
# Universal ON/OFF Unit Technical Manual -50Hz/R410a

A/1/LCAC/1/TM/1.0/201111

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R410A 50Hz Universal Outdoor series

# PART 1.General Information

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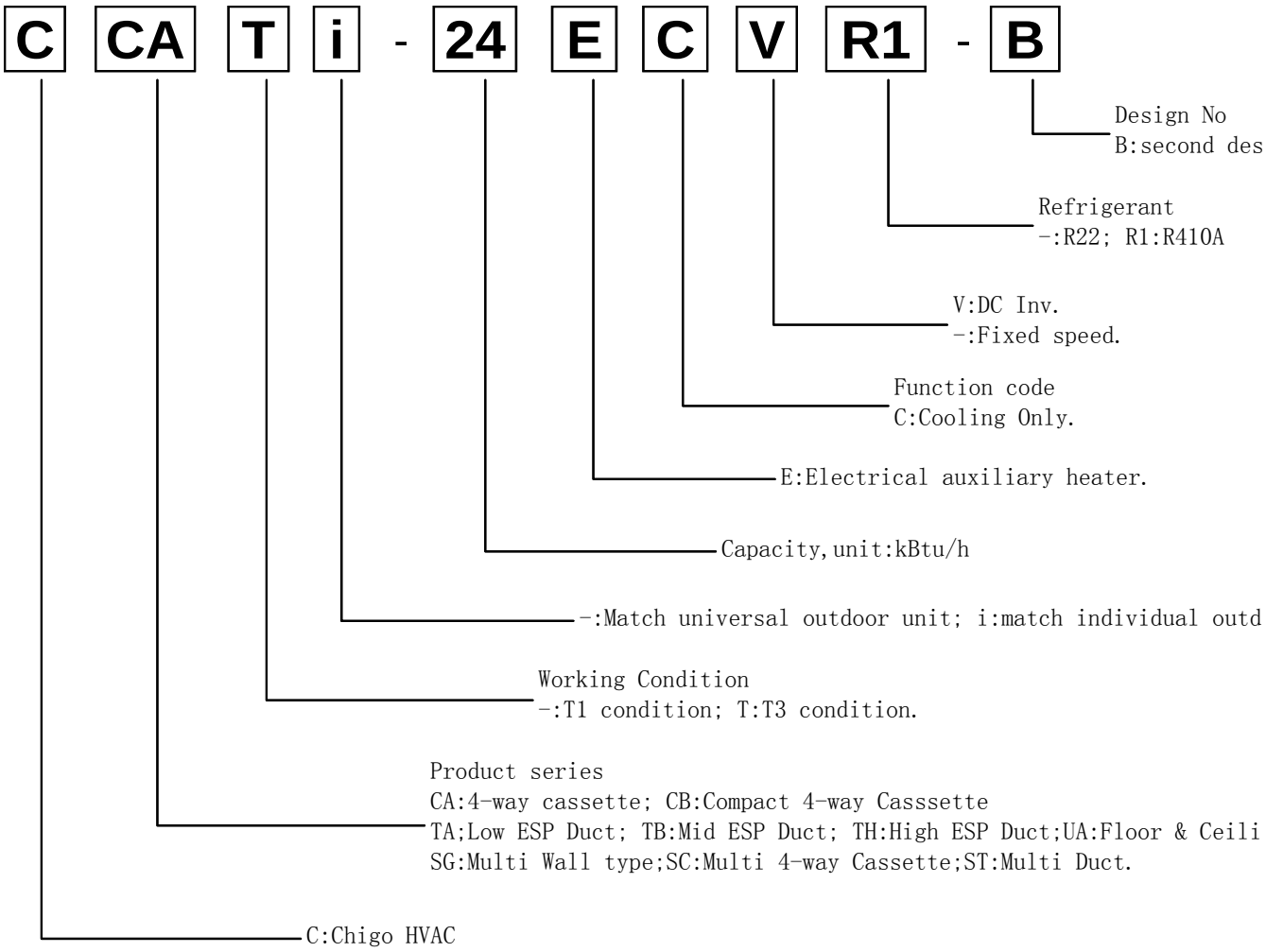
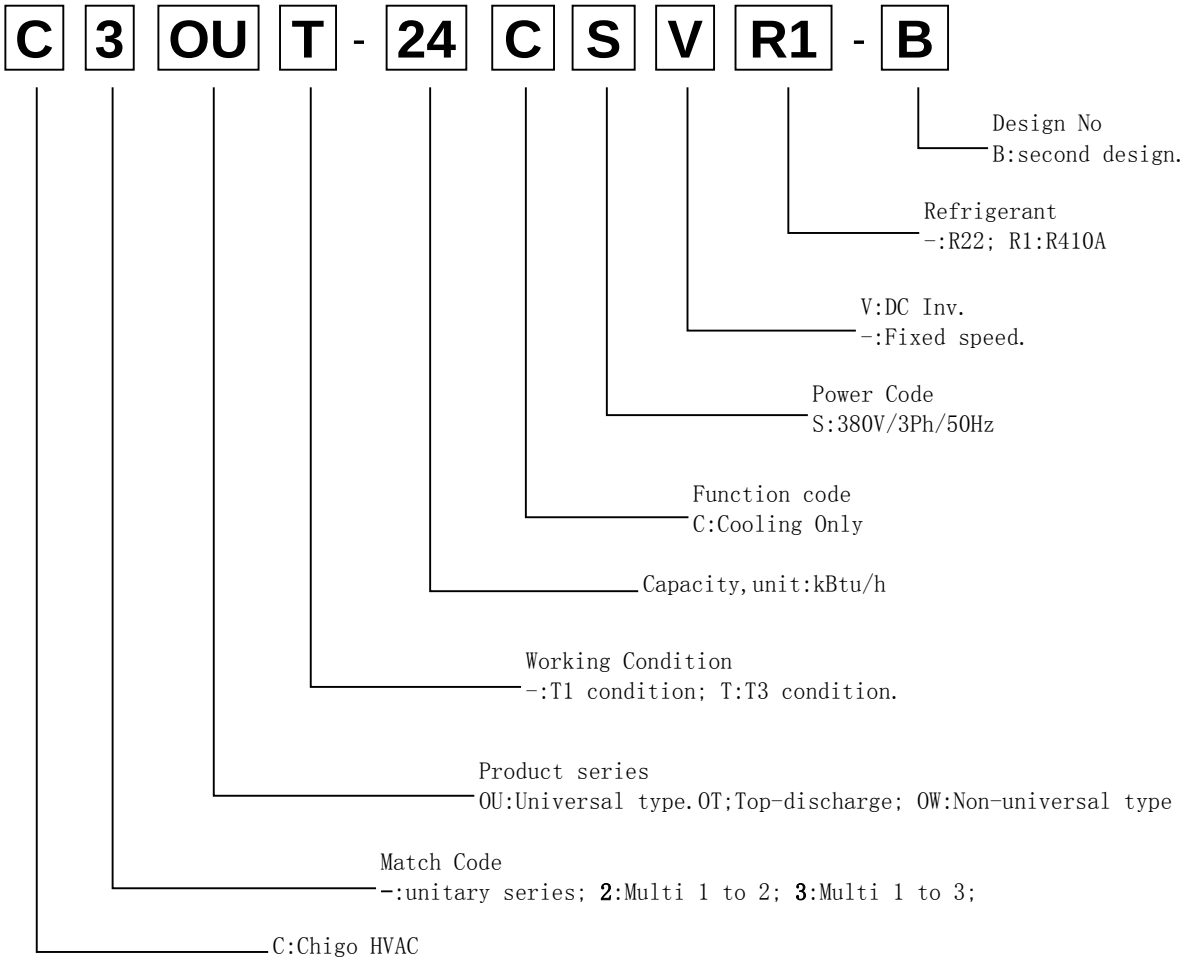
# 1.Nomenclature

## 1.1. Indoor unit



## 1.2. Outdoor unit



# 2.Model Names of Indoor/Outdoor Units

## 2.1. Indoor Units

| Model name | Dimension (W×H×D) (mm) | Net/Gross weight(kg) | Power supply |
|---|---|---|---|
| CCB-18HR1 | 580×275×580 | 25/27 | 220~240V-1Ph-50Hz |
| CCA-18HR1 | 840×230×840 | 26/32 | 220~240V-1Ph-50Hz |
| CCA-24HR1 | 840×230×840 | 28/32 | 220~240V-1Ph-50Hz |
| CCA-36HR1 | 840×285×840 | 31/35 | 220~240V-1Ph-50Hz |
| CCA-48HR1 | 840×285×840 | 31/35 | 220~240V-1Ph-50Hz |
| CCA-60HR1 | 840×285×840 | 31/35 | 220~240V-1Ph-50Hz |
| | | | |
| CTA-18HR1 | 1204×181×510 | 21/25 | 220~240V-1Ph-50Hz |
| CTA-24HR1 | 1532×181×510 | 26/30 | 220~240V-1Ph-50Hz |
| CTB-18HR1 | 1189×260×663 | 32/36 | 220~240V-1Ph-50Hz |
| CTB-24HR1 | 1189×260×663 | 32/36 | 220~240V-1Ph-50Hz |
| CTB-36HR1 | 1425×260×663 | 44/48 | 220~240V-1Ph-50Hz |
| CTB-48HR1 | 1425×260×663 | 44/48 | 220~240V-1Ph-50Hz |
| CTB-48HR1-B | 1200×364×625 | 60/64 | 220~240V-1Ph-50Hz |
| CTB-60HR1-B | 1200×364×625 | 60/64 | 220~240V-1Ph-50Hz |
| CTB-60HR1 | 1425×260×663 | 44/48 | 220~240V-1Ph-50Hz |
| CTH-48HR1 | 1200×364×625 | 60/64 | 220~240V-1Ph-50Hz |
| CTH-60HR1 | 1200×364×625 | 60/64 | 220~240V-1Ph-50Hz |
| | | | |
| CUA-18HR1 | 880×635×203 | 30/32 | 220~240V-1Ph-50Hz |
| CUA-24HR1 | 1245×680×247 | 35/41 | 220~240V-1Ph-50Hz |
| CUA-36HR1 | 1245×680×247 | 37/43 | 220~240V-1Ph-50Hz |
| CUA-48HR1 | 1670×680×247 | 47/54 | 220~240V-1Ph-50Hz |
| CUA-60HR1 | 1670×680×247 | 47/54 | 220~240V-1Ph-50Hz |
| | | | |

## 2.2. Outdoor Units

| Model name | Dimension (W×H×D) (mm) | Net/Gross weight(kg) | Power supply |
|---|---|---|---|
| COU-18HR1 | 815×286×535 | 49/51 | 220~240V-1Ph-50Hz |
| COU-24HR1 | 930×370×700 | 58/61 | 220~240V-1Ph-50Hz |
| COU-36HR1 | 1070×400×995 | 92/100 | 220~240V-1Ph-50Hz |
| COU-36HSR1 | 1070×400×995 | 92/100 | 380~415V-3Ph-50Hz |
| COU-48HSR1 | 911×400×1335 | 96/107 | 380~415V-3Ph-50Hz |
| COU-60HSR1 | 911×400×1335 | 96/107 | 380~415V-3Ph-50Hz |

# 3.External Appearance

## 3.1. Indoor unit

| | |
|---|---|
| **4-way Cassette**<br>  | **4-way cassette (Compact type)**<br>  |
| **Low ESP Duct**<br>  | **Middle ESP Duct**<br>  |
| **High ESP Duct（CTB-48HR1-B,CTB-60HR1-B）**<br>  | **High ESP Duct**<br>  |
| **Floor & Ceiling(COU-18HR1)**<br>  | **Floor & Ceiling**<br>  |

## 3.2.Outdoor unit

| COU-18HR1 | COU-24HR1 |
|---|---|
|  |  |
| **COU-36HR1,COU-36HSR1** | **COU-48HSR1,COU-60HSR1** |
|  |  |

# 4.Features

4.1 High quality coils
The coil is constructed of advanced inner grooved copper tube and aluminum fins.
4.2 Low operation sound level: Well-known stable and quiet running fan motor.
4.3 Well-known compressor, Sanyo & Hitachi.
4.4 Compact design: Smaller dimension and larger stuffing capacity.
4.5 Universal outdoor unit design.
4.6 R410A environment friendly refrigerant.
4.7 CE certification, RoHS certification.

# Part 2 Indoor Unit

# 4-Way Cassette Type

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# 1. Features

1.1 Brand-new panel design
Simple, featly and voguish appearance suit for different requirements, it's mostly used for office, shopping center, restaurant, meeting room and etc.
18kBtu/h, compact type, 650mm×650mm.
18kBtu~60kBtu/h, standard type, 950mm×950mm.
1.2 Ultra-thin body design, the min. height is only 230mm, save installation space.
1.3 4-way air flow, cold air can reach each corner of the room, providing a stable and comfortable environment.
1.4 Intelligent auto-swing function, three modes for choice.
1.5 3 fan speed， meet for different requirement.
1.6 Three-dimensional centrifugal fan design.
1.7 Energy saving and healthy, adopting hydrophilic aluminum fins increasing heat-exchange.
1.8 Easy and convenient installation and maintenance, washable filter design.
1.9 Built-in water pump, water head up to 800mm (Compact type, 750mm).
1.10 Fire resistance design, the E-box with galvanized steel built-in body easy for maintenance.
1.11 Fresh air intake.
1.12 Multi protection and auto-restart function.
1.13 Standard for wireless controller; option for wired controller.

# 2.Specification

| Model | | | CCB-18HR1 | CCA-18HR1 | CCA-24HR1 |
|---|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 18000 | 18000 | 24000 |
| | | KW | 5.3 | 5.3 | 7.1 |
| | Input | W | 85 | 64 | 120 |
| | Rated current | A | 0.39 | 0.29 | 0.55 |
| | EER | W/W | 2.67 | 2.70 | 2.82 |
| Heating | Capacity | Btu/h | 19800 | 19800 | 26400 |
| | | KW | 5.8 | 5.8 | 7.8 |
| | Input | W | 85 | 64 | 120 |
| | Rated current | A | 0.39 | 0.29 | 0.55 |
| | COP | W/W | 3.27 | 3.31 | 3.51 |
| Indoor fan motor | Model | | YDK-35T-41 | YDK-35Q-8P3 | YDK-55T-6 |
| | Input | W | 85 | 64 | 120 |
| | Capacitor | μF | 2.5 | 2.5 | 3 |
| | Speed(Hi/Med/Lo) | r/min | 1080/950/830 | 480/430/380 | 680/570/465 |
| Indoor coil | Number of rows | | 2 | 2 | 2 |
| | Tube pitch x row pitch | mm | 21×12.7 | 21×12.7 | 21×12.7 |
| | Fin spacing | mm | 1.55 | 1.45 | 1.45 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ7 | Φ7 | Φ7 |
| | | | inner grooved | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 1137×210×25.4 | 1791×168×25.4 | 1791×168×25.4 |
| | Number of circuits | | 5 | 8 | 8 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 700/580/480 | 810/720/640 | 1100/920/750 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 45/42/40 | 39/36/35 | 44/41/39 |
| Indoor unit | Dimension(W×H×D) | Body(mm) | 580×275×580 | 840×230×840 | 840×230×840 |
| | | Panel(mm) | 650×30×650 | 950×50×950 | 950×50×950 |
| | Packing(W×H×D) | Body(mm) | 745×375×675 | 920×310×920 | 920×310×920 |
| | | Panel(mm) | 750×95×750 | 1030×105×1030 | 1030×105×1030 |
| | Net/Gross weight | Body(Kg) | 25/27 | 26/32 | 28/32 |
| | | Panel(Kg) | 4/5 | 5/7 | 5/7 |
| Refrigerant type | | | R410A | R410A | R410A |
| Refrigerant piping | Liquid side/ Gas side | mm | Φ6.35/Φ12.7 | Φ6.35/Φ12.7 | Φ9.52/Φ15.88 |
| Drainage pipe | | mm | 25 | 25 | 25 |
| Connection wiring | Power Supply | | From indoor unit | From indoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 2.5 | 2.5 | 1.0 |
| | Signal wiring | $mm^2$ | 1.5 | 1.5 | 0.75 |
| Controller | | | Standard for remote controller(wired controller for option) | | |
| Operation temp | | °C | 16～32 | 16～32 | 16～32 |
| Ambient temp | | °C | -7～43 | -7～43 | -7～43 |
| Application area | | $m^2$ | 20-35 | 20-35 | 28-50 |
| Stuffing Quantity(20'/40'/40'HQ) | | | 120/240/270 | 75/155/170 | 75/155/170 |

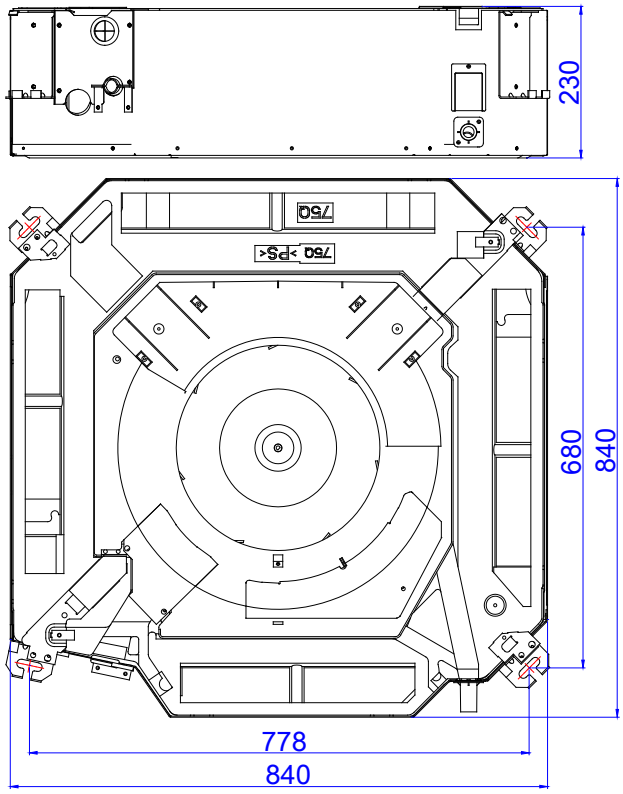
**Notes:** 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

| Model | | | CCA-36HR1 | CCA-48HR1 | CCA-60HR1 |
|---|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 36000 | 48000 | 60000 |
| | | KW | 10.5 | 14 | 16 |
| | Input | W | 160 | 180 | 180 |
| | Rated current | A | 0.73 | 0.82 | 0.82 |
| | EER | W/W | 2.71 | 2.70 | 2.72 |
| Heating | Capacity | Btu/h | 39600 | 52800 | 66000 |
| | | KW | 11.5 | 15.4 | 16.6 |
| | Input | W | 160 | 180 | 180 |
| | Rated current | A | 0.73 | 0.82 | 0.82 |
| | COP | W/W | 3.31 | 2.92 | 2.78 |
| Indoor fan motor | Model | | YDK-75T-6 | YDK-75T-6P3-1 | YDK-75T-6P3-1 |
| | Input | W | 160 | 180 | 180 |
| | Capacitor | μF | 4 | 5 | 5 |
| | Speed(Hi/Med/Lo) | r/min | 760/680/580 | 850/750/650 | 850/750/650 |
| Indoor coil | Number of rows | | 2 | 2 | 2 |
| | Tube pitch x row pitch | mm | 21×12.7 | 21×12.7 | 20×17.32 |
| | Fin spacing | mm | 1.45 | 1.45 | 1.5 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ7 | Φ7 | Φ7.94 |
| | | | inner grooved | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 1791×252×25.4 | 2005×252×25.4 | 1929×252×34.64 |
| | Number of circuits | | 8 | 8 | 8 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 1600/1300/1100 | 1900/1550/1300 | 1900/1550/1300 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 47/44/42 | 48/47/44 | 48/47/44 |
| Indoor unit | Dimension(W×H×D) | Body(mm) | 840×285×840 | 840×285×840 | 840×285×840 |
| | | Panel(mm) | 950×50×950 | 950×50×950 | 950×50×950 |
| | Packing(W×H×D) | Body(mm) | 920×375×920 | 920×375×920 | 920×375×920 |
| | | Panel(mm) | 1030×105×1030 | 1030×105×1030 | 1030×105×1030 |
| | Net/Gross weight | Body(Kg) | 31/35 | 31/35 | 31/35 |
| | | Panel(Kg) | 5/7 | 5/7 | 5/7 |
| Refrigerant type | | | R410A | R410A | R410A |
| Refrigerant piping | Liquid side/Gas side | mm | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 |
| Drainage pipe | | mm | 25 | 25 | 25 |
| Connection wiring | Power Supply | | From outdoor unit | From outdoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 1.0 | 1.0 | 1.0 |
| | Signal wiring | $mm^2$ | 0.75 | 0.75 | 0.75 |
| Controller | | | Standard for remote controller(wired controller for option) | | |
| Operation temp | | °C | 16～32 | 16～32 | 16～32 |
| Ambient temp | | °C | -7～43 | -7～43 | -7～43 |
| Application area | | $m^2$ | 40-70 | 55~95 | 60~105 |
| Stuffing Quantity(20'/40'/40'HQ) | | | 65/130/150 | 65/130/150 | 65/130/150 |

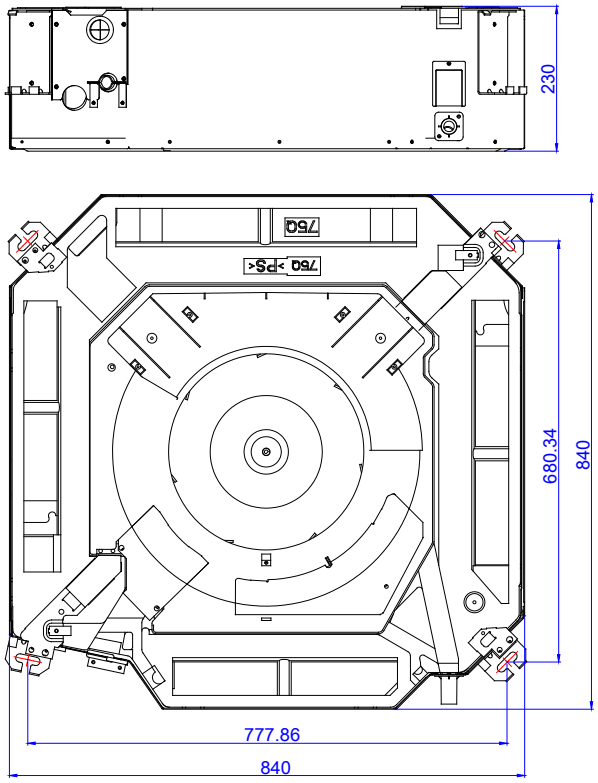
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

# 3.Dimension

## 3.1 CCB-18HR1

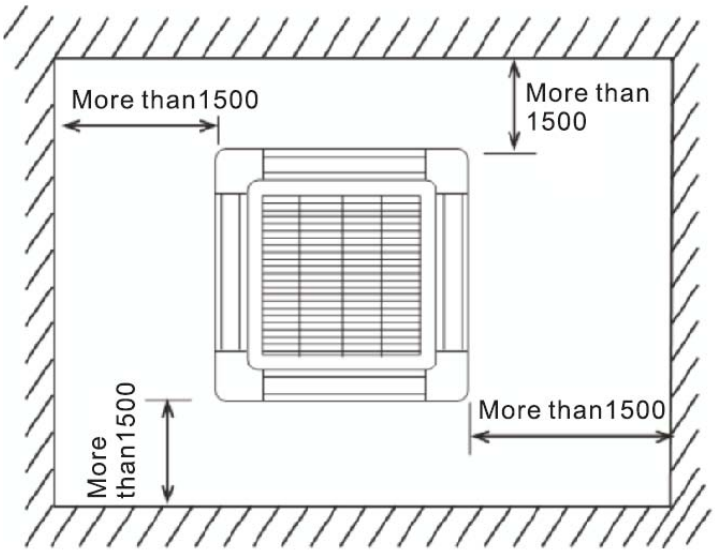



## 3.2 CCA-18HR1,CCA-24HR1,CCA-36HR1,CCA-48HR1,CCA-60HR1



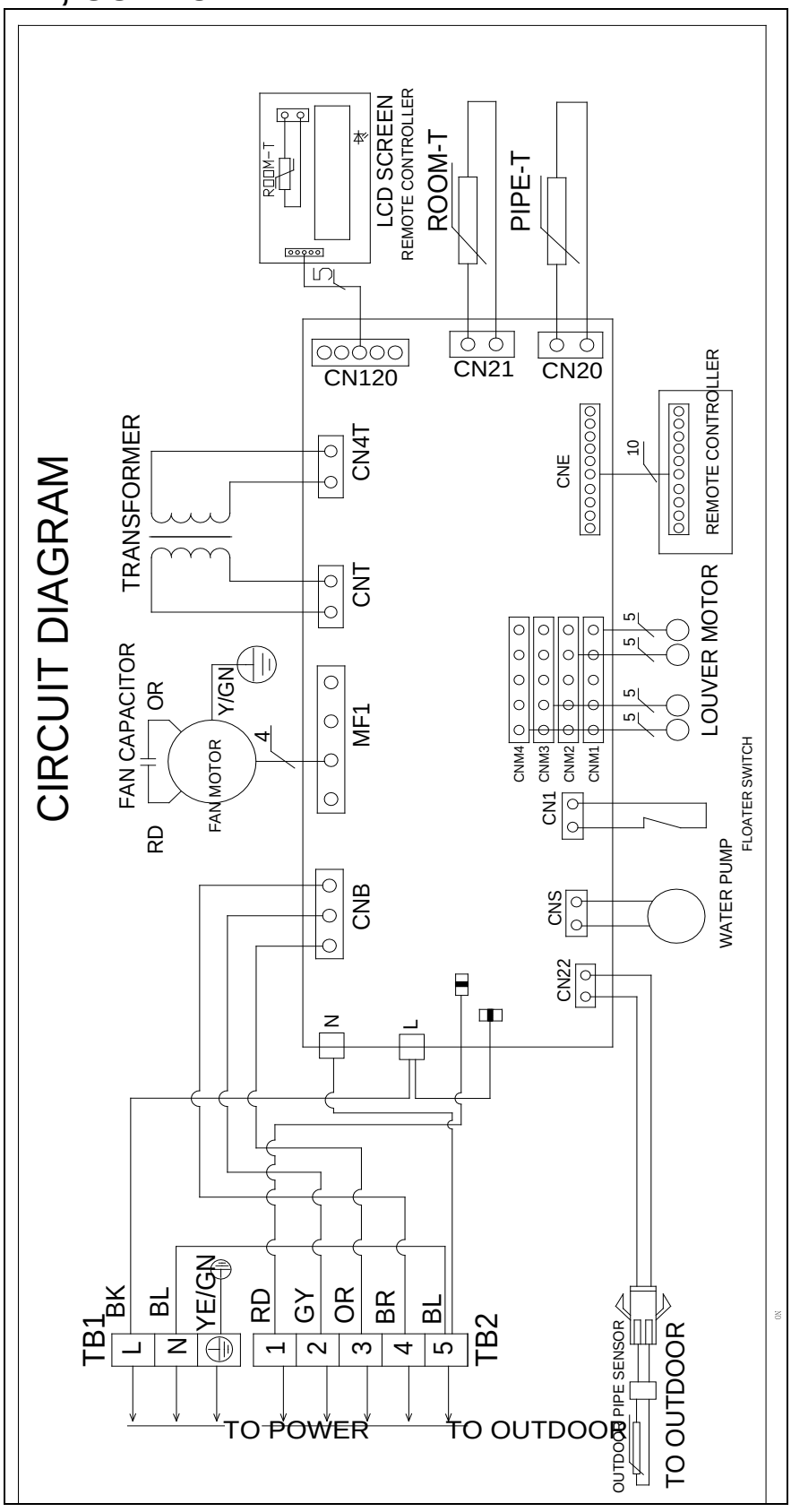
# 4. Service Space

The indoor unit should be installed in a location that meets the following requirements:
4.1 There is enough interspace for installation and maintenance.
4.2 The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
4.3 The outlet and the inlet are not impeded, and the influence of external air is the least.
4.4 The air flow can reach throughout the room.
4.5 The connecting pipe and drainpipe could be extracted out easily.
4.6 There is no direct radiation from heaters.

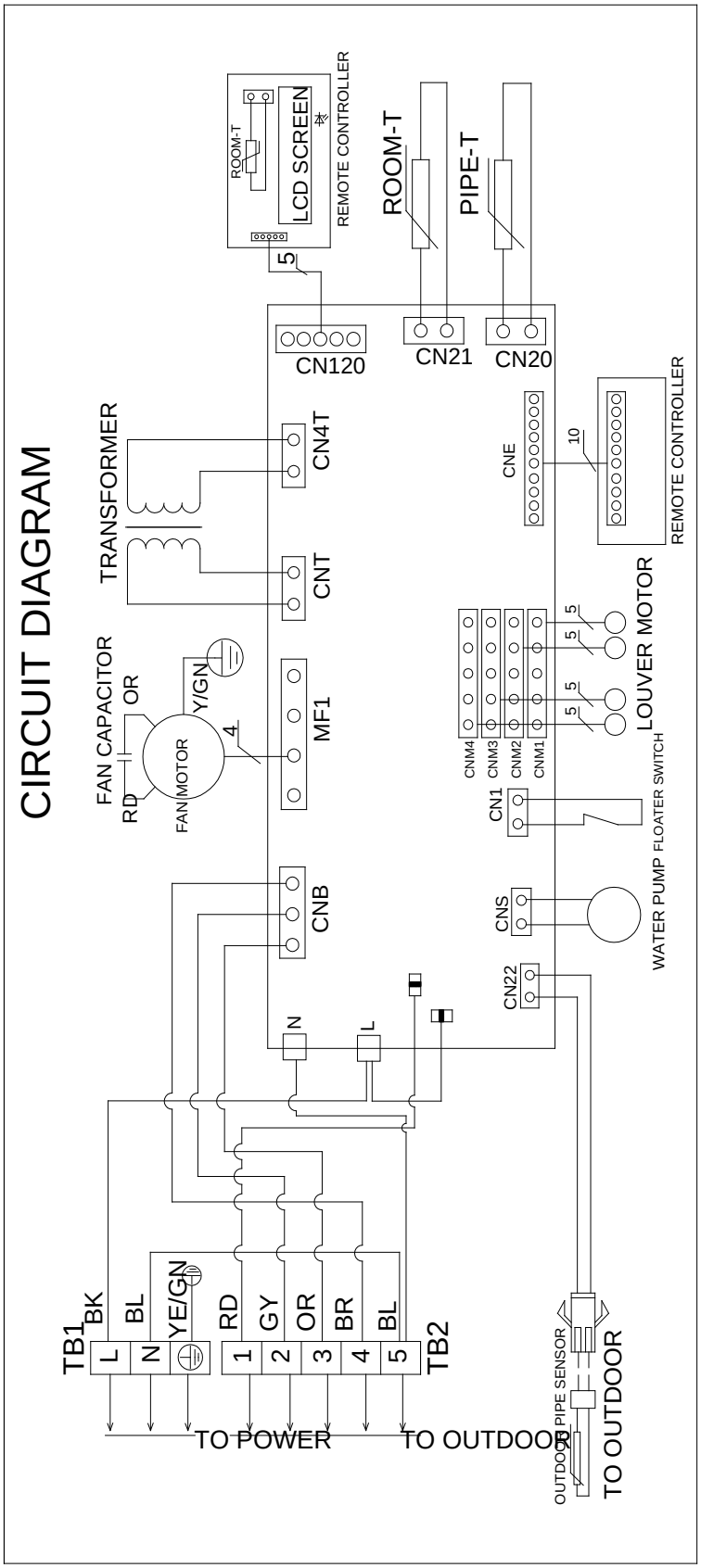


# 5. Wiring Diagrams

## 5.1 CCB-18HR1, CCA-18HR1



## 5.2 CCA-24HR1, CCA-36HR1, CCA-48HR1, CCA-60HR1



# 6. Capacity Table

## Cooling

## 6.1 CCA-18HR1

| MODEL | | CCA-18HR1 | | | |
|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | |
| Indoor Conditions | | 21ºC | 28ºC | 35ºC | 43ºC |
| 21ºC D 15ºC W | Total capacity kW | 5.05 | 4.74 | 4.39 | 4.15 |
| | Sensitive capacity kW | 4.03 | 3.79 | 3.51 | 3.33 |
| | Input kW. | 1.1 | 1.35 | 1.56 | 1.81 |
| 24ºC D 17ºC W | Total capacity kW | 5.51 | 5.19 | 4.82 | 4.56 |
| | Sensitive capacity kW | 4.42 | 4.14 | 3.85 | 3.65 |
| | Input kW. | 1.156 | 1.42 | 1.66 | 1.9 |
| 27ºC D 19ºC W | Total capacity kW | 6.03 | 5.3 | 5.24 | 4.95 |
| | Sensitive capacity kW | 5.02 | 4.51 | 4.18 | 3.95 |
| | Input kW. | 1.22 | 1.78 | 1.72 | 2.01 |
| 29ºC D 19ºC W | Total capacity kW | 6.49 | 5.84 | 5.51 | 5.28 |
| | Sensitive capacity kW | 5.18 | 4.66 | 4.41 | 4.22 |
| | Input kW. | 1.31 | 1.75 | 1.98 | 2.21 |
| 32ºC D 23ºC W | Total capacity kW | 6.93 | 6.04 | 5.79 | 5.71 |
| | Sensitive capacity kW | 5.52 | 4.82 | 4.63 | 4.5 |
| | Input kW. | 1.4 | 2 | 2.21 | 2.3 |

## 6.2 CCB-18HR1

| MODEL | | CCB-18HR1 | | | |
|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | |
| Indoor Conditions | | 21ºC | 28ºC | 35ºC | 43ºC |
| 21ºC D 15ºC W | Total capacity kW | 5.2 | 4.86 | 4.52 | 4.28 |
| | Sensitive capacity kW | 4.15 | 3.89 | 3.61 | 3.42 |
| | Input kW. | 1.18 | 1.46 | 1.69 | 1.95 |
| 24ºC D 17ºC W | Total capacity kW | 5.7 | 5.34 | 4.94 | 4.68 |
| | Sensitive capacity kW | 4.55 | 4.25 | 3.95 | 3.75 |
| | Input kW. | 1.24 | 1.53 | 1.79 | 2.06 |
| 27ºC D 19ºC W | Total capacity kW | 6.19 | 5.79 | 5.3 | 5.08 |
| | Sensitive capacity kW | 4.95 | 4.62 | 4.29 | 4.07 |
| | Input kW. | 1.31 | 1.61 | 1.8 | 2.17 |
| 29ºC D 19ºC W | Total capacity kW | 6.66 | 6.22 | 5.78 | 5.46 |
| | Sensitive capacity kW | 5.32 | 4.97 | 4.63 | 4.37 |
| | Input kW. | 1.41 | 1.74 | 2.03 | 2.33 |
| 32ºC D 23ºC W | Total capacity kW | 7.12 | 6.66 | 6.19 | 5.86 |
| | Sensitive capacity kW | 5.59 | 5.36 | 4.95 | 4.68 |
| | Input kW. | 1.51 | 1.89 | 2.17 | 2.49 |

## 6.3 CCA-24HR1

| MODEL | | CCA-24HR1 | | | |
|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | |
| Indoor Conditions | | 21ºC | 28ºC | 35ºC | 43ºC |
| 21ºC D 15ºC W | Total capacity kW | 7.29 | 6.94 | 6.61 | 6.34 |
| | Sensitive capacity kW | 5.4 | 5.34 | 5.26 | 5.32 |
| | Input kW. | 2.19 | 2.38 | 2.52 | 2.58 |
| 24ºC D 17ºC W | Total capacity kW | 7.51 | 7.16 | 6.79 | 6.37 |
| | Sensitive capacity kW | 5.62 | 5.55 | 5.51 | 5.35 |
| | Input kW. | 2.34 | 2.53 | 2.61 | 2.72 |
| 27ºC D 19ºC W | Total capacity kW | 7.66 | 7.29 | 7.10 | 6.62 |
| | Sensitive capacity kW | 5.65 | 5.58 | 5.53 | 5.4 |
| | Input kW. | 2.38 | 2.52 | 2.36 | 2.78 |
| 29ºC D 19ºC W | Total capacity kW | 7.68 | 7.35 | 7.22 | 6.63 |
| | Sensitive capacity kW | 6.45 | 6.24 | 6.21 | 6.05 |
| | Input kW. | 2.42 | 2.58 | 2.69 | 2.79 |
| 32ºC D 23ºC W | Total capacity kW | 7.78 | 7.54 | 7.36 | 6.83 |
| | Sensitive capacity kW | 6.59 | 6.53 | 6.46 | 6.33 |
| | Input kW. | 2.48 | 2.59 | 2.79 | 2.89 |

## 6.4 CCA-36HR1

| MODEL | | CCA-36HR1 | | | |
|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | |
| Indoor Conditions | | 21ºC | 28ºC | 35ºC | 43ºC |
| 21ºC D 15ºC W | Total capacity kW | 10.81 | 10.25 | 9.75 | 9.33 |
| | Sensitive capacity kW | 7.98 | 7.92 | 7.78 | 7.83 |
| | Input kW. | 3.18 | 3.43 | 3.59 | 3.68 |
| 24ºC D 17ºC W | Total capacity kW | 11.11 | 10.59 | 10.04 | 9.47 |
| | Sensitive capacity kW | 8.32 | 8.23 | 8.15 | 7.96 |
| | Input kW. | 3.34 | 3.58 | 3.73 | 3.92 |
| 27ºC D 19ºC W | Total capacity kW | 11.31 | 10.81 | 10.50 | 9.75 |
| | Sensitive capacity kW | 8.34 | 8.33 | 8.15 | 7.09 |
| | Input kW. | 3.41 | 3.63 | 3.65 | 4.01 |
| 29ºC D 19ºC W | Total capacity kW | 11.42 | 10.95 | 10.69 | 9.85 |
| | Sensitive capacity kW | 9.58 | 9.26 | 9.22 | 8.94 |
| | Input kW. | 3.39 | 3.69 | 3.83 | 4.08 |
| 32ºC D 23ºC W | Total capacity kW | 11.52 | 11.11 | 10.95 | 10.02 |
| | Sensitive capacity kW | 9.79 | 9.65 | 9.62 | 9.33 |
| | Input kW. | 3.58 | 3.73 | 4.01 | 4.16 |

## 6.5 CCA-48HR1

| MODEL | | CCA-48HR1 | | | |
|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | |
| Indoor Conditions | | 21ºC | 28ºC | 35ºC | 43ºC |
| 21ºC D 15ºC W | Total capacity kW | 14.41 | 13.71 | 13.01 | 12.43 |
| | Sensitive capacity kW | 10.65 | 10.54 | 10.39 | 10.45 |
| | Input kW. | 4.14 | 4.48 | 4.7 | 4.83 |
| 24ºC D 17ºC W | Total capacity kW | 14.83 | 14.12 | 13.43 | 12.58 |
| | Sensitive capacity kW | 11.12 | 11.01 | 10.88 | 10.56 |
| | Input kW. | 4.4 | 4.68 | 4.88 | 5.14 |
| 27ºC D 19ºC W | Total capacity kW | 15.11 | 14.41 | 14 | 13.01 |
| | Sensitive capacity kW | 11.17 | 11.09 | 10.9 | 10.65 |
| | Input kW. | 4.48 | 4.73 | 5.00 | 5.24 |
| 29ºC D 19ºC W | Total capacity kW | 15.24 | 14.54 | 14.26 | 13.15 |
| | Sensitive capacity kW | 12.8 | 12.36 | 12.25 | 11.96 |
| | Input kW. | 4.58 | 4.83 | 5.04 | 5.34 |
| 32ºC D 23ºC W | Total capacity kW | 15.38 | 14.85 | 14.57 | 13.42 |
| | Sensitive capacity kW | 13.07 | 12.9 | 12.82 | 12.48 |
| | Input kW. | 4.69 | 4.91 | 5.23 | 5.44 |

## 6.6 CCA-48HR1

| MODEL | | CCA-60HR1 | | | |
|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | |
| Indoor Conditions | | 21ºC | 28ºC | 35ºC | 43ºC |
| 21ºC D 15ºC W | Total capacity kW | 16.48 | 15.68 | 14.88 | 14.24 |
| | Sensitive capacity kW | 12.16 | 12.07 | 11.91 | 11.97 |
| | Input kW. | 4.75 | 5.14 | 5.37 | 5.54 |
| 24ºC D 17ºC W | Total capacity kW | 16.96 | 16.16 | 15.36 | 14.40 |
| | Sensitive capacity kW | 12.72 | 12.61 | 12.45 | 12.09 |
| | Input kW. | 5.03 | 5.37 | 5.60 | 5.89 |
| 27ºC D 19ºC W | Total capacity kW | 17.28 | 16.48 | 16.00 | 14.88 |
| | Sensitive capacity kW | 12.79 | 12.69 | 12.48 | 12.21 |
| | Input kW. | 5.14 | 5.43 | 5.81 | 6.00 |
| 29ºC D 19ºC W | Total capacity kW | 17.44 | 16.64 | 16.32 | 15.04 |
| | Sensitive capacity kW | 14.65 | 14.15 | 14.03 | 13.69 |
| | Input kW. | 5.26 | 5.54 | 5.77 | 6.11 |
| 32ºC D 23ºC W | Total capacity kW | 17.60 | 16.96 | 16.64 | 15.36 |
| | Sensitive capacity kW | 14.96 | 14.75 | 14.64 | 14.29 |
| | Input kW. | 5.37 | 5.60 | 6.00 | 6.23 |

# Heating

## 6.7 CCA-18HR1

| MODEL | | CCA-18HR1 | | | | |
|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 7ºC D 6ºC W | 2ºC DB 1ºC WB | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 9.85 | 6.55 | 5.73 | 4.92 | 4.59 |
| | Input kW. | 3.1 | 2.07 | 1.9 | 1.75 | 1.65 |
| 18ºC | Capacity kW | 9.23 | 6.15 | 5.39 | 4.62 | 4.31 |
| | Input kW. | 2.91 | 1.95 | 1.8 | 1.65 | 1.56 |
| 20ºC | Capacity kW | 8.54 | 5.8 | 4.99 | 4.23 | 3.99 |
| | Input kW. | 2.65 | 1.7 | 1.65 | 1.53 | 1.44 |
| 22ºC | Capacity kW | 7.85 | 5.25 | 4.59 | 3.93 | 3.68 |
| | Input kW. | 2.48 | 1.65 | 1.53 | 1.41 | 1.32 |
| 27ºC | Capacity kW | 6.84 | 4.56 | 3.99 | 3.42 | 3.2 |
| | Input kW. | 2.16 | 1.44 | 1.32 | 1.23 | 1.15 |

## 6.8 CCB-18HR1

| MODEL | | CCB-18HR1 | | | | |
|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 7ºC D 6ºC W | 2ºC DB 1ºC WB | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 10.31 | 6.85 | 6.01 | 5.15 | 4.81 |
| | Input kW. | 3.24 | 2.13 | 2.01 | 1.83 | 1.73 |
| 18ºC | Capacity kW | 9.68 | 6.44 | 5.62 | 4.84 | 4.52 |
| | Input kW. | 3.02 | 2.02 | 1.87 | 1.72 | 1.62 |
| 20ºC | Capacity kW | 8.95 | 5.8 | 5.22 | 4.46 | 4.18 |
| | Input kW. | 2.81 | 1.73 | 1.73 | 1.59 | 1.51 |
| 22ºC | Capacity kW | 8.22 | 5.27 | 4.81 | 4.12 | 3.82 |
| | Input kW. | 2.58 | 1.72 | 1.6 | 1.47 | 1.38 |
| 27ºC | Capacity kW | 7.15 | 4.78 | 4.16 | 3.56 | 3.35 |
| | Input kW. | 2.24 | 1.5 | 1.39 | 1.27 | 1.21 |

## 6.9 CCA-24HR1

| MODEL | | CCA-24HR1 | | | | |
|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 7ºC D 6ºC W | 2ºC DB 1ºC WB | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 10.25 | 8.21 | 6.78 | 6.12 | 5.76 |
| | Input kW. | 2.38 | 2.12 | 2.07 | 1.95 | 1.84 |
| 20ºC | Capacity kW | 9.95 | 7.8 | 6.38 | 5.98 | 5.51 |
| | Input kW. | 2.45 | 2.15 | 2.11 | 2.07 | 1.94 |
| 27ºC | Capacity kW | 9.34 | 7.43 | 6.01 | 5.82 | 5.18 |
| | Input kW. | 2.63 | 2.25 | 2.18 | 2.12 | 2.05 |

## 6.10 CCA-36HR1

| MODEL | | CCA-36HR1 | | | | |
|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | |
| Indoor Conditions | | 24ºC D<br>18ºC W | 7ºC D<br>6ºC W | 2ºC DB<br>1ºC WB | -5ºC D<br>-6ºC W | -7ºC D<br>-8ºC W |
| 15ºC | Capacity kW | 15.15 | 12.22 | 10.01 | 9.08 | 8.36 |
| | Input kW. | 3.62 | 3.21 | 3.03 | 2.94 | 2.71 |
| 20ºC | Capacity kW | 14.68 | 11.55 | 9.36 | 8.79 | 8.09 |
| | Input kW. | 3.95 | 3.24 | 3.15 | 3.04 | 2.96 |
| 27ºC | Capacity kW | 13.72 | 10.89 | 8.79 | 8.56 | 7.61 |
| | Input kW. | 4.45 | 3.62 | 3.53 | 3.41 | 3.15 |

## 6.11 CCA-48HR1

| MODEL | | CCA-48HR1 | | | | |
|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | |
| Indoor Conditions | | 24ºC D<br>18ºC W | 7ºC D<br>6ºC W | 2ºC DB<br>1ºC WB | -5ºC D<br>-6ºC W | -7ºC D<br>-8ºC W |
| 15ºC | Capacity kW | 19.82 | 16.02 | 13.15 | 11.92 | 11.15 |
| | Input kW. | 5.85 | 5.08 | 4.35 | 4.11 | 3.87 |
| 20ºC | Capacity kW | 19.22 | 15.4 | 12.38 | 11.56 | 10.69 |
| | Input kW. | 6.38 | 5.26 | 4.82 | 4.38 | 4.15 |
| 27ºC | Capacity kW | 18.03 | 14.35 | 11.62 | 11.32 | 10.12 |
| | Input kW. | 6.79 | 5.88 | 5.22 | 4.78 | 4.47 |

## 6.12 CCA-60HR1

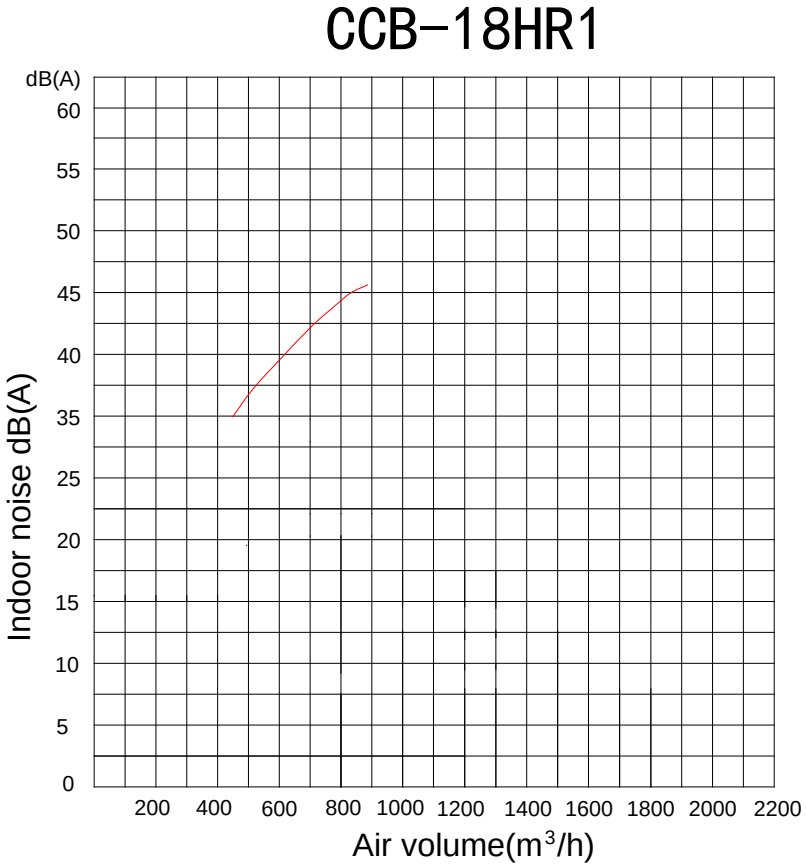
| MODEL | | CCA-60HR1 | | | | |
|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | |
| Indoor Conditions | | 24ºC D<br>18ºC W | 7ºC D<br>6ºC W | 2ºC DB<br>1ºC WB | -5ºC D<br>-6ºC W | -7ºC D<br>-8ºC W |
| 15ºC | Capacity kW | 22.66 | 18.32 | 14.98 | 13.59 | 12.72 |
| | Input kW. | 6.68 | 5.81 | 5.02 | 4.72 | 4.44 |
| 20ºC | Capacity kW | 21.96 | 17.6 | 14.12 | 13.23 | 12.21 |
| | Input kW. | 7.33 | 5.93 | 5.53 | 5.12 | 4.76 |
| 27ºC | Capacity kW | 20.56 | 16.41 | 13.24 | 12.87 | 11.52 |
| | Input kW. | 7.76 | 6.73 | 5.97 | 5.51 | 5.15 |

# 7. Electric Characteristics

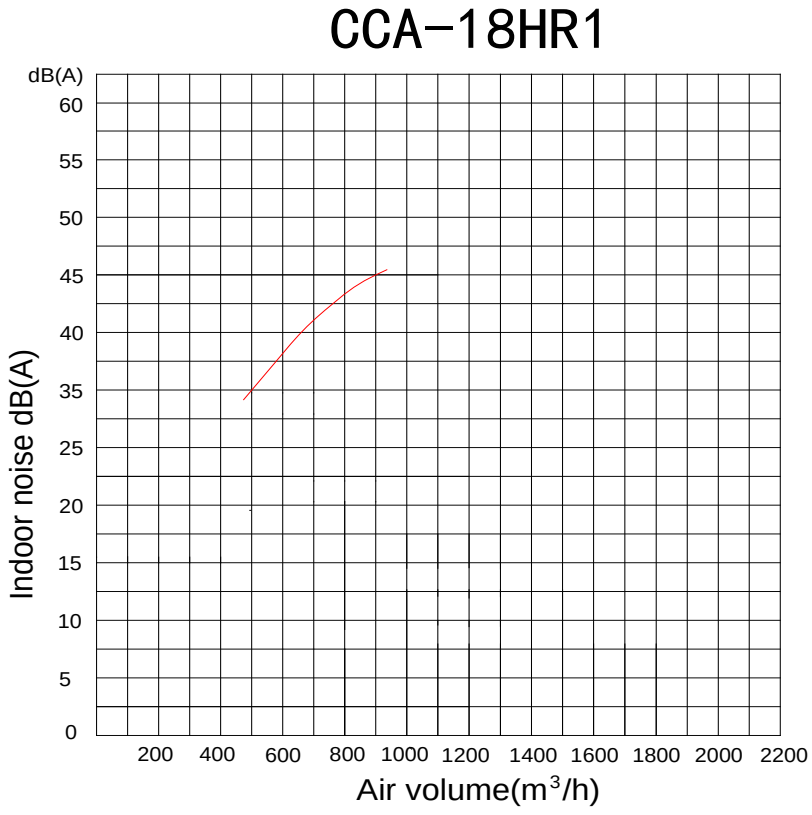
| Model | Indoor Units | | | | Indoor Fan Motor |
|---|---|---|---|---|---|
| | Hz | Voltage | Min. | Max. | kW |
| **CCB-18HR1** | 50 | 220-240V | 198V | 254V | 0.064 |
| **CCA-18HR1** | 50 | 220-240V | 198V | 254V | 0.085 |
| **CCA-24HR1** | 50 | 220-240V | 198V | 254V | 0.12 |
| **CCA-36HR1** | 50 | 220-240V | 198V | 254V | 0.16 |
| **CCA-48HR1** | 50 | 220-240V | 198V | 254V | 0.18 |
| **CCA-60HR1** | 50 | 220-240V | 198V | 254V | 0.18 |

