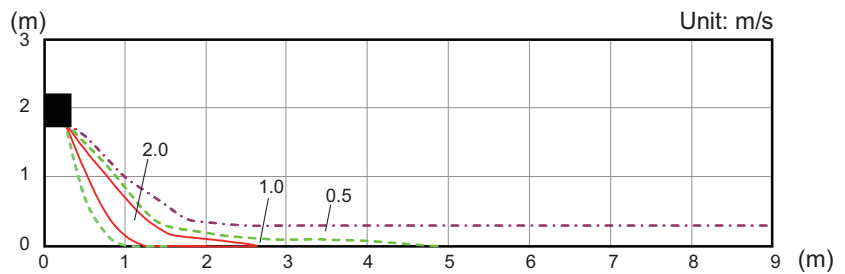
Top view  
Horizontal louver: Up  
Vertical louver: Left & Right



Side view  
Horizontal louver: Up  
Vertical louver: Center



Side view  
Horizontal louver: Down  
Vertical louver: Center



## 6-2. Airflow

### ■ Model: RSH09KHCBN

#### ● Cooling

| Fan speed | Airflow           |     |
|-----------|-------------------|-----|
|           |                   |     |
| HIGH      | m <sup>3</sup> /h | 800 |
|           | l/s               | 222 |
|           | CFM               | 471 |
| MED—HIGH  | m <sup>3</sup> /h | 740 |
|           | l/s               | 206 |
|           | CFM               | 436 |
| MED       | m <sup>3</sup> /h | 690 |
|           | l/s               | 192 |
|           | CFM               | 406 |
| MED—LOW   | m <sup>3</sup> /h | 640 |
|           | l/s               | 178 |
|           | CFM               | 377 |
| LOW       | m <sup>3</sup> /h | 580 |
|           | l/s               | 161 |
|           | CFM               | 341 |
| QUIET     | m <sup>3</sup> /h | 350 |
|           | l/s               | 97  |
|           | CFM               | 206 |

#### ● Heating

| Fan speed | Airflow           |     |
|-----------|-------------------|-----|
|           |                   |     |
| HIGH      | m <sup>3</sup> /h | 900 |
|           | l/s               | 250 |
|           | CFM               | 530 |
| MED—HIGH  | m <sup>3</sup> /h | 800 |
|           | l/s               | 222 |
|           | CFM               | 471 |
| MED       | m <sup>3</sup> /h | 690 |
|           | l/s               | 192 |
|           | CFM               | 406 |
| MED—LOW   | m <sup>3</sup> /h | 640 |
|           | l/s               | 178 |
|           | CFM               | 377 |
| LOW       | m <sup>3</sup> /h | 580 |
|           | l/s               | 161 |
|           | CFM               | 341 |
| QUIET     | m <sup>3</sup> /h | 290 |
|           | l/s               | 81  |
|           | CFM               | 171 |

## ■ Model: RSH12KHCBN

### ● Cooling

| Fan speed | Airflow           |     |
|-----------|-------------------|-----|
|           |                   |     |
| HIGH      | m <sup>3</sup> /h | 830 |
|           | l/s               | 231 |
|           | CFM               | 489 |
| MED—HIGH  | m <sup>3</sup> /h | 760 |
|           | l/s               | 211 |
|           | CFM               | 447 |
| MED       | m <sup>3</sup> /h | 690 |
|           | l/s               | 192 |
|           | CFM               | 406 |
| MED—LOW   | m <sup>3</sup> /h | 640 |
|           | l/s               | 178 |
|           | CFM               | 377 |
| LOW       | m <sup>3</sup> /h | 580 |
|           | l/s               | 161 |
|           | CFM               | 341 |
| QUIET     | m <sup>3</sup> /h | 350 |
|           | l/s               | 97  |
|           | CFM               | 206 |

### ● Heating

| Fan speed | Airflow           |     |
|-----------|-------------------|-----|
|           |                   |     |
| HIGH      | m <sup>3</sup> /h | 900 |
|           | l/s               | 250 |
|           | CFM               | 530 |
| MED—HIGH  | m <sup>3</sup> /h | 800 |
|           | l/s               | 222 |
|           | CFM               | 471 |
| MED       | m <sup>3</sup> /h | 690 |
|           | l/s               | 192 |
|           | CFM               | 406 |
| MED—LOW   | m <sup>3</sup> /h | 640 |
|           | l/s               | 178 |
|           | CFM               | 377 |
| LOW       | m <sup>3</sup> /h | 580 |
|           | l/s               | 161 |
|           | CFM               | 341 |
| QUIET     | m <sup>3</sup> /h | 290 |
|           | l/s               | 81  |
|           | CFM               | 171 |

## ■ Model: RSH14KHCBN

### ● Cooling

| Fan speed | Airflow           |     |
|-----------|-------------------|-----|
|           |                   |     |
| HIGH      | m <sup>3</sup> /h | 890 |
|           | l/s               | 247 |
|           | CFM               | 524 |
| MED—HIGH  | m <sup>3</sup> /h | 840 |
|           | l/s               | 233 |
|           | CFM               | 494 |
| MED       | m <sup>3</sup> /h | 790 |
|           | l/s               | 219 |
|           | CFM               | 465 |
| MED—LOW   | m <sup>3</sup> /h | 720 |
|           | l/s               | 200 |
|           | CFM               | 424 |
| LOW       | m <sup>3</sup> /h | 640 |
|           | l/s               | 178 |
|           | CFM               | 377 |
| QUIET     | m <sup>3</sup> /h | 440 |
|           | l/s               | 122 |
|           | CFM               | 259 |

### ● Heating

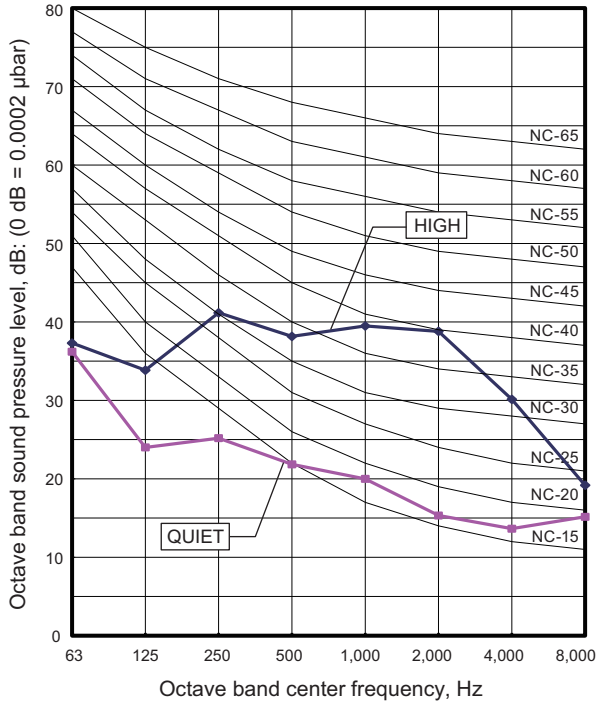
| Fan speed | Airflow           |     |
|-----------|-------------------|-----|
|           |                   |     |
| HIGH      | m <sup>3</sup> /h | 940 |
|           | l/s               | 261 |
|           | CFM               | 553 |
| MED—HIGH  | m <sup>3</sup> /h | 860 |
|           | l/s               | 239 |
|           | CFM               | 506 |
| MED       | m <sup>3</sup> /h | 780 |
|           | l/s               | 217 |
|           | CFM               | 459 |
| MED—LOW   | m <sup>3</sup> /h | 710 |
|           | l/s               | 197 |
|           | CFM               | 418 |
| LOW       | m <sup>3</sup> /h | 640 |
|           | l/s               | 178 |
|           | CFM               | 377 |
| QUIET     | m <sup>3</sup> /h | 390 |
|           | l/s               | 108 |
|           | CFM               | 230 |

