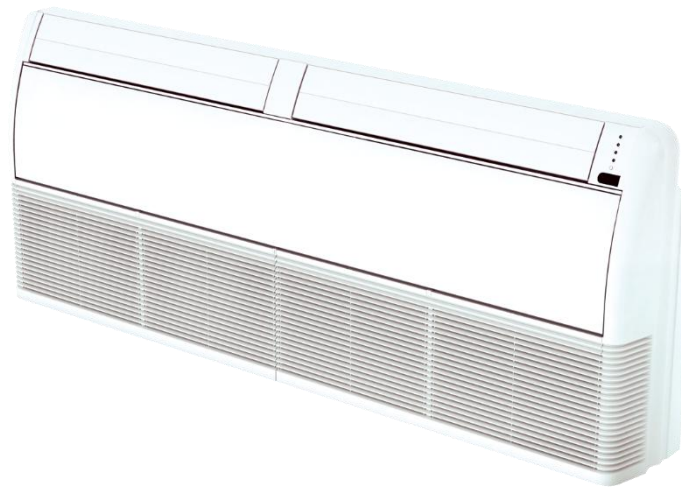


# Engineering Data

**Ceiling & Floor VRF IDU**

**AC 50Hz**



**KTHA40HQAN1**

**KTHA80HQAN1**

**KTHA50HQAN1**

**KTHA90HQAN1**

**KTHA60HQAN1**

**KTHA115HQAN1**

**KTHA72HQAN1)**

**KTHA140HQAN1**



# Ceiling & Floor

|  |           |
|--|-----------|
| <b>1 Specifications .....</b>            | <b>4</b>  |
| <b>2 Dimensions .....</b>                | <b>6</b>  |
| <b>3 Unit Placement .....</b>            | <b>7</b>  |
| <b>4 Piping Diagram .....</b>            | <b>8</b>  |
| <b>5 Wiring Diagram .....</b>            | <b>9</b>  |
| <b>6 Capacity Tables.....</b>            | <b>11</b> |
| <b>7 Electrical Characteristics.....</b> | <b>13</b> |
| <b>8 Sound Levels .....</b>              | <b>14</b> |

# 1 Specifications

## KTHA40HQAN1 / KTHA40HQAN1 / KTHA40HQAN1/ KTHA40HQAN1

| Model                      |                      |                   | KTHA40HQAN1              | KTHA50HQAN1 | KTHA60HQAN1 | KTHA72HQAN1 |
|----------------------------|----------------------|-------------------|--------------------------|-------------|-------------|-------------|
| Power supply               |                      |                   | 1 phase, 220-240V,50Hz   |             |             |             |
| Cooling                    | Capacity             | kW                | 3.6                      | 4.5         | 5.6         | 7.1         |
|                            | Input                | W                 | 49                       | 120         | 122         | 125         |
| Heating                    | Capacity             | kW                | 4                        | 5           | 6.3         | 8           |
|                            | Input                | W                 | 49                       | 120         | 122         | 125         |
| Indoor fan motor           | Type                 |                   | AC                       |             |             |             |
|                            | Quantity             |                   | 1                        |             |             |             |
| Indoor coil                | Number of rows       |                   | 2                        | 3           |             |             |
|                            | Tube pitchxrow pitch | mm                | 25.4×22                  |             |             |             |
|                            | Fin spacing          | mm                | 1.8                      |             |             |             |
|                            | Fin type             |                   | Hydrophilic aluminum     |             |             |             |
|                            | Diameter & type      | mm                | Φ9.53, inner-groove tube |             |             |             |
|                            | Dimensions (LxHxW)   | mm                | 804×254×44               | 804×254×66  |             |             |
|                            | Number of circuits   |                   | 3                        |             |             |             |
| Indoor air flow (H/M/L)    |                      | m <sup>3</sup> /h | 650/570/500              | 800/600/500 |             |             |
| Indoor noise level (H/M/L) |                      | dB(A)             | 40/38/36                 | 43/41/38    |             |             |
| Indoor unit                | Dimension (WxHxD)    | mm                | 990×203×660              |             |             |             |
|                            | Packing (WxHxD)      | mm                | 1089×296×744             |             |             |             |
|                            | Net/Gross weight     | kg                | 26/32                    | 28/34       |             |             |
| Piping connections         | Liquid pipe          | mm                | Φ6.35                    |             | Φ9.53       |             |
|                            | Gas pipe             | mm                | Φ12.7                    |             | Φ15.9       |             |
|                            | Drain pipe           | mm                | ODΦ25                    |             |             |             |