# 8.Sound Levels

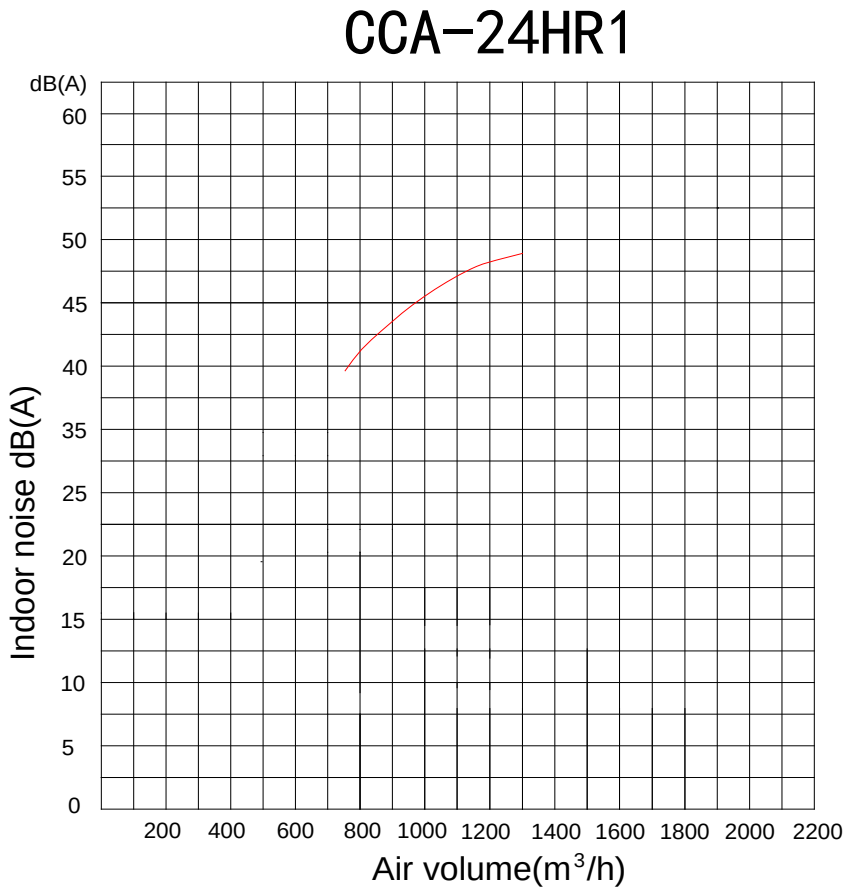
## 8.1 CCB-18HR1



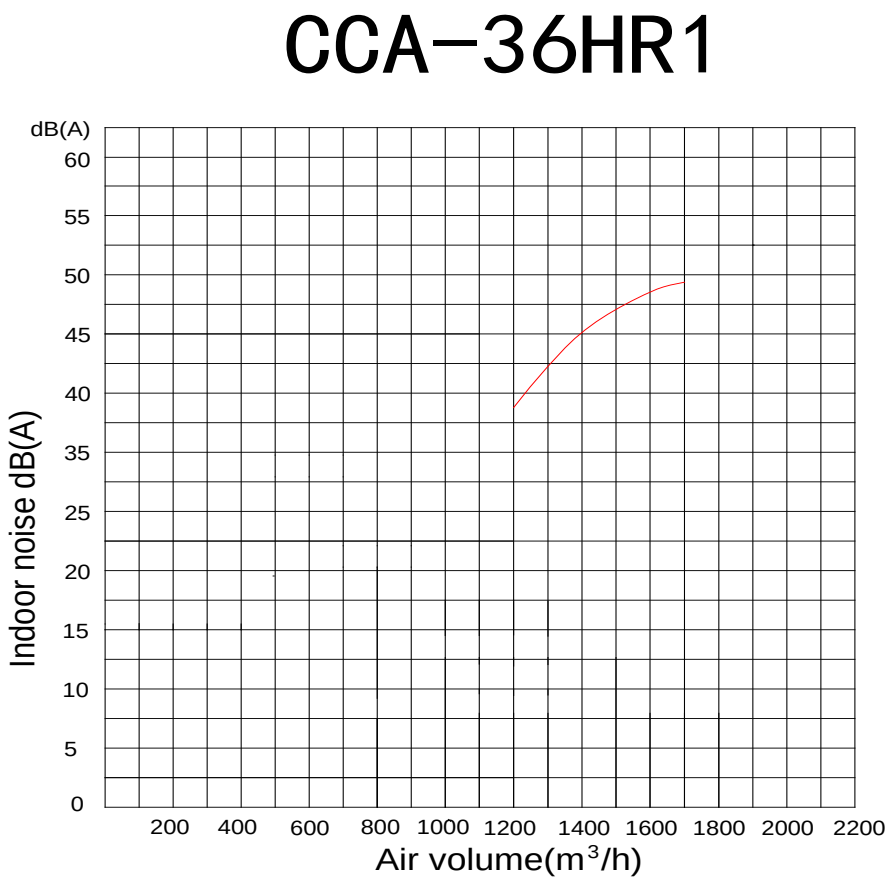

## 8.2 CCA-18HR1



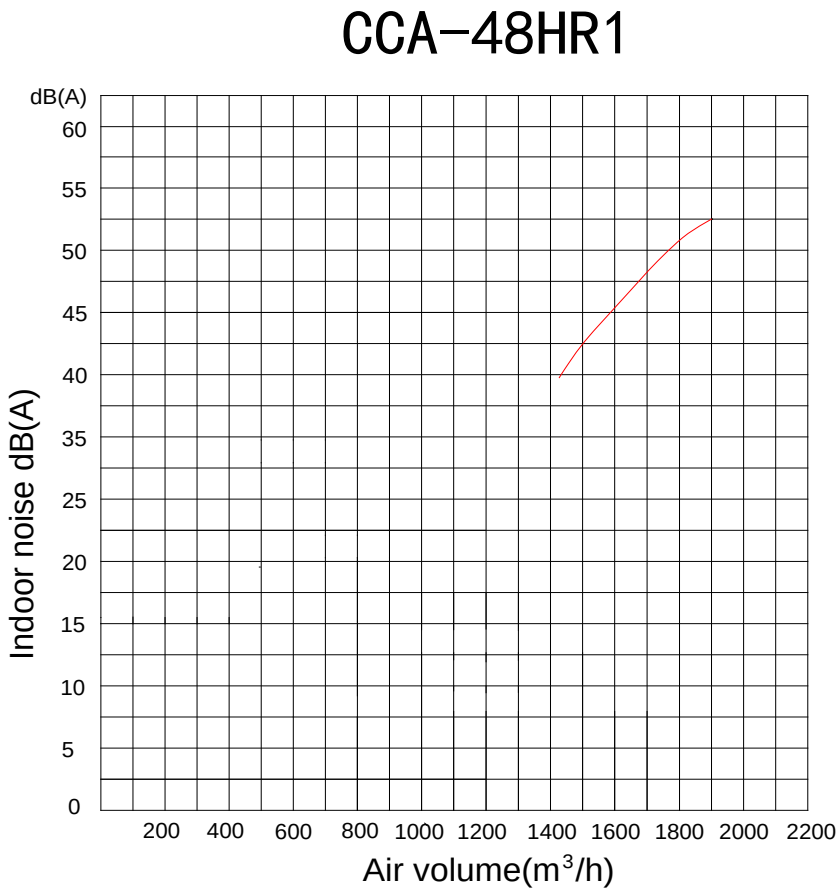
## 8.3 CCA-24HR1



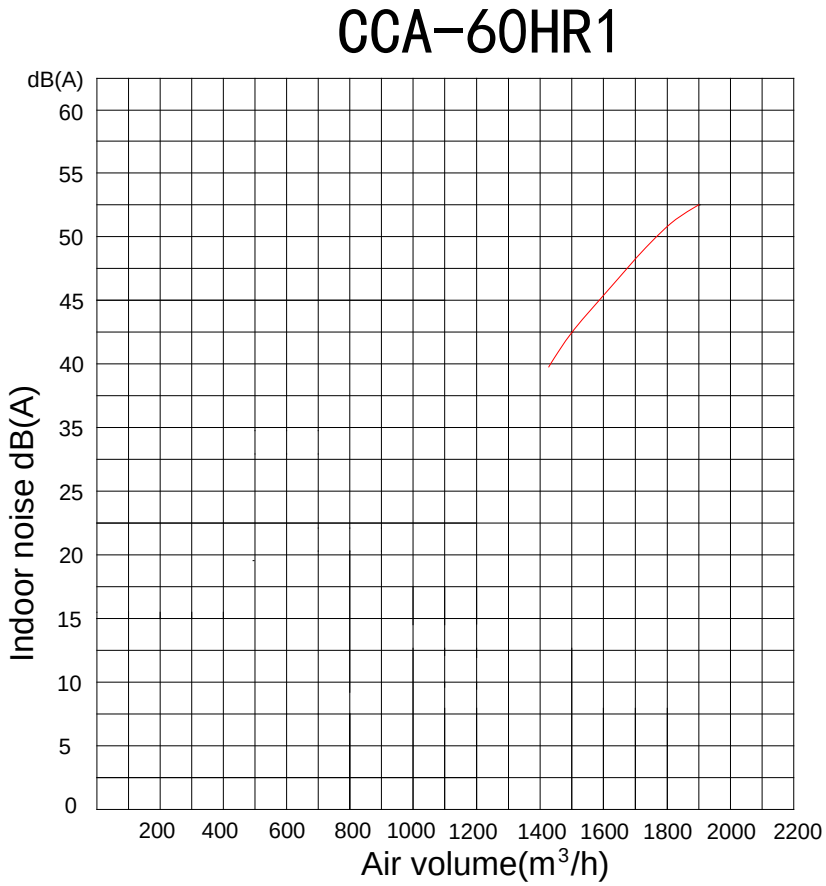

## 8.4 CCA-36HR1



## 8.5 CCA-48HR1

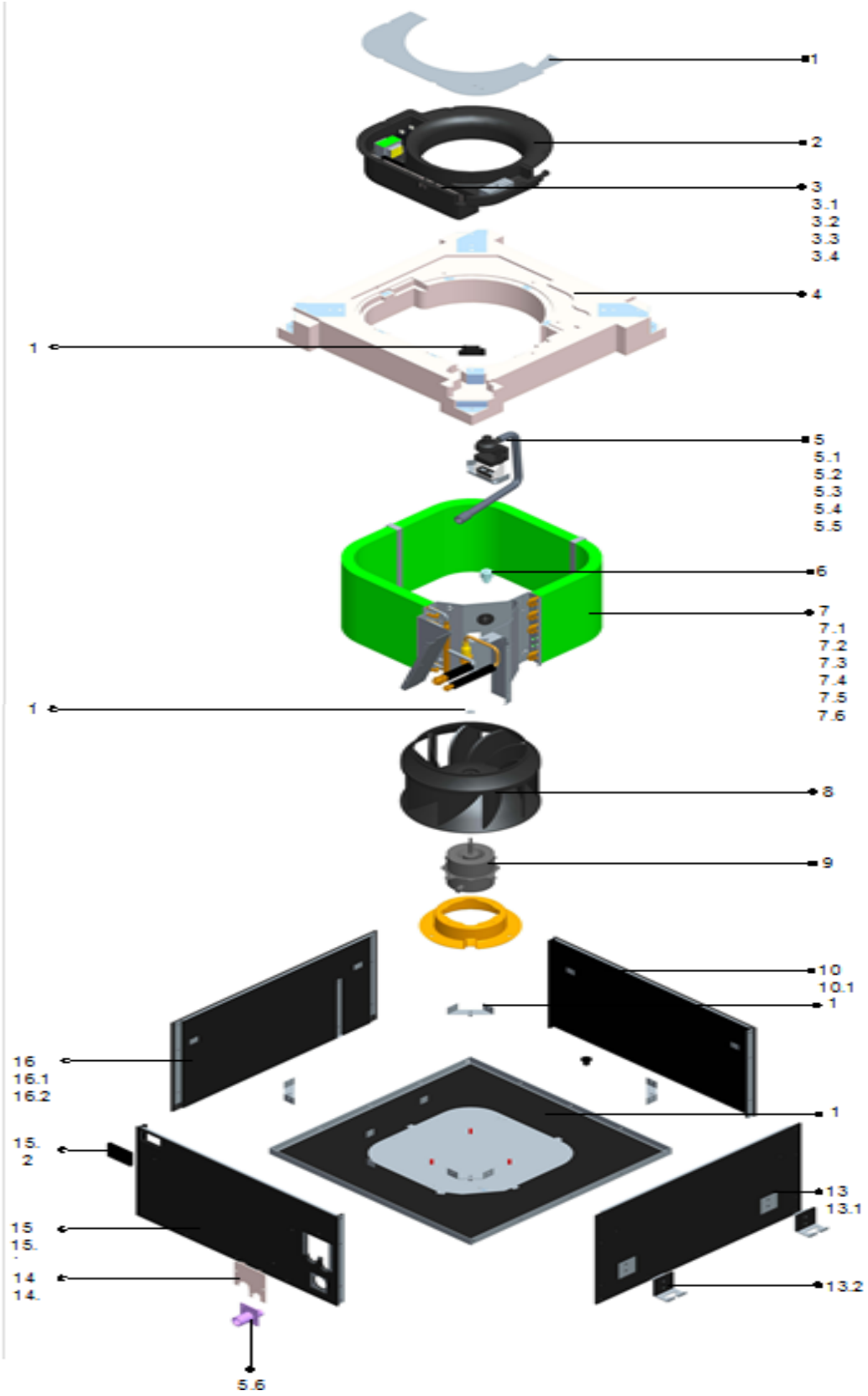



## 8.6 CCA-60HR1



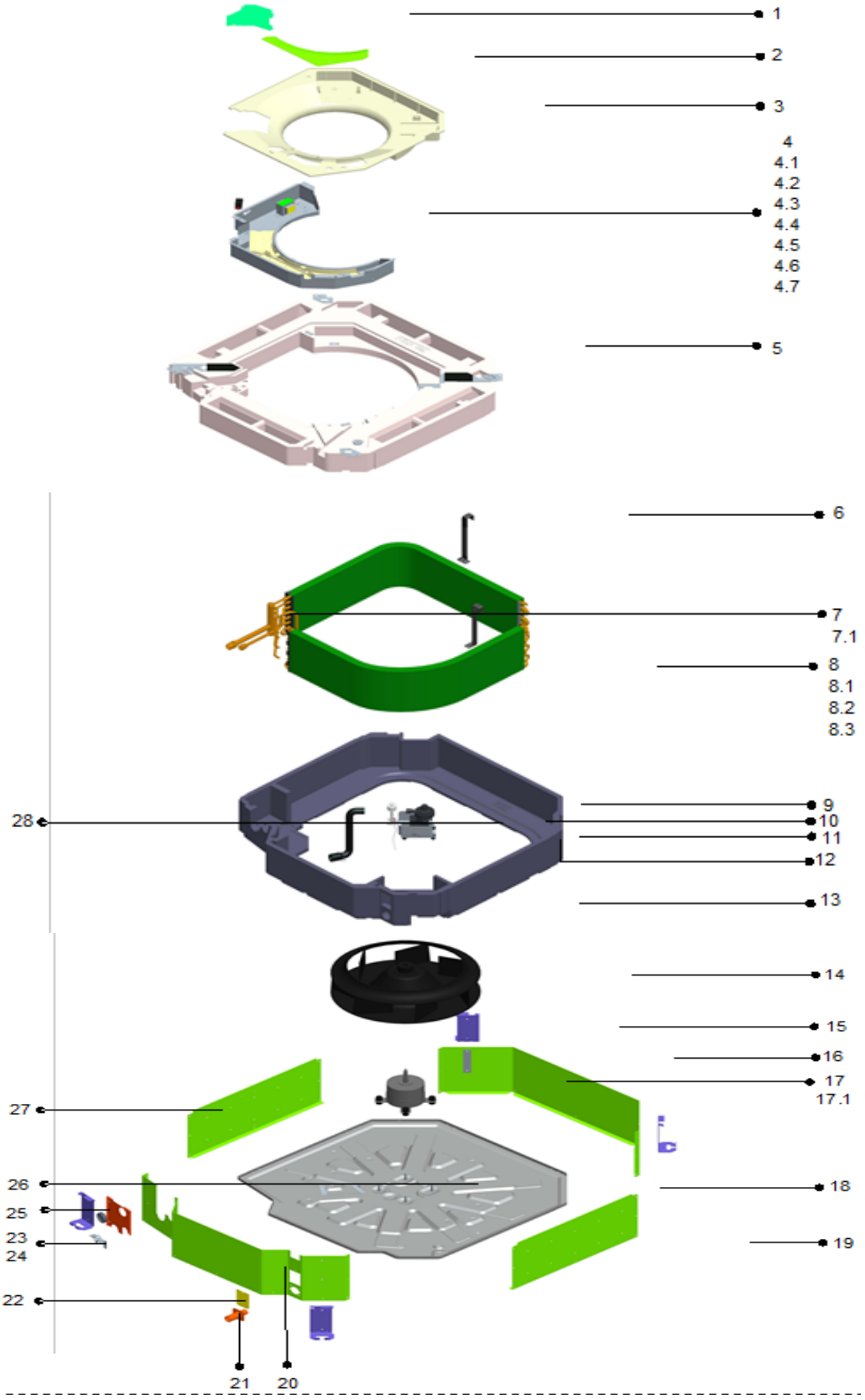
# 9.Exploded View

## 9.1 CCB-18HR1



| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | E-parts box cover assy | 1 | 7.5 | Evaporator subassembly | 1 |
| 2 | E-parts box | 1 | 8 | Centrifugal fan | 1 |
| 3 | E-parts subassembly | 1 | 9 | Indoor fan motor | 1 |
| 3.1 | Temperature sensor | 1 | 10 | Brattice IV components | 1 |
| 3.2 | Temperature sensor | 1 | 10.1 | Brattice IV | 1 |
| 3.3 | PTC transformer | 1 | 11 | Brattice fixing bar components | 4 |
| 3.4 | Terminal | 1 | 12 | Chassis components | 1 |
| 4 | Foam water pan assy (ROHS) | 1 | 12.1 | Chassis welding components | 1 |
| 5 | Water pump components | 1 | 13 | Brattice Ⅰ components | 1 |
| 5.1 | Water pump fixing plate assy | 1 | 13.1 | Brattice Ⅰ | 1 |
| 5.2 | Discharge pipe | 1 | 13.2 | Shackle | 2 |
| 5.3 | Water pump | 1 | 14 | Copper tube support panel components | 1 |
| 5.4 | Water pump gasket 2 | 1 | 14.1 | Copper tube support panel | 1 |
| 5.5 | Water pump gasket 1 components(ROHS) | 1 | 15 | Brattice Ⅱ components | 1 |
| 5.6 | Discharge joint pipe assy (ROHS) | 1 | 15.1 | Brattice Ⅱ | 1 |
| 6 | Water level switch | 1 | 15.2 | Protection rubber | 1 |
| 7 | Evaporator components | 1 | 16 | Brattice Ⅲ components | 1 |
| 7.1 | End-plate II fixing plate assy | 1 | 16.1 | Brattice Ⅰ | 1 |
| 7.2 | End-plate I fixing plate assy | 1 | 16.2 | Shackle | 2 |
| 7.3 | Inclined end-plate assy | 1 | 17 | Fan gasket | 1 |
| 7.4 | Evaperator compacting bar assy | 2 | 18 | Groove clamp assy | 1 |

## 9.2 CCA-18HR1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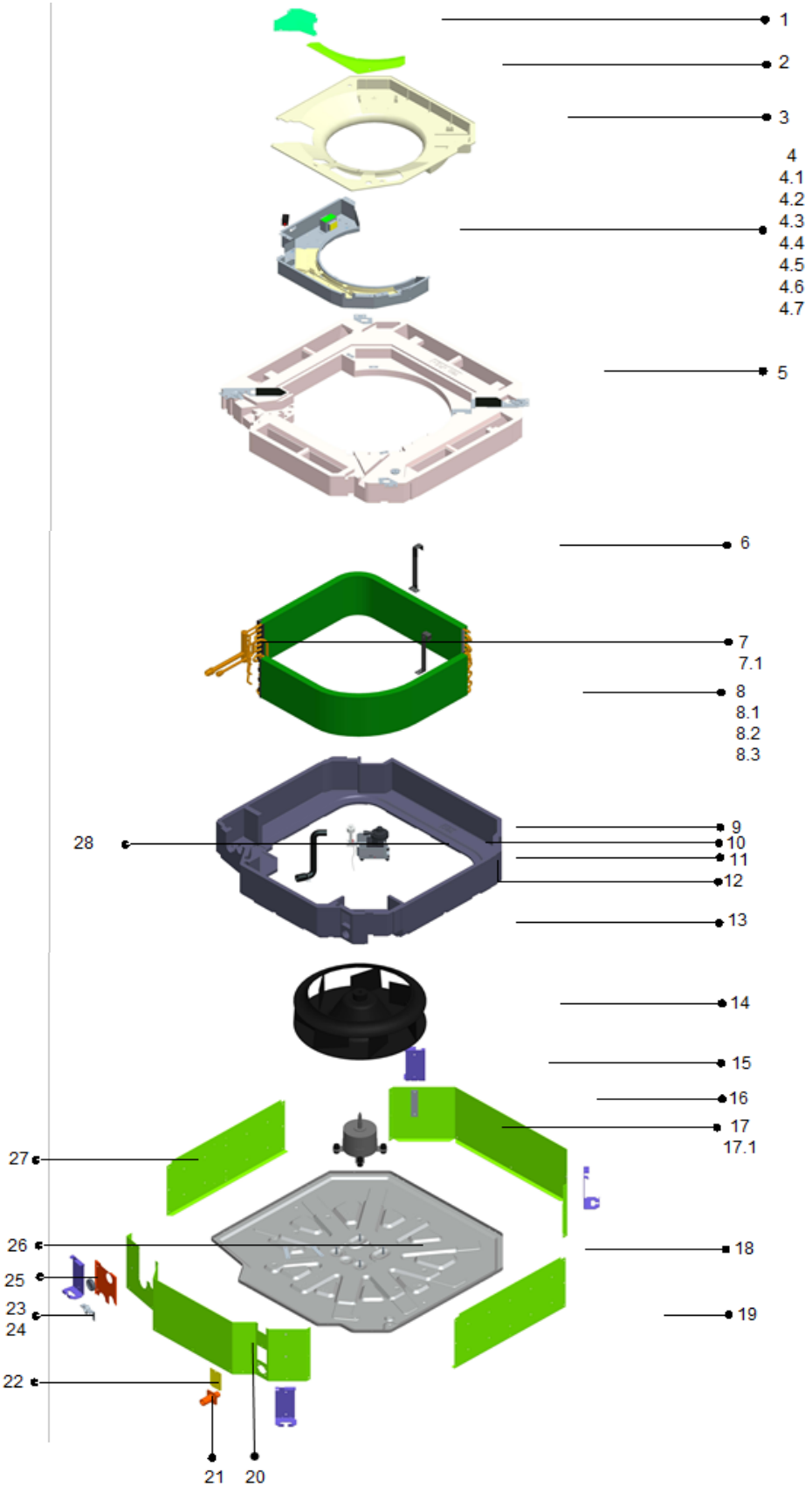
| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Warning panel | 1 | 8.3.4 | Installation tube for probe | 1 |
| 2 | Circuit diagram panel | 1 | 9 | Water pump | 1 |
| 3 | Small wind inlet guide | 1 | 10 | Liquid-level sensor | 1 |
| 4 | E-parts components | 1 | 11 | Water pump fan motor holder | 1 |
| 4.1 | E-parts box welding assy | 1 | 12 | Underlay for water pump support | 3 |
| 4.2 | No.3 groove clamp | 1 | 13 | Upper foam | 1 |
| 4.3 | (ROHS)Transformer | 1 | 14 | Centrifugal fan | 1 |
| 4.4 | Fan motor capacitor | 1 | 15 | Hanger | 4 |
| 4.5 | Terminal (DJ-75W-3PA) | 1 | 16 | Rear brattice | 1 |
| 4.6 | Terminal (DJ-75W-5PA) | 1 | 17 | Fan motor for indoor unit (YDK-55T-6) | 1 |
| 4.7 | Electric control board for indoor unit | 1 | 17.1 | Fan motor foot underlay | 1 |
| 4.8 | E-parts box | 1 | 18 | Chassis assy | 1 |
| 5 | Water pan assy | 1 | 19 | Right clapboard | 1 |
| 6 | Auxiliary fixing board for evaporator | 2 | 20 | Front brattice | 1 |
| 7 | Main fixing board assy | 1 | 21 | Discharge pipe joint | 1 |
| 7.1 | Main fixing board for evaporator | 1 | 22 | Side maintenance board for water pump | 1 |
| 8 | Evaporator components | 1 | 23 | Lower clamp | 1 |
| 8.1 | Rubber insulating pipe | 1 | 24 | Upper clamp | 1 |
| 8.2 | Insulating pipe | 1 | 25 | Valve panel | 1 |
| 8.3 | Welding parts for evaporator | 1 | 26 | Wire board | 2 |
| 8.3.1 | Collecting pipe assy for evaporator | 1 | 27 | Left clapboard | 1 |
| 8.3.2 | Distributing pipe assy for evaporator | 1 | 28 | Water outlet pipe | 1 |
| 8.3.3 | Evaporator | 1 | | | |

## 9.3 CCA-24HR1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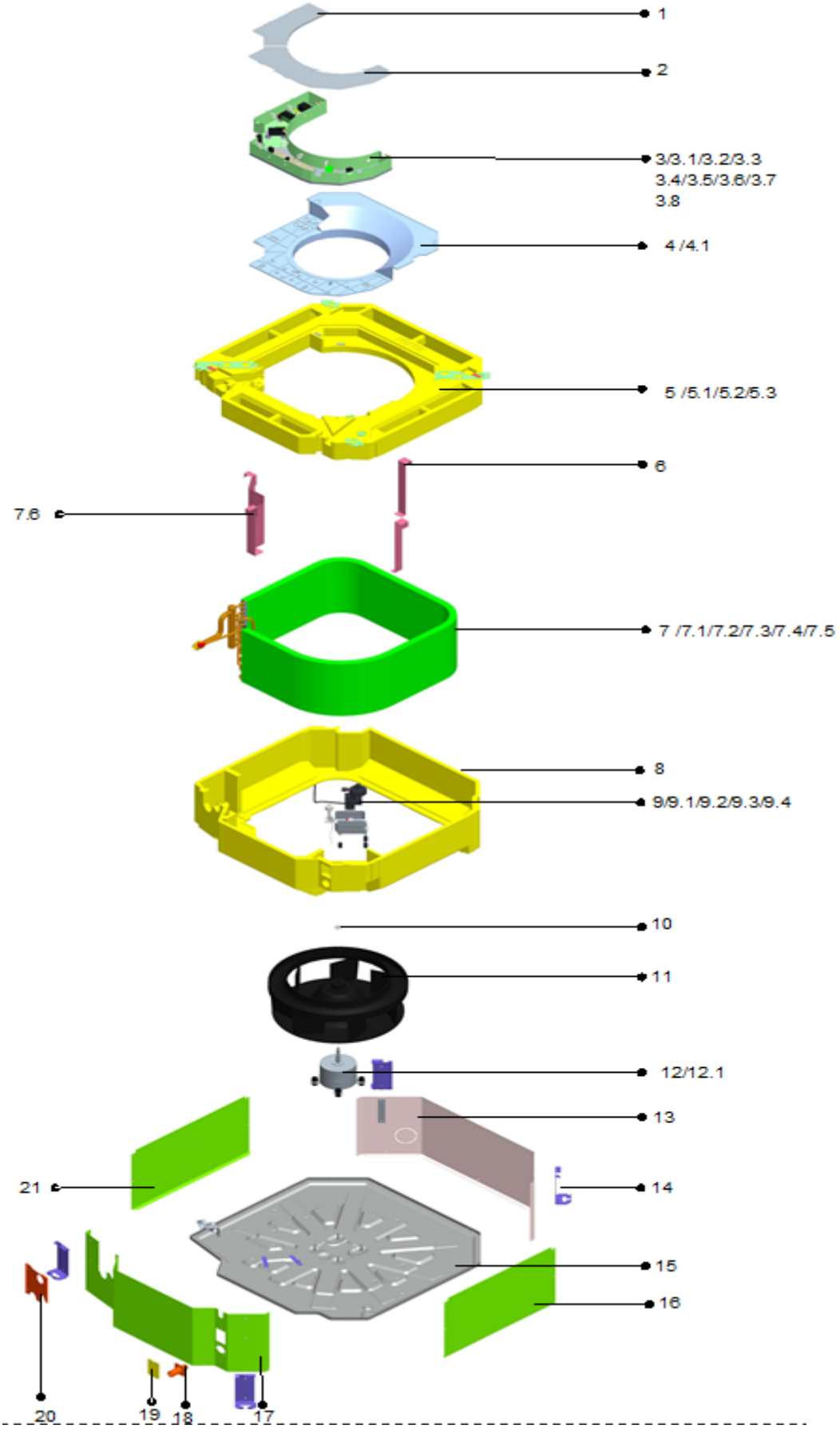
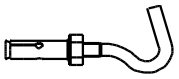
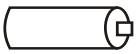
| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Warning panel | 1 | 8.3.4 | Installation tube for probe | 1 |
| 2 | Circuit diagram panel | 1 | 9 | Water pump | 1 |
| 3 | Small wind inlet guide | 1 | 10 | Liquid-level sensor | 1 |
| 4 | E-parts components | 1 | 11 | Water pump fan motor holder | 1 |
| 4.1 | E-parts box welding assy | 1 | 12 | Underlay for water pump support | 3 |
| 4.2 | No.3 groove clamp | 1 | 13 | Upper foam | 1 |
| 4.3 | (ROHS)Transformer | 1 | 14 | Centrifugal fan | 1 |
| 4.4 | Fan motor capacitor | 1 | 15 | Hanger | 4 |
| 4.5 | Terminal (DJ-75W-3PA) | 1 | 16 | Rear brattice | 1 |
| 4.6 | Terminal (DJ-75W-5PA) | 1 | 17 | Fan motor for indoor unit (YDK-55T-6) | 1 |
| 4.7 | Electric control board for indoor unit | 1 | 17.1 | Fan motor foot underlay | 1 |
| 4.8 | E-parts box | 1 | 18 | Chassis assy | 1 |
| 5 | Water pan assy | 1 | 19 | Right clapboard | 1 |
| 6 | Auxiliary fixing board for evaporator | 2 | 20 | Front brattice | 1 |
| 7 | Main fixing board assy | 1 | 21 | Discharge pipe joint | 1 |
| 7.1 | Main fixing board for evaporator | 1 | 22 | Side maintenance board for water pump | 1 |
| 8 | Evaporator components | 1 | 23 | Lower clamp | 1 |
| 8.1 | Rubber insulating pipe | 1 | 24 | Upper clamp | 1 |
| 8.2 | Insulating pipe | 1 | 25 | Valve panel | 1 |
| 8.3 | Welding parts for evaporator | 1 | 26 | Wire board | 2 |
| 8.3.1 | Collecting pipe assy for evaporator | 1 | 27 | Left clapboard | 1 |
| 8.3.2 | Distributing pipe assy for evaporator | 1 | 28 | Water outlet pipe | 1 |
| 8.3.3 | Evaporator | 1 | | | |

## 9.4 CCA-36HR1,CCA-48HR1,CCA-60HR1



| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | E-parts box cover assy 1 | 1 | 7.4.3 | Collecting pipe assy for evaporator | 1 |
| 2 | E-parts box cover assy 2 | 1 | 7.4.4 | Distributing pipe assy for evaporator | 1 |
| 3 | E-parts components | 1 | 7.5 | Protection rubber | 1 |
| 3.1 | (ROHS)Transformer | 1 | 7.6 | Main fixing board assy | 1 |
| 3.2 | Fan motor capacitor | 1 | 8 | Upper foam assy | 1 |
| 3.3 | Terminal (DJ-75W-3PA) | 1 | 8.1 | Upper foam | 1 |
| 3.4 | Terminal (DJ-75W-5PA) | 1 | 9 | pre-installed assy of pump | 1 |
| 3.5 | Electric control board for indoor unit | 1 | 9.1 | Water pump fan motor holder | 1 |
| 3.6 | Temperature sensor | 1 | 9.2 | Water pump | 1 |
| 3.7 | Temperature sensor | 1 | 9.3 | Liquid-level sensor | 1 |
| 3.8 | E-parts box welding base | 1 | 9.4 | Underlay for water pump support | 3 |
| 4 | wind inlet guide assy | 1 | 10 | fan snap ring | 1 |
| 4.1 | wind inlet guide | 1 | 11 | Centrifugal fan | 1 |
| 5 | Water pan assy | 1 | 12 | motor pre-installed assy | 1 |
| 5.1 | defrostingtray foam（ROHS） | 1 | 12.1 | Fan motor for indoor unit (YDK-75T-6) | 1 |
| 5.2 | water outlet plug | 1 | 13 | Rear brattice | 1 |
| 5.3 | foam pendant | 2 | 14 | Hanger | 4 |
| 6 | Auxiliary fixing board for evaporator | 2 | 15 | Chassis assy | 1 |
| 7 | Evaporator components | 1 | 16 | Right clapboard | 1 |
| 7.1 | Insulating pipe | 1 | 17 | Front brattice | 1 |
| 7.2 | Rubber insulating pipe | 1 | 18 | Discharge pipe joint | 1 |
| 7.3 | Stick cotton | 1 | 19 | Side maintenance board for water pump | 1 |
| 7.4 | Welding parts for evaporator | 1 | 20 | Valve panel | 1 |
| 7.4.1 | Instalation tube for probe | 1 | 21 | Left clapboard | 1 |
| 7.4.2 | evaporator | 1 | | | |

# 10.Accessories

| | Name | Shape | Quantity |
|---|---|---|---|
| Installation Fittings | Expansible hook |  | 4 |
| | Installation hook |  | 4 |
| | Installation paper board |  | 1 |
| | Bolt M5 |  | 4 |
| Tubing & Fittings (optional) | Connecting pipe group | | 1 |
| | Binding tape |  | 1 |
| | Soundproof/insulation sheath |  | 2 |
| Drainpipe Fittings | Out-let pipe sheath |  | 1 |
| | Tightening band |  | 5 |
| Protect Pipe Fittings (optional) | Wall conduit |  | 1 |
| | Wall conduit cover |  | 1 |
| Remote controller | Remote controller |  | 1 |
| | Mounting screw(ST2.9×10-C-H) |  | 2 |
| | Alkaline dry batteries (AM4) |  | 2 |
| Others | Operation&installation instruction manual |  | 1 |

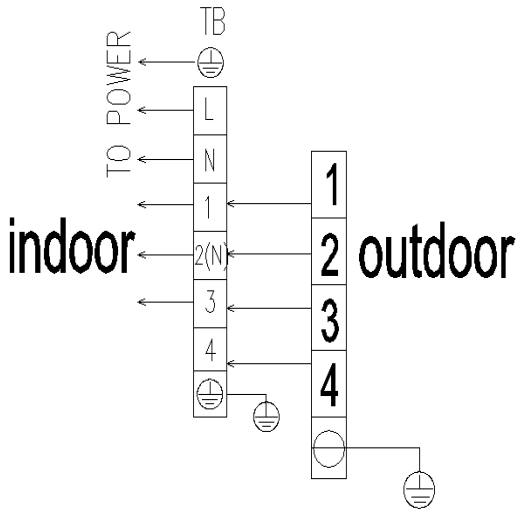
# 11.The Specification of Power

| Type | | CCA-18HR | CCB-18HR1 | CCA-24HR1 |
|---|---|---|---|---|
| Power | Phase | 1-phase | 1-phase | 1-phase |
| | Frequency and Voltage | 220-240V, 50Hz | | |
| Indoor Unit Power Wiring ($mm^2$) | | 3×2.5$mm^2$ | 3×2.5$mm^2$ | 3×1.0$mm^2$ |
| Indoor/Outdoor Connecting Wiring ($mm^2$) | Ground Wiring | 2.5 $mm^2$ | 2.5 $mm^2$ | 1 $mm^2$ |
| | Strong Electric Signal | 5×1.5$mm^2$ | 5×1.5$mm^2$ | 5×0.75$mm^2$ |

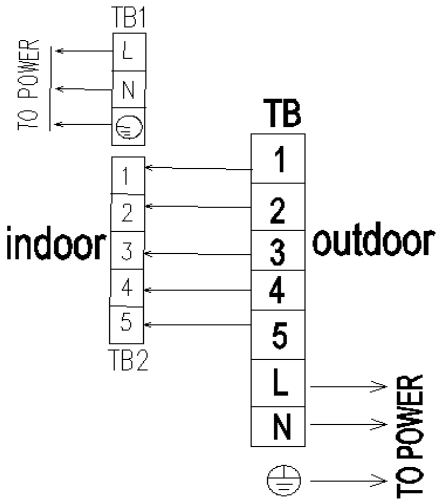
| Type | | CCA-36HR1 | CCA-48HR1 | CCA-60HR1 |
|---|---|---|---|---|
| Power | Phase | 1-phase | 1-phase | 1-phase |
| | Frequency and Voltage | 220-240V, 50Hz | | |
| Indoor Unit Power Wiring ($mm^2$) | | 3×1.0$mm^2$ | 3×1.0$mm^2$ | 3×1.0$mm^2$ |
| Indoor/Outdoor Connecting Wiring ($mm^2$) | Ground Wiring | 1 $mm^2$ | 1 $mm^2$ | 1 $mm^2$ |
| | Strong Electric Signal | 5×0.75$mm^2$ | 5×0.75$mm^2$ | 5×0.75$mm^2$ |

# 12.Field Wiring

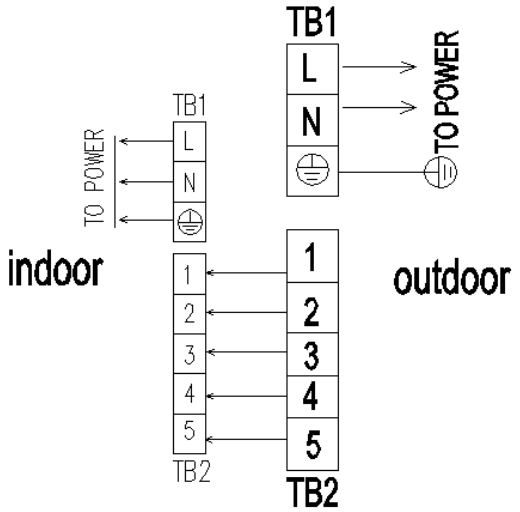
**CCB-18HR1&COU-18HR1**
**CCA-18HR1&COU18HR1**



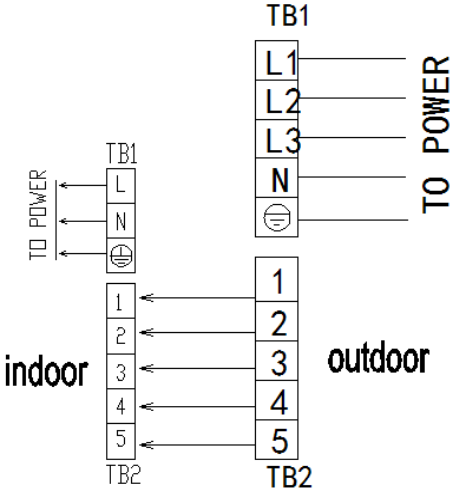

**CCA-24HR1&COU-24HR1**



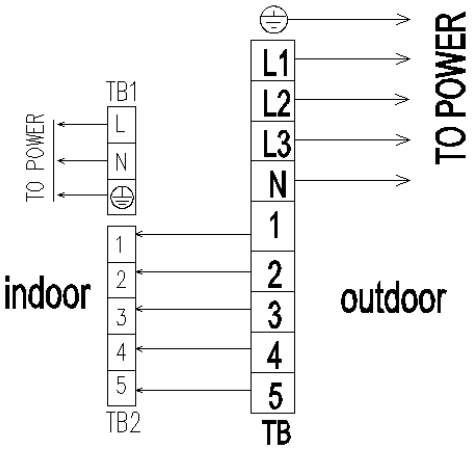

**CCA-36HR1&COU-36HR1**




**CCA-36HR1&COU-36HSR1**




**CCA-48HR1&COU-48HR1**
**CCA-60HR1&COU-60HR1**



# 13.Troubleshooting

| Setting Change is Impossible | | |
|---|---|---|
| Symptoms | Causes | Reason and Disposal |
| The fan speed can not be changed | Check whether the MODE indicated on the display is “AUTO” | When the automatic mode is selected, the air conditioner automatically selects the fan speed |
| | Check whether the MODE indicated on the display is “DEHUNMIDIFICATION” | When dry operation is selected, the air conditioner automatically select the fan speed. The fan speed can be selected during “COOL” and “FAN ONLY”, and “HEAT” |

| The Transmission Indicator “+””-“ Never Comes On | | |
|---|---|---|
| Symptoms | Causes | Reason and Disposal |
| The remote control signal is not transmitted even when the ON/OFF button is pushed | Check whether the batteries in the remote controller are exhausted | The remote control signal is not transmitted, because the power supply is off |

| The Display Never Comes On | | |
|---|---|---|
| Symptoms | Causes | Reason |
| The TEMP. Indicator does not come on | Check whether the MODE indicated on the display is “FAN ONLY” | The temperature cannot be set during fan only operation |

| The Display Goes Off | | |
|---|---|---|
| Symptoms | Causes | Reason |
| The indication on the display disappears af ter a lapse of time | Check whether the timer operation has come to an end when the OFF TIMER is indicated on the display | The air conditioner operation stops since the set time elapsed. |
| The ON TIMER indicators go off after a lapse of certain time | Check whether the timer operation is started when the ON TIMER is indicated on the display | When the time set to start the air conditioner is reached.the air conditioner will automatically start and the appropriate indicator will go off |

| The Signal Receiving Tone does Not Sound | | |
|---|---|---|
| Symptoms | Causes | Reason |
| No receiving tone sounds from the indoor unit even when the ON/OFF button is pushed | Check whether the signal transmitter of remote controller is properly directed to the receiver of the indoor unit when the ON/OFF button is pushed | Direct the signal transmitter of the remote controller to the receiver of the indoor unit , and then repeatly push the ON/OFF button twice |
| Buttons on the remote controller don’t work | | Press Reset button |

## Fault Code Table

| No. | Type | Content | LED Flashing | Remark |
|---|---|---|---|---|
| 1 | Fault | Room temperature sensor fault | Timing lamp flashing/5Hz | Automatic recovery after the problem resolved |
| 2 | Fault | Indoor coil temperature sensor fault | Running lamp flashing/5Hz | |
| 3 | Fault | Outdoor coil temperature sensor fault | Defrosting lamp flashing/5Hz | |
| 4 | Fault | Water full protection | Alarm lamp flashing/5Hz | |
| 5 | Fault | Outdoor protection | Defrosting lamp and Alarm lamp both flashing/5Hz | |
| 6 | Fault | Communication fault | Running lamp and Defrosting lamp both flashing/5Hz | Manual eliminate |
| 7 | Fault | EEPROM communication fault | Running lamp and Timing lamp both flashing/5Hz | Recovery after interruption of power supply |
| 8 | Indication | Enforced cooling | Running lamp and Alarm lamp both flashing/5Hz | |
| 9 | Indication | Anti- cool air in heating mode | Defrosting preheat lamp ON | |
| 10 | Indication | Defrosting | Defrosting preheat lamp ON | |

# Duct Type

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# 1.Features

**Low Static Pressure Duct**

**Medium Static Pressure Duct**

**High Static Pressure Duct**

1.1 Ultra-thin body design
1.2 Adopting aviation centrifugal fans, and CFD technology design, increasing air-volume and decreasing noise level, noise level only 29dB(A).
1.3 Three fan speed, meet different requirement.
1.4 30Pa ESP design for the medium static pressure duct type, duct connected installation meet for different room structure.
1.5 Filter can be taken out easily for clear. Easy maintenance.
1.6 E-box is body-side design, convenient installation and maintenance.
1.7 Two air return type option: air inlet from back is standard and from bottom is optional
1.8 Multi protection and auto-restart function.
1.9 Standard for wired controller, wireless controller for option.

# 2.Specification

| Model | | | CTA-18HR1 | CTA-24HR1 | CTB-18HR1 |
|---|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 18000 | 24000 | 18000 |
| | | KW | 5.3 | 7.1 | 5.3 |
| | Input | W | 70 | 150 | 250 |
| | Rated current | A | 0.32 | 0.68 | 0.45 |
| | EER | W/W | 2.69 | 2.78 | 2.69 |
| Heating | Capacity | Btu/h | 19800 | 26400 | 19800 |
| | | KW | 5.8 | 7.8 | 5.8 |
| | Input | W | 70 | 150 | 100 |
| | Rated current | A | 0.3 | 0.7 | 0.45 |
| | COP | W/W | 3.30 | 3.47 | 3.30 |
| Indoor fan motor | Model | | YSK-110-35P-4P3H95 | YSK-110-50P-4P3H95 | YSK110-90F-4P3H105 |
| | Input | W | 70 | 150 | 250 |
| | Capacitor | μF | 1.8 | 3 | 5 |
| | Speed(Hi/Med/Lo) | r/min | 1170/960/800 | 1170/990/850 | 1100/900/750 |
| Indoor coil | Number of rows | | 3 | 3 | 3 |
| | Tube pitch x row pitch | mm | 21×12.7 | 21×12.7 | 22×19.05 |
| | Fin spacing | mm | 1.6 | 1.6 | 1.7 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ7 | Φ7 | Φ7.94 |
| | | | inner grooved | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 900×231×38.1 | 1222×231×38.1 | 900×240×57.15 |
| | Number of circuits | | 4 | 5 | 6 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 730/600/500 | 1020/860/740 | 1010/840/700 |
| Static Pressure | | Pa | 30 | 30 | 70 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 42/31/26 | 43/32/28 | 38/36/34 |
| Indoor unit | Dimension(W×H×D) | mm | 1204×181×510 | 1532×181×510 | 1189×260×663 |
| | Packing(W×H×D) | mm | 1330×250×605 | 1650×250×605 | 1255×330×730 |
| | Net/Gross weight | kg | 21/25 | 26/30 | 32/36 |
| Refrigerant type | | | R410A | R410A | R410A |
| Refrigerant piping | Liquid side/Gas side | mm | Φ6.35/Φ12.7 | Φ9.52/Φ15.88 | Φ6.35/Φ12.7 |
| Drainage pipe | | mm | 30 | 30 | 30 |
| Connection wiring | Power Supply | | From indoor unit | From outdoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 2.5 | 1.0 | 2.5 |
| | Signal wiring | $mm^2$ | 0.75 | 1.5 | 0.75 |
| Controller | | | Standard for wired controller(remote controller for option) | | |
| Operation temp | | ℃ | 16～32 | 16～32 | 16～32 |
| Ambient temp | | ℃ | -7～43 | -7～43 | -7～43 |
| Application area | | $m^2$ | 20-35 | 28~50 | 28-50 |
| Stuffing Quantity (20'/40'/40'HQ) | | | 115/250/320 | 90/190/255 | 75/165/189 |

**Notes:** 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

| Model | | | CTB-24HR1 | CTB-36HR1 | CTB-48HR1 |
|---|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 24000 | 36000 | 48000 |
| | | KW | 7.1 | 10.5 | 14 |
| | Input | W | 300 | 340 | 340 |
| | Rated current | A | 1.36 | 1.55 | 1.55 |
| | EER | W/W | 3.12 | 2.59 | 2.62 |
| Heating | Capacity | Btu/h | 26400 | 39600 | 52800 |
| | | KW | 7.8 | 11.5 | 15.4 |
| | Input | W | 300 | 340 | 340 |
| | Rated current | A | 1.36 | 1.6 | 1.6 |
| | COP | W/W | 3.32 | 3.18 | 2.83 |
| Indoor fan motor | Model | | YSK120-150F-4P3H105 | YDK110-75F-4P& YSK120-150F-4P | YDK110-75F-4P& YSK120-150F-4P |
| | Input | W | 300 | 340 | 340 |
| | Capacitor | μF | 5 | 3&5 | 3&5 |
| | Speed(Hi/Med/Lo) | r/min | 1300/1200/1060 | 1340/1070/870 | 1340/1070/870 |
| Indoor coil | Number of rows | | 3 | 3 | 3 |
| | Tube pitch x row pitch | mm | 22×19.05 | 22×19.05 | 25×21.65 |
| | Fin spacing | mm | 1.7 | 1.7 | 1.8 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ7.94 inner grooved | Φ7.94 inner grooved | Φ9.52 inner grooved |
| | Coil size(W×H×D) | mm | 900×240×57.15 | 1136×240×57.15 | 1136×250×64.95 |
| | Number of circuits | | 6 | 6 | 5 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 1350/990/8500 | 1900/1500/1200 | 2000/1600/1300 |
| Static Pressure | | Pa | 70 | 30 | 30 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 42/39/36 | 48/43/38 | 48/43/38 |
| Indoor unit | Dimension(W×H×D) | mm | 1189×260×663 | 1425×260×663 | 1425×260×663 |
| | Packing(W×H×D) | mm | 1255×330×730 | 1490×330×730 | 1490×330×730 |
| | Net/Gross weight | Kg | 32/36 | 44/48 | 44/48 |
| Refrigerant type | | | R410A | R410A | R410A |
| Refrigerant piping | Liquid side/Gas side | mm | Φ9.52/Φ15.88 | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 |
| Drainage pipe | | mm | 30 | 30 | 30 |
| Connection wiring | Power Supply | | From outdoor unit | From outdoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 1.0 | 1.0 | 1.0 |
| | Signal wiring | $mm^2$ | 0.75 | 0.75 | 0.75 |
| Controller | | | Standard for wired controller(remote controller for option) | | |
| Operation temp | | °C | 16～32 | 16～32 | 16～32 |
| Ambient temp | | °C | -7～43 | -7～43 | -7～43 |
| Application area | | $m^2$ | 28-50 | 40-70 | 55~95 |
| Stuffing Quantity(20'/40'/40'HQ) | | | 75/165/189 | 75/165/168 | 75/165/168 |

**Notes:** 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

| Model | | | CTB-60HR1 | CTB-48HR1-B | CTB-60HR1-B |
|---|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 60000 | 48000 | 60000 |
| | | KW | 16 | 14 | 16 |
| | Input | W | 420 | 500 | 500 |
| | Rated current | A | 1.91 | 2.27 | 2.27 |
| | EER | W/W | 2.65 | 2.55 | 2.37 |
| Heating | Capacity | Btu/h | 66000 | 52800 | 66000 |
| | | KW | 17.6 | 15.4 | 17.6 |
| | Input | W | 420 | 500 | 500 |
| | Rated current | A | 1.91 | 2.3 | 2.3 |
| | COP | W/W | 2.72 | 2.98 | 2.82 |
| Indoor fan motor | Model | | YDK110-75F-4P3H 105L-2&YSK120-1 50F-4P3H105-2 | YSK139-300F-4P3H95 | YSK139-300F-4P3H95 |
| | Input | W | 420 | 500 | 500 |
| | Capacitor | μF | 4&6 | 15 | 15 |
| | Speed(Hi/Med/Lo) | r/min | 1420/1280/1200 | 1150/930/800 | 1150/930/800 |
| Indoor coil | Number of rows | | 3 | 3 | 3 |
| | Tube pitch x row pitch | mm | 25×21.65 | 22×19.05 | 22×19.05 |
| | Fin spacing | mm | 1.8 | 1.6 | 1.6 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ9.52 | Φ7.94 | Φ7.94 |
| | | | inner grooved | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 1136×250×64.95 | 935×300×57.15 | 935×300×57.15 |
| | Number of circuits | | 5 | 6 | 6 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 2820/2370/1930 | 3210/2930/2650 | 3210/2930/2650 |
| Static Pressure | | Pa | 70 | 120 | 120 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 45/42/38 | 53/49/43 | 53/49/43 |
| Indoor unit | Dimension(W×H×D) | mm | 1425×260×663 | 1200×364×625 | 1200×364×625 |
| | Packing(W×H×D) | mm | 1490×330×730 | 1260×490×640 | 1260×490×640 |
| | Net/Gross weight | Kg | 44/48 | 60/64 | 60/64 |
| Refrigerant type | | | R410A | R410A | R410A |
| Refrigerant piping | Liquid side/Gas side | mm | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 |
| Drainage pipe | | mm | 30 | 30 | 30 |
| Connection wiring | Power Supply | | From outdoor unit | From outdoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 1.0 | 1.0 | 1.0 |
| | Signal wiring | $mm^2$ | 0.75 | 0.75 | 0.75 |
| Controller | | | Standard for wired controller(remote controller for option) | | |
| Operation temp | | °C | 16～32 | 16～32 | 16～32 |
| Ambient temp | | °C | -7～43 | -7～43 | -7～43 |
| Application area | | $m^2$ | 60~105 | 55~95 | 60~105 |
| Stuffing Quantity(20'/40'/40'HQ) | | | 75/165/168 | 75/165/168 | 75/165/168 |

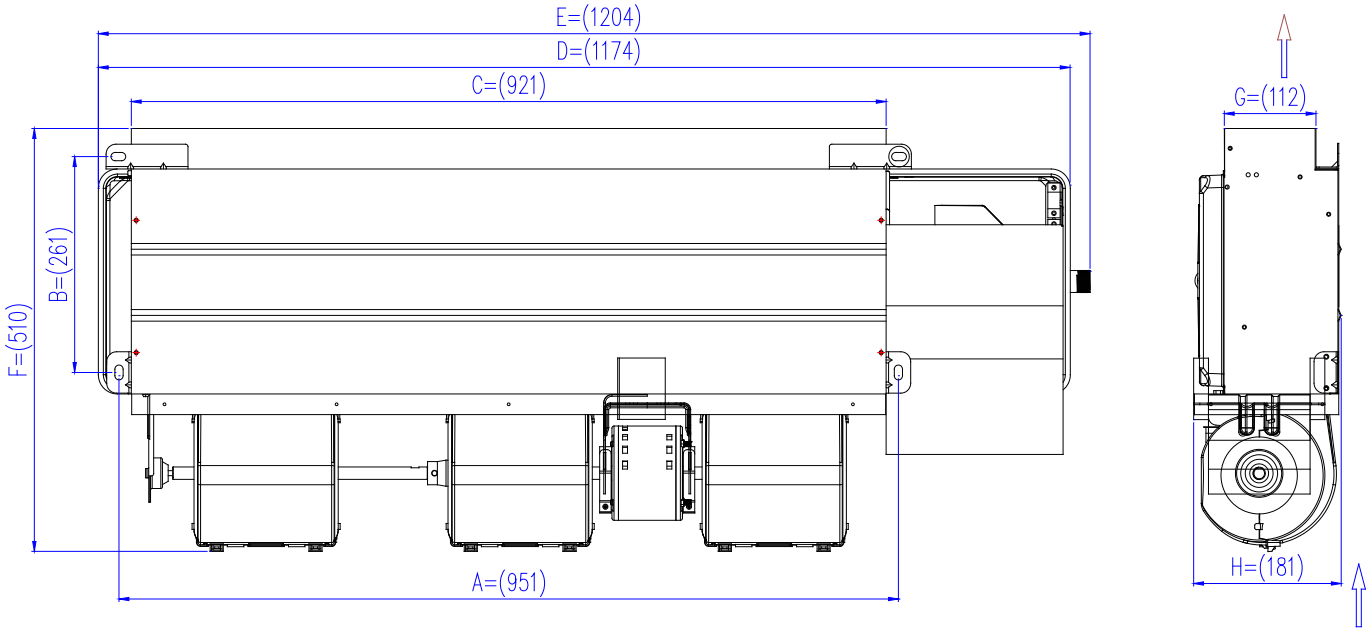
**Notes:** 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

| Model | | | CTH-48HR1 | CTH-60HR1 |
|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 48000 | 60000 |
| | | KW | 14 | 16 |
| | Input | W | 500 | 500 |
| | Rated current | A | 2.27 | 2.27 |
| | EER | W/W | 2.55 | 2.58 |
| Heating | Capacity | Btu/h | 52800 | 66000 |
| | | KW | 15.4 | 16.6 |
| | Input | W | 500 | 500 |
| | Rated current | A | 2.3 | 2.3 |
| | COP | W/W | 2.77 | 2.65 |
| Indoor fan motor | Model | | YSK139-300F-4P3H95 | YSK139-300F-4P3H95 |
| | Input | W | 500 | 500 |
| | Capacitor | μF | 15 | 15 |
| | Speed(Hi/Med/Lo) | r/min | 1150/930/800 | 1150/930/800 |
| Indoor coil | Number of rows | | 3 | 3 |
| | Tube pitch x row pitch | mm | 22×19.05 | 22×19.05 |
| | Fin spacing | mm | 1.6 | 1.6 |
| | Fin type | | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ7.94 | Φ7.94 |
| | | | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 935×300×57.15 | 935×300×57.15 |
| | Number of circuits | | 6 | 6 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 2300/2100/1900 | 2300/2100/1900 |
| Static Pressure | | Pa | 120 | 120 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 55/51/47 | 55/51/47 |
| Indoor unit | Dimension(W×H×D) | mm | 1200×364×625 | 1200×364×625 |
| | Packing(W×H×D) | mm | 1260×490×640 | 1260×490×640 |
| | Net/Gross weight | Kg | 60/64 | 60/64 |
| Refrigerant type | | | R410A | R410A |
| Refrigerant piping | Liquid side/Gas side | mm | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 |
| Drainage pipe | | mm | 30 | 30 |
| Connection wiring | Power Supply | | From outdoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 1.0 | 1.0 |
| | Signal wiring | $mm^2$ | 0.75 | 0.75 |
| Controller | | | Standard for wired controller(remote controller for option) | |
| Operation temp | | ℃ | 16～32 | 16～32 |
| Ambient temp | | ℃ | -7～43 | -7～43 |
| Application area | | $m^2$ | 55~95 | 60~105 |
| Stuffing Quantity(20'/40'/40'HQ) | | | 75/165/168 | 75/165/168 |

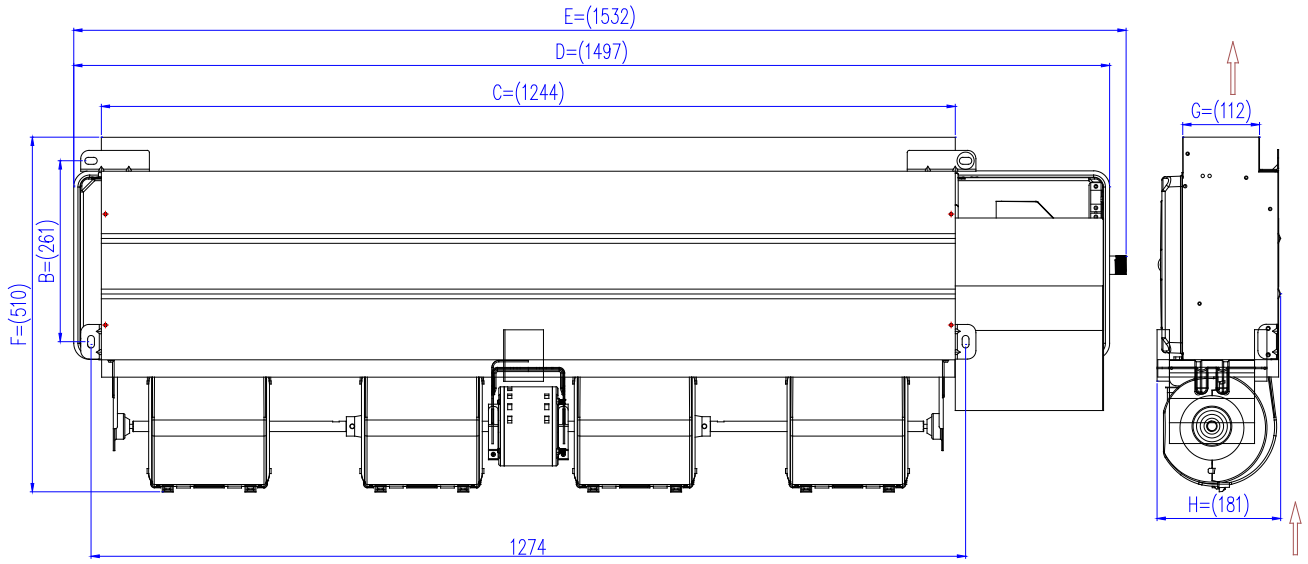
**Notes:** 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

# 3.Dimensions

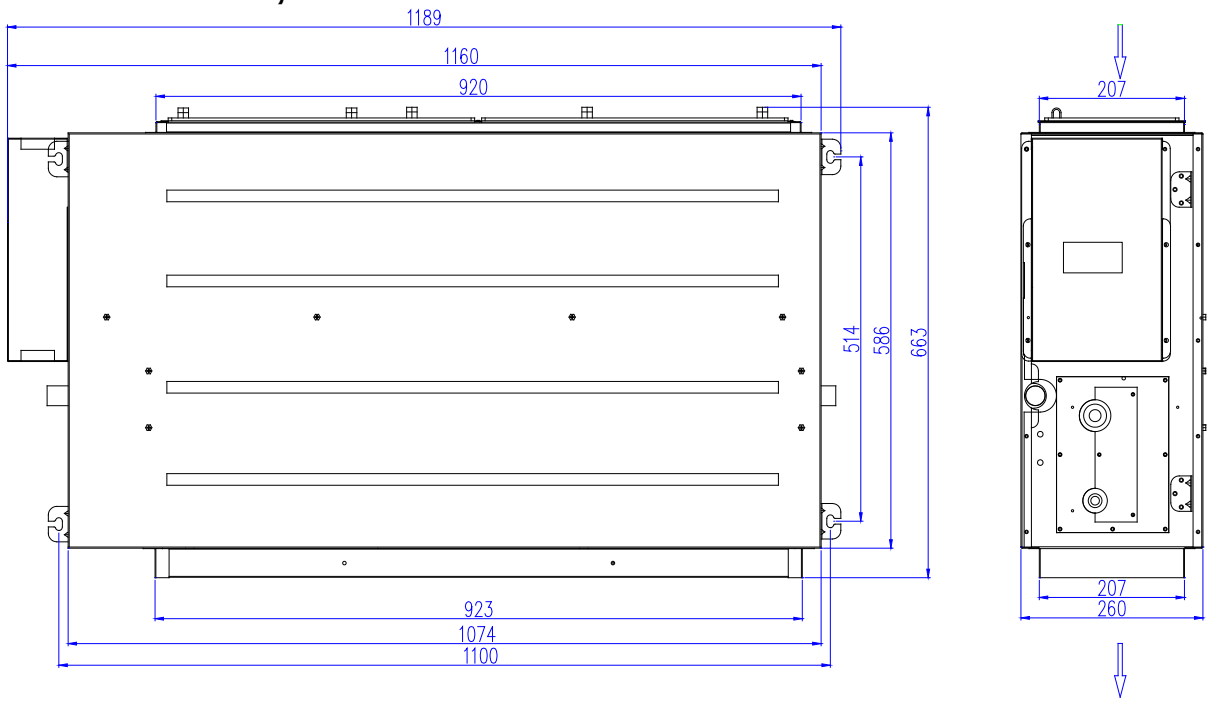
## 3.1 CTA-18HR1



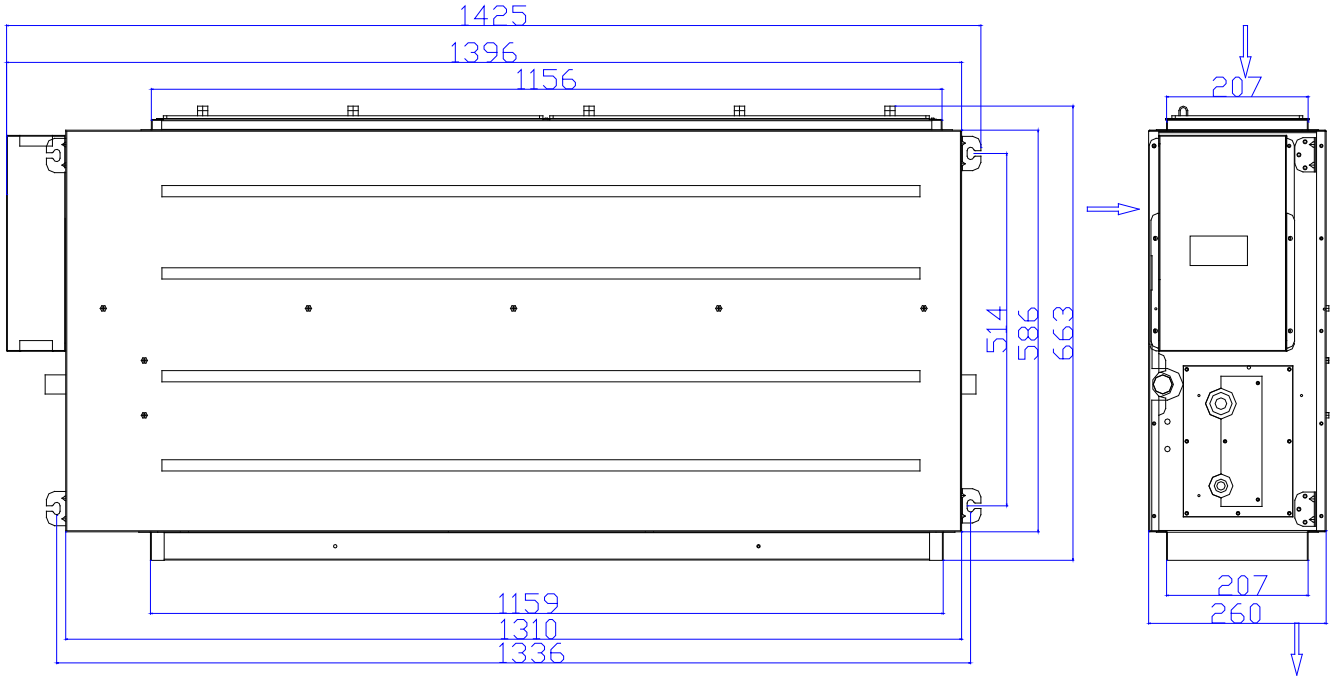

## 3.2 CTA-24HR1



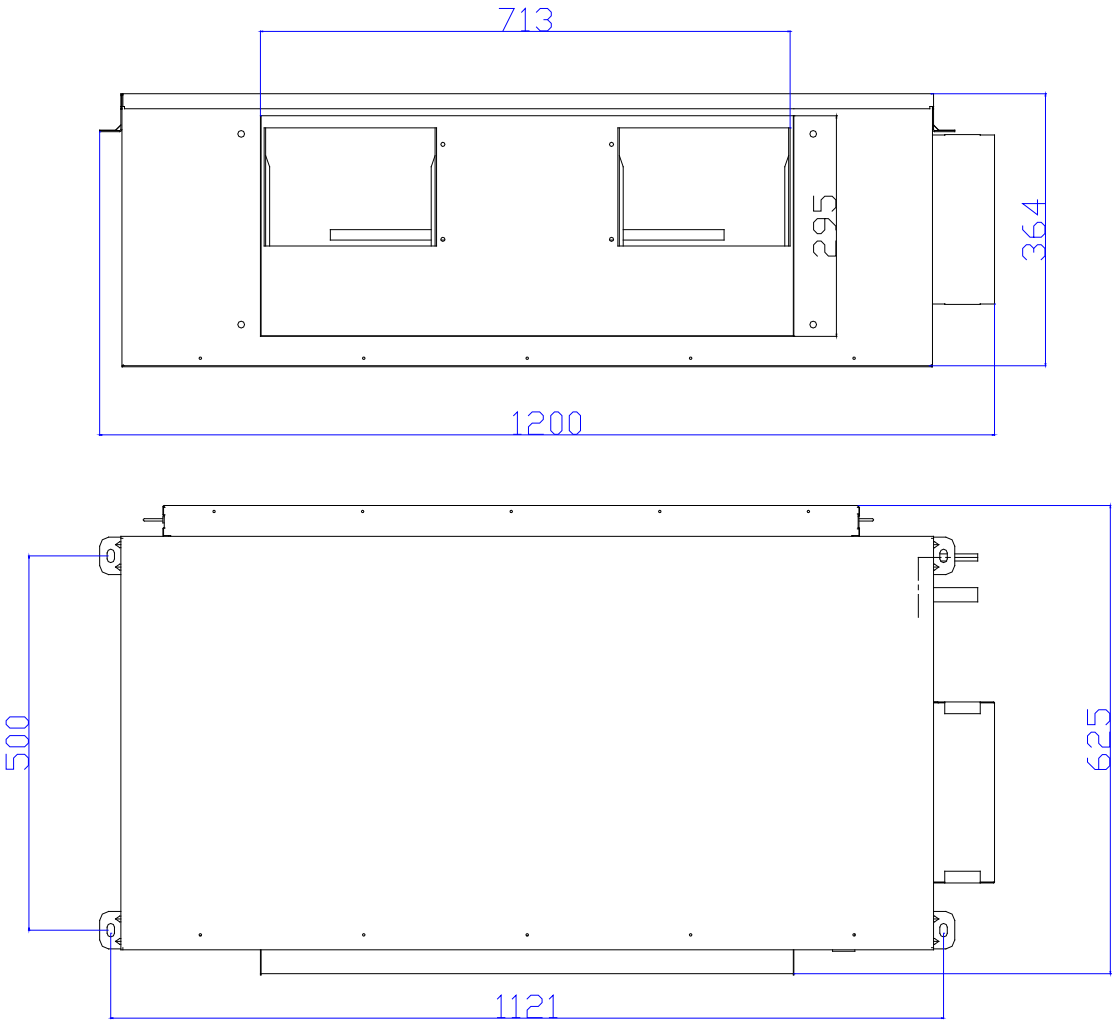
## 3.3 CTB-18HR1, CTB-24HR1




## 3.4 CTB-36HR1, CTB-48HR1, CTB-60HR1



## 3.5 CTB-48HR1-B, CTB-60HR1-B, CTH-48HR1, CTH-60HR1

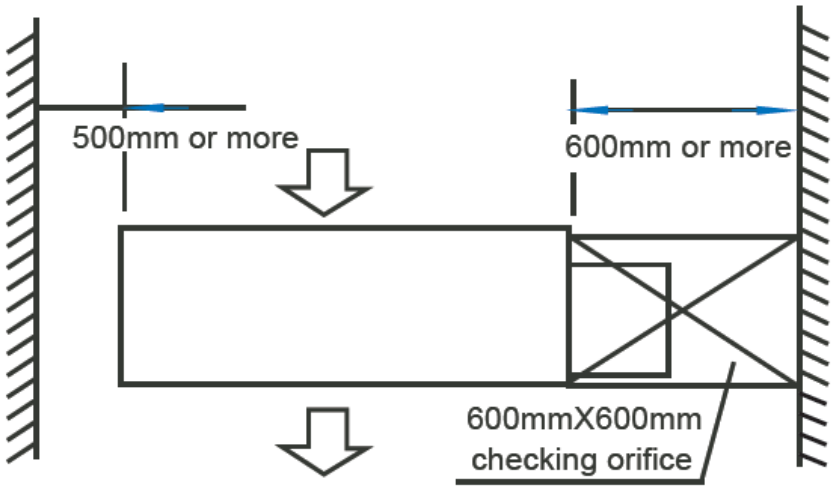



**Wymiary wlotu powietrza: 920 x 295**

**Wymiary wylotu powietrza: 735 x 270**

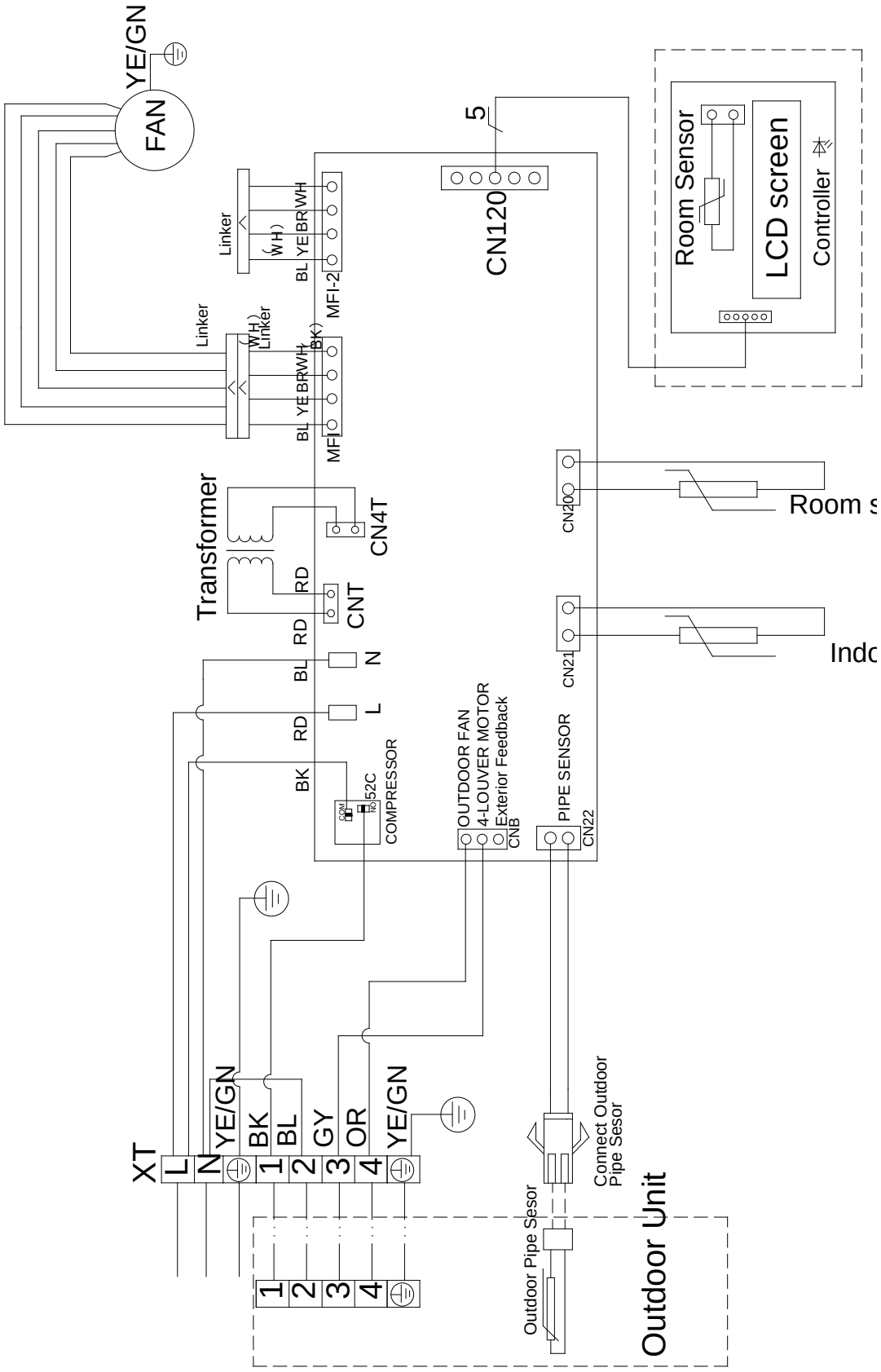
# 4.Service Space

Ensure enough space required for installation and maintenance.