# 7. Operation noise (sound pressure)

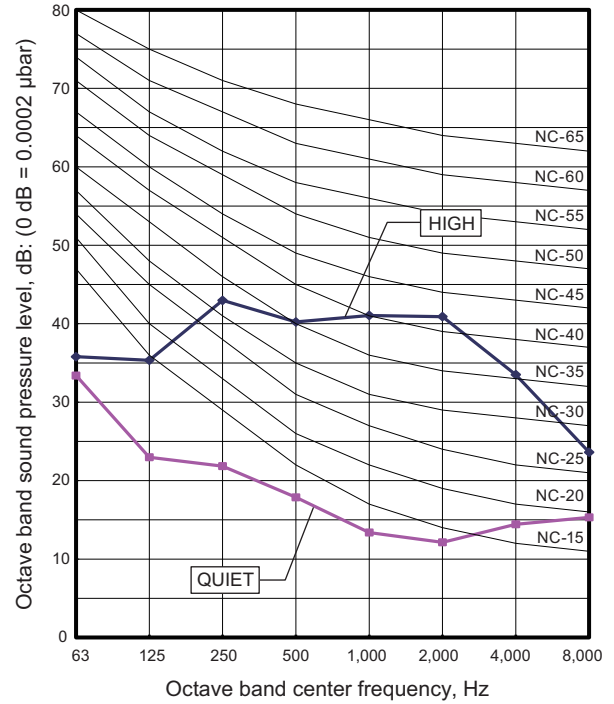
## 7-1. Noise level curve

### Model: RSH09KHCBN

#### ● Cooling

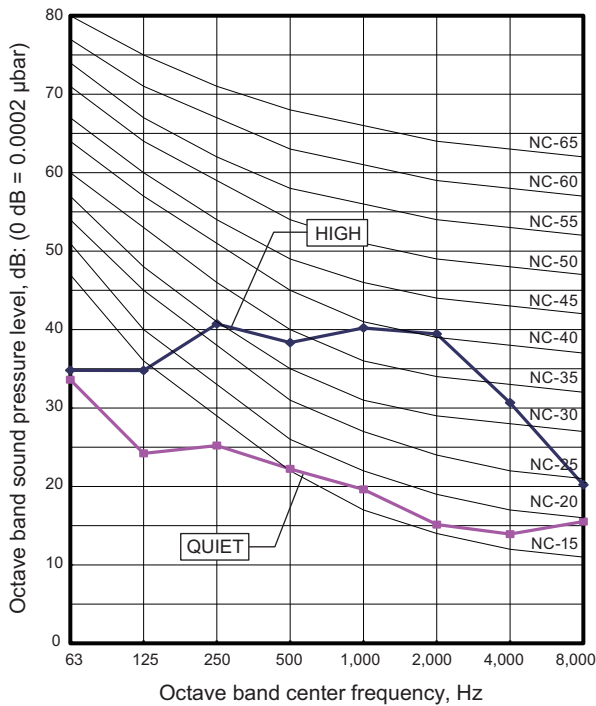


#### ● Heating

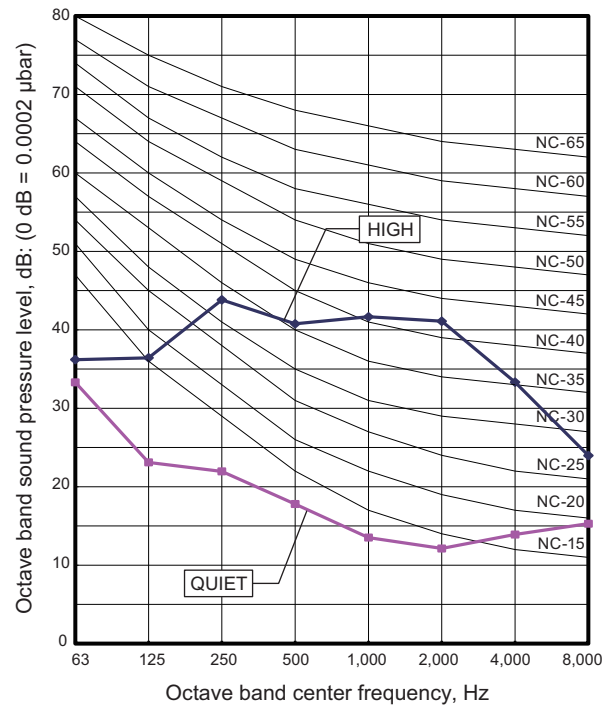


### Model: RSH12KHCBN

#### ● Cooling

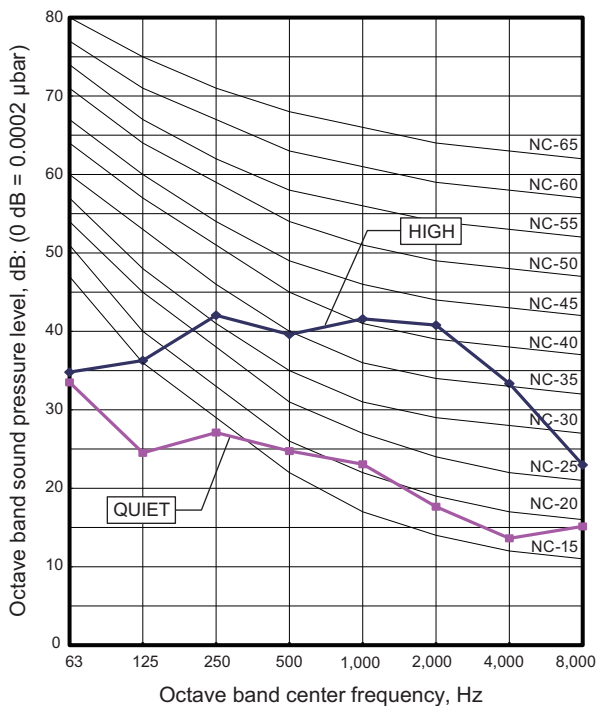


#### ● Heating

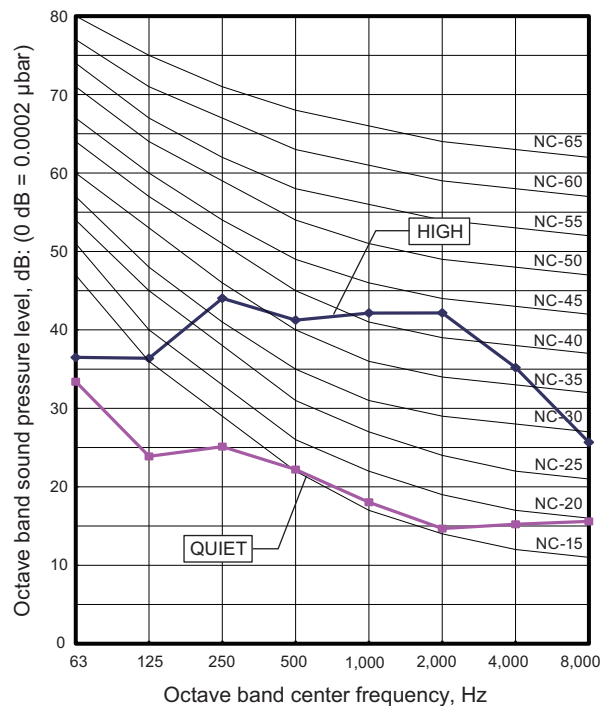


# Model: RSH14KHCBN

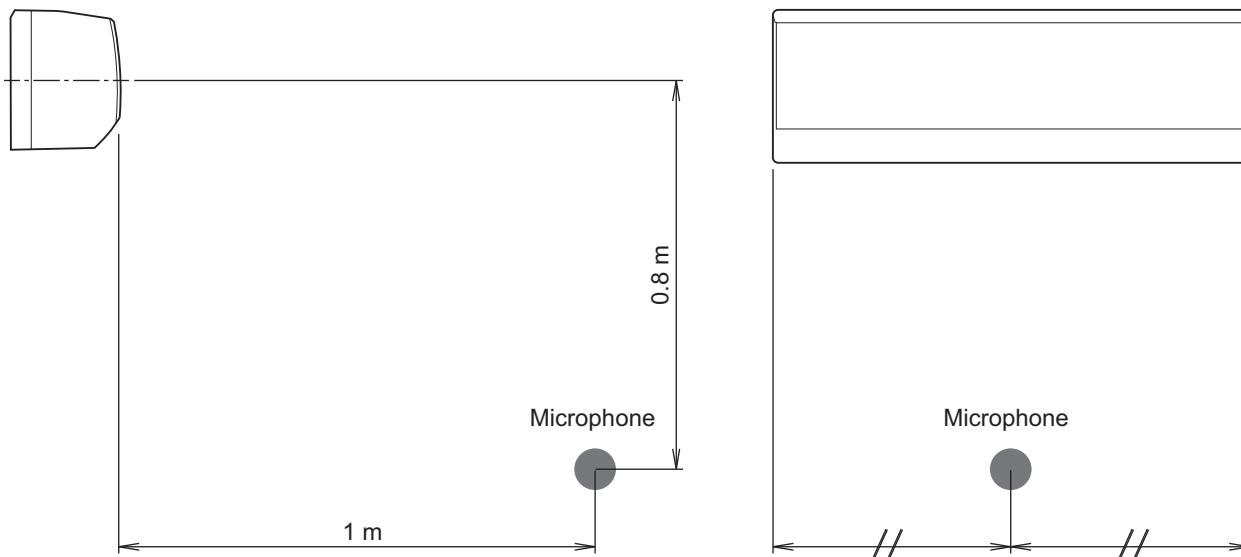
## ● Cooling



## ● Heating



## 7-2. Sound level check point



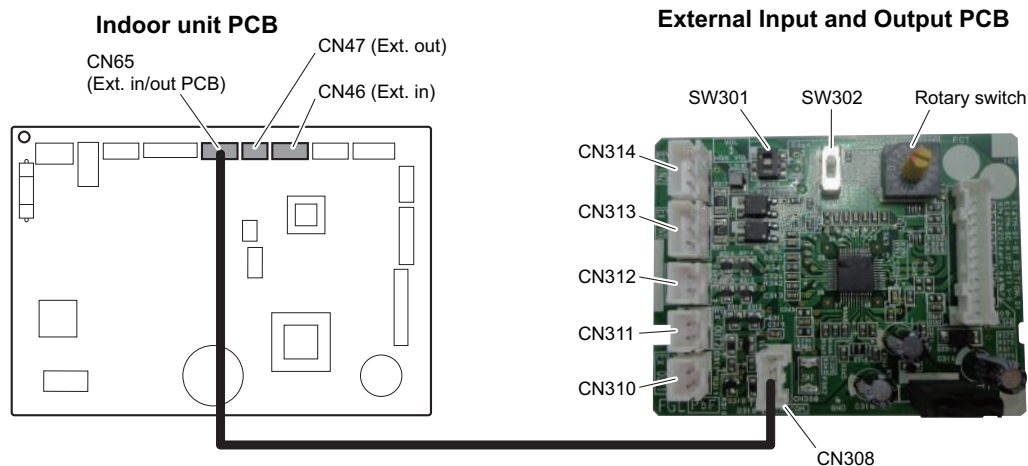
**NOTE:** Detailed shape of the actual indoor unit might be slightly different from the one illustrated above.

## 8. Safety devices

| Type of protection   | Protection form           | Model                                  |                                |
|----------------------|---------------------------|--|--------------------------------|
|                      |                           | RSH09KHCBN<br>RSH12KHCBN<br>RSH14KHCBN |                                |
| Circuit protection   | Current fuse (PCB*)       | 250 V, 3.15 A                          |                                |
| Fan motor protection | Thermal protector program | Activate                               | 150 ±15°C<br>Fan motor stop    |
|                      |                           | Reset                                  | 120 ±15°C<br>Fan motor restart |

\*PCB: Printed Circuit Board

## 9. External input and output



| Connecting point                           |                         | Input/Output | Function   | Input select              | Input signal |
|--|-------------------------|--------------|--|---------------------------|--------------|
| Indoor unit                                | CN46                    | Input        | Operation/Stop<br>Forced stop                                      | Dry contact               | Edge         |
|  | CN47                    | Output       | Operation/Stop<br>Error status<br>Indoor unit fan operation status | —                         | —            |
| External Input and Output PCB (UTY-XCSXZ3) | CN313<br>CN314          | Input        | Operation/Stop<br>Forced stop                                      | Dry contact/Apply voltage | Edge/Pulse   |
|  | CN313                   |              | Forced thermostat off  |                           | Edge         |
|  | CN310<br>CN311<br>CN312 | Output       | Operation/Stop<br>Error status<br>Indoor unit fan operation status | —                         | —            |
|  |                         |              |  |                           |              |

**NOTE:** For details of the switching function, refer to "[Setting of external input and output](#)" on page 26.



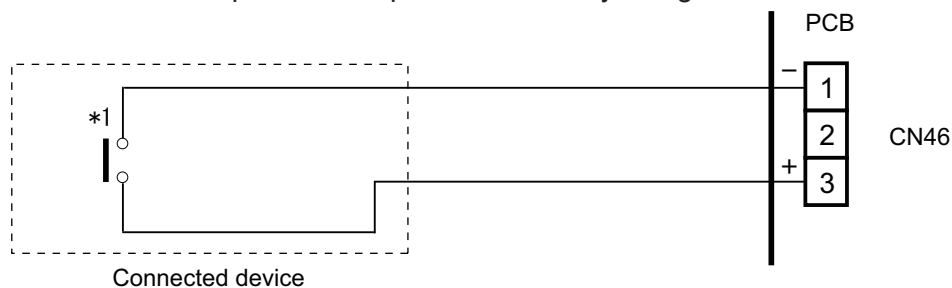
## 9-1. External input

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

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

### Indoor unit

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



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

## External Input and Output PCB

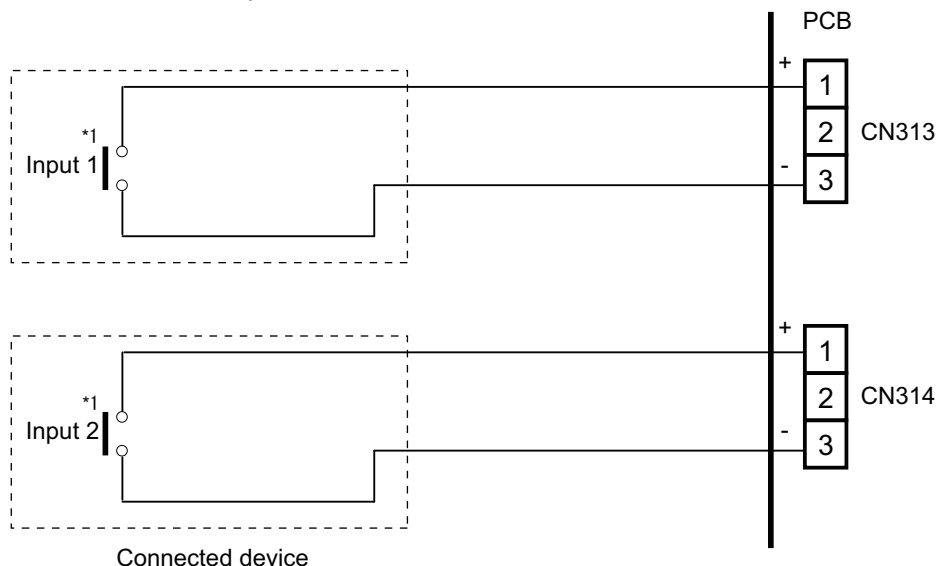
The indoor unit Operation/Stop can be set by using the input connector on the PCB.

### Input select

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

#### – Dry contact

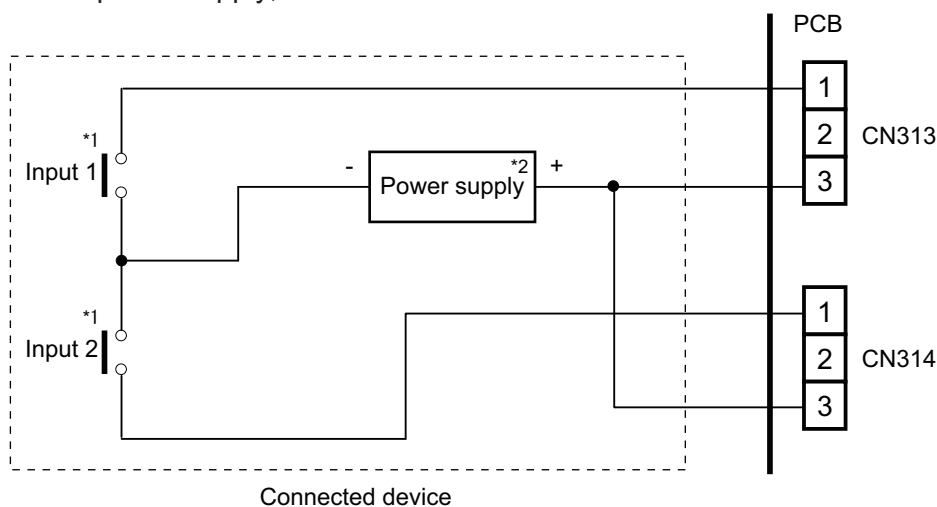
In case of internal power supply, set the slide switch of SW301 to "NON VOL" side.



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

#### – Apply voltage

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



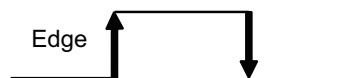
\*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

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

## ■ Input signal type

- **Indoor unit**

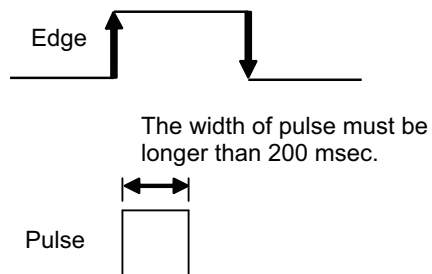
Input signal type is only "Edge".



- **External Input and Output PCB**

The input signal type can be selected.

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



**NOTE:** The input signal supports the following switch type:

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

## 9-2. External output

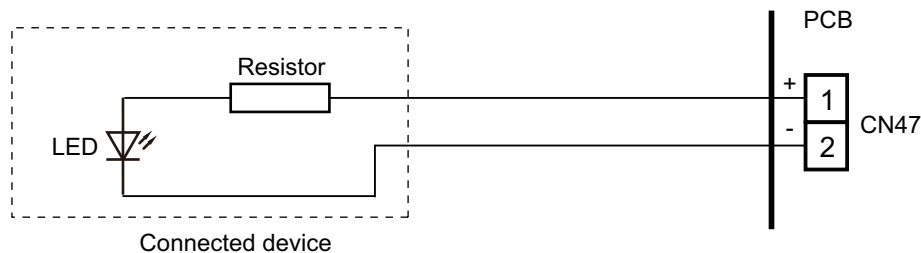
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

### Indoor unit

- A twisted pair cable 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 "[Setting of external input and output](#)" on page 26.