### Notes:

1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Fan motor speed and air flow rate are from the highest speed to the lowest speed, total 3 steps for each model.
4. Sound pressure level is from highest level to lowest level, total 3 steps for each model. Sound pressure level is measured in a semi-anechoic chamber.
5. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

**KTHA80HQAN1 / KTHA90HQAN1/ KTHA115HQAN1 / KTHA140HQAN1**

| Model                      |                        |       | KTHA80HQAN1              | KTHA90HQAN1 | KTHA115HQAN1   | KTHA140HQAN1 |
|----------------------------|------------------------|-------|--------------------------|-------------|----------------|--------------|
| Power supply               |                        |       | 1 phase, 220-240V,50Hz   |             |                |              |
| Cooling                    | Capacity               | kW    | 8                        | 9           | 11.2           | 14           |
|                            | Input                  | W     | 130                      | 130         | 182            | 182          |
| Heating                    | Capacity               | kW    | 9                        | 10          | 12.5           | 15           |
|                            | Input                  | W     | 130                      | 130         | 182            | 182          |
| Indoor fan motor           | Type                   |       | AC                       |             |                |              |
|                            | Quantity               |       | 1                        |             | 2              |              |
| Indoor coil                | Number of rows         |       | 3                        |             |                |              |
|                            | Tube pitch x row pitch | mm    | 25.4x22                  |             |                |              |
|                            | Fin spacing            | mm    | 1.8                      |             |                |              |
|                            | Fin type               |       | Hydrophilic aluminum     |             |                |              |
|                            | Diameter & type        | mm    | Φ9.53, inner-groove tube |             |                |              |
|                            | Dimensions (L x H x W) | mm    | 1094x254x66              |             | 1360x254x66    |              |
|                            | Number of circuits     |       | 5                        |             |                |              |
| Indoor air flow (H/M/L)    |                        | m3/h  | 1200/900/700             |             | 1980/1860/1730 |              |
| Indoor noise level (H/M/L) |                        | dB(A) | 45/43/40                 |             | 47/45/42       |              |
| Indoor unit                | Dimensions (W x H x D) | mm    | 1280x203x660             |             | 1670x244x680   |              |
|                            | Packing (W x HxD)      | mm    | 1379x296x744             |             | 1764x329x760   |              |
|                            | Net/Gross weight       | kg    | 34.5/41                  |             | 54/59          |              |
| Piping connections         | Liquid pipe            | mm    | Φ9.53                    |             |                |              |
|                            | Gas pipe               | mm    | Φ15.9                    |             |                |              |
|                            | Drain pipe             | mm    | ODΦ25                    |             |                |              |

**Notes:**

- Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
- Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
- Fan motor speed and air flow rate are from the highest speed to the lowest speed, total 3 steps for each model.
- Sound pressure level is from highest level to lowest level, total 3 steps for each model. Sound pressure level is measured in a semi-anechoic chamber.
- Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

## 2 Dimensions

### 2.1 Unit Dimensions

Figure 2.1: Ceiling & floor dimensions (unit: mm)

