

## Chilled Water Vertical Fan Coils

**Models:**    FMMW-C    FMMW-H  
                 FWCW-C    FWCW-H



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## SAFETY PRECAUTIONS

Before installing the air conditioner, please read the following safety precautions carefully.



## Warning

- Installation and maintenance are to be performed by qualified persons who are familiar with local code and regulation, and experienced with this type of appliance.
- All field wiring must be installed in accordance with the national wiring regulation.
- Ensure that the rated voltage of the unit corresponds to that of the nameplate before commencing wiring work according to the wiring diagram.
- The unit must be GROUNDED to prevent possible hazard due to insulation failure.
- Confirm that the unit has been switched OFF before installing or servicing the unit.

# VERTICAL FLOW FAN COIL

## THE NEW SHAPE OF WELLNESS

The new series F of fan coil with vertical air flow is characterised by flexibility in performance and quiet operation to offer a total wellness. It represents one of the most cost-effective solutions to provide a comfortable environment for both commercial and residential applications.

The series features 8 sizes, with cabinet for floor or wall installation and chassis for concealed installations.

The units are available in the 2-pipes version with 3 or 4-rows coil – nominal cooling capacity from 1.3 to 8.0kW; nominal heating capacity from 2.2 to 12.0kW – or in the 4-pipes version – nominal cooling capacity from 1.2 to 8.0kW; nominal heating capacity from 2.3 to 13.0kW.

The AC2800/AC2800B controllers have been set according to the unit configuration:

- cooling or heating for 2-pipes application
- cooling or heating for 4-pipes application
- 2-way or 3-way valve with ON/OFF control

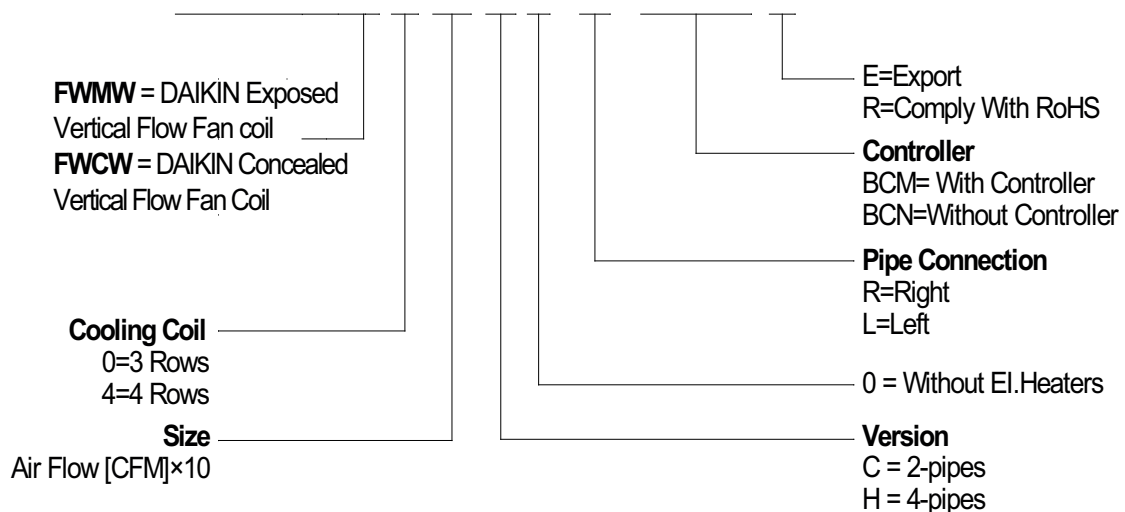
Activating all parameters and routines of regulation which optimise the operation of the unit.

Through AC2800 units can also be directly integrated with Smart Manager and solution for the supervision of hydronic systems. With reference to fan coils, Smart Manager run up to 50 mini-chillers and 120 fan coils.



## NOMENCLATURE

# FWMW012C0-R-BCME



# GENERAL CHARACTERISTICS

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## Design

The design, elegant and considered in all details, harmonises well with all types of interiors.

Covers, grids and cabinet materials have been selected with a special care to grant both the quality of the finishing and the durability of the product.

Cover and grids are realised in ABS, RAL103; the cabinet is made of pre-painted sheet metal finished with high quality paint, RAL1013.

## Filter

The filter, located at the bottom of the unit, is easily accessible and self-locking, therefore no tools are required for removing and re-assembling it.

The filter material grade is G1 and thanks to its pleated surface grants a filtration surface up to 60% greater than traditional filters resulting in lower pressure drop and reduced noise emission.

## Connections

Units are available with left or right hand water connections, which can be easily switched in the field if required. Connections are equipped with air vents and drainage valves.

## Controllers

### AC2800 Electronic controller (optional)

Among the features of AC2800 controllers are:

- Selectable temperature range: 10-30°C or 16-30°C ( through selecting J4, default: close/16-30°C).
- 2-pipes/4-pipes model (through selecting J1 and J2).
- Cool/heat mode.
- Fan speed can be set at high/medium/low.
- Sensor failure alarm.
- LEDs show running state:
  - 1) The three blue LEDs show fan speed high/medium/low.
  - 2) The dichromatic LED shows heat and cool mode: the red LED shows heat mode, the green LED shows cool mode.
  - 3) The red LED shows ON/OFF of the system.
  - 4) The room sensor failure alarm: high speed LED blinks and shuts off all outputs.  
The water sensor failure alarm: medium speed LED blinks and shuts off all outputs.
  - 5) Mode conflict: the mode LED blinks and shuts off all outputs.
- Smart manager integration

# GENERAL CHARACTERISTICS

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## AC2800B Electronic controller

- Temperature range: 16-30°C.
- 2-pipes/4-pipes model (through selecting J1 and J2).
- Cool/heat mode.
- Fan speed can be set at high/medium/low.
- Cold draft protection (under heat mode, the fan can run only when the water temperature is above 30°C ).
- Sensor failure alarm.
- LEDs show running state:
  - 1) The three blue LEDs show fan speed high/medium/low.
  - 2) The dichromatic LED shows heat and cool mode: the red LED shows heat mode, the green LED shows cool mode.
  - 3) The red LED shows ON/OFF of the system.
  - 4) The room sensor failure alarm: high speed LED blinks and shuts off all outputs.  
The water sensor failure alarm: medium speed LED blinks and shuts off all outputs.
  - 5) Mode conflict: the mode LED blinks and shuts off all outputs.

## NOTES

1. Mode conflict: for 2-pipes model, when the system works on heat mode and the water temperature is below 25°C, or when the system works on cool mode and the water temperature is above 25°C, the system considers it fault as the mode conflict. At the same time, the system will shut off all outputs and the mode LED will blink.
2. For 4-pipes model, the water sensor is fixed on the pipe of hot water.

# GENERAL CHARACTERISTICS

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The **AC2800** controller can be connected straight to Fan Coil Network, without any further components; in fact the electronic board has integrated the NIM Module [Network Interface Module].

The Network allows to control from a unique place all the operating parameters of the connected units.

The general control is executed through the Master unit and can be carried out through the electronic controller on board, the wall mounted installed thermostat or the infra-red handset.

Across AC2800, the units can be connected straight to Smart Manager, the hydronic systems supervision solution. With reference to hydronic units, Smart Manager manages up to 50 mini-chillers and 120 fan coils.



# GENERAL CHARACTERISTICS

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## **AC8000 Electronic thermostat**

The thermostat AC8000 is predisposed for wall mounted and is composed of:

- LCD DISPLAY: back-light and with graphic extremely easy, allows also an easy reading of the operating parameters and auto-diagnosis
- KEYBOARD: allows to set parameters as: room temperature, fan speed, manual or automatic fan speed setting, operating mode summer/winter, ON/OFF, operating time setting
- INFRARED HANDSET AC5300: standard, assures a utilization more easy than other thermostat 2.5 meters.

**AC512 Mechanical thermostat** [for 2 pipes versions] and **Mechanical thermostat AC513** [for 4 pipes versions]

Easy utilization, allows to set essential operating parameter: room temperature, fan speed, ON/OFF

## **ACCESSORIES**

Valves kit [*standard condensate drain panel*], 2 or 3 ways

Controllers (optional)

Feet (cover and/or support)

Base module

Frontal air intake module

External air intake module

# TECHNICAL DATA

| 2 PIPES                                |         |                     |                     | 3 ROWS              |                     |                     |                      |                       |                        |
|----------------------------------------|---------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|-----------------------|------------------------|
| MODELS                                 |         | 012C                | 020C                | 025C                | 035C                | 050C                | 060C                 | 080C                  | 090C                   |
| Nominal Air Flow<br>(High/Medium/Low)  | m³/h    | 290/<br>245/<br>197 | 380/<br>296/<br>210 | 497/<br>349/<br>260 | 705/<br>565/<br>400 | 853/<br>695/<br>465 | 1141/<br>969/<br>705 | 1360/<br>1063/<br>824 | 1500/<br>1368/<br>1190 |
| Available Static Pressure              | Pa      | --                  | --                  | --                  | --                  | --                  | --                   | --                    | --                     |
| Total Cooling Capacity <sup>1</sup>    | kW      | 1.3                 | 1.8                 | 2.7                 | 3.6                 | 4.8                 | 5.9                  | 6.9                   | 8.0                    |
| Total Sensible Capacity <sup>1</sup>   | kW      | 1.0                 | 1.5                 | 1.9                 | 2.6                 | 3.6                 | 4.6                  | 5.3                   | 5.8                    |
| Heating Capacity <sup>2</sup>          | kW      | 2.2                 | 2.7                 | 3.6                 | 4.8                 | 6.2                 | 8.1                  | 10.5                  | 12.0                   |
| Water Flow Rate                        | l/s     | 0.063               | 0.085               | 0.129               | 0.170               | 0.227               | 0.282                | 0.358                 | 0.347                  |
| Water Pressure Drop - Cooling          | kPa     | 4                   | 5                   | 10                  | 16                  | 28                  | 33                   | 18                    | 20                     |
| Lp (Sound Pressure Level) <sup>3</sup> | dB(A)   | 38/35/33            | 42/37/32            | 42/35/32            | 48/44/39            | 47/39/31            | 53/48/41             | 51/47/40              | 53/51/47               |
| Power Supply                           | V/ph/Hz | 220~240/1/50        |                     |                     |                     |                     |                      |                       |                        |
| Fan N°.                                | n°      | 1                   | 1                   | 2                   | 2                   | 2                   | 2                    | 3                     | 3                      |
| Max Power Supply <sup>4</sup>          | kW      | 0.024               | 0.044               | 0.044               | 0.059               | 0.068               | 0.102                | 0.147                 | 0.167                  |
| Cond. Drain Connections                | mm      | 20                  | 20                  | 20                  | 20                  | 20                  | 20                   | 20                    | 20                     |
| Water Connections                      | inches  | 3/4"                | 3/4"                | 3/4"                | 3/4"                | 3/4"                | 3/4"                 | 3/4"                  | 3/4"                   |
| Total volume                           | litres  | 0.792               |                     | 1.158               |                     | 1.525               |                      | 1.89                  |                        |
| Weight [with package]                  | kg      | 20 [22]             |                     | 24 [27]             |                     | 26 [30]             |                      | 35 [39]               |                        |
| Weight with cabinet<br>[with package]  | kg      | 22 [25]             |                     | 29 [32]             |                     | 32 [37]             |                      | 45 [50]               |                        |
| Dimens. unit (L x A x P)               | mm      | 704x224x540         |                     | 904x224x540         |                     | 1104x224x540        |                      | 1304x224x540          |                        |
| Dimens. with cabinet (L x A x P)       | mm      | 910x539x230         |                     | 1110x539x230        |                     | 1310x539x230        |                      | 1510x539x230          |                        |

| 2 PIPES                                |         |                     |                     | 4 ROWS              |                     |                     |                      |                       |                        |
|----------------------------------------|---------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|-----------------------|------------------------|
| MODELS                                 |         | 412C                | 420C                | 425C                | 435C                | 450C                | 460C                 | 480C                  | 490C                   |
| Nominal Air Flow<br>(High/Medium/Low)  | m³/h    | 254/<br>215/<br>176 | 369/<br>321/<br>240 | 445/<br>330/<br>250 | 677/<br>545/<br>380 | 811/<br>663/<br>456 | 1068/<br>915/<br>672 | 1300/<br>1165/<br>908 | 1450/<br>1288/<br>1120 |
| Available Static Pressure              | Pa      | --                  | --                  | --                  | --                  | --                  | --                   | --                    | --                     |
| Total Cooling Capacity <sup>1</sup>    | kW      | 1.5                 | 2.7                 | 3.1                 | 4.6                 | 5.3                 | 6.4                  | 7.1                   | 8.3                    |
| Total Sensible Capacity <sup>1</sup>   | kW      | 1.1                 | 1.7                 | 2.1                 | 2.8                 | 3.7                 | 5.0                  | 5.5                   | 5.8                    |
| Heating Capacity <sup>2</sup>          | kW      | 2.3                 | 2.8                 | 4.2                 | 5.3                 | 6.8                 | 8.4                  | 11.0                  | 12.5                   |
| Water Flow Rate                        | l/s     | 0.073               | 0.098               | 0.149               | 0.193               | 0.251               | 0.304                | 0.397                 | 0.409                  |
| Water Pressure Drop - Cooling          | kPa     | 4                   | 5                   | 10                  | 14                  | 21                  | 20                   | 18                    | 17                     |
| Lp (Sound Pressure Level) <sup>3</sup> | dB(A)   | 38/36/33            | 42/37/32            | 41/34/32            | 47/43/38            | 47/39/31            | 53/48/41             | 51/47/40              | 53/50/47               |
| Power Supply                           | V/ph/Hz | 220~240/1/50        |                     |                     |                     |                     |                      |                       |                        |
| Fan N°.                                | n°      | 1                   | 1                   | 2                   | 2                   | 2                   | 2                    | 3                     | 3                      |
| Max Power Supply <sup>4</sup>          | kW      | 0.021               | 0.050               | 0.051               | 0.056               | 0.077               | 0.107                | 0.143                 | 0.167                  |
| Cond. Drain Connections                | mm      | 20                  | 20                  | 20                  | 20                  | 20                  | 20                   | 20                    | 20                     |
| Water Connections                      | inches  | 3/4"                | 3/4"                | 3/4"                | 3/4"                | 3/4"                | 3/4"                 | 3/4"                  | 3/4"                   |
| Total volume                           | litres  | 1.056               |                     | 1.545               |                     | 2.033               |                      | 2.52                  |                        |
| Weight [with package]                  | kg      | 24 [26]             |                     | 28 [30]             |                     | 30 [33]             |                      | 35 [39]               |                        |
| Weight with cabinet<br>[with package]  | kg      | 26 [27]             |                     | 31 [35]             |                     | 35 [40]             |                      | 45 [50]               |                        |
| Dimens. unit (L x A x P)               | mm      | 704x224x540         |                     | 904x224x540         |                     | 1104x224x540        |                      | 1304x224x540          |                        |
| Dimens. with cabinet (L x A x P)       | mm      | 910x539x230         |                     | 1110x539x230        |                     | 1310x539x230        |                      | 1510x539x230          |                        |