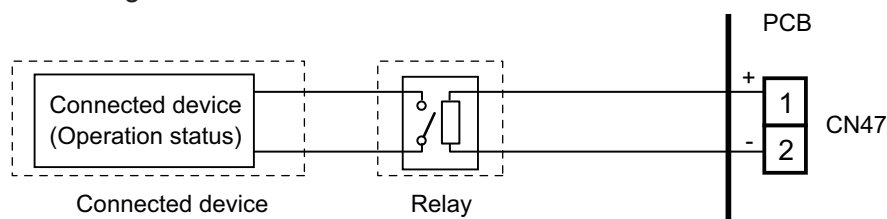
- **When indicator, etc. are connected directly**

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



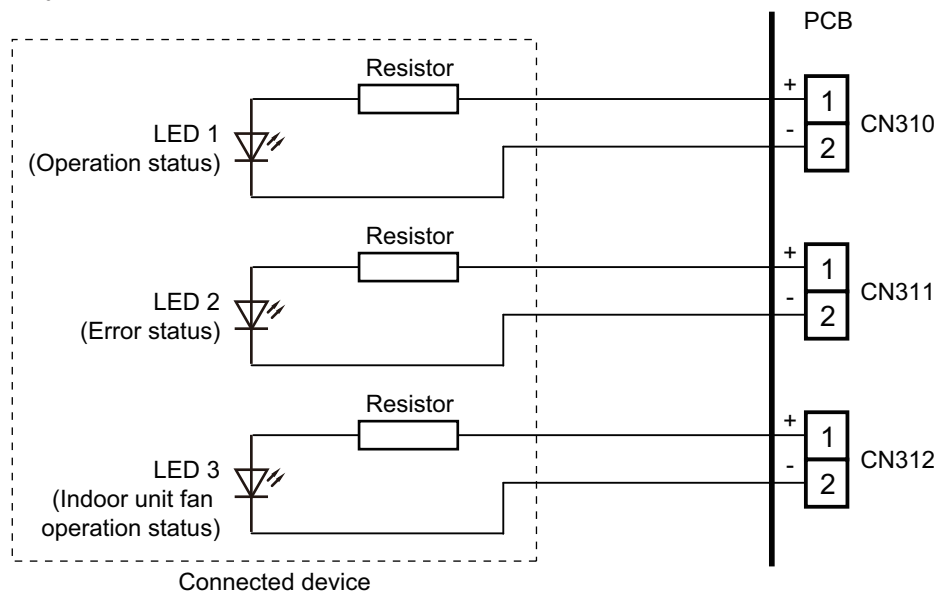
- **When connecting with a device equipped with a power supply**

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

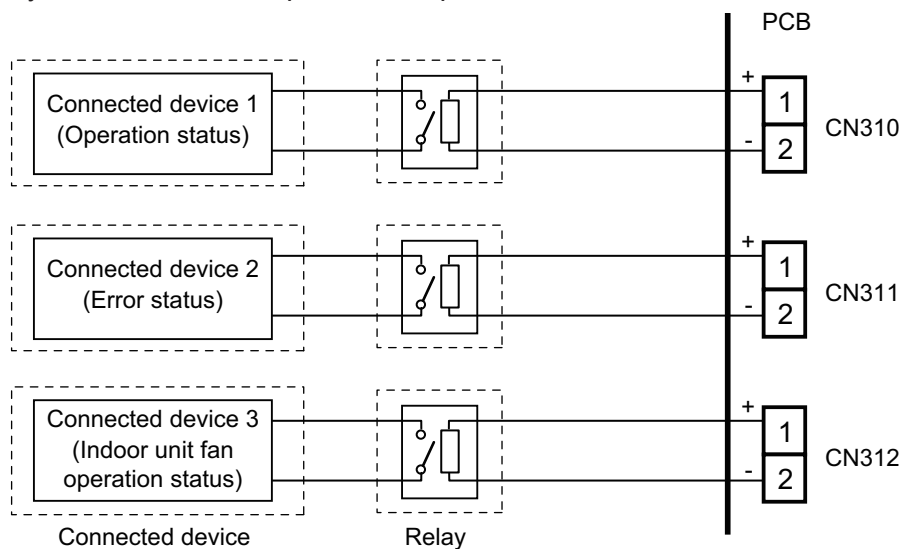


## External Input and Output PCB

- A twisted pair cable 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 "[Setting of external input and output](#)" on page 26.
- **When indicator or other components are connected directly:**  
**Example:** Rotary SW on External Input and Output PCB is set to "1".



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



## 9-3. Setting of external input and output

- Indoor unit

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

| Output           |                            |                                  |
|------------------|----------------------------|----------------------------------|
| Connection point | Function setting number 60 | Function                         |
| CN47             | 00                         | Operation/Stop                   |
|                  | 01 to 08                   | (Setting prohibited)             |
|                  | 09                         | Error status                     |
|                  | 10                         | Indoor unit fan operation status |
|                  | 11                         | (Setting prohibited)             |

- External Input and Output PCB

| Switch setting |       | Input                 |               | Output         |                                  |                                  |
|----------------|-------|-----------------------|---------------|----------------|----------------------------------|----------------------------------|
| Rotary switch  | SW302 | CN313                 | CN314         | CN310          | CN311                            | CN312                            |
| 1              | Edge  | Operation/Stop        | Not available | Operation/Stop | Error status                     | Indoor unit fan operation status |
|                | Pulse | Operation             | Stop          |                |                                  |                                  |
| 2              | Edge* | Forced thermostat off | Not available | Error status   | Indoor unit fan operation status | Not available                    |
| 3 to 9, A      |       | (Setting prohibited)  |               |                |                                  |                                  |
| B              |       | Forced thermostat off | Not available | Operation/Stop | Indoor unit fan operation status | Not available                    |
| C              |       | Forced thermostat off | Not available | Operation/Stop | Error status                     | Not available                    |
| D              |       | Forced thermostat off | Not available | Operation/Stop | Indoor unit fan operation status | Error status                     |

### NOTES:

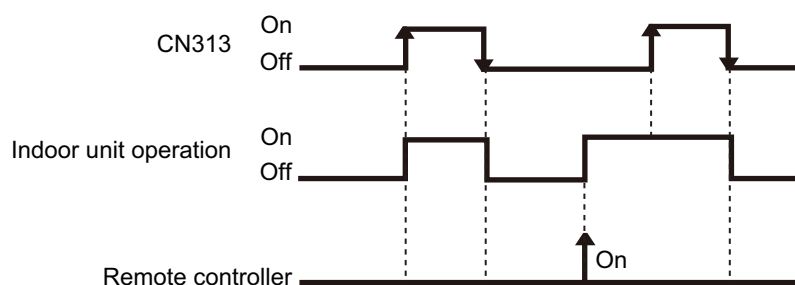
- When the rotary switch is selected to "1", the operation of the connector input of the indoor unit and the External Input and Output PCB input are the same. The operation content depends on the setting of function setting number 46.
- \*: The external input other than "Operation/Stop" is available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

## 9-4. Details of control input function

### ■ Operation/Stop mode 1

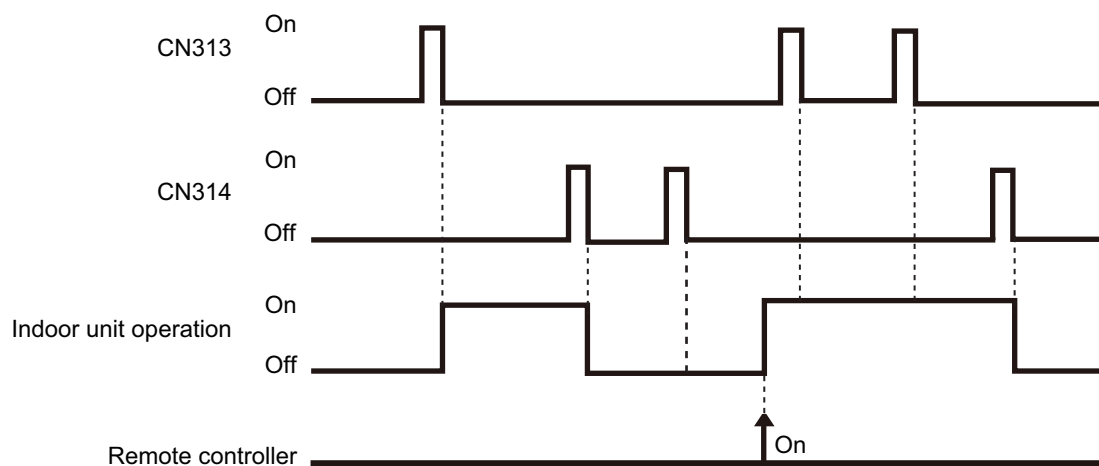
- In the case of "Edge" input

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



- In the case of "Pulse" input

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



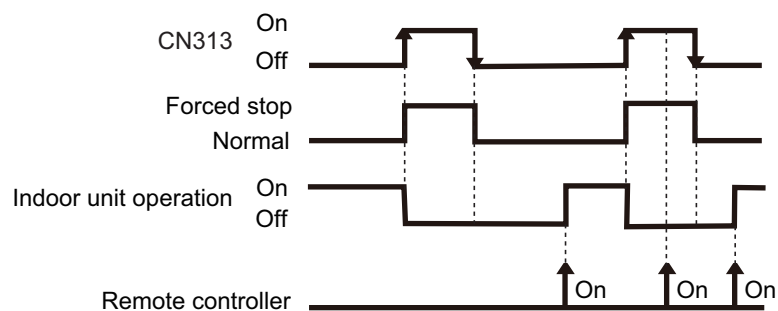
#### NOTES:

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

## ■ Forced stop

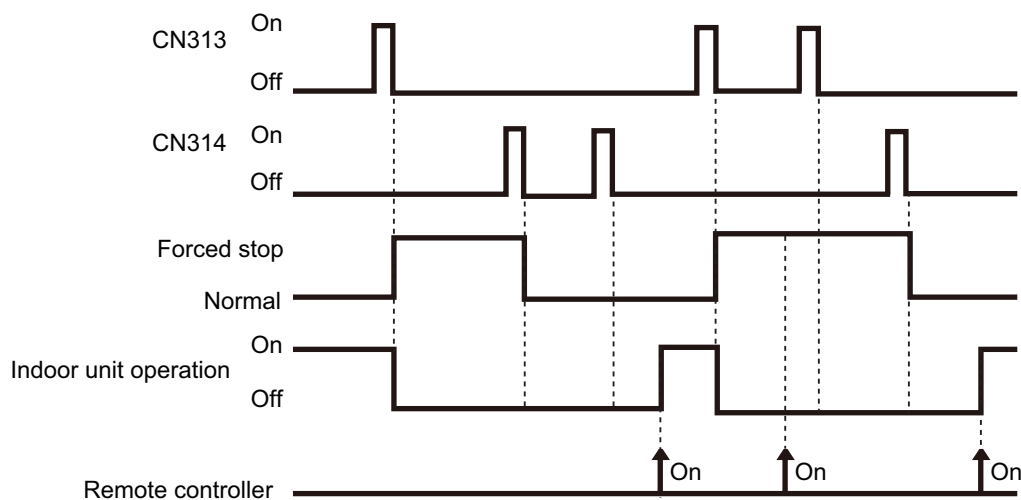
- In the case of "Edge" input

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



- In the case of "Pulse" input

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



### NOTES:

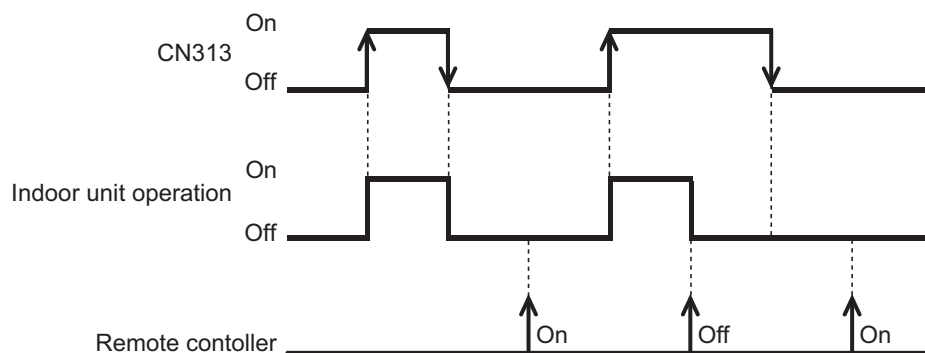
- When the forced stop is triggered, indoor unit stops and Operation/Stop operation by the remote controller is restricted.
- When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.



## ■ Operation/Stop mode 2

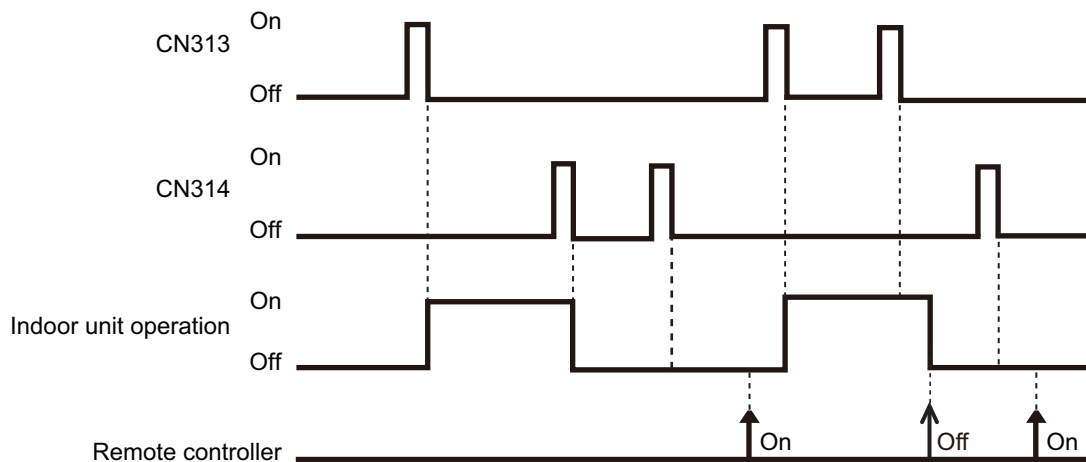
- In the case of “Edge” input

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



- In the case of “Pulse” input

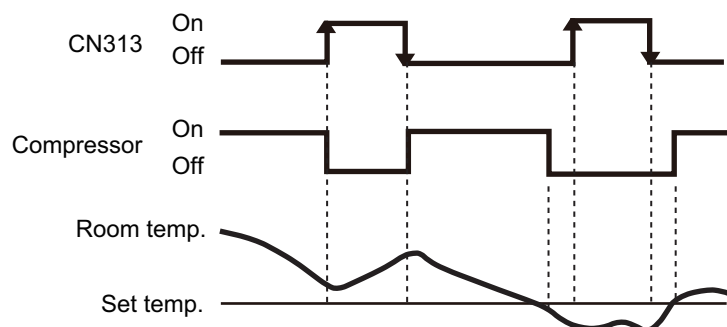
| Function setting | External Input and Output PCB |       | External input                | Input signal | Command                  |
|------------------|-------------------------------|-------|-------------------------------|--------------|--------------------------|
|                  | Rotary switch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



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

## ■ Forced thermostat off

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

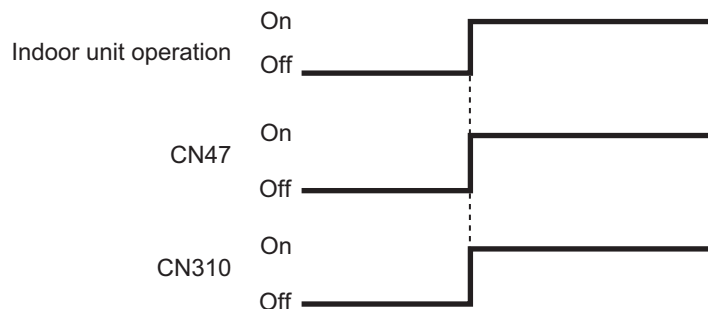


## 9-5. Details of control output function

### ■ Operation status

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

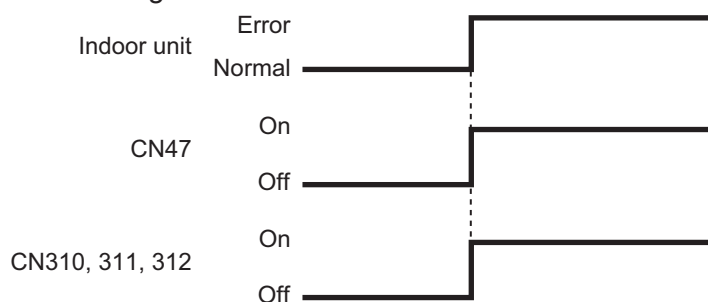
The output is low when the unit is stopped.