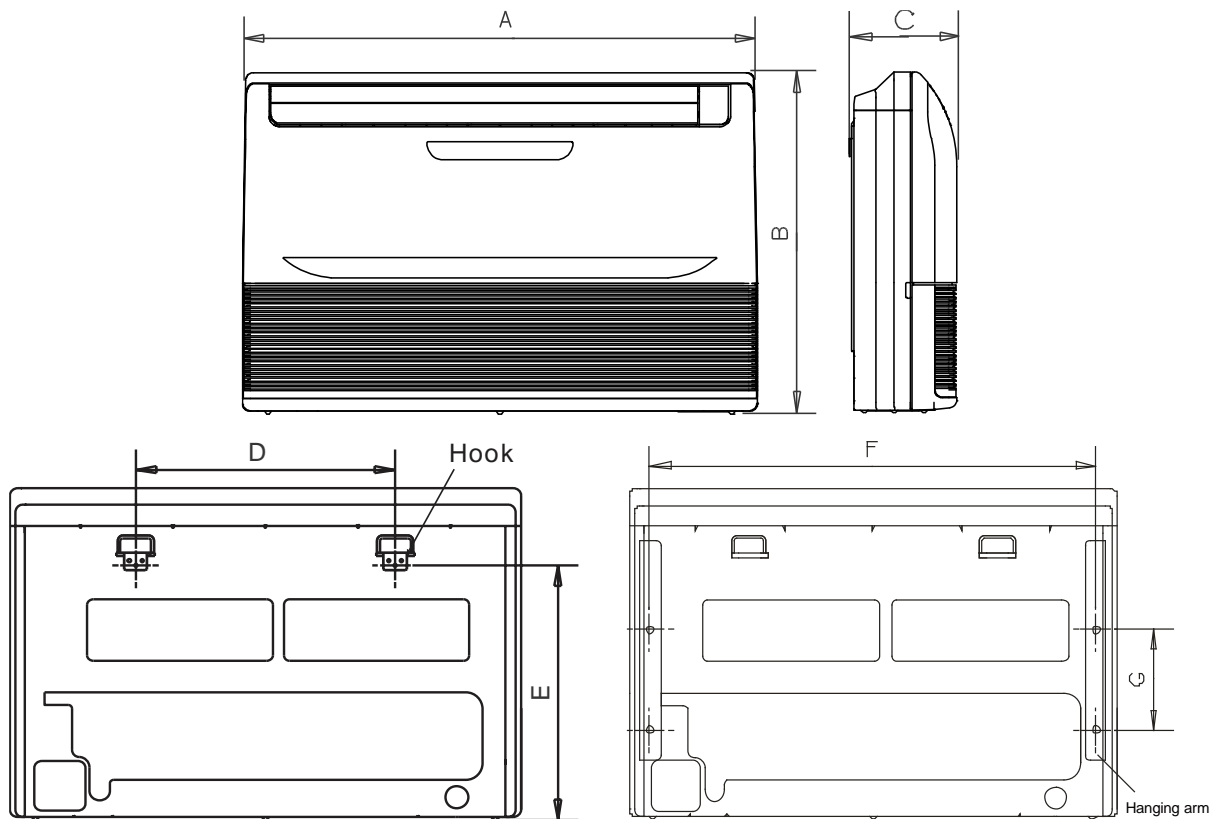


Table 2.2: Ceiling & floor piping connections

| Model  | Gas pipe (mm) | Liquid pipe (mm) |
|--|---------------|------------------|
| KTHA40HQAN1<br>KTHA50HQAN1   | Φ12.7         | Φ6.35            |
| KTHA60HQAN1<br>KTHA72HQAN1<br>KTHA80HQAN1<br>KTHA90HQAN1<br>KTHA115HQAN1<br>KTHA140HQAN1 | Φ15.9         | Φ9.53            |

Table 2.1: Ceiling & floor dimensions

| Model  | Dimensions (mm) |     |     |      |     |      |     |
|--|-----------------|-----|-----|------|-----|------|-----|
|  | A               | B   | C   | D    | E   | F    | G   |
| KTHA40HQAN1<br>KTHA50HQAN1<br>KTHA60HQAN1<br>KTHA72HQAN1 | 990             | 660 | 203 | 505  | 506 | 907  | 200 |
| KTHA80HQAN1<br>KTHA90HQAN1                               | 1280            | 660 | 203 | 795  | 506 | 1195 | 200 |
| KTHA115HQAN1<br>KTHA140HQAN1                             | 1670            | 680 | 244 | 1070 | 450 | 1542 | 200 |