## NOTES

1 At the following nominal conditions: nominal air flow; 7/12°C inlet/outlet water temperature; 27°C d b/19°C wb inlet air temperature; High speed

2 At the following nominal conditions: nominal air flow 50°C inlet water temperature; 20°C inlet air temperature; same water flow as for cooling; High speed

3 At High/Medium/Low speed; nominal air flow; measured in a room of 100m volume and 0.5 sec. reverberation time (e.g. office/conference room with carpet on the floor)

4 Nominal Air Flow; High Fan Speed

# TECHNICAL DATA

## 4 PIPES

## 3+1 ROWS

| MODELS                                 |                   | 012H                | 020H                | 025H                | 035H                | 050H                | 060H                 | 080H                  | 090H                   |
|----------------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|-----------------------|------------------------|
| Nominal Air Flow<br>(High/Medium/Low)  | m <sup>3</sup> /h | 254/<br>215/<br>176 | 369/<br>321/<br>240 | 445/<br>330/<br>250 | 677/<br>545/<br>380 | 811/<br>663/<br>456 | 1068/<br>915/<br>672 | 1300/<br>1063/<br>824 | 1450/<br>1248/<br>1078 |
| Available Static Pressure              | Pa                | --                  | --                  | --                  | --                  | --                  | --                   | --                    | --                     |
| Total Cooling Capacity <sup>5</sup>    | kW                | 1.2                 | 1.8                 | 2.5                 | 3.5                 | 4.6                 | 5.7                  | 6.9                   | 8.0                    |
| Total Sensible Capacity <sup>5</sup>   | kW                | 0.9                 | 1.4                 | 1.7                 | 2.5                 | 3.4                 | 4.4                  | 4.9                   | 5.2                    |
| Water Flow Rate                        | l/s               | 0.057               | 0.084               | 0.118               | 0.165               | 0.219               | 0.271                | 0.32                  | 0.345                  |
| Water Pressure Drop - Cooling          | kPa               | 4                   | 5                   | 8                   | 15                  | 26                  | 16                   | 15                    | 17                     |
| Heating Capacity <sup>6</sup>          | kW                | 2.3                 | 2.9                 | 4.3                 | 5.6                 | 7.0                 | 8.6                  | 12.0                  | 13.0                   |
| Water Flow Rate                        | l/s               | 0.057               | 0.071               | 0.104               | 0.137               | 0.172               | 0.209                | 0.216                 | 0.339                  |
| Water Pressure Drop - Heating          | kPa               | 11                  | 18                  | 30                  | 18                  | 35                  | 40                   | 24                    | 14                     |
| Lp (Sound Pressure Level) <sup>7</sup> | dB(A)             | 38/36/33            | 42/37/32            | 41/34/32            | 47/43/38            | 47/39/31            | 53/48/41             | 51/47/40              | 53/50/47               |
| Power Supply                           | V/ph/Hz           | 220~240/1/50        |                     |                     |                     |                     |                      |                       |                        |
| Fan N°.                                | n°                | 1                   | 1                   | 2                   | 2                   | 2                   | 2                    | 3                     | 3                      |
| Max Power Supply <sup>4</sup>          | kW                | 0.021               | 0.050               | 0.051               | 0.056               | 0.077               | 0.107                | 0.140                 | 0.161                  |
| Cond. Drain Connections                | mm                | 20                  | 20                  | 20                  | 20                  | 20                  | 20                   | 20                    | 20                     |
| Water Connections                      | inches            | 3/4"                | 3/4"                | 3/4"                | 3/4"                | 3/4"                | 3/4"                 | 3/4"                  | 3/4"                   |
| Total volume                           | litres            | [0.792 + 0.264]     |                     | [1.158 + 0.386]     |                     | [1.525 + 0.508]     |                      | [1.89 + 0.63]         |                        |
| Weight [with package]                  | kg                | 24 [26]             |                     | 28 [30]             |                     | 30 [33]             |                      | 35 [39]               |                        |
| Weight with cabinet<br>[with package]  | kg                | 26 [27]             |                     | 31 [35]             |                     | 35 [40]             |                      | 45 [50]               |                        |
| Dimens. unit (LxA xP)                  | mm                | 704x224x540         |                     | 904x224x540         |                     | 1104x224x540        |                      | 1304x224x540          |                        |
| Dimens. with cabinet (L x A x P)       | mm                | 910x539x230         |                     | 1110x539x230        |                     | 1310x539x230        |                      | 1510x539x230          |                        |

### NOTES

4 Nominal Air Flow; High Fan Speed

5 At the following nominal conditions: nominal air flow; 7/12°C inlet/outlet water temperature; 27°C d b / 19°C wb inlet air temperature; High speed

6 At the following nominal conditions: nominal air flow; 70/60 °C inlet/outlet water temperature; 20°C inlet air temperature; High speed

7 At High/Medium/Low speed; nominal air flow; measured in a room of 100 m volume and 0.5 sec. reverberation time (e.g. office/conference room with carpet on the floor)

# SOUND LEVEL

| 2 PIPES |        |                                 |        |        |        |       |       |       |       | 3 ROWS        |               |      |
|---------|--------|---------------------------------|--------|--------|--------|-------|-------|-------|-------|---------------|---------------|------|
| Model   | Speed  | 1/1 Octave Sound pressure level |        |        |        |       |       |       |       | Lw<br>{dB(A)} | Lp<br>{dB(A)} | NR   |
|         |        | 63Hz                            | 125 Hz | 250 Hz | 500 Hz | 1K Hz | 2K Hz | 4K Hz | 8K Hz |               |               |      |
| 012C    | High   | 11.3                            | 15.8   | 30.0   | 30.5   | 33.7  | 32.9  | 24.0  | 16.8  | 46.0          | 38.0          | 33.0 |
|         | Medium | 12.4                            | 14.9   | 27.5   | 27.6   | 31.5  | 28.8  | 19.9  | 13.5  | 43.5          | 35.5          | 30.0 |
|         | Low    | 11.7                            | 12.3   | 23.4   | 23.7   | 25.6  | 21.4  | 13.6  | 11.0  | 40.5          | 32.5          | 28.0 |
| 020C    | High   | 12.8                            | 20.7   | 33.7   | 35.2   | 37.7  | 36.6  | 31.0  | 23.7  | 50.0          | 42.0          | 37.0 |
|         | Medium | 12.1                            | 17.6   | 29.5   | 31.1   | 33.4  | 31.6  | 24.8  | 17.6  | 44.5          | 36.5          | 32.0 |
|         | Low    | 13.2                            | 13.7   | 24.3   | 25.0   | 27.3  | 23.1  | 16.7  | 13.5  | 40.0          | 32.0          | 28.0 |
| 025C    | High   | 9.0                             | 14.1   | 27.8   | 30.7   | 30.1  | 25.1  | 17.6  | 12.2  | 50.0          | 42.0          | 37.0 |
|         | Medium | 9.9                             | 12.1   | 25.0   | 27.9   | 26.2  | 20.8  | 14.0  | 11.4  | 43.0          | 35.0          | 31.0 |
|         | Low    | 11.3                            | 10.3   | 22.0   | 24.0   | 21.7  | 16.1  | 11.7  | 11.0  | 40.0          | 32.0          | 28.0 |
| 035C    | High   | 10.4                            | 23.5   | 38.1   | 41.0   | 41.5  | 40.5  | 34.0  | 25.2  | 55.5          | 47.5          | 43.0 |
|         | Medium | 10.9                            | 19.6   | 34.0   | 37.6   | 36.7  | 35.7  | 27.8  | 19.1  | 51.5          | 43.5          | 39.0 |
|         | Low    | 9.9                             | 14.9   | 28.6   | 31.9   | 30.1  | 28.2  | 18.6  | 13.8  | 47.0          | 38.5          | 34.0 |
| 050C    | High   | 17.5                            | 24.3   | 37.6   | 39.4   | 41.7  | 40.3  | 32.9  | 24.1  | 53.8          | 47.0          | 39.0 |
|         | Medium | 14.2                            | 20.4   | 34.2   | 36.3   | 37.9  | 36.7  | 27.6  | 18.3  | 47.0          | 39.0          | 35.0 |
|         | Low    | 13.7                            | 17.3   | 28.4   | 30.5   | 30.9  | 27.5  | 18.0  | 12.0  | 39.0          | 31.0          | 26.0 |
| 060C    | High   | 14.1                            | 28.6   | 42.3   | 43.8   | 46.3  | 45.5  | 38.8  | 32.8  | 61.0          | 53.0          | 51.0 |
|         | Medium | 12.7                            | 23.9   | 38.9   | 40.4   | 42.5  | 42.0  | 33.6  | 26.6  | 56.0          | 48.0          | 44.0 |
|         | Low    | 10.6                            | 17.0   | 32.3   | 34.2   | 36.2  | 33.4  | 23.4  | 16.4  | 49.0          | 41.5          | 38.0 |
| 080C    | High   | 14.8                            | 28.5   | 42.7   | 46.2   | 46.9  | 45.7  | 39.3  | 34.6  | 59.5          | 51.3          | 47.0 |
|         | Medium | 12.5                            | 24.5   | 39.5   | 43.1   | 43.2  | 41.5  | 34.4  | 29.0  | 55.3          | 47.4          | 42.0 |
|         | Low    | 10.7                            | 20.2   | 34.2   | 37.8   | 36.8  | 34.3  | 26.0  | 19.9  | 48.4          | 40.7          | 37.0 |
| 090C    | High   | 17.6                            | 29.6   | 43.9   | 46.3   | 48.2  | 47.2  | 41.7  | 36.6  | 61.5          | 53.2          | 48.0 |
|         | Medium | 16.2                            | 27.2   | 41.1   | 44.2   | 45.7  | 44.9  | 38.4  | 33.1  | 58.6          | 50.6          | 46.0 |
|         | Low    | 16.0                            | 24.3   | 38.1   | 41.2   | 42.2  | 40.7  | 33.9  | 28.0  | 55.6          | 47.1          | 42.0 |

| 2 PIPES |        |                                 |        |        |        |       |       |       |       | 4 ROWS    |           |      |
|---------|--------|---------------------------------|--------|--------|--------|-------|-------|-------|-------|-----------|-----------|------|
| Model   | Speed  | 1/1 Octave Sound pressure level |        |        |        |       |       |       |       | Lw{dB(A)} | Lp{dB(A)} | NR   |
|         |        | 63Hz                            | 125 Hz | 250 Hz | 500 Hz | 1K Hz | 2K Hz | 4K Hz | 8K Hz |           |           |      |
| 412C    | High   | 10.5                            | 15.7   | 29.8   | 30.8   | 33.2  | 30.2  | 23.4  | 14.6  | 46.0      | 38.0      | 33.0 |
|         | Medium | 10.6                            | 13.2   | 27.6   | 28.2   | 30.4  | 26.2  | 19.1  | 12.2  | 43.5      | 35.5      | 30.0 |
|         | Low    | 10.6                            | 12.2   | 23.5   | 23.3   | 24.7  | 19.6  | 13.5  | 11.1  | 40.5      | 32.5      | 27.0 |
| 420C    | High   | 11.7                            | 18.1   | 31.7   | 34.3   | 36.8  | 34.6  | 28.6  | 20.2  | 50.0      | 42.0      | 38.0 |
|         | Medium | 10.2                            | 14.3   | 27.6   | 29.5   | 32.3  | 28.4  | 21.1  | 13.8  | 45.0      | 37.0      | 33.0 |
|         | Low    | 11.1                            | 11.2   | 22.2   | 23.5   | 24.2  | 19.3  | 13.0  | 11.1  | 40.5      | 37.0      | 33.0 |
| 425C    | High   | 8.7                             | 14.3   | 28.5   | 30.3   | 29.7  | 26.0  | 18.0  | 14.0  | 49.0      | 41.0      | 37.0 |
|         | Medium | 7.3                             | 12.4   | 26.1   | 27.5   | 26.3  | 21.7  | 14.9  | 13.4  | 43.0      | 34.5      | 31.0 |
|         | Low    | 8.7                             | 12.9   | 23.1   | 24.2   | 22.4  | 17.4  | 13.2  | 13.0  | 39.5      | 31.5      | 27.0 |
| 435C    | High   | 12.2                            | 22.3   | 36.4   | 38.9   | 39.7  | 37.7  | 32.1  | 23.9  | 55.0      | 47.0      | 42.0 |
|         | Medium | 8.5                             | 20.3   | 32.6   | 35.7   | 35.7  | 32.9  | 26.5  | 18.6  | 51.5      | 43.0      | 38.0 |
|         | Low    | 8.2                             | 17.1   | 27.5   | 30.2   | 29.1  | 24.9  | 18.2  | 14.0  | 46.0      | 38.0      | 34.0 |
| 450C    | High   | 12.4                            | 23.6   | 37.7   | 40.1   | 41.9  | 39.4  | 32.7  | 23.1  | 55.5      | 47.0      | 43.0 |
|         | Medium | 10.4                            | 19.7   | 33.7   | 36.4   | 37.4  | 34.2  | 26.3  | 17.2  | 47.0      | 39.0      | 35.0 |
|         | Low    | 8.6                             | 14.1   | 27.7   | 30.2   | 29.5  | 24.3  | 16.6  | 13.3  | 39.0      | 31.0      | 26.0 |
| 460C    | High   | 15.4                            | 26.9   | 40.7   | 43.2   | 44.8  | 42.6  | 37.6  | 29.3  | 61.0      | 53.0      | 51.0 |
|         | Medium | 12.2                            | 22.7   | 36.8   | 39.8   | 40.8  | 38.3  | 32.3  | 23.3  | 56.0      | 48.0      | 44.0 |
|         | Low    | 9.7                             | 17.5   | 30.3   | 33.6   | 34.3  | 29.4  | 21.4  | 14.9  | 49.0      | 41.5      | 38.0 |
| 480C    | High   | 18.7                            | 26.8   | 41.8   | 43.9   | 46.3  | 45.4  | 39.6  | 31.6  | 59.2      | 51.1      | 46.0 |
|         | Medium | 14.1                            | 23.6   | 38.1   | 41.1   | 42.7  | 41.3  | 34.8  | 26.2  | 55.2      | 47.2      | 42.0 |
|         | Low    | 13.9                            | 17.7   | 32.4   | 35.2   | 35.9  | 33.8  | 25.9  | 16.5  | 45.7      | 40.6      | 36.0 |
| 490C    | High   | 17.3                            | 29.8   | 43.4   | 45.7   | 47.9  | 46.0  | 41.1  | 34.1  | 61.0      | 52.6      | 47.0 |
|         | Medium | 16.3                            | 28.1   | 41.8   | 44.4   | 45.8  | 43.6  | 38.5  | 31.2  | 58.1      | 50.1      | 45.0 |
|         | Low    | 16.9                            | 25.0   | 39.2   | 41.7   | 42.9  | 40.7  | 35.0  | 27.3  | 55.0      | 46.8      | 42.0 |