### ■ Error status

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

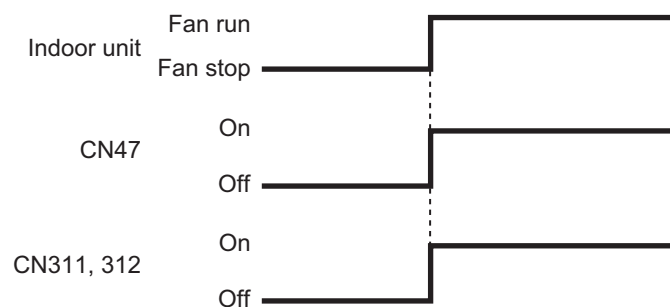
The output is on when an error is generated for the indoor unit.



## Indoor unit fan operation status

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

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



## 10. Group connection

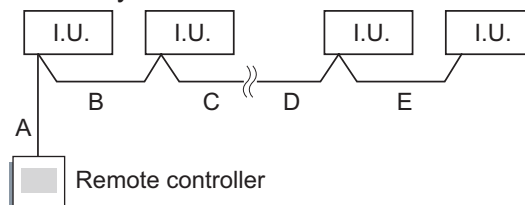
**NOTE:** Group control cannot be used together with WLAN Adapter.

### Installation procedure for group control system:

A number of indoor units can be operated at the same time using a single remote controller.

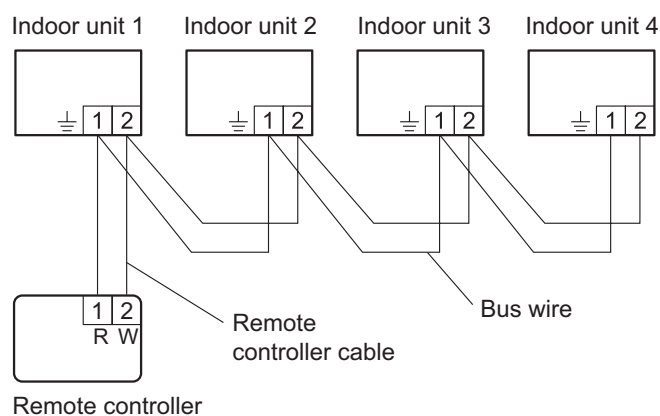
**NOTE:** When different type of indoor units (such as wall-mounted type and cassette type, cassette type and duct type, or other combinations) are connected using group control system, some functions may no longer be available.

1. Connect up to 16 indoor units in a system.



|  |  |
|--|--|
| A, B, C, D, E: Remote controller cable |  |
| Wiring length limitation               | $A + B + C + D + E \leq 500 \text{ m}$ |

Example of wiring method



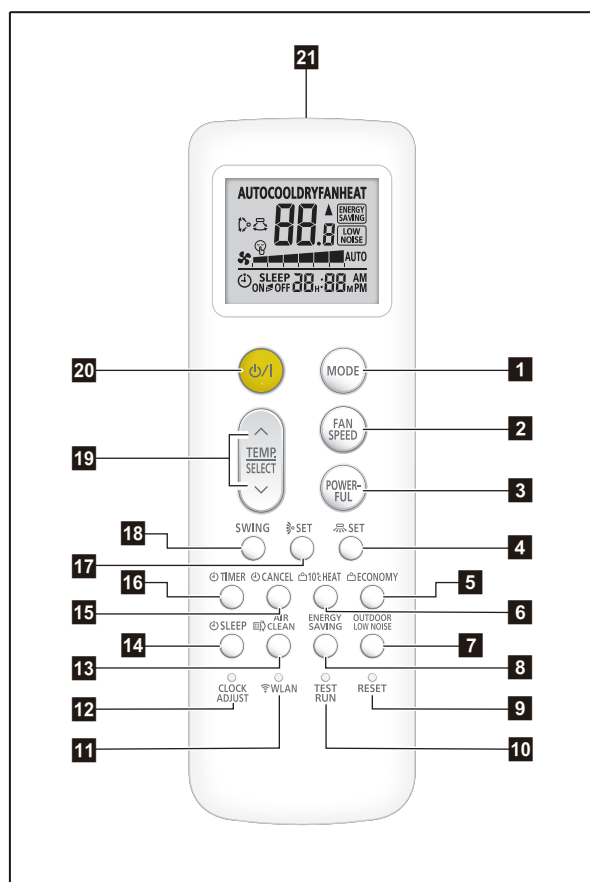
2. Automatic address setting

After the remote controller connection in the system, the automatic address setting runs in the initial starting up. Do not change the remote controller address for the indoor unit.

# 11. Remote controller

## 11-1. Wireless remote controller

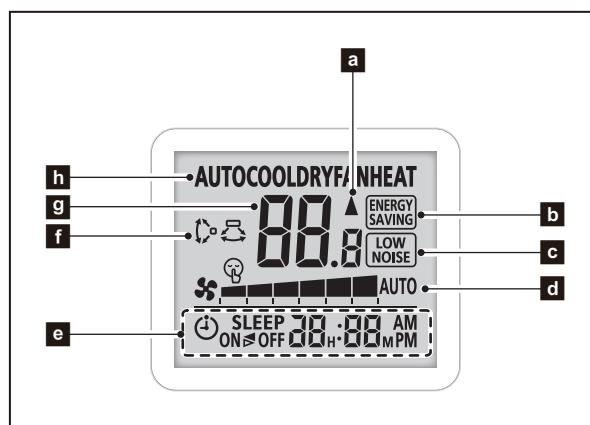
### Overview



- 1 MODE button
- 2 FAN SPEED button
- 3 POWERFUL button
- 4 SET button (Left/right airflow)
- 5 ECONOMY button
- 6 10 °C HEAT button
- 7 OUTDOOR LOW NOISE button
- 8 ENERGY SAVING button
- 9 RESET button
- 10 TEST RUN button
- 11 WLAN button
- 12 CLOCK ADJUST button
- 13 AIR CLEAN button
- 14 SLEEP button
- 15 CANCEL button
- 16 TIMER button
- 17 SET button (Up/down airflow)
- 18 SWING button
- 19 TEMP. (Up/down) button
- 20 START/STOP button
- 21 Signal transmitter

**NOTE:** Functions may differ by type of the indoor unit. For details, refer to the operation manual.

### Display panel



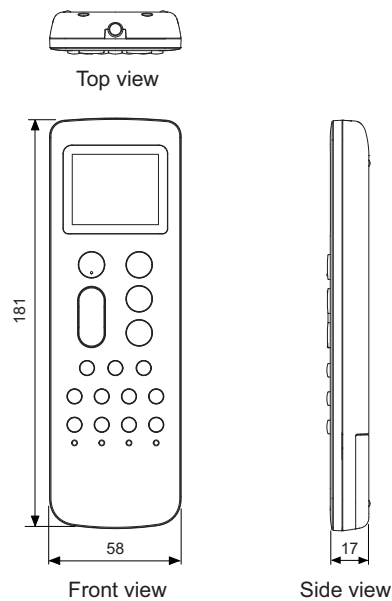
- a Signal transmit indicator
- b ENERGY SAVING mode indicator
- c LOW NOISE mode indicator
- d Fan speed indicator
- e Clock and Timer indicator
- f Swing indicator
- g Temperature indicator
- h Operating mode indicator

To facilitate explanation, the accompanying illustration has been drawn to show all possible indicators; in actual operation, however, the display will only show those indicators appropriate to the current operation.

## ■ Specifications

### ● Controller

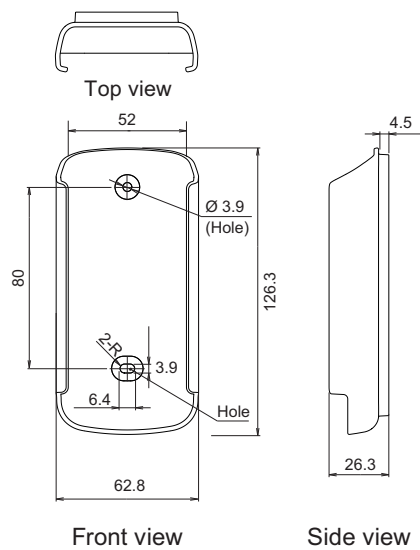
Unit: mm



|                  |    |                         |
|------------------|----|-------------------------|
| Size (H × W × D) | mm | 181 × 58 × 17           |
| Weight           | g  | 116 (without batteries) |

### ● Holder

Unit: mm



|                  |    |                     |
|------------------|----|---------------------|
| Size (H × W × D) | mm | 126.3 × 62.8 × 26.3 |
| Weight           | g  | 28                  |

## 12. Function settings

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

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

### 12-1. Function settings by using remote controller

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

#### ■ Setting procedure by using wireless remote controller

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

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

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

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

#### NOTES:

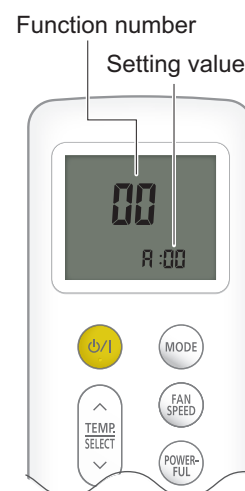
- Settings will not be changed if invalid numbers or setting values are selected.
- When optional wired remote controller is used, refer to the installation manual enclosed with the remote controller.

#### Entering function setting mode:

While pressing the FAN SPEED button and TEMP./SELECT (^) button simultaneously, press the RESET button to enter the function setting mode.

#### Selecting the function number and setting value:

1. Press MODE button.
2. Press the TEMP./SELECT (^) (v) buttons to select the function number. (Press MODE button to switch between the left and right digits.)
3. Press the FAN SPEED button to proceed to value setting. (Press FAN SPEED button again to return to the function number selection.)
4. Press the TEMP./SELECT (^) (v) buttons to select the setting value. (Press MODE button to switch between the left and right digits.)
5. Press the POWERFUL button once. Please confirm the beeping sound.
6. Press the START/STOP button once to fix the Function setting. Please confirm the beeping sound.
7. Press the RESET button to cancel the function setting mode.
8. After completing the function setting, be sure to disconnect the power supply and then reconnect it.



#### ⚠ CAUTION

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



## ■ Contents of function setting

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

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

### ● Function setting list

|     | Function no. | Functions   |
|-----|--------------|---|
| 1)  | 11           | Filter sign   |
| 2)  | 30/31        | Room temperature control for indoor unit sensor             |
| 3)  | 35/36        | Room temperature control for wired remote controller sensor |
| 4)  | 40           | Auto restart  |
| 5)  | 42           | Room temperature sensor switching                           |
| 6)  | 44           | Remote controller custom code                               |
| 7)  | 46           | External input control                                      |
| 8)  | 48           | Room temperature sensor switching (Aux.)                    |
| 9)  | 49           | Indoor unit fan control for energy saving for cooling       |
| 10) | 60           | Switching functions for external output terminal            |

#### 1) Filter sign

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

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

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

## 2) Room temperature control for indoor unit sensor

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              |               |                     |                              |  |

### 3) 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              |               |                     |                              |  |

### 4) Auto restart

Enables or disables automatic restart after a power interruption.

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

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

### 5) Room temperature sensor switching

(Only for wired remote controller)

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

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

00: Sensor on the indoor unit is active.

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

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

**6) Remote controller custom code**

(Only for wireless remote controller)

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

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

**7) External input control**

"Operation/Stop" mode or "Forced stop" mode can be selected.

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

**8) Room temperature sensor switching (Aux.)**

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

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

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

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

**9) Indoor unit fan control for energy saving for cooling**

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

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

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

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

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

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

## 10) Switching functions for external output terminal

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

| Function number | Setting value | Setting description              | Factory setting |
|-----------------|---------------|----------------------------------|-----------------|
| 60              | 00            | Operation status                 | ◆               |
|                 | 01—08         | (Setting prohibited)             |                 |
|                 | 09            | Error status                     |                 |
|                 | 10            | Indoor unit fan operation status |                 |
|                 | 11            | (Setting prohibited)             |                 |

## 12-2. Custom code setting for wireless remote controller

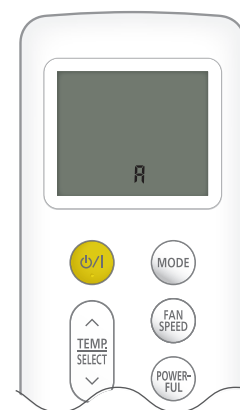
To interconnect the air conditioner and the wireless remote controller, assignment of the custom code for the wireless remote controller is required.