### 3 Unit Placement

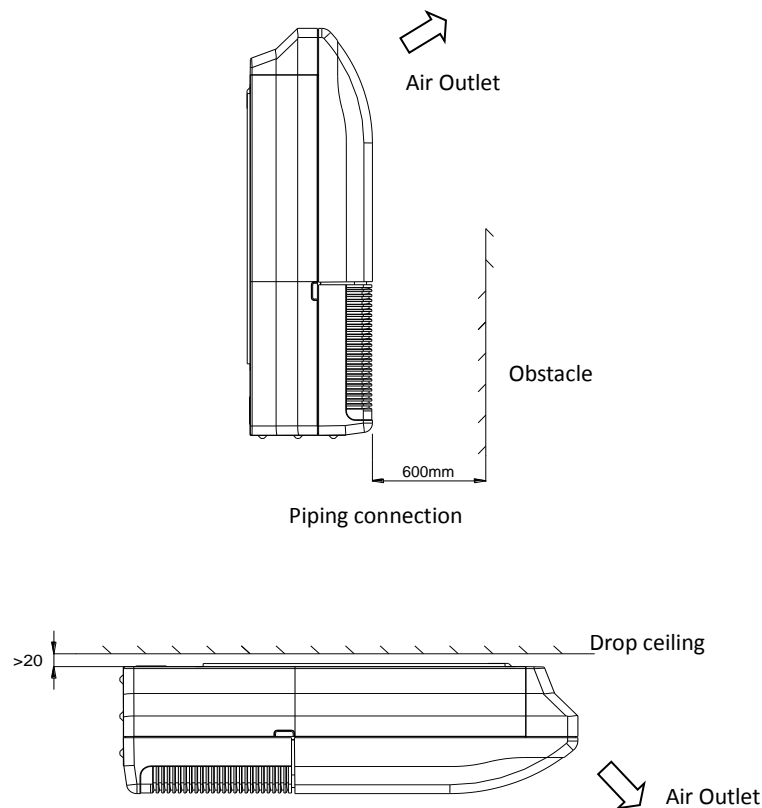
#### 3.1 Placement Considerations

Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
  - Where exposure to direct radiation from a high-temperature heat source or to interference from a source of electromagnetic radiation may occur.
  - Where dust or dirt may affect heat exchangers.
  - Where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
  - Where exposure to salinity may occur, such as seaside locations.
  - Where highly flammable materials are present.
  - Where exposure to oily air may occur, such as a kitchen.
  - Where exposure to very high humidity may occur, such as a laundry.
- Units should be installed in positions where:
  - The ceiling is horizontal and is able to bear the unit's weight.
  - There are no obstructions that could impede the airflow into and out of the unit.
  - The airflow out of the unit can reach throughout the room.
  - There is sufficient space for access during installation, servicing and maintenance.
  - The refrigerant piping and drain piping can be easily connected to the refrigerant piping and drain piping systems.
  - Short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) will not occur.

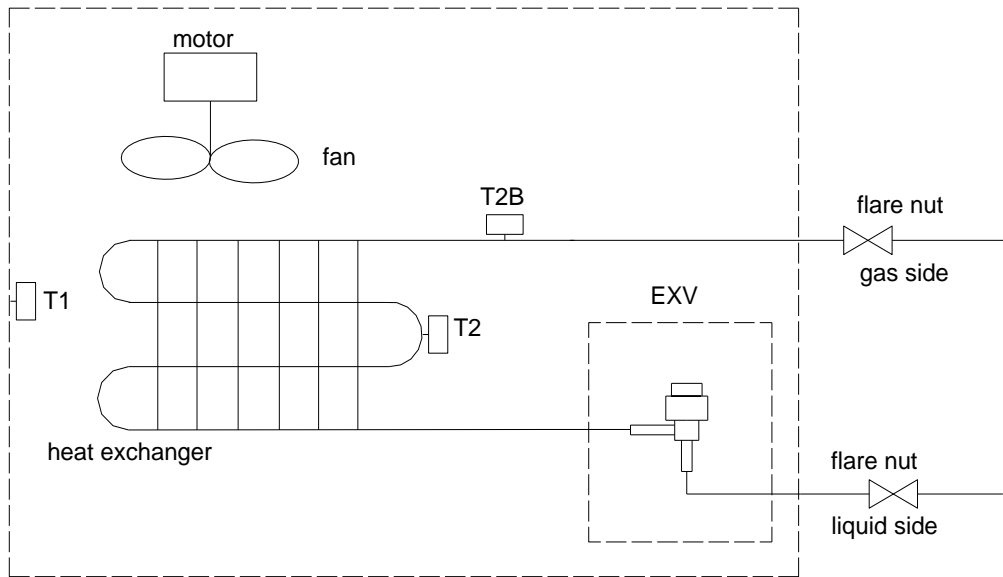
#### 3.2 Space Requirements

Figure 3.1: Ceiling & floor space requirements (unit: mm)