# SOUND LEVEL

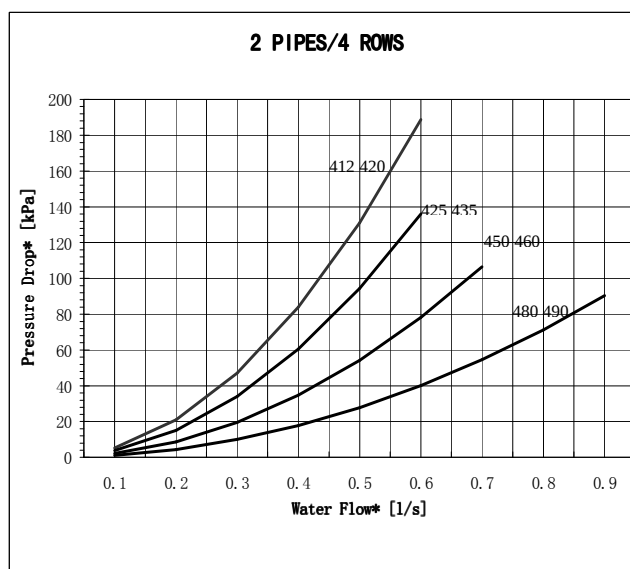
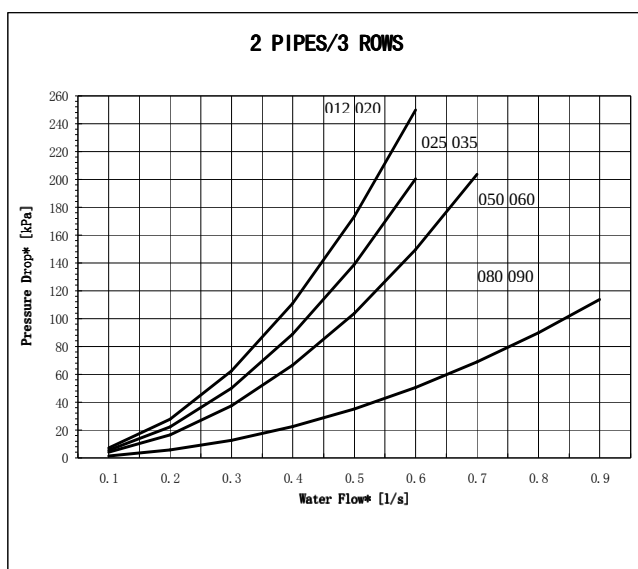
| 4 PIPES |        |                                 |        |        |        |       |       |       |       | 3+1 ROWS  |           |      |
|---------|--------|---------------------------------|--------|--------|--------|-------|-------|-------|-------|-----------|-----------|------|
| Model   | Speed  | 1/1 Octave Sound pressure level |        |        |        |       |       |       |       | Lw{dB(A)} | Lp{dB(A)} | NR   |
|         |        | 63Hz                            | 125 Hz | 250 Hz | 500 Hz | 1K Hz | 2K Hz | 4K Hz | 8K Hz |           |           |      |
| 012H    | High   | 11.5                            | 16.6   | 29.6   | 31.5   | 33.1  | 30.3  | 23.5  | 17.2  | 46.0      | 38.0      | 33.0 |
|         | Medium | 11.3                            | 14.5   | 27.0   | 28.4   | 30.5  | 26.3  | 19.4  | 14.7  | 43.5      | 35.5      | 30.0 |
|         | Low    | 11.1                            | 13.2   | 22.5   | 23.7   | 24.0  | 19.3  | 14.2  | 13.2  | 40.5      | 32.5      | 27.0 |
| 020H    | High   | 10.3                            | 20.1   | 33.8   | 36.3   | 36.9  | 35.5  | 29.4  | 22.9  | 50.0      | 42.0      | 38.0 |
|         | Medium | 10.3                            | 17.4   | 29.2   | 31.7   | 33.0  | 30.7  | 23.4  | 17.2  | 45.0      | 37.0      | 33.0 |
|         | Low    | 9.4                             | 14.1   | 23.9   | 25.8   | 27.3  | 22.5  | 15.7  | 13.3  | 40.5      | 37.0      | 33.0 |
| 025H    | High   | 11.5                            | 15.0   | 26.7   | 28.9   | 29.2  | 25.4  | 17.8  | 12.4  | 49.0      | 41.0      | 37.0 |
|         | Medium | 17.8                            | 14.2   | 24.5   | 25.9   | 25.2  | 21.1  | 14.1  | 11.4  | 43.0      | 34.5      | 31.0 |
|         | Low    | 10.1                            | 13.6   | 21.9   | 22.7   | 20.6  | 16.4  | 12.4  | 11.5  | 39.5      | 31.5      | 27.0 |
| 035H    | High   | 13.1                            | 21.8   | 35.9   | 39.2   | 40.5  | 38.6  | 33.3  | 25.6  | 55.0      | 47.0      | 42.0 |
|         | Medium | 11.8                            | 22.7   | 33.0   | 35.7   | 36.7  | 33.9  | 27.7  | 19.8  | 51.5      | 43.0      | 38.0 |
|         | Low    | 11.7                            | 21.6   | 27.6   | 30.2   | 30.1  | 25.6  | 18.6  | 12.6  | 46.0      | 38.0      | 34.0 |
| 050H    | High   | 12.6                            | 21.3   | 35.4   | 38.7   | 40.0  | 38.1  | 32.8  | 25.1  | 55.5      | 47.0      | 43.0 |
|         | Medium | 11.1                            | 18.2   | 30.0   | 32.5   | 33.8  | 31.5  | 24.2  | 18.0  | 47.0      | 39.0      | 35.0 |
|         | Low    | 9.0                             | 13.9   | 23.2   | 24.4   | 24.7  | 20.0  | 14.9  | 13.9  | 39.0      | 31.0      | 26.0 |
| 060H    | High   | 16.7                            | 26.2   | 40.4   | 42.5   | 44.4  | 42.7  | 36.6  | 27.0  | 61.0      | 53.0      | 51.0 |
|         | Medium | 13.2                            | 22.9   | 37.1   | 39.3   | 40.7  | 38.8  | 31.5  | 21.7  | 56.0      | 48.0      | 44.0 |
|         | Low    | 11.2                            | 17.9   | 30.9   | 33.2   | 34.3  | 30.0  | 21.4  | 14.5  | 49.0      | 41.5      | 38.0 |
| 080H    | High   | 15.6                            | 27.9   | 42.8   | 44.3   | 46.1  | 44.0  | 38.1  | 32.7  | 59.2      | 51.1      | 46.0 |
|         | Medium | 13.3                            | 25.0   | 39.8   | 41.4   | 42.2  | 40.0  | 33.5  | 27.3  | 55.2      | 47.2      | 42.0 |
|         | Low    | 10.9                            | 19.7   | 35.0   | 36.7   | 36.5  | 33.0  | 25.6  | 19.3  | 45.7      | 40.6      | 36.0 |
| 090H    | High   | 17.3                            | 29.8   | 43.4   | 45.7   | 47.9  | 46.0  | 41.1  | 34.1  | 61.0      | 52.6      | 47.0 |
|         | Medium | 16.3                            | 28.1   | 41.8   | 44.4   | 45.8  | 43.6  | 38.5  | 31.2  | 58.1      | 50.1      | 45.0 |
|         | Low    | 16.9                            | 25.0   | 39.2   | 41.7   | 42.9  | 40.7  | 35.0  | 27.3  | 55.0      | 46.8      | 42.0 |

Sound pressure level and NR are measured to a room of 100m<sup>3</sup> volume and 0.5 sec. reverberation time (e.g. office/conference room with carpet on the floor).

# OPERATING LIMITS AND PRESSURE DROPS

| OPERATING LIMITS                                                                                                                | FWMW / FWCW                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Water Circuit</b><br>Maximum water-side pressure<br>Minimum entering water temperature<br>Maximum entering water temperature | 16.4 kg/cm <sup>2</sup><br>3°C (cooling)<br>FWMW – C0 – BCM :60°C; FWMW – H0 – BCM:75°C<br>(heating) |
| <b>Room air</b><br>Minimum temperature<br>Maximum temperature                                                                   | 16°C (10°C optional for FWMW)<br>30°C                                                                |
| <b>Power supply</b><br>Nominal single-phase voltage<br>Wire size                                                                | 220~240 V / 50 Hz<br>AWG18 (or 1mm <sup>2</sup> )                                                    |

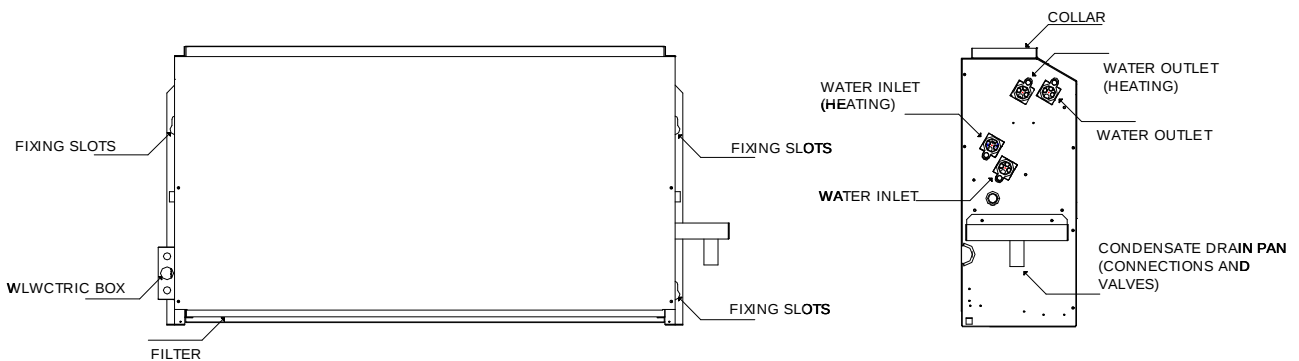
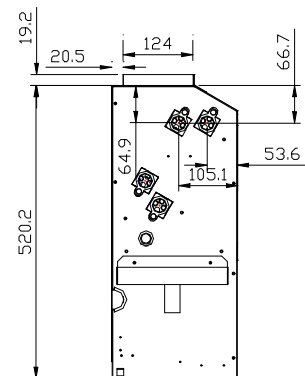
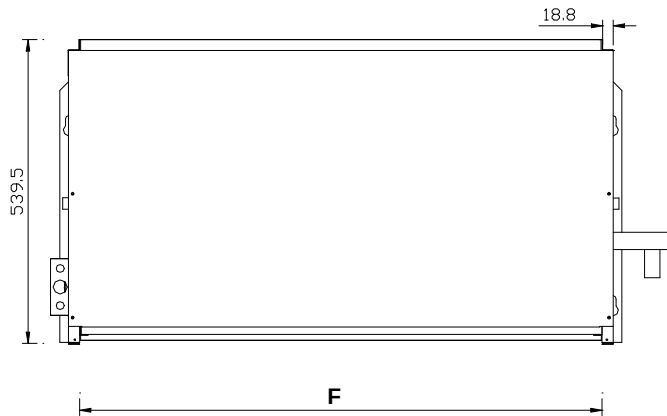
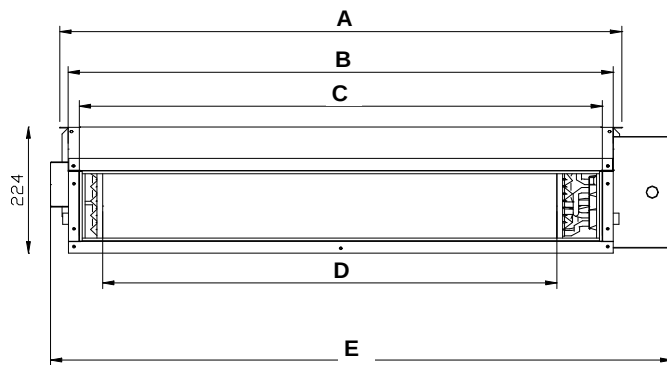
## PRESSURE DROPS



\*The pressure drop is for coil only and excludes water connections and valves.

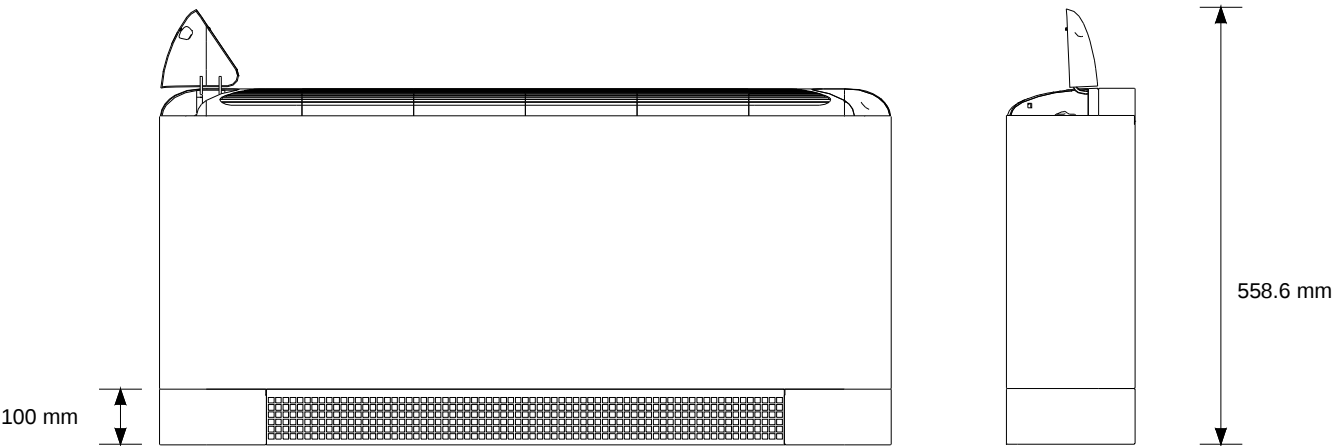
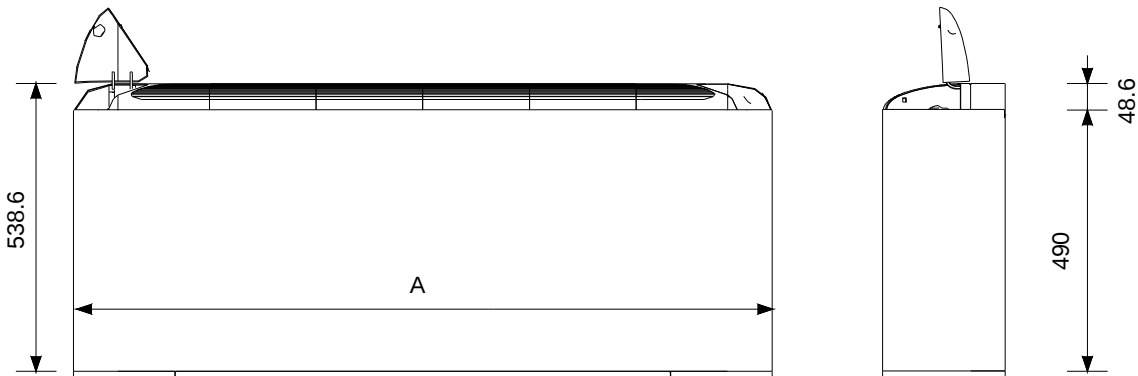
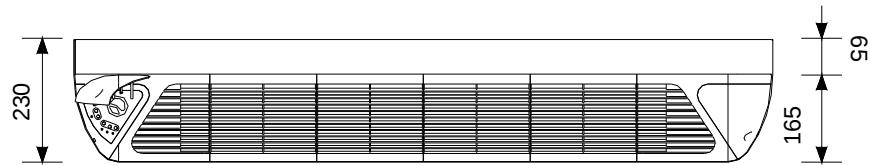
# OUTLINES AND DIMENSIONS

| FWCW – C/H | 012 / 020 | 025 / 035 | 050 / 060 | 080 / 090 |
|------------|-----------|-----------|-----------|-----------|
|            | 412 / 420 | 425 / 435 | 450 / 460 | 480 / 490 |
| A          | 598       | 798       | 998       | 1198      |
| B          | 568       | 768       | 968       | 1168      |
| C          | 526       | 726       | 926       | 1126      |
| D          | 407       | 607       | 807       | 1007      |
| E          | 704       | 904       | 1104      | 1304      |
| F          | 529       | 729       | 929       | 1129      |