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

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

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

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





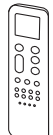
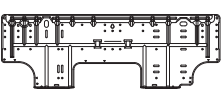



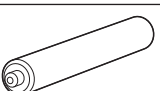



### NOTES:

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

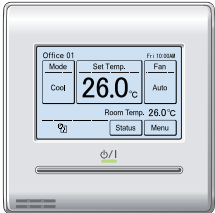
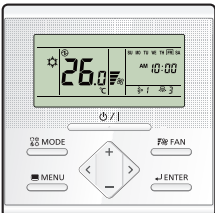


## 13. Accessories

### 13-1. Models: RSH09KHCBN, RSH12KHCBN, and RSH14KHCBN

| Part name                | Exterior  | Qty | Part name                  | Exterior  | Qty |
|--------------------------|---|-----|----------------------------|---|-----|
| Operation manual         |    | 1   | Self-tapping screw (Large) |  | 5   |
| Installation manual      |    | 1   | Self-tapping screw (Small) |  | 2   |
| Remote controller        |    | 1   | Wall hook bracket          |  | 1   |
| Remote controller holder |    | 1   | Cloth tape                 |  | 1   |
| Air cleaning filter      |    | 2   | Battery                    |  | 2   |
| Filter holder            |  | 2   |                            |   |     |

## 14. Optional parts

### 14-1. Controllers

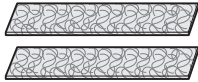
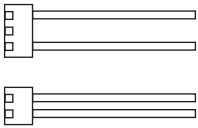
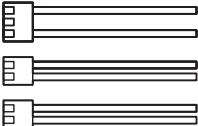

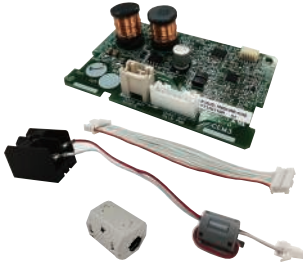





| Exterior  | Part name                       | Model name | Summary  |
|---|---------------------------------|------------|--|
|    | Wired Remote Controller         | UTU-RNRXZ* | Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room.<br>Wire type: Non-polar 2-wire  |
|    | Wired Remote Controller         | UTU-RLRX   | High visibility and easy operation. Room temperature can be accurately controlled using the thermo sensor.<br>Wire type: Non-polar 2-wire                              |
|    | Compact Wired Remote Controller | UTU-RCRXZ1 | Compact body and easy operation. Room temperature can be accurately controlled using the thermo sensor.<br>Wire type: Non-polar 2-wire                                 |
|  | Simple Remote Controller        | UTU-RSRX   | 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 |

#### NOTES:

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



## 14-2. Others

| Exterior  | Part name                           | Model name | Summary   |
|---|-------------------------------------|------------|---|
|    | Air Cleaning Filter                 | UTR-FA16-5 | Air Cleaning Filter can be mounted to the indoor unit.  |
|    | External Connect Kit                | UTY-XWZX   | Use to connect with various peripheral devices and air conditioner PCB.<br>Connecting point: CN46 and CN47 on Main PCB  |
|    | External Connect Kit                | UTY-XWZXZ5 | Required when external device is connected.<br>Connecting point: CN46 and CN47 on Main PCB  |
|    | External Input and Output PCB       | UTY-XCSXZ3 | Use to connect with external devices and air conditioner PCB.<br>Optional External Connect Kit is necessary for installation.<br>Connecting point: CN65 on Main PCB |
|   | Communication Kit                   | UTY-TWRXZ4 | Use to connect Non-polar 2-core wired remote controller.  |
|  | Modbus Converter                    | UTY-VMSX   | For connection between indoor unit with UART interface and a Modbus open network.<br>Connecting point: CN65 on Main PCB   |
|  | KNX Converter                       | UTY-VKSX   | For connection between indoor unit with UART interface and a KNX open network.<br>Connecting point: CN65 on Main PCB  |
|  | Network Converter                   | UTY-VTGX   | This converter is required when connecting single split system to VRF network system.<br>Connecting point: CN13 via Communication Kit                               |
|  | Network Converter (AC power supply) | UTY-VTGXV  | This converter is required when connecting single split system to VRF network system.<br>Connecting point: CN13 via Communication Kit                               |
|  | External Switch Controller          | UTY-TERX   | Air conditioner switching can be controlled by connecting other external sensor switches.<br>Connecting point: CN13 via Communication Kit                           |



# **Part 2. OUTDOOR UNIT**

---

**SINGLE TYPE:**

**ROH09KHCBN**

**ROH12KHCBN**

**ROH14KHCBN**

# 1. Specifications

| Type  |                        |  | Inverter, Heat pump                                    |  |   |
|---|------------------------|--|--|--|---|
| Model name  |                        |  | ROH09KHCBN   | ROH12KHCBN   | ROH14KHCBN  |
| Power supply  |                        |  | 230 V~ 50 Hz   |  |   |
| Power supply intake   |                        |  | Outdoor unit   |  |   |
| Available voltage range   |                        |  | 207—253 V  |  |   |
| Starting current  |                        |  | A  |  |   |
| Fan   | Airflow rate           | Cooling  | 2.5  | 3.4  | 5.0   |
|   |                        | Heating  | 1,850  | 2,630  | 2,530   |
|   | Type × Qty             |  | 1,690  | 2,140  | 2,070   |
|   | Motor output           | W  | Propeller fan × 1                                      |  |   |
| Sound pressure level*   | Cooling                | dB (A)   | 44   | 48   | 51  |
|   |                        |  | 44   | 49   |   |
| Sound power level   | Cooling                | dB (A)   | 57   | 61   | 64  |
|   |                        |  | 55   | 59   | 60  |
| Heat exchanger type   | Dimensions (H × W × D) | mm   | Main 1: 588 × 881 × 18.19<br>Main 2: 588 × 851 × 18.19 | Main 1: 672 × 881 × 18.19<br>Main 2: 672 × 851 × 18.19 | Main 1: 672 × 873 × 18.19<br>Main 2: 672 × 845 × 18.19<br>Main 3: 672 × 784 × 18.19 |
|   |                        |  | Fin pitch  | Main 1: 1.30<br>Main 2: 1.30                           | Main 1: 1.30<br>Main 2: 1.30  |
|   | Rows × Stages          |  | Main 1: 1 × 28<br>Main 2: 1 × 28                       | Main 1: 1 × 32<br>Main 2: 1 × 32                       | Main 1: 1 × 32<br>Main 2: 1 × 32<br>Main 3: 1 × 32                                  |
|   | Pipe type              |  | Copper tube  |  |   |
|   | Fin type               | Type (Material)                                    | Aluminum   |  |   |
|   |                        | Surface treatment                                  | PC fin   |  |   |
| Compressor  | Type                   | DC rotary  |  |  |   |
|   | Motor output           | W  | 925  | 1,060  |   |
| Refrigerant   | Type                   | R32 (675)  |  |  |   |
|   | Charge                 | g  | 1,220  | 1,320  | 1,390   |
| Refrigerant oil   | Type                   | RmM68AF  |  |  |   |
|   | Amount                 | cm <sup>3</sup>                                    | 400  |  |   |
| Enclosure   | Material               | Steel sheet  |  |  |   |
|   | Color                  | Beige<br>Approximate color of Munsell 10YR 7.5/1.0 |  |  |   |
| Dimensions (H × W × D)  | Net                    | mm   | 632 × 799 × 290  | 716 × 820 × 315  |   |
|   | Gross                  |  | 692 × 940 × 375  | 776 × 961 × 450  |   |
| Weight  | Net                    | kg   | 39   | 42   | 45  |
|   | Gross                  |  | 43   | 47   | 50  |
| Connection pipe   | Size                   | Liquid   | Ø6.35 (Ø1/4)   |  |   |
|   |                        | Gas  | Ø9.52 (Ø3/8)   |  |   |
|   | Method                 | Flare  |  |  |   |
|   | Pre-charge length      | m  | 15   |  |   |
|   | Max. length            |  | 20   |  |   |
|   | Max. height difference |  | 15   |  |   |
| Max. height difference  | g/m                    | 20   |  |  |   |
| Operation range   | Cooling                | °C   | -10 to 50  |  |   |
|   | Heating                |  | -30 to 24  |  |   |
| <b>NOTES:</b>   |                        |  |  |  |   |
| <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: 5.0 m, Height difference: 0 m. (Between outdoor unit and indoor unit.)</li> </ul> </li> <li>• Protective function might work when using it outside the operation range.</li> <li>• *: Sound pressure level <ul style="list-style-type: none"> <li>– Measured values in manufacturer's semi-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> </ul> |                        |  |  |  |   |

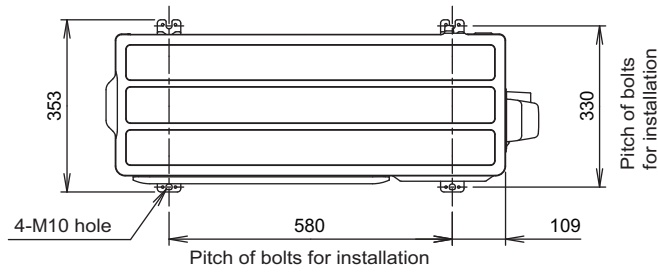
## 2. Dimensions

### 2-1. Model: ROH09KHCBN

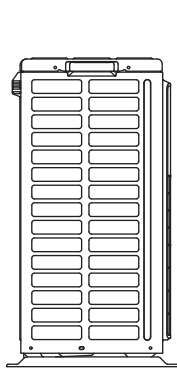
Unit: mm

OUTDOOR UNIT  
ROH09-14KHCBN

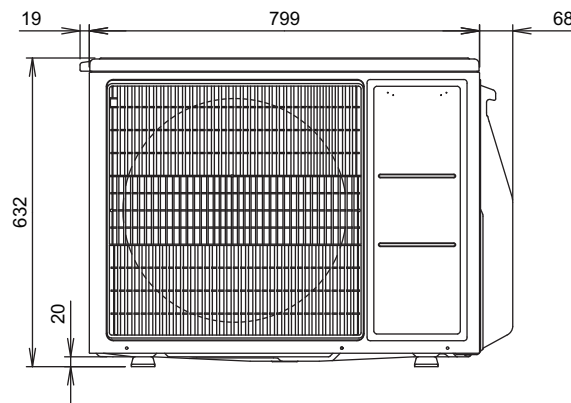
OUTDOOR UNIT  
ROH09-14KHCBN



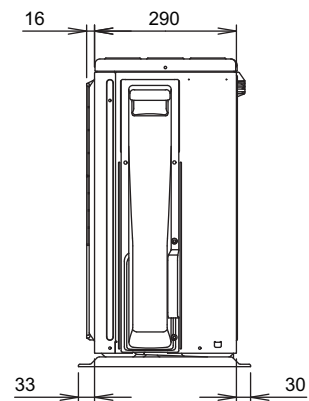
Top view



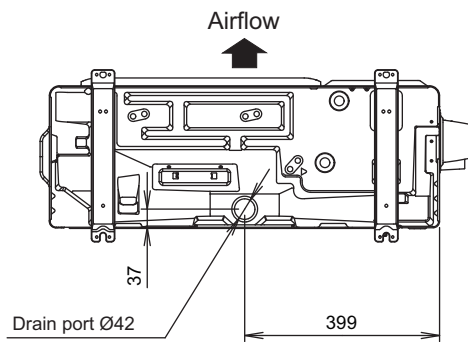
Side view



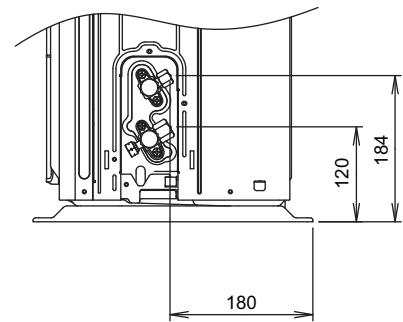
Front view



Side view



Bottom view



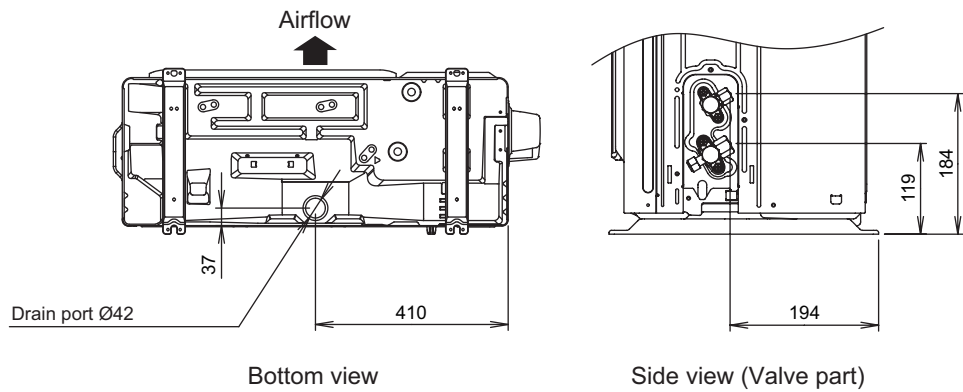
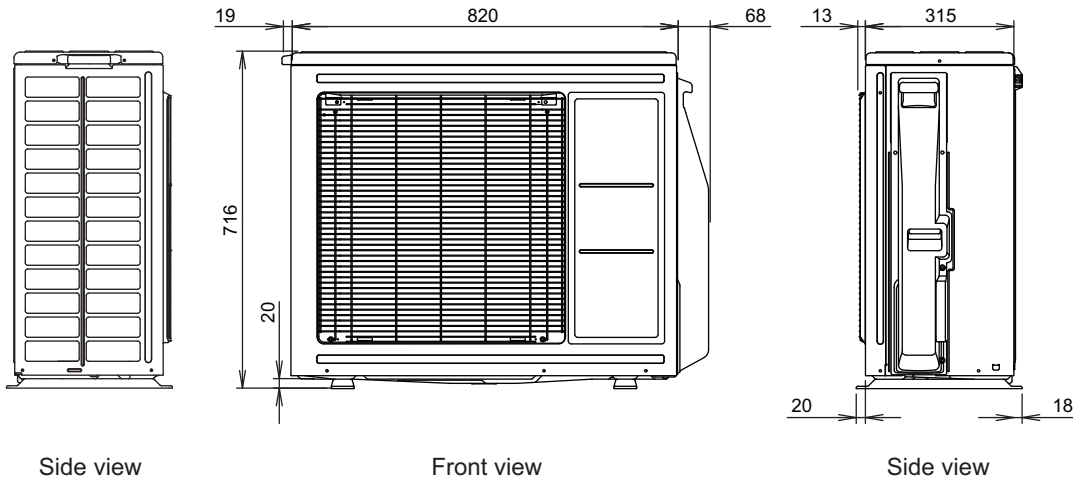
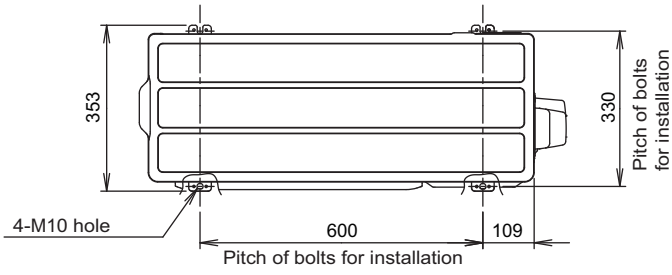
Side view (Valve part)

## 2-2. Models: ROH12KHCBN and ROH14KHCBN

Unit: mm

OUTDOOR UNIT  
ROH09-14KHCBN

OUTDOOR UNIT  
ROH09-14KHCBN



## 3. Installation space

### 3-1. Models: ROH09KHCBN, ROH12KHCBN, and ROH14KHCBN

#### ■ Space requirement

Provide sufficient installation space for product safety.