## 4 Piping Diagram

Figure 4.1: Ceiling & floor piping diagram

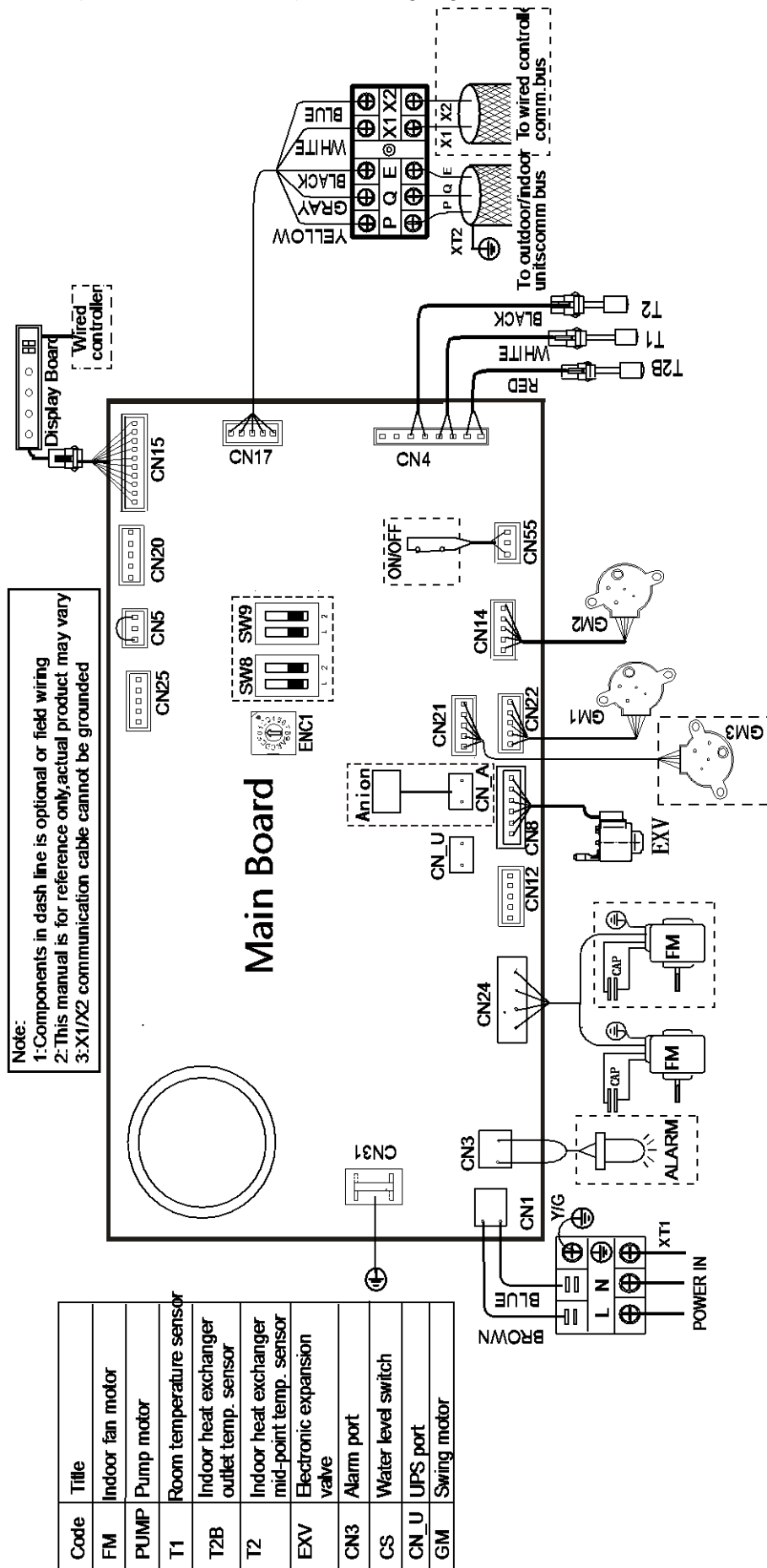


| Legend |  |
|--------|--|
| T1     | Indoor ambient temperature sensor                  |
| T2     | Indoor heat exchanger mid-point temperature sensor |
| T2B    | Indoor heat exchanger outlet temperature sensor    |