# OUTLINES AND DIMENSIONS

| FWMW – C/H | 012 / 020 | 025 / 035 | 050 / 060 | 080 / 090 |
|------------|-----------|-----------|-----------|-----------|
|            | 412 / 420 | 425 / 435 | 450 / 460 | 480 / 490 |
| A          | 910       | 1110      | 1310      | 1510      |



- Height = 100 mm from the wall for:
- Feet (cover and/or support)
  - Base module
  - Frontal air intake module
  - External air intake module

# INSTALLATION

## INSTALLATION OF FWMW/FWCW UNIT

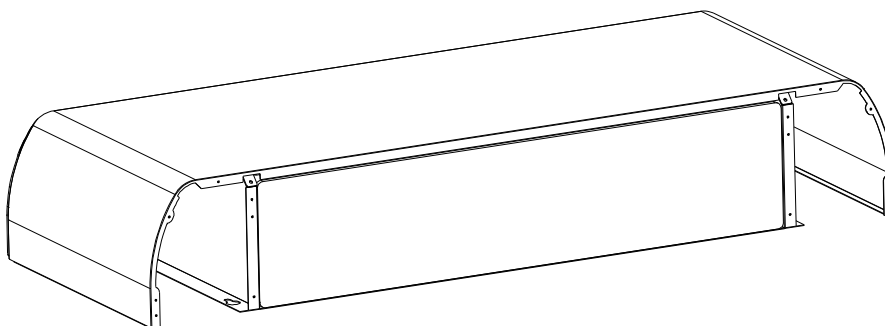
- Portage
  - 1) When unpacking, Units can not be taken out, instead to pull out the carton box upwards; Please do not lay the unit down or turn the unit up and down; Do not handle the unit through the cabinet, which will cause the damage of cabinet;
  - 2) When moving the unit , please to handle it through the **cross beam**; Do not try to move the unit through the cabinet , which will cause the damage of cabinet;
  - 3) After the unit is moved in position for installation, start to install the aesthetic feet, support ( refer to the accessory installation instruction) ;

- Accessory list of FWMW/FWCW series

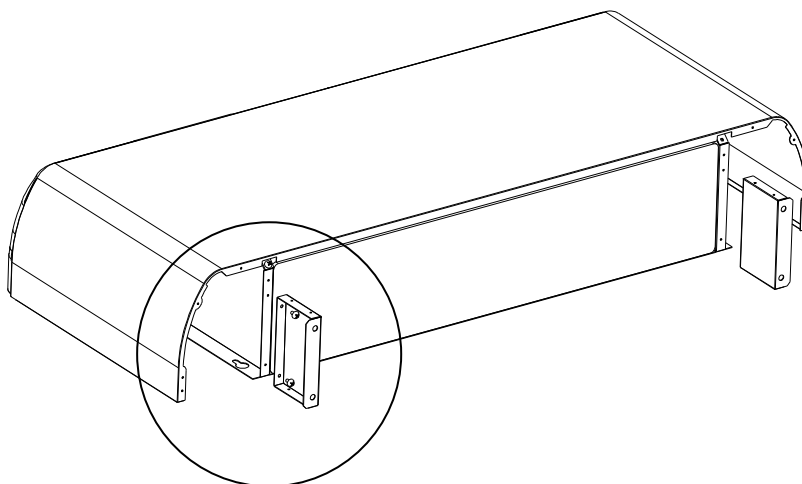
| Accessory Case      |        | FWMW-AC-FT-O       | FWMW-AC-FT-S | FWMW-AC-GR            |              |                     |
|---------------------|--------|--------------------|--------------|-----------------------|--------------|---------------------|
| Installation Method |        | Aesthetic Feet L/R | Support      | M4 Self-tapping Screw | Inlet Grille | M5 Fine-pitch Screw |
| FWMW                | Type A | 1 SET(L/R)         | 2 EA         | 12 EA                 | 1 EA         | 2 EA                |
|                     | Type B | 1 SET(L/R)         | 2 EA         | 12 EA                 | ----         | ----                |
| FWCW                | ----   | ----               | 2 EA         | 4 EA                  | ----         | ----                |

- Accessory installation of FWMW/FWCW unit

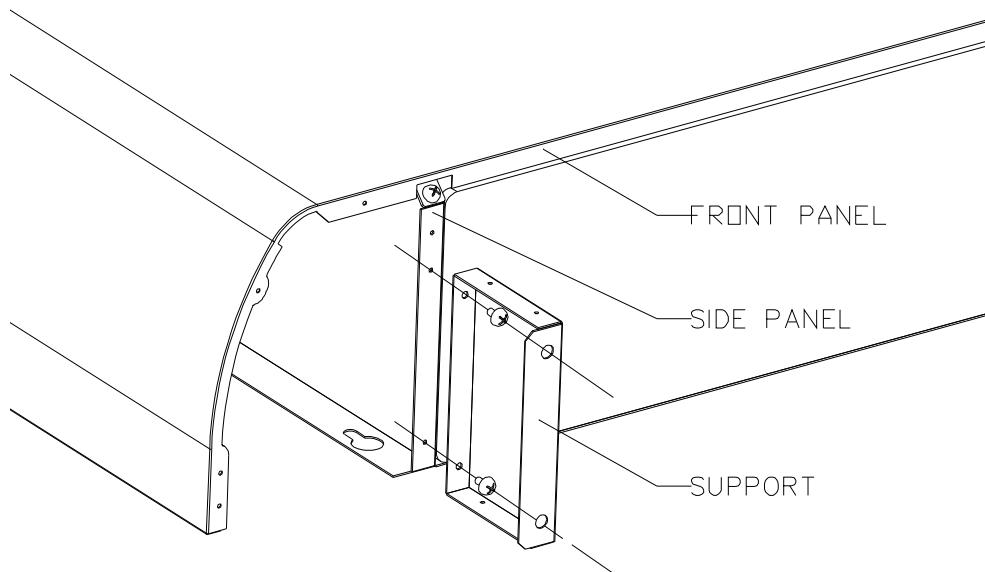
- 1) Before installation, lay down the unit with cabinet upwards;



- 2) Step one : Install the SUPPORT;

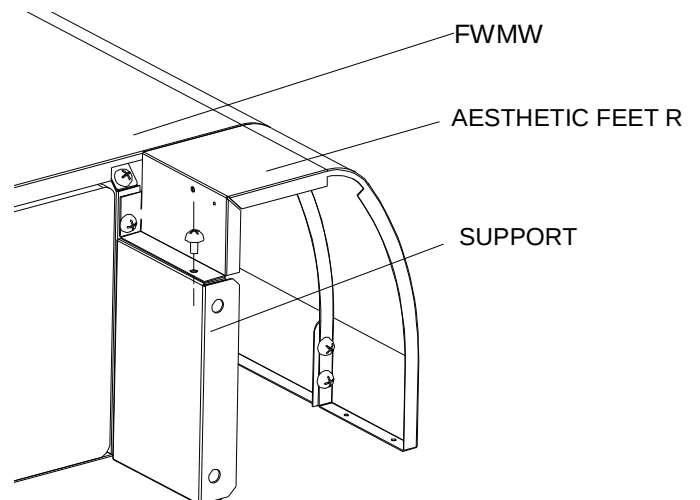
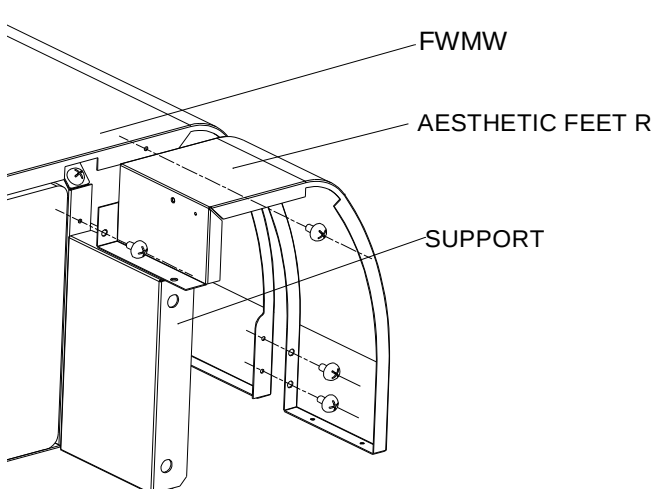
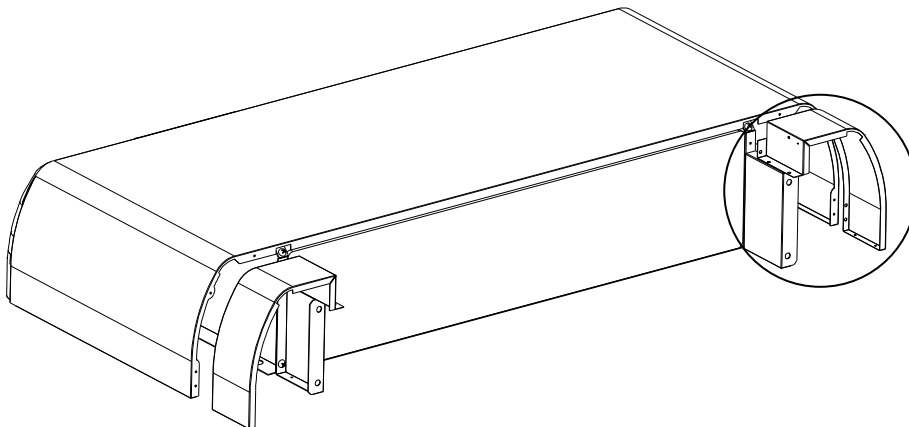


# INSTALLATION



As shown as the above drawings, to drill the screw to fix the support with core units;

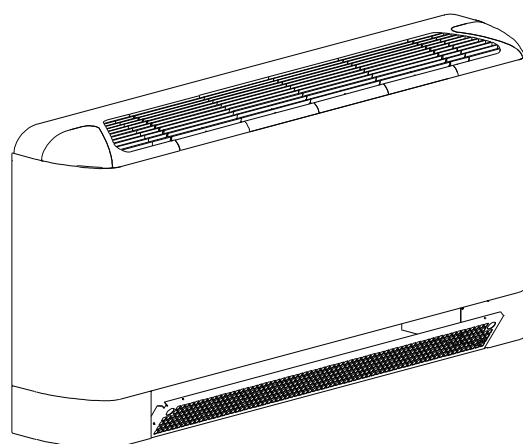
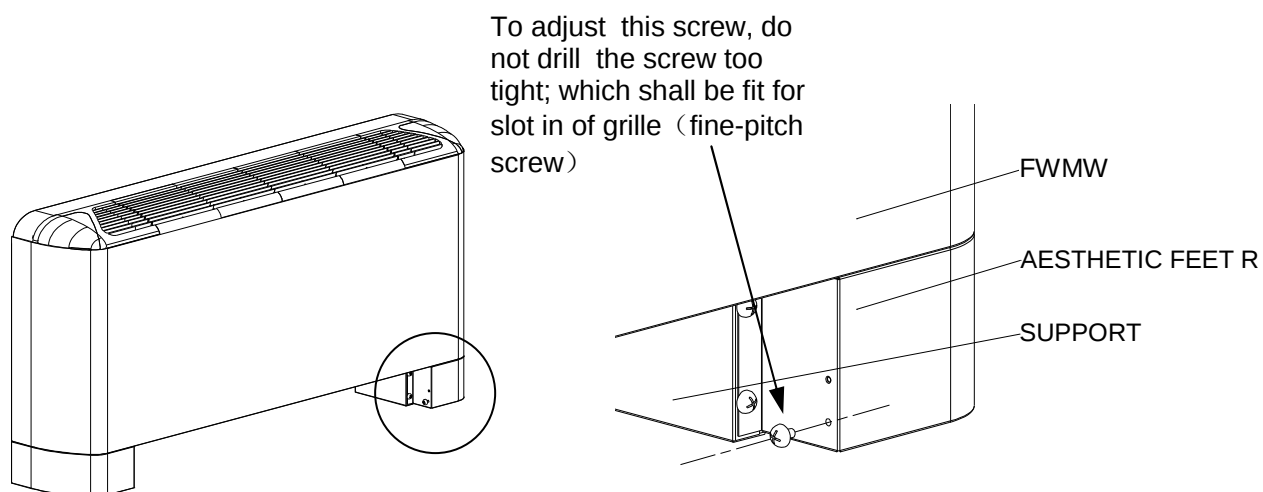
- 3) Step two: To install the AESTHETIC FEET (L/R);



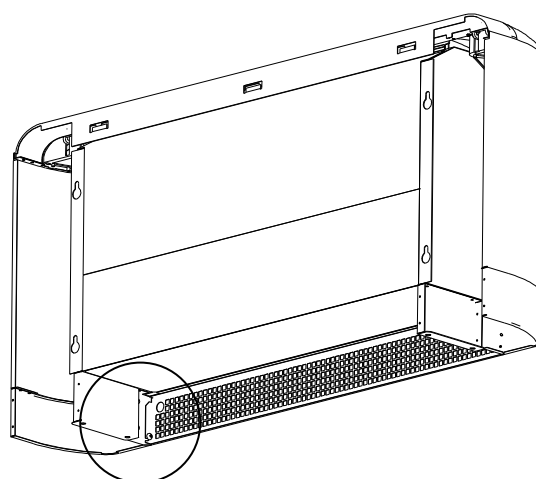
# INSTALLATION

As shown as above, to connect the aesthetic feet and support as above; ( Left and right are the same way);

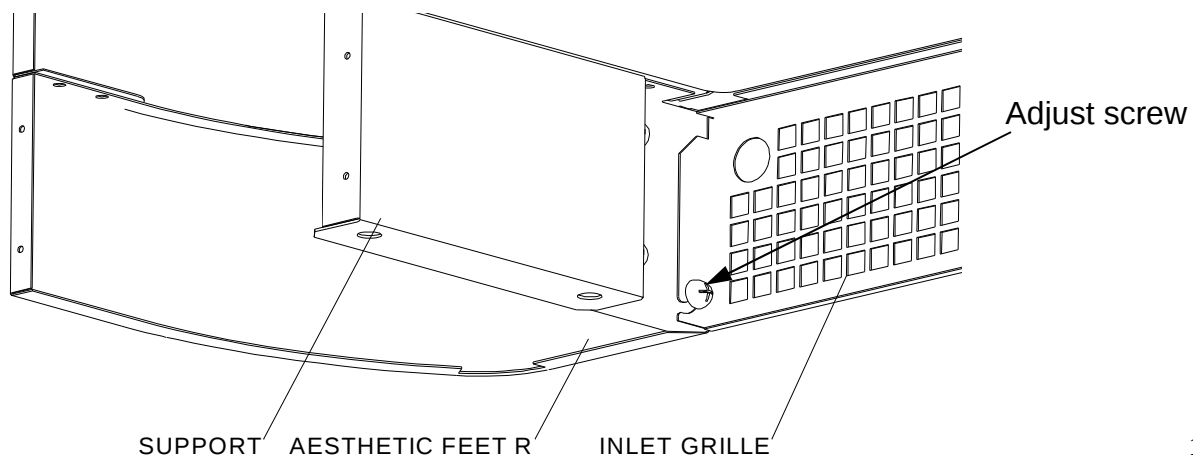
4) Step three : to install the GRILLE ( only applied for type A);



Front



Back



To fix the grille please slot the grille into the fixing screw (shown as the above view) , to adjust the tightness of screw and ensure the rotate of grille fixed with screw;

## INSTALLATION

### Preliminary site survey

A place protected from rain, direct sunlight and well-ventilated wherever practicable.