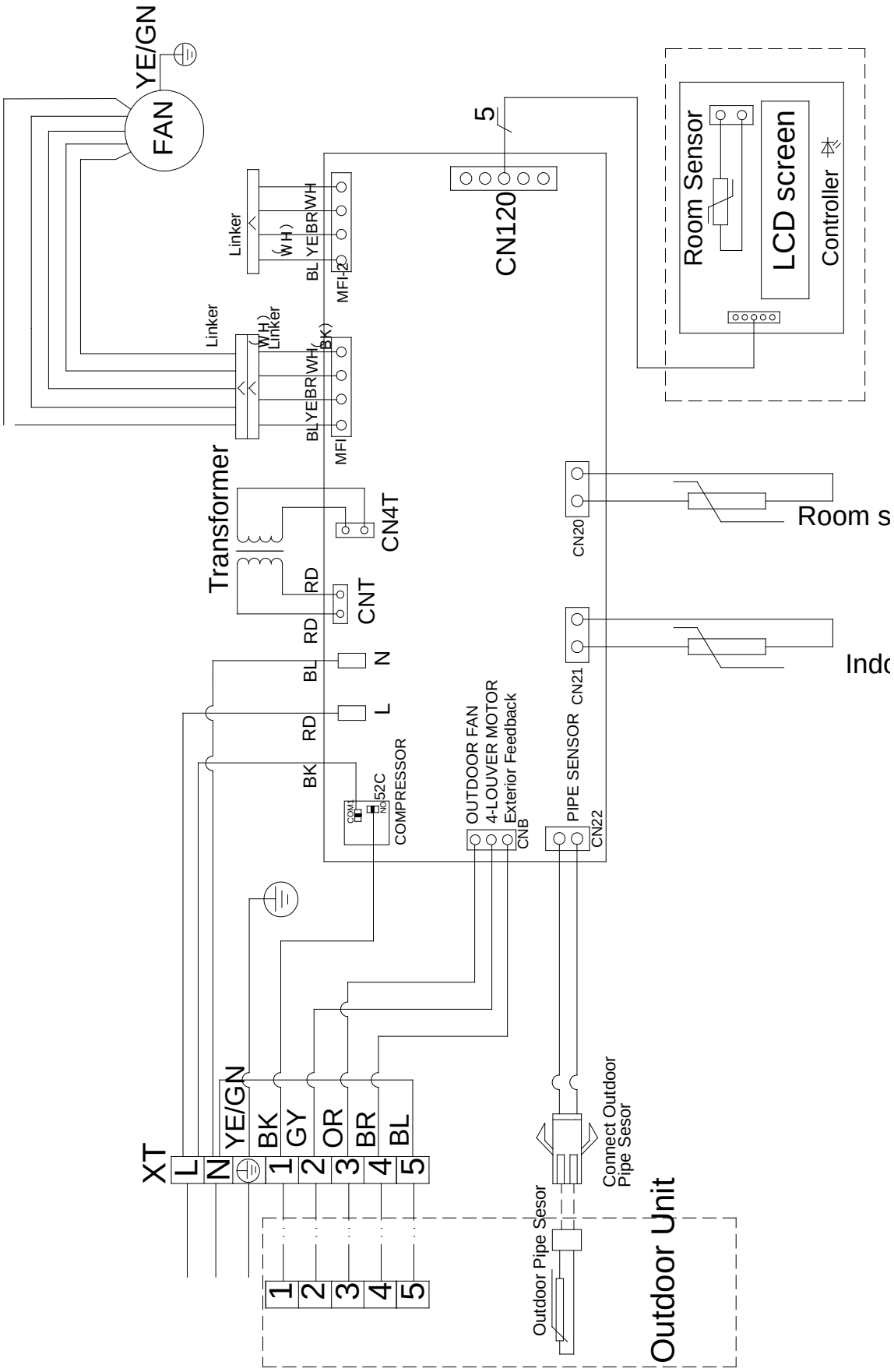


# 5.Wiring Diagrams

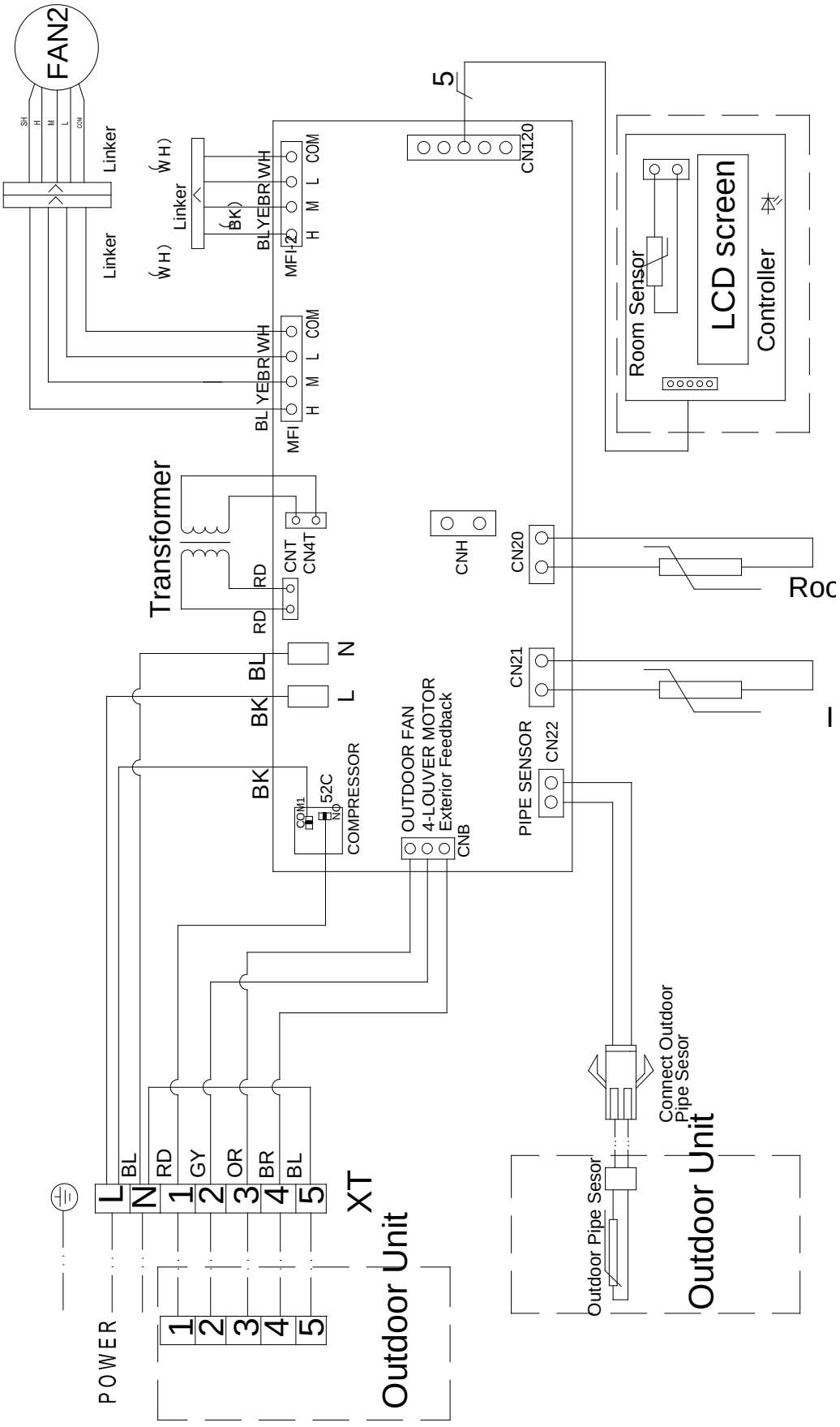
## 5.1 CTA-18HR1, CTB-18HR1



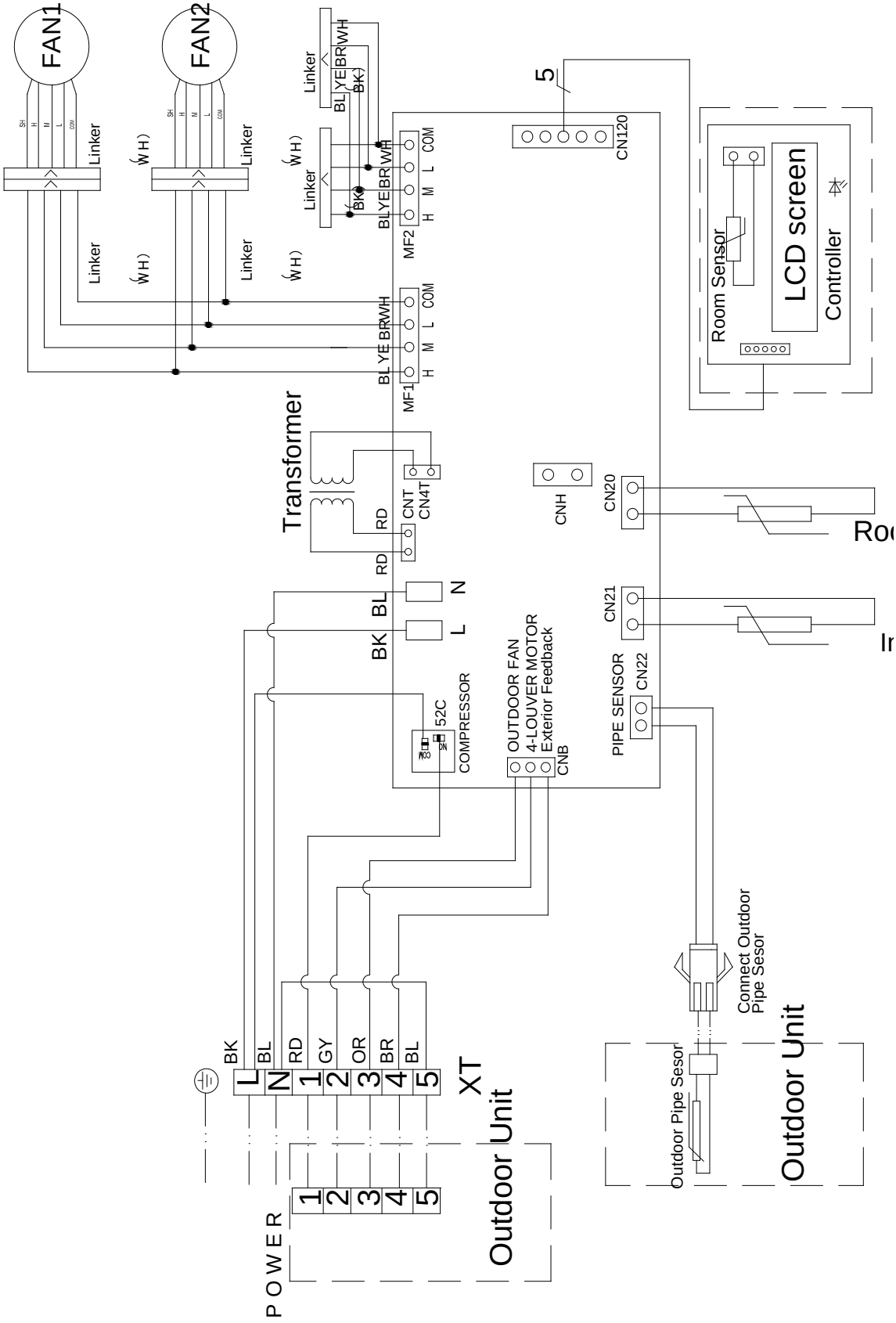
## 5.2 CTA-24HR1


YE/GN
FAN
5
CN120
Room Sensor
LCD screen
Controller
Linker
(WH)
YE
BR
WH
BL
MFI-2
Linker
(WH)
Linker
(BK)
WH
BR
YE
BL
MFI
Transformer
CN4T
CN20
Room s
RD
CNT
RD
BL
N
L
RD
BK
52C
COMPRESSOR
OUTDOOR FAN
4-LOUVER MOTOR
Exterior Feedback
CNB
PIPE SENSOR
CN21
CN22
Indc
XT
L
N
YE/GN
BK
GY
OR
BR
BL
1
2
3
4
5
Connect Outdoor
Pipe Sesor
Outdoor Pipe Sesor
Outdoor Unit

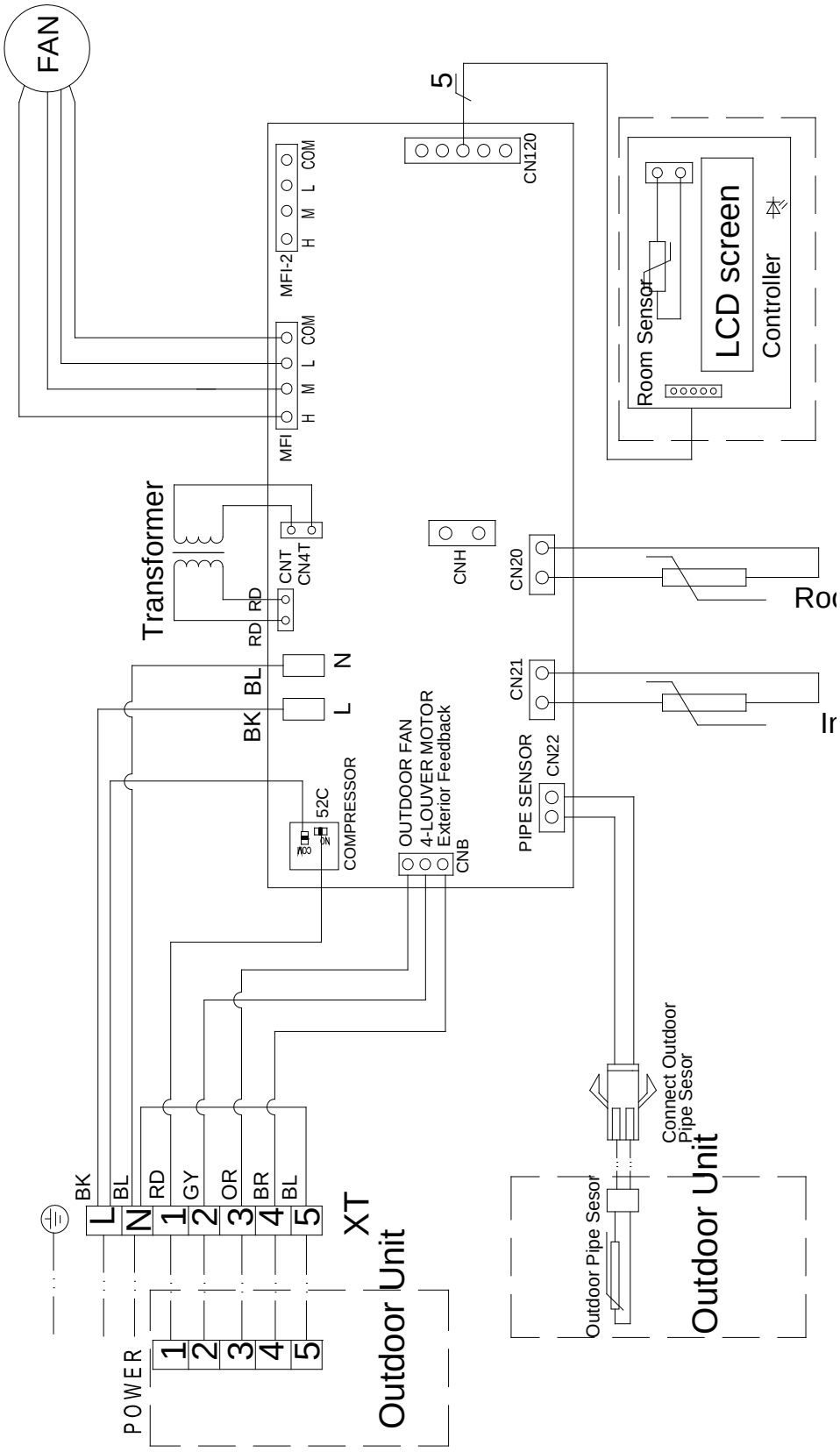
## 5.3 CTB-24HR1


FAN2
SH
H
M
L
COM
Linker
Linker
Linker
(WH)
(BK)
(WH)
BL YE BR WH
H M L COM
MFI-2
BL YE BR WH
H M L COM
MFI
5
CN120
LCD screen
Controller
Room Sensor
Transformer
CNT
CN4T
RD
RD
CNH
CN20
Roc
BL
BK
BK
N
L
CN21
I
OUTDOOR FAN
4-LOUVER MOTOR
Exterior Feedback
CNB
COM1
NO
52C
COMPRESSOR
PIPE SENSOR
CN22
Connect Outdoor
Pipe Sesor
Outdoor Pipe Sesor
Outdoor Unit
L
N
1
2
3
4
5
BL
RD
GY
OR
BR
BL
XT
Outdoor Unit
POWER
1
2
3
4
5

## 5.4 CTB-36HR1, CTB-48HR1, CTB-60HR1



## 5.5 CTB-48HR1-B, CTB-60HR1-B, CTH-48HR1, CTH-60HR1



# 6.Capacity Tables

## Cooling

## 6.1 CTA-18HR1

| MODEL | | CTA-18HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 5.19 | 4.92 | 4.76 | 4.48 | 4.28 | 4.18 |
| | Sensitive capacity kW | 4.12 | 3.93 | 3.81 | 3.56 | 3.41 | 3.31 |
| | Input kW. | 1.15 | 1.29 | 1.47 | 1.61 | 1.8 | 1.96 |
| 24ºC DB 17ºC WB | Total capacity kW | 5.67 | 5.39 | 5.27 | 4.91 | 4.71 | 4.58 |
| | Sensitive capacity kW | 4.5 | 4.31 | 4.15 | 3.93 | 3.77 | 3.62 |
| | Input kW. | 1.21 | 1.36 | 1.54 | 1.73 | 1.91 | 2.07 |
| 27ºC DB 19ºC WB | Total capacity kW | 6.13 | 5.85 | 5.64 | 5.3 | 5.1 | 4.94 |
| | Sensitive capacity kW | 4.82 | 4.68 | 4.5 | 4.13 | 4.09 | 3.96 |
| | Input kW. | 1.25 | 1.48 | 1.62 | 1.79 | 2.01 | 2.18 |
| 32ºC DB 23ºC WB | Total capacity kW | 7.1 | 6.73 | 6.5 | 6.15 | 5.9 | 5.72 |
| | Sensitive capacity kW | 5.63 | 5.39 | 5.21 | 4.91 | 4.87 | 4.54 |
| | Input kW. | 1.48 | 1.68 | 1.87 | 2.1 | 2.32 | 2.54 |

## 6.2 CTA-24HR1

| MODEL | | CTA-24HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 6.87 | 6.54 | 6.32 | 5.94 | 5.75 | 5.53 |
| | Sensitive capacity kW | 5.51 | 5.24 | 5.03 | 4.75 | 4.55 | 4.45 |
| | Input kW. | 5.49 | 5.24 | 5.03 | 4.76 | 4.57 | 4.45 |
| 24ºC DB 17ºC WB | Total capacity kW | 7.53 | 7.17 | 6.93 | 6.51 | 6.28 | 6.05 |
| | Sensitive capacity kW | 6.02 | 5.76 | 5.52 | 5.22 | 5.03 | 4.84 |
| | Input kW. | 1.67 | 1.90 | 2.16 | 2.36 | 2.61 | 2.86 |
| 27ºC DB 19ºC WB | Total capacity kW | 8.18 | 7.80 | 7.52 | 7.11 | 6.84 | 6.61 |
| | Sensitive capacity kW | 6.53 | 6.24 | 6.02 | 5.66 | 5.44 | 5.27 |
| | Input kW. | 1.74 | 2.00 | 2.23 | 2.52 | 2.73 | 3.02 |
| 32ºC DB 23ºC WB | Total capacity kW | 9.38 | 8.97 | 8.63 | 8.14 | 7.82 | 7.56 |
| | Sensitive capacity kW | 7.53 | 7.17 | 6.921 | 6.51 | 6.25 | 6.04 |
| | Input kW. | 2.02 | 2.32 | 2.61 | 2.87 | 3.16 | 3.44 |

## 6.3 CTB-18HR1

| MODEL | | CTB-18HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 5.34 | 5.11 | 4.98 | 4.72 | 4.44 | 4.32 |
| | Sensitive capacity kW | 4.33 | 4.19 | 3.98 | 3.73 | 3.55 | 3.41 |
| | Input kW. | 1.30 | 1.49 | 1.57 | 1.65 | 1.92 | 2.18 |
| 24ºC DB 17ºC WB | Total capacity kW | 5.92 | 5.54 | 5.47 | 5.17 | 4.95 | 4.88 |
| | Sensitive capacity kW | 4.78 | 4.61 | 4.36 | 4.13 | 3.97 | 3.87 |
| | Input kW. | 1.11 | 1.38 | 1.74 | 1.83 | 2.13 | 2.37 |
| 27ºC DB 19ºC WB | Total capacity kW | 6.43 | 6.28 | 6.01 | 5.83 | 5.61 | 5.34 |
| | Sensitive capacity kW | 5.03 | 4.78 | 4.54 | 4.13 | 3.98 | 3.76 |
| | Input kW. | 1.20 | 1.58 | 1.73 | 1.90 | 2.21 | 2.48 |
| 32ºC DB 23ºC WB | Total capacity kW | 7.3 | 6.93 | 6.71 | 6.45 | 6.15 | 5.92 |
| | Sensitive capacity kW | 5.83 | 5.58 | 5.41 | 5.11 | 4.97 | 4.64 |
| | Input kW. | 1.58 | 1.72 | 1.89 | 2.23 | 2.45 | 2.60 |

## 6.4 CTB-24HR1

| MODEL | | CTB-24HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 6.84 | 6.55 | 6.31 | 5.95 | 5.72 | 5.53 |
| | Sensitive capacity kW | 5.47 | 5.24 | 5.04 | 4.76 | 4.57 | 4.43 |
| | Input kW. | 1.57 | 1.79 | 2.01 | 2.25 | 2.46 | 2.7 |
| 24ºC DB 17ºC WB | Total capacity kW | 7.52 | 7.18 | 6.91 | 6.52 | 6.28 | 6.06 |
| | Sensitive capacity kW | 6 | 5.73 | 5.53 | 5.22 | 5.03 | 4.87 |
| | Input kW. | 1.65 | 1.9 | 2.13 | 2.37 | 2.61 | 2.88 |
| 27ºC DB 19ºC WB | Total capacity kW | 8.16 | 7.79 | 7.54 | 7.1 | 6.83 | 6.58 |
| | Sensitive capacity kW | 6.54 | 6.22 | 6.01 | 5.66 | 5.43 | 5.27 |
| | Input kW. | 1.75 | 2 | 2.24 | 2.49 | 2.75 | 3 |
| 32ºC DB 23ºC WB | Total capacity kW | 9.37 | 8.96 | 8.64 | 8.15 | 7.83 | 7.58 |
| | Sensitive capacity kW | 7.5 | 7.18 | 6.91 | 6.52 | 6.25 | 6.06 |
| | Input kW. | 2.01 | 2.29 | 2.59 | 2.87 | 3.16 | 3.44 |

## 6.5 CTB-36HR1

| MODEL | | CTB-36HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 10.12 | 9.68 | 9.33 | 8.8 | 8.45 | 8.18 |
| | Sensitive capacity kW | 8.07 | 7.74 | 7.45 | 7.04 | 6.76 | 6.53 |
| | Input kW. | 2.34 | 2.72 | 3.03 | 3.36 | 3.68 | 4.02 |
| 24ºC DB 17ºC WB | Total capacity kW | 11.09 | 10.61 | 10.22 | 9.64 | 9.26 | 8.96 |
| | Sensitive capacity kW | 8.87 | 8.48 | 8.16 | 7.71 | 7.4 | 7.16 |
| | Input kW. | 2.45 | 2.83 | 3.18 | 3.54 | 3.93 | 4.27 |
| 27ºC DB 19ºC WB | Total capacity kW | 12.05 | 11.53 | 11.09 | 10.5 | 10.07 | 9.75 |
| | Sensitive capacity kW | 9.63 | 9.22 | 8.87 | 8.38 | 8.05 | 7.78 |
| | Input kW. | 2.65 | 3.01 | 3.36 | 3.83 | 4.11 | 4.48 |
| 32ºC DB 23ºC WB | Total capacity kW | 13.87 | 13.26 | 12.78 | 12.06 | 11.57 | 11.21 |
| | Sensitive capacity kW | 11.09 | 10.61 | 10.22 | 9.64 | 9.26 | 8.96 |
| | Input kW. | 3 | 3.43 | 3.86 | 4.3 | 4.72 | 5.16 |

## 6.6 CTB-48HR1

| MODEL | | CTB-48HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 13.51 | 12.92 | 12.45 | 11.75 | 11.27 | 10.95 |
| | Sensitive capacity kW | 10.8 | 10.33 | 9.96 | 9.38 | 9.01 | 8.73 |
| | Input kW. | 3.06 | 3.36 | 3.9 | 4.31 | 4.71 | 5.19 |
| 24ºC DB 17ºC WB | Total capacity kW | 14.79 | 14.14 | 13.64 | 12.89 | 12.34 | 11.96 |
| | Sensitive capacity kW | 11.81 | 11.31 | 10.91 | 10.31 | 9.87 | 9.57 |
| | Input kW. | 3.21 | 3.55 | 4.11 | 4.55 | 4.98 | 5.44 |
| 27ºC DB 19ºC WB | Total capacity kW | 16.09 | 15.37 | 14.82 | 14.00 | 13.43 | 13.01 |
| | Sensitive capacity kW | 12.86 | 12.41 | 11.85 | 11.21 | 10.72 | 10.44 |
| | Input kW. | 3.38 | 3.86 | 4.3 | 5.16 | 5.25 | 5.72 |
| 32ºC DB 23ºC WB | Total capacity kW | 18.5 | 17.72 | 17.05 | 16.08 | 15.44 | 14.96 |
| | Sensitive capacity kW | 14.79 | 14.16 | 13.63 | 12.86 | 12.33 | 11.93 |
| | Input kW. | 3.86 | 4.41 | 4.94 | 5.49 | 5.99 | 6.58 |

## 6.7 CTB-60HR1

| MODEL | | CTB-60HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 15.45 | 14.79 | 14.25 | 12.11 | 12.91 | 12.5 |
| | Sensitive capacity kW | 12.37 | 11.83 | 11.4 | 10.75 | 10.32 | 10.02 |
| | Input kW. | 3.75 | 4.3 | 4.84 | 5.36 | 5.92 | 6.44 |
| 24ºC DB 17ºC WB | Total capacity kW | 16.93 | 16.19 | 15.61 | 14.72 | 13.13 | 13.71 |
| | Sensitive capacity kW | 13.54 | 12.95 | 12.48 | 11.78 | 11.3 | 10.97 |
| | Input kW. | 3.95 | 4.54 | 5.11 | 5.66 | 6.23 | 6.82 |
| 27ºC DB 19ºC WB | Total capacity kW | 18.42 | 17.6 | 16.98 | 16 | 15.36 | 14.88 |
| | Sensitive capacity kW | 14.72 | 14.1 | 13.58 | 12.8 | 12.3 | 11.91 |
| | Input kW. | 4.16 | 4.78 | 5.36 | 5.97 | 6.57 | 7.18 |
| 32ºC DB 23ºC WB | Total capacity kW | 21.16 | 20.24 | 19.5 | 18.42 | 17.67 | 17.12 |
| | Sensitive capacity kW | 16.92 | 16.19 | 15.61 | 14.74 | 14.13 | 13.7 |
| | Input kW. | 4.81 | 5.48 | 6.17 | 6.88 | 7.55 | 8.24 |

## 6.8 CTB-48HR1-B

| MODEL | | CTB-48HR1-B | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 13.87 | 13.23 | 12.92 | 11.86 | 11.49 | 10.99 |
| | Sensitive capacity kW | 11.03 | 10.75 | 10.23 | 9.71 | 9.36 | 8.98 |
| | Input kW. | 2.86 | 3.18 | 3.61 | 4.13 | 4.32 | 4.66 |
| 24ºC DB 17ºC WB | Total capacity kW | 15.82 | 15.27 | 14.85 | 13.68 | 13.31 | 12.98 |
| | Sensitive capacity kW | 12.06 | 11.83 | 11.12 | 10.55 | 10.17 | 9.89 |
| | Input kW. | 3.04 | 3.33 | 3.89 | 4.11 | 4.47 | 4.98 |
| 27ºC DB 19ºC WB | Total capacity kW | 16.34 | 15.89 | 15.04 | 14.80 | 13.92 | 13.42 |
| | Sensitive capacity kW | 12.88 | 12.32 | 11.87 | 11.20 | 10.75 | 10.42 |
| | Input kW. | 3.29 | 3.76 | 4.23 | 4.70 | 5.17 | 5.64 |
| 32ºC DB 23ºC WB | Total capacity kW | 18.52 | 17.71 | 17.07 | 16.10 | 15.46 | 14.97 |
| | Sensitive capacity kW | 14.81 | 14.17 | 13.65 | 12.88 | 12.36 | 11.98 |
| | Input kW. | 3.68 | 4.21 | 4.76 | 5.04 | 5.65 | 6.04 |

## 6.9 CTB-60HR1-B

| MODEL | | CTB-60HR1-B | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 15.47 | 14.73 | 14.28 | 12.21 | 12.91 | 12.5 |
| | Sensitive capacity kW | 12.37 | 11.83 | 11.4 | 10.75 | 10.32 | 10.02 |
| | Input kW. | 3.73 | 4.34 | 4.84 | 5.36 | 5.92 | 6.44 |
| 24ºC DB 17ºC WB | Total capacity kW | 16.93 | 16.17 | 15.53 | 14.70 | 13.11 | 13.75 |
| | Sensitive capacity kW | 13.74 | 12.91 | 12.43 | 11.74 | 11.34 | 10.67 |
| | Input kW. | 3.65 | 4.34 | 5.11 | 5.64 | 6.24 | 6.81 |
| 27ºC DB 19ºC WB | Total capacity kW | 17.25 | 16.6 | 16.2 | 16.2 | 15.34 | 14.83 |
| | Sensitive capacity kW | 14.72 | 14.11 | 13.54 | 12.7 | 12.3 | 11.81 |
| | Input kW. | 4.17 | 4.75 | 5.36 | 5.97 | 6.54 | 7.18 |
| 32ºC DB 23ºC WB | Total capacity kW | 21.14 | 20.22 | 19.5 | 18.36 | 17.67 | 17.12 |
| | Sensitive capacity kW | 16.92 | 16.17 | 15.61 | 14.71 | 14.13 | 13.7 |
| | Input kW. | 4.91 | 5.43 | 6.17 | 6.90 | 7.55 | 8.23 |

## 6.10 CTH-48HR1

| MODEL | | CTH-48HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 13.52 | 12.94 | 12.47 | 11.76 | 11.29 | 10.94 |
| | Sensitive capacity kW | 10.82 | 10.35 | 9.97 | 9.41 | 9.03 | 8.75 |
| | Input kW. | 2.96 | 3.38 | 3.81 | 4.23 | 4.65 | 5.08 |
| 24ºC DB 17ºC WB | Total capacity kW | 14.81 | 14.17 | 13.65 | 12.88 | 12.36 | 11.98 |
| | Sensitive capacity kW | 11.85 | 11.33 | 10.92 | 10.30 | 9.89 | 9.58 |
| | Input kW. | 3.13 | 3.57 | 4.02 | 4.47 | 4.91 | 5.36 |
| 27ºC DB 19ºC WB | Total capacity kW | 16.10 | 15.40 | 14.84 | 14.00 | 13.44 | 13.02 |
| | Sensitive capacity kW | 12.88 | 12.32 | 11.87 | 11.20 | 10.75 | 10.42 |
| | Input kW. | 3.29 | 3.76 | 4.23 | 4.70 | 5.17 | 5.64 |
| 32ºC DB 23ºC WB | Total capacity kW | 18.52 | 17.71 | 17.07 | 16.10 | 15.46 | 14.97 |
| | Sensitive capacity kW | 14.81 | 14.17 | 13.65 | 12.88 | 12.36 | 11.98 |
| | Input kW. | 3.78 | 4.32 | 4.86 | 5.41 | 5.95 | 6.49 |

## 6.11 CTH-60HR1

| MODEL | | CTH-60HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 15.47 | 14.73 | 14.28 | 12.21 | 12.91 | 12.5 |
| | Sensitive capacity kW | 12.37 | 11.83 | 11.4 | 10.75 | 10.32 | 10.02 |
| | Input kW. | 3.73 | 4.34 | 4.84 | 5.36 | 5.92 | 6.44 |
| 24ºC DB 17ºC WB | Total capacity kW | 16.93 | 16.17 | 15.53 | 14.70 | 13.11 | 13.75 |
| | Sensitive capacity kW | 13.74 | 12.91 | 12.43 | 11.74 | 11.34 | 10.67 |
| | Input kW. | 3.65 | 4.34 | 5.11 | 5.64 | 6.24 | 6.81 |
| 27ºC DB 19ºC WB | Total capacity kW | 17.25 | 16.6 | 16.2 | 16.2 | 15.34 | 14.83 |
| | Sensitive capacity kW | 14.72 | 14.11 | 13.54 | 12.7 | 12.3 | 11.81 |
| | Input kW. | 4.17 | 4.75 | 5.36 | 5.97 | 6.54 | 7.18 |
| 32ºC DB 23ºC WB | Total capacity kW | 21.14 | 20.22 | 19.5 | 18.36 | 17.67 | 17.12 |
| | Sensitive capacity kW | 16.92 | 16.17 | 15.61 | 14.71 | 14.13 | 13.7 |
| | Input kW. | 4.91 | 5.43 | 6.17 | 6.90 | 7.55 | 8.23 |

# Heating

## 6.12 CTA-18HR1

| MODEL | | CTA-18HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 10.15 | 8.14 | 6.75 | 6.11 | 5.69 | 5.08 | 4.75 |
| | Input kW. | 3.15 | 2.48 | 2.07 | 1.93 | 1.87 | 1.8 | 1.68 |
| 18ºC | Capacity kW | 9.56 | 7.68 | 6.36 | 5.75 | 5.4351 | 4.78 | 4.49 |
| | Input kW. | 2.98 | 2.35 | 1.94 | 1.83 | 1.76 | 1.66 | 1.58 |
| 20ºC | Capacity kW | 8.92 | 7.05 | 5.8 | 5.28 | 5.02 | 4.42 | 4.12 |
| | Input kW. | 2.75 | 2.18 | 1.71 | 1.68 | 1.63 | 1.53 | 1.44 |
| 22ºC | Capacity kW | 8.12 | 6.48 | 5.43 | 4.87 | 4.6 | 4.06 | 3.78 |
| | Input kW. | 2.48 | 1.98 | 1.64 | 16 | 1.51 | 1.41 | 1.32 |
| 27ºC | Capacity kW | 7.12 | 5.62 | 4.68 | 4.21 | 4.02 | 3.51 | 3.28 |
| | Input kW. | 2.14 | 1.68 | 1.43 | 1.34 | 1.27 | 1.19 | 1.16 |

## 6.13 CTA-24HR1

| MODEL | | CTA-24HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 13.78 | 11.02 | 9.18 | 8.26 | 7.79 | 6.85 | 6.42 |
| | Input kW. | 4.30 | 3.43 | 2.87 | 2.71 | 2.55 | 2.46 | 2.30 |
| 18ºC | Capacity kW | 12.92 | 10.34 | 8.63 | 7.74 | 7.31 | 6.45 | 6.00 |
| | Input kW. | 4.05 | 3.18 | 2.67 | 2.54 | 2.41 | 2.30 | 2.13 |
| 20ºC | Capacity kW | 12.00 | 9.56 | 8.01 | 7.14 | 6.77 | 6.03 | 5.60 |
| | Input kW. | 3.75 | 3.00 | 2.50 | 2.35 | 2.23 | 2.14 | 2.00 |
| 22ºC | Capacity kW | 11.04 | 8.76 | 7.32 | 6.60 | 6.22 | 5.48 | 5.11 |
| | Input kW. | 3.42 | 2.71 | 2.28 | 2.14 | 2.01 | 1.88 | 1.82 |
| 27ºC | Capacity kW | 9.54 | 7.60 | 6.37 | 5.73 | 5.40 | 4.72 | 4.43 |
| | Input kW. | 3.00 | 2.33 | 2.00 | 1.91 | 1.75 | 1.68 | 1.60 |

## 6.14 CTB-18HR1

| MODEL | | CTB-18HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 10.42 | 9.92 | 8.71 | 7.55 | 6.89 | 5.74 | 5.02 |
| | Input kW. | 3.33 | 2.87 | 2.45 | 1.99 | 1.87 | 1.83 | 1.67 |
| 18ºC | Capacity kW | 9.76 | 8.67 | 7.68 | 6.04 | 5.42 | 4.99 | 4.51 |
| | Input kW. | 2.88 | 2.23 | 1.87 | 1.79 | 1.72 | 1.63 | 1.58 |
| 20ºC | Capacity kW | 9.04 | 8.76 | 7.8 | 6.28 | 5.71 | 4.42 | 4.12 |
| | Input kW. | 2.75 | 2.18 | 1.71 | 1.68 | 1.63 | 1.53 | 1.44 |
| 22ºC | Capacity kW | 8.12 | 6.48 | 5.46 | 4.83 | 4.6 | 4.06 | 3.78 |
| | Input kW. | 2.48 | 1.93 | 1.64 | 16.3 | 1.61 | 1.47 | 1.34 |
| 27ºC | Capacity kW | 7.14 | 6.52 | 5.65 | 5.12 | 4.98 | 4.13 | 3.87 |
| | Input kW. | 2.13 | 1.78 | 1.55 | 1.42 | 1.25 | 1.19 | 1.15 |

## 6.15 CTB-24HR1

| MODEL | | CTB-24HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 13.68 | 10.96 | 9.12 | 8.21 | 7.79 | 6.58 | 6.4 |
| | Input kW. | 4.18 | 3.4 | 2.76 | 2.65 | 2.53 | 2.4 | 2.27 |
| 18ºC | Capacity kW | 12.84 | 10.2 | 8.52 | 7.1 | 7.31 | 6.38 | 6.01 |
| | Input kW. | 4 | 3.12 | 2.61 | 2.5 | 2.4 | 2.23 | 2.09 |
| 20ºC | Capacity kW | 11.5 | 9.45 | 7.8 | 7.08 | 6.59 | 5.92 | 5.48 |
| | Input kW. | 3.6 | 2.88 | 2.28 | 2.2 | 2.03 | 2.04 | 1.92 |
| 22ºC | Capacity kW | 10.95 | 8.68 | 7.28 | 6.58 | 6.18 | 5.48 | 5.12 |
| | Input kW. | 3.38 | 2.68 | 2.22 | 2.11 | 2.01 | 1.93 | 1.78 |
| 27ºC | Capacity kW | 9.48 | 7.59 | 6.31 | 5.68 | 5.37 | 4.78 | 4.45 |
| | Input kW. | 2.92 | 2.32 | 1.95 | 1.83 | 1.76 | 1.65 | 1.58 |

## 6.16 CTB-36HR1

| MODEL | | CTB-36HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 19.16 | 15.35 | 12.76 | 11.46 | 10.83 | 9.55 | 8.92 |
| | Input kW. | 6.32 | 5.11 | 4.22 | 4.03 | 3.77 | 3.62 | 3.4 |
| 18ºC | Capacity kW | 17.87 | 14.33 | 11.89 | 10.74 | 10.17 | 9.03 | 8.37 |
| | Input kW. | 6 | 4.76 | 3.98 | 3.78 | 3.58 | 3.37 | 3.19 |
| 20ºC | Capacity kW | 16.62 | 13.29 | 11.55 | 9.89 | 9.48 | 8.31 | 7.73 |
| | Input kW. | 5.38 | 4.26 | 3.42 | 3.31 | 3.18 | 3.08 | 2.92 |
| 22ºC | Capacity kW | 15.28 | 12.26 | 10.24 | 9.12 | 8.66 | 7.62 | 7.11 |
| | Input kW. | 5.08 | 4.08 | 3.39 | 3.17 | 3.04 | 2.87 | 2.72 |
| 27ºC | Capacity kW | 13.3 | 10.62 | 8.86 | 8.03 | 7.53 | 6.62 | 6.2 |
| | Input kW. | 4.36 | 3.52 | 2.95 | 2.81 | 2.62 | 2.49 | 2.36 |

## 6.17 CTB-48HR1

| MODEL | | CTB-48HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 26.18 | 20.96 | 17.46 | 15.71 | 14.84 | 13.09 | 12.22 |
| | Input kW. | 8.56 | 6.87 | 5.72 | 5.43 | 5.14 | 4.86 | 4.59 |
| 18ºC | Capacity kW | 24.57 | 19.66 | 16.4 | 14.73 | 13.91 | 12.29 | 11.47 |
| | Input kW. | 8.12 | 6.43 | 5.37 | 5.12 | 4.86 | 4.59 | 4.31 |
| 20ºC | Capacity kW | 22.65 | 18.15 | 15.20 | 13.54 | 12.88 | 11.28 | 10.59 |
| | Input kW. | 7.46 | 5.97 | 5.42 | 4.98 | 4.72 | 4.35 | 4.14 |
| 22ºC | Capacity kW | 20.92 | 16.74 | 13.96 | 12.54 | 11.85 | 10.45 | 9.76 |
| | Input kW. | 6.85 | 5.52 | 4.63 | 4.38 | 4.14 | 3.89 | 3.72 |
| 27ºC | Capacity kW | 18.21 | 14.52 | 12.14 | 10.89 | 10.31 | 9.1 | 8.49 |
| | Input kW. | 5.96 | 4.82 | 3.99 | 3.81 | 3.64 | 3.42 | 3.22 |

## 6.18 CTB-60HR1

| MODEL | | CTB-60HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 30.36 | 24.25 | 20.24 | 18.24 | 17.21 | 15.21 | 14.17 |
| | Input kW. | 10.31 | 8.24 | 6.88 | 6.54 | 6.19 | 5.85 | 5.51 |
| 18ºC | Capacity kW | 28.51 | 22.81 | 19.12 | 17.16 | 16.17 | 14.26 | 13.31 |
| | Input kW. | 9.72 | 7.81 | 6.52 | 6.14 | 5.82 | 5.5 | 5.16 |
| 20ºC | Capacity kW | 26.4 | 21.14 | 17.6 | 15.84 | 15.02 | 13.24 | 12.32 |
| | Input kW. | 8.95 | 7.18 | 6.09 | 5.66 | 5.38 | 5.06 | 4.81 |
| 22ºC | Capacity kW | 24.32 | 19.4 | 16.2 | 14.58 | 13.76 | 12.15 | 11.34 |
| | Input kW. | 8.3 | 6.59 | 5.5 | 5.22 | 4.93 | 4.67 | 4.4 |
| 27ºC | Capacity kW | 21.14 | 16.92 | 14.12 | 12.68 | 11.98 | 10.62 | 9.88 |
| | Input kW. | 7.18 | 5.74 | 4.78 | 4.54 | 4.34 | 4.05 | 3.82 |

## 6.19 CTB-48HR1-B

| MODEL | | CTB-48HR1-B | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 25.10 | 20.45 | 16.33 | 15.54 | 14.82 | 13.34 | 12.03 |
| | Input kW. | 8.43 | 6.56 | 5.45 | 5.23 | 5.04 | 4.67 | 4.45 |
| 18ºC | Capacity kW | 23.37 | 19.34 | 16.21 | 14.35 | 13.77 | 12.02 | 11.23 |
| | Input kW. | 8.09 | 6.34 | 5.11 | 5.01 | 4.83 | 4.49 | 4.21 |
| 20ºC | Capacity kW | 22.22 | 17.19 | 15.17 | 13.38 | 12.71 | 11.03 | 10.48 |
| | Input kW. | 7.24 | 5.87 | 5.41 | 4.72 | 4.55 | 4.37 | 4.13 |
| 22ºC | Capacity kW | 19.92 | 15.79 | 13.55 | 12.34 | 11.66 | 10.92 | 9.70 |
| | Input kW. | 6.84 | 5.51 | 4.68 | 4.45 | 4.03 | 3.76 | 3.49 |
| 27ºC | Capacity kW | 17.23 | 14.50 | 12.22 | 10.77 | 10.34 | 9.10 | 8.38 |
| | Input kW. | 5.96 | 4.81 | 3.98 | 3.77 | 3.60 | 3.22 | 3.27 |

## 6.20 CTB-60HR1-B

| MODEL | | CTB-60HR1-B | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 29.36 | 24.28 | 20.21 | 18.20 | 17.41 | 15.17 | 14.03 |
| | Input kW. | 10.32 | 8.21 | 6.65 | 6.53 | 6.00 | 5.68 | 5.34 |
| 18ºC | Capacity kW | 27.44 | 22.57 | 19.02 | 17.11 | 15.17 | 14.25 | 13.27 |
| | Input kW. | 9.56 | 7.45 | 6.53 | 6.36 | 5.64 | 5.92 | 5.43 |
| 20ºC | Capacity kW | 25.46 | 20.14 | 17.32 | 15.28 | 15.32 | 13.69 | 12.00 |
| | Input kW. | 8.96 | 7.21 | 6.67 | 5.23 | 5.11 | 5.34 | 4.45 |
| 22ºC | Capacity kW | 23.33 | 19.4 | 16.15 | 14.56 | 13.76 | 12.10 | 11.34 |
| | Input kW. | 8.38 | 6.59 | 5.54 | 5.27 | 4.92 | 4.63 | 4.35 |
| 27ºC | Capacity kW | 20.14 | 16.98 | 14.12 | 12.47 | 11.89 | 10.66 | 9.82 |
| | Input kW. | 7.11 | 5.77 | 4.75 | 4.65 | 4.34 | 4.09 | 3.71 |

## 6.21 CTH-48HR1

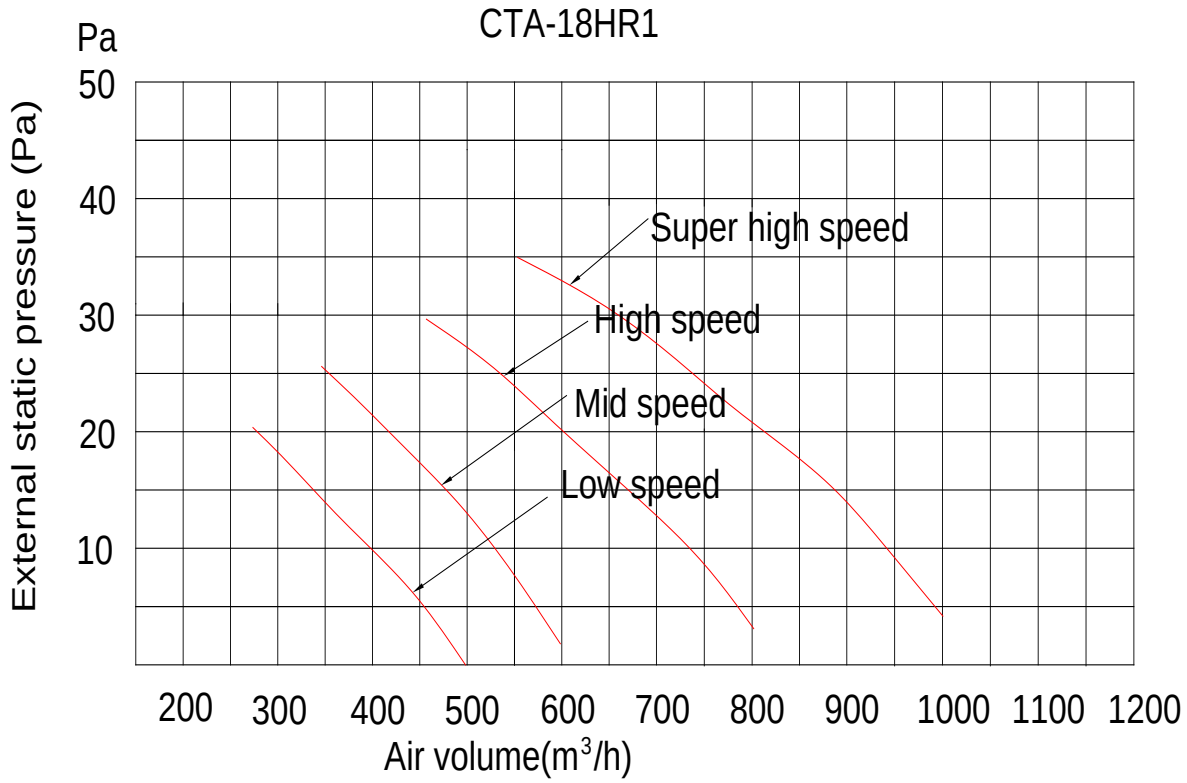
| MODEL | | CTH-48HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 26.13 | 20.86 | 17.42 | 15.72 | 14.81 | 13.19 | 12.25 |
| | Input kW. | 8.52 | 6.86 | 5.74 | 5.41 | 5.17 | 4.83 | 4.55 |
| 18ºC | Capacity kW | 24.57 | 19.62 | 16.43 | 14.77 | 13.988 | 12.19 | 11.44 |
| | Input kW. | 8.17 | 6.46 | 5.27 | 5.15 | 4.84 | 4.56 | 4.21 |
| 20ºC | Capacity kW | 22.62 | 18.17 | 15.23 | 13.47 | 12.85 | 11.18 | 10.54 |
| | Input kW. | 7.43 | 5.97 | 5.42 | 4.92 | 4.72 | 4.35 | 4.14 |
| 22ºC | Capacity kW | 20.94 | 16.75 | 13.93 | 12.57 | 11.86 | 10.42 | 9.71 |
| | Input kW. | 6.87 | 5.52 | 4.61 | 4.32 | 4.14 | 3.83 | 3.72 |
| 27ºC | Capacity kW | 18.24 | 14.57 | 12.16 | 10.80 | 10.31 | 9.11 | 8.42 |
| | Input kW. | 5.98 | 4.85 | 3.97 | 3.81 | 3.64 | 3.42 | 3.28 |

## 6.22 CTH-60HR1

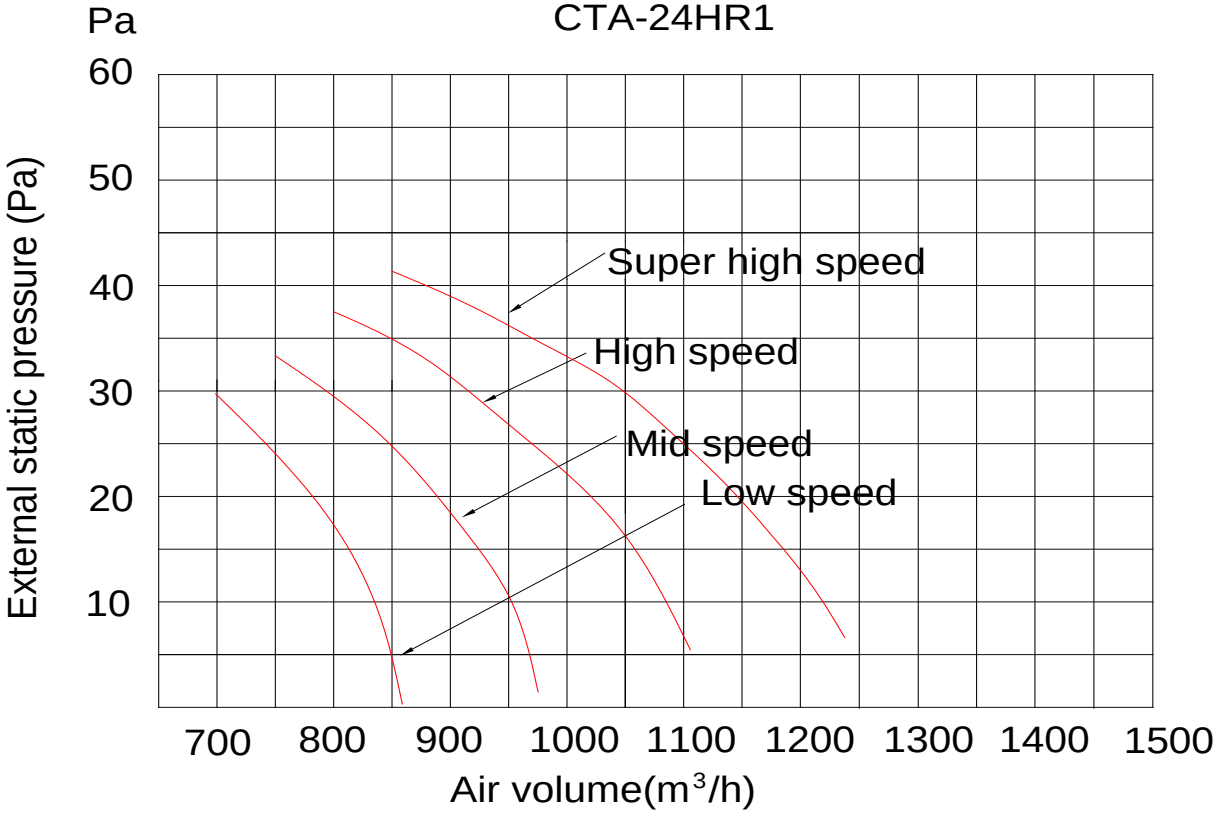
| MODEL | | CTH-60HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC DB 18ºC WB | 12ºC DB 11ºC WB | 7ºC DB 6ºC WB | 4ºC DB 3ºC WB | 0ºC DB -1ºC WB | -5ºC DB -6ºC WB | -7ºC DB -8ºC WB |
| 15ºC | Capacity kW | 30.32 | 24.23 | 20.22 | 18.27 | 17.21 | 15.29 | 14.16 |
| | Input kW. | 10.37 | 8.22 | 6.85 | 6.57 | 6.13 | 5.80 | 5.58 |
| 18ºC | Capacity kW | 28.54 | 22.81 | 19.12 | 17.16 | 16.17 | 14.26 | 13.33 |
| | Input kW. | 9.72 | 7.83 | 6.54 | 6.16 | 5.84 | 5.52 | 5.13 |
| 20ºC | Capacity kW | 26.4 | 21.14 | 17.6 | 15.84 | 15.02 | 13.24 | 12.36 |
| | Input kW. | 8.92 | 7.13 | 6.09 | 5.65 | 5.37 | 5.05 | 4.83 |
| 22ºC | Capacity kW | 24.35 | 19.4 | 16.26 | 14.58 | 13.79 | 12.12 | 11.37 |
| | Input kW. | 8.38 | 6.59 | 5.54 | 5.22 | 4.92 | 4.67 | 4.4 |
| 27ºC | Capacity kW | 21.16 | 16.98 | 14.17 | 12.65 | 11.98 | 10.66 | 9.82 |
| | Input kW. | 7.11 | 5.74 | 4.72 | 4.55 | 4.39 | 4.05 | 3.81 |