#### ⚠ CAUTION

Keep the space shown in the installation examples.

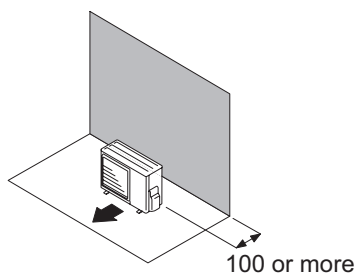
If the installation is not performed accordingly, it could cause a short circuit and result in a lack of operating performance.

#### ● Single outdoor unit installation

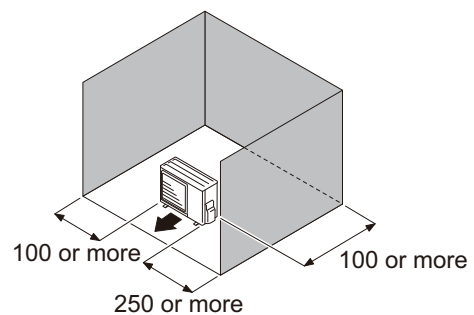
- When the upper space is open:

Unit: mm

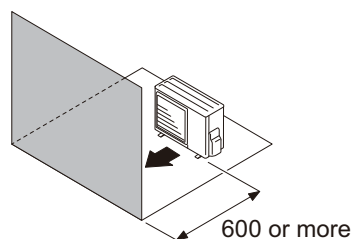
Obstacles at rear only



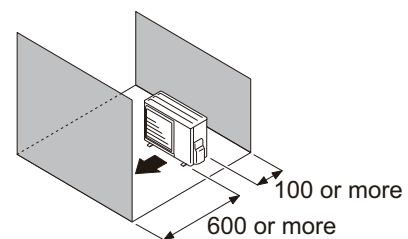
Obstacles at rear and sides



Obstacles at front



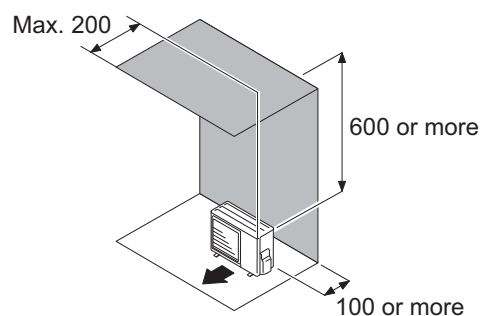
Obstacles at front and rear



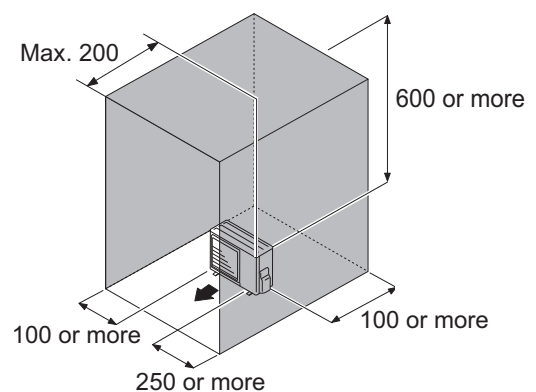
- When an obstruction in the upper space:

Unit: mm

Obstacles at rear and above



Obstacles at rear, sides, and above

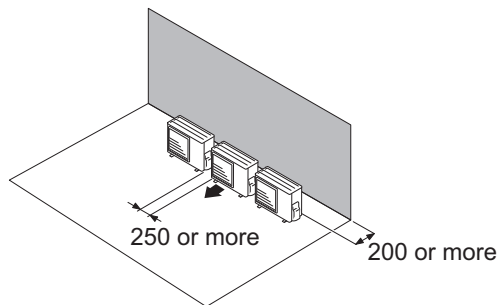


## ● Multiple outdoor unit installation

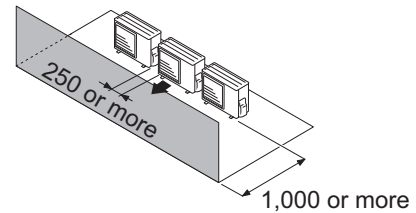
- Provide at least 250 mm of space between the outdoor units if multiple units are installed.
- When routing the piping from the side of an outdoor unit, provide space for piping.
- No more than 3 units must be installed side by side.  
When 4 units or more are arranged in a line, provide the space as shown in the following example **“When an obstruction in the upper space:”**.
- **When the upper space is open:**

Unit: mm

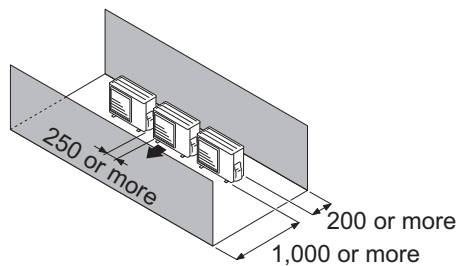
Obstacles at rear only



Obstacles at front only



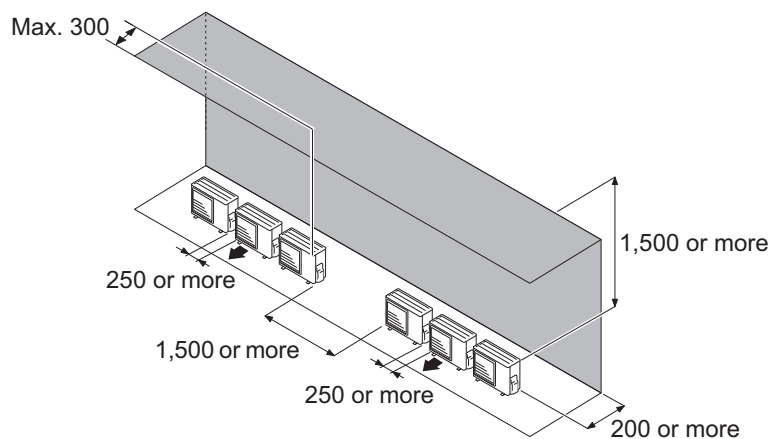
Obstacles at front and rear



- **When an obstruction in the upper space:**

Unit: mm

Obstacles at rear and above.

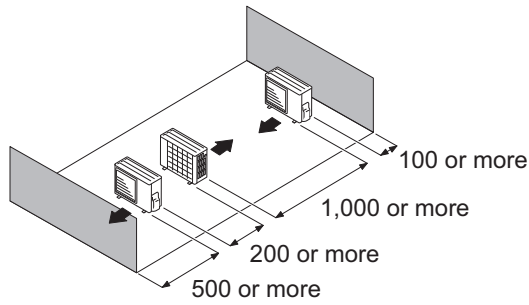




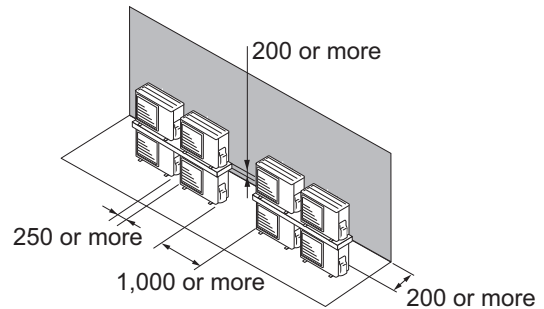
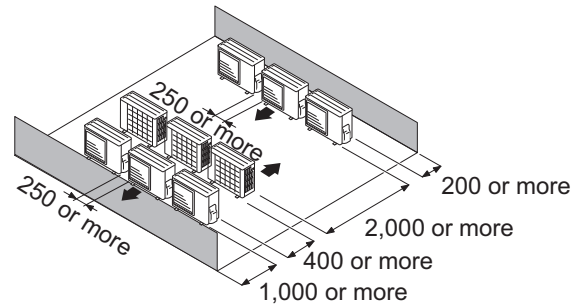
## ● Outdoor units installation in multi-row

Unit: mm

Single parallel unit arrangement



Multiple parallel unit arrangement

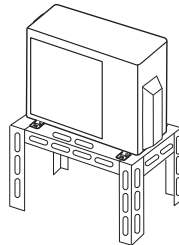


### NOTES:

- If the space is larger than stated above, the condition will be the same as when there is no obstacle.
- When installing the outdoor unit, be sure to open the front and left side to obtain better operation efficiency.

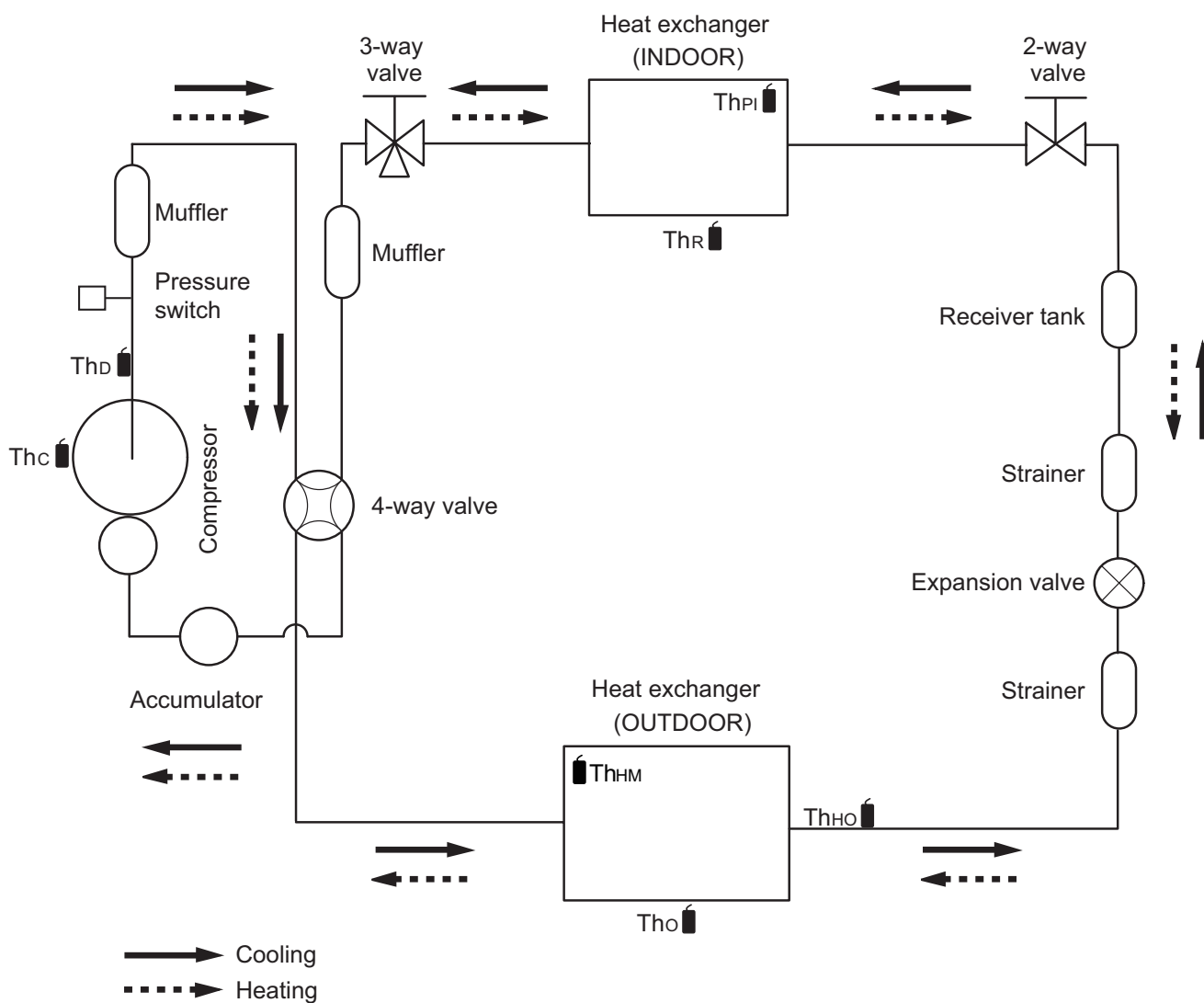
### ⚠ CAUTION

- Do not install the outdoor unit in two-stage where the drain water could freeze. Otherwise the drainage from the upper unit may form ice and cause a malfunction of the lower unit.
- When the outdoor temperature is 0 °C or less, do not use the accessory drain pipe and drain cap. If the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold climate. (For reverse cycle model only.)
- In area with heavy snowfall, if the inlet and outlet of the outdoor unit is blocked with snow, it might become difficult to get warm, and it is likely to cause product malfunction. Construct a canopy and a pedestal, or place the unit on a high stand that is locally installed.