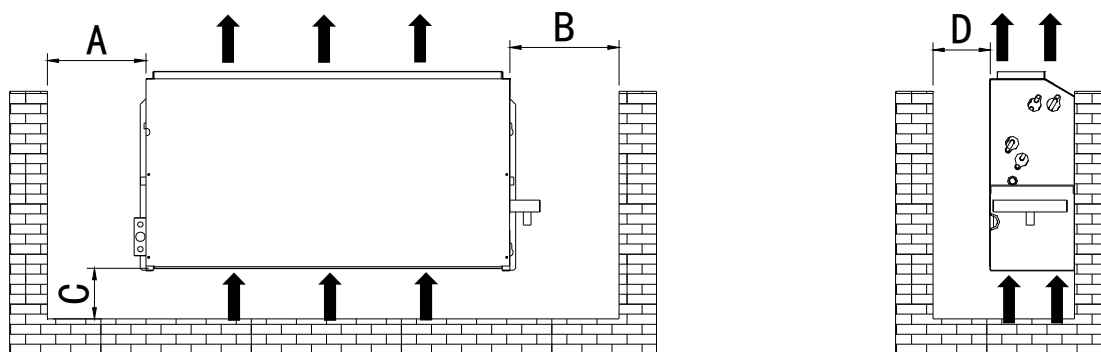
A place capable of bearing the weight of the outdoor unit and isolating noise and vibration.

A place where there are no obstruction of air flow into or out the unit.

Do not put any object which may become obstacle for the air flow into or out the unit.

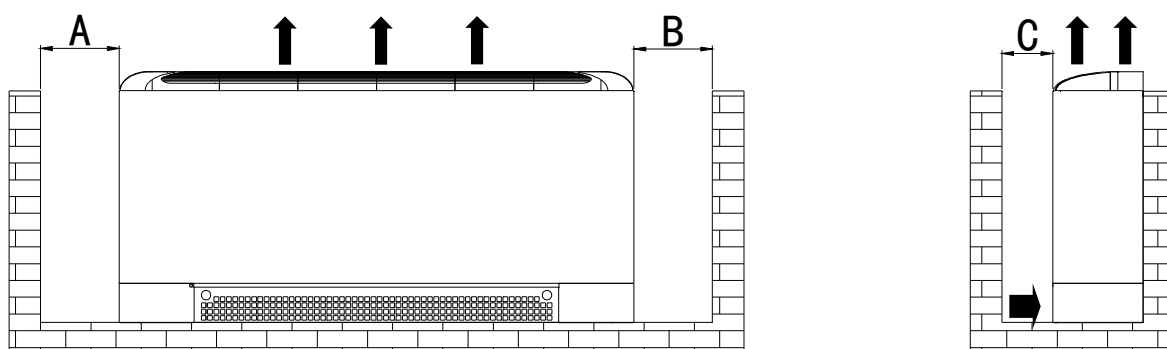
The location must not be susceptible to high concentration dust, oil, salt or sulfide gas.

### FWCW Series



| All units         | A   | B   | C   | D   |
|-------------------|-----|-----|-----|-----|
| MIN. DISTANCE(mm) | 500 | 500 | 100 | 500 |

### FWMW Series



| All units         | A   | B   | C   |
|-------------------|-----|-----|-----|
| MIN. DISTANCE(mm) | 300 | 300 | 500 |

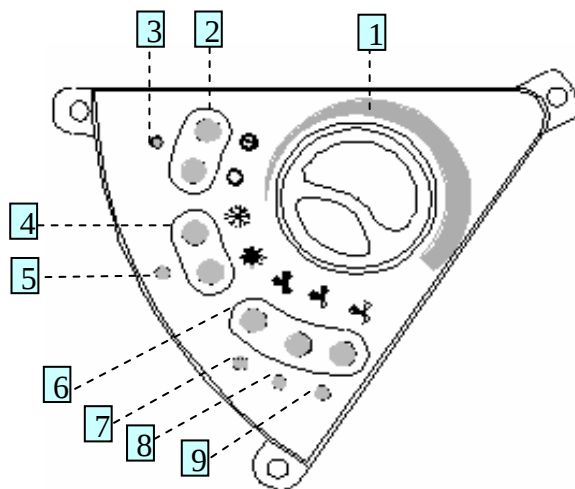
# CONTROL FEATURES

## ELECTRONIC CONTROLLER AC2800B



|                                |                                                                                                                                                                                |  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Location                       | On Board                                                                                                                                                                       |  |
| Models                         | Standard for FWMW series, all versions                                                                                                                                         |  |
| Parameters                     | Temperature operation range:<br>16-30℃                                                                                                                                         |  |
| Main Functions                 | On/Off<br>Cool/Heat Mode<br>Fan speed (HIGH/MEDIUM/LOW)<br>Cold draft protection (Heat Mode)<br>Sensor failure alarm (auto-diagnosis)<br>2 or 3 ways valve with ON/OFF control |  |
| Integration into FCU Network   | ---                                                                                                                                                                            |  |
| Integration with Smart Manager | ---                                                                                                                                                                            |  |

- 1 Potentiometer for temperature regulation
- 2 On/Off keys
- 3 On/Off led
- 4 Heating / Cooling mode keys
- 5 Heating / Cooling mode led
- 6 Fan Speed selection keys
- 7 Fan Speed led (HIGH)
- 8 Fan Speed led (MEDIUM)
- 9 Fan Speed led (LOW)

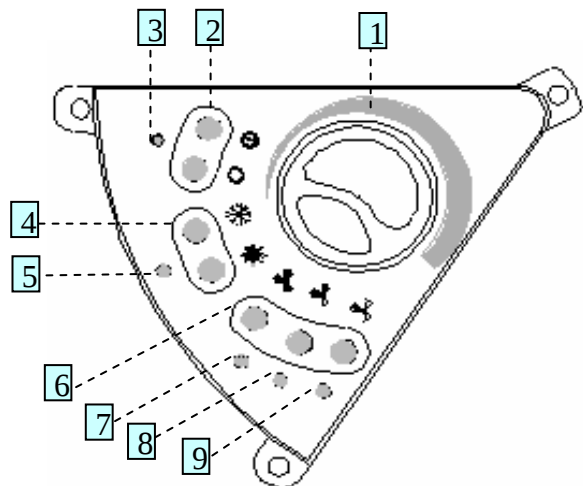


## ELECTRONIC CONTROLLER AC2800 (OPTIONAL)



|                                |                                                                                                                                           |  |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--|
| Location                       | On Board                                                                                                                                  |  |
| Models                         | FWMW series, all versions                                                                                                                 |  |
| Parameters                     | Selectable Temperature operation range:<br>10-30℃ or 16-30℃                                                                               |  |
| Main Functions                 | On/Off<br>Cool/Heat Mode<br>Fan speed (HIGH/MEDIUM/LOW)<br>Sensor failure alarm (auto-diagnosis)<br>2 or 3 ways valve with ON/OFF control |  |
| Integration into FCU Network   | Direct Connection                                                                                                                         |  |
| Integration with Smart Manager | Direct Connection                                                                                                                         |  |

- 1 Potentiometer for temperature regulation
- 2 On/Off keys
- 3 On/Off LED
- 4 Heating / Cooling mode keys
- 5 Heating / Cooling mode LED
- 6 Fan Speed selection keys
- 7 Fan Speed LED (HIGH)
- 8 Fan Speed LED (MEDIUM)
- 9 Fan Speed LED (LOW)



## AUTO-DIAGNOSIS

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Led Blinking 7: Ambient temperature sensor incorrect operation.

Led Blinking 8: Water temperature sensor incorrect operation.

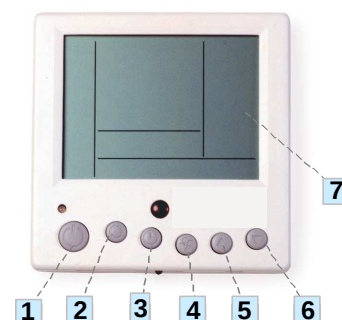
Led Blinking 5: Fan Coil / Chiller conflicting mode selection (when the system works on cool mode and the water temperature is above 25°C, or when the system works on heat mode and the water temperature is below 25°C, the system considers it as the mode conflict, at the same time, the system will shut off all outputs and the LED will blink.)

## ELECTRONIC THERMOSTAT AC8000 + REMOTE CONTROLLER AC5300

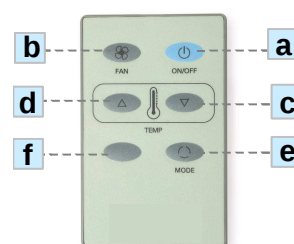


|                                |                                                  |  |
|--------------------------------|--------------------------------------------------|--|
| Location                       | Wall Mounted                                     |  |
| Models                         | All models; all versions                         |  |
| Parameters                     | Temperature operation range:                     |  |
|                                | 16-30°C                                          |  |
| Main Functions                 | On/Off                                           |  |
|                                | Cool/Heat Mode                                   |  |
|                                | Fan speed (HIGH/MEDIUM/LOW)                      |  |
|                                | Auto Fan Speed selection                         |  |
|                                | [available from December 2004]                   |  |
|                                | Date / Time setting                              |  |
|                                | Sensor failure alarm (auto-diagnosis)            |  |
|                                | Timer with 2 daily setting (14 weekly)           |  |
|                                | Cold draft protection                            |  |
|                                | 2 or 3 ways valve with ON/OFF control            |  |
|                                | Remote control – max. distance: 2.5 meters       |  |
| Integration into FCU Network   | Connection through AC8000C controller            |  |
|                                | Direct connection [available from December 2004] |  |
| Integration with Smart Manager | Connection through AC8000C controller            |  |
|                                | Direct connection [available from December 2004] |  |

- 1 On/Off key
- 2 Heating/Cooling mode key
- 3 Clock/Timer setting
- 4 Fan Speed selection key (HIGH/MEDIUM/LOW)
- 5 Temperature up key
- 6 Temperature down key
- 7 Back-light LCD Display



- a On/Off key
- b Fan Speed selection key (HIGH/MEDIUM/LOW)
- c Temperature up key
- d Temperature down key
- e Heating/Cooling mode key
- f Clock/Timer setting



## **AUTO-DIAGNOSIS**

---

**E00:** Ambient temperature sensor open

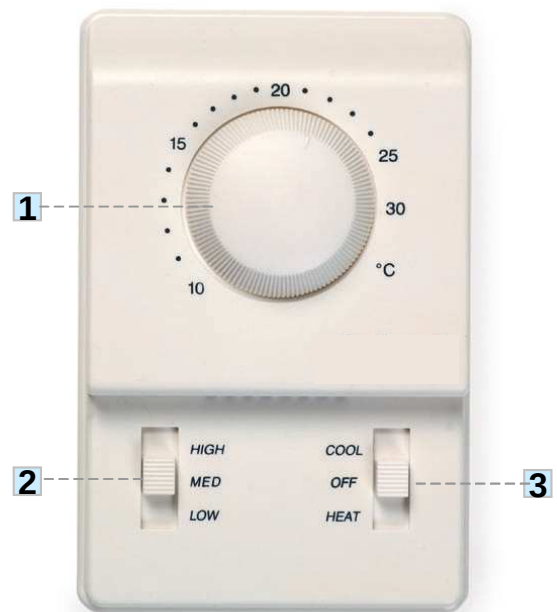
**E01:** Ambient temperature sensor short

## MECHANICAL THERMOSTAT AC512/AC513



|                                |                                       |  |
|--------------------------------|---------------------------------------|--|
| Location                       | Wall Mounted                          |  |
| Models                         | All models                            |  |
|                                | AC512: 2 Pipes version                |  |
|                                | AC513: 4 Pipes version                |  |
| Parameters                     | Temperature operation range:          |  |
|                                | 10-30°C                               |  |
| Main Functions                 | On/Off                                |  |
|                                | Cool/Heat Mode                        |  |
|                                | Fan Speed (HIGH/MEDIUM/LOW)           |  |
|                                | 2 or 3 ways valve with ON/OFF control |  |
| Integration into FCU Network   | ---                                   |  |
| Integration with Smart Manager | ---                                   |  |

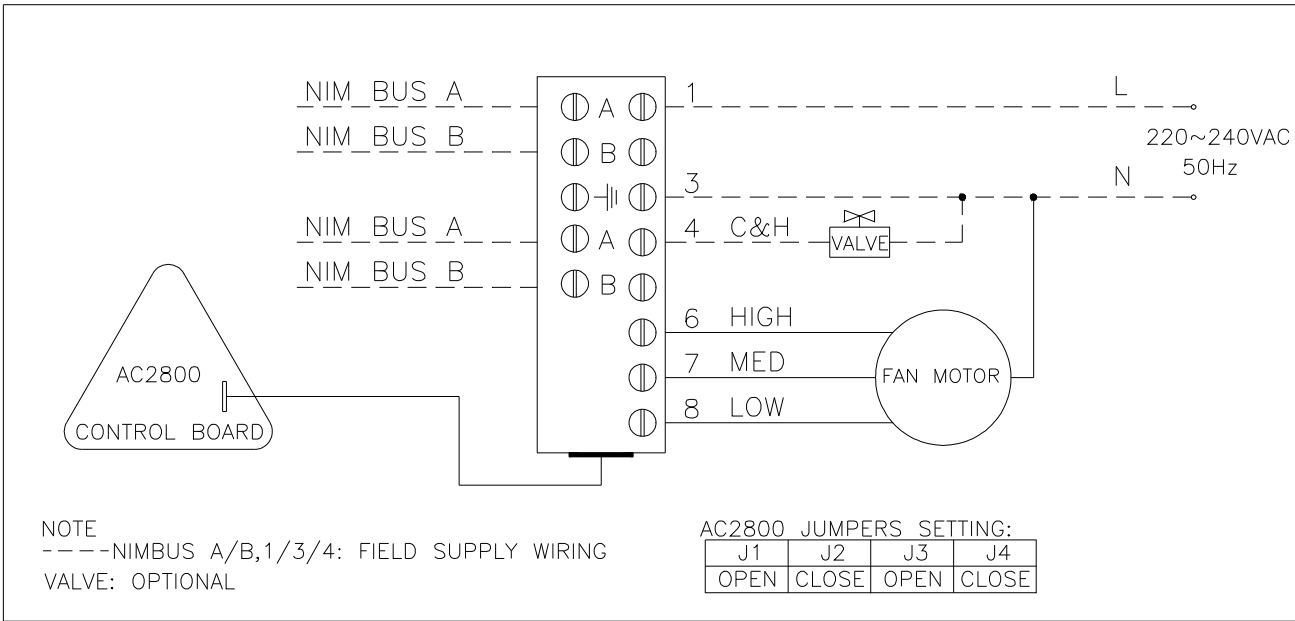
- 1 Potentiometer for temperature regulation
- 2 Fan speed keys (HIGH/MEDIUM/LOW)
- 3 Heating/Cooling mode buttons