# 7.Static Pressure

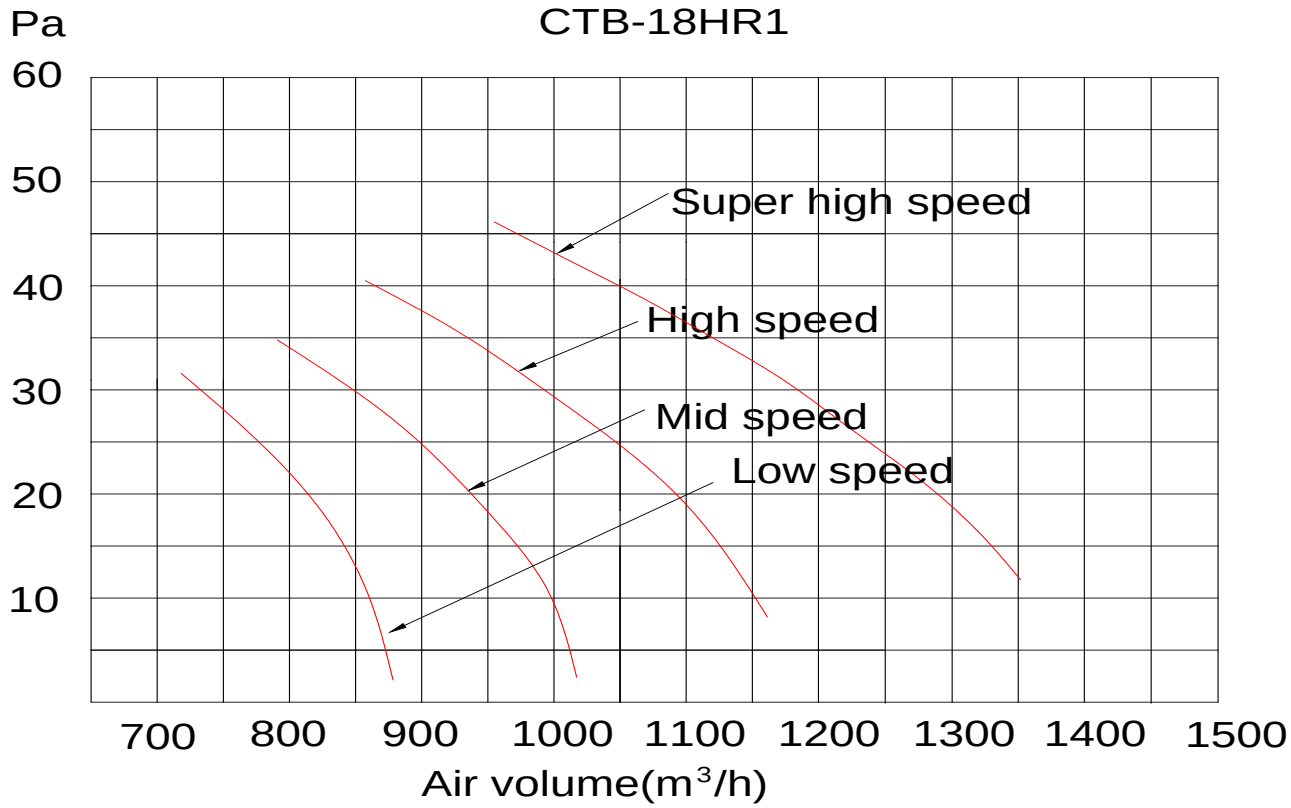
## 7.1 CTA-18HR1



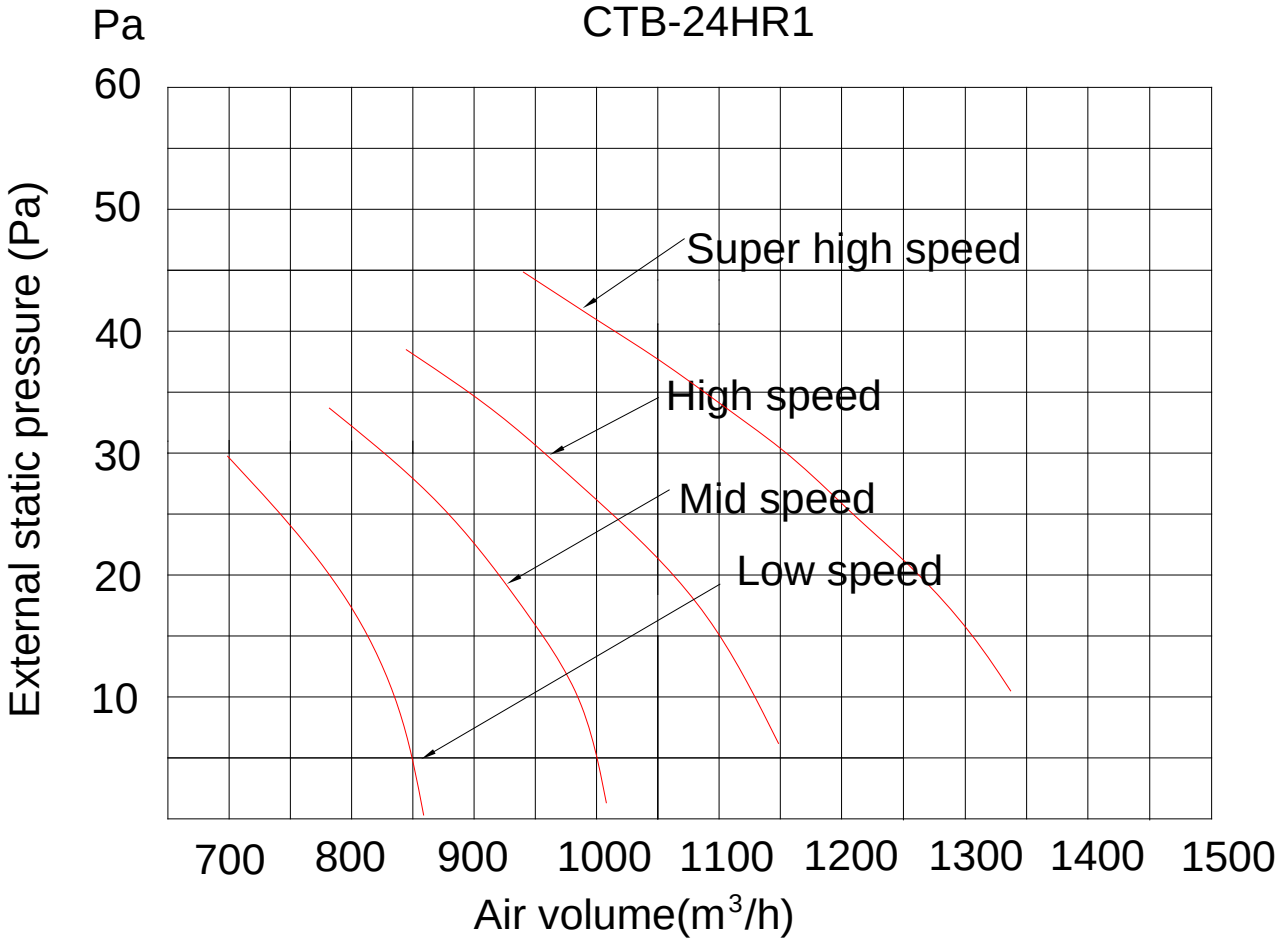

## 7.2 CTA-24HR1



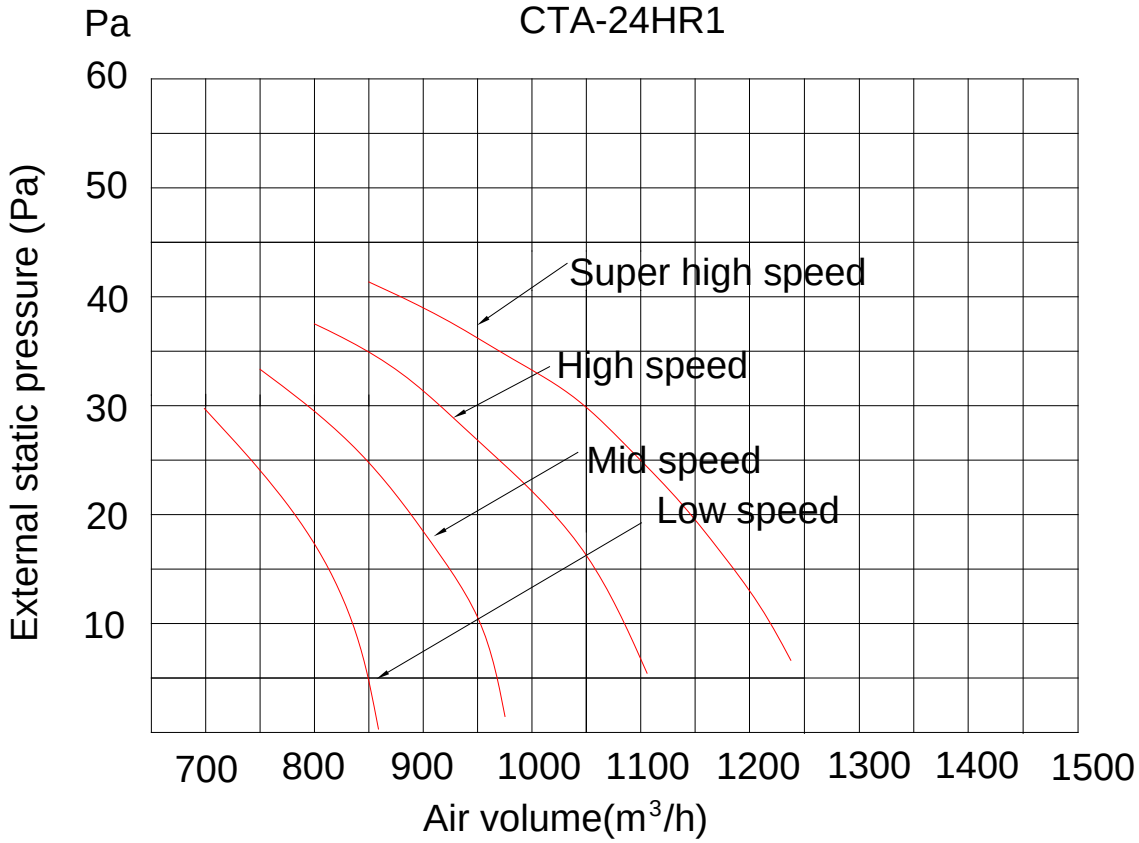
## 7.3 CTB-18HR1



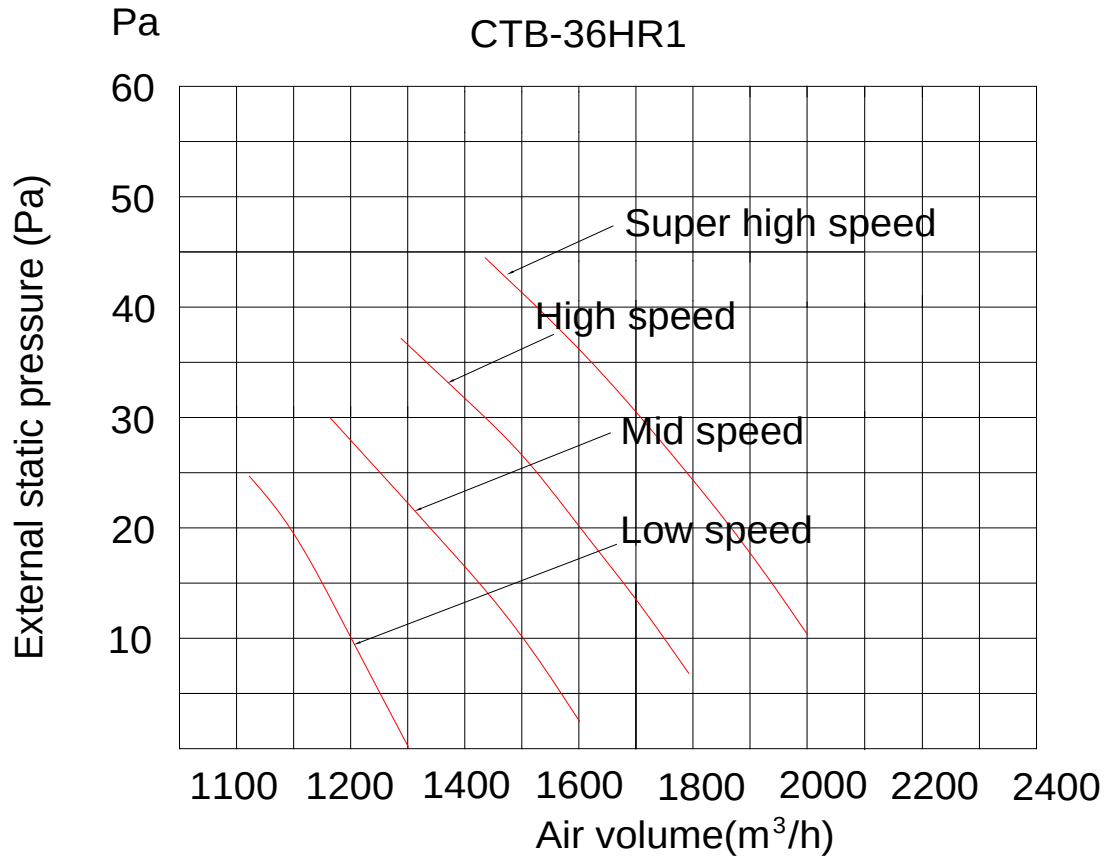

## 7.4 CTB-24HR1



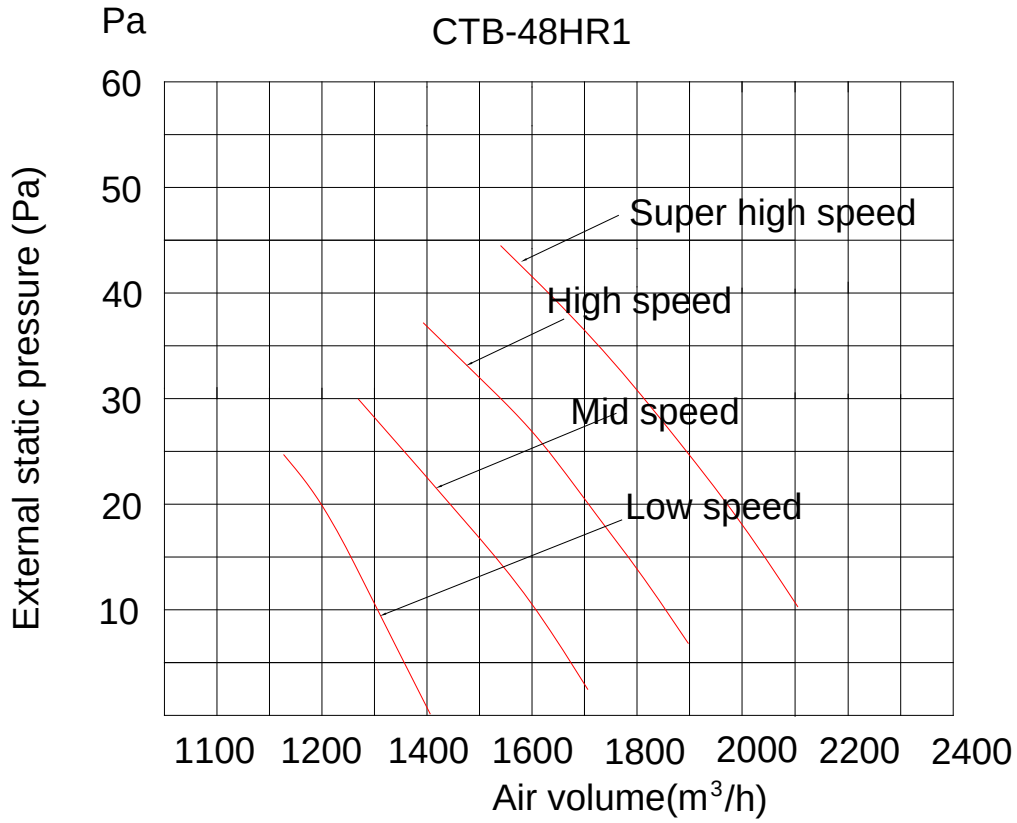
## 7.5 CTA-36HR1



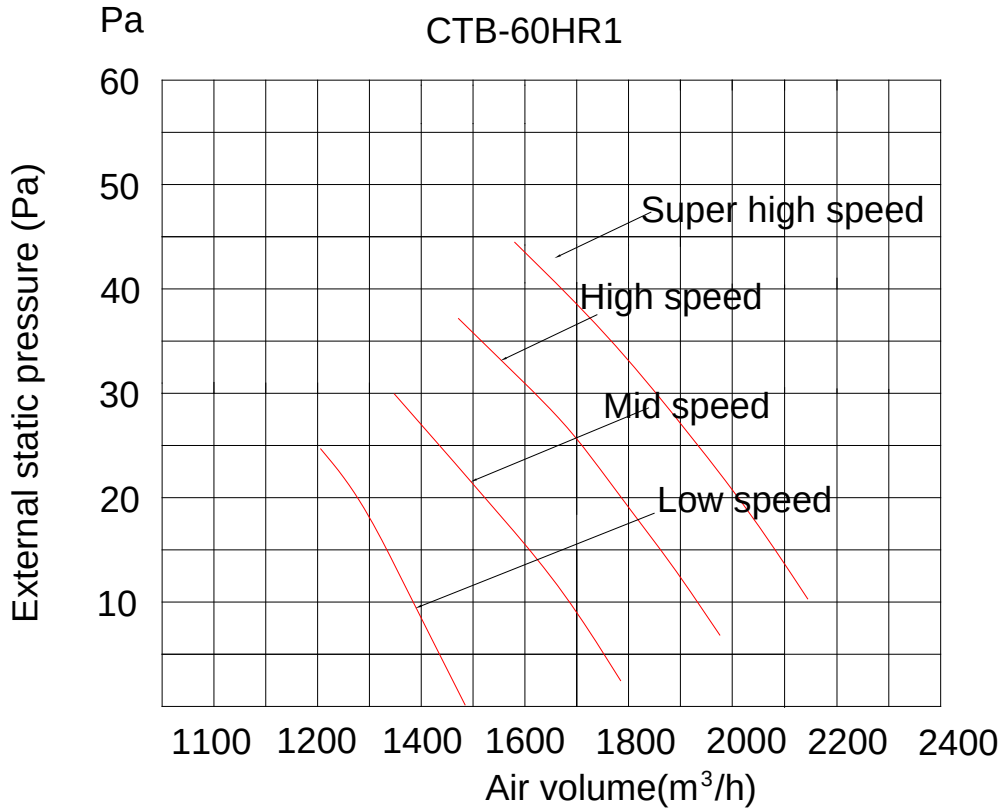

## 7.6 CTB-36HR1



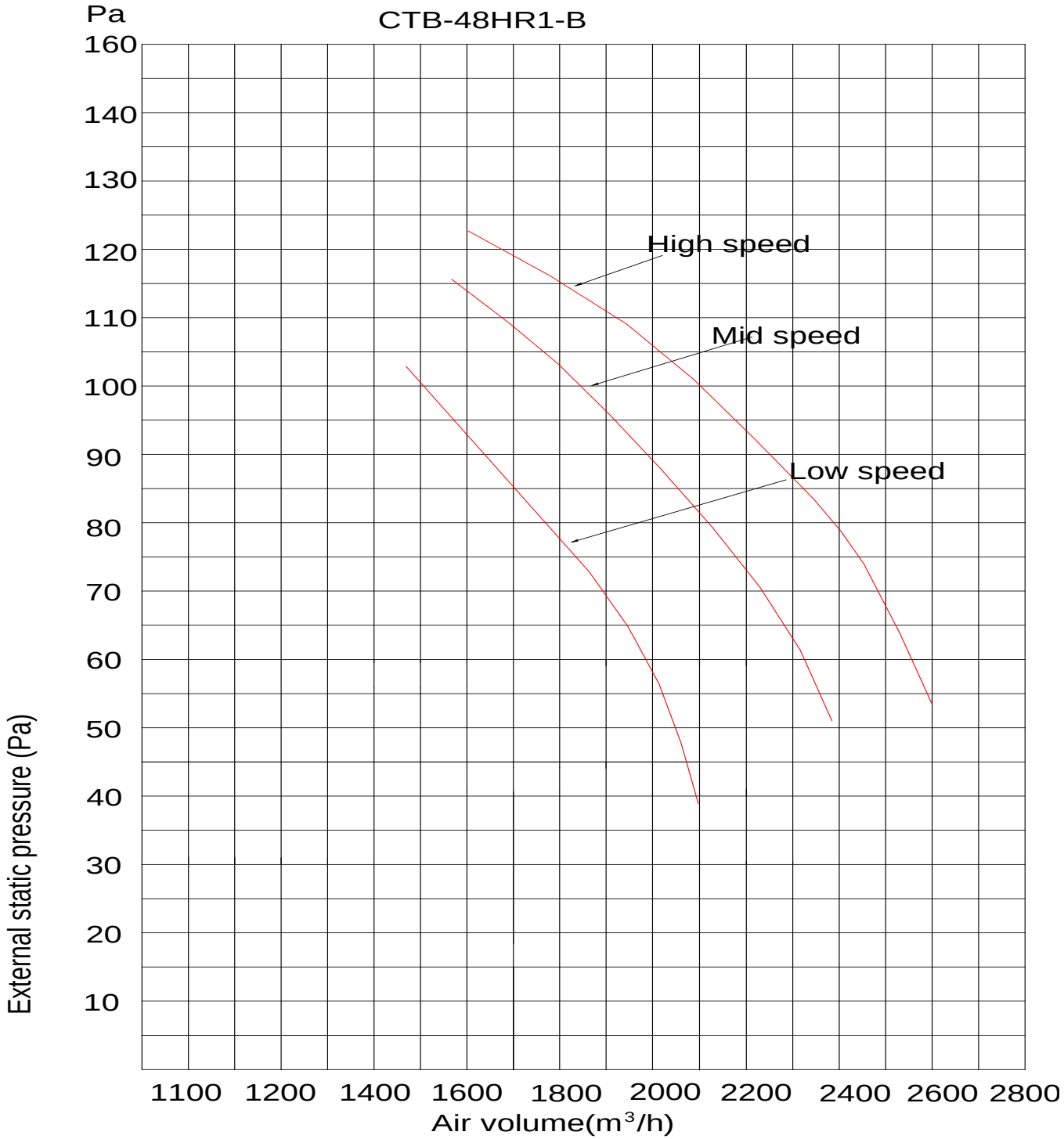
## 7.7 CTB-48HR1



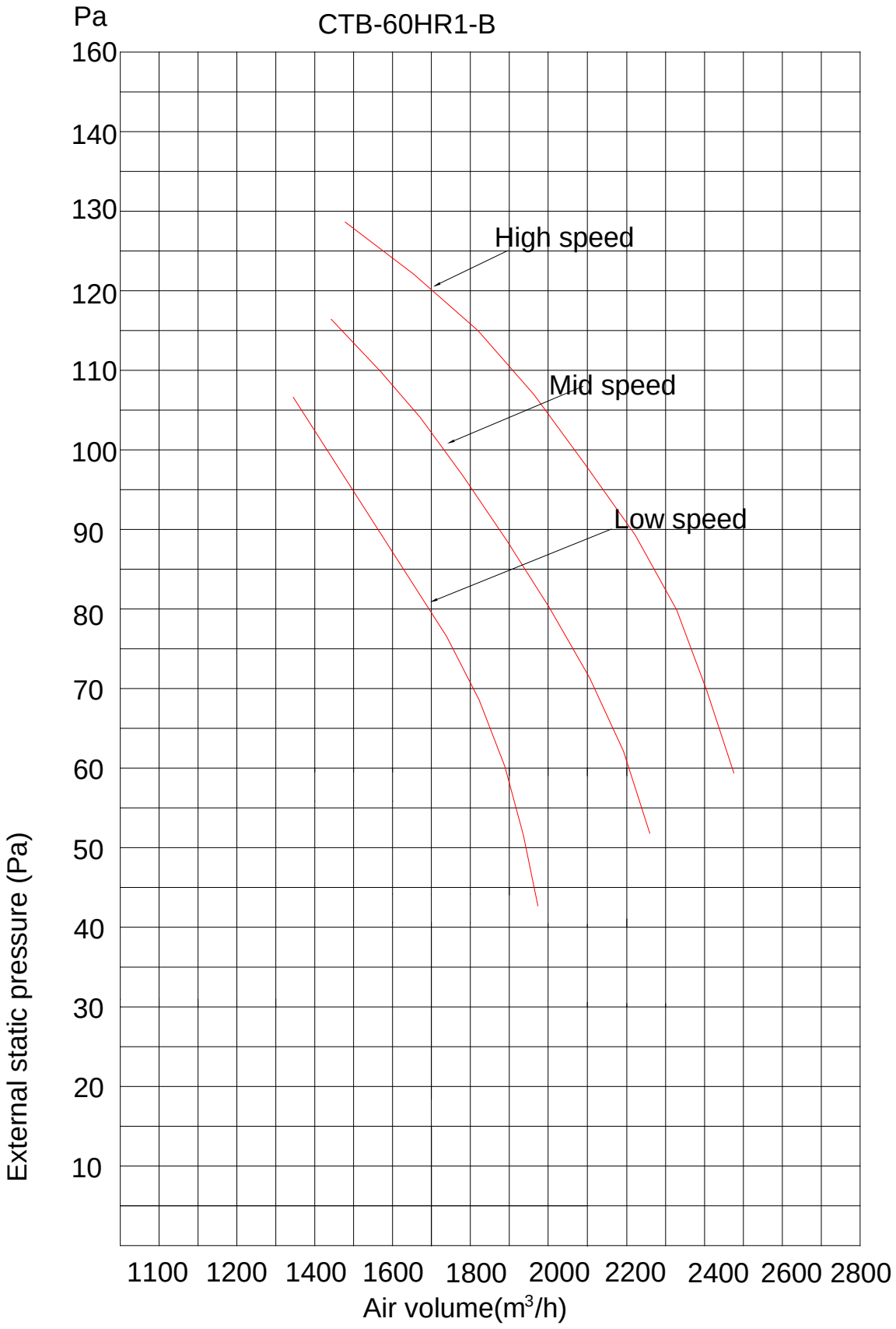

## 7.8 CTB-60HR1



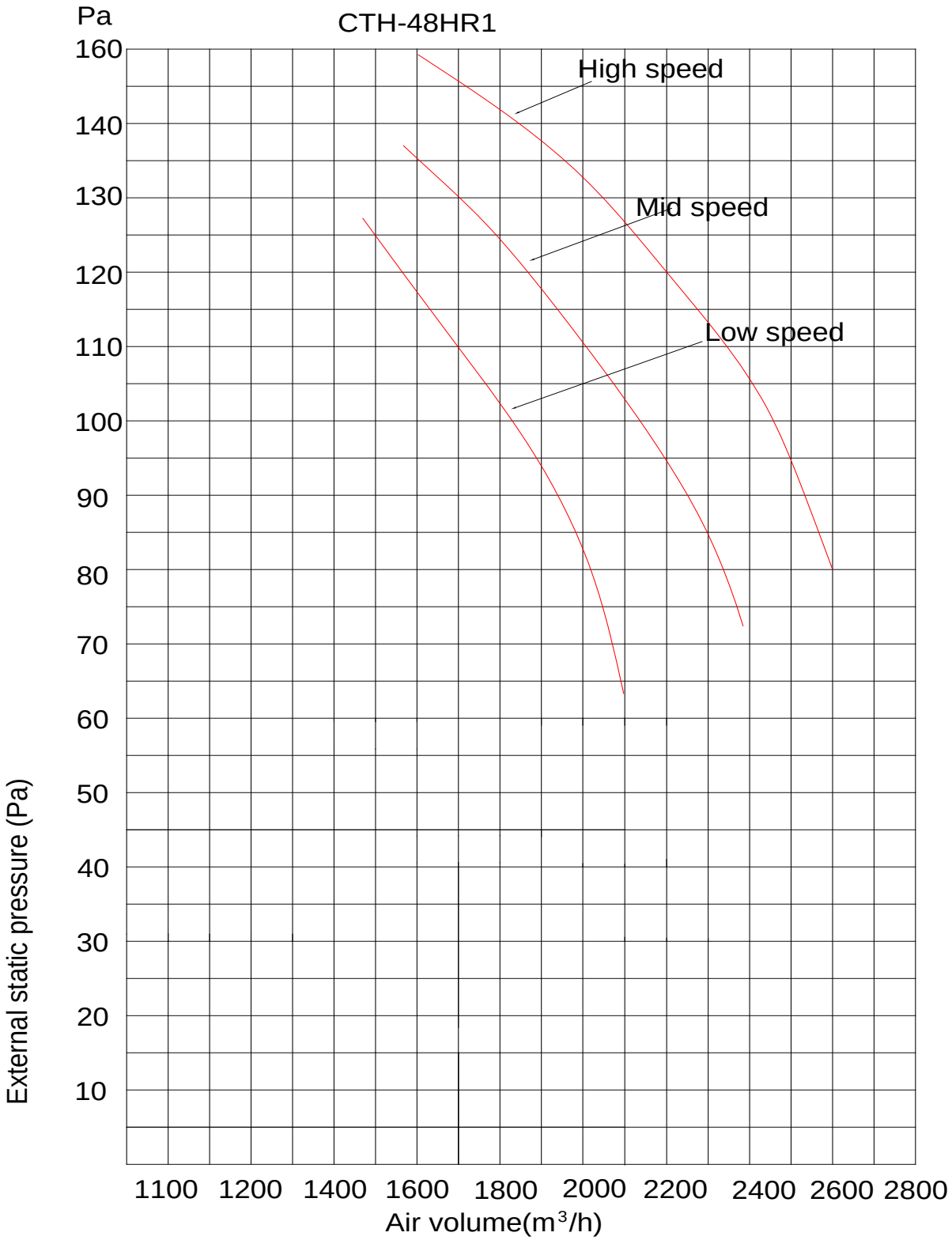
## 7.9 CTB-48HR1-B



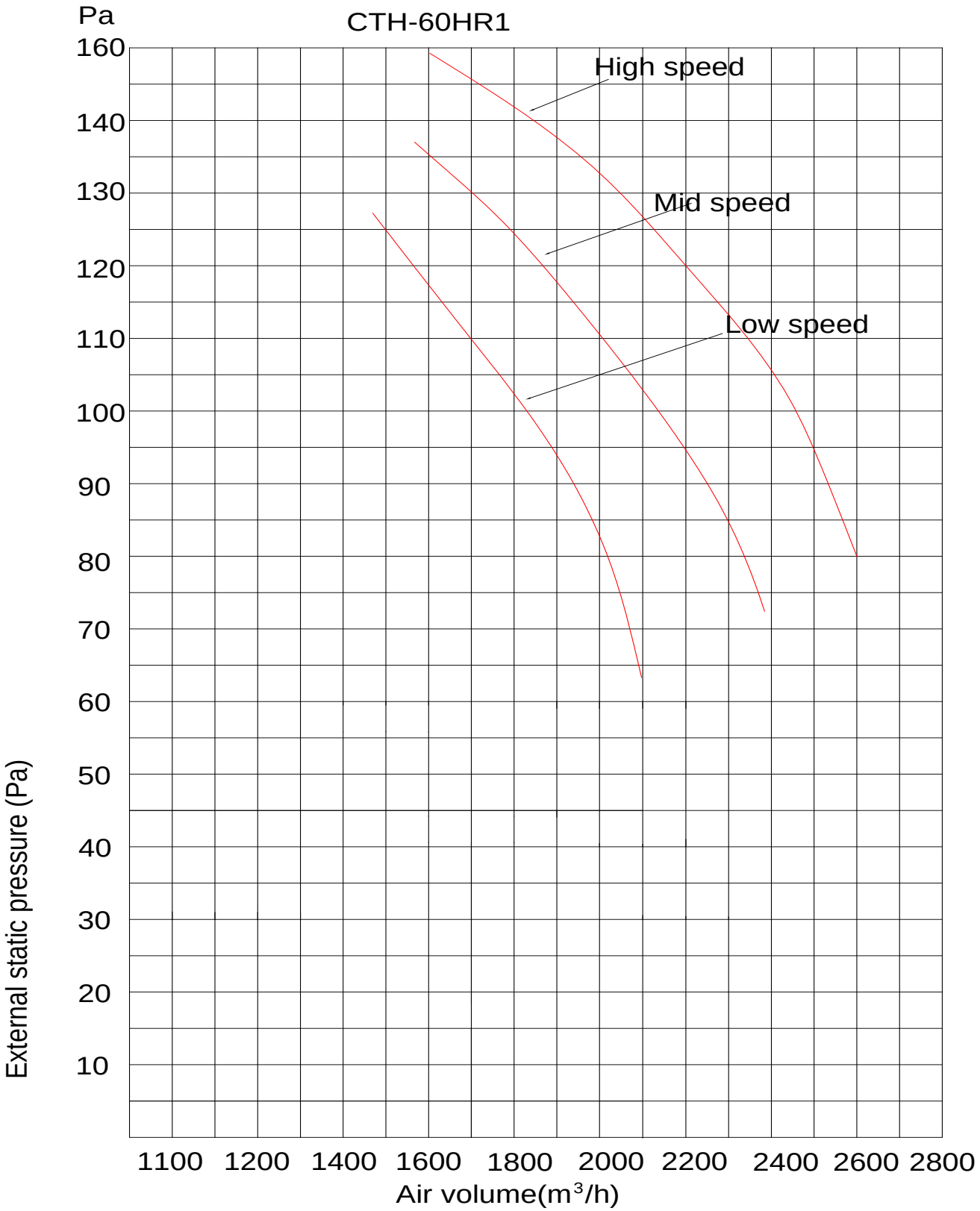
## 7.10 CTB-60HR1-B



## 7.11 CTH-48HR1



## 7.12 CTH-60HR1

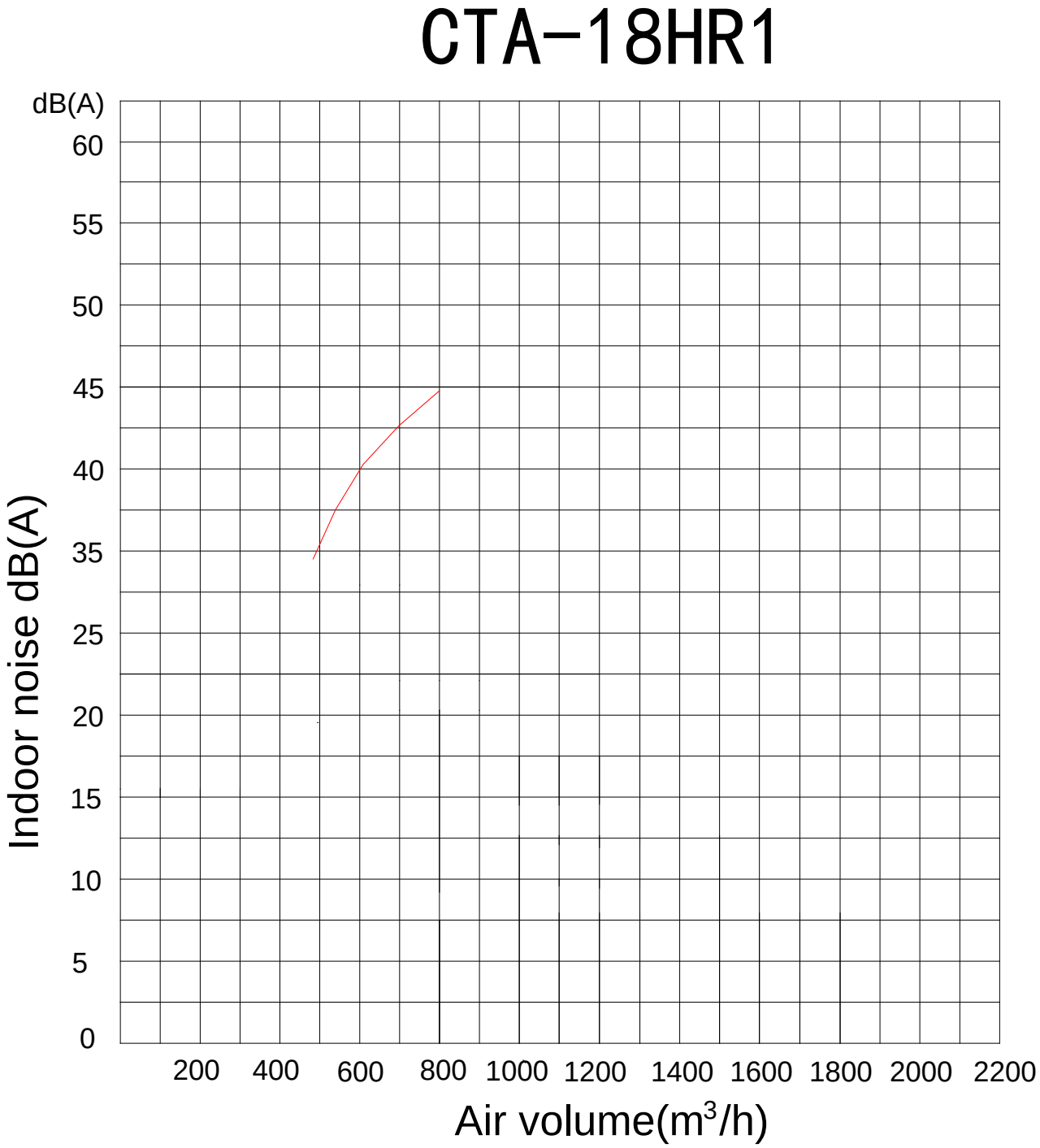


# 8.Electric Characteristics

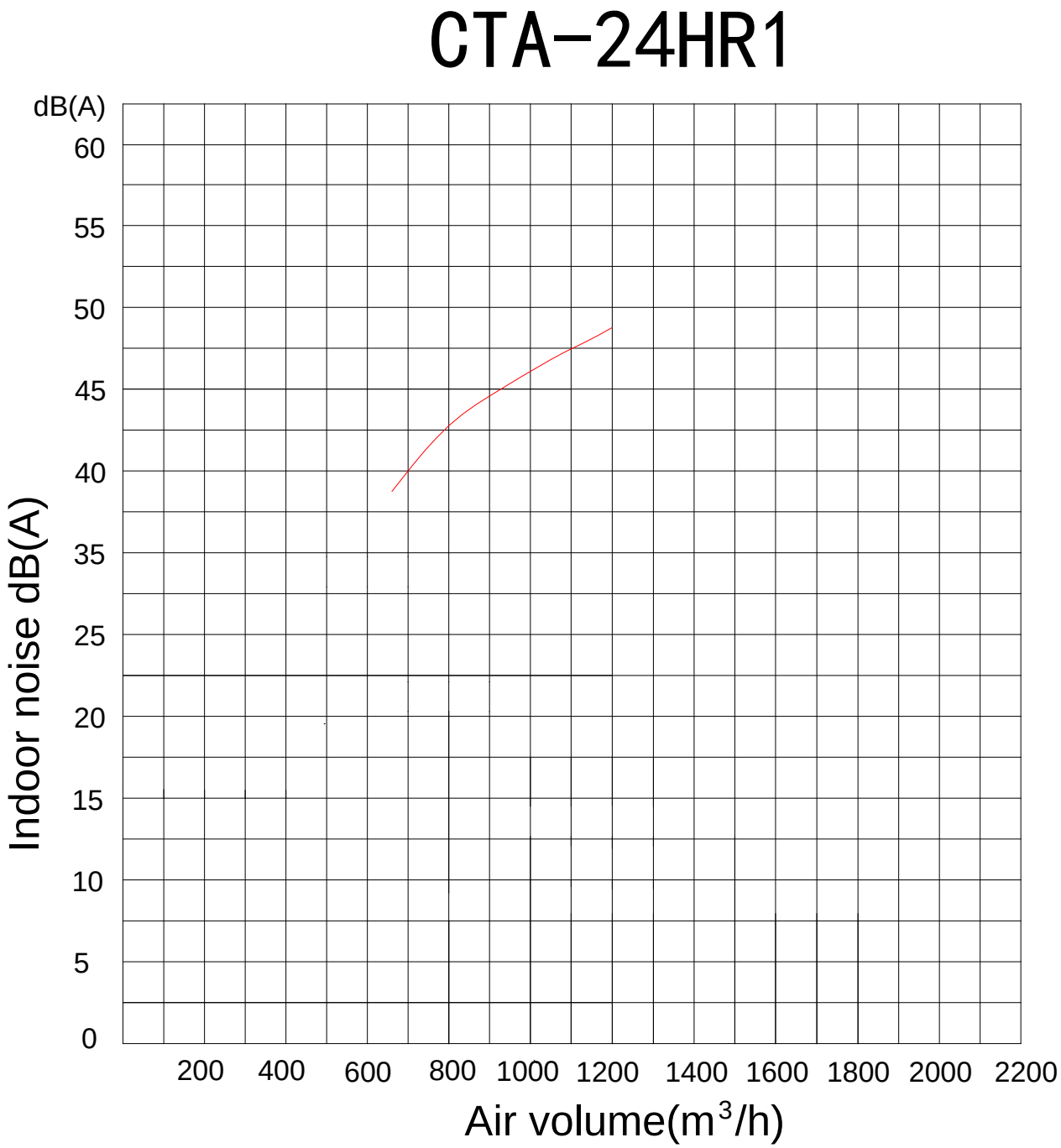
| Model | Indoor Units | | | |
|---|---|---|---|---|
| | Hz | Voltage | Min. | Max. |
| CTA-18HR1 | 50 | 220-240V | 198 | 254 |
| CTA-24HR1 | 50 | 220-240V | 198 | 254 |
| CTB-18HR1 | 50 | 220-240V | 198 | 254 |
| CTB-24HR1 | 50 | 220-240V | 198 | 254 |
| CTB-36HR1 | 50 | 220-240V | 198 | 254 |
| CTB-48HR1 | 50 | 220-240V | 198 | 254 |
| CTB-60HR1 | 50 | 220-240V | 198 | 254 |
| CTB-48HR1-B | 50 | 220-240V | 198 | 254 |
| CTB-60HR1-B | 50 | 220-240V | 198 | 254 |
| CTH-48HR1 | 50 | 220-240V | 198 | 254 |
| CTH-60HR1 | 50 | 220-240V | 198 | 254 |

# 9.Sound Levels

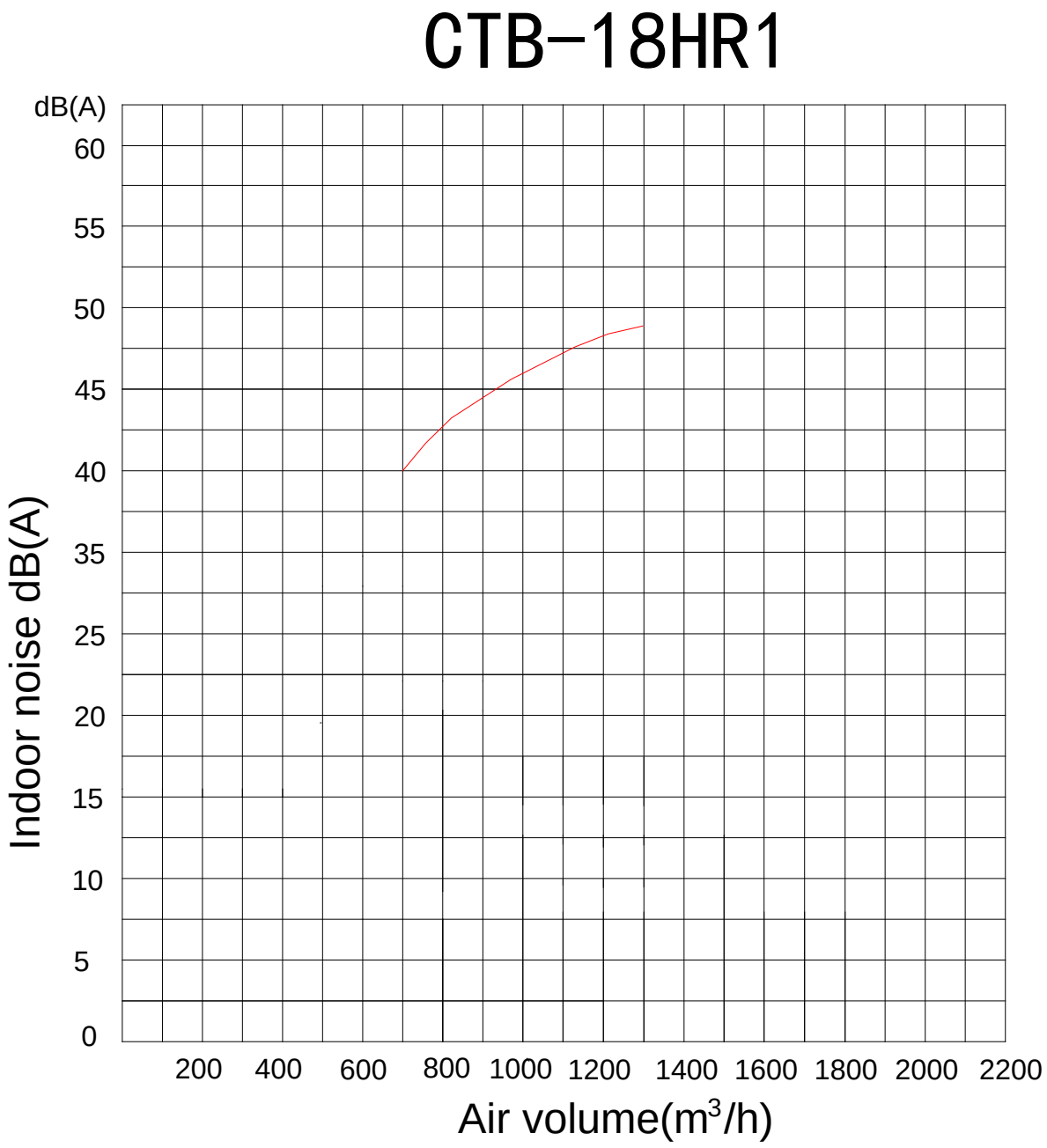
## 9.1 CTA-18HR1



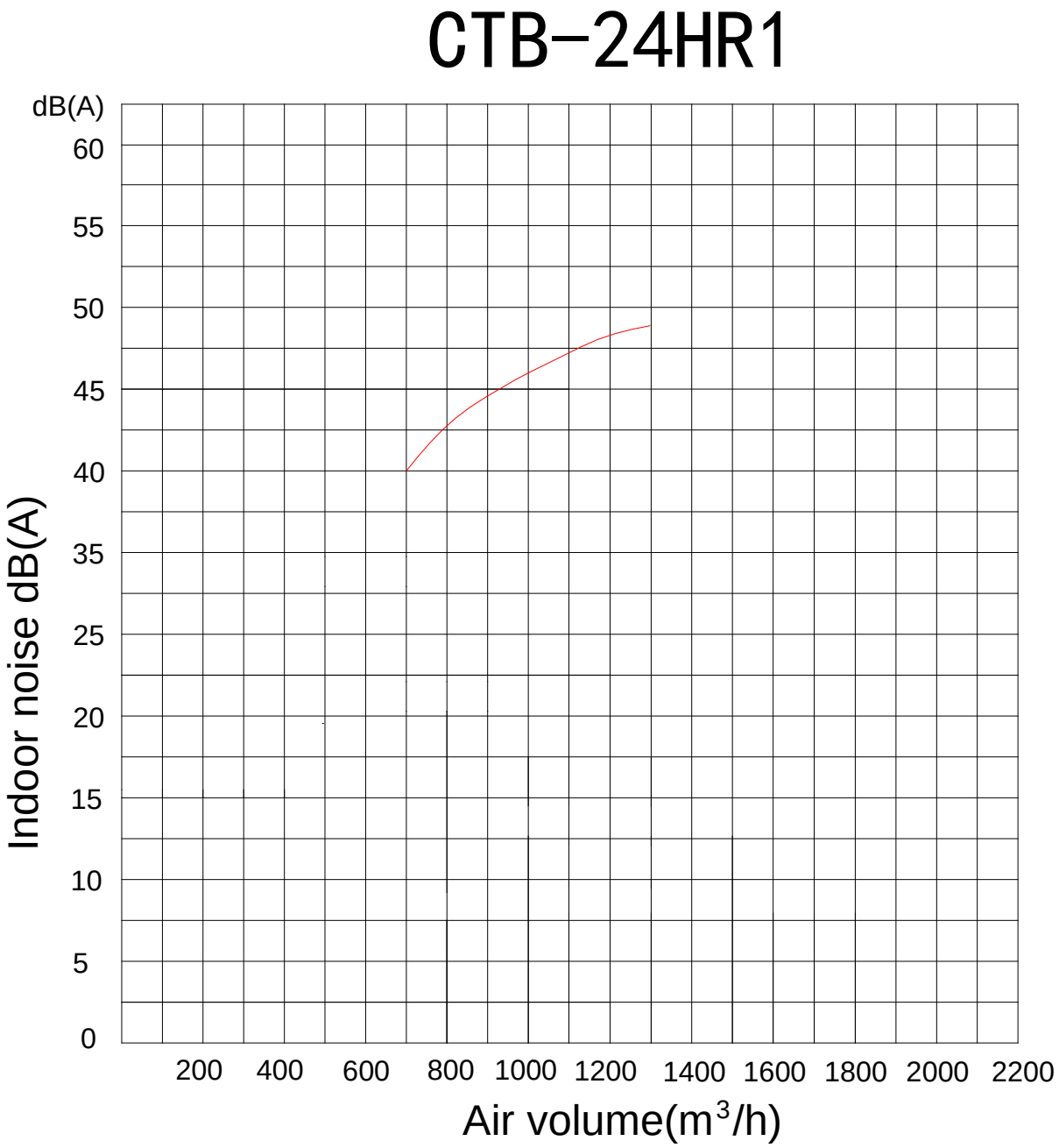
## 9.2 CTA-24HR1


CTA-24HR1
dB(A)
60
55
50
45
40
35
25
20
15
10
5
0
Indoor noise dB(A)
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
Air volume(m3/h)

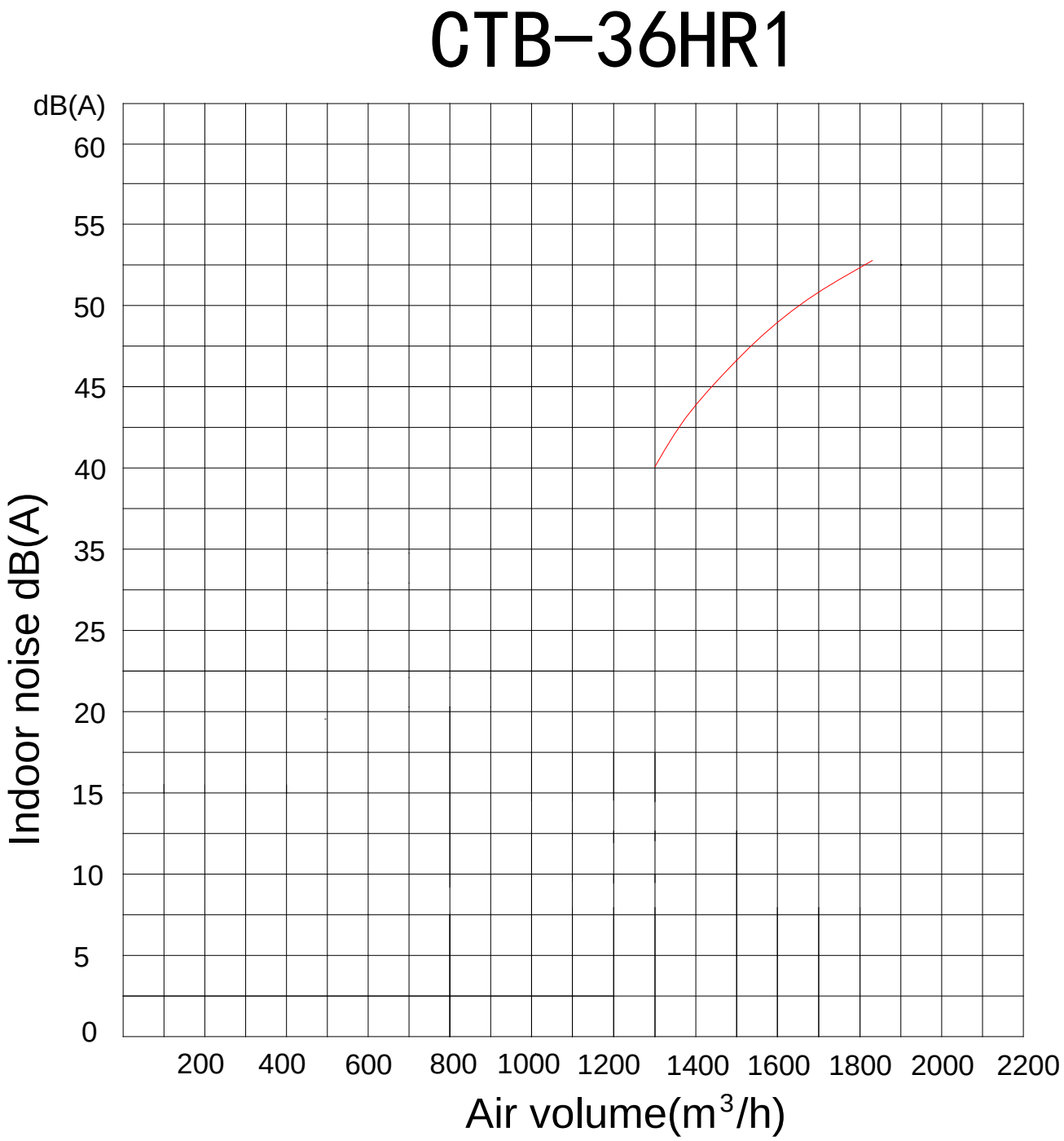
## 9.3 CTB-18HR1


CTB-18HR1
dB(A)
60
55
50
45
40
35
25
20
15
10
5
0
Indoor noise dB(A)
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
Air volume(m3/h)

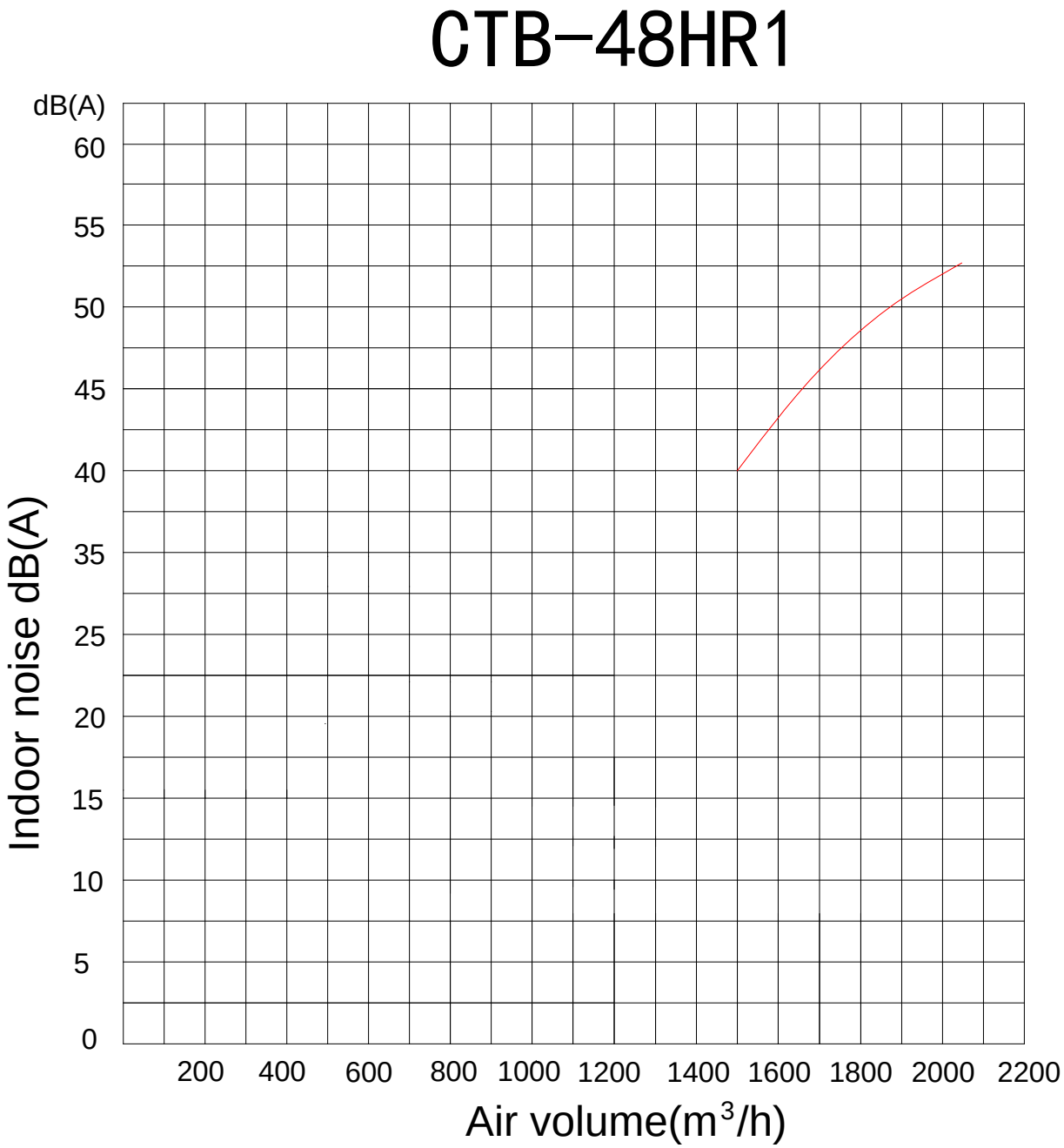
## 9.4 CTB-24HR1


CTB-24HR1
dB(A)
60
55
50
45
40
35
25
20
15
10
5
0
Indoor noise dB(A)
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
Air volume(m3/h)

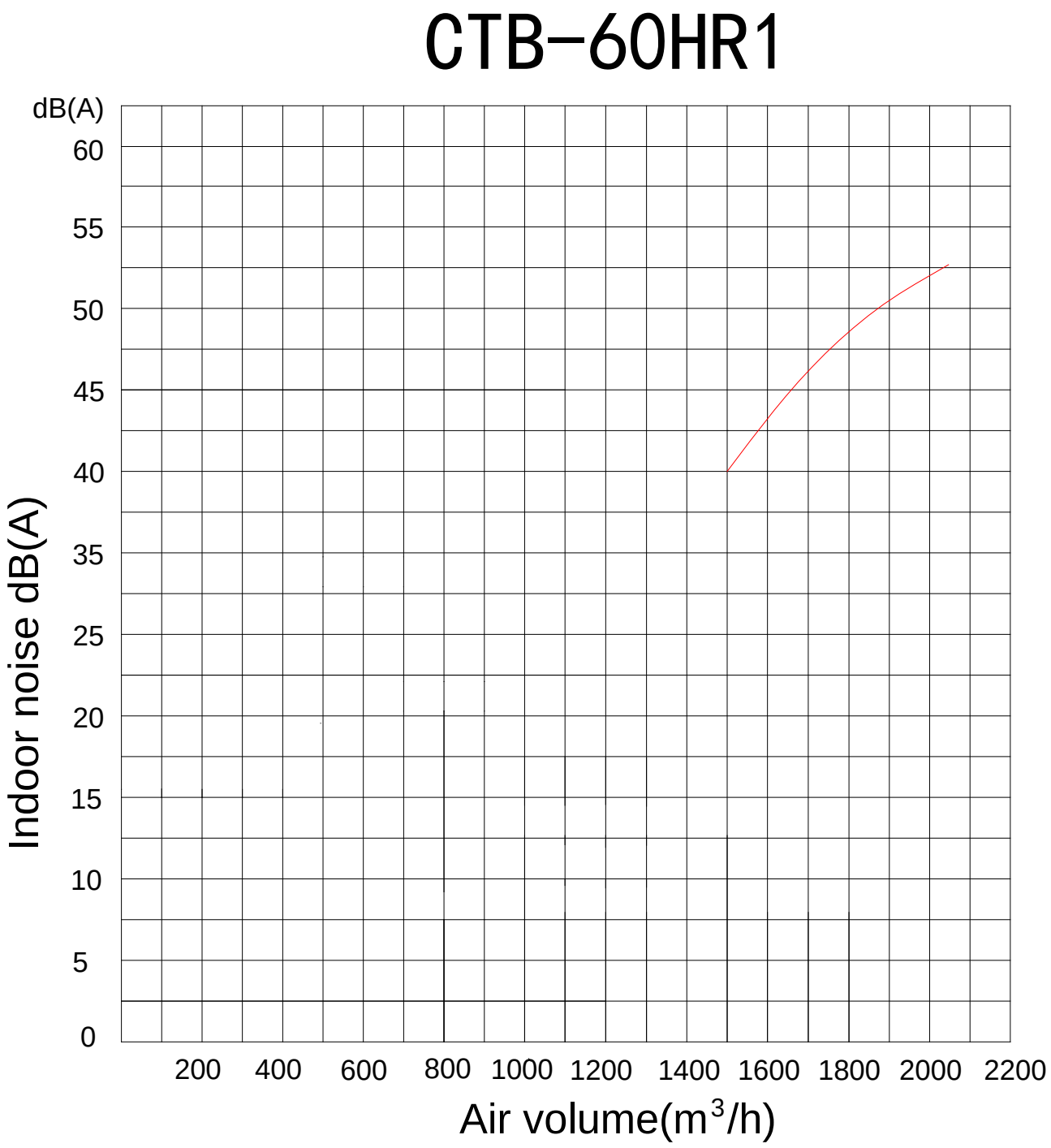
## 9.5 CTB-36HR1


CTB-36HR1
dB(A)
60
55
50
45
40
35
25
20
15
10
5
0
Indoor noise dB(A)
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
Air volume(m3/h)

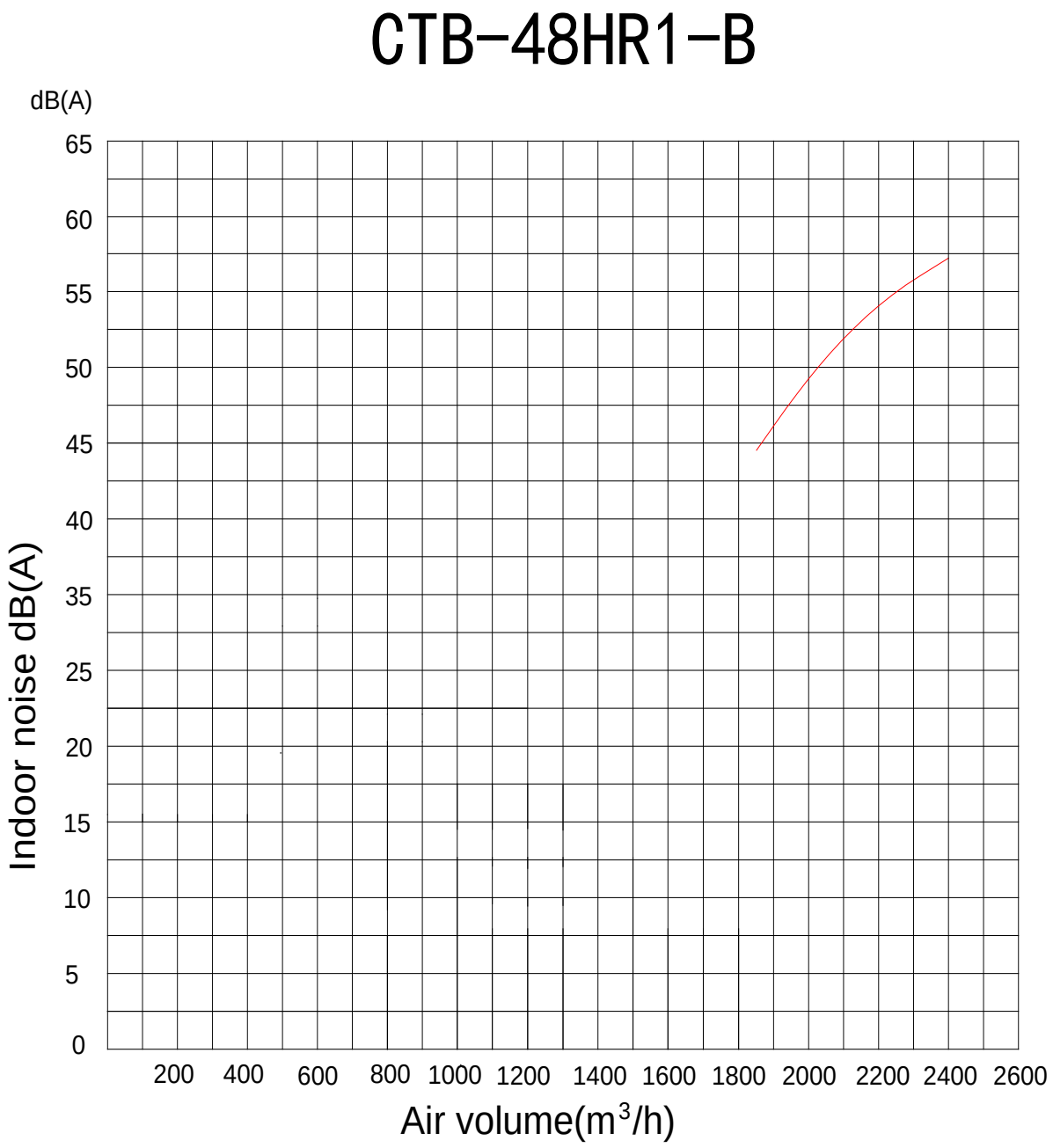
## 9.6 CTB-48HR1


CTB-48HR1
dB(A)
60
55
50
45
40
35
25
20
15
10
5
0
Indoor noise dB(A)
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
Air volume(m3/h)