## 5 Wiring Diagram

Figure 5.1: Ceiling & floor KTHA40 (50/60/72/80/90/115/140) HQAN1wiring diagram



**Caution**

- All installation, servicing and maintenance must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.
- Units should be grounded in accordance with all applicable legislation. Metal and other conductive components should be insulated in accordance with all applicable legislation.
- Power supply wiring should be securely fastened at the power supply terminals – loose power supply wiring would represent a fire risk.
- After installation, servicing or maintenance, the electric control box cover should be closed. Failing to close the electric control box cover risks fire or electric shock.
- Switch ENC1 (indoor unit capacity setting) is factory-set and its setting should normally not be changed. The only circumstances in which a switch ENC1 might need to be set in the field is when replacing a main PCB. When replacing a main PCB, ensure that the capacity setting on switch ENC1 on the new PCB is consistent with the unit capacity given on the unit's nameplate.

## 6 Capacity Tables

### 6.1 Cooling Capacity Table

Table 6.1: Ceiling & floor cooling capacity tables

| Model        | Indoor air temp. (°C WB/DB) |      |       |      |       |      |       |      |       |      |       |      |       |      |
|--------------|-----------------------------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
|              | 14/20                       |      | 16/23 |      | 18/26 |      | 19/27 |      | 20/28 |      | 22/30 |      | 24/32 |      |
|              | TC                          | SC   | TC    | SC   | TC    | SC   | TC    | SC   | TC    | SC   | TC    | SC   | TC    | SC   |
| KTHA40HQAN1  | 3.2                         | 3.1  | 3.4   | 3.1  | 3.6   | 3.1  | 3.6   | 3.0  | 3.7   | 2.9  | 3.8   | 2.8  | 3.9   | 2.7  |
| KTHA50HQAN1  | 4.0                         | 3.8  | 4.3   | 3.9  | 4.5   | 3.8  | 4.5   | 3.7  | 4.6   | 3.6  | 4.7   | 3.4  | 4.8   | 3.3  |
| KTHA60HQAN1  | 5.0                         | 4.8  | 5.3   | 4.8  | 5.6   | 4.8  | 5.6   | 4.6  | 5.7   | 4.5  | 5.8   | 4.2  | 6.0   | 4.1  |
| KTHA72HQAN1  | 6.3                         | 6.0  | 6.7   | 6.0  | 7.0   | 5.9  | 7.1   | 5.8  | 7.2   | 5.6  | 7.4   | 5.4  | 7.6   | 5.2  |
| KTHA80HQAN1  | 7.1                         | 6.8  | 7.6   | 6.8  | 7.9   | 6.7  | 8.0   | 6.5  | 8.1   | 6.3  | 8.3   | 6.0  | 8.5   | 5.8  |
| KTHA90HQAN1  | 8.0                         | 7.6  | 8.5   | 7.6  | 8.9   | 7.6  | 9.0   | 7.3  | 9.1   | 7.1  | 9.4   | 6.8  | 9.6   | 6.5  |
| KTHA115HQAN1 | 9.9                         | 9.5  | 10.6  | 9.6  | 11.1  | 9.5  | 11.2  | 9.2  | 11.3  | 8.9  | 11.6  | 8.4  | 11.9  | 8.1  |
| KTHA140HQAN1 | 12.4                        | 11.9 | 13.2  | 11.9 | 13.8  | 11.8 | 14.0  | 11.4 | 14.2  | 11.1 | 14.5  | 10.5 | 14.9  | 10.1 |

## 6.2 Heating Capacity Table

Table 6.2: Ceiling & floor heating capacity tables

| Model        | Indoor air temp. (°C DB) |      |      |      |      |      |
|--------------|--------------------------|------|------|------|------|------|
|              | 16                       | 18   | 20   | 21   | 22   | 24   |
|              | TC                       | TC   | TC   | TC   | TC   | TC   |
| KTHA40HQAN1  | 4.2                      | 4.2  | 4.0  | 3.8  | 3.8  | 3.5  |
| KTHA50HQAN1  | 5.3                      | 5.3  | 5.0  | 4.8  | 4.7  | 4.4  |
| KTHA60HQAN1  | 6.7                      | 6.6  | 6.3  | 6.1  | 5.9  | 5.5  |
| KTHA72HQAN1  | 8.5                      | 8.4  | 8.0  | 7.8  | 7.5  | 7.0  |
| KTHA80HQAN1  | 9.5                      | 9.5  | 9.0  | 8.7  | 8.5  | 7.8  |
| KTHA90HQAN1) | 10.6                     | 10.5 | 10.0 | 9.7  | 9.4  | 8.8  |
| KTHA115HQAN1 | 13.3                     | 13.1 | 12.5 | 12.1 | 11.8 | 10.9 |
| KTHA140HQAN1 | 15.9                     | 15.7 | 15.0 | 14.6 | 14.1 | 13.1 |