# WIRING DIAGRAMS

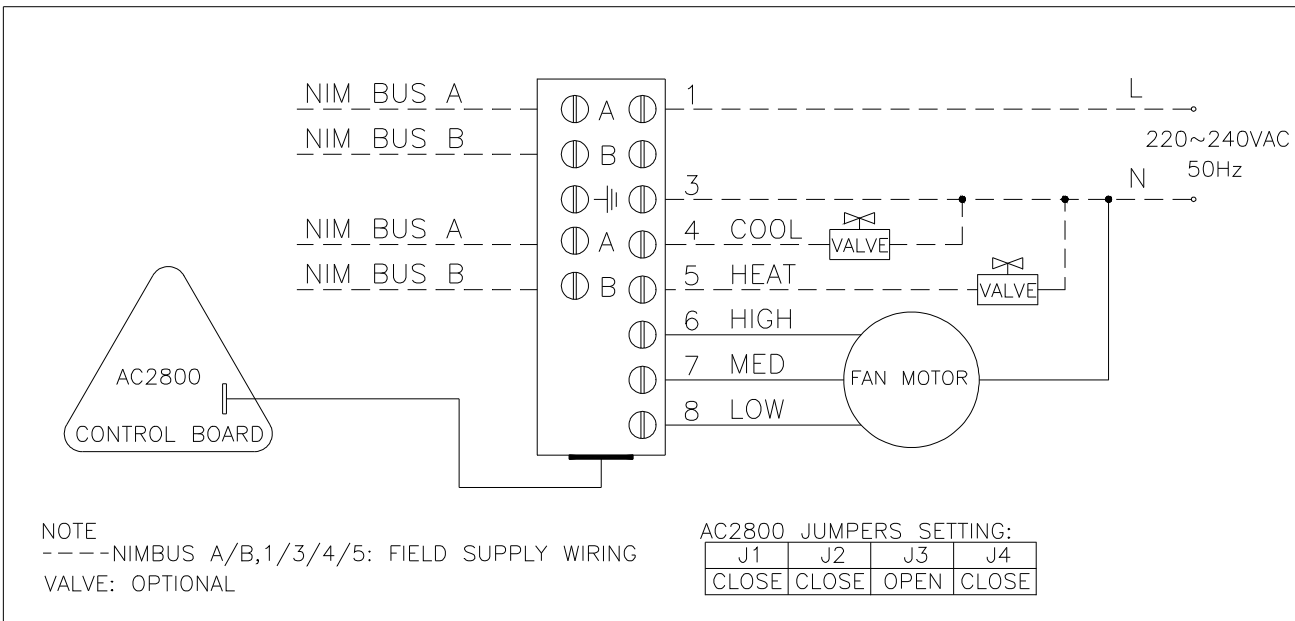
## FWMW – C0 – BCE

012 / 020 / 025 / 035 / 050 / 060 / 080 / 090  
412 / 420 / 425 / 435 / 450 / 460 / 480 / 490



## FWMW – H0 – BCE

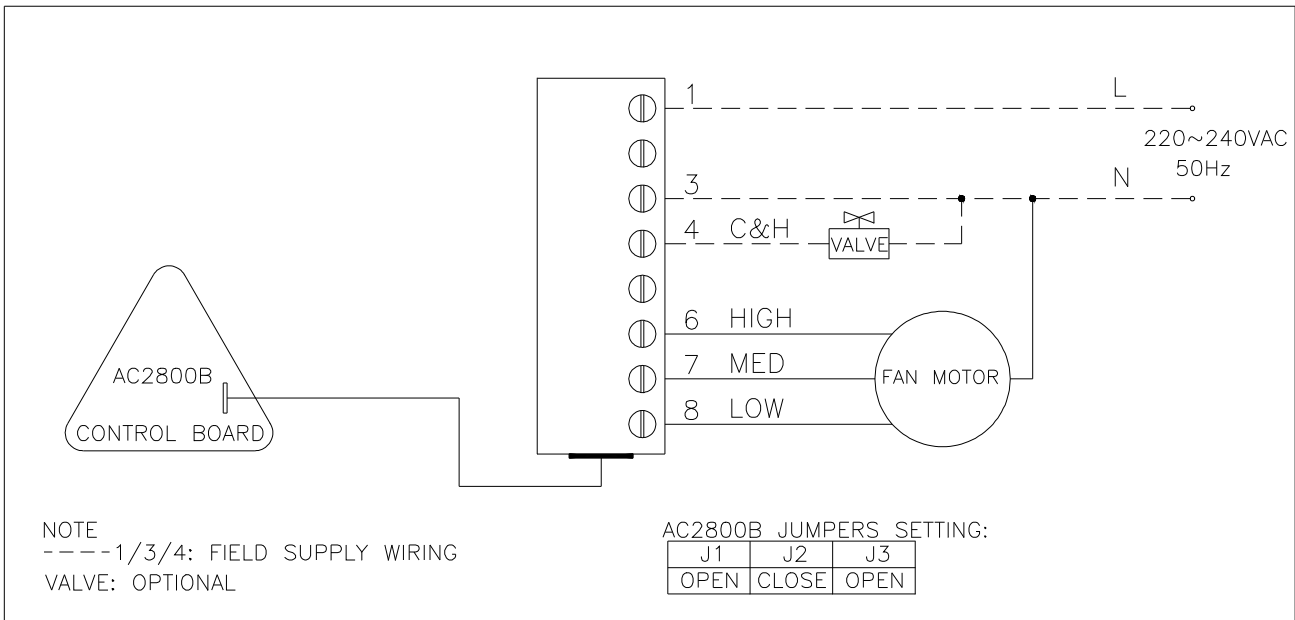
012 / 020 / 025 / 035 / 050 / 060 / 080 / 090



# WIRING DIAGRAMS

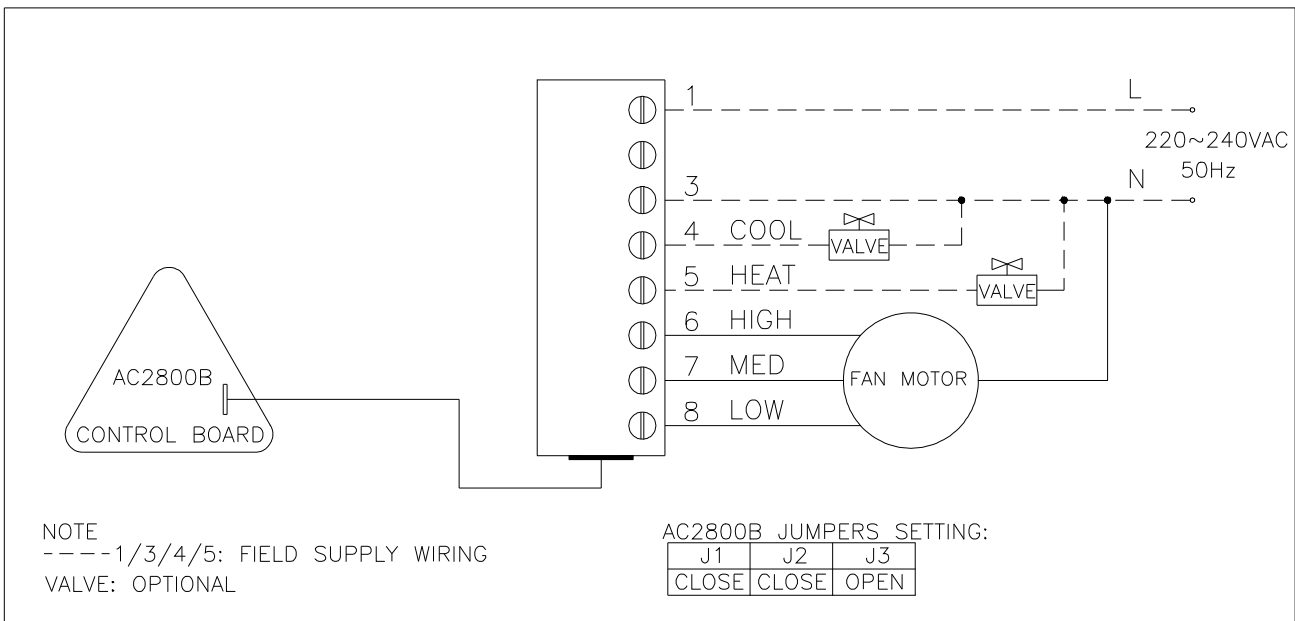
## FWMW – C0 – BCM

012 / 020 / 025 / 035 / 050 / 060 / 080 / 090  
412 / 420 / 425 / 435 / 450 / 460 / 480 / 490