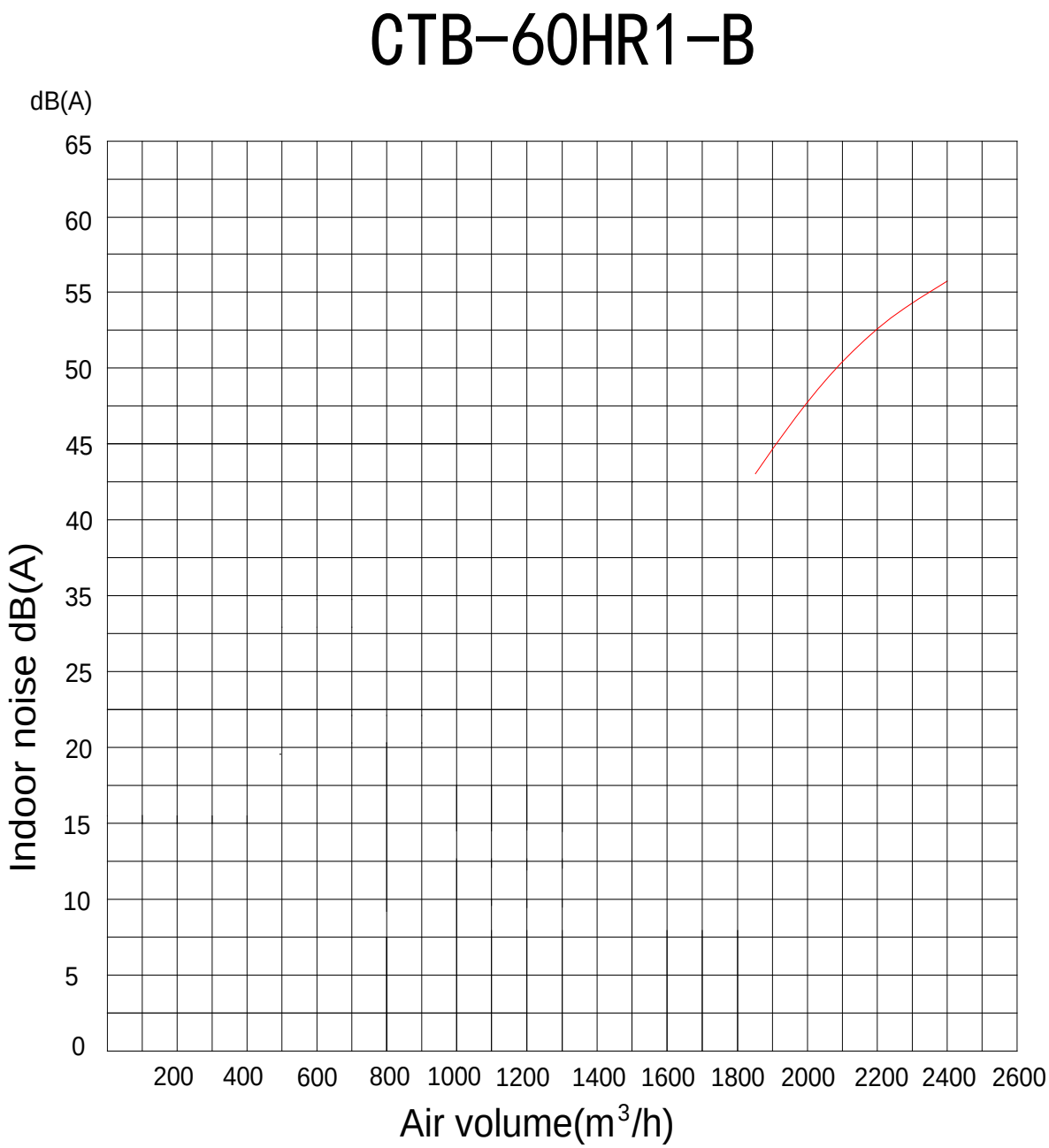
## 9.7 CTB-60HR1


CTB-60HR1
dB(A)
60
55
50
45
40
35
25
20
15
10
5
0
Indoor noise dB(A)
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
Air volume(m3/h)

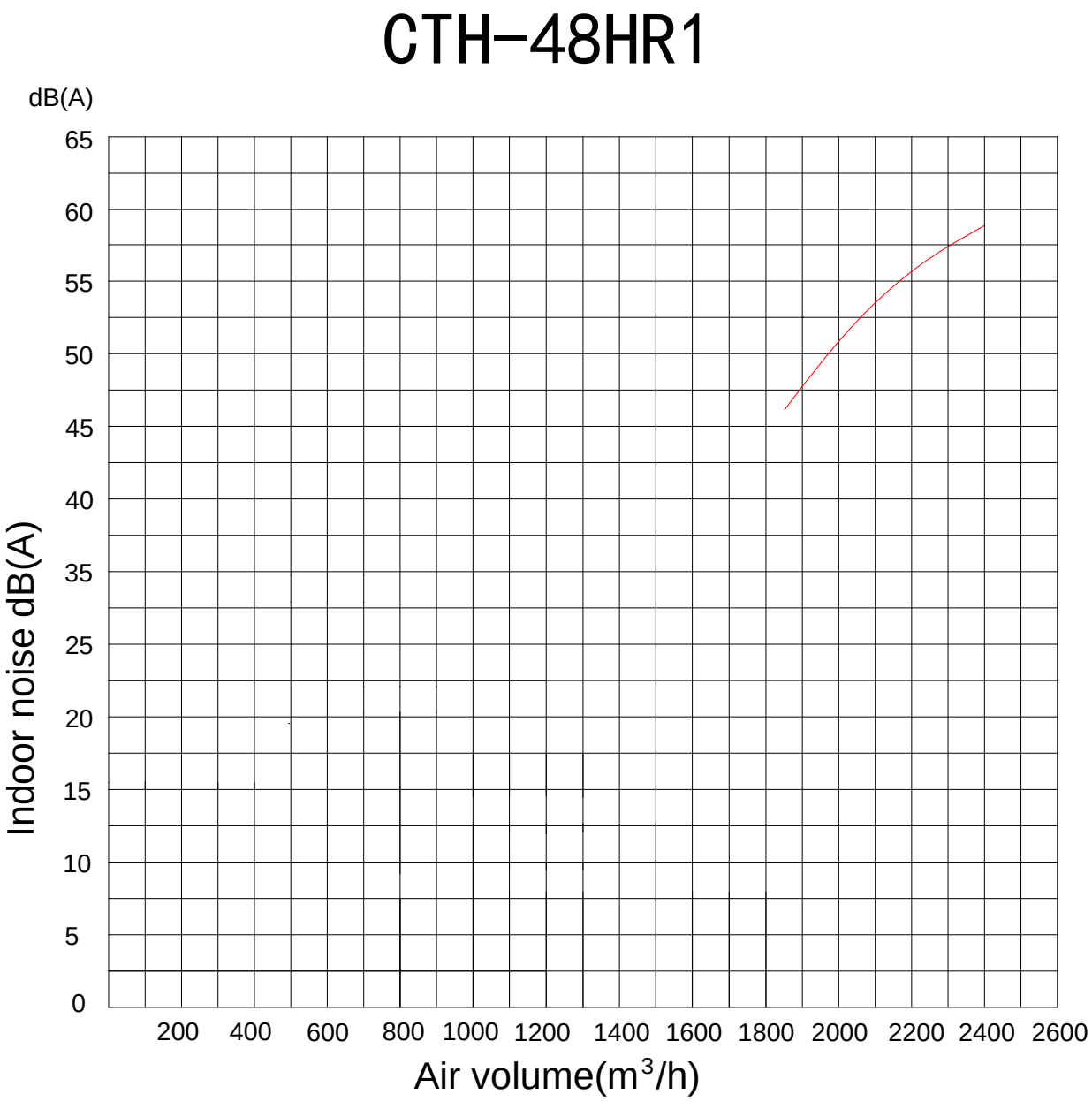
## 9.8 CTB-48HR1-B



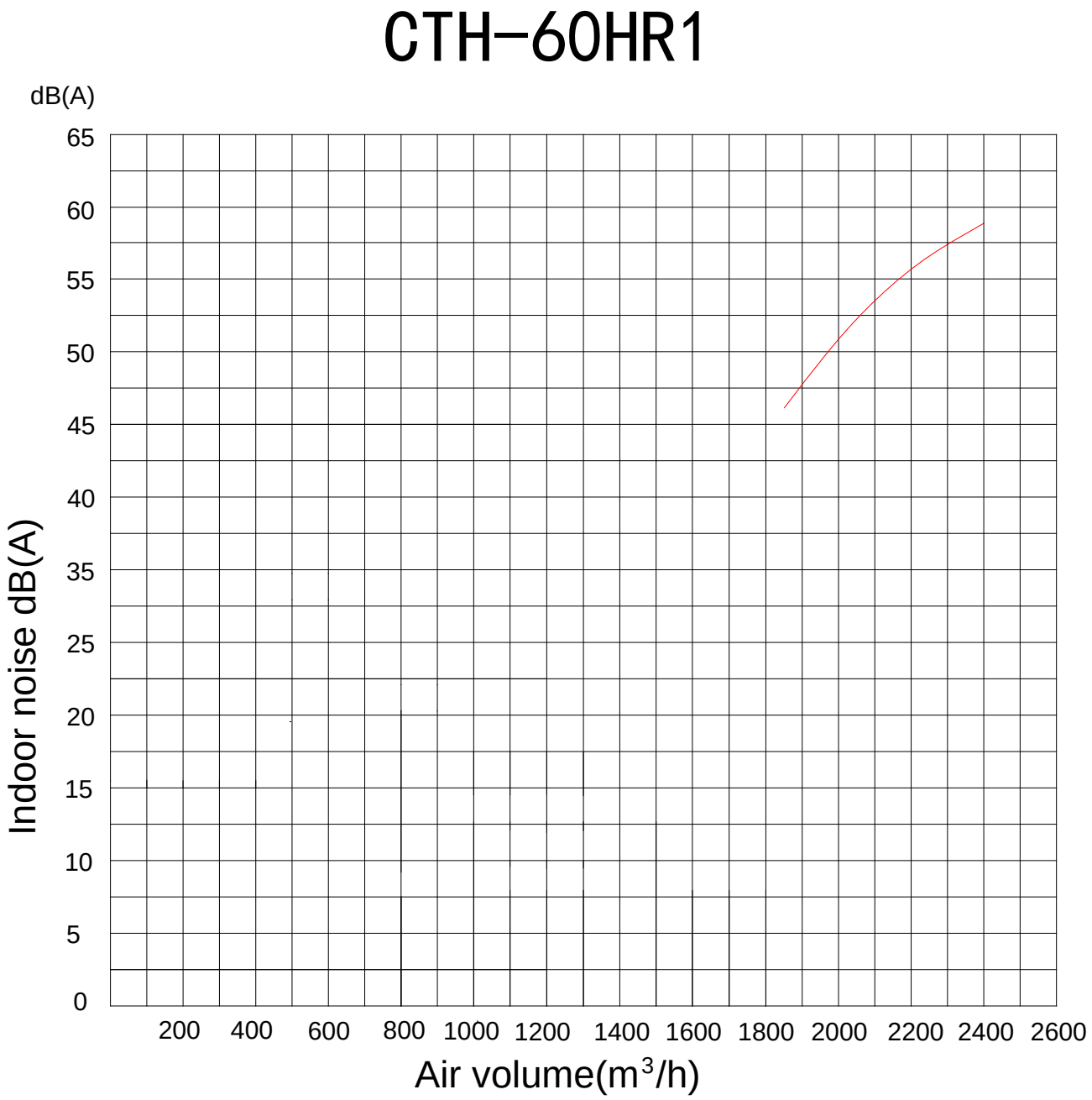
## 9.9 CTB-60HR1-B



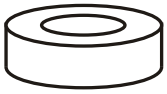
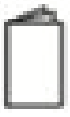
## 9.10 CTH-48HR1



## 9.11 CTH-60HR1



# 10.Accessories

| | Name | Shape | Quantity |
|---|---|---|---|
| Tubing & Fittings | Soundproof/insulation sheath |  | 2 |
| | Binding tape |  | 1 |
| | Seal sponge |  | 1 |
| Drainpipe Fittings | Seal ring |  | 1 |
| Controller | Wire controller |  | 1 |
| | Remote controller (optional) |  | 1 |
| others | Operation & installation instruction manual |  | 1 |

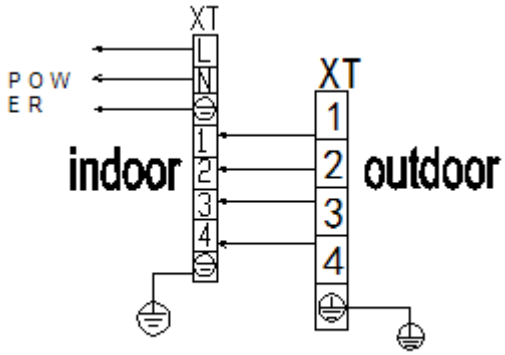
# 11.The Specification of Wiring

| Type | | CTA-18HR1 | CTA-24HR1 | CTB-18HR1 | CTB-24HR1 | CTB-36HR1 | CTB-48HR1 |
|---|---|---|---|---|---|---|---|
| Power | Phase | 1-phase | 1-phase | 1-phase | 1-phase | 1-phase | 1-phase |
| | Frequency and Voltage | 220-240V, 50Hz | | | | | |
| Indoor Unit Power Wiring ($mm^2$) | | $3\times2.5mm^2$ | $3\times1.0mm^2$ | $3\times2.5mm^2$ | $3\times1.0mm^2$ | $3\times1.0mm^2$ | $3\times1.0mm^2$ |
| Indoor/Outdoor Connecting Wiring ($mm^2$) | Ground Wiring | $1.0mm^2$ | $1.0mm^2$ | $1.0mm^2$ | $1.0mm^2$ | $1.0mm^2$ | $1.0mm^2$ |
| | Strong Electric Signal | $5\times0.75mm^2$ | $5\times0.75mm^2$ | $5\times0.75mm^2$ | $5\times0.75mm^2$ | $5\times0.75mm^2$ | $5\times0.75mm^2$ |

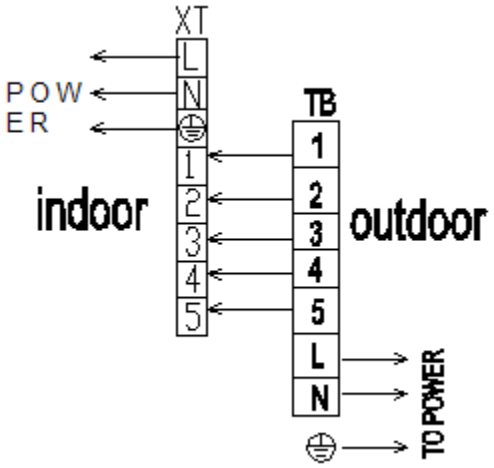
| Type | | CTB-60HR1 | CTB-48HR1-B | CTB-60HR1-B | CTH-48HR1 | CTH-60HR1 |
|---|---|---|---|---|---|---|
| Power | Phase | 1-phase | 1-phase | 1-phase | 1-phase | 1-phase |
| | Frequency and Voltage | 220-240V, 50Hz | | | | |
| Indoor Unit Power Wiring ($mm^2$) | | $3\times1.0mm^2$ | $3\times1.0mm^2$ | $3\times1.0mm^2$ | $3\times1.0mm^2$ | $3\times1.0mm^2$ |
| Indoor/Outdoor Connecting Wiring ($mm^2$) | Ground Wiring | $1.0mm^2$ | $1.0mm^2$ | $1.0mm^2$ | $1.0mm^2$ | $1.0mm^2$ |
| | Strong Electric Signal | $5\times0.75mm^2$ | $5\times0.75mm^2$ | $5\times0.75mm^2$ | $5\times0.75mm^2$ | $5\times0.75mm^2$ |

# 12.Field Wiring

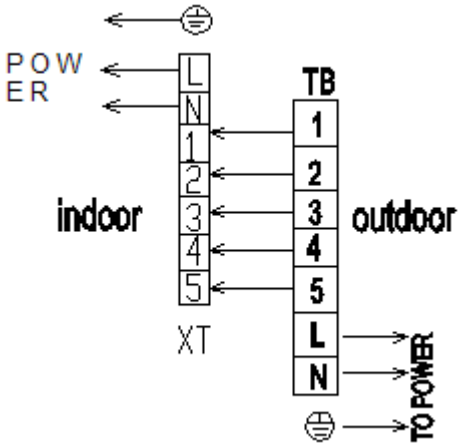
**CTA-18HR1&COU-18HR1,CTB-18HR1&COU-18HR1**



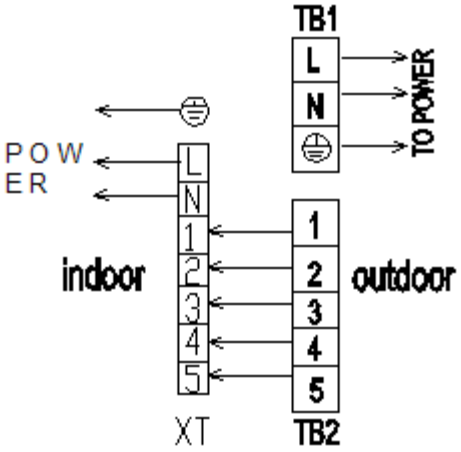

**CTA-24HR1&COU-24HR1**



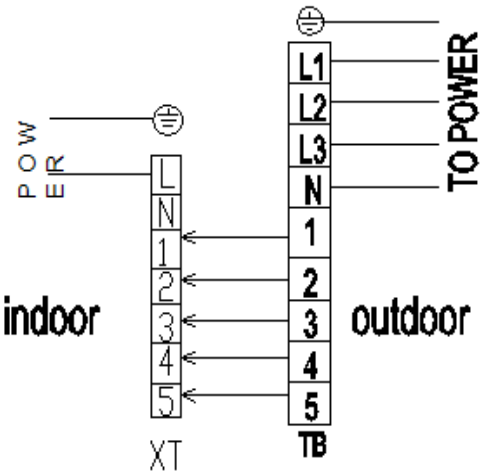

**CTB-24HR1&COU-24HR1**




**CTB-36HR1&COU-36HR1**

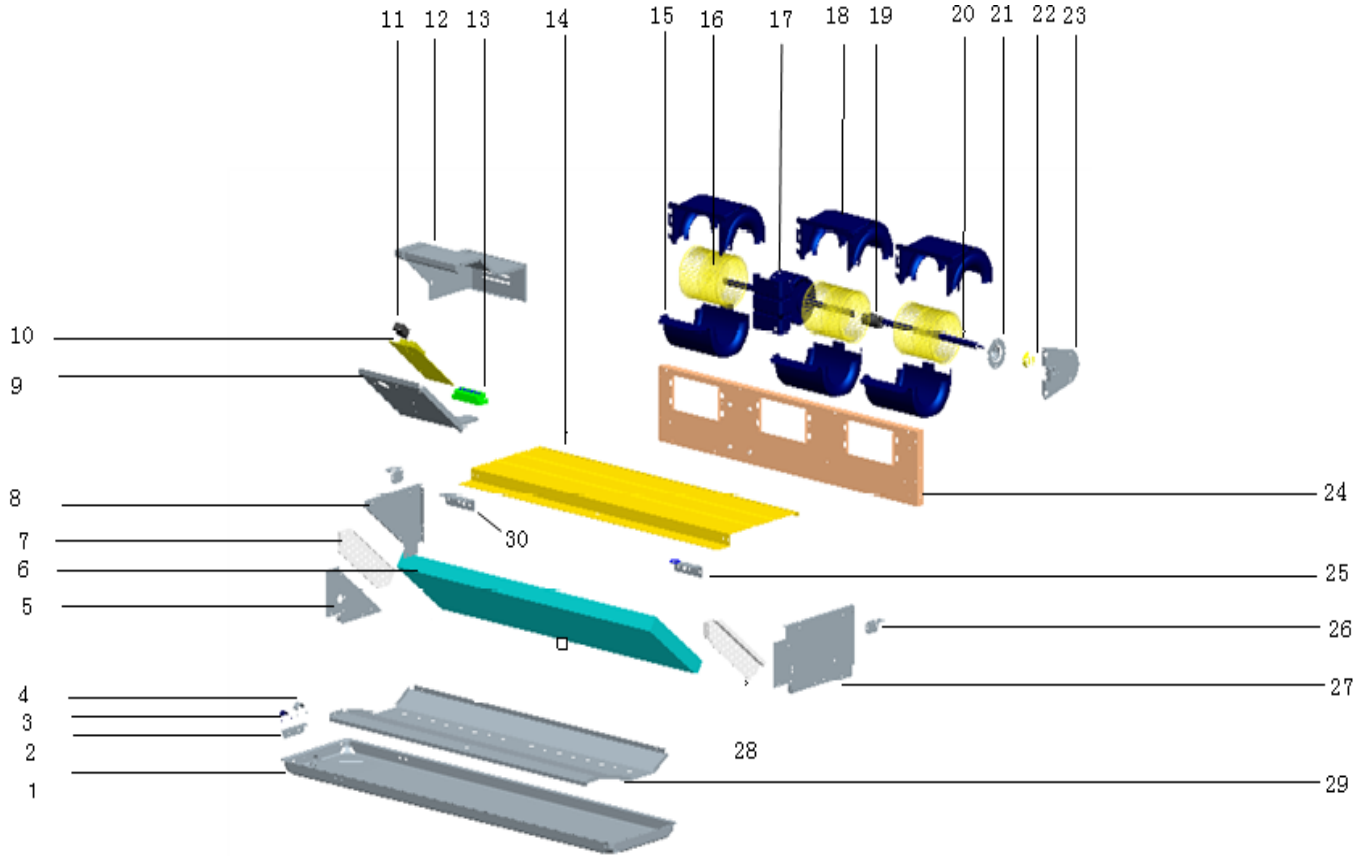



**CTB-36HR1&COU-36HSR1 CTB-48HR1&COU-48HSR1 CTB-60HR1&COU-60HSR1**
**CTB-48HR1-B&COU-48HS1 CTB-60HR1-B&COU-60HSR1**
**CTH-48HR1&COU-48HSR1 CTH- 60HR1&COU-60HSR1**



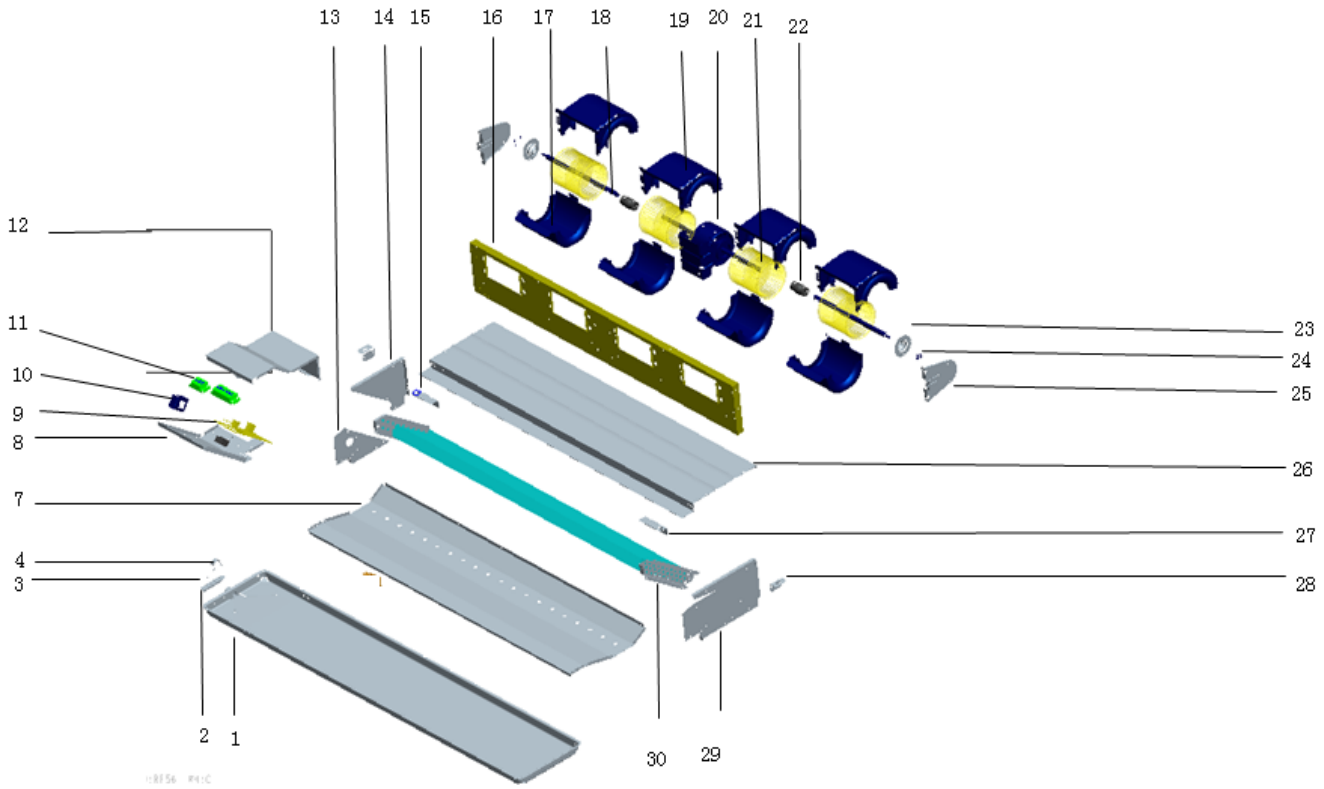
# 13.Exploded View

## 13.1 CTA-18HR1



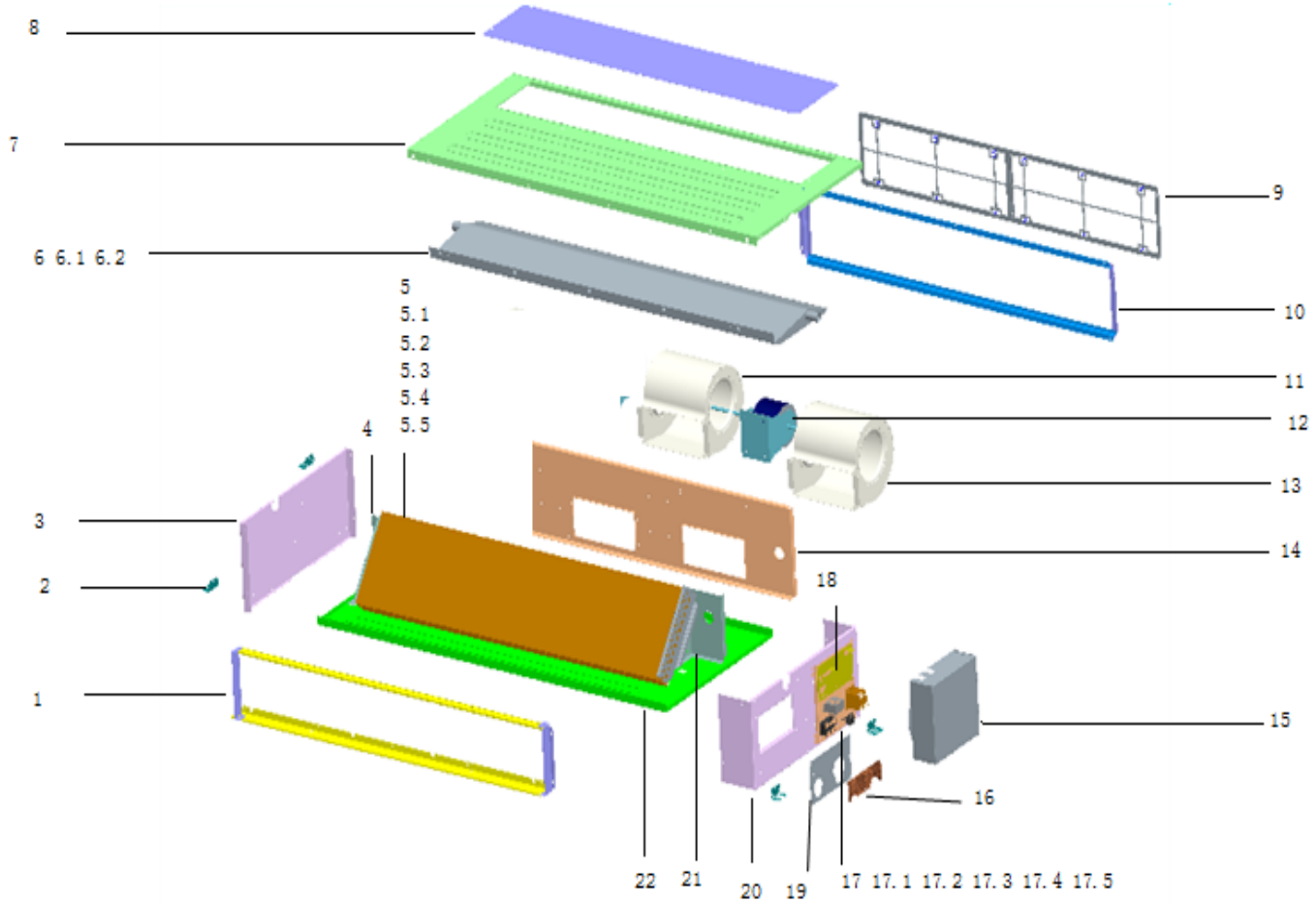

| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Welding assy for water collector | 1 | 16 | Centrifugal fan | 3 |
| 2 | Fixing board for inlet and outlet pipe | 1 | 17 | Fan motor | 1 |
| 3 | Pipe clamp 2 | 1 | 18 | Upper scroll case | 3 |
| 4 | Pipe clamp 1 | 1 | 19 | Coupling | 1 |
| 5 | Front-left clapboard | 1 | 20 | Axis2 | 1 |
| 6 | Evaporator | 1 | 21 | Louver fixing board assy | 1 |
| 7 | Left end plate of Evaporator | 1 | 22 | No.13 Bearing holder | 1 |
| 8 | Rear-left clapboard | 1 | 23 | Motor support | 1 |
| 9 | Installing board for E-parts | 1 | 24 | Fan fixing board assy | 1 |
| 10 | Main control board | 1 | 25 | Front hanger B | 1 |
| 11 | PTC transformer | 1 | 26 | hanger | 2 |
| 12 | E-parts box cover assy | 1 | 27 | Right clapboard | 1 |
| 13 | Terminal | 1 | 28 | Right end plate of Evaporator | 1 |
| 14 | Upper cover | 1 | 29 | Evaporator chassis | 1 |
| 15 | Lower scroll case | 3 | 30 | Front hanger A | 1 |

## 13.2 CTA-24HR1



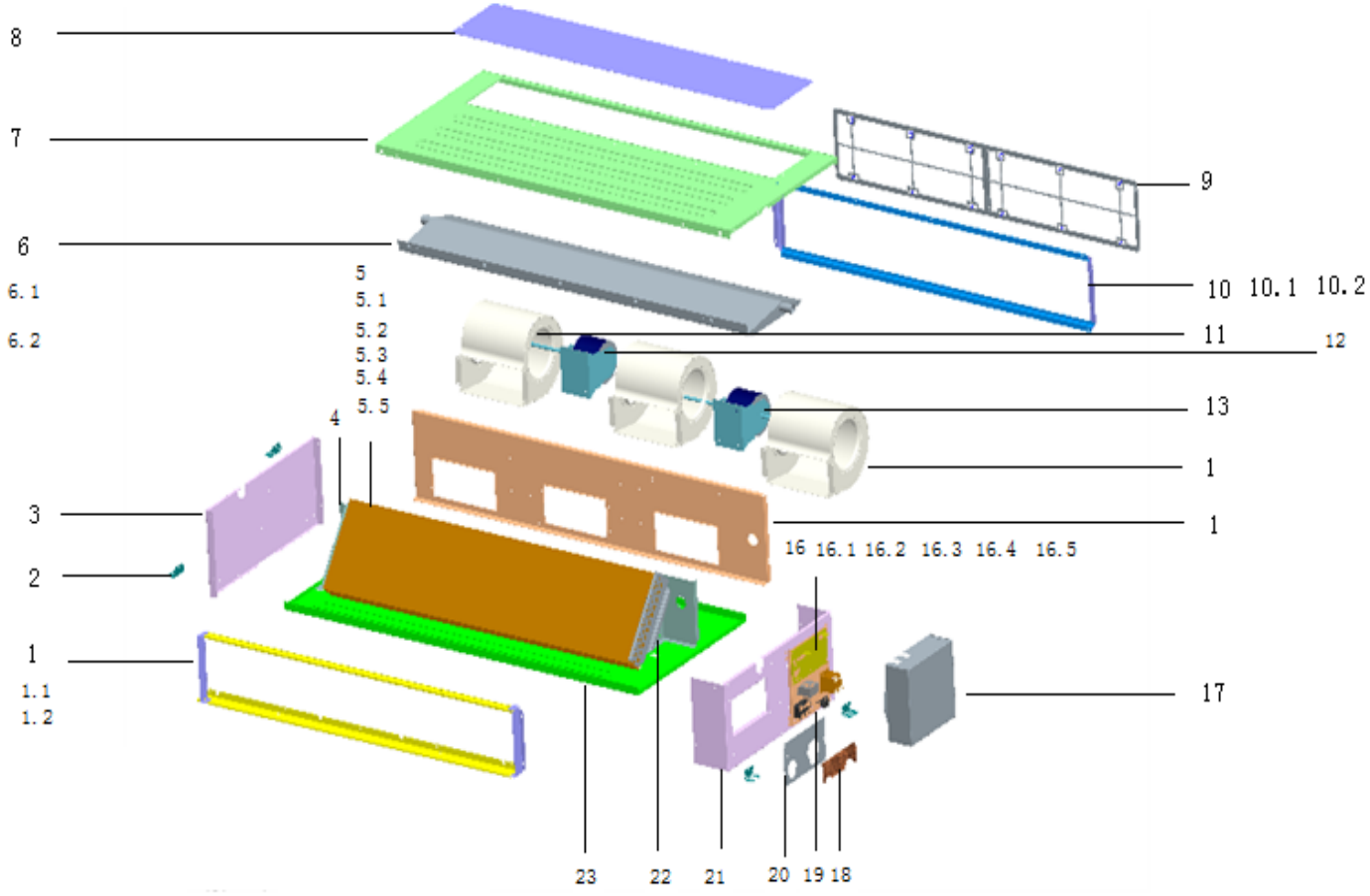

| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Welding assy for water collector | 1 | 20 | Fan motor | 1 |
| 2 | Fixing board for inlet and outlet pipe | 1 | 21 | Centrifugal fan | 4 |
| 3 | Pipe clamp 2 | 1 | 22 | Coupling | 2 |
| 4 | Pipe clamp 1 | 1 | 23 | Louver fixing board assy | 2 |
| 7 | Evaporator chassis | 1 | 24 | No.13 Bearing holder | 2 |
| 8 | Installing board for E-parts | 1 | 25 | Motor support | 2 |
| 9 | Main control board | 1 | 26 | Upper cover | 1 |
| 10 | PTC transformer | 1 | 27 | Front hanger B | 1 |
| 11 | Terminal | 1 | 28 | Hanger | 2 |
| 12 | E-parts box cover assy | 1 | 29 | Right clapboard | 1 |
| 13 | Front-left clapboard | 1 | 30 | Pre-welding assy for evaporator | 1 |
| 14 | Rear-left clapboard | 1 | 30.1 | Evaporator | 1 |
| 15 | Front hanger A | 1 | 30.2 | Distributing capillary assy for indoor unit | 1 |
| 16 | Fan fixing board assy | 1 | 30.3 | Collecting pipe assy | 1 |
| 17 | Lower scroll case | 4 | 30.4 | Installation tube for probe | 1 |
| 18 | Axis2 | 2 | 30.5 | Installation spring for probe | 1 |
| 19 | Upper scroll case | 4 | | | |

## 13.3 CTB-18HR1, CTB-24HR1



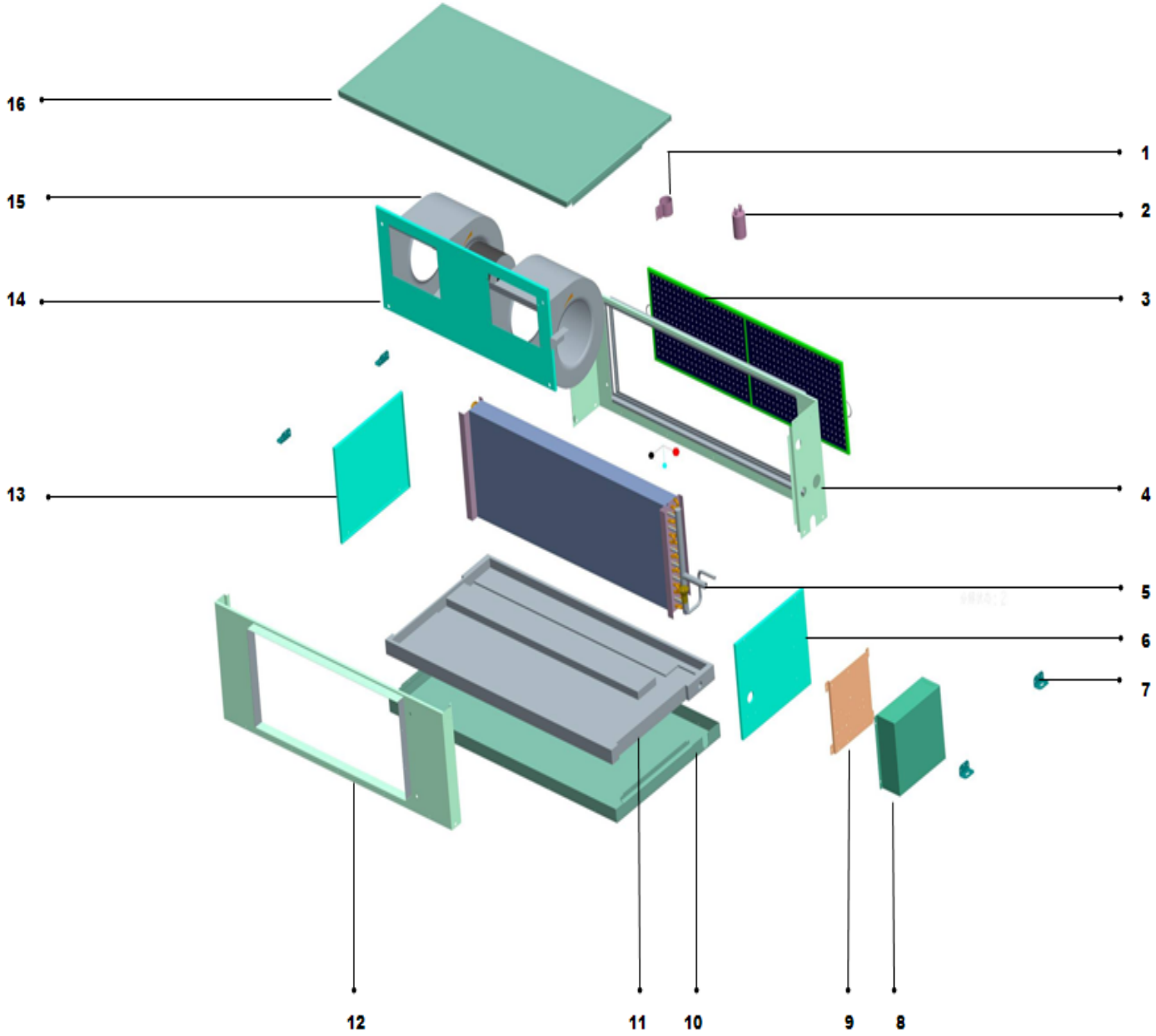

| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | outlet assy | 1 | 11 | scroll case(left) | 1 |
| 2 | hanger | 4 | 12 | Fan motor | 1 |
| 3 | left clapboard | 1 | 13 | scroll case(right) | 1 |
| 4 | Left end plate of Evaporator | 1 | 14 | Fan fixing board assy | 1 |
| 5 | Evaporator assy | 1 | 15 | E-parts box cover assy | 1 |
| 5.1 | Transition tube | 6 | 16 | Small cover plate | 1 |
| 5.2 | Shunt assy | 1 | 17 | E-parts | 1 |
| 5.3 | air header assy | 1 | 17.1 | Main control board | 1 |
| 5.4 | Evaporator | 1 | 17.2 | Temperature sensor | 1 |
| 5.5 | Probe copper tube | 1 | 17.3 | PTC transformer | 1 |
| 6 | Welding assy for water collector | 1 | 17.4 | Terminal | 1 |
| 6.1 | leading | 2 | 17.5 | NO.7Line pressing buckle | 2 |
| 6.2 | effluent joint rubber cap | 2 | 18 | E-parts box base | 1 |
| 7 | Lower plate | 1 | 19 | big cover plate | 1 |
| 8 | Return air damper | 1 | 20 | Right clapboard | 1 |
| 9 | filter screen | 2 | 21 | Right end plate of Evaporator | 1 |
| 10 | Return air assy | 1 | 22 | Upper plate | 1 |

# 13.4 CTB-36HR1, CTB-48HR1, CTB-60HR1



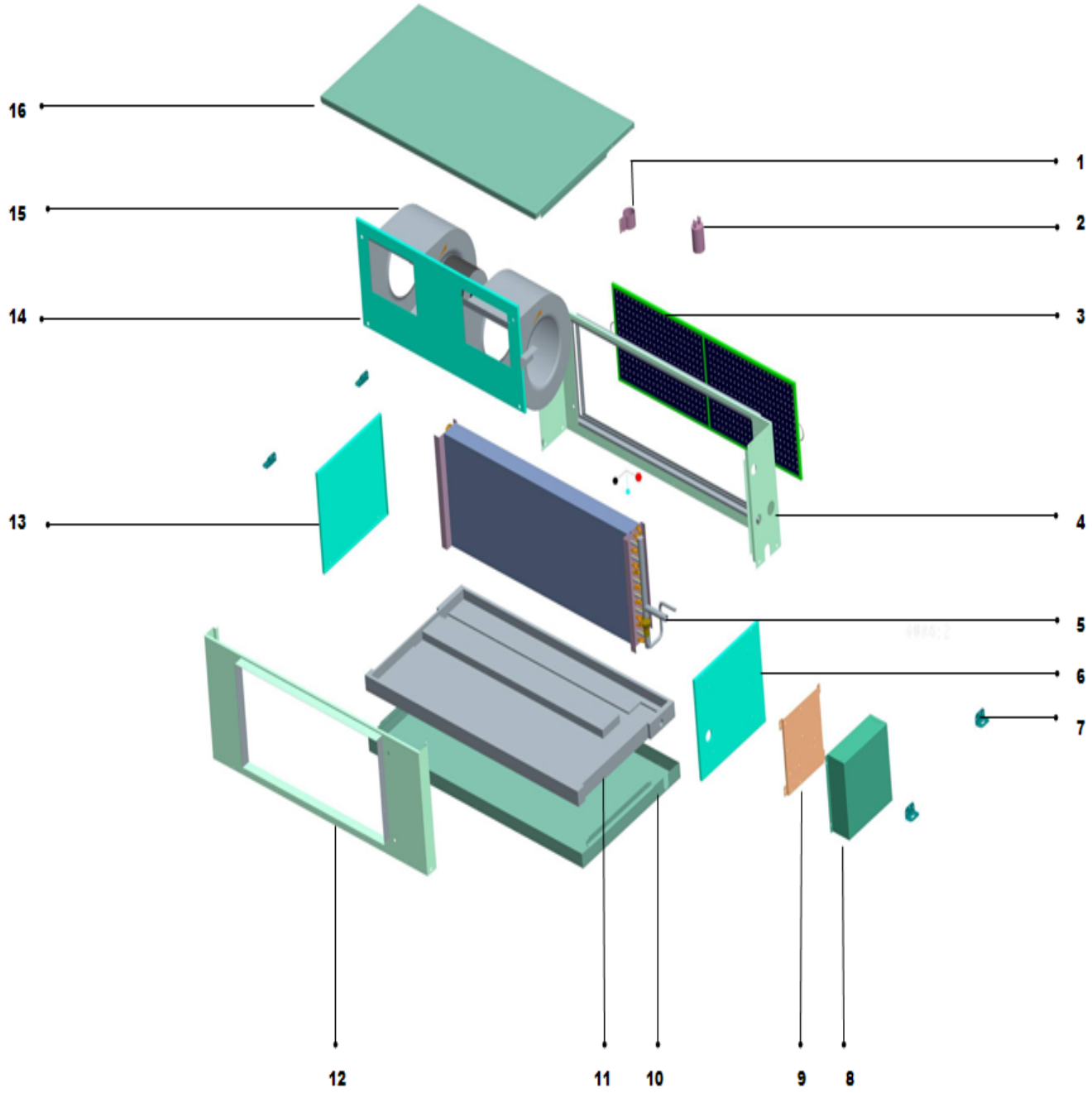

| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | outlet assy | 1 | 10.2 | return air left-right rail | 2 |
| 1.1 | outlet left-right rail | 2 | 11 | scroll case(left) | 1 |
| 1.2 | outlet upper-lower rail | 2 | 12 | Fan motor | 1 |
| 2 | hanger | 4 | 13 | Fan motor | 1 |
| 3 | left clapboard | 1 | 14 | scroll case(right) | 2 |
| 4 | Left end plate of Evaporator | 1 | 15 | Fan fixing board assy | 1 |
| 5 | Evaporator assy | 1 | 16 | E-parts | 1 |
| 5.1 | Transition tube | 5 | 16.1 | Main control board | 1 |
| 5.2 | Shunt assy | 1 | 16.2 | Temperature sensor | 1 |
| 5.3 | air header assy | 1 | 16.3 | PTC transformer | 1 |
| 5.4 | Evaporator | 1 | 16.4 | Terminal | 1 |
| 5.5 | Probe copper tube | 1 | 16.5 | NO.7Line pressing buckle | 2 |
| 6 | Welding assy for water collector | 1 | 17 | E-parts box cover assy | 1 |
| 6.1 | leading | 2 | 18 | Small cover plate | 1 |
| 6.2 | effluent joint rubber cap | 2 | 19 | E-parts box base | 1 |
| 7 | Lower plate | 1 | 20 | big cover plate | 1 |
| 8 | Return air damper | 1 | 21 | Right clapboard | 1 |
| 9 | filter screen | 2 | 22 | Right end plate of Evaporator | 1 |
| 10 | Return air assy | 1 | 23 | Upper plate | 1 |
| 10.1 | return air upper-lower rail | 2 | | | |

## 13.5 CTB-48HR1-B, CTH-48HR1




| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | capacitance clamping | 1 | 9.3 | Terminal | 1 |
| 2 | compressor capacitor | 1 | 10 | chassis parts | 1 |
| 3 | Filter | 2 | 11 | foam water collector | 1 |
| 4 | back panel | 1 | 12 | front panel assembly | 1 |
| 5 | Evaporator assemble | 1 | 13 | left clapboard | 1 |
| 6 | Right clapboard | 1 | 14 | Fan fixing board assy | 1 |
| 7 | hanger | 4 | 15 | fan assy | 1 |
| 8 | E-parts box cover assy | 1 | 15.1 | fan motor | 1 |
| 9 | E-parts | 1 | 15.2 | scroll case(left) | 1 |
| 9.1 | Main control board | 1 | 15.3 | scroll case(right) | 1 |
| 9.2 | Transformer | 1 | 16 | up panel assembly | 1 |

## 13.6 CTB-60HR1-B, CTH-60HR1




| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | capacitance clamping | 1 | 9.3 | Terminal | 1 |
| 2 | compressor capacitor | 1 | 10 | chassis parts | 1 |
| 3 | filter | 2 | 11 | foam water collector | 1 |
| 4 | back panel | 1 | 12 | front panel assembly | 1 |
| 5 | Evaporator assemble | 1 | 13 | left clapboard | 1 |
| 6 | Right clapboard | 1 | 14 | Fan fixing board assy | 1 |
| 7 | hanger | 4 | 15 | fan assy | 1 |
| 8 | E-parts box cover assy | 1 | 15.1 | fan motor | 1 |
| 9 | E-parts | 1 | 15.2 | scroll case(left) | 1 |
| 9.1 | Main control board | 1 | 15.3 | scroll case(right) | 1 |
| 9.2 | transformer | 1 | 16 | up panel assembly | 1 |

# 14.Troubleshooting

**Table 1**

| Symptoms | Causes | Solution |
|---|---|---|
| Unit does not start | Power failure<br>Power switch is off<br>Fuse of power switch may have burned<br>Batteries of remote controller exhausted or other problem of controller | Wait for the comeback of power<br>Switch on the power<br>Repilocation<br>Replace the batterises or check the controller |
| Air flowing normally but conpletely can't cooling | Temperature is not set correctlly<br>Be in 3 minutes protection of compressor | Set the temperature properly<br>Wait |
| Units start or stop frequently | Refrigerant i s too little or too much<br>Air or no concreting gas in the refrigerating circuit<br>Compressor i s malfunction<br>Voltage is too high or too low<br>System circuit is bolcked | Check leakage ,and rightly recharge refrigerant<br>Vacuum and recharge refrigerant<br>Mainternance or change compressor<br>Install manostat<br>Find reasons and solution |
| Low cooling effect | Outdoor unit and indoor unit heat exchanger is dirty<br>The air filter is dirty<br>Inlet/Outlet of indoor/outdoor units is blocked<br>Doors and windows are open<br>Sunlight directly shine<br>Too much heat resource<br>Outdoor temp. Is too high<br>Leakage of refrigerant or lack of refrigerant | Clean the heat exchanger<br>Clean the air filter<br>Eliminate all dirties and make air smooth<br>Close doors and windows<br>Make curtains in order to shelter form sunshine<br>Reduce heat source<br>AC cooling capacity reduces(normal)<br>Check leakage and rightly recharge refrigerant |
| Low heating effect | Outdoor temperature is lower than 7℃<br>Door and windows not completelty closed<br>Leakage of refrigerant or lack of refrigerant | Use heating decvice<br>Close doors and windows<br>Check leakage and rightly recharge refrigerant |

**Table 2**

| Symptoms | Solution | Causes |
|---|---|---|
| The fan speed can not be changed | Check whether the MODE indicated on the display is "AUTO" | When the automatic mode is selected, the air conditioner will automatically change the fan speed |
| | Check whether the MODE indicated on the display is "DEHUINIDIFICATION" | When dry operation is selected. the air conditioner automatically change the fan speed.The fan speed can be selected during "COOL","FAN NOLY",and "HEAT" |
| The wire controller signal is not tea transmitted even when the ON/OFF button is pushed | Check whether the signal transmitter of the wire controller is properly directed to the infrared signal receiver of the indoor unit | The power supply is off |

| | | |
|---|---|---|
| The TEMP. indicator does not come on. | Check whether the MODE indicated on the display is FAN ONLY | The temperature cannot be set during FAN mode |
| The indication on the display disappears after a lapse of time | Check whether the timer operation has come to an end when the TIMER OFF is indicated on the display | The air conditioner operation will stop up to the set time |
| The TIMER ON indicator goes off after a lapse of certain time | Check whether the timer operation is started when the TIMER ON is indicated on the display | Up to the set time,the air conditioner will automatically start and appropriate indicator will go off |
| NO receiving tone sounds from the indoor unit even when the ON/OFF button is pressed | Check whether the signal transmitter of the wire controller is properly directed to the infrared signal receiver of the indoor unit when the ON/OFF button is pressed | Directly transmit the signal transmitter of the wire controller to the infrared signal receiver of the indoor unit, and then repeatly push the ON/OFF button twice |

## Fault code table

| No. | Type | Content | Code | Remark |
|---|---|---|---|---|
| 1 | Fault | Room temperature sensor fault | E2 | Automatic recovery after the problem resolved |
| 2 | Fault | Indoor coil temperature sensor fault | E3 | |
| 3 | Fault | Outdoor coil temperature sensor fault | E5 | |
| 4 | Fault | Water full protection | F5 | |
| 5 | Fault | Outdoor protection | F2 | |
| 6 | Fault | Communication fault | E1 | Manual eliminate |
| 7 | Fault | EEPROM communication fault | P6 | Recovery after interruption of power supply |
| 8 | Indication | Enforced cooling | / | |
| 9 | Indication | Anti- cool air in heating mode | P1 | |
| 10 | Indication | Defrosting | P3 | |

# Floor & Ceiling

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# 1.Features

1.1 Flexible installation, ceiling suspended and floor standing.
1.2 Adopting centrifugal fans, higher ESP and longer air flow distance.
1.3 Auto-swing function, built-in two louver motor, vertical and horizontal air-flow adjustment.
1.4 Washable air filter
1.5 Adopting waterproof plastic film on water collector, avoiding water leakage.
1.6 Self-diagnostic function and multi protection.
1.7 Auto-restart function.
1.8 Standard for wireless controller; option for wired controller

# 2.Specifications

| Model | | | CUA-18HR1 | CUA-24HR1 | CUA-36HR1 |
|---|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 18000 | 24000 | 36000 |
| | | KW | 5.3 | 7.1 | 10.5 |
| | Input | W | 65 | 150 | 300 |
| | Rated current | A | 0.3 | 0.68 | 1.36 |
| | EER | W/W | 2.7 | 2.78 | 2.62 |
| Heating | Capacity | Btu/h | 19800 | 26400 | 39600 |
| | | KW | 5.8 | 7.8 | 11.5 |
| | Input | W | 65 | 150 | 300 |
| | Rated current | A | 0.3 | 0.68 | 1.36 |
| | COP | W/W | 3.3 | 3.47 | 3.19 |
| Indoor fan motor | Model | | YSK110-65LD-4P3H85 | YSK110-75LD-4P2 | YSK110-180LD-4P2 |
| | Input | W | 65 | 150 | 300 |
| | Capacitor | μF | 3 | 5 | 5 |
| | Speed(Hi/Med/Lo) | r/min | 1350/1270/1180 | 980/880/780 | 1330/1080/910 |
| Indoor coil | Number of rows | | 3 | 2 | 3 |
| | Tube pitch x row pitch | mm | 25×21.65 | 25×21.65 | 25×21.65 |
| | Fin spacing | mm | 2 | 1.4 | 1.7 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ9.52 | Φ9.52 | Φ9.52 |
| | | | inner grooved | inner grooved | inner grooved |
| | Coil size(W x H x D) | mm | 610x250x64.95 | 982×250×43.3 | 982×250×64.95 |
| | Number of circuits | | 3 | 5 | 5 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 790/670/540 | 1100/860/740 | 1700/1300/1100 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 51/47/43 | 47/45/43 | 50/46/43 |
| Indoor unit | Dimension(W×H×D) | mm | 880×635×203 | 1245×680×247 | 1245×680×247 |
| | Packing(W×H×D) | mm | 970×711×301 | 1325×770×325 | 1325×770×325 |
| | Net/Gross weight | kg | 30/32 | 35/41 | 37/43 |
| Refrigerant type | | | R410A | R410A | R410A |
| Refrigerant piping | Liquid side/Gas side | mm | Φ6.35/Φ12.7 | Φ9.52/Φ15.88 | Φ9.52/Φ19.05 |
| Drainage pipe | | mm | 30 | 30 | 30 |
| Connection wiring | Power Supply | | From indoor unit | From outdoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 2.5 | 1.0 | 1.0 |
| | Signal wiring | $mm^2$ | 1.5 | 0.75 | 0.75 |
| Controller | | | Standard for remote controller(wired controller for option) | | |
| Operation temp | | ℃ | 16～32 | 16～32 | 16～32 |
| Ambient temp | | ℃ | -7～43 | -7～43 | -7～43 |
| Application area | | $m^2$ | 20-35 | 28-50 | 40-70 |
| Stuffing Quantity（20'/40'/40'HQ） | | | 132/270/306 | 75/165/189 | 75/165/189 |

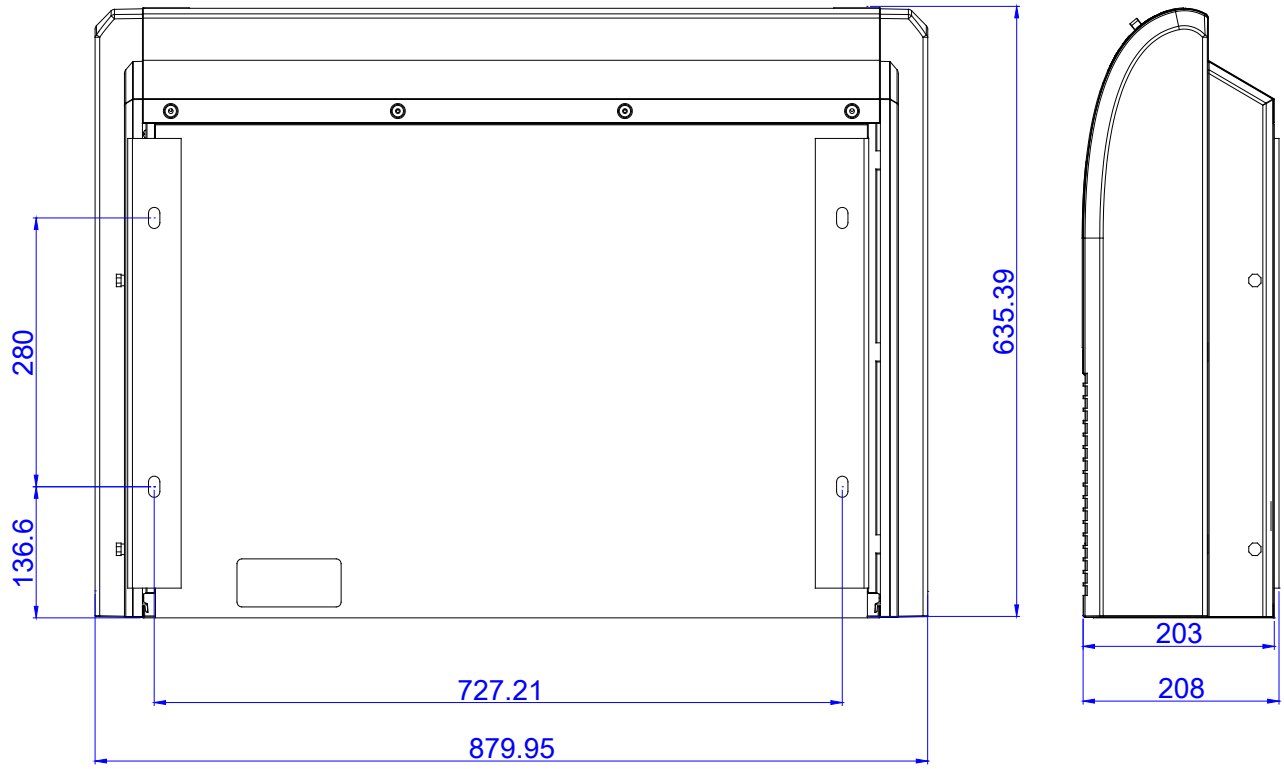
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

| Model | | | CUA-48HR1 | CUA-60HR1 |
|---|---|---|---|---|
| Indoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 48000 | 60000 |
| | | KW | 14 | 16 |
| | Input | W | 330 | 330 |
| | Rated current | A | 1.5 | 1.5 |
| | EER | W/W | 2.63 | 2.65 |
| Heating | Capacity | Btu/h | 52800 | 66000 |
| | | KW | 15.4 | 16.6 |
| | Input | W | 330 | 330 |
| | Rated current | A | 1.5 | 1.5 |
| | COP | W/W | 2.84 | 2.71 |
| Indoor fan motor | Model | | YSK110-59LD-4P17 | YSK110-59LD-4P17 |
| | Input | W | 165+165 | 165+165 |
| | Capacitor | μF | 3+3 | 3+3 |
| | Speed(Hi/Med/Lo) | r/min | 1310/1139/1016 | 1310/1139/1016 |
| Indoor coil | Number of rows | | 2 | 2 |
| | Tube pitch x row pitch | mm | 25×21.65 | 25×21.65 |
| | Fin spacing | mm | 1.5 | 1.5 |
| | Fin type | | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | Φ9.52 | Φ9.52 |
| | | | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 1360×250×43.3 | 1360×250×43.3 |
| | Number of circuits | | 5 | 5 |
| Indoor air flow(Hi/Med/Lo) | | $m^3/h$ | 2300/1900/1500 | 2300/1900/1600 |
| Indoor noise level(Hi/Med/Lo) | | dB(A) | 55/52/50 | 55/52/50 |
| Indoor unit | Dimension(W×H×D) | mm | 1670×680×247 | 1670×680×247 |
| | Packing(W×H×D) | mm | 1750×770×325 | 1750×770×325 |
| | Net/Gross weight | kg | 47/54 | 47/54 |
| Refrigerant type | | | R410A | R410A |
| Refrigerant piping | Liquid side/Gas side | mm | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 |
| Drainage pipe | | mm | 30 | 30 |
| Connection wiring | Power Supply | | From outdoor unit | From outdoor unit |
| | Indoor power wiring | $mm^2$ | 1.0 | 1.0 |
| | Signal wiring | $mm^2$ | 0.75 | 0.75 |
| Controller | | | Standard for remote controller(wired controller for option) | |
| Operation temp | | °C | 16～32 | 16～32 |
| Ambient temp | | °C | -7～43 | -7～43 |
| Application area | | $m^2$ | 55~95 | 60~105 |
| Stuffing Quantity（20'/40'/40'HQ） | | | 60/120/123 | 60/120/123 |