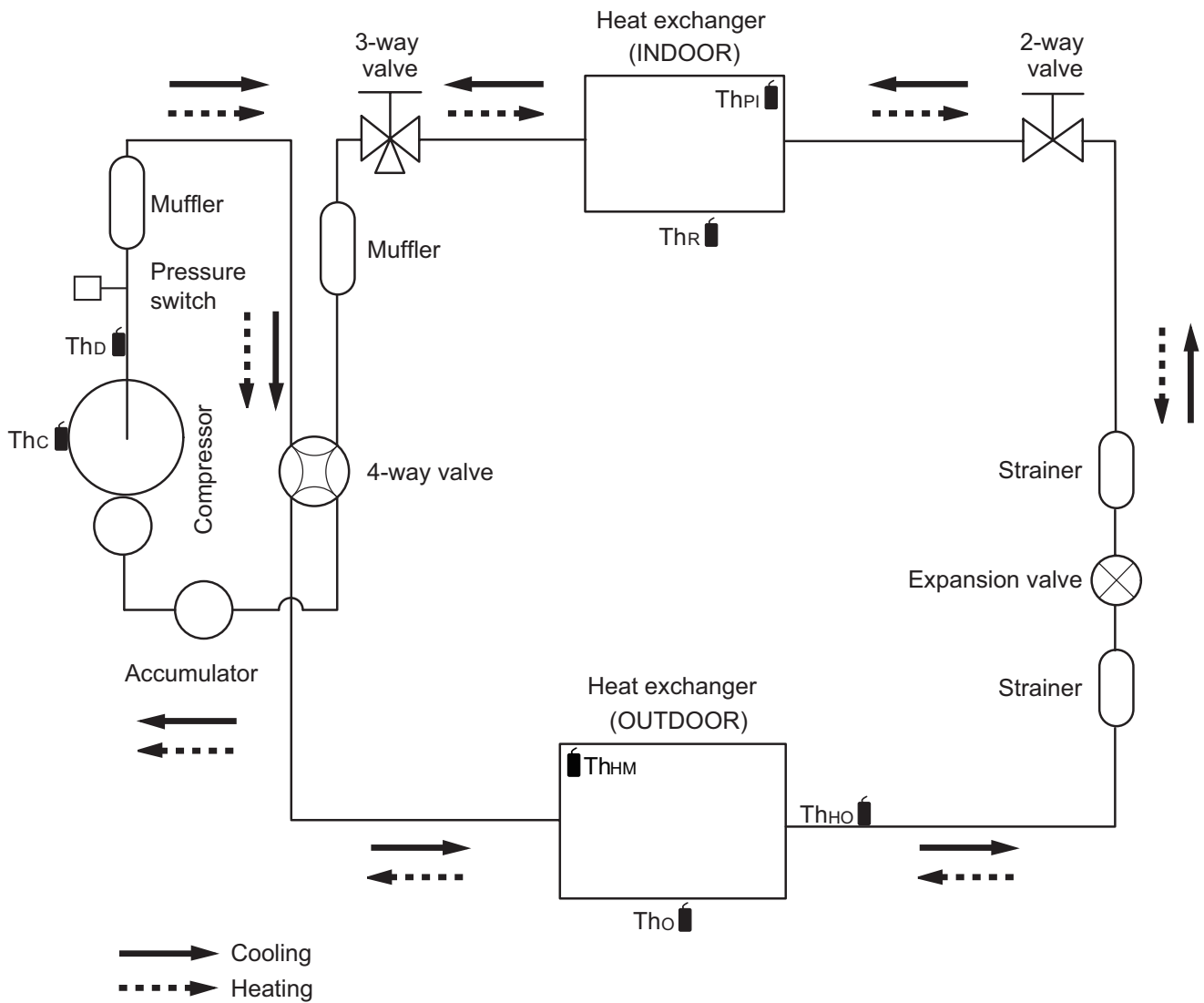
## 4. Refrigerant circuit

### 4-1. Models: ROH09KHCBN and ROH12KHCBN



- $Th_c$  : Thermistor (Compressor temperature)  
 $Th_d$  : Thermistor (Discharge temperature)  
 $Th_M$  : Thermistor (Heat exchanger middle temperature)  
 $Th_o$  : Thermistor (Outdoor temperature)  
 $Th_{HO}$  : Thermistor (Heat exchanger out temperature)  
 $Th_{PI}$  : Thermistor (Pipe temperature)  
 $Th_R$  : Thermistor (Room temperature)

## 4-2. Model: ROH14KHCBN



Th<sub>c</sub> : Thermistor (Compressor temperature)

Th<sub>d</sub> : Thermistor (Discharge temperature)

Th<sub>HM</sub> : Thermistor (Heat exchanger middle temperature)

Th<sub>o</sub> : Thermistor (Outdoor temperature)

Th<sub>HO</sub> : Thermistor (Heat exchanger out temperature)

Th<sub>PI</sub> : Thermistor (Pipe temperature)

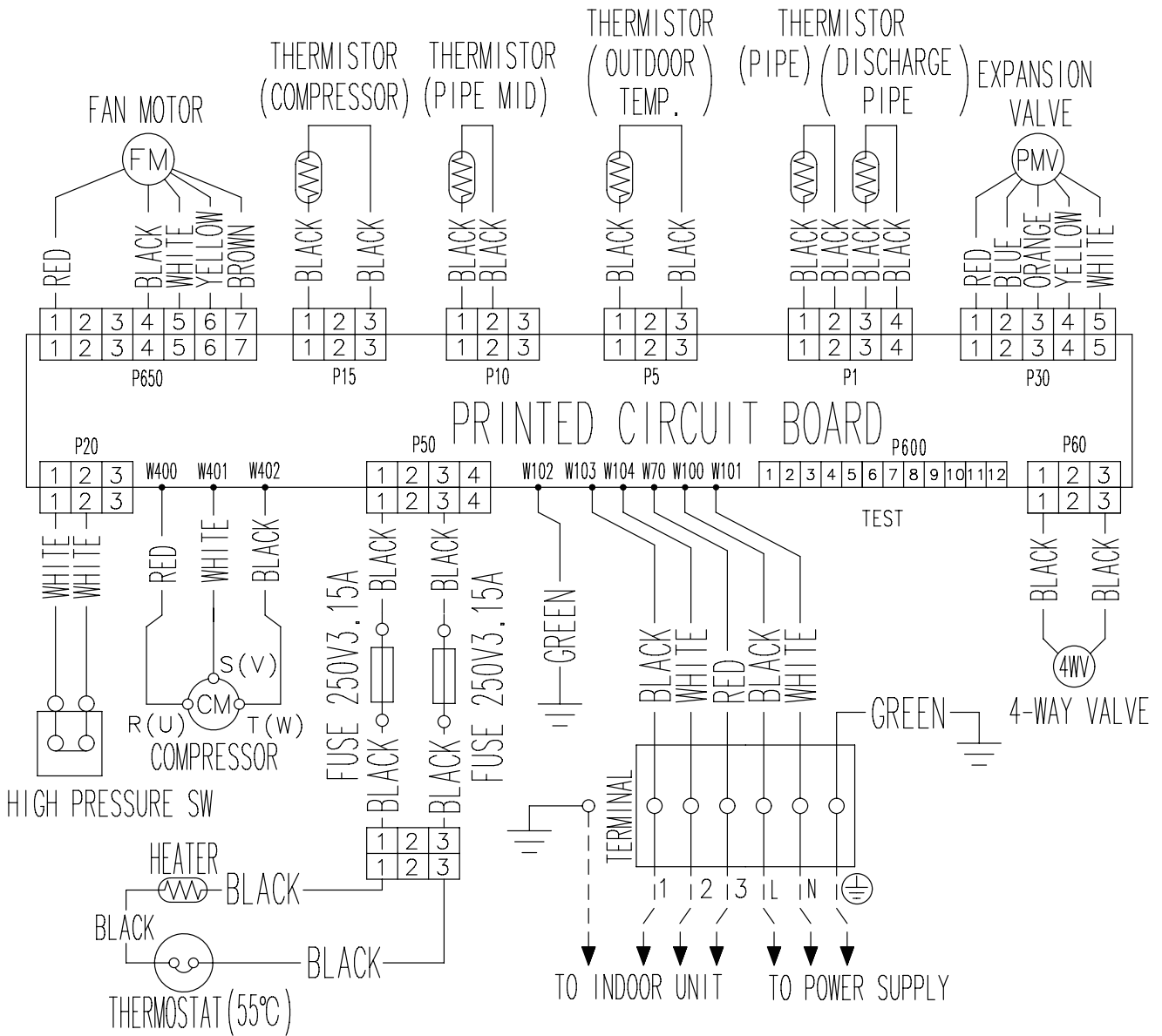
Th<sub>R</sub> : Thermistor (Room temperature)

## 5. Wiring diagrams

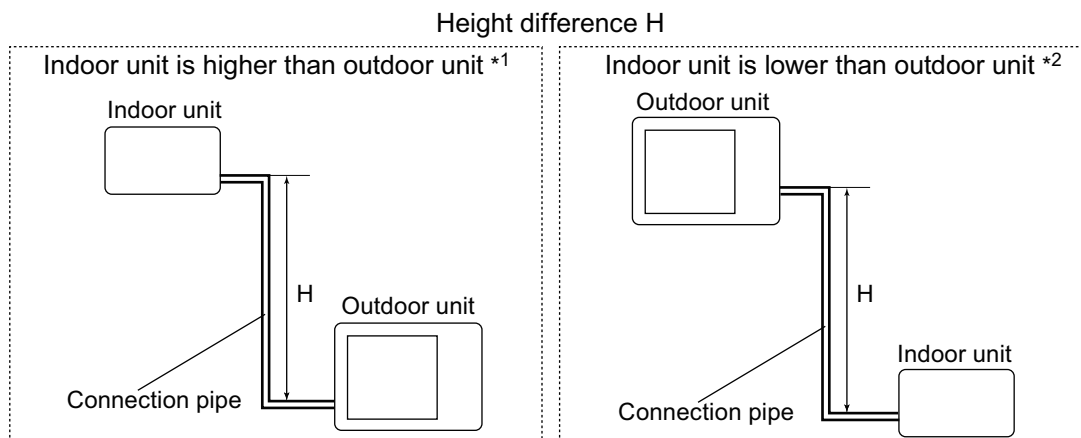
### 5-1. Models: ROH09KHCBN, ROH12KHCBN, and ROH14KHCBN

OUTDOOR UNIT  
ROH09-14KHCBN

OUTDOOR UNIT  
ROH09-14KHCBN



## 6. Capacity compensation rate for pipe length and height difference



### 6-1. Models: ROH09KHCBN, ROH12KHCBN, and ROH14KHCBN

**NOTE:** Values mentioned in the table are calculated based on the maximum capacity.

| COOLING                 |  |      | Pipe length (m) |       |       |       |       |
|-------------------------|--|------|-----------------|-------|-------|-------|-------|
|                         |  |      | 5               | 7.5   | 10    | 15    | 20    |
| Height difference H (m) | Indoor unit is higher than outdoor unit *1 | 15   | —               | —     | —     | 0.939 | 0.925 |
|                         |  | 10   | —               | —     | 0.966 | 0.947 | 0.932 |
|                         |  | 7.5  | —               | 0.979 | 0.970 | 0.951 | 0.936 |
|                         |  | 5    | 0.992           | 0.983 | 0.974 | 0.955 | 0.939 |
|                         | Indoor unit is lower than outdoor unit *2  | 0    | 1.000           | 0.991 | 0.981 | 0.963 | 0.946 |
|                         |  | -5   | 1.000           | 0.991 | 0.981 | 0.963 | 0.946 |
|                         |  | -7.5 | —               | 0.991 | 0.981 | 0.963 | 0.946 |
|                         |  | -10  | —               | —     | 0.981 | 0.963 | 0.946 |
|                         |  | -15  | —               | —     | —     | 0.963 | 0.946 |

| HEATING                 |  |      | Pipe length (m) |       |       |       |       |
|-------------------------|--|------|-----------------|-------|-------|-------|-------|
|                         |  |      | 5               | 7.5   | 10    | 15    | 20    |
| Height difference H (m) | Indoor unit is higher than outdoor unit *1 | 15   | —               | —     | —     | 0.903 | 0.887 |
|                         |  | 10   | —               | —     | 0.952 | 0.903 | 0.887 |
|                         |  | 7.5  | —               | 0.976 | 0.952 | 0.903 | 0.887 |
|                         |  | 5    | 1.000           | 0.976 | 0.952 | 0.903 | 0.887 |
|                         | Indoor unit is lower than outdoor unit *2  | 0    | 1.000           | 0.976 | 0.952 | 0.903 | 0.887 |
|                         |  | -5   | 0.995           | 0.971 | 0.947 | 0.899 | 0.883 |
|                         |  | -7.5 | —               | 0.969 | 0.945 | 0.897 | 0.881 |
|                         |  | -10  | —               | —     | 0.942 | 0.894 | 0.879 |
|                         |  | -15  | —               | —     | —     | 0.890 | 0.875 |

## 7. Additional charge calculation

### 7-1. Model: ROH09KHCBN

|                       |   |       |
|-----------------------|---|-------|
| Refrigerant type      |   | R32   |
| Factory charge amount | g | 1,220 |

#### ■ Refrigerant charge

|                          |   |            |           |        |
|--------------------------|---|------------|-----------|--------|
| Total pipe length        | m | 15 or less | 20 (Max.) | 20 g/m |
| Additional charge amount | g | 0          | 100       |        |

### 7-2. Model: ROH12KHCBN

|                       |   |       |
|-----------------------|---|-------|
| Refrigerant type      |   | R32   |
| Factory charge amount | g | 1,320 |

#### ■ Refrigerant charge

|                          |   |            |           |        |
|--------------------------|---|------------|-----------|--------|
| Total pipe length        | m | 15 or less | 20 (Max.) | 20 g/m |
| Additional charge amount | g | 0          | 100       |        |

### 7-3. Model: ROH14KHCBN

|                       |   |       |
|-----------------------|---|-------|
| Refrigerant type      |   | R32   |
| Factory charge amount | g | 1,390 |

#### ■ Refrigerant charge

|                          |   |            |           |        |
|--------------------------|---|------------|-----------|--------|
| Total pipe length        | m | 15 or less | 20 (Max.) | 20 g/m |
| Additional charge amount | g | 0          | 100       |        |

## 8. Airflow

### 8-1. Model: ROH09KHCBN

#### ● Cooling

|                   |       |
|-------------------|-------|
| m <sup>3</sup> /h | 1,850 |
| l/s               | 514   |
| CFM               | 1,089 |

#### ● Heating

|                   |       |
|-------------------|-------|
| m <sup>3</sup> /h | 1,690 |
| l/s               | 469   |
| CFM               | 995   |

### 8-2. Model: ROH12KHCBN

#### ● Cooling

|                   |       |
|-------------------|-------|
| m <sup>3</sup> /h | 2,630 |
| l/s               | 731   |
| CFM               | 1,548 |