## FWMW – H0 – BCM

012 / 020 / 025 / 035 / 050 / 060 / 080 / 090



# TECHNICAL DATA AT CONDITIONS NON STANDARD

| 2 PIPES                       |                                |                                   |    | 3 ROWS           |      |                  |      |                  |      |                  |      |                  |      |                  |      |                  |      |                  |      |
|-------------------------------|--------------------------------|-----------------------------------|----|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|
| Water Temperature<br>IN<br>°C | Water Temperature<br>OUT<br>°C | Air Temperature<br>DB °C    WB °C |    | 012              |      | 020              |      | 025              |      | 035              |      | 050              |      | 060              |      | 080              |      | 090              |      |
|                               |                                |                                   |    | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      |
|                               |                                |                                   |    | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens |
|                               |                                |                                   |    | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] |
| 3                             | 6                              | 21                                | 15 | 1.40             | 1.02 | 1.91             | 1.42 | 2.66             | 1.80 | 3.58             | 1.49 | 4.72             | 3.40 | 6.00             | 4.43 | 6.96             | 5.05 | 8.10             | 5.54 |
|                               |                                |                                   |    | 1.22             | 0.89 | 1.57             | 1.15 | 1.96             | 1.33 | 3.00             | 2.08 | 4.01             | 2.87 | 5.33             | 3.89 | 6.18             | 4.43 | 7.20             | 4.86 |
|                               |                                |                                   |    | 1.01             | 0.74 | 1.50             | 0.86 | 1.50             | 1.03 | 2.25             | 1.56 | 2.87             | 2.03 | 4.17             | 2.99 | 4.94             | 3.41 | 5.63             | 3.74 |
| 3                             | 8                              | 21                                | 15 | 1.05             | 0.86 | 1.44             | 1.20 | 2.22             | 1.57 | 2.91             | 2.17 | 4.03             | 3.07 | 5.03             | 3.98 | 5.83             | 4.54 | 6.79             | 4.98 |
|                               |                                |                                   |    | 0.93             | 0.75 | 1.22             | 0.99 | 1.66             | 1.19 | 2.47             | 1.83 | 3.47             | 2.61 | 4.52             | 3.51 | 5.24             | 4.00 | 6.10             | 4.39 |
|                               |                                |                                   |    | 0.79             | 0.63 | 0.93             | 0.76 | 1.29             | 0.93 | 1.89             | 1.39 | 2.55             | 1.87 | 3.62             | 2.73 | 4.20             | 3.11 | 4.89             | 3.41 |
| 3                             | 10                             | 21                                | 15 | 0.68             | 0.68 | 0.98             | 0.98 | 1.70             | 1.33 | 2.15             | 1.82 | 3.24             | 2.71 | 3.95             | 3.51 | 4.58             | 4.00 | 5.33             | 4.39 |
|                               |                                |                                   |    | 0.61             | 0.61 | 0.82             | 0.82 | 1.30             | 1.02 | 1.87             | 1.55 | 2.84             | 2.32 | 3.62             | 3.11 | 4.20             | 3.55 | 4.89             | 3.89 |
|                               |                                |                                   |    | 0.52             | 0.52 | 0.69             | 0.64 | 1.03             | 0.81 | 1.47             | 1.20 | 2.15             | 1.69 | 2.99             | 2.44 | 3.47             | 2.78 | 4.04             | 3.05 |
| 5                             | 8                              | 21                                | 15 | 1.14             | 0.90 | 1.54             | 1.25 | 2.25             | 0.59 | 2.97             | 2.20 | 3.91             | 3.01 | 4.91             | 3.93 | 5.70             | 4.48 | 6.63             | 4.91 |
|                               |                                |                                   |    | 0.99             | 0.78 | 1.28             | 1.02 | 1.65             | 1.18 | 2.50             | 1.84 | 3.34             | 2.55 | 4.39             | 3.45 | 5.09             | 3.93 | 5.93             | 4.31 |
|                               |                                |                                   |    | 0.83             | 0.65 | 0.98             | 0.77 | 1.26             | 0.92 | 1.88             | 1.39 | 2.41             | 1.81 | 3.46             | 2.66 | 4.01             | 3.03 | 4.67             | 3.33 |
| 5                             | 10                             | 21                                | 15 | 0.59             | 0.74 | 1.06             | 1.04 | 1.78             | 1.36 | 2.27             | 1.88 | 3.17             | 2.69 | 3.89             | 3.48 | 4.51             | 3.97 | 5.25             | 4.35 |
|                               |                                |                                   |    | 0.69             | 0.65 | 0.92             | 0.86 | 1.33             | 1.03 | 1.95             | 1.59 | 2.76             | 2.29 | 3.54             | 3.08 | 4.11             | 3.51 | 4.78             | 3.85 |
|                               |                                |                                   |    | 0.77             | 0.55 | 0.74             | 0.66 | 1.04             | 0.81 | 1.51             | 1.21 | 2.06             | 1.65 | 2.89             | 2.40 | 3.35             | 2.74 | 3.90             | 3.00 |
| 5                             | 12                             | 21                                | 15 | 0.55             | 0.55 | 0.80             | 0.80 | 1.20             | 1.11 | 1.52             | 1.52 | 2.32             | 2.32 | 2.98             | 2.98 | 3.46             | 3.40 | 4.02             | 3.73 |
|                               |                                |                                   |    | 0.49             | 0.49 | 0.68             | 0.68 | 0.93             | 0.86 | 1.30             | 1.30 | 2.07             | 1.99 | 2.65             | 2.65 | 3.07             | 3.02 | 3.58             | 3.31 |
|                               |                                |                                   |    | 0.42             | 0.42 | 0.53             | 0.53 | 0.74             | 0.68 | 1.04             | 1.01 | 1.62             | 1.45 | 2.19             | 2.10 | 2.54             | 2.39 | 2.96             | 2.63 |
| 7                             | 10                             | 21                                | 15 | 0.86             | 0.77 | 1.15             | 1.08 | 1.80             | 1.37 | 2.33             | 1.90 | 3.02             | 2.62 | 3.72             | 3.42 | 4.32             | 3.90 | 5.02             | 4.28 |
|                               |                                |                                   |    | 0.75             | 0.68 | 0.97             | 0.88 | 1.32             | 1.02 | 1.96             | 1.59 | 2.61             | 2.22 | 3.36             | 3.00 | 3.90             | 3.42 | 4.54             | 3.75 |
|                               |                                |                                   |    | 0.63             | 0.56 | 0.75             | 0.66 | 1.00             | 0.80 | 1.48             | 1.20 | 1.90             | 1.58 | 2.70             | 2.32 | 3.13             | 2.64 | 3.65             | 2.90 |
| 7                             | 12                             | 21                                | 15 | 0.60             | 0.60 | 0.86             | 0.86 | 1.28             | 1.14 | 1.57             | 1.57 | 2.28             | 2.28 | 2.94             | 2.94 | 3.41             | 3.35 | 3.97             | 3.68 |
|                               |                                |                                   |    | 0.53             | 0.52 | 0.71             | 0.71 | 0.96             | 0.87 | 1.36             | 1.33 | 1.98             | 1.95 | 2.61             | 2.61 | 3.03             | 2.98 | 3.52             | 3.26 |
|                               |                                |                                   |    | 0.45             | 0.45 | 0.55             | 0.55 | 0.75             | 0.69 | 1.07             | 1.03 | 1.51             | 1.41 | 2.07             | 2.07 | 2.40             | 2.36 | 2.79             | 2.59 |
| 7                             | 14                             | 21                                | 15 | 0.41             | 0.41 | 0.62             | 0.62 | 0.86             | 0.86 | 1.18             | 1.18 | 1.87             | 1.87 | 2.40             | 2.40 | 2.78             | 2.74 | 3.24             | 3.00 |
|                               |                                |                                   |    | 0.37             | 0.37 | 0.52             | 0.52 | 0.67             | 0.67 | 1.02             | 1.02 | 1.61             | 1.61 | 2.15             | 2.15 | 2.49             | 2.45 | 2.90             | 2.69 |
|                               |                                |                                   |    | 0.32             | 0.32 | 0.41             | 0.41 | 0.54             | 0.54 | 0.80             | 0.80 | 1.19             | 1.19 | 1.71             | 1.71 | 1.98             | 1.95 | 2.31             | 2.14 |
| 9                             | 12                             | 21                                | 15 | 0.64             | 0.64 | 0.89             | 0.89 | 1.30             | 1.15 | 1.60             | 1.60 | 2.21             | 2.21 | 2.86             | 2.86 | 3.32             | 3.26 | 3.86             | 3.58 |
|                               |                                |                                   |    | 0.56             | 0.56 | 0.73             | 0.73 | 0.95             | 0.86 | 1.36             | 1.34 | 1.87             | 1.87 | 2.52             | 2.52 | 2.92             | 2.87 | 3.40             | 3.15 |
|                               |                                |                                   |    | 0.47             | 0.47 | 0.56             | 0.56 | 0.72             | 0.67 | 1.04             | 1.01 | 1.35             | 1.35 | 1.96             | 1.96 | 2.27             | 2.23 | 2.65             | 2.45 |
| 9                             | 14                             | 21                                | 15 | 0.46             | 0.46 | 0.67             | 0.67 | 0.90             | 0.90 | 1.23             | 1.23 | 1.84             | 1.84 | 2.37             | 2.37 | 2.75             | 2.70 | 3.20             | 2.96 |
|                               |                                |                                   |    | 0.41             | 0.41 | 0.56             | 0.56 | 0.69             | 0.69 | 1.05             | 1.05 | 1.57             | 1.57 | 2.10             | 2.10 | 2.44             | 2.39 | 2.84             | 2.63 |
|                               |                                |                                   |    | 0.35             | 0.35 | 0.43             | 0.43 | 0.55             | 0.55 | 0.82             | 0.82 | 1.15             | 1.15 | 1.66             | 1.66 | 1.93             | 1.89 | 2.24             | 2.08 |
| 9                             | 16                             | 21                                | 15 | 0.26             | 0.26 | 0.42             | 0.42 | 0.59             | 0.59 | 0.82             | 0.82 | 1.39             | 1.39 | 1.79             | 1.79 | 2.08             | 2.04 | 2.42             | 2.24 |
|                               |                                |                                   |    | 0.24             | 0.24 | 0.36             | 0.36 | 0.47             | 0.47 | 0.72             | 0.72 | 1.21             | 1.21 | 1.61             | 1.61 | 1.87             | 1.84 | 2.17             | 2.01 |
|                               |                                |                                   |    | 0.21             | 0.21 | 0.29             | 0.29 | 0.38             | 0.38 | 0.57             | 0.57 | 0.90             | 0.90 | 1.29             | 1.29 | 1.50             | 1.47 | 1.74             | 1.61 |
| 11                            | 14                             | 21                                | 15 | 0.50             | 0.50 | 0.70             | 0.70 | 0.91             | 0.91 | 1.25             | 1.25 | 1.77             | 1.77 | 2.28             | 2.28 | 2.64             | 2.60 | 3.08             | 2.85 |
|                               |                                |                                   |    | 0.44             | 0.44 | 0.58             | 0.58 | 0.69             | 0.69 | 1.06             | 1.06 | 1.50             | 1.50 | 2.02             | 2.02 | 2.34             | 2.30 | 2.73             | 2.53 |
|                               |                                |                                   |    | 0.37             | 0.37 | 0.44             | 0.44 | 0.54             | 0.54 | 0.81             | 0.81 | 1.08             | 1.08 | 1.57             | 1.57 | 1.82             | 1.79 | 2.12             | 1.96 |
| 11                            | 16                             | 21                                | 15 | 0.88             | 0.80 | 1.37             | 1.37 | 1.77             | 1.77 | 0.31             | 0.31 | 0.47             | 0.47 | 0.64             | 0.64 | 0.74             | 0.73 | 0.86             | 0.80 |
|                               |                                |                                   |    | 0.76             | 0.76 | 1.18             | 1.18 | 1.58             | 1.58 | 0.28             | 0.28 | 0.40             | 0.40 | 0.50             | 0.50 | 0.58             | 0.57 | 0.68             | 0.63 |
|                               |                                |                                   |    | 0.60             | 0.60 | 0.87             | 0.87 | 1.25             | 1.25 | 0.24             | 0.24 | 0.31             | 0.31 | 0.40             | 0.40 | 0.46             | 0.46 | 0.54             | 0.50 |
| 11                            | 18                             | 21                                | 15 | 0.11             | 0.11 | 0.21             | 0.21 | 0.28             | 0.28 | 0.42             | 0.42 | 0.85             | 0.85 | 1.12             | 1.12 | 1.30             | 1.28 | 1.51             | 1.40 |
|                               |                                |                                   |    | 0.10             | 0.10 | 0.19             | 0.19 | 0.23             | 0.23 | 0.37             | 0.37 | 0.75             | 0.75 | 1.02             | 1.02 | 1.18             | 1.16 | 1.38             | 1.28 |
|                               |                                |                                   |    | 0.09             | 0.09 | 0.15             | 0.15 | 0.19             | 0.19 | 0.31             | 0.31 | 0.58             | 0.58 | 0.83             | 0.83 | 0.96             | 0.95 | 1.12             | 1.04 |
| 3                             | 6                              | 23                                | 17 | 1.77             | 1.14 | 2.42             | 1.58 | 3.26             | 2.00 | 4.43             | 2.78 | 5.85             | 3.76 | 7.51             | 4.91 | 8.71             | 5.60 | 10.14            | 6.14 |
|                               |                                |                                   |    | 1.54             | 0.99 | 1.98             | 1.29 | 2.39             | 1.48 | 3.70             | 2.32 | 4.96             | 3.17 | 6.63             | 4.30 | 7.69             | 4.90 | 8.95             | 5.38 |
|                               |                                |                                   |    | 1.27             | 0.82 | 1.49             | 0.96 | 1.83             | 1.15 | 2.76             | 1.74 | 3.52             | 2.24 | 5.15             | 3.30 | 5.97             | 3.76 | 6.95             | 4.13 |
| 3                             | 8                              | 23                                | 17 | 1.43             | 0.99 | 1.96             | 1.38 | 2.84             | 1.79 | 3.79             | 2.47 | 5.19             | 3.45 | 6.57             | 4.49 | 7.62             | 5.12 | 8.87             | 5.61 |
|                               |                                |                                   |    | 1.26             | 0.86 | 1.64             | 1.13 | 2.11             | 1.34 | 3.20             | 2.08 | 4.44             | 2.92 | 5.86             | 3.95 | 6.80             | 4.50 | 7.91             | 4.94 |
|                               |                                |                                   |    | 1.06             | 0.72 | 1.27             | 0.86 | 1.64             | 1.05 | 2.43             | 1.57 | 3.21             | 2.09 | 4.63             | 3.06 | 5.37             | 3.49 | 6.25             | 3.83 |
| 3                             | 10                             | 23                                | 17 | 1.05             | 0.82 | 1.47             | 1.17 | 2.35             | 1.56 | 3.07             | 2.14 | 4.45             | 3.12 | 5.54             | 4.04 | 6.43             | 4.61 | 7.48             | 5.05 |
|                               |                                |                                   |    | 0.94             | 0.73 | 1.27             | 0.97 | 1.78             | 1.19 | 2.64             | 1.82 | 3.85             | 2.66 | 5.01             | 3.57 | 5.81             | 4.07 | 6.76             | 4.46 |
|                               |                                |                                   |    | 0.81             | 0.62 | 1.01             | 0.75 | 1.40             | 0.94 | 2.04             | 1.40 | 2.85             | 1.92 | 4.04             | 2.79 | 4.69             | 3.18 | 5.45             | 3.49 |
| 5                             | 8                              | 23                                | 17 | 1.52             | 1.02 | 2.06             | 1.42 | 2.86             | 1.80 | 3.85             | 2.50 | 5.06             | 3.39 | 6.44             | 4.43 | 7.47             | 5.05 | 8.69             | 5.54 |
|                               |                                |                                   |    | 1.32             | 0.89 | 1.70             | 1.16 | 2.09             | 1.33 | 3.22             | 2.09 | 4.30             | 2.86 | 5.71             | 3.88 | 6.62             | 4.42 | 7.71             | 4.85 |
|                               |                                |                                   |    | 1.09             | 0.74 | 1.28             | 0.87 | 1.60             | 1.03 | 2.41             | 1.56 | 3.07             | 2.02 | 4.46             | 2.89 | 5.17             | 3.29 | 6.02             | 3.61 |
| 5                             | 10                             | 23                                | 17 | 1.16             | 0.87 | 1.60             | 1.22 | 2.42             | 1.59 | 3.18             | 2.19 | 4.36             | 3.08 | 5.47             | 4.01 | 6.35             | 4.57 | 7.38             | 5.01 |
|                               |                                |                                   |    | 1.03             | 0.77 | 1.35             | 1.01 | 1.80             | 1.20 | 2.70             | 1.85 | 3.76             |      |                  |      |                  |      |                  |      |