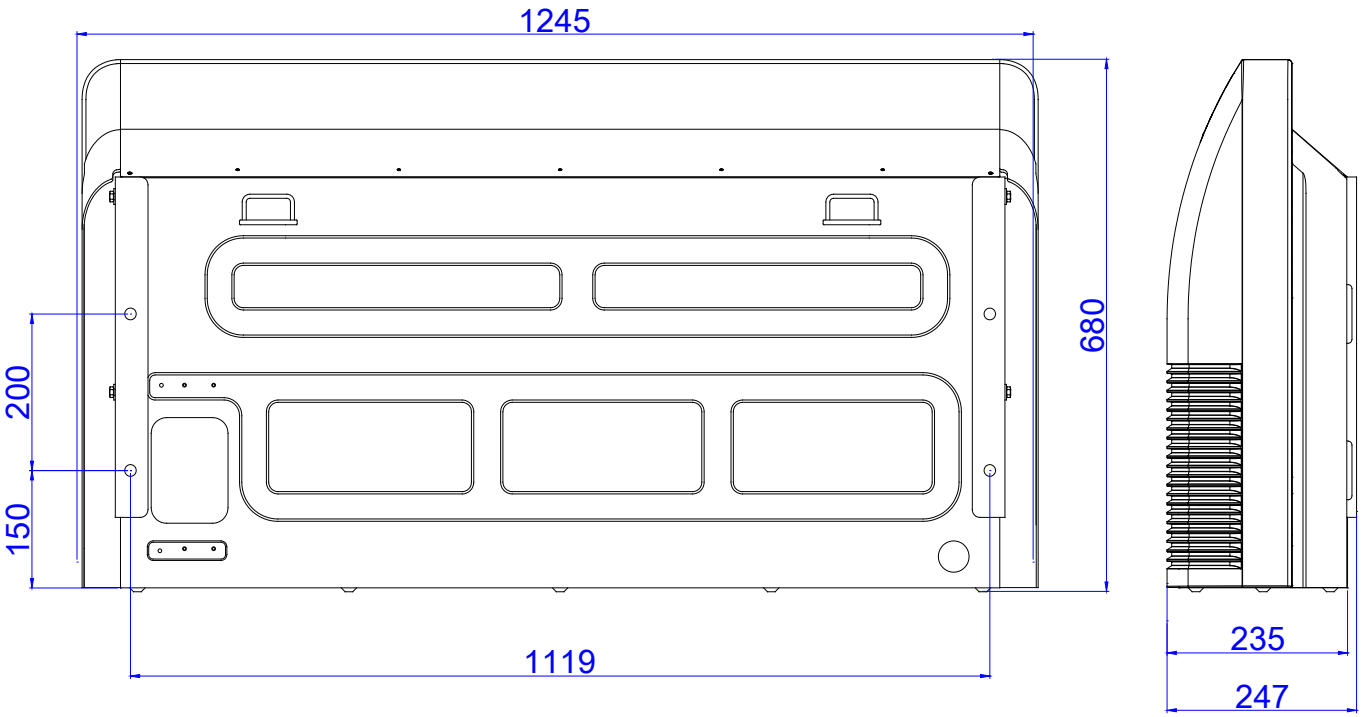
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3.Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

# 3.Dimensions

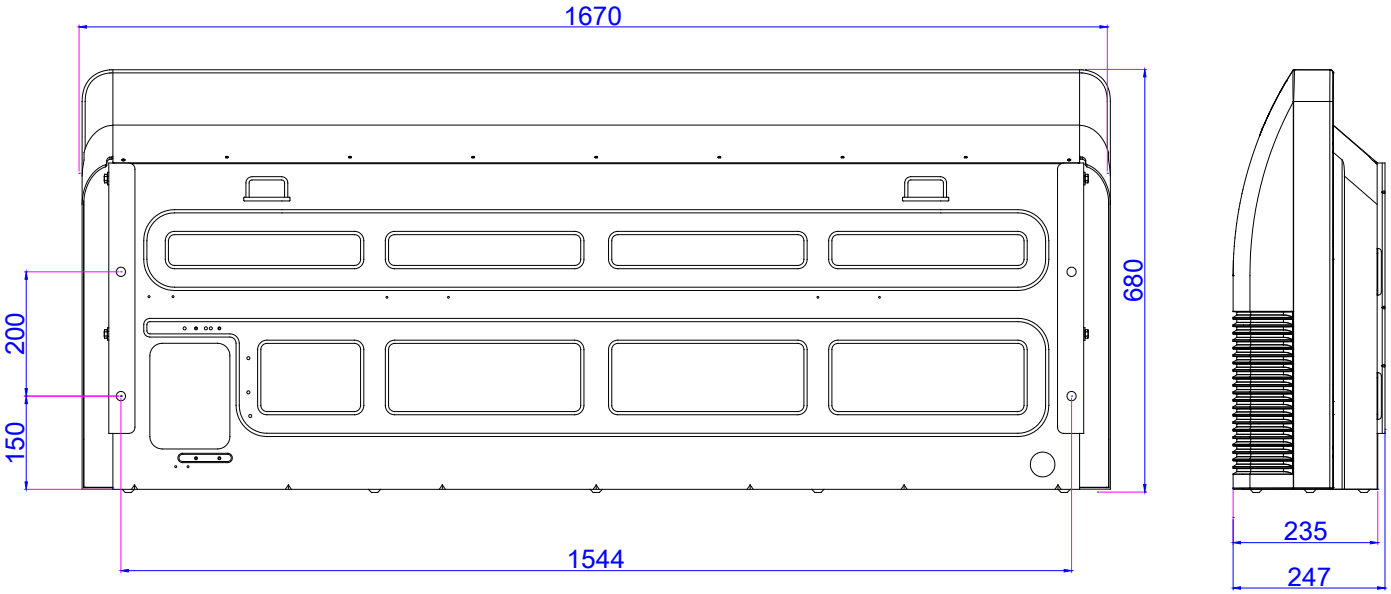
## 3.1 CUA-18HR1



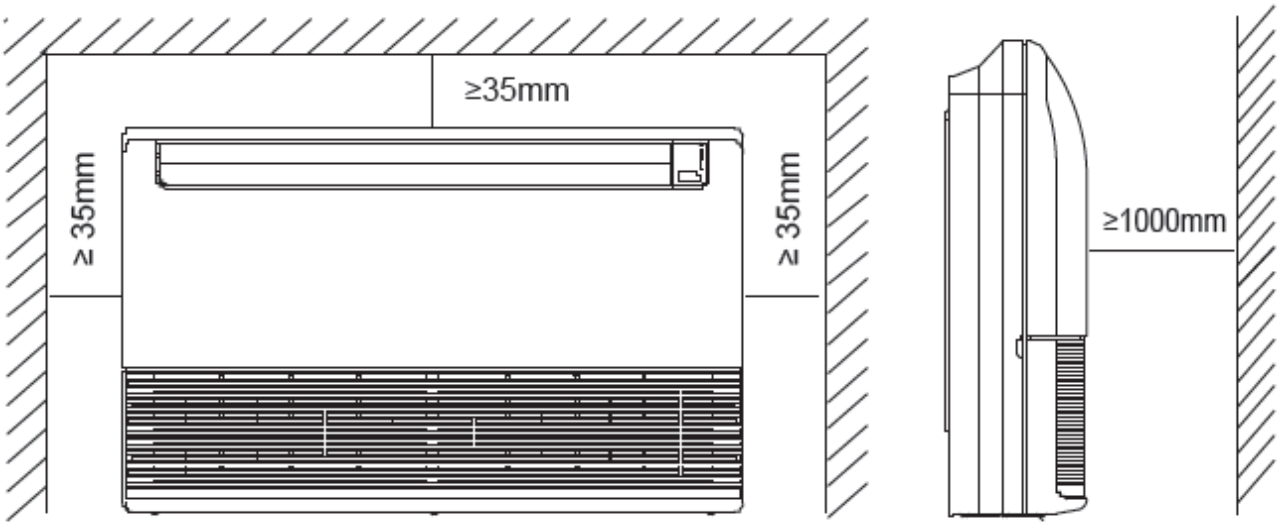

## 3.2 CUA-24HR1, CUA-36HR1



## 3.3 CUA-48HR1, CUA-60HR1

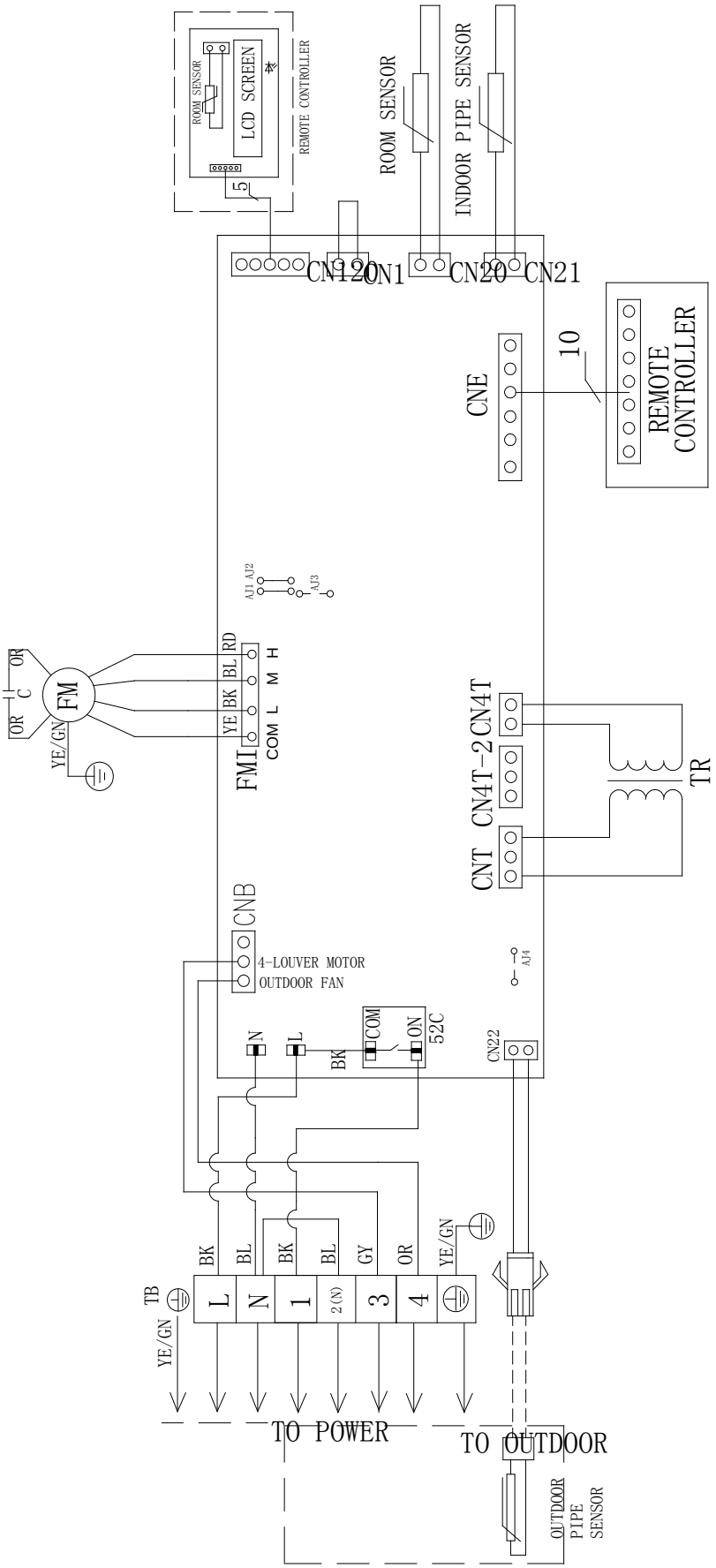


# 4.Service Space

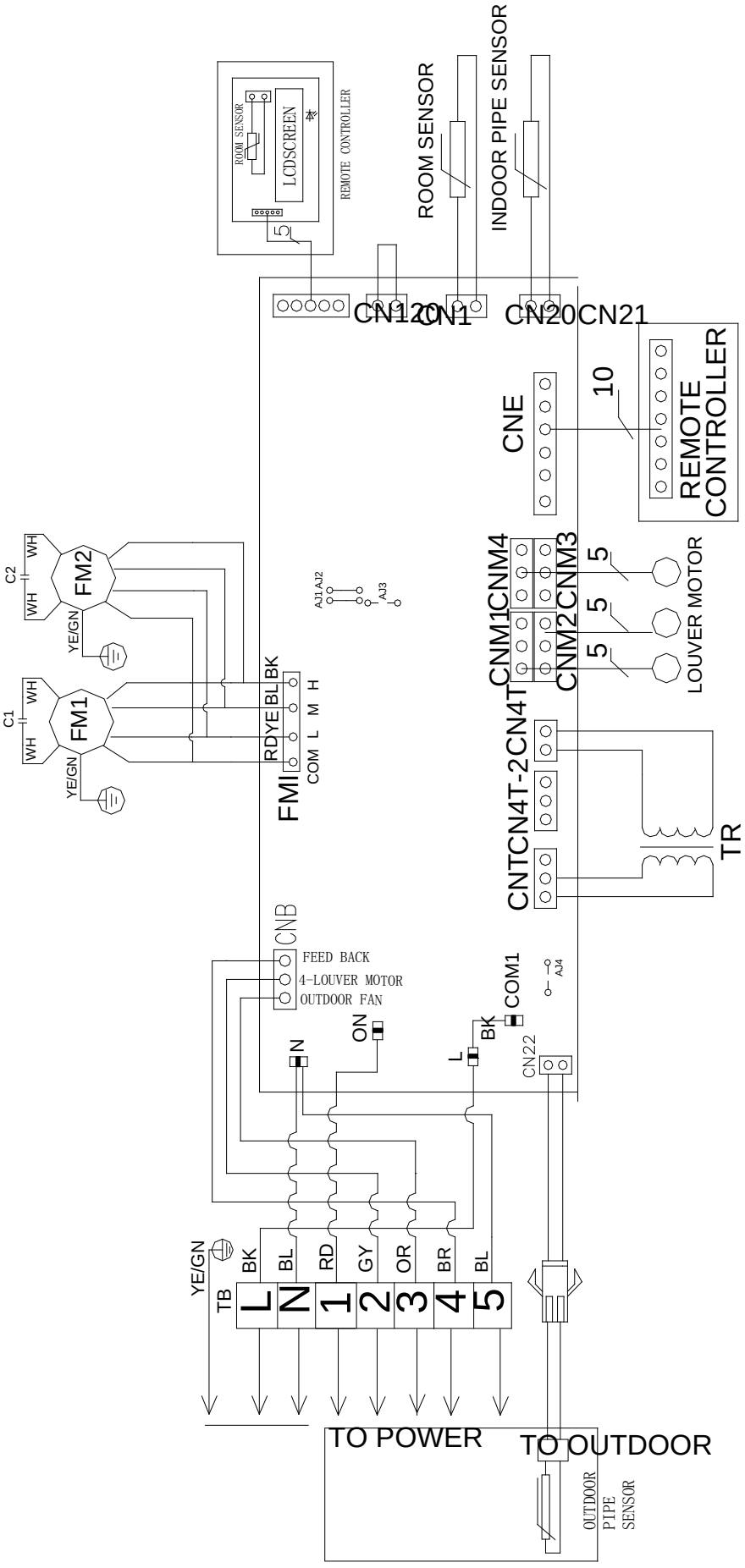


# 5.Wiring Diagrams

## 5.1 CUA-18HR1



## 5.2 CUA24HR1,CUA-36HR1,CUA-48HR1,CUA-60HR1



# 6.Capacity Table

# Cooling

## 6.1 CUA-18HR1

| MODEL | | CUA-18HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC D 15ºC W | Total capacity Kw | 5.21 | 4.98 | 4.79 | 4.52 | 4.36 | 4.21 |
| | Sensitive capacity kW | 4.16 | 3.96 | 3.84 | 3.61 | 3.47 | 3.35 |
| | Input kW. | 1.18 | 1.36 | 1.53 | 1.69 | 1.86 | 2.03 |
| 24ºC D 17ºC W | Total capacity kW | 5.7 | 5.47 | 5.26 | 4.95 | 4.78 | 4.61 |
| | Sensitive capacity kW | 4.56 | 4.35 | 4.2 | 3.96 | 3.811 | 3.71 |
| | Input kW. | 1.21 | 1.42 | 1.61 | 1.79 | 1.97 | 2.15 |
| 27ºC D 19ºC W | Total capacity kW | 6.2 | 5.95 | 5.71 | 5.3 | 5.16 | 5.01 |
| | Sensitive capacity kW | 4.95 | 4.74 | 4.55 | 4.31 | 4.13 | 4.03 |
| | Input kW. | 1.31 | 1.51 | 1.71 | 1.78 | 2.07 | 2.26 |
| 32ºC D 23ºC W | Total capacity kW | 7.13 | 6.84 | 6.57 | 6.22 | 5.94 | 5.77 |
| | Sensitive capacity kW | 5.69 | 5.45 | 5.25 | 4.95 | 4.75 | 4.62 |
| | Input kW. | 1.51 | 1.72 | 1.96 | 2.17 | 2.38 | 2.61 |

## 6.2 CUA-24HR1

| MODEL | | CUA-24HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 6.85 | 6.55 | 6.31 | 5.94 | 5.71 | 5.54 |
| | Sensitive capacity kW | 5.47 | 5.24 | 5.04 | 4.75 | 4.56 | 4.43 |
| | Input kW. | 1.68 | 1.91 | 2.15 | 2.4 | 2.65 | 2.91 |
| 24ºC DB 17ºC WB | Total capacity kW | 7.52 | 7.18 | 6.91 | 6.52 | 6.26 | 6.05 |
| | Sensitive capacity kW | 6.01 | 5.74 | 5.53 | 5.21 | 4.98 | 4.84 |
| | Input kW. | 1.78 | 2.01 | 2.27 | 2.52 | 2.78 | 3.06 |
| 27ºC DB 19ºC WB | Total capacity kW | 8.15 | 7.79 | 7.51 | 7.10 | 6.81 | 6.58 |
| | Sensitive capacity kW | 6.51 | 6.24 | 5.98 | 5.66 | 5.44 | 5.26 |
| | Input kW. | 1.87 | 2.13 | 2.39 | 2.54 | 2.93 | 3.22 |
| 32ºC DB 23ºC WB | Total capacity kW | 9.37 | 8.96 | 8.63 | 8.16 | 7.82 | 7.57 |
| | Sensitive capacity kW | 7.49 | 7.17 | 6.91 | 6.51 | 6.25 | 6.05 |
| | Input kW. | 2.15 | 2.42 | 2.75 | 3.05 | 3.39 | 3.69 |

## 6.3 CUA-36HR1

| MODEL | | CUA-36HR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 10.12 | 9.68 | 9.33 | 8.81 | 8.45 | 8.18 |
| | Sensitive capacity kW | 8.09 | 7.75 | 7.46 | 7.03 | 6.75 | 6.55 |
| | Input kW. | 2.34 | 2.68 | 3.02 | 3.41 | 3.73 | 4.07 |
| 24ºC DB 17ºC WB | Total capacity kW | 11.1 | 10.61 | 10.23 | 9.64 | 9.26 | 8.96 |
| | Sensitive capacity kW | 8.87 | 8.48 | 8.16 | 7.72 | 7.42 | 7.15 |
| | Input kW. | 2.47 | 2.83 | 3.19 | 3.58 | 3.94 | 4.3 |
| 27ºC DB 19ºC WB | Total capacity kW | 12.06 | 11.54 | 11.12 | 10.50 | 10.1 | 9.75 |
| | Sensitive capacity kW | 9.65 | 9.24 | 8.89 | 8.38 | 8.04 | 7.79 |
| | Input kW. | 2.64 | 3.03 | 3.37 | 3.79 | 4.15 | 4.48 |
| 32ºC DB 23ºC WB | Total capacity kW | 13.86 | 13.26 | 12.78 | 12.06 | 11.58 | 11.21 |
| | Sensitive capacity kW | 11.09 | 10.61 | 10.23 | 9.65 | 9.26 | 8.97 |
| | Input kW. | 3.01 | 3.46 | 3.91 | 4.33 | 4.75 | 5.16 |

## 6.4 CUA-48HR1

| MODEL | | CUA-48HSR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 13.51 | 12.92 | 12.45 | 11.74 | 11.27 | 10.92 |
| | Sensitive capacity kW | 10.86 | 10.33 | 9.96 | 9.38 | 9.01 | 8.73 |
| | Input kW. | 2.95 | 3.41 | 3.85 | 4.21 | 4.68 | 5.12 |
| 24ºC DB 17ºC WB | Total capacity kW | 14.84 | 14.16 | 13.63 | 12.86 | 12.35 | 11.96 |
| | Sensitive capacity kW | 11.83 | 11.32 | 10.91 | 10.28 | 9.87 | 9.54 |
| | Input kW. | 3.15 | 3.59 | 4.01 | 4.49 | 4.94 | 5.41 |
| 27ºC DB 19ºC WB | Total capacity kW | 16.06 | 15.38 | 14.82 | 14.00 | 13.42 | 12.98 |
| | Sensitive capacity kW | 12.92 | 12.31 | 11.89 | 11.16 | 10.74 | 10.4 |
| | Input kW. | 3.27 | 3.79 | 4.21 | 5.15 | 5.25 | 5.68 |
| 32ºC DB 23ºC WB | Total capacity kW | 18.49 | 17.7 | 17.05 | 16.08 | 15.42 | 14.97 |
| | Sensitive capacity kW | 14.79 | 14.15 | 13.63 | 12.86 | 12.33 | 11.98 |
| | Input kW. | 3.82 | 4.35 | 4.88 | 5.45 | 5.98 | 6.52 |

## 6.5 CUA-60HR1

| MODEL | | CCA-60HSR1 | | | | | |
|---|---|---|---|---|---|---|---|
| COOLING | | OUTDOOR TEMPERATURE DRY | | | | | |
| Indoor Conditions | | 21ºC | 25ºC | 30ºC | 35ºC | 40ºC | 45ºC |
| 21ºC DB 15ºC WB | Total capacity kW | 15.45 | 14.78 | 14.3 | 13.44 | 12.91 | 12.49 |
| | Sensitive capacity kW | 12.38 | 11.83 | 11.39 | 10.75 | 10.32 | 10.02 |
| | Input kW. | 3.76 | 4.32 | 4.84 | 5.38 | 5.92 | 6.46 |
| 24ºC DB 17ºC WB | Total capacity kW | 16.93 | 16.19 | 15.6 | 14.72 | 14.13 | 13.7 |
| | Sensitive capacity kW | 13.54 | 12.96 | 12.48 | 11.78 | 11.31 | 10.96 |
| | Input kW. | 3.97 | 4.55 | 5.13 | 5.67 | 6.26 | 6.83 |
| 27ºC DB 19ºC WB | Total capacity kW | 18.4 | 17.6 | 16.96 | 16 | 15.36 | 14.88 |
| | Sensitive capacity kW | 14.72 | 14.1 | 13.57 | 12.81 | 12.3 | 11.92 |
| | Input kW. | 4.20 | 4.78 | 5.39 | 5.96 | 6.58 | 7.19 |
| 32ºC DB 23ºC WB | Total capacity kW | 21.16 | 20.24 | 19.51 | 18.39 | 17.67 | 17.12 |
| | Sensitive capacity kW | 16.93 | 16.13 | 15.6 | 14.73 | 14.12 | 13.71 |
| | Input kW. | 4.83 | 5.52 | 6.21 | 6.89 | 7.59 | 8.26 |

# Heating

## 6.6 CUA-18HR1

| MODEL | | CUA-18HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 12ºC D 11ºC W | 7ºC D 6ºC W | 4ºC D 3ºC W | 0ºC D -1ºC W | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 10.28 | 8.21 | 6.88 | 6.2 | 5.85 | 5.16 | 4.81 |
| | Input kW. | 3.16 | 2.52 | 2.12 | 1.99 | 1.9 | 1.79 | 1.68 |
| 18ºC | Capacity kW | 9.67 | 7.72 | 6.45 | 5.81 | 5.49 | 4.85 | 4.52 |
| | Input kW. | 2.94 | 2.33 | 1.97 | 1.88 | 1.78 | 1.68 | 1.58 |
| 20ºC | Capacity kW | 8.87 | 7.12 | 5.8 | 5.38 | 5.08 | 4.49 | 4.18 |
| | Input kW. | 2.71 | 2.15 | 1.71 | 1.75 | 1.66 | 1.55 | 1.46 |
| 22ºC | Capacity kW | 8.21 | 6.56 | 5.51 | 4.96 | 4.66 | 4.13 | 3.85 |
| | Input kW. | 2.48 | 2.01 | 1.69 | 1.61 | 1.51 | 1.43 | 1.35 |
| 27ºC | Capacity kW | 7.15 | 5.72 | 4.78 | 4.3 | 4.06 | 3.58 | 3.37 |
| | Input kW. | 2.15 | 1.75 | 1.46 | 1.38 | 1.32 | 1.24 | 1.15 |

## 6.7 CUA-24HR1

| MODEL | | CUA-24HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 12ºC D 11ºC W | 7ºC D 6ºC W | 4ºC D 3ºC W | 0ºC D -1ºC W | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 13.68 | 10.91 | 9.12 | 8.24 | 7.78 | 6.86 | 6.42 |
| | Input kW. | 4.78 | 3.76 | 3.12 | 2.95 | 2.78 | 2.68 | 2.54 |
| 18ºC | Capacity kW | 12.85 | 10.27 | 8.56 | 7.68 | 7.31 | 6.42 | 6.01 |
| | Input kW. | 4.48 | 3.43 | 2.84 | 2.76 | 2.61 | 2.46 | 2.36 |
| 20ºC | Capacity kW | 11.89 | 9.48 | 7.8 | 7.16 | 6.78 | 5.92 | 5.58 |
| | Input kW. | 4.08 | 3.26 | 2.33 | 2.31 | 2.26 | 2.22 | 2.15 |
| 22ºC | Capacity kW | 10.95 | 8.76 | 7.31 | 6.58 | 6.24 | 5.5 | 5.12 |
| | Input kW. | 3.78 | 2.96 | 2.25 | 2.28 | 2.21 | 2.08 | 1.98 |
| 27ºC | Capacity kW | 9.51 | 7.57 | 6.34 | 5.72 | 5.42 | 4.68 | 4.46 |
| | Input kW. | 3.27 | 2.45 | 2.14 | 2.08 | 1.98 | 1.83 | 1.68 |

## 6.8 CUA-36HR1

| MODEL | | CUA-36HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 12ºC D 11ºC W | 7ºC D 6ºC W | 4ºC D 3ºC W | 0ºC D -1ºC W | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 19.64 | 15.74 | 13.12 | 11.82 | 11.15 | 9.81 | 9.19 |
| | Input kW. | 6.01 | 4.81 | 4.01 | 3.8 | 3.59 | 3.39 | 3.22 |
| 18ºC | Capacity kW | 18.49 | 14.78 | 12.32 | 11.12 | 10.49 | 9.21 | 8.63 |
| | Input kW. | 5.65 | 4.51 | 3.75 | 3.6 | 3.38 | 3.19 | 2.98 |
| 20ºC | Capacity kW | 17.12 | 13.7 | 11.55 | 10.25 | 9.7 | 8.54 | 8.02 |
| | Input kW. | 5.23 | 4.18 | 3.38 | 3.23 | 3.13 | 2.96 | 2.78 |
| 22ºC | Capacity kW | 15.75 | 12.62 | 10.51 | 9.45 | 8.94 | 7.88 | 7.35 |
| | Input kW. | 4.81 | 3.82 | 3.18 | 3.02 | 2.9 | 2.71 | 2.54 |
| 27ºC | Capacity kW | 13.66 | 11.03 | 9.13 | 8.22 | 7.74 | 6.86 | 6.39 |
| | Input kW. | 4.14 | 3.32 | 2.78 | 2.64 | 2.48 | 2.35 | 2.21 |

## 6.9 CUA-48HR1

| MODEL | | CUA-48HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 12ºC D 11ºC W | 7ºC D 6ºC W | 4ºC D 3ºC W | 0ºC D -1ºC W | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 26.21 | 20.95 | 17.45 | 15.71 | 14.83 | 13.09 | 12.22 |
| | Input kW. | 8.47 | 6.79 | 5.62 | 5.37 | 5.09 | 4.81 | 4.54 |
| 118ºC | Capacity kW | 24.58 | 19.68 | 16.4 | 14.76 | 13.93 | 12.29 | 11.51 |
| | Input kW. | 7.96 | 6.31 | 5.42 | 5.04 | 4.79 | 4.53 | 4.25 |
| 20ºC | Capacity kW | 22.8 | 18.22 | 15.4 | 13.66 | 12.91 | 11.38 | 10.63 |
| | Input kW. | 7.39 | 5.91 | 5.41 | 4.68 | 4.45 | 4.19 | 3.95 |
| 22ºC | Capacity kW | 20.92 | 16.76 | 13.97 | 12.57 | 11.87 | 10.47 | 9.77 |
| | Input kW. | 6.78 | 5.43 | 4.53 | 4.31 | 4.09 | 3.87 | 3.64 |
| 27ºC | Capacity kW | 18.21 | 14.55 | 12.14 | 10.92 | 10.32 | 9.1 | 8.48 |
| | Input kW. | 5.91 | 4.73 | 3.95 | 3.76 | 3.57 | 3.36 | 3.17 |

## 6.10 CUA-60HR1

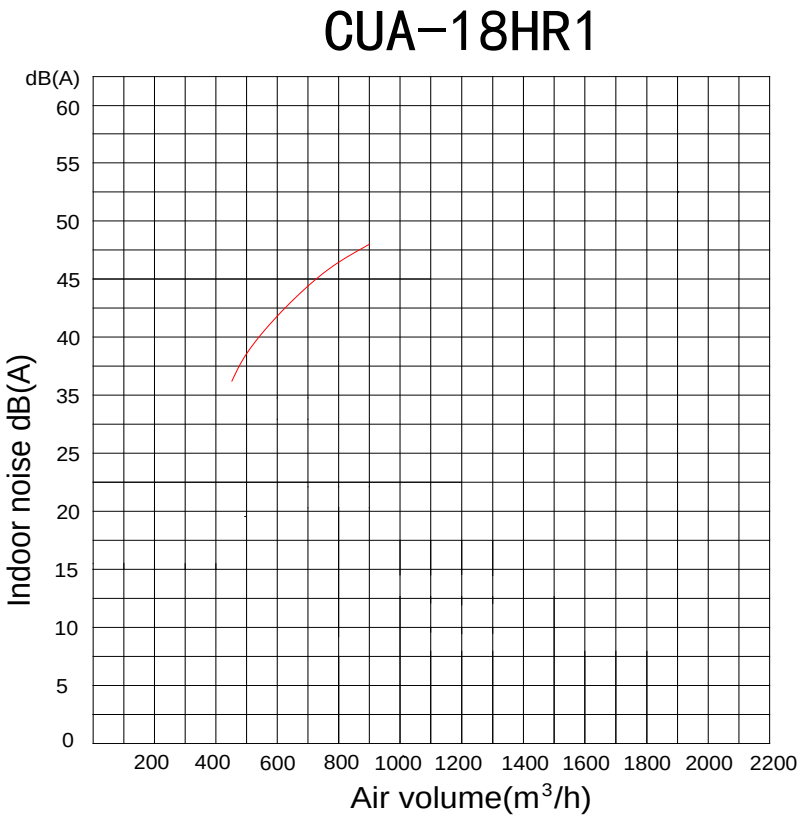
| MODEL | | CUA-60HR1 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HEATING | | OUTDOOR CONDITIONS | | | | | | |
| Indoor Conditions | | 24ºC D 18ºC W | 12ºC D 11ºC W | 7ºC D 6ºC W | 4ºC D 3ºC W | 0ºC D -1ºC W | -5ºC D -6ºC W | -7ºC D -8ºC W |
| 15ºC | Capacity kW | 30.36 | 24.29 | 20.24 | 18.21 | 17.2 | 15.18 | 14.12 |
| | Input kW. | 10.34 | 8.27 | 6.91 | 6.55 | 6.22 | 5.88 | 5.51 |
| 18ºC | Capacity kW | 28.52 | 22.81 | 19.01 | 19.11 | 16.16 | 14.26 | 13.3 |
| | Input kW. | 9.73 | 7.77 | 6.46 | 6.15 | 5.84 | 5.51 | 5.16 |
| 20ºC | Capacity kW | 26.4 | 21.12 | 17.6 | 15.84 | 14.96 | 13.2 | 12.32 |
| | Input kW. | 9.02 | 7.21 | 6.08 | 5.72 | 5.39 | 5.11 | 4.78 |
| 22ºC | Capacity kW | 24.23 | 19.43 | 16.2 | 14.58 | 13.76 | 12.14 | 11.33 |
| | Input kW. | 8.29 | 6.61 | 5.53 | 5.24 | 4.96 | 4.67 | 4.41 |
| 27ºC | Capacity kW | 21.12 | 16.9 | 14.09 | 12.67 | 11.98 | 10.58 | 9.87 |
| | Input kW. | 7.19 | 5.78 | 4.82 | 4.57 | 4.34 | 4.09 | 3.86 |

# 7.Electric Characteristics

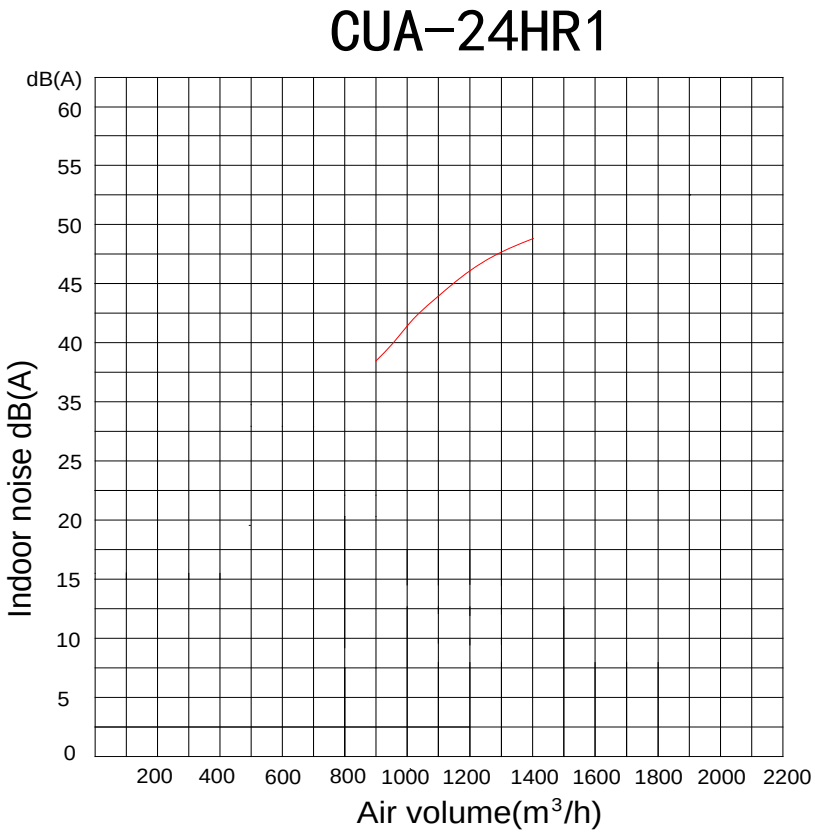
| Model | Indoor Units | | | | Indoor Fan Motor |
|---|---|---|---|---|---|
| | Hz | Voltage | Min. | Max. | kW |
| CUA-18HR1 | 50 | 220-240V | 198 | 254 | 0.065 |
| CUA-24HR1 | 50 | 220-240V | 198 | 254 | 0.3 |
| CUA-36HR1 | 50 | 220-240V | 198 | 254 | 0.3 |
| CUA-48HR1 | 50 | 220-240V | 198 | 254 | 0.33 |
| CUA-60HR1 | 50 | 220-240V | 198 | 254 | 0.33 |

# 8.Sound Levels

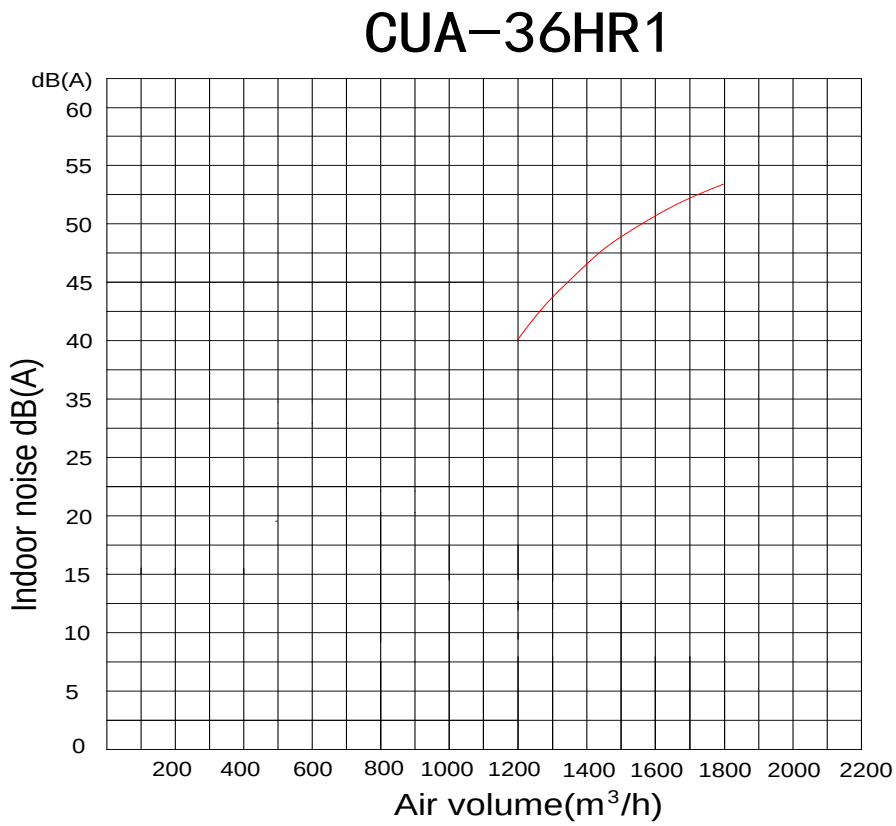
## 8.1 CUA-18HR1



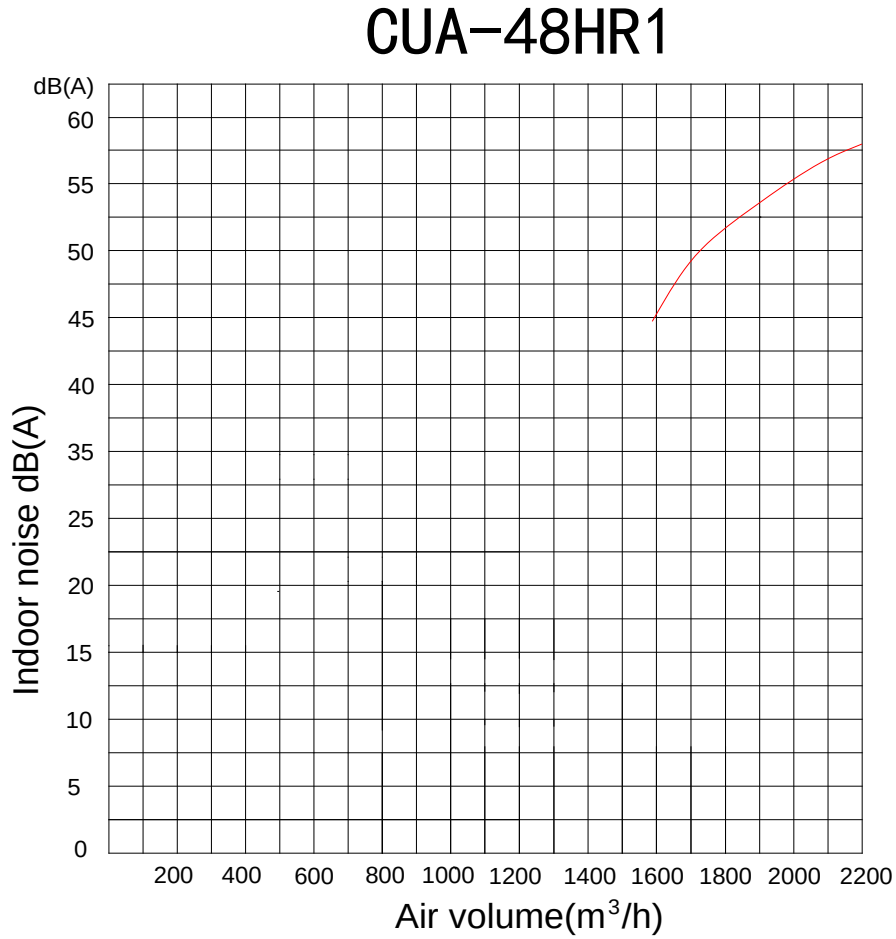

## 8.2 CUA-24HR1



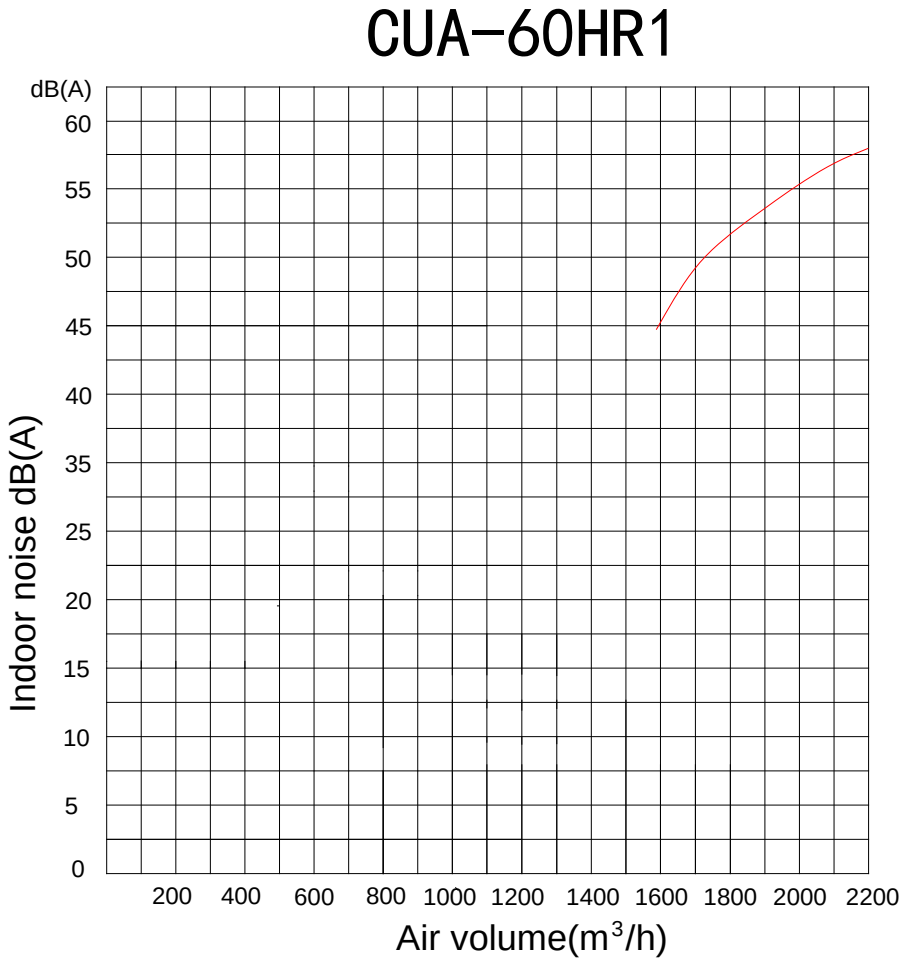
## 8.3 CUA-36HR1




## 8.4 CUA-48HR1

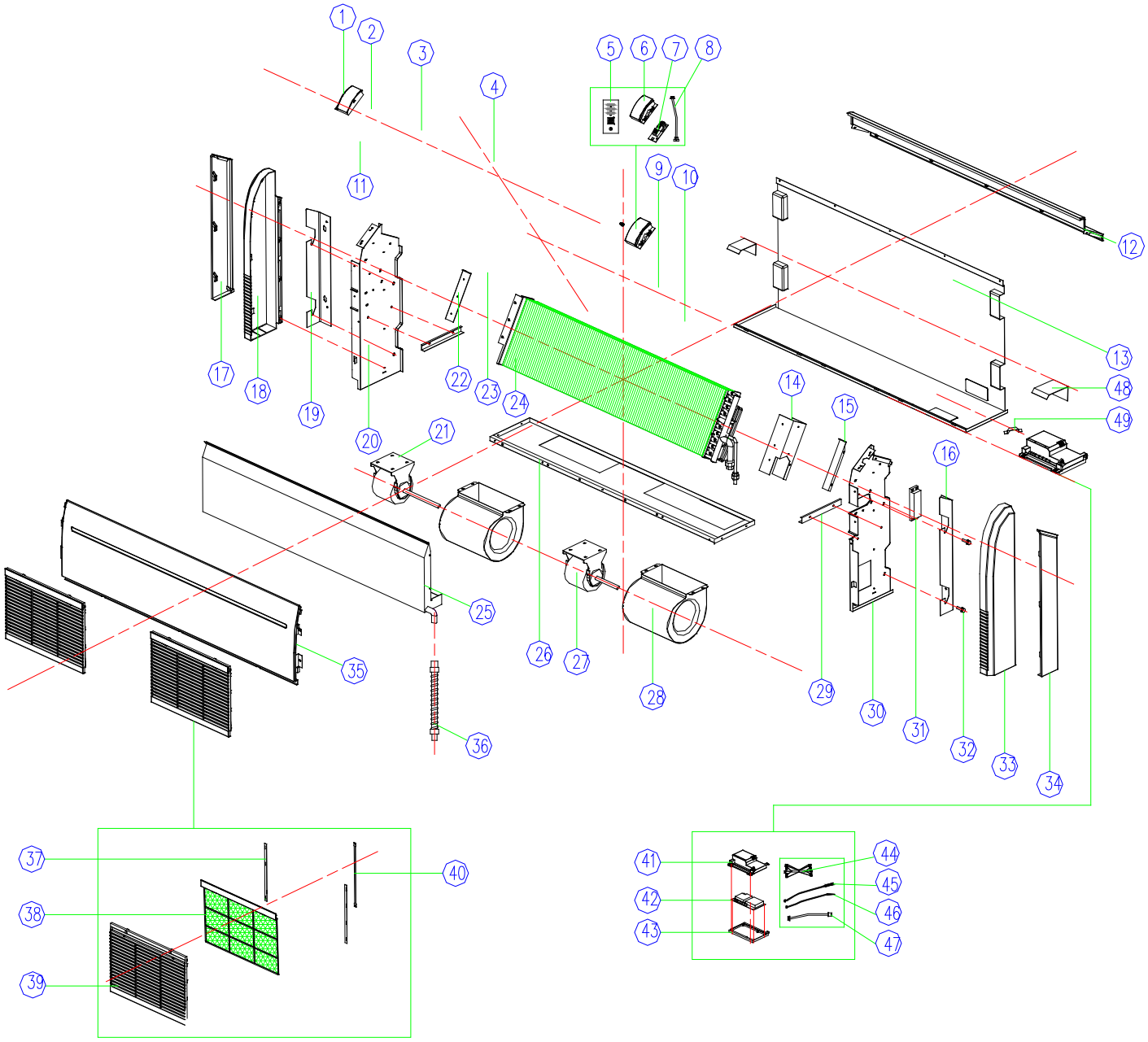


## 8.5 CUA-60HR1


CUA-60HR1
dB(A)
60
55
50
45
40
35
25
20
15
10
5
0
Indoor noise dB(A)
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
Air volume(m3/h)

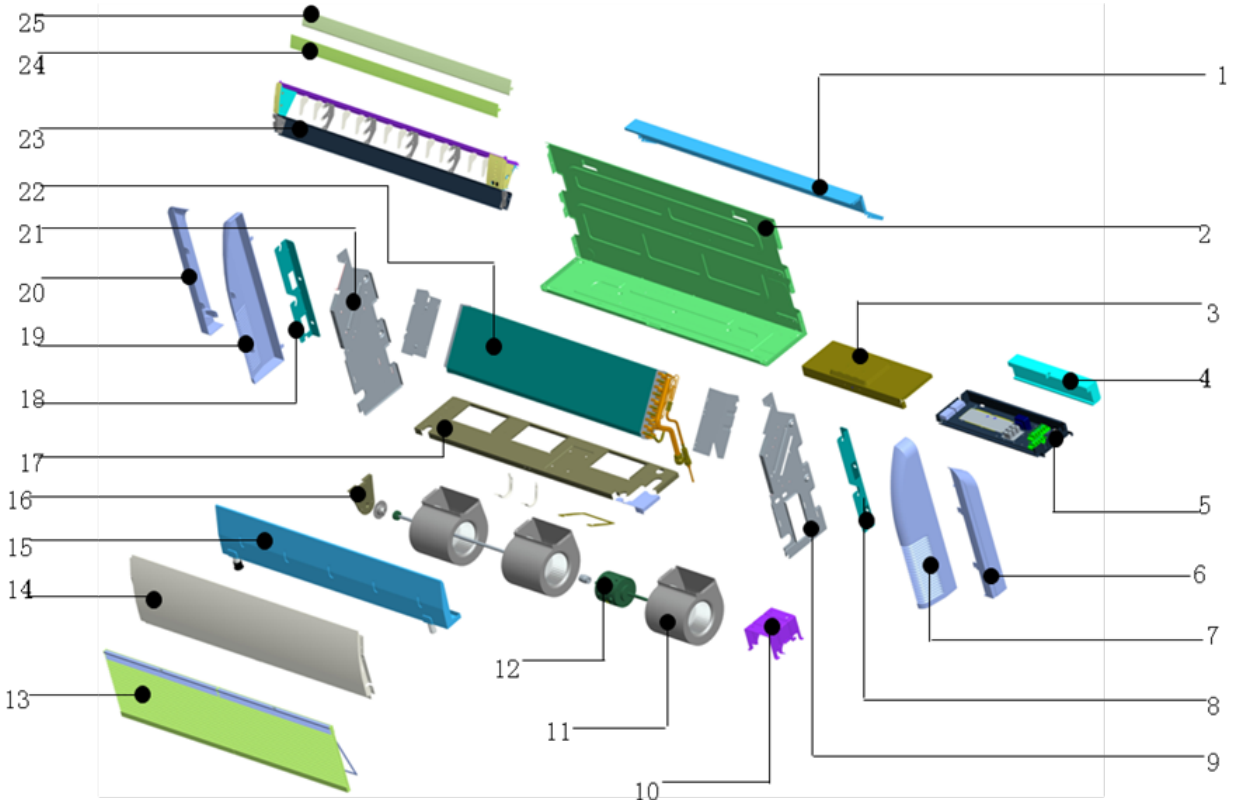
# 9.Exploded View

## 9.1 CUA-18HR1



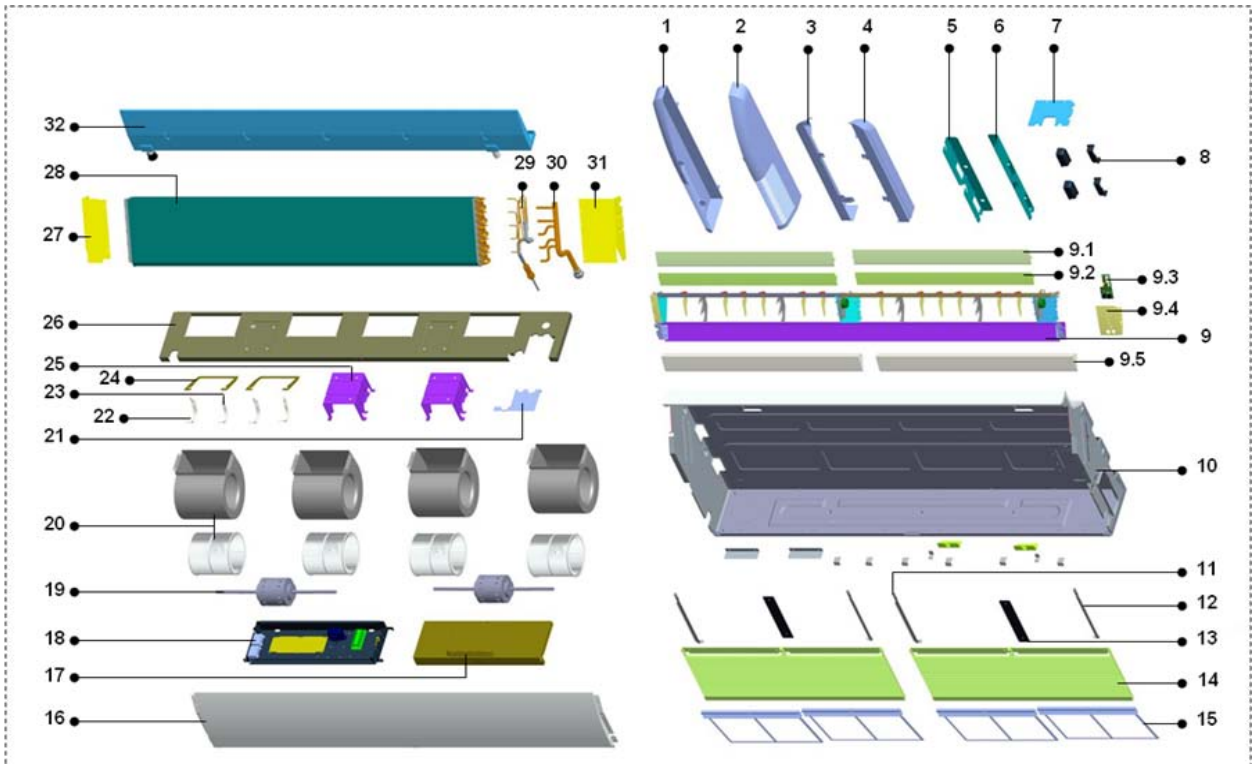
| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| **1** | Connection board for air guide B | 1 | **26** | fan mounting plate | 1 |
| **2** | connecting shaft | 2 | **27** | Indoor fan motor | 1 |
| **3** | air guide frame | 1 | **28** | scroll case | 3 |
| **4** | Connection board for air guide | 1 | **29** | guide rail | 2 |
| **5** | mask（IMD） | 1 | **30** | Right separating board | 1 |
| **6** | display panel | 1 | **31** | Terminal | 1 |
| **7** | display lamp panel | 1 | **32** | Hexagon bolts M8×30 | 4 |
| **8** | wire of display lamp panle | 1 | **33** | Right cover | 1 |
| **9** | Guard vane | 24 | **34** | Right sealplate | 3 |
| **10** | connecting rod | 2 | **35** | Front panel | 3 |
| **11** | Guard vane 2 | 2 | **36** | Insulation pipes | 3 |
| **12** | top Cover | 1 | **37** | filter bar | 6 |
| **13** | Rear cover | 1 | **38** | filter screen | 1 |
| **14** | Right mounting plate of evaporator | 1 | **39** | Air inlet grille | 1 |
| **15** | Right mounting plate of evaporator | 1 | **40** | filter bar 2 | 1 |
| **16** | Right mounting holder | 1 | **41** | upper E-part box cover | 1 |
| **17** | Left sealplate | 1 | **42** | Indoor PCB | 1 |
| **18** | Left cover | 1 | **43** | lower E-part box cover | 1 |
| **19** | left mounting holder | 1 | **44** | Communication line | 1 |
| **20** | Lelf separating board | 1 | **45** | pipe temperature probe | 2 |
| **21** | Indoor fan motor（left） | 1 | **46** | indoor temperature probe | 8 |
| **22** | left mounting plate of evaporator | 1 | **47** | connecting wire of display lamp panle | 1 |
| **23** | outlet holder | 1 | **48** | Rear cover holder | 2 |
| **24** | evaporator | 1 | **49** | E-part box holder | 1 |
| **25** | water pan | 1 | | | |

## 9.2 CUA-24HR1, CUA-36HR1



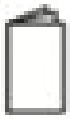

| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| **1** | Rear cover | 1 | **20** | Right sealplate | 1 |
| **2** | Chassis assembly | 1 | **21** | Right separating board | 1 |
| **3** | E-part box cover | 1 | **22** | Evaporator component | 1 |
| **4** | E-part box mat | 1 | **22.1** | Left mounting plate of evaporator | 1 |
| **5** | Indoor PCB assembly | 1 | **22.2** | Shunt capillary assembly | 1 |
| **5.1** | E-part box | 1 | **22.3** | Distributor | 1 |
| **5.2** | Indoor PCB | 1 | **22.4** | Air inlet header pipe assembly of evaporator | 1 |
| **5.3** | Fan capacitor | 1 | **22.5** | Single Connector | 1 |
| **5.4** | Transformer | 1 | **22.6** | Evaporator assembly | 1 |
| **5.5** | Temperature sensors（indoor ) | 1 | **22.7** | Right mounting plate of evaporator | 1 |
| **5.6** | Terminal | 1 | **22.8** | Temperature sensors (evaporator ) | 1 |
| **6** | Left sealplate | 1 | **23** | Air-out frame component | 1 |
| **7** | Left cover | 1 | **23.1** | Fixing board assembly for air-out frame | 1 |
| **8** | Left hoisting pate | 1 | **23.2** | Display film | 1 |
| **9** | Lelf separating board Ⅰ | 1 | **23.3** | Display lamp panel | 1 |
| **10** | Motor separating board | 1 | **23.4** | Vertical step motor | 1 |
| **11** | Wheel volute for slim type | 3 | **23.5** | Horizontal step motor | 1 |
| **12** | Indoor fan motor | 1 | **23.6** | End bearing of louver | 2 |
| **13** | Air inlet grille | 2 | **23.7** | Intermediate bearing of louver | 8 |
| **14** | Top Cover assembly | 1 | **23.8** | Driving lever for louver | 1 |
| **15** | Weld assembly of Water drain pan | 1 | **23.9** | Follower lever for louver | 1 |
| **15.1** | Water outlet rubber cover | 1 | **23.10** | Louver holder | 1 |
| **16** | Supporting board for motor | 1 | **23.11** | Guard vane | 10 |
| **17** | Weld assembly for intermediate transverse girder | 1 | **24** | Upper horizontal louver | 1 |
| **18** | Right mounting plate of evaporator | 1 | **25** | Down horizontal louver | 1 |
| **19** | Right cover | 1 | | | |

## 9.3 CUA-48HR1, CUA-60HR1




| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| **1** | Right cover | 1 | **16** | top Cover assembly | 1 |
| **2** | Left cover | 1 | **17** | electric box cover | 1 |
| **3** | Right sealplate | 1 | **18** | indoor PCB assembly | 1 |
| **4** | left sealplate | 1 | **18.1** | electric box | 1 |
| **5** | Right hoisting plate | 1 | **18.2** | indoor PCB | 1 |
| **6** | Left hoisting pate | 1 | **18.3** | fan capacitor | 2 |
| **7** | Rat guard | 1 | **18.4** | temperature sensors（indoor） | 1 |
| **8** | Handle | 4 | **18.5** | temperature sensors (evaporator ) | 1 |
| **9** | Air out frame assy | 1 | **18.6** | transformer | 1 |
| **9.1** | Horizontal louver，up | 2 | **18.7** | terminal | 1 |
| **9.2** | Horizontal louver, down | 2 | **19** | indoor fan motor | 2 |
| **9.3** | display lamp panel | 1 | **20** | wheel volute for slim type | 4 |
| **9.4** | display panel Installing box | 1 | **21** | pipe clamp | 1 |
| **9.5** | Foam for air outlet frame | 2 | **22** | left gland for motor shaft sleeve | 2 |
| **9.6** | vertical step motor | 1 | **23** | right gland for motor shaft sleeve | 2 |
| **9.7** | horizontal step motor 1 | 1 | **24** | Motor separating board | 2 |
| **9.8** | horizontal step motor | 1 | **25** | Holder for fan motor | 2 |
| **9.9** | display film | 1 | **26** | weld assembly for intermediate transverse girder | 1 |
| **9.10** | endbearing of louver | 4 | **27** | right mounting plate of evaporator | 1 |
| **9.11** | intermediate bearing of louver | 8 | **28** | evaporator | 1 |
| **9.12** | driving lever for louver | 2 | **29** | shunt capillary assembly | 1 |
| **9.13** | follower lever for louver | 2 | **29.1** | | 1 |
| **9.14** | Louver holder | 2 | **29.2** | distributor | 1 |
| **9.15** | Guard vane | 12 | **30** | air inlet header pipe assembly of evaporator | 1 |
| **10** | Chassis | 1 | **30.1** | Single Connector | 1 |
| **11** | left retaining plate | 2 | **31** | left mounting plate of evaporator | 1 |
| **12** | right retaining plate | 2 | **32** | weld assembly of Water drain pan | 1 |
| **13** | filter snap-gauge | 2 | **32.1** | water outlet rubber cover | 1 |
| **14** | air inlet grille | 2 | **33** | remote controller | 1 |
| **15** | Filter | 4 | | | |