#### ● Heating

|                   |       |
|-------------------|-------|
| m <sup>3</sup> /h | 2,140 |
| l/s               | 594   |
| CFM               | 1,260 |

### 8-3. Model: ROH14KHCBN

#### ● Cooling

|                   |       |
|-------------------|-------|
| m <sup>3</sup> /h | 2,530 |
| l/s               | 703   |
| CFM               | 1,489 |

#### ● Heating

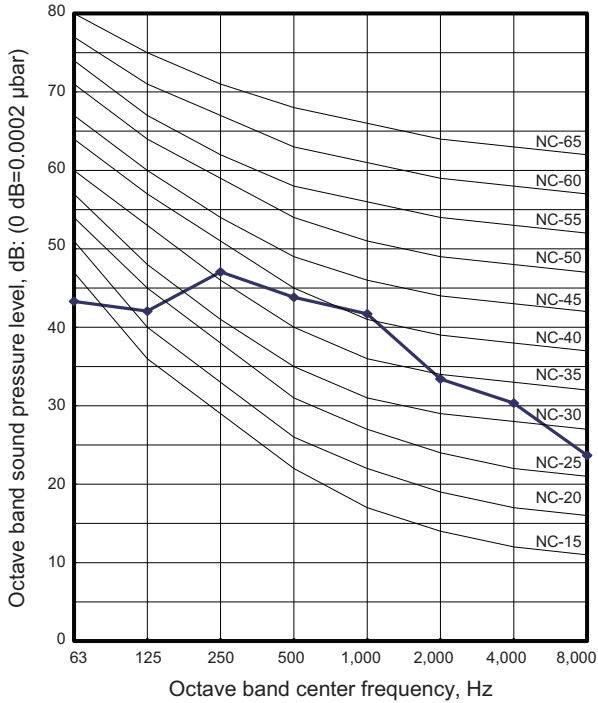
|                   |       |
|-------------------|-------|
| m <sup>3</sup> /h | 2,070 |
| l/s               | 575   |
| CFM               | 1,218 |

# 9. Operation noise (sound pressure)

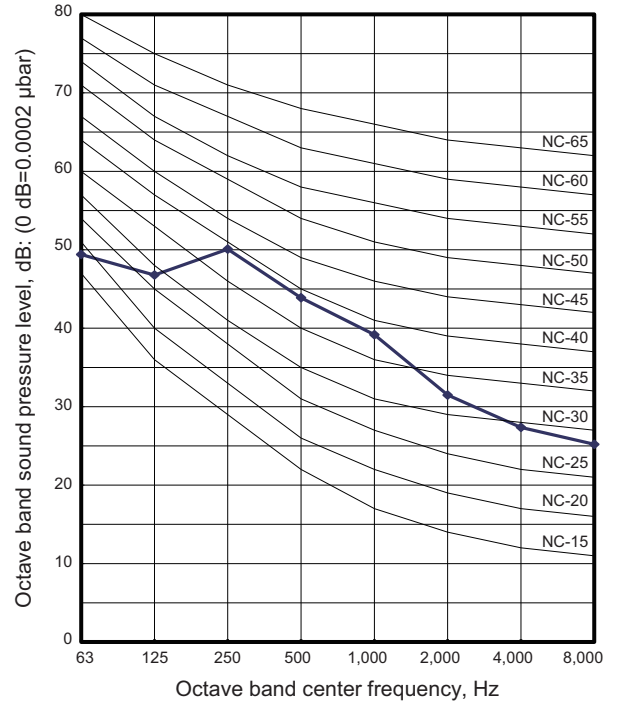
## 9-1. Noise level curve

### ROH09KHCBN

#### Cooling

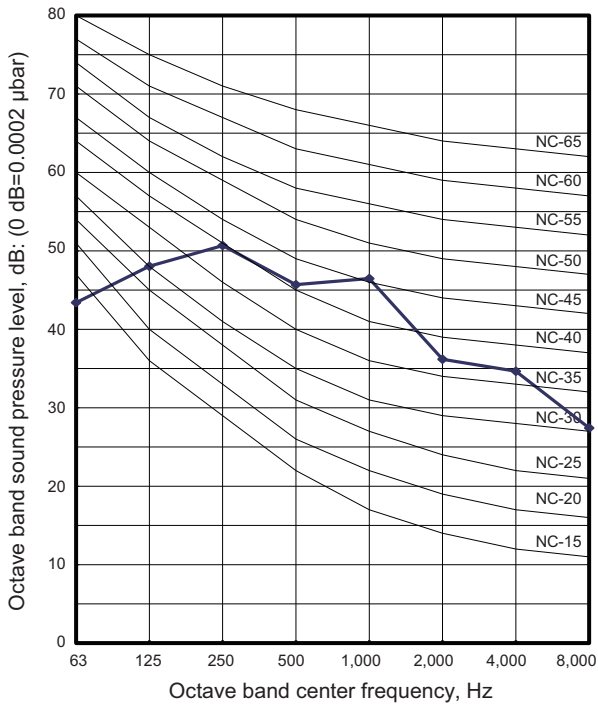


#### Heating

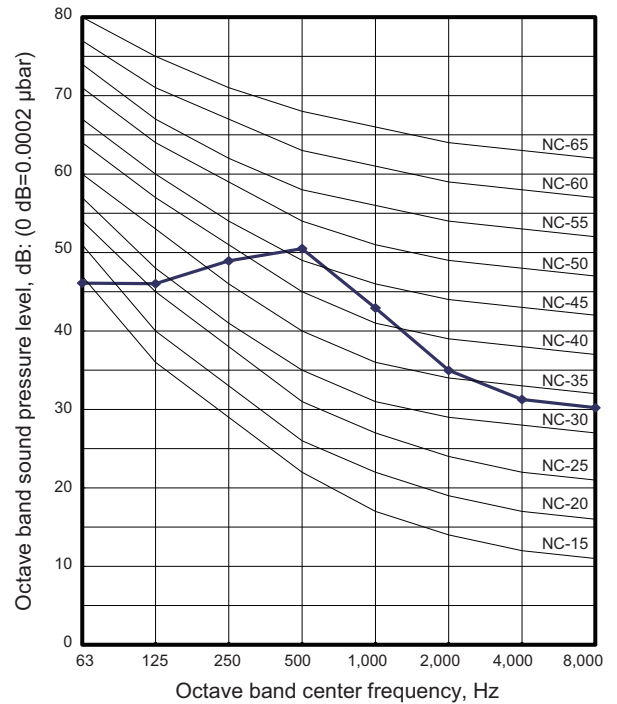


### ROH12KHCBN

#### Cooling



#### Heating



OUTDOOR UNIT  
ROH09-14KHCBN

OUTDOOR UNIT  
ROH09-14KHCBN

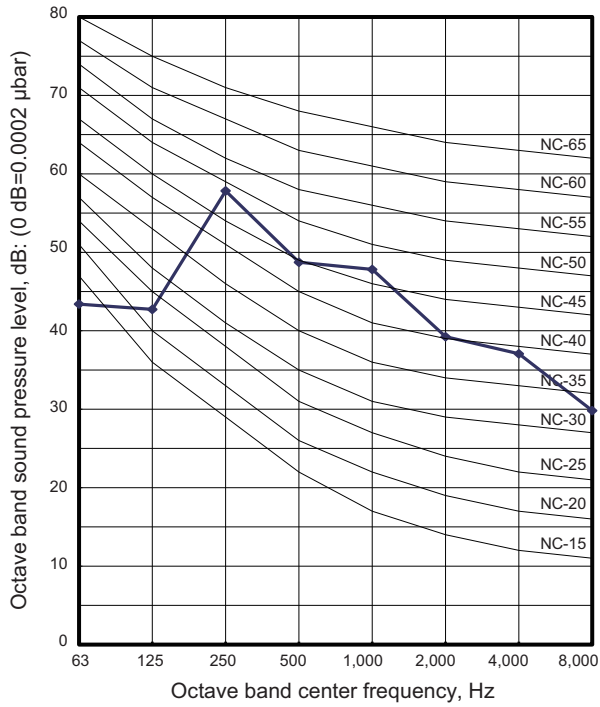


# ROH14KHCBN

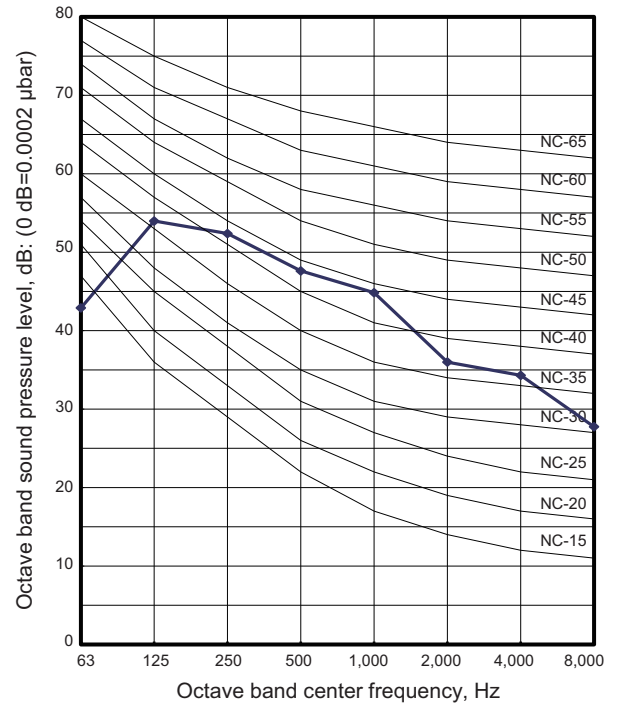
OUTDOOR UNIT  
ROH09-14KHCBN

OUTDOOR UNIT  
ROH09-14KHCBN

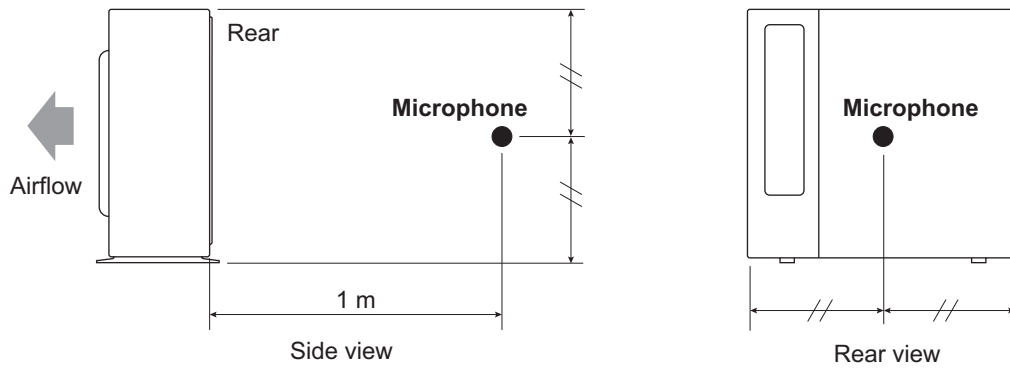
## ● Cooling



## ● Heating



## 9-2. Sound level check point



**NOTE:** Detailed shape of the actual outdoor unit might be slightly different from the one illustrated above.

## 10. Electrical characteristics

| Model name                          |                                |                       | ROH09KHCBN      | ROH12KHCBN | ROH14KHCBN |    |
|-------------------------------------|--------------------------------|-----------------------|-----------------|------------|------------|----|
| Power supply                        | Voltage                        | V                     | 230             |            |            |    |
|                                     | Frequency                      | Hz                    | 50              |            |            |    |
| Max operating current* <sup>1</sup> |                                | A                     | 9.5             | 12.5       | 15.5       |    |
| Starting current                    |                                | A                     | 2.5             | 3.4        | 5.0        |    |
| Wiring spec.* <sup>2</sup>          | Circuit breaker current        |                       | A               | 13         | 15         | 20 |
|                                     | Power cable                    |                       | mm <sup>2</sup> | 1.5        | 2.5        |    |
|                                     | Connection cable* <sup>3</sup> | Cross-sectional area  | mm <sup>2</sup> | 1.5        |            |    |
|                                     |                                | Limited wiring length | m               | 21         |            |    |

### NOTES:

- \*1: Maximum operating current is the total current of the indoor unit and the outdoor unit.
- \*2: Selected sample based on Japan Electrotechnical Standards and Codes Committee E0005. As the regulations of wire size and circuit breaker differ in each country or region, select appropriate devices complied to the regional standard.
- \*3: Limit voltage drop to less than 2%. If voltage drop is 2% or more, increase cable conductor size.


# 11. Safety devices

| Type of protection    | Protection form   |          | Model   |            |            |
|-----------------------|---|----------|---|------------|------------|
|                       |   |          | ROH09KHCBN  | ROH12KHCBN | ROH14KHCBN |
| Circuit protection    | Current fuse (PCB*)   |          | 250 V, 25 A   |            |            |
|                       | Current fuse (Base pan heater)  |          | 250 V, 5 A  |            |            |
| Fan motor protection  | Thermal protection program  | Activate | 125 ±10°C<br>Fan motor stop                             |            |            |
|                       |   | Reset    | 120 ±10°C<br>Fan motor restart                          |            |            |
| Compressor protection | Thermal protection program (Compressor temp.)                             | Activate | 108°C<br>Compressor stop                                |            |            |
|                       |   | Reset    | After 3 minutes, and 80°C or less<br>Compressor restart |            |            |
|                       | Thermal protection program (Discharge temp.)                              | Activate | 110°C<br>Compressor stop                                |            |            |
|                       |   | Reset    | After 7 minutes<br>Compressor restart                   |            |            |
|                       | Thermal protection program (Outdoor temp.)<br>(Only in COOL and DRY mode) | Activate | -15°C<br>Compressor stop                                |            |            |
|                       |   | Reset    | -10°C<br>Compressor restart                             |            |            |

\*PCB: Printed Circuit Board

## 12. Accessories

### 12-1. Models: ROH09KHCBN, ROH12KHCBN, and ROH14KHCBN

| Part name           | Exterior  | Qty | Part name | Exterior | Qty |
|---------------------|---|-----|-----------|----------|-----|
| Installation manual |  | 1   |           |          |     |