## 7 Electrical Characteristics

Table 7.1: Ceiling & floor electrical characteristics

| Model        | Power supply |         |            |            |      |     | Indoor fan motors       |           |
|--------------|--------------|---------|------------|------------|------|-----|-------------------------|-----------|
|              | Hz           | Volts   | Min. volts | Max. volts | MCA  | MFA | Rated motor output (kW) | FLA       |
| KTHA40HQAN1  | 50           | 220-240 | 198        | 264        | 0.45 | 15  | 0.10                    | 0.35      |
| KTHA50HQAN1  | 50           | 220-240 | 198        | 264        | 1.20 | 15  | 0.10                    | 0.93      |
| KTHA60HQAN1  | 50           | 220-240 | 198        | 264        | 1.20 | 15  | 0.10                    | 0.95      |
| KTHA72HQAN1  | 50           | 220-240 | 198        | 264        | 1.20 | 15  | 0.10                    | 0.95      |
| KTHA80HQAN1  | 50           | 220-240 | 198        | 264        | 1.30 | 15  | 0.10                    | 1.10      |
| KTHA90HQAN1  | 50           | 220-240 | 198        | 264        | 1.30 | 15  | 0.10                    | 1.10      |
| KTHA115HQAN1 | 50           | 220-240 | 198        | 264        | 1.70 | 15  | 0.10+0.10               | 0.65+0.65 |
| KTHA140HQAN1 | 50           | 220-240 | 198        | 264        | 1.70 | 15  | 0.10+0.10               | 0.65+0.65 |

Abbreviations:

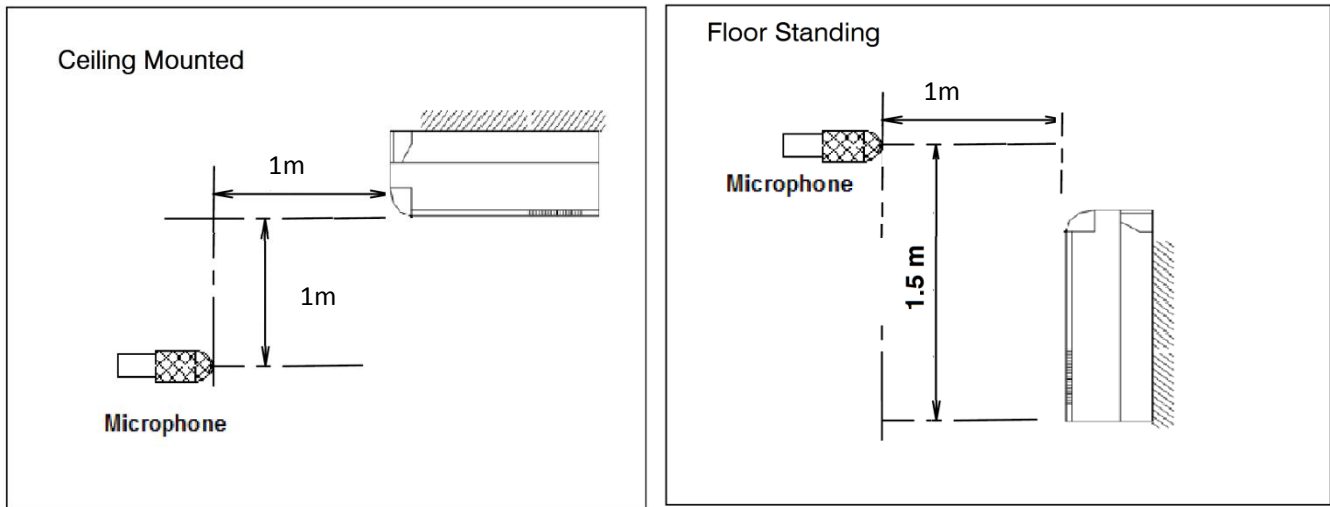
MCA: Minimum Circuit Amps

MFA: Maximum Fuse Amps

FLA: Full Load Amps

## 8 Sound Levels

### 8.1 Test Condition



Note:

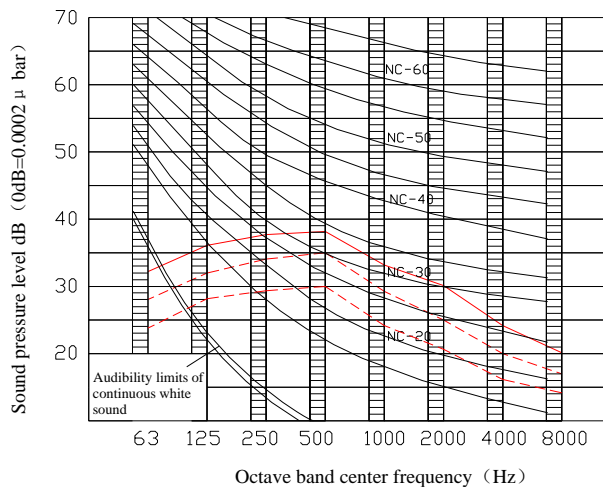
- 1, during actual operation, these values are normally somewhat higher as a result of ambient conditions.
- 2, Anechoic chamber conversion value, measured at a point 1m in front of the unit at a height of 1.5m

### 8.2 Test Data (Sound Pressure Levels)

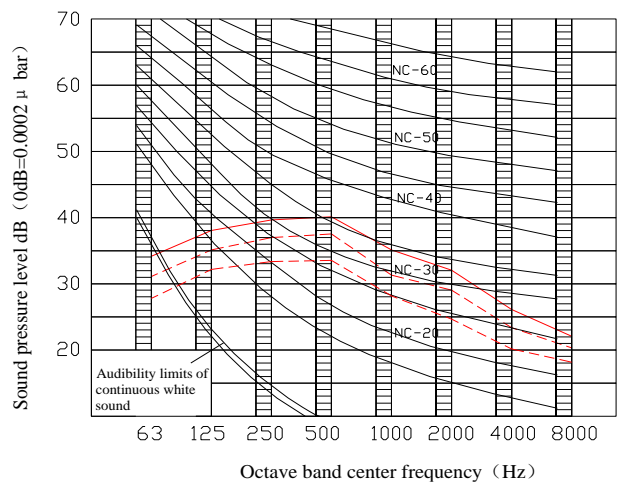
| Model        | Sound level under three speeds of fan (dB(A)) |    |    |
|--------------|---|----|----|
|              | H   | M  | L  |
| KTHA40HQAN1  | 40  | 38 | 36 |
| KTHA50HQAN1  | 43  | 41 | 38 |
| KTHA60HQAN1  | 43  | 41 | 38 |
| KTHA72HQAN1  | 43  | 41 | 38 |
| KTHA80HQAN1  | 45  | 43 | 40 |
| KTHA90HQAN1  | 45  | 43 | 40 |
| KTHA115HQAN1 | 47  | 45 | 42 |
| KTHA140HQAN1 | 47  | 45 | 42 |

### 8.3 Octave Band Levels

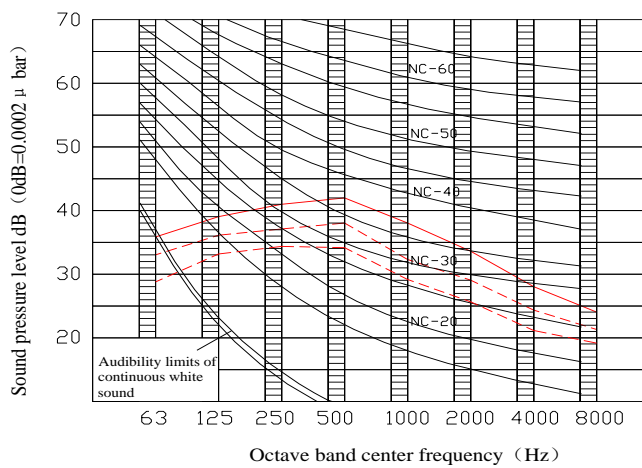
KTHA40HQAN1



KTHA50(60)HQAN1



KTHA80(90)HQAN1



KTHA115(140)HQAN1