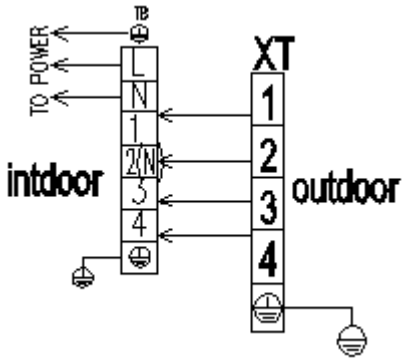
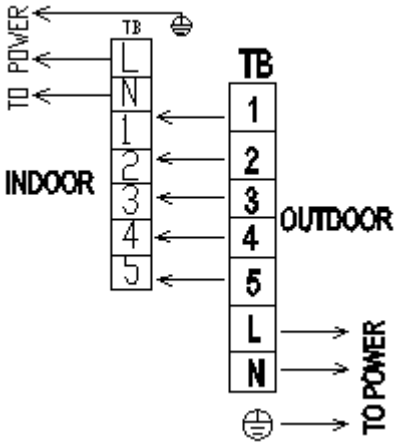
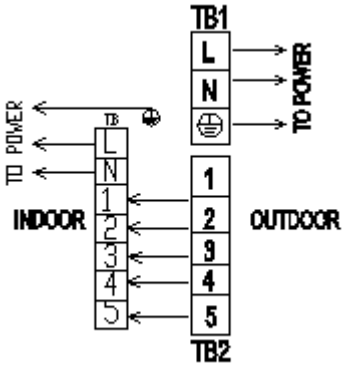
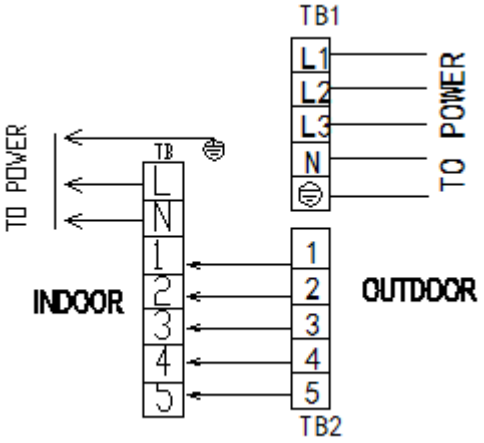
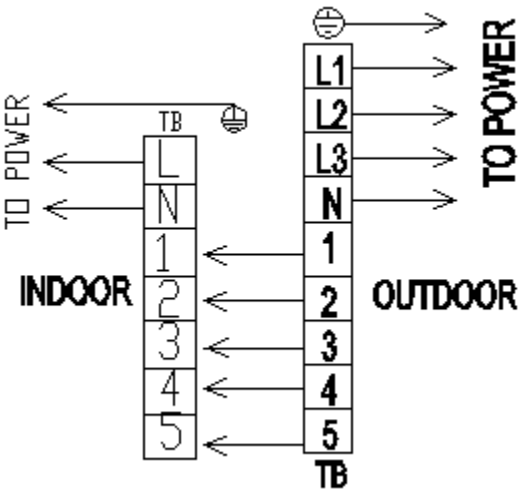
# 10.Accessories

| | | | |
|---|---|---|---|
| Installation fittings | Name | Shape | Quantity |
| | Hanging arm |  | 2 |
| Controller | Remote controller |  | 1 |
| | Remote controller holder (optional) |  | 1 |
| | Wire controller (optional) |  | 1 |
| | Mounting screw (ST2.9×10-C-H) |  | 2 |
| | Alkaline dry batteries (AM4) |  | 2 |
| Others | Installation & operation instruction manual |  | 1 |

# 11.The Specification of Power

| Type | | CUA-18HR1 | CUA-24HR1 | CUA-36HR1 | CUA-48HR1 | CUA-60HR1 |
|---|---|---|---|---|---|---|
| Power | Phase | 1-phase | 1-phase | 1-phase | 1-phase | 1-phase |
| | Frequency and Voltage | 220-240V, 50Hz | | | | |
| Indoor Unit Power Wiring ($mm^2$) | | 3×2.5$mm^2$ | 3×1.0$mm^2$ | 3×1.0$mm^2$ | 3×1.0$mm^2$ | 3×1.0$mm^2$ |
| Indoor/Outdoor Connecting Wiring ($mm^2$) | Ground Wiring | 2.5$mm^2$ | 1.0$mm^2$ | 1.0$mm^2$ | 1.0$mm^2$ | 1.0$mm^2$ |
| | Strong Electric Signal | 5×1.5$mm^2$ | 5×0.75$mm^2$ | 5×0.75$mm^2$ | 5×0.75$mm^2$ | 5×0.75$mm^2$ |

# 12.Field Wiring

| CUA-18HR1&COU-18HR1 | CUA-24HR1&COU-24HR1 |
|---|---|
|  |  |
| **CUA-36HR1&COU-36HR1** | **CUA-36HR1&COU-36HSR1** |
|  |  |
| **CUA-48HR1&COU-48HR1、CUA-60HR1&COU-60HR1** | |
|  | |

# 13.Troubleshooting

## Table 1

If the following cases happen, do not worry, for them being not faults:

| Phenomena | Phenomena analysis |
|---|---|
| The air conditioner can not be restarted just after shutting down | The unit delays running for 3 minutes after stopping for protection. The three-minute protection timer built-in micro-computer works automatically, but it is not for the case when the unit is powered first time. |
| The air conditioner does not supply air at the beginning of heating. | The air conditioner does not supply air to avoid of blowing cold air until the indoor heat exchanger is warm(2-5minutes). |
| The air conditioner does not supply air after it has running for 5-10 minutes in heating mode. | The air conditioner enters defrost mode automatically when the outdoor temp. Is quite low or the humidity is too high, so please wait for a moment. Besides, during defrosting, some moisture or steam will come out from the outdoor unit. |
| The air conditioner does not supply air in dehumidifying mode. | Sometimes, the fan of indoor unit will stop running to prevent the condensate from evaporating and save energy. |
| The air conditioner blows out the moisture in cooling mode. | This is caused by too high temperature and humidity of the room. It will eliminate when the temperature and humidify reduces. |
| The air blown out is smelly. | The air blown out is smelly during operating, it may come from the tobacco or other cosmetics sticked to the inner of the air conditioner. |
| Squeak is heard from the unit | This is caused by the circulating refrigerant inside the unit. |
| Crack is heard from the unit | This is caused by heat expansion or contraction of plastics |
| When the power restores, the air conditioner can not run | This is because the memory circuit of the microcomputer is cleared. Please start the air conditioner through the remote controller. |
| The air conditioner can not receive the signal from the remote controller. | It may happen when the signal receiver of the air conditioner is exposed to sunlight or strong light directly or the batteries are used up. In that case, eliminate those factors or change the batteries. |
| There is some drop on the air outlet and the grille. | The air outlet and the grillemoisture will condense when the air conditioner is operated in humid environment for a long time, please adjust the grille and the vane to the position which is in paralle with the wind supply direction and select "High speed" mode to improve the condensing phenomena. |

## Table 2 Fault code

| No. | Type | Content | LED Flashing | Code | Remark |
|---|---|---|---|---|---|
| 1 | Fault | Room temperature sensor fault | Timing lamp flashing/5Hz | E2 | Automatic recovery after the problem resolved |
| 2 | Fault | Indoor coil temperature sensor fault | Running lamp flashing/5Hz | E3 | |
| 3 | Fault | Outdoor coil temperature sensor fault | Defrosting lamp flashing/5Hz | E5 | |
| 4 | Fault | Water full protection | Alarm lamp flashing/5Hz | F5 | |
| 5 | Fault | Outdoor protection | Defrosting lamp and Alarm lamp both flashing/5Hz | F2 | |
| 6 | Fault | Communication fault | Running lamp and Defrosting lamp both flashing/5Hz | E1 | Manual eliminate |
| 7 | Fault | EEPROM communication fault | Running lamp and Timing lamp both flashing/5Hz | P6 | Recovery after interruption of power supply |
| 8 | Indication | Enforced cooling | Running lamp and Alarm lamp both flashing/5Hz | / | |
| 9 | Indication | Anti- cool air in heating mode | Defrosting preheat lamp ON | P1 | |
| 10 | Indication | Defrosting | Defrosting preheat lamp ON | P3 | |

# Part 3 Outdoor Units

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7.Sound Levels .....131
8.Exploded View .....132

# 1.Specification

| Model | | | COU-18HR1 | COU-24HR1 | COU-36HR1 |
|---|---|---|---|---|---|
| Outdoor power supply | | V/Ph/Hz | 220~240/1/50 | 220~240/1/50 | 220~240/1/50 |
| Cooling | Capacity | Btu/h | 18000 | 24000 | 36000 |
| | | KW | 5.3 | 7.1 | 10.5 |
| | Input | W | 1900 | 2400 | 3710 |
| | Rated current | A | 8.64 | 10.91 | 16.86 |
| Heating | Capacity | Btu/h | 19800 | 26400 | 39600 |
| | | KW | 5.8 | 7.8 | 11.5 |
| | Input | W | 1690 | 2100 | 3310 |
| | Rated current | A | 7.68 | 9.55 | 15.05 |
| Max. input consumption | | W | 2500 | 2700 | 4800 |
| Max. current | | A | 11.36 | 12.27 | 21.82 |
| Starting current | | A | 40 | 49 | 112 |
| Compressor | Model | | ASH232SV-C8LU | ASH264RV-C8DU1 | C-SBN301H5D |
| | Type | | ROTARY | ROTARY | SCROLL |
| | Brand | | HITACHI | HITACHI | SANYO |
| | Capacity | Btu/h | 18800 | 24000 | 36000 |
| | Input | W | 1900 | 2200 | 3950 |
| | Rated current(RLA) | A | 8.8 | 9.95 | 19.2 |
| | Locked rotor Amp(LRA) | A | 40 | 49 | 112 |
| | Thermal protector | | built-in | built-in | built-in |
| | Capacitor | μF | 60 | 55 | 60 |
| | Refrigerant oil | ml | 600 | 600 | 1700 |
| Outdoor motor fan | Model | | YDK-38-6B | YDK-60A-6F | YKD-200-6 |
| | Input | W | 80 | 150 | 450 |
| | Capacitor | μF | 2.5 | 4 | 10 |
| | Speed | r/min | 920 | 850 | 800 |
| Outdoor coil | Number of rows | | 2 | 2 | 1 |
| | Tube pitch x row pitch | mm | 25×21.65 | 25×21.65 | 25×21.65 |
| | Fin spacing | mm | 1.7 | 1.8 | 1.4 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | 9.52 | 9.52 | 9.52 |
| | | | inner grooved | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 800×510×43.3 | 742×650×43.3 | 883.5×950×21.65 |
| | Number of circuits | | 4 | 5 | 3 |
| Outdoor air flow | | $m^3/h$ | 2800 | 3800 | 6000 |
| Outdoor noise level | | dB(A) | 53 | 65 | 65 |
| Outdoor unit | Dimension(W×H×D) | mm | 866×535×304 | 930×700×370 | 1070×995×400 |
| | Packing(W×H×D) | mm | 920×585×335 | 990×770×410 | 1145×1120×475 |
| | Net/Gross weight | kg | 49/51 | 58/61 | 92/100 |
| Refrigerant type/quantity | | g | R410A/1200 | R410A/1800 | R410A/2100 |
| Throttle part | | | capillary | capillary | capillary |
| Design pressure | | MPa | 4.2 | 4.2 | 4.2 |
| Outdoor power supply | | $mm^2$ | 1.5 | 2.5 | 4 |
| Refrigerant piping | Liquid side/Gas side | mm | φ6.35/φ12.7 | Φ9.52/Φ15.88 | Φ9.52/Φ19.05 |
| | Max. pipe length | m | 20 | 20 | 20 |
| | Max. high drop | m | 10 | 10 | 10 |
| Ambient temp | | °C | -7～43 | -7～43 | -7～43 |
| Stuffing Quantity（20'/40'/40'HQ） | | | 100/200/208 | 70/140/144 | 40/80/80 |

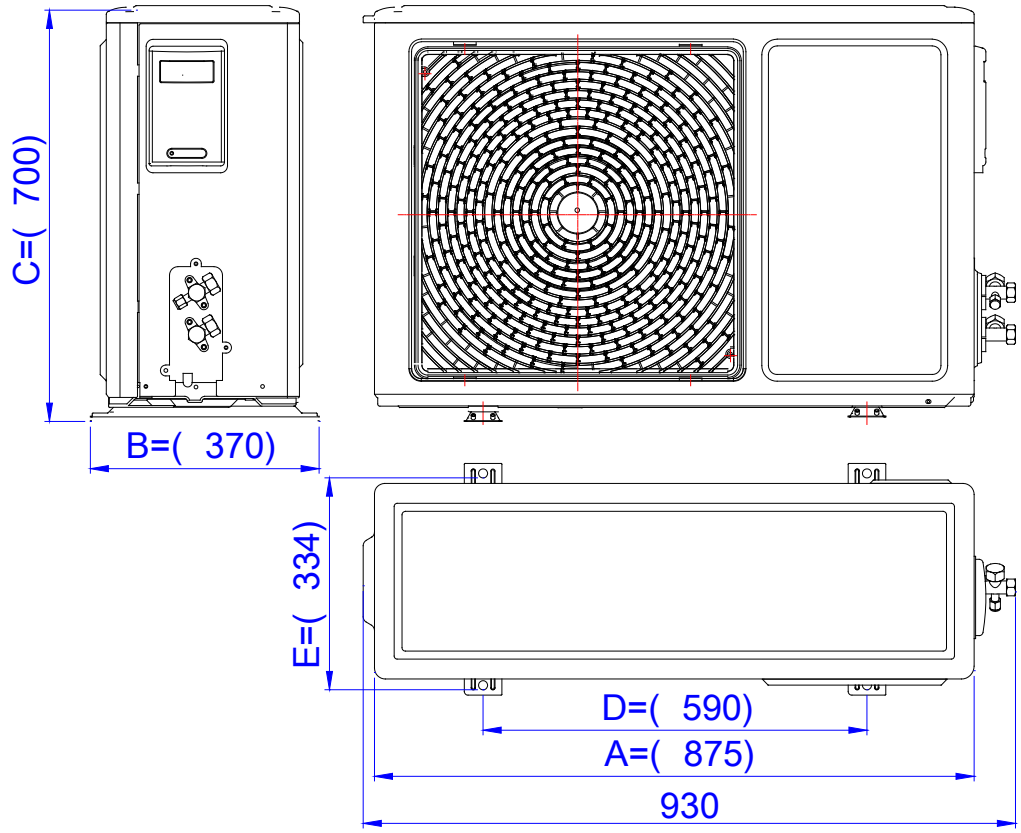
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

| Model | | | COU-36HSR1 | COU-48HSR1 | COU-60HSR1 |
|---|---|---|---|---|---|
| Outdoor power supply | | V/Ph/Hz | 380~415/3/50 | 380~415/3/50 | 380~415/3/50 |
| Cooling | Capacity | Btu/h | 36000 | 48000 | 60000 |
| | | KW | 10.5 | 14 | 16 |
| | Input | W | 3800 | 5000 | 5700 |
| | Rated current | A | 6.79 | 8.94 | 10.19 |
| Heating | Capacity | Btu/h | 39600 | 52800 | 66000 |
| | | KW | 11.5 | 15.4 | 16.6 |
| | Input | W | 3600 | 5100 | 5800 |
| | Rated current | A | 6.44 | 9.12 | 10.37 |
| Max. input consumption | | W | 4900 | 6000 | 6600 |
| Max. current | | A | 8.76 | 10.73 | 11.8 |
| Starting current | | A | 48 | 66 | 70 |
| Compressor | Model | | C-SBN303H8D | C-SBN373H8D | C-SBN453H8D |
| | Type | | SCROLL | SCROLL | SCROLL |
| | Brand | | SANYO | SANYO | SANYO |
| | Capacity | Btu/h | 3600 | 48100 | 56000 |
| | Input | W | 3650 | 4750 | 5750 |
| | Rated current(RLA) | A | 6.58 | 8.22 | 9.77 |
| | Locked rotor Amp(LRA) | A | 48 | 66 | 70 |
| | Thermal protector | | built-in | built-in | built-in |
| | Capacitor | μF | / | / | / |
| | Refrigerant oil | ml | 1700 | 1700 | 1700 |
| Outdoor motor fan | Model | | YKD-200-6 | YDK-60-6P3-1 | YDK-60-6P3-1 |
| | Input | W | 450 | 170×2 | 170×2 |
| | Capacitor | μF | 10 | 4×2 | 4×2 |
| | Speed | r/min | 800 | 780 | 780 |
| Outdoor coil | Number of rows | | 1 | 2 | 2 |
| | Tube pitch x row pitch | mm | 25×21.65 | 22×19.05 | 25×21.65 |
| | Fin spacing | mm | 1.4 | 1.6 | 1.6 |
| | Fin type | | Hydrophilic | Hydrophilic | Hydrophilic |
| | Tube outside dia. and type | mm | 9.52 | 7.94 | 9.52 |
| | | | inner grooved | inner grooved | inner grooved |
| | Coil size(W×H×D) | mm | 883.5×950×21.65 | 1735×1280×38.1 | 1804×1250×43.3 |
| | Number of circuits | | 3 | 7 | 7 |
| Outdoor air flow | | $m^3/h$ | 6000 | 6100 | 6100 |
| Outdoor noise level | | dB(A) | 65 | 60 | 60 |
| Outdoor unit | Dimension(W×H×D) | mm | 1070×995×400 | 911×1335×400 | 911×1335×400 |
| | Packing(W×H×D) | mm | 1145×1120×475 | 964×1445×475 | 964×1445×475 |
| | Net/Gross weight | kg | 92/100 | 96/107 | 96/107 |
| Refrigerant type/quantity | | g | R410A/2100 | R410A/3600 | R410A/4000 |
| Throttle part | | | capillary | capillary | capillary |
| Design pressure | | MPa | 4.2 | 4.2 | 4.2 |
| Outdoor power supply | | $mm^2$ | 1.5 | 2.5 | 2.5 |
| Refrigerant piping | Liquid side/Gas side | mm | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 | Φ9.52/Φ19.05 |
| | Max. pipe length | m | 20 | 20 | 20 |
| | Max. high drop | m | 10 | 10 | 10 |
| Ambient temp | | °C | -7～43 | -7～43 | -7～43 |
| Stuffing Quantity（20'/40'/40'HQ） | | | 40/80/80 | 32/64/64 | 32/64/64 |

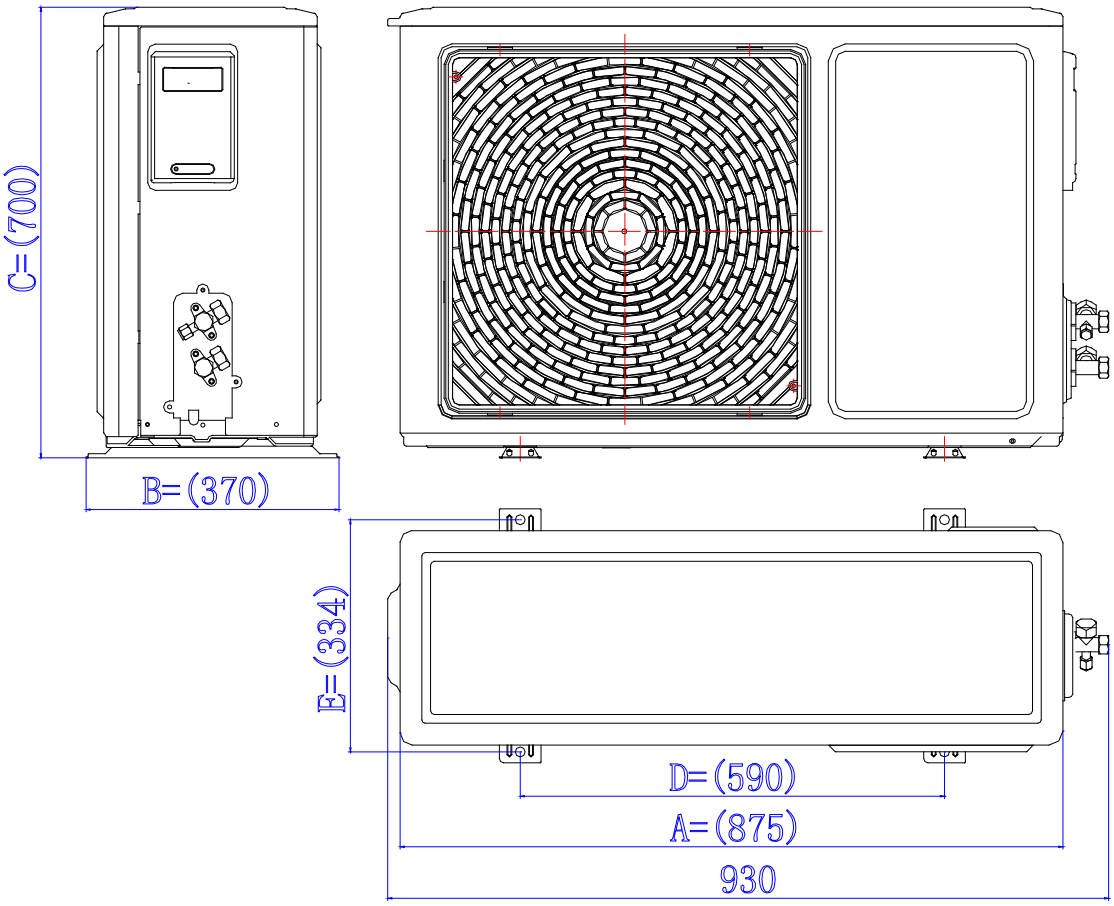
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

# 2.Dimensions

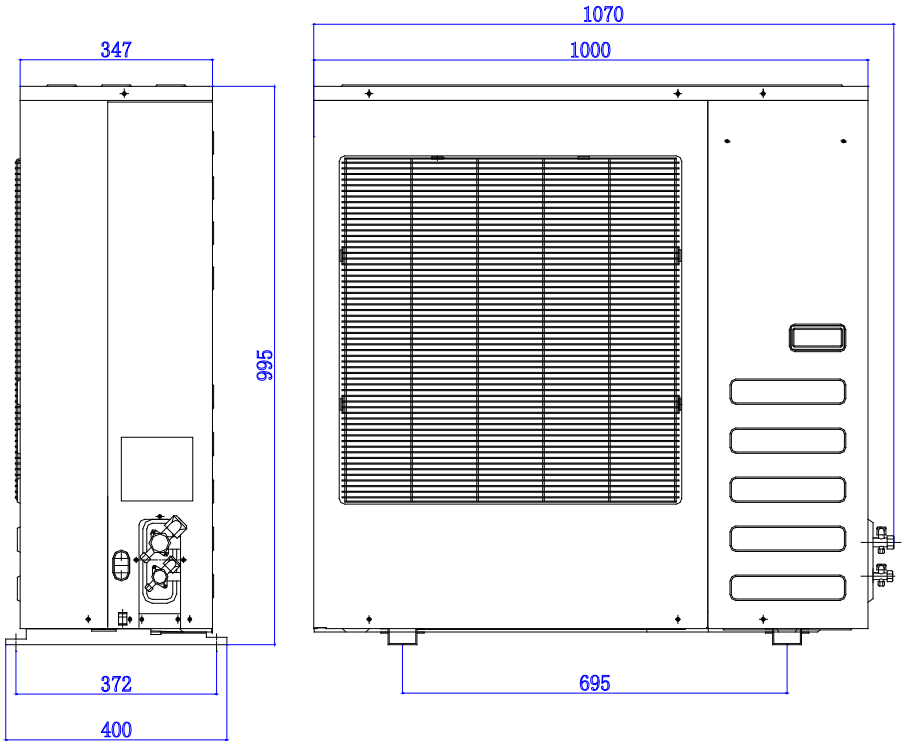
## 2.1 COU-18H



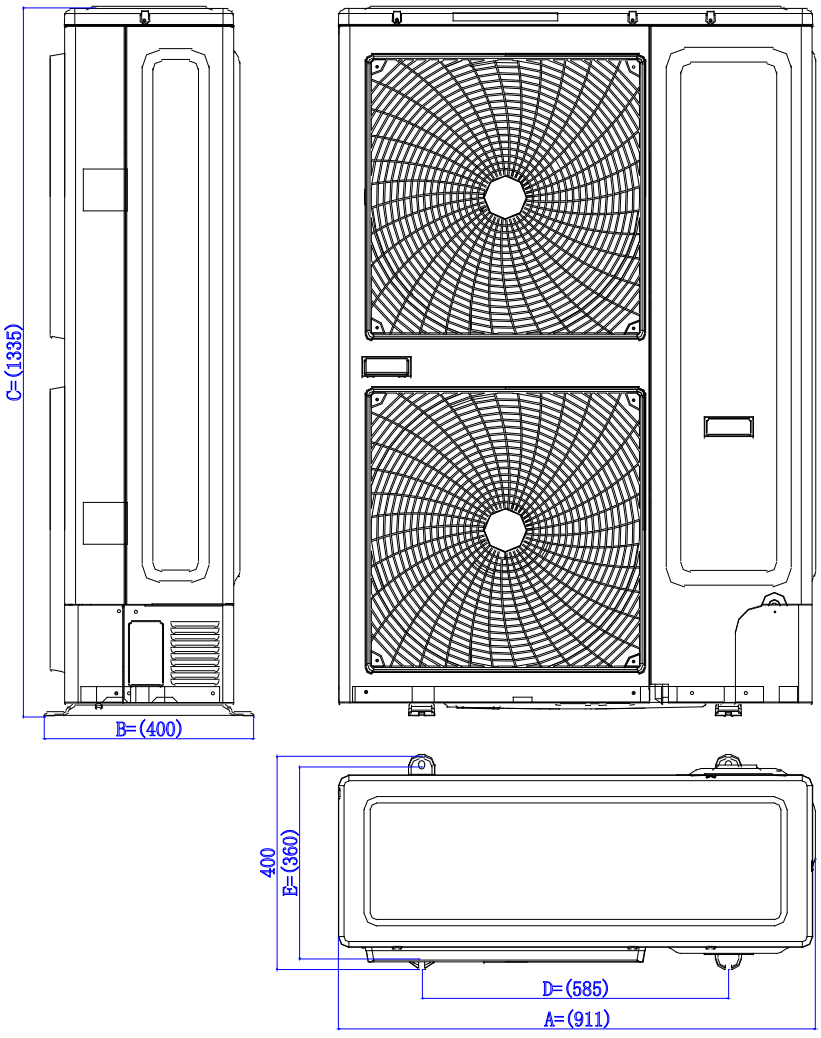

## 2.2 COU-24HR1



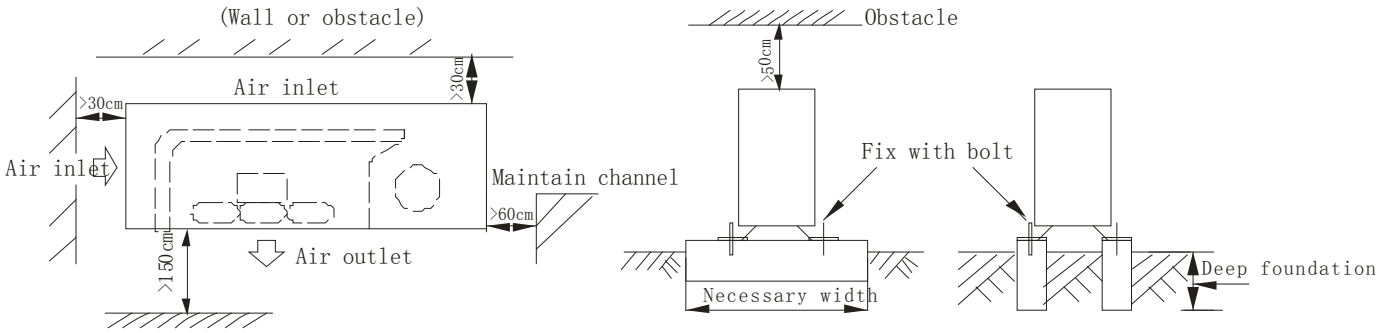
## 2.3 COU-36HR1, COU-36HSR1



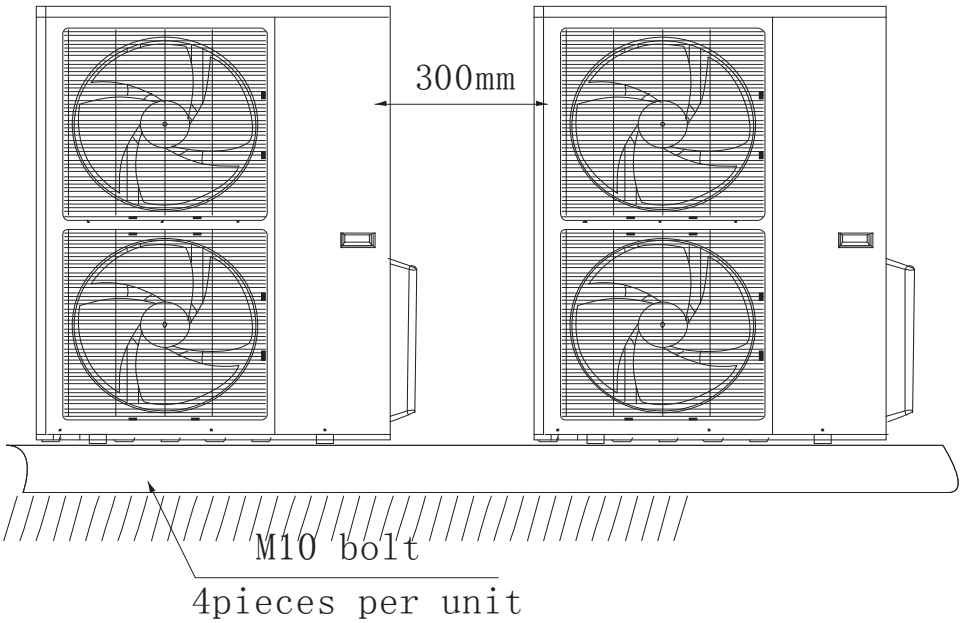

## 2.4 COU-48HR1, COU-60HR1



# 3.Service Space

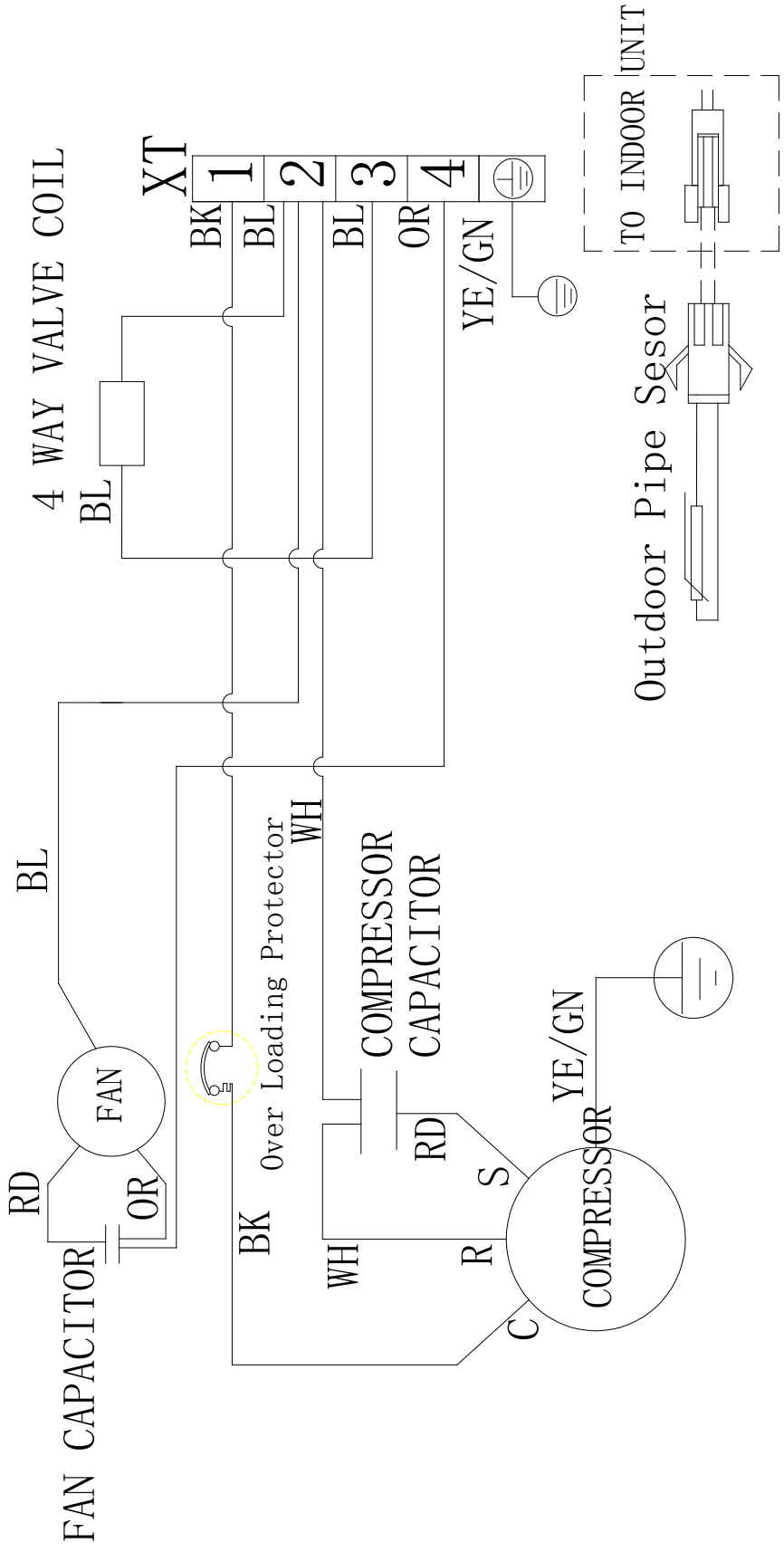



300mm is necessary between 2 outdoor units

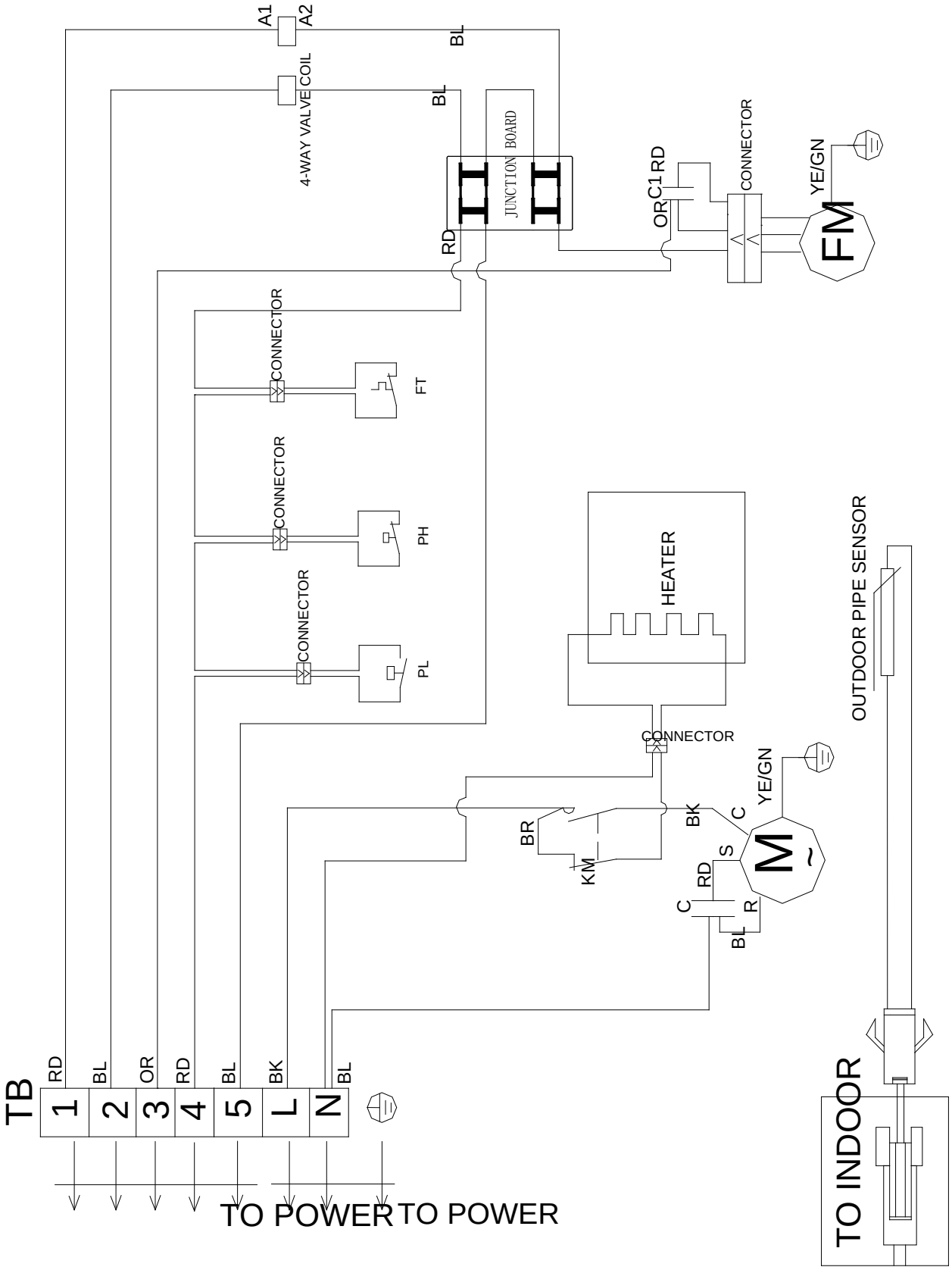


# 4.Wiring Diagrams

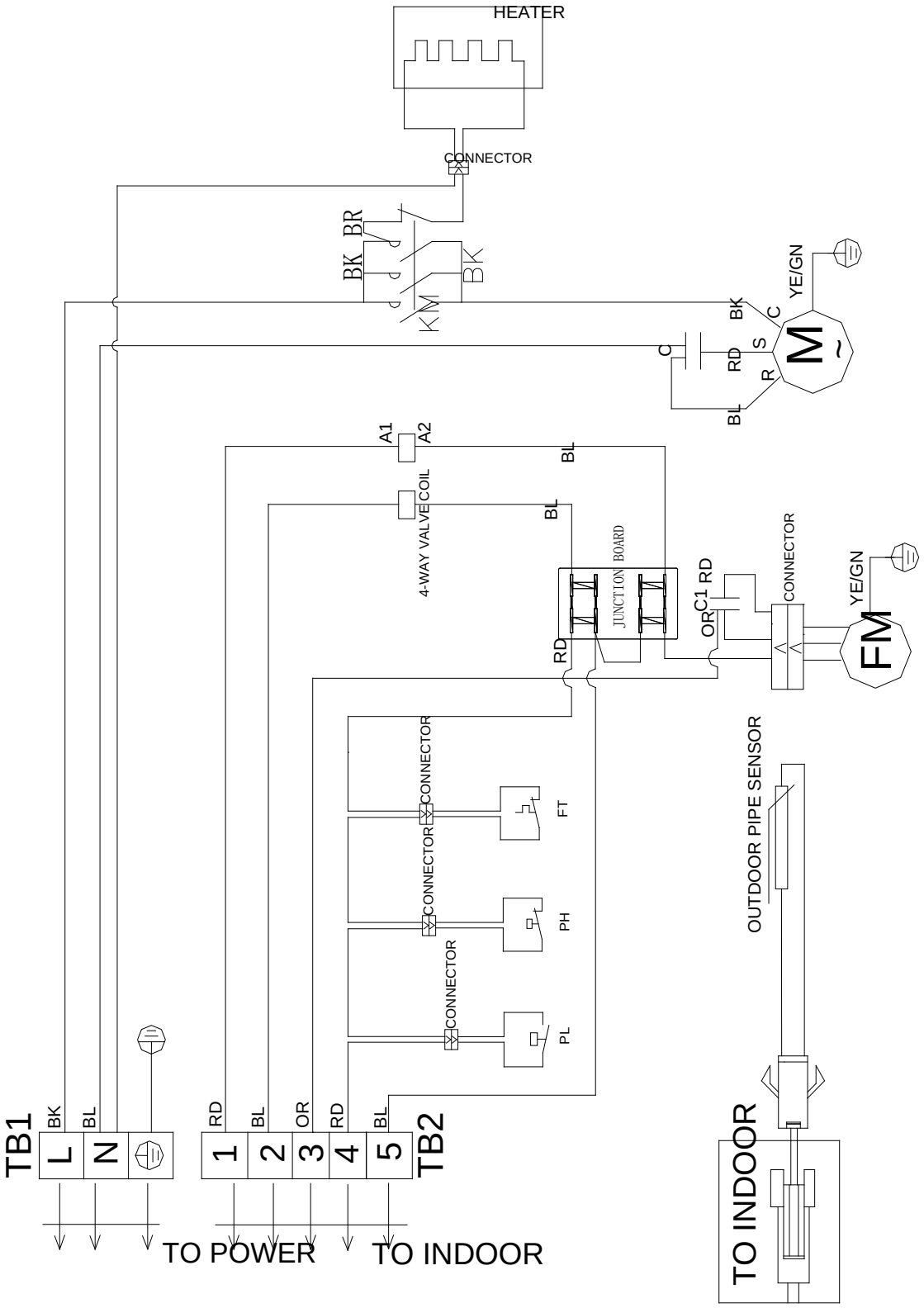
## 4.1 COU-18HR1



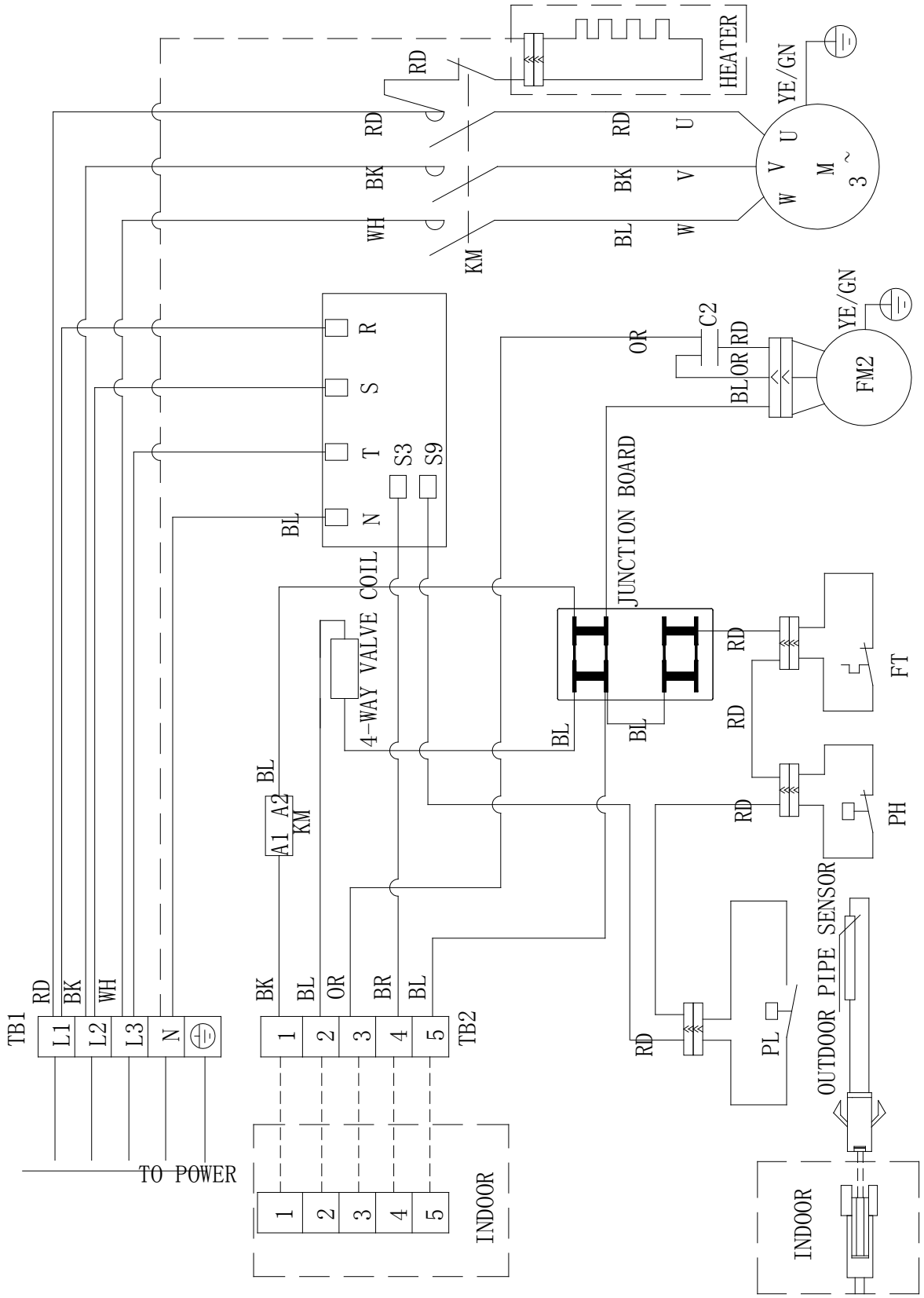
## 4.2 COU-24HR1


A1
A2
BL
4-WAY VALVE COIL
JUNCTION BOARD
RD
OR
C1
RD
CONNECTOR
YE/GN
FM
CONNECTOR
FT
CONNECTOR
PH
CONNECTOR
PL
HEATER
OUTDOOR PIPE SENSOR
CONNECTOR
YE/GN
BR
BK
C
S
KM
RD
M
~
C
R
BL
TB
RD
BL
OR
RD
BL
BK
BL
1
2
3
4
5
L
N
TO POWER
TO POWER
TO INDOOR

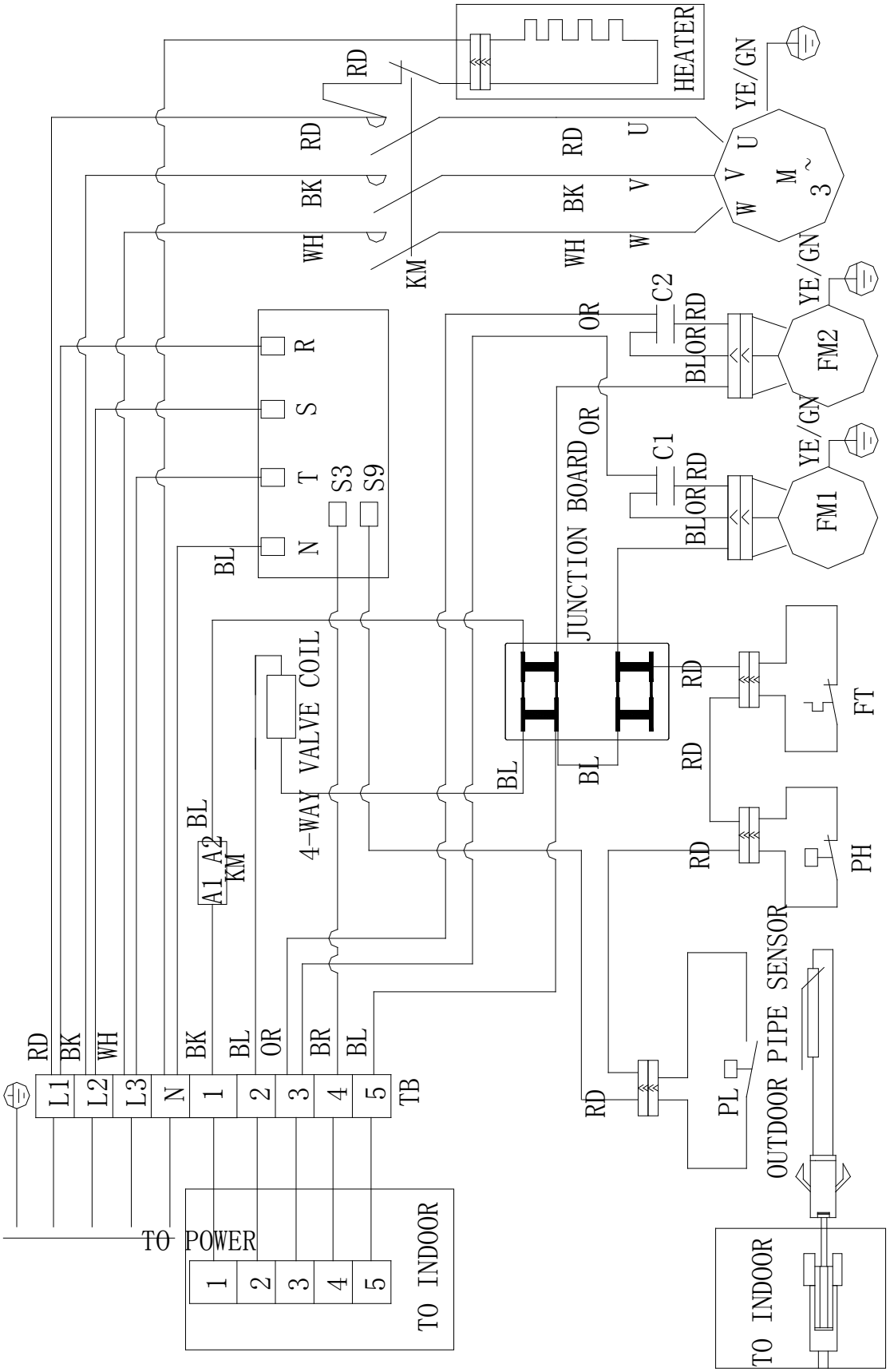
## 4.3 COU-36HR1


HEATER
CONNECTOR
BR
BK
BK
KM
YE/GN
BK
C
S
R
RD
BL
M
A1
A2
BL
4-WAY VALVE COIL
BL
JUNCTION BOARD
RD
OR
C1
RD
CONNECTOR
YE/GN
FM
CONNECTOR
CONNECTOR
CONNECTOR
FT
PH
PL
OUTDOOR PIPE SENSOR
TB1
BK
BL
L
N
RD
BL
OR
RD
BL
1
2
3
4
5
TB2
TO POWER
TO INDOOR
TO INDOOR

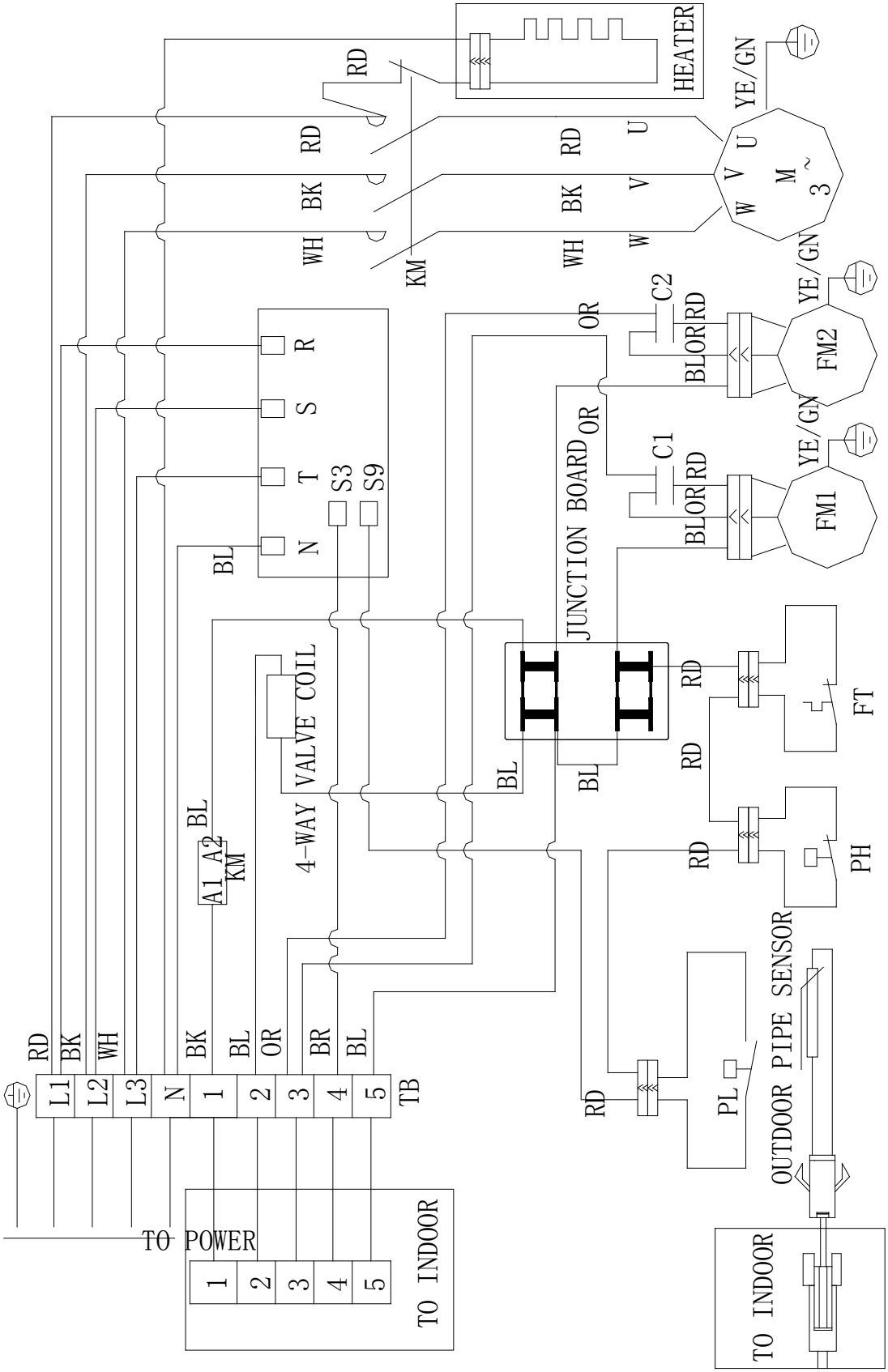
## 4.4 COU-36HSR1



## 4.5 COU-48HSR1



## 4.6 COU-60HSR1



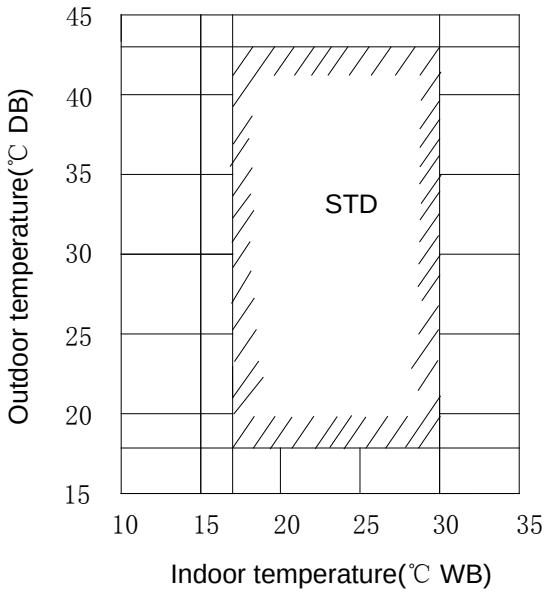
# 5.Electric Characteristics

| Model | Outdoor Unit | | | |
|---|---|---|---|---|
| | Hz | Voltage | Min. | Max. |
| COU-18HR1 | 50 | 220~240V | 198 | 254 |
| COU-24HR1 | 50 | 220~240V | 198 | 254 |
| COU-36HR1 | 50 | 220~240V | 198 | 254 |
| COU-36HSR1 | 50 | 380~415V | 342V | 418V |
| COU-48HSR1 | 50 | 380~415V | 342V | 418V |
| COU-60HSR1 | 50 | 380~415V | 342V | 418V |

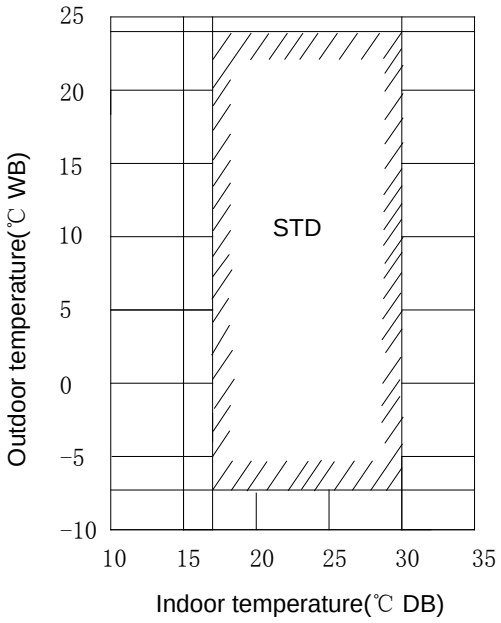
# 6.Operation Limits

| Operation mode | Outdoor temperature(℃) | Room temperature(℃) |
|---|---|---|
| Cooling operation | 18~43 | 16~32 |
| Heating operation | -7~24 | 16~32 |

Cooling

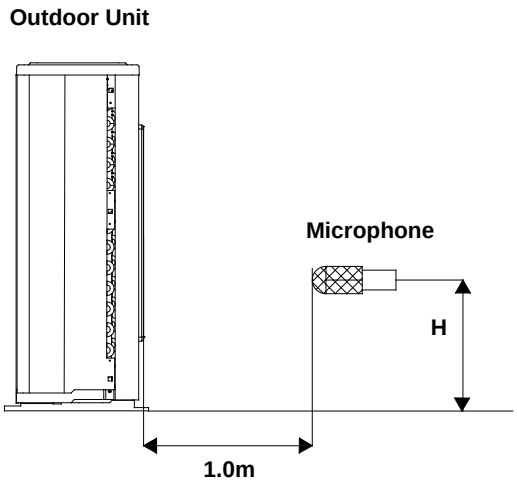



Heating



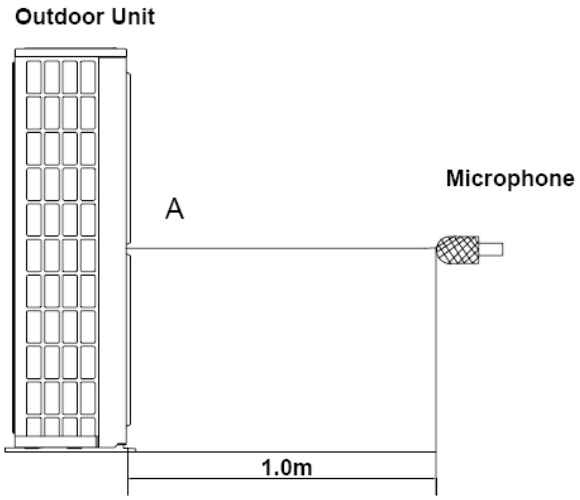
# 7.Sound Levels

**18kBtu/h-36kBtu/h**




**Note:** H= 0.5 × height of outdoor unit

**48kBtu/h ~ 60kBtu/h**

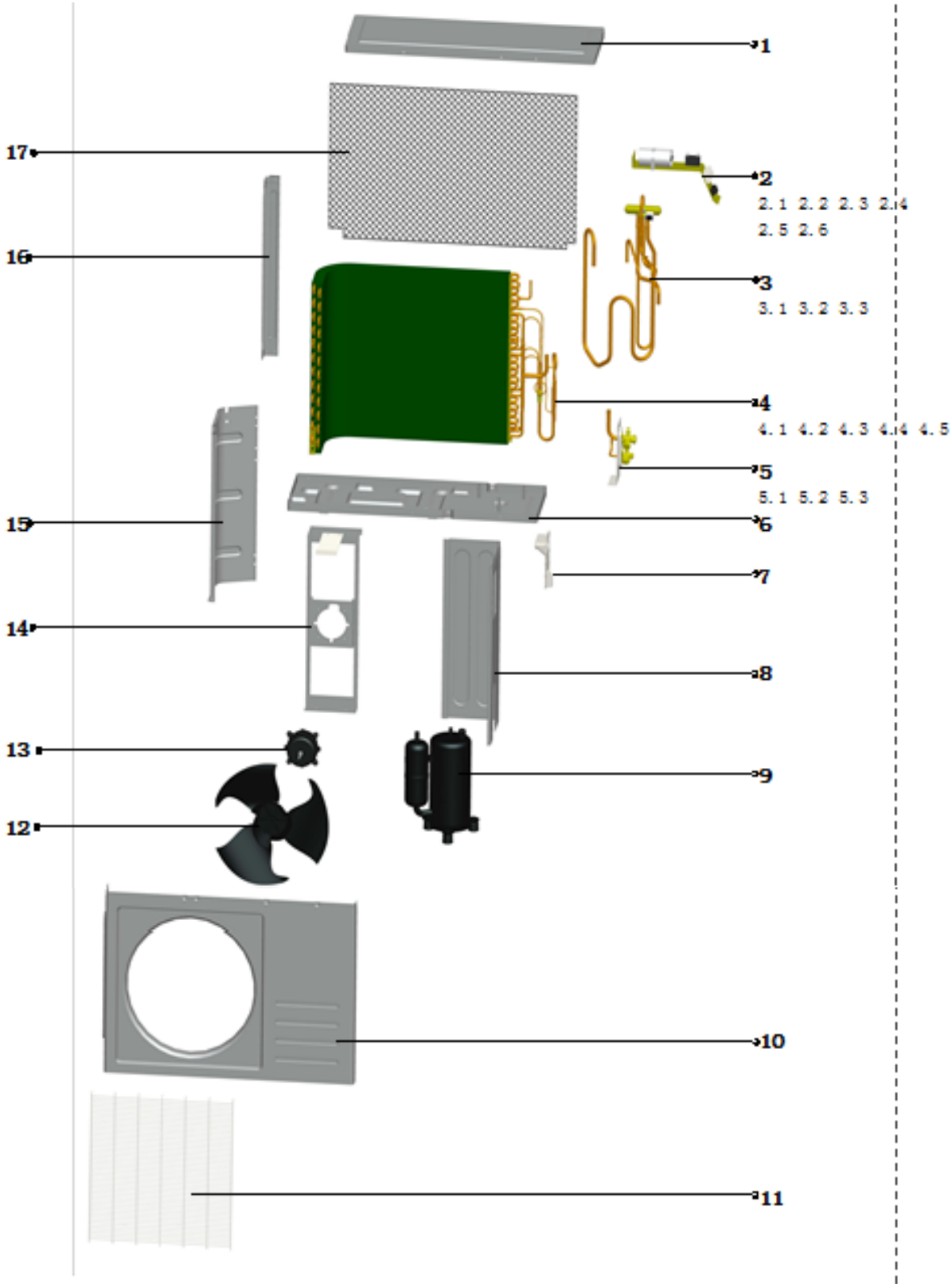



**Note:** The point A is in the middle of the whole outdoor panel.

| Model | Noise level dB(A) |
|---|---|
| COU-18HR1 | 53 |
| COU-24HR1 | 58 |
| COU-36HR1 | 65 |
| COU-36HSR1 | 65 |
| COU-48HSR1 | 60 |
| COU-60HSR1 | 60 |

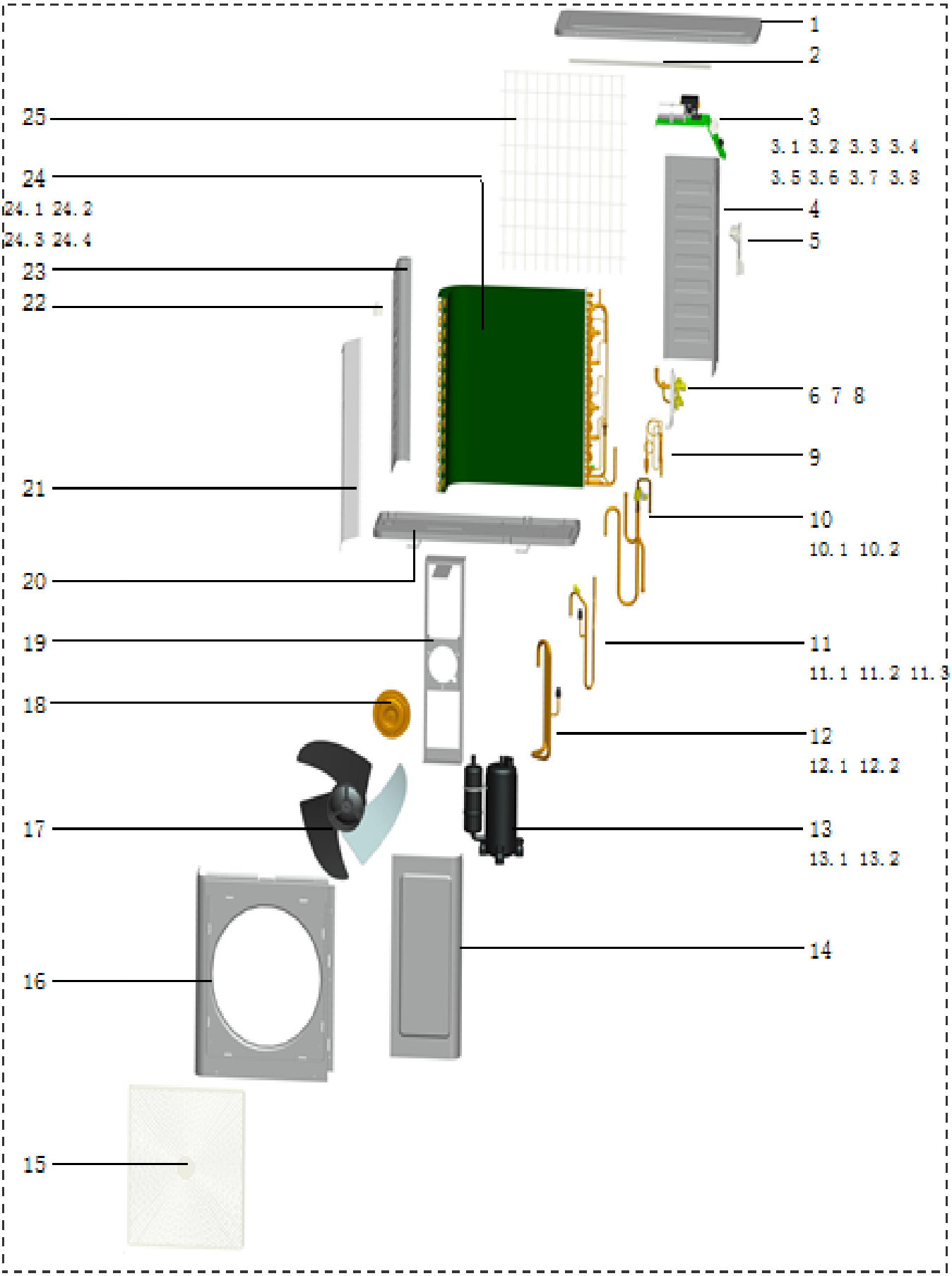
# 8.Exploded View

## 8.1 COU-18HR1



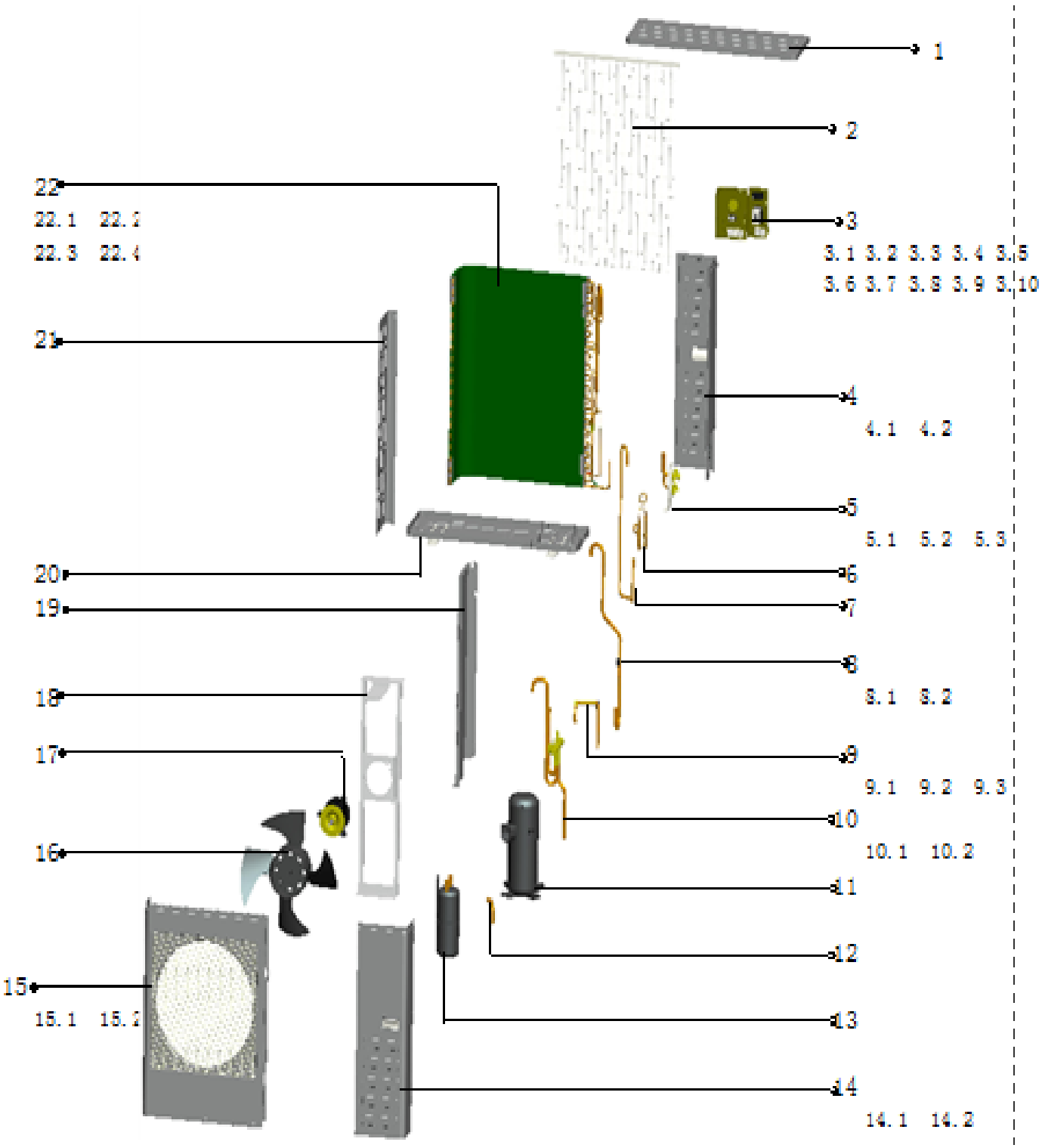
| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Cover | 1 | 5 | Valve holder assy | 1 |
| 2 | E-parts assy | 1 | 5.1 | Valve holder | 1 |
| 2.1 | Fan motor capacitor | 1 | 5.2 | Cut-off valve | 1 |
| 2.2 | Compressor capacitor | 1 | 5.3 | Cut-off valve | 1 |
| 2.3 | Capacitor clamp | 1 | 6 | Chassis | 1 |
| 2.4 | Groove clamp 3 | 1 | 7 | Handle | 1 |
| 2.5 | Terminal | 1 | 8 | Right clapboard | 1 |
| 2.6 | Cover for E-parts | 1 | 9 | Compressor assy | 1 |
| 3 | Pipe assy | 1 | 10 | Panel | 1 |
| 3.1 | 4-Ways valve assy | 1 | 11 | Top net | 1 |
| 3.2 | Discharge pipe for compressor | 1 | 12 | Propeller fan | 1 |
| 3.3 | Control wire for 4-Ways valve | 1 | 13 | Fan motor | 1 |
| 4 | Condenser assy | 1 | 14 | Holder for fan motor | 1 |
| 4.1 | Condenser | 1 | 15 | Separating board | 1 |
| 4.2 | Pre-welding assy for distributing capillary | 1 | 16 | column | 1 |
| 4.3 | Pre-welding assy for condensor collecting pipe | 1 | 17 | plastic Rear net | 1 |
| 4.4 | Temp sensor | 1 | 18 | Refrigerant R410a | 1.2 |
| 4.5 | Pre-welding assy for throttle capillary | 1 | | | |

## 8.2 COU-24HR1


1
2
25
3
3.1 3.2 3.3 3.4
3.5 3.6 3.7 3.8
24
24.1 24.2
24.3 24.4
4
5
23
22
6 7 8
9
21
10
10.1 10.2
20
19
11
11.1 11.2 11.3
18
12
12.1 12.2
17
13
13.1 13.2
14
16
15

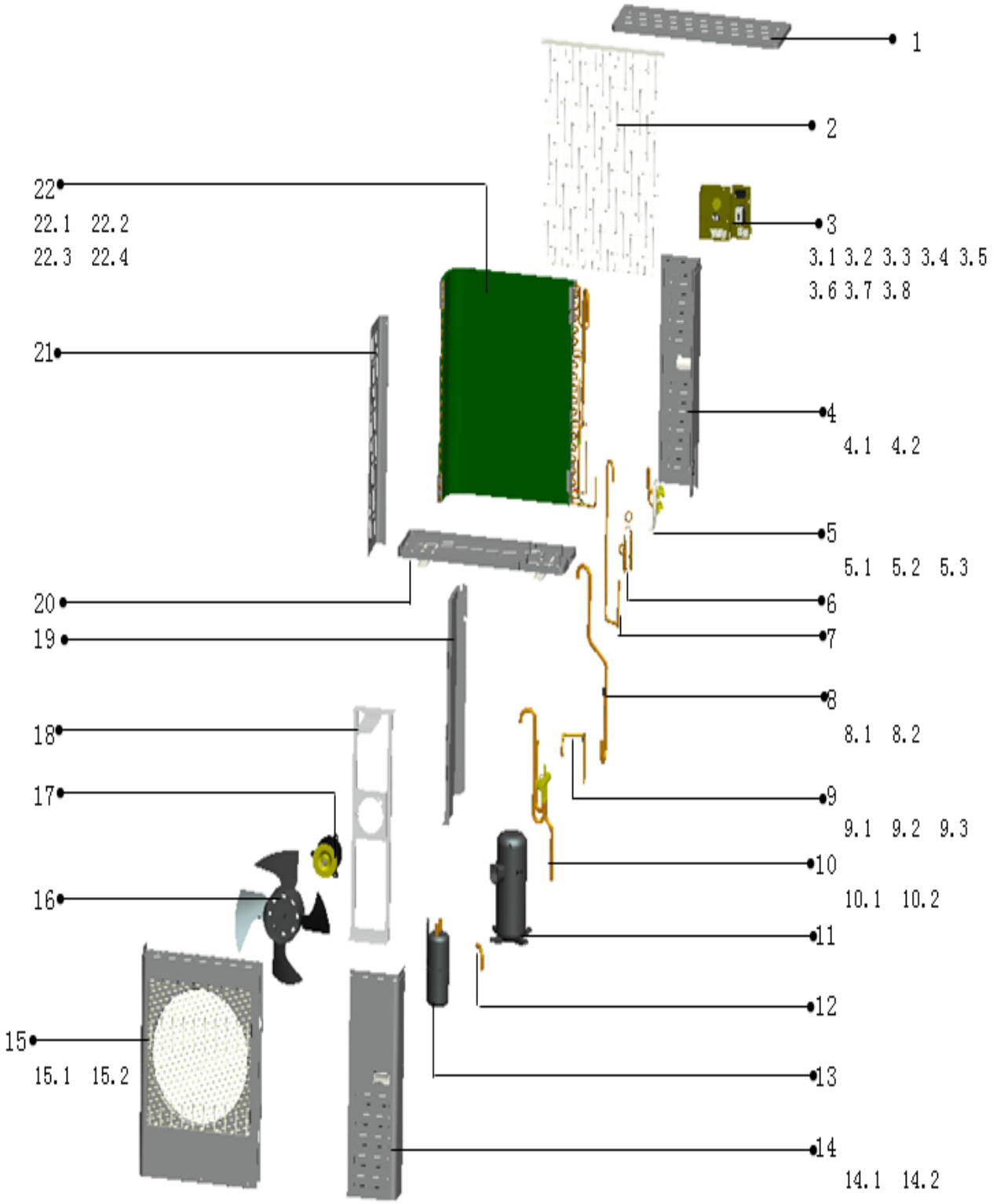
| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Cover | 1 | 12 | Suction pipe assy | 1 |
| 2 | Sprung cotton for rear net | 1 | 12.1 | Suction pipe | 1 |
| 3 | E-parts assy | 1 | 12.2 | Low-pressure swicth | 1 |
| 3.1 | Capacitor clamp | 1 | 13 | Compressor assy | 1 |
| 3.2 | Groove clamp 4# | 1 | 13.1 | Compressor assy | 1 |
| 3.3 | Cover for E-parts | 1 | 13.2 | Rubber foot for compressor | 1 |
| 3.4 | Patching board | 1 | 14 | Maintenance panel | 1 |
| 3.5 | Terminal | 1 | 15 | Front top net | 1 |
| 3.6 | Compressor capacitor | 1 | 16 | Front panel | 1 |
| 3.7 | Fan motor capacitor | 1 | 17 | Propeller fan | 1 |
| 3.8 | Contactor | 1 | 18 | Fan motor | 1 |
| 4 | Right clapboard | 1 | 19 | Holder for fan motor | 1 |
| 5 | Handle | 1 | 20 | Chassis | 1 |
| 6 | Valve holder | 1 | 21 | Separating board | 1 |
| 7 | Cut-off valve | 1 | 22 | Handle | 1 |
| 8 | Cut-off valve | 1 | 23 | Left clapboard | 1 |
| 9 | Pre-welding assy for throttle capillary | 1 | 24 | Condenser assy | 1 |
| 10 | 4-Ways valve assy | 1 | 24.1 | Condenser | 1 |
| 10.1 | 4-Ways valve assy | 1 | 24.2 | condensor collecting pipe assy | 1 |
| 10.2 | Control wire for 4-Ways valve | 1 | 24.3 | distributing capillary assy | 1 |
| 11 | Discharge pipe assy | 1 | 24.4 | Temp sensor | 1 |
| 11.1 | Discharge pipe | 1 | 25 | Rear net | 1 |
| 11.2 | High-pressure swicth | 1 | 26 | Refrigerant R410a | 1.8kg |
| 11.3 | Discharge temp sensor | 1 | | | |

## 8.3 COU-36HR1


1
2
22
22.1 22.2
22.3 22.4
3
3.1 3.2 3.3 3.4 3.5
3.6 3.7 3.8 3.9 3.10
21
4
4.1 4.2
5
5.1 5.2 5.3
20
6
19
7
8
8.1 8.2
18
17
9
9.1 9.2 9.3
10
10.1 10.2
16
11
12
15
15.1 15.2
13
14
14.1 14.2

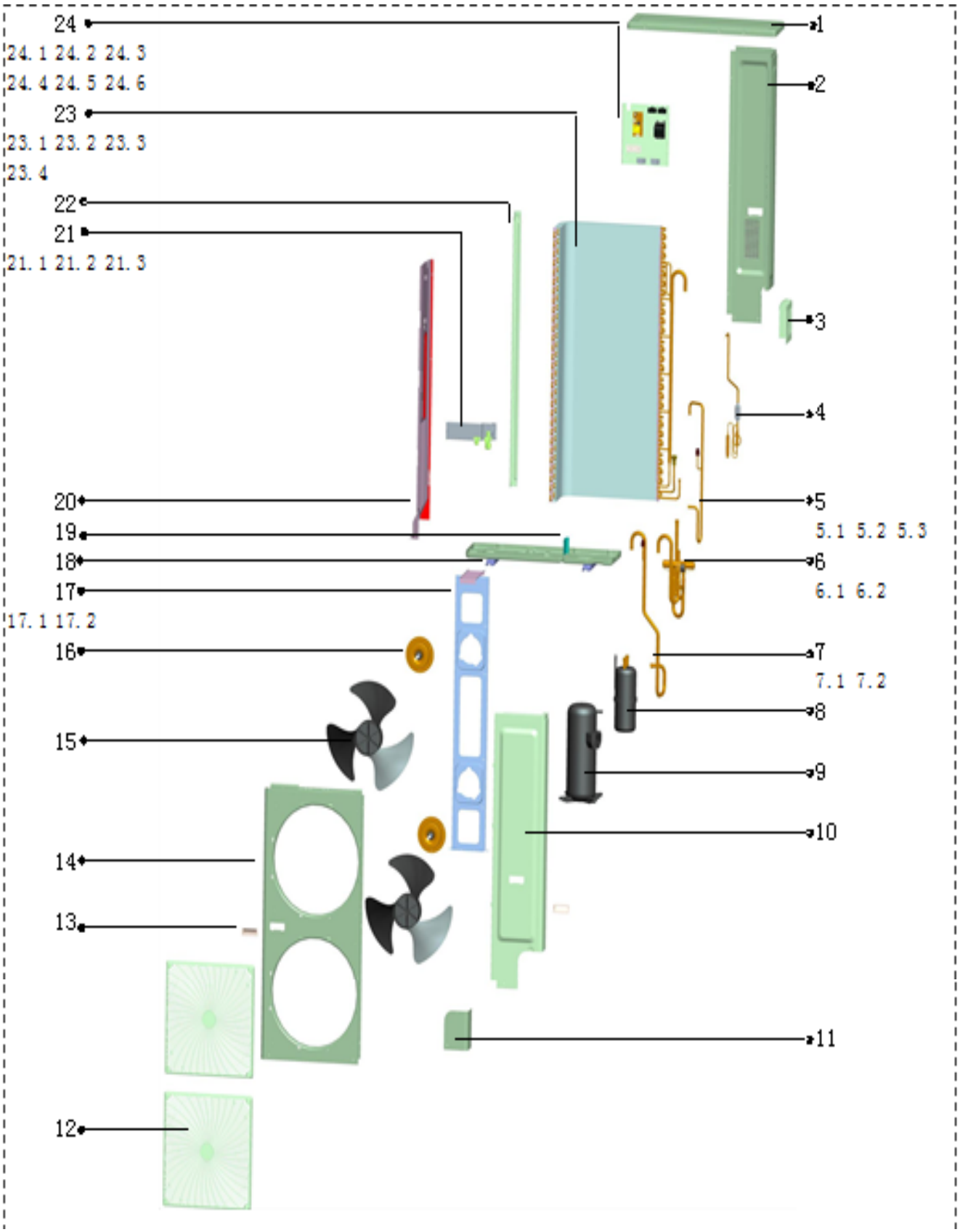
| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Cover | 1 | 9.2 | High-pressure swicth | 1 |
| 2 | Rear net | 1 | 9.3 | Discharge temp sensor | 1 |
| 3 | E-parts assy | 1 | 10 | 4-Ways valve assy | 1 |
| 3.1 | Fan motor capacitor | 1 | 10.1 | 4-Ways valve assy | 1 |
| 3.2 | Compressor capacitor | 1 | 10.2 | Control wire for 4-Ways valve | 1 |
| 3.3 | Contactor | 1 | 11 | Compressor | 1 |
| 3.4 | Terminal | 1 | 12 | Suction pipe for compressor | 1 |
| 3.5 | Terminal | 1 | 13 | Vapor-liquid seperator | 1 |
| 3.6 | Cover for E-parts | 1 | 14 | Maintenance board assy | 1 |
| 3.7 | Patchboard | 1 | 14.1 | Maintenance board | 1 |
| 3.8 | Protection cap | 2 | 14.2 | Handle | 1 |
| 3.9 | Capacitor clamp | 1 | 15 | Front panel assy | 1 |
| 3.10 | Groove clamp 4 | 1 | 15.1 | Panel | 1 |
| 4 | Right clapboard assy | 1 | 15.2 | Top net | 1 |
| 4.1 | Right clapboard | 1 | 16 | Propeller fan | 1 |
| 4.2 | Handle | 1 | 17 | Fan motor | 1 |
| 5 | Valve holder assy | 1 | 18 | Holder for fan motor | 1 |
| 5.1 | Valve holder | 1 | 19 | Separating board | 1 |
| 5.2 | Cut-off valve | 1 | 20 | Chassis | 1 |
| 5.3 | Cut-off valve DN16 | 1 | 21 | Left clapboard | 1 |
| 6 | throttle capillary Pre-welding assy | 1 | 22 | Condenser assy | 1 |
| 7 | Discharge pipe B for compressor | 1 | 22.1 | Condenser | 1 |
| 8 | compressor suction pipe B Pre-welding assy | 1 | 22.2 | condensor collecting pipe Pre-welding assy | 1 |
| 8.1 | compressor Suction pipe B | 1 | 22.3 | distributing capillary Pre-welding assy | 1 |
| 8.2 | Low-pressure switch | 1 | 22.4 | Temp sensor | 1 |
| 9 | Pre-welding assy for discharge pipe A | 1 | 23 | Refrigerant R410a | 2.1kg |
| 9.1 | Discharge pipe A for compressor | 1 | | | |

## 8.4 COU-36HSR1



| No. | Part Name | Qty | No. | Part Name | Qty |
|---|---|---|---|---|---|
| 1 | Cover | 1 | 9.3 | Discharge temp sensor | 1 |
| 2 | Rear net | 1 | 10 | 4-Ways valve assy | 1 |
| 3 | E-parts assy | 1 | 10.1 | 4-Ways valve assy | 1 |
| 3.1 | Fan motor capacitor | 1 | 10.2 | Control wire for 4-Ways valve | 1 |
| 3.2 | Contactor | 1 | 11 | Compressor | 1 |
| 3.3 | Terminal | 1 | 12 | Suction pipe for compressor | 1 |
| 3.4 | Terminal | 1 | 13 | Vapor-liquid seperator | 1 |
| 3.5 | Cover for E-parts | 1 | 14 | Maintenance board assy | 1 |
| 3.6 | Patch board | 1 | 14.1 | Maintenance board | 1 |
| 3.7 | Protection cap | 2 | 14.2 | Handle | 1 |
| 3.8 | Groove clamp 4 | 1 | 15 | Front panel assy | 1 |
| 4 | Right clapboard assy | 1 | 15.1 | Panel | 1 |
| 4.1 | Right clapboard | 1 | 15.2 | Top net | 1 |
| 4.2 | handle | 1 | 16 | Propeller fan | 1 |
| 5 | Valve holder assy | 1 | 17 | Fan motor | 1 |
| 5.1 | Valve holder | 1 | 18 | Holder for fan motor | 1 |
| 5.2 | Cut-off valve | 1 | 19 | Separating board | 1 |
| 5.3 | Cut-off valve DN16 | 1 | 20 | Chassis | 1 |
| 6 | Pre-welding assy for throttle capillary | 1 | 21 | Left clapboard | 1 |
| 7 | Discharge pipe B for compressor | 1 | 22 | Condenser assy | 1 |
| 8 | Pre-welding assy for compressor suction pipe B | 1 | 22.1 | Condenser | 1 |
| 8.1 | Suction pipe B for compressor | 1 | 22.2 | condensor collecting pipe Pre-welding assy | 1 |
| 8.2 | Low-pressure swicth | 1 | 22.3 | distributing capillary Pre-welding assy | 1 |
| 9 | Pre-welding assy for discharge pipe A | 1 | 22.4 | Temp sensor | 1 |
| 9.1 | Discharge pipe A for compressor | 1 | 23 | Refrigerant R410a | 2.1kg |
| 9.2 | High-pressure switch | 1 | | | |

## 8.5 COU-48HR1 , COU-60HR1



| No. | Part Name | Quantity | No. | Part Name | Quantity |
|---|---|---|---|---|---|
| 1 | Cover | 1 | 17.1 | Fan motor support | 1 |
| 2 | Rear clapboard | 1 | 17.2 | Joint board for fan motor support | 1 |
| 3 | Rear clapboard for valve | 1 | 18 | Chassis weld parts | 1 |
| 4 | High-pressure valve joint tube assy | 1 | 19 | Compressor foot cover | 1 |
| 5 | Discharge pipe assy | 1 | 20 | Separating board | 1 |
| 5.1 | Discharge pipe | 1 | 21 | Valve holder | 1 |
| 5.2 | High-pressure swicth | 1 | 21.1 | Valve holder | 1 |
| 5.3 | Discharge temp sensor | 1 | 21.2 | Cut-off valve DN8 | 1 |
| 6 | 4-Way valve assy | 1 | 21.3 | Cut-off valve DN16 | 1 |
| 6.1 | 4-Way valve assy | 1 | 22 | column | 1 |
| 6.2 | Control wire for 4-Ways valve | 1 | 23 | Condenser assy | 1 |
| 7 | Suction pipe assy | 1 | 23.1 | Condenser | 1 |
| 7.1 | Suction pipe | 1 | 23.2 | Condensor collecting pipe assy | 1 |
| 7.2 | Low-pressure swicth | 1 | 23.3 | Distributing capillary assy | 1 |
| 8 | Vapor-liquid seperator | 1 | 23.4 | Temp sensor | 1 |
| 9 | Compressor | 1 | 24 | E-parts assy | 1 |
| 10 | Right clapboard | 1 | 24.1 | Installation board for E-parts | 1 |
| 11 | Right clapboard for valve | 1 | 24.2 | Sequence protector | 1 |
| 12 | Top net | 2 | 24.3 | Contactor | 1 |
| 13 | Handle | 3 | 24.4 | Fan motor capacitor | 1 |
| 14 | Front panel | 1 | 24.5 | Terminal | 1 |
| 15 | Propeller fan | 2 | 24.6 | Groove clamp | 2 |
| 16 | Asynchronous motor | 2 | 25 | Plastic rear net | 1 |
| 17 | Fan motor support | 1 | 26 | Refrigerant R410a | 3.6kg |

# Part 4 Installation

1.Precaution on Installation .....143

2.Vacuum Dry and Leakage Checking.....144

3.Additional Refrigerant Charge .....146

4.Water Drainage .....147

5.Insulation Work.....150

6.Test Operation .....152

# 1.Precaution on Installation

1.1. Measure the necessary length of the connecting pipe, and make it by the following way.

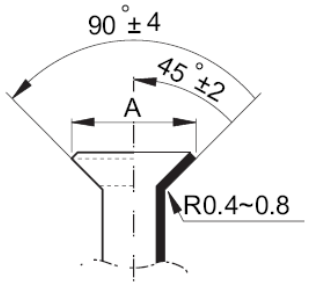
a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

**CAUTIONS:**

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
- With hands before fasten the flare nuts.

Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

| Pipe gauge | Tightening torque | Flare dimension A Min (mm) Max | | Flare shape |
|---|---|---|---|---|
| Φ6.4 | 15～16N.m (153～163 kgf.cm) | 8.3 | 8.7 |   |
| Φ9.5 | 25～26N.m (255～265kgf.cm) | 12.0 | 12.4 | |
| Φ12.7 | 35～36N.m (357～367kgf.cm) | 15.4 | 15.8 | |
| Φ15.9 | 45～47N.m (459～480 kgf.cm) | 18.6 | 19.1 | |
| Φ19.1 | 65～67N.m (663～684kgf.cm) | 22.9 | 23.3 | |

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

1.2. Locate The Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

1.3. Connect the pipes.

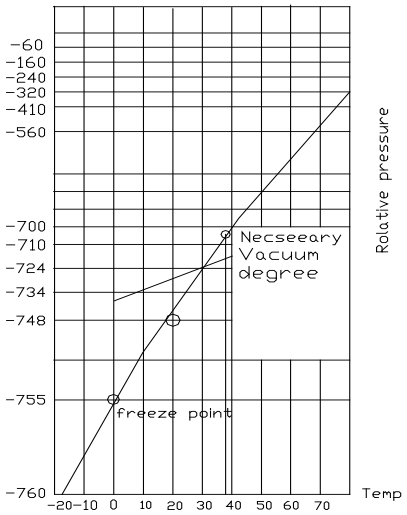
1.4. Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

1.5. Be sure of no leakage by checking it with leak detector or soap water.

1.6. Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

# 2.Vacuum Dry and Leakage Checking

2.1 Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water(steam temperature) is 100℃. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.

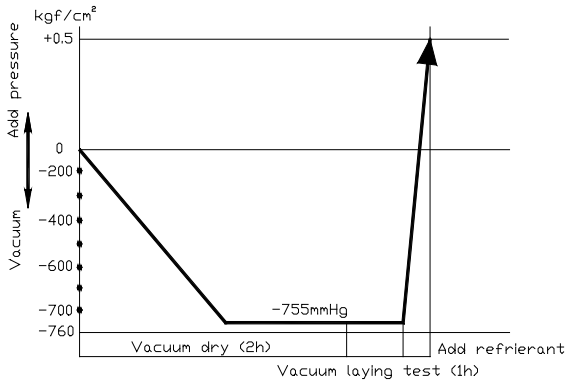



2.2 Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

①. Common vacuum dry procedure

- Vacuum dry (for the first time)---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)
- If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.
- If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.
- Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.
- Vacuuming from liquid pipe and gas pipe at the same time.
- Sketch map of common vacuum dry procedure.




②. Special vacuum dry procedure

- This vacuum dry method is used in the following conditions:
- There's moisture when flushing the refrigerant pipe.
- Rainwater may enter into the pipe.
- Vacuum dry for the first time …… 2h pumping

③. Vacuum destroy for the second time …… Fill nitrogen to 0.5Kgf/cm$^2$

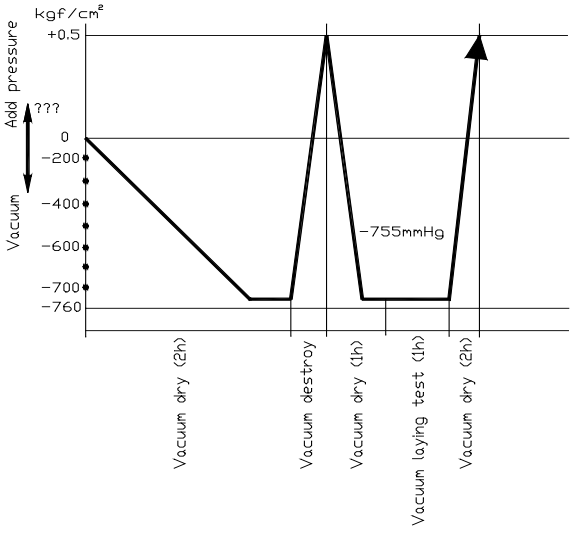
Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

④. Vacuum dry for the second time……1h pumping

Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure ③ and ④.

⑤. Vacuum placing test …… 1h

⑥. Sketch map of special vacuum dry procedure



# 3.Additional Refrigerant Charge

**Caution**

● Refrigerant cannot be charged until field wiring has been completed.

● Refrigerant may only be charged after performing the leak test and the vacuum pumping.

● When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.

● Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.

● Refrigerant containers shall be opened slowly.

● Always use protective gloves and protect your eyes when charging refrigerant.

The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit

| R(g) D(mm) L(m) | φ6.4 | Φ9.5 | Φ12.7 |
|---|---|---|---|
| Less than 5m (One-way) | — | — | — |
| Added Refrigerant When Over 5m(One-way) | 30g/m×(L-5) | 65g/m×(L-5) | 120g/m×(L-5) |

**Remark:**

R (g): Additional refrigerant to be charged

L (m): The length of the refrigerant pipe (one-way)

D (mm): Liquid side piping

# 4.Water Drainage

## 4.1 Gradient and Supporting

4.1.1 Keep the drainpipe sloping downwards at a gradient of at least 1/100. Keep the drainpipe as short as possible and eliminate the air bubble.

4.1.2 The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/100 and prevent bending. Refer to the following table for the specification of the prop stand.

| | Diameter | Distance between the prop stands |
|---|---|---|
| Hard PVC pipe | 25~40mm | 1~1.5m |

4.1.3. Precautions

① The diameter of drainpipe should meet the drainage requirement at least.

② The drainpipe should be heat-insulated to prevent atomization.

③ Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can operate correctly.

④ All connection should be firm.

⑤ Wipe color on PVC pipe to note connection.

⑥ Climbing, horizontal and bending conditions are prohibited.

⑦ The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.

⑧ Heat-insulation should be done well to prevent condensation.

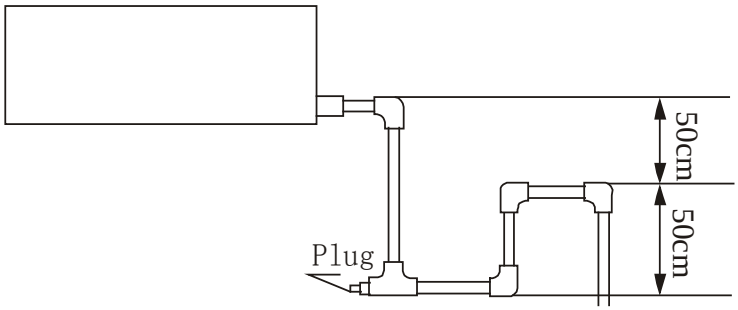
⑨ Indoor units with different drainage type can't share one convergent drainpipe.

## 4.2 Drainpipe Trap

4.2.1. If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.

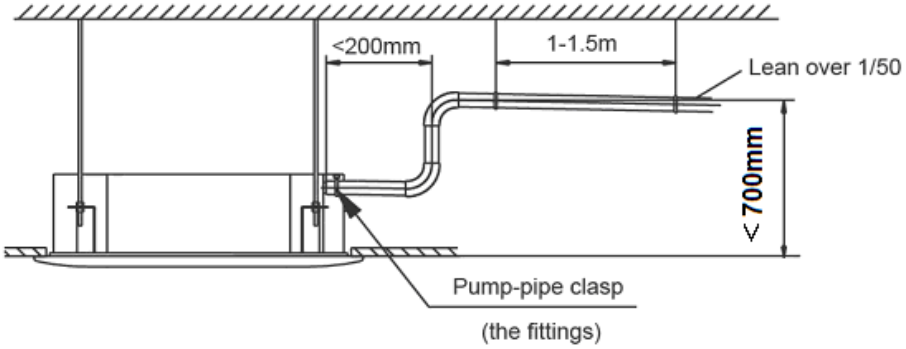
4.2.2. Every indoor unit needs one drainpipe trap.

4.2.3. A plug should be designed to do cleaning.

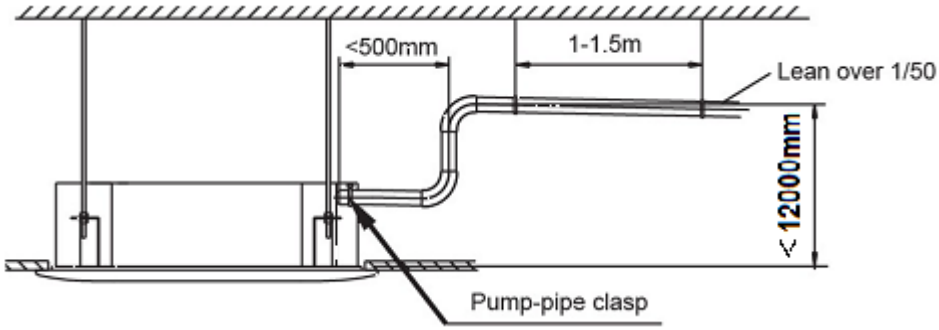


## 4.3 Upwards drainage (drain pump)

**For Four-way cassette(compact)**



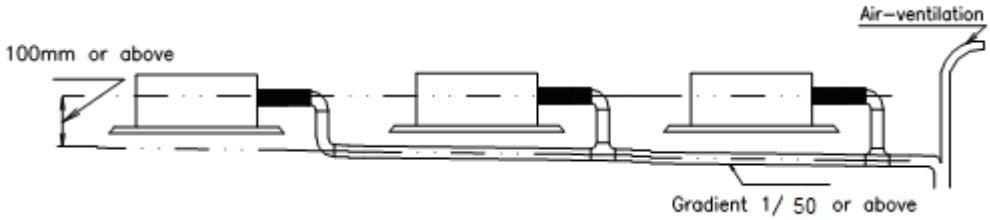

**For Four-way cassette**




## 4.4 Convergent drainage

4.4.1. The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.

4.4.2. Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.




4.4.3. Selecting the diameter

Number of connecting indoor units →Calculate drainage volume→Select the diameter

Calculate allowed volume =Total cooling capacity of indoor units(HP)×2 (l/ hr)

| | Allowed volume(lean 1/50) (l/ hr) | I.D. (mm) | Thick |
|---|---|---|---|
| Hard PVC | ∽≤14 | ₵25 | 3.0 |
| Hard PVC | 14＜∽≤88 | ₵30 | 3.5 |
| Hard PVC | 88＜∽≤334 | ₵40 | 4.0 |
| Hard PVC | 175＜∽≤334 | ₵50 | 4.5 |
| Hard PVC | 334＜∽ | ₵80 | 6.0 |

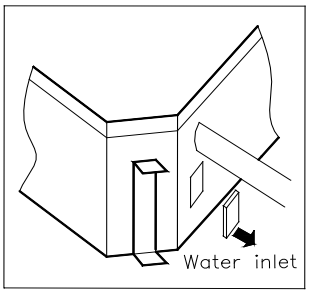
## 4.5 Drainage test

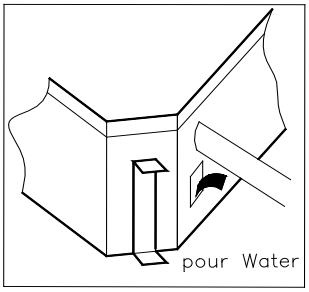
4.5.1Drainage without drain pump

After finishing drainpipe installation, pour some water into the water receiver plate to check if the water flows smoothly.

4.5.2 Drainage with drain pump

① Poke the Water Level Switch, remove the cover, use water pipe to pour 2000ml water into the water receipt plate through the water inlet.




② Turn on the power to Cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.

③ Stop the air conditioner running, turn off the power, and put back the cover.

- Stop the air conditioner. After 3 minutes, check if it has abnormity. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even overflow from the water receipt plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop. Turn off the power and drain the remained water, and then turn on the air conditioner.

Note: the drain stuff in the main water receipt plate is for maintenance. Stuff up the drain stuff to prevent water leakage.

# 5.Insulation Work

## 5.1 Insulation material and thickness

5.1.1. Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70℃ in the high-pressure side, no less than 120℃ in the low-pressure side(For the cooling type machine, no requirements at the low-pressure side.)

◆ Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120℃)
Cooling only type----Polyethylene foam (withstand above 100℃)

5.1.2. Thickness choice for insulation material

Insulation material thickness is as follows:

| | Pipe diameter (mm) | Adiabatic material thickness |
|---|---|---|
| Refrigerant pipe | Φ6.4—Φ25.4 | 10mm |
| | Φ28.6—Φ38.1 | 15mm |
| Drainage pipe | Inner diameterΦ20—Φ32 | 6mm |

## 5.2 Refrigerant pipe insulation

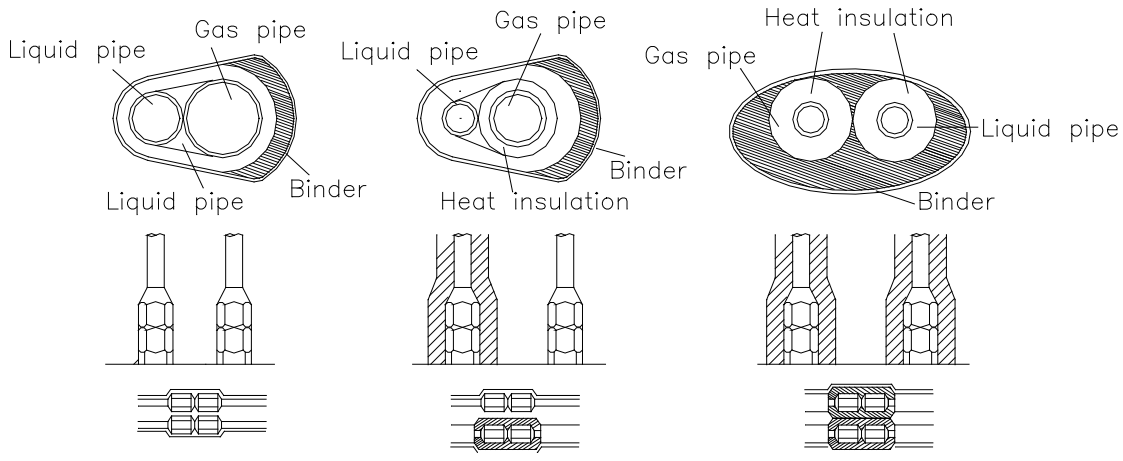
5.2.1. Work Procedure

① Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

② When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

5.2.2. Insulation for non-jointing parts and non-connection parts

| wrong | right | |
|---|---|---|
| Gas pipe and liquid pipe should not be put together to insulate | Insulate the gas pipe (cooling only) | Insulate the gas pipe and liquid pipe |

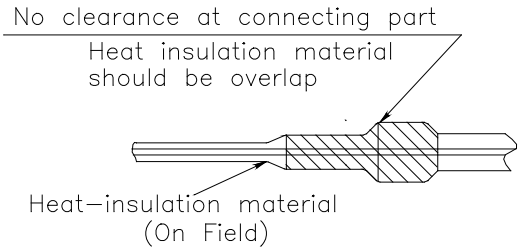


For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

5.2.3. Insulate for the jointing area, expanding area and the flange area

① Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes

② Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.




## 5.3 Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

## 5.4 Note

5.4.1 The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test

5.4.2 The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

5.4.3 Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in ,expand nut ) of the indoor unit

.

# 6.Test Operation

**(1) The test operation must be carried out after the entire installation has been completed.**

**(2) Please confirm the following points before the test operation.**

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop values are both opened.
- The air conditioner is pre-heated by turning on the power.

**(3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.**

**(4) Test operation**

Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points.

**Indoor unit**

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

**Outdoor unit**

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

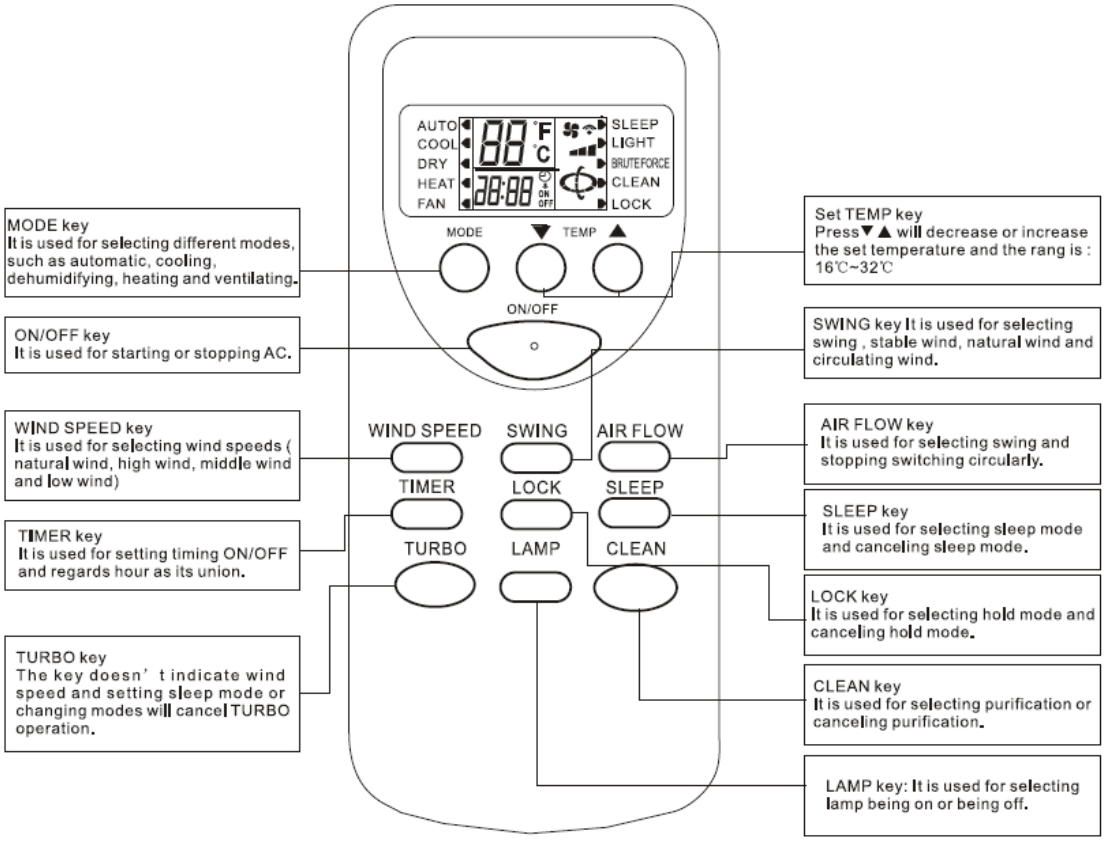
# Part 5 Control

**1.Wireless Remote Controller.....125**

**2.Wire Controller .....128**

# 1.Wireless Remote Controller

## 1.1 Jingling Commer




**USE OF REMOTE CONTROLLER**

The controller below is the Jingling Common Remote Controller, SWING key, TURBO key, LAMP key and CLEAN key is applicable for special latest developed new models instead of normal ones.

**FUNCTION KEY**

A. ON/OFF key:

Press the key and the remote control will switch circularly in the order: ON→OFF→ON. When it is powered on at first from off state to on state, the default setting of work condition is ( The set temperature is 25℃ and the mode , wind speed, swing and air door are all automatic and there is no lamp, no turbo, no purification, no sleep, no timing and no hold function ). When it is not powered on firstly from off state to on state, the work condition is as the same as the state before stopping. It will cancel damp, purification, sleep, turbo and timing running mode.

B. MODE key:

Press the key to switch modes in the order: automatic cooling →dehumidify →heating →ventilating →automatic.

C. " ▼ " key:

In dehumidifying mode and automatic mode, pressing the key cannot change the temperature. In other mode, press the key once and the temperature will decrease 1℃ in the order: 32℃→31℃ →...→17℃→16℃ .

D. " ▲ " key:

In dehumidifying mode and automatic mode, pressing the key cannot change the temperature. In other mode, press the key once and the temperature will increase 1℃ in the order: 16℃→17℃ →...→31℃→32℃.

E. SWING key:

In dehumidifying mode, the swing mode is in the stable wind mode without change. In other mode, press the key to switch modes in the order: swing → stable wind→ natural wind →swing

F. AIR FLOW key:

The default air flow is in the swing mode when starting firstly and press the key to switch modes in the order: swing→stop →swing.

G. WIND SPEED key:

The default wind speed is in the automatic wind mode when starting firstly. The remote control won′t react by pressing the key because the wind speed can't be adjusted and in low speed in dehumidifying mode. In other mode, press the key to switch modes in the order:

Automatic wind→ high speed →middle speed→ low speed →automatic wind

H. TIMER key:

The default mode is in no timing state, press the key to set timing time with hour as its union. The switch order is: 1H→2H→...→24H→cancel→1H.... Press the key to set timing starting in the off state and set timing stopping in the on state. After setting timing function, the time keeps decreasing per hour until the time decreasing to the timing on or timing off and the timing display will be cancelled at the same time. Pressing MODE key can't cancel timing in timing mode which will send out the order of timing time by pressing other key.

I. TURBO key:

The default state for the control is no turbo and the key don't work in the automatic mode, dehumidifying mode and ventilating mode (It will not display any contents and not send out any codes). The control, however, will switch between on and off by pressing the key in other mode. The wind speed isn't indicated in turbo mode and it will be cancelled for changing modes and setting sleep mode.

J. SLEEP key:

Press the key to switch modes in the order: sleep→ cancel sleep→ sleep. The sleep function won't be cancelled for changing modes. Press the key to set sleep mode and the wind speed will automatically be switched to low speed and it can adjust the wind speed by pressing the WIND SPEED key (except dehumidifying mode).

K. LOCK key:

The default state is in no LOCK key state, press the key to select modes in order: LOCK key →cancel LOCK key→ LOCK key; In LOCK key mode, all keys except LOCK key of the remote control can't work . (NOTE: In LOCK key mode, the remote and operation panel of the unit both will be locked automatically by pressing the key and press the key again, they will be unlocked. As for the split unit, it only holds the control rather than urgent keys and the panel will make a reaction.)

L. LAMP key:

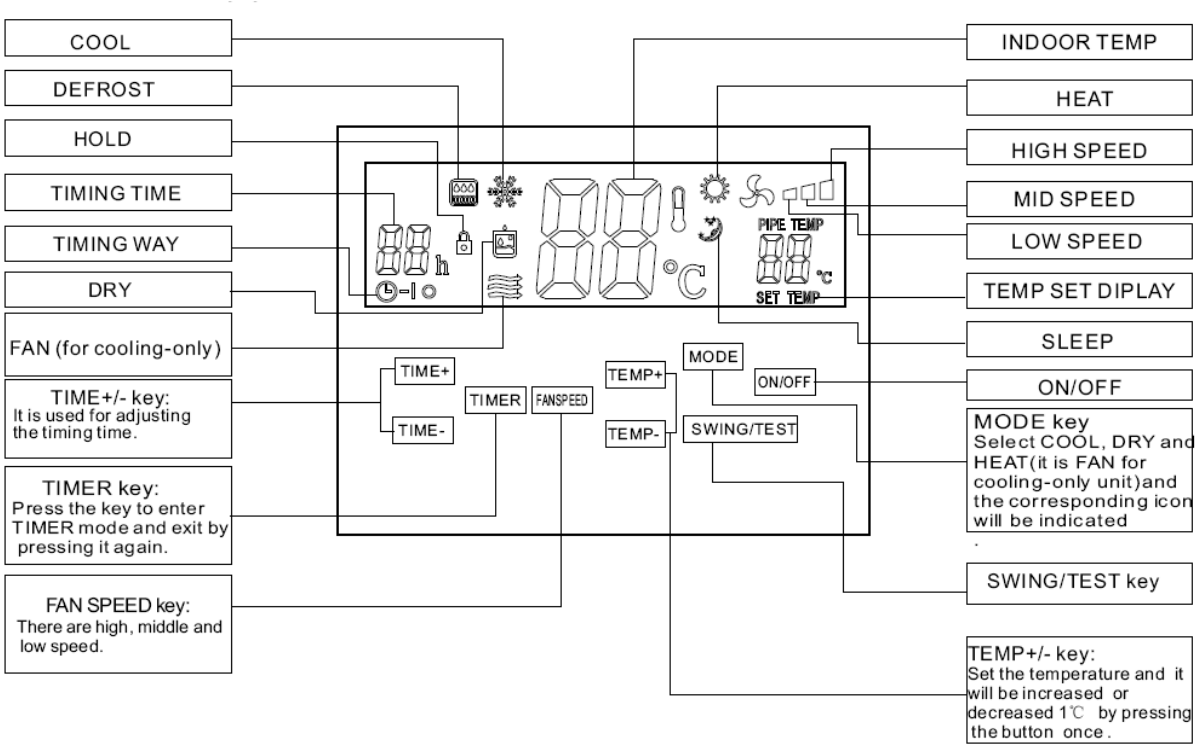
The default state is in no LAMP key state, press the key to select modes in order: LAMP key→cancel LAMP key→ LAMP key; In LAMP key mode, pressing MODE key can't cancel the show of LAMP key.

M. CLEAN key:

The default state is in no purification state, press the key to select modes in order: CLEAN→cancel CLEAN→ CLEAN; In purification mode, pressing CLEAN key can't cancel purification function. Press the key when the remote control is closed, the control will switch modes in the order: CLEAN →cancel CLEAN→ CLEAN; when you stop the unit and turn on the purification switch, except the wind, the stable swing and air door swing speed aren't adjusted.

# 2.Wire Controller

## 2.1 ZKX-QE-01


Instructions for function:

1. Key function: In the panel, there are 9 keys and their function and defining are:

a. “ON/OFF” key- On running, press the key to stop AC; On standby, press it to start AC;

b. “MODE” key- The key works as the “MODE” key in the remote controller;

c. “SPEED” key- The key works as the “SPEED” key in the remote controller;

d. “TIMING” key- The key works as the “TIMING” key in the remote controller;

e. Press “TIME ＋” and “TIME －” key to adjust the time. At the timing state, press “TIME ＋” key once and the timing time indicated on the LCD will increase one hour; When it increases to 12 hours and the time will stay at the value. Press “TIME－” key once and the timing time indicated on the LCD will decrease one hour; When it decreases to 1hour and the time will stay at the value.

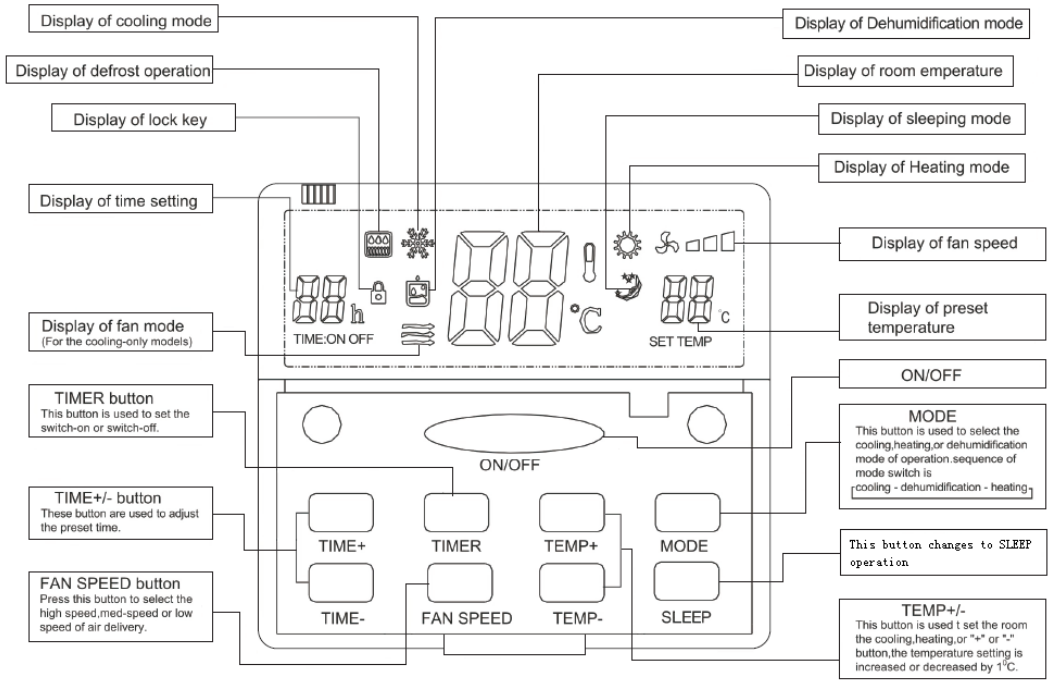
f. “TEST” key: No matter the unit is running or at the standby state, press the key and LCD will indicate the model and the temperature of the indoor coil instead of timing state or set temperature. Besides, “TEST” key has another function. Press the key and power on, the main panel of the wire controller will begin to check itself and the display is distributed the whole screen of LCD and the buzzer will utter three times. The display and self-inspection will be complete 2 minutes later.

2. Indicator light (red): There is a power indicator light in the main panel of the wire controller. When the system has been supplied power, the red light will be on. When the system goes wrong, the indicator light will flash and give an alarm and it will turn off after the system power-off.

3. Incepting terminal: It is used for accepting the signal of infrared remote controller.

4. Buzzer: The buzzer will utter three times when power-on and starting and it will utter twice when pressing “TIME ＋” and “TIME －” key at the same time. When the controller accepts other signal, it only utters once.

## 2.2 ZKX-PF-02




Note:

1. Do not handle the button with nail or other sharp things, so as avoid the damages of operation panel.
2. Thanks to technical renovation, the operation panel or remote controller may be changed without further notice.

1. Operation mode:

Operation method of COOL/DEHUMIDIFY/HEAT (VENT)

1) Press ON/OFF button to start unit.

2) Press MODE button to select desired mode Select VENT mode and the compressor stops.

3) Press temperature + / - button to set the desired room temperature. Room temperature setting ranges from 18℃ to 29℃.

4) Press FAN button to select the desired high speed, mid speed or low speed of Fan. Fan works only at low speed during DEHUMIDIFY mode.

5) Press ON/OFF again to stop. To protect the air conditioner from starting immediately after stopping, the delayed start function will keep the air conditioner idle for 3 minutes before automatically starting it.

Note: When the temperature of surroundings is less than 21℃ or more than 43℃, do not operate the COOL mode.

When the temperature of surroundings is less than -7℃ or more than 24℃, do not operate the HEAT mode.

When the indoor temperature is less than 18℃, do not transformed to the DEHUMIDIFY mode.

2. Timing operation

Timing OFF operation: Set the OFF time and the air conditioner will automatically stop at the set time.

1) While the air conditioner is running , press the TIMING button , and the air conditioner enters timing OFF state, and " TIMING OFF " and " TIMING " lamps will be on.

2) Press + or - button to set the desired timing OFF time. The set time ranges From 1 to 12 hours.

The green lamps on the display area show the set OFF time, that is, the time left to turn the unit off. The number of green lamps will decrease 1 hour every hour, and the rest lamps indicate the left hours.

3) To cancel the setting, press the TIMING button again. Under running state, only TIMING OFF function can be set.

Timing ON operation: Set the ON time and the air conditioner will automatically start at the set time.

1) While the air conditioner is at standby state, press TIMING button, and the air conditioner enters timing ON state, and " TIMING On " and " TIMING " lamps will be on.

2) Press + or - button to set the desired timing ON time .The set time ranges from1 to12 hours. The green lamps on the display area show the set ON time, that is, the time left to turn the unit off. The number of green lamps wills decrease1hour every hour, and the rest lamps indicate the left hours.

3) To cancel the setting, press the TIMING button again. Under standby state, only TIMING ON function can be set.

3. Features of HEAT Mode

Theory and Capacity

1) Air conditioner absorbs heat from outdoor air and transmits it indoor to heat the Indoor air. For this heat bump heating theory, its heating capacity depends on the outdoor air temperature.

2) This heat cycling system raises the room temperature fast.

3) When the outdoor temperature is low, other heating facilities can be used together.

DEFROST

When the outdoor temperature is low and humidity is high, the outdoor heat exchanger will frost. Frost will affect heating efficiency. Under this circumstance, the DEFROST function automatically works and the heating operation will stop about 5-10 minutes for defrosting.

1) The fans of indoor and outdoor unit will both stop, and the HEAT lamp (green) will slowly flash in defrosting.

2) Steam out of outdoor unit in defrosting is normal.

3) After DEFROST operation, the unit returns to HEAT mode.

SLEEP

Use this mode to reduce operation sound when sleeping, etc.

Press the SLEEP button, the air flow sound from the indoor unit is decreased.

Press the SLEEP again can release the mode.

NOTE:

Use the sleep mode when you are going to bed, If this mode is used in the day, the capacity is reduced since the ambient temperature is too high.

During the operation of cooling, the room temperature will be raised gradually by 2℃(4℉)higher than the setting after the machine begins to operate in the sleeping mode.

During the operation of heating mode, the room temperature will be dropped gradually 5℃(9 ℉)lower than the setting after the machine begins to operate in the sleeping mode.