# TECHNICAL DATA AT CONDITIONS NON STANDARD

| 2 PIPES                       |                                |                             |                             | 3 ROWS           |              |                  |              |                  |              |                  |              |                  |              |                  |              |                  |              |                  |              |
|-------------------------------|--------------------------------|-----------------------------|-----------------------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|
| Water Temperature<br>IN<br>°C | Water Temperature<br>OUT<br>°C | Air Temperature<br>DB<br>°C | Air Temperature<br>WB<br>°C | 012              |              | 020              |              | 025              |              | 035              |              | 050              |              | 060              |              | 080              |              | 090              |              |
|                               |                                |                             |                             | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              |
|                               |                                |                             |                             | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] |
| 3                             | 6                              | 25                          | 19                          | 216              | 125          | 295              | 173          | 388              | 219          | 534              | 305          | 705              | 409          | 911              | 535          | 1057             | 610          | 1230             | 669          |
|                               |                                |                             |                             | 187              | 109          | 241              | 141          | 285              | 162          | 445              | 254          | 595              | 344          | 801              | 468          | 929              | 534          | 1081             | 585          |
|                               |                                |                             |                             | 155              | 090          | 180              | 105          | 219              | 125          | 331              | 189          | 420              | 242          | 617              | 358          | 716              | 408          | 833              | 448          |
| 3                             | 8                              | 25                          | 19                          | 1263             | 111          | 252              | 154          | 348              | 199          | 472              | 275          | 641              | 380          | 820              | 495          | 951              | 564          | 1107             | 619          |
|                               |                                |                             |                             | 160              | 097          | 209              | 126          | 259              | 149          | 397              | 231          | 545              | 321          | 727              | 435          | 843              | 496          | 981              | 544          |
|                               |                                |                             |                             | 134              | 081          | 159              | 095          | 200              | 116          | 299              | 174          | 391              | 229          | 568              | 335          | 659              | 382          | 767              | 419          |
| 3                             | 10                             | 25                          | 19                          | 147              | 095          | 204              | 134          | 303              | 177          | 404              | 244          | 571              | 349          | 722              | 453          | 838              | 516          | 975              | 566          |
|                               |                                |                             |                             | 130              | 084          | 173              | 111          | 228              | 134          | 343              | 207          | 490              | 297          | 646              | 399          | 749              | 455          | 872              | 499          |
|                               |                                |                             |                             | 111              | 071          | 135              | 085          | 178              | 106          | 263              | 158          | 357              | 213          | 512              | 311          | 594              | 355          | 691              | 389          |
| 5                             | 8                              | 25                          | 19                          | 191              | 114          | 261              | 158          | 349              | 200          | 477              | 277          | 628              | 374          | 807              | 489          | 936              | 557          | 1089             | 611          |
|                               |                                |                             |                             | 166              | 099          | 214              | 128          | 256              | 148          | 398              | 231          | 530              | 315          | 711              | 428          | 825              | 488          | 960              | 535          |
|                               |                                |                             |                             | 137              | 082          | 160              | 096          | 196              | 114          | 296              | 173          | 376              | 222          | 551              | 328          | 639              | 374          | 744              | 410          |
| 5                             | 10                             | 25                          | 19                          | 158              | 100          | 216              | 139          | 308              | 180          | 413              | 248          | 561              | 345          | 713              | 449          | 827              | 512          | 963              | 561          |
|                               |                                |                             |                             | 138              | 087          | 180              | 114          | 229              | 135          | 348              | 209          | 479              | 292          | 634              | 395          | 735              | 450          | 856              | 494          |
|                               |                                |                             |                             | 116              | 073          | 138              | 086          | 177              | 105          | 263              | 158          | 345              | 208          | 499              | 305          | 579              | 348          | 674              | 381          |
| 5                             | 12                             | 25                          | 19                          | 119              | 084          | 166              | 119          | 259              | 158          | 340              | 217          | 486              | 313          | 608              | 406          | 705              | 463          | 821              | 508          |
|                               |                                |                             |                             | 106              | 074          | 142              | 099          | 195              | 120          | 290              | 184          | 420              | 267          | 548              | 359          | 636              | 409          | 740              | 449          |
|                               |                                |                             |                             | 091              | 063          | 113              | 073          | 153              | 065          | 224              | 141          | 309              | 192          | 439              | 280          | 509              | 319          | 593              | 350          |
| 7                             | 10                             | 25                          | 19                          | 164              | 103          | 224              | 142          | 307              | 180          | 415              | 249          | 544              | 338          | 694              | 441          | 805              | 503          | 937              | 551          |
|                               |                                |                             |                             | 143              | 078          | 184              | 116          | 225              | 138          | 347              | 203          | 461              | 284          | 615              | 387          | 713              | 441          | 830              | 484          |
|                               |                                |                             |                             | 118              | 074          | 139              | 086          | 172              | 103          | 259              | 156          | 328              | 201          | 479              | 296          | 556              | 337          | 647              | 370          |
| 7                             | 12                             | 25                          | 19                          | 129              | 088          | 177              | 123          | 263              | 159          | 347              | 220          | 473              | 308          | 595              | 401          | 690              | 457          | 803              | 501          |
|                               |                                |                             |                             | 114              | 077          | 149              | 102          | 195              | 120          | 294              | 186          | 407              | 261          | 533              | 353          | 618              | 402          | 720              | 441          |
|                               |                                |                             |                             | 096              | 065          | 115              | 077          | 151              | 094          | 224              | 141          | 296              | 187          | 423              | 273          | 491              | 311          | 571              | 341          |
| 7                             | 14                             | 25                          | 19                          | 087              | 072          | 123              | 103          | 209              | 137          | 268              | 189          | 391              | 276          | 482              | 358          | 559              | 408          | 651              | 448          |
|                               |                                |                             |                             | 078              | 064          | 108              | 086          | 189              | 105          | 231              | 160          | 342              | 236          | 439              | 317          | 509              | 361          | 593              | 396          |
|                               |                                |                             |                             | 068              | 054          | 088              | 066          | 125              | 083          | 181              | 123          | 256              | 170          | 359              | 248          | 416              | 283          | 485              | 310          |
| 9                             | 12                             | 25                          | 19                          | 135              | 091          | 183              | 126          | 261              | 159          | 348              | 221          | 454              | 300          | 573              | 392          | 665              | 447          | 774              | 490          |
|                               |                                |                             |                             | 118              | 079          | 152              | 103          | 191              | 118          | 292              | 185          | 387              | 253          | 510              | 344          | 592              | 392          | 689              | 430          |
|                               |                                |                             |                             | 098              | 066          | 115              | 077          | 146              | 091          | 218              | 138          | 277              | 179          | 401              | 264          | 465              | 301          | 541              | 330          |
| 9                             | 14                             | 25                          | 19                          | 097              | 076          | 133              | 107          | 213              | 139          | 275              | 191          | 378              | 271          | 466              | 352          | 541              | 401          | 629              | 440          |
|                               |                                |                             |                             | 086              | 067          | 114              | 088          | 159              | 105          | 234              | 162          | 327              | 230          | 422              | 310          | 490              | 353          | 570              | 388          |
|                               |                                |                             |                             | 073              | 056          | 090              | 067          | 123              | 082          | 180              | 123          | 241              | 165          | 341              | 241          | 396              | 275          | 460              | 301          |
| 9                             | 16                             | 25                          | 19                          | 059              | 059          | 086              | 086          | 152              | 115          | 187              | 159          | 286              | 237          | 342              | 307          | 397              | 350          | 462              | 384          |
|                               |                                |                             |                             | 053              | 053          | 072              | 072          | 117              | 089          | 165              | 135          | 255              | 203          | 318              | 272          | 369              | 310          | 429              | 340          |
|                               |                                |                             |                             | 045              | 045          | 060              | 056          | 093              | 070          | 132              | 105          | 196              | 148          | 269              | 214          | 312              | 244          | 363              | 268          |
| 11                            | 14                             | 25                          | 19                          | 103              | 078          | 139              | 109          | 211              | 138          | 275              | 191          | 355              | 262          | 441              | 342          | 512              | 390          | 595              | 428          |
|                               |                                |                             |                             | 090              | 068          | 116              | 089          | 154              | 103          | 231              | 160          | 305              | 221          | 396              | 300          | 459              | 342          | 535              | 375          |
|                               |                                |                             |                             | 075              | 057          | 090              | 067          | 117              | 080          | 174              | 121          | 221              | 157          | 316              | 231          | 367              | 263          | 427              | 289          |
| 11                            | 16                             | 25                          | 19                          | 063              | 063          | 090              | 090          | 157              | 117          | 195              | 161          | 271              | 232          | 324              | 300          | 376              | 342          | 437              | 375          |
|                               |                                |                             |                             | 056              | 056          | 075              | 075          | 117              | 089          | 168              | 137          | 239              | 197          | 300              | 265          | 348              | 302          | 405              | 331          |
|                               |                                |                             |                             | 048              | 047          | 062              | 062          | 091              | 070          | 131              | 105          | 181              | 142          | 250              | 207          | 290              | 236          | 338              | 259          |
| 11                            | 18                             | 25                          | 19                          | 045              | 045          | 067              | 067          | 091              | 091          | 125              | 125          | 194              | 194          | 249              | 249          | 289              | 284          | 336              | 311          |
|                               |                                |                             |                             | 040              | 040          | 056              | 056          | 071              | 071          | 108              | 108          | 168              | 167          | 223              | 223          | 259              | 254          | 301              | 279          |
|                               |                                |                             |                             | 035              | 035          | 044              | 044          | 057              | 084          | 084              | 084          | 128              | 123          | 177              | 177          | 205              | 202          | 239              | 221          |
| 3                             | 6                              | 27                          | 19                          | 217              | 140          | 296              | 194          | 395              | 244          | 540              | 340          | 705              | 456          | 905              | 597          | 1051             | 681          | 1223             | 746          |
|                               |                                |                             |                             | 188              | 122          | 241              | 158          | 289              | 180          | 449              | 283          | 595              | 383          | 799              | 522          | 927              | 595          | 1079             | 653          |
|                               |                                |                             |                             | 155              | 101          | 180              | 117          | 220              | 139          | 333              | 211          | 420              | 269          | 617              | 399          | 716              | 455          | 833              | 499          |
| 3                             | 8                              | 27                          | 19                          | 185              | 126          | 253              | 175          | 356              | 224          | 479              | 310          | 642              | 427          | 816              | 557          | 947              | 635          | 1102             | 696          |
|                               |                                |                             |                             | 162              | 110          | 210              | 143          | 263              | 167          | 402              | 260          | 547              | 361          | 725              | 489          | 841              | 557          | 979              | 611          |
|                               |                                |                             |                             | 135              | 092          | 160              | 108          | 203              | 130          | 303              | 196          | 392              | 256          | 568              | 377          | 659              | 430          | 767              | 471          |
| 3                             | 10                             | 27                          | 19                          | 150              | 111          | 206              | 156          | 312              | 203          | 413              | 280          | 574              | 397          | 720              | 516          | 835              | 588          | 972              | 645          |
|                               |                                |                             |                             | 132              | 097          | 175              | 128          | 234              | 153          | 350              | 237          | 493              | 337          | 646              | 455          | 749              | 519          | 872              | 569          |
|                               |                                |                             |                             | 112              | 082          | 137              | 098          | 182              | 120          | 268              | 180          | 360              | 241          | 515              | 353          | 597              | 402          | 695              | 441          |
| 5                             | 8                              | 27                          | 19                          | 192              | 129          | 262              | 179          | 356              | 224          | 483              | 312          | 628              | 421          | 802              | 551          | 930              | 628          | 1083             | 689          |
|                               |                                |                             |                             | 167              | 112          | 214              | 145          | 260              | 166          | 403              | 260          | 531              | 354          | 709              | 482          | 822              | 549          | 957              | 603          |
|                               |                                |                             |                             | 138              | 093          | 161              | 108          | 198              | 128          | 299              | 194          | 377              | 249          | 551              | 369          | 639              | 421          | 744              | 461          |
| 5                             | 10                             | 27                          | 19                          | 160              | 115          | 218              | 160          | 316              | 205          | 421              | 284          | 563              | 392          | 710              | 512          | 824              | 584          | 959              | 640          |
|                               |                                |                             |                             | 140              | 101          | 182              | 131          | 234              | 153          | 354              | 238          | 481              | 332          | 634              | 449          | 735              | 512          | 856              | 561          |
|                               |                                |                             |                             | 117              | 084          | 140              | 099          | 180              | 119          | 267              | 180          | 347              | 236          | 500              | 346          | 580              | 394          | 675              | 433          |
| 5                             | 12                             | 27                          | 19                          | 122              | 100          | 168              | 141          | 270              | 184          | 351              | 253          | 490              | 362          | 608              | 470          | 705              | 536          | 821              | 588          |
|                               |                                |                             |                             | 109              | 088          | 145              | 117          | 202              | 139          | 299              | 214          | 424              | 307          | 550              | 415          | 638              | 473          | 743              | 519          |
|                               |                                |                             |                             | 093              | 074          | 115              | 089          | 157              | 109          | 230              | 163          | 313              | 221          | 443              | 322          | 514              | 367          | 598              | 403          |
| 7                             | 10                             | 27                          | 19                          | 166              | 118          | 225              | 163          | 315              | 204          | 423              | 285          | 5345             | 385          | 691              | 504          | 802              | 575          | 933              | 630          |
|                               |                                |                             |                             |                  |              |                  |              |                  |              |                  |              |                  |              |                  |              |                  |              |                  |              |

# TECHNICAL DATA AT CONDITIONS NON STANDARD

| 2 PIPES                       |                                |                             |                             |                  |              |                  |              |                  |              | 3 ROWS           |              |                  |              |                  |              |                  |              |                  |              |
|-------------------------------|--------------------------------|-----------------------------|-----------------------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|
| Water Temperature<br>IN<br>°C | Water Temperature<br>OUT<br>°C | Air Temperature<br>DB<br>°C | Air Temperature<br>WB<br>°C | 012              |              | 020              |              | 025              |              | 035              |              | 050              |              | 060              |              | 080              |              | 090              |              |
|                               |                                |                             |                             | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              | Cooling Capacity |              |
|                               |                                |                             |                             | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] | Total<br>[kW]    | Sens<br>[kW] |
| 3                             | 6                              | 29                          | 21                          | 256              | 151          | 350              | 208          | 459              | 262          | 632              | 364          | 826              | 486          | 1068             | 636          | 1239             | 725          | 1442             | 795          |
|                               |                                |                             |                             | 222              | 130          | 285              | 168          | 335              | 192          | 525              | 303          | 695              | 408          | 939              | 556          | 1089             | 634          | 1268             | 695          |
|                               |                                |                             |                             | 183              | 108          | 212              | 125          | 256              | 148          | 389              | 225          | 489              | 286          | 721              | 424          | 836              | 483          | 973              | 530          |
| 3                             | 8                              | 29                          | 21                          | 226              | 137          | 309              | 190          | 421              | 243          | 573              | 336          | 766              | 458          | 980              | 598          | 1137             | 682          | 1323             | 748          |
|                               |                                |                             |                             | 197              | 119          | 254              | 155          | 311              | 180          | 480              | 281          | 649              | 386          | 868              | 524          | 1007             | 597          | 1172             | 655          |
|                               |                                |                             |                             | 164              | 099          | 192              | 116          | 240              | 140          | 360              | 211          | 462              | 273          | 674              | 403          | 782              | 459          | 910              | 504          |
| 3                             | 10                             | 29                          | 21                          | 192              | 123          | 264              | 171          | 380              | 223          | 510              | 307          | 700              | 430          | 889              | 559          | 1031             | 637          | 1200             | 699          |
|                               |                                |                             |                             | 169              | 107          | 221              | 141          | 283              | 167          | 431              | 259          | 598              | 364          | 792              | 492          | 919              | 561          | 1069             | 615          |
|                               |                                |                             |                             | 142              | 090          | 170              | 107          | 220              | 131          | 327              | 196          | 432              | 260          | 623              | 380          | 723              | 433          | 841              | 475          |
| 5                             | 8                              | 29                          | 21                          | 233              | 140          | 317              | 193          | 421              | 242          | 577              | 338          | 751              | 452          | 967              | 592          | 1122             | 675          | 1305             | 740          |
|                               |                                |                             |                             | 201              | 121          | 258              | 156          | 308              | 178          | 480              | 281          | 633              | 379          | 852              | 517          | 988              | 589          | 1150             | 646          |
|                               |                                |                             |                             | 166              | 100          | 192              | 116          | 235              | 137          | 356              | 209          | 447              | 266          | 657              | 395          | 762              | 450          | 887              | 494          |
| 5                             | 10                             | 29                          | 21                          | 202              | 127          | 275              | 176          | 383              | 224          | 517              | 310          | 689              | 425          | 878              | 555          | 1018             | 633          | 1185             | 694          |
|                               |                                |                             |                             | 176              | 110          | 227              | 143          | 283              | 167          | 433              | 260          | 586              | 358          | 779              | 486          | 904              | 554          | 1052             | 608          |
|                               |                                |                             |                             | 147              | 092          | 173              | 107          | 217              | 129          | 325              | 195          | 419              | 254          | 608              | 374          | 705              | 426          | 821              | 468          |
| 5                             | 12                             | 29                          | 21                          | 166              | 112          | 229              | 157          | 339              | 204          | 450              | 282          | 620              | 396          | 781              | 516          | 906              | 588          | 1054             | 645          |
|                               |                                |                             |                             | 146              | 098          | 193              | 130          | 253              | 154          | 381              | 237          | 532              | 336          | 699              | 454          | 811              | 518          | 944              | 568          |
|                               |                                |                             |                             | 124              | 083          | 150              | 098          | 197              | 120          | 290              | 180          | 387              | 240          | 554              | 351          | 643              | 400          | 748              | 439          |
| 7                             | 10                             | 29                          | 21                          | 207              | 129          | 282              | 178          | 381              | 223          | 518              | 311          | 671              | 417          | 859              | 547          | 996              | 624          | 1160             | 684          |
|                               |                                |                             |                             | 179              | 112          | 230              | 144          | 278              | 164          | 431              | 259          | 567              | 350          | 758              | 478          | 879              | 545          | 1023             | 598          |
|                               |                                |                             |                             | 148              | 092          | 172              | 107          | 211              | 127          | 320              | 193          | 401              | 246          | 587              | 365          | 681              | 416          | 792              | 456          |
| 7                             | 12                             | 29                          | 21                          | 174              | 116          | 238              | 161          | 341              | 205          | 455              | 284          | 605              | 390          | 765              | 510          | 887              | 581          | 1033             | 638          |
|                               |                                |                             |                             | 152              | 101          | 198              | 131          | 251              | 153          | 382              | 238          | 516              | 330          | 682              | 447          | 791              | 510          | 921              | 559          |
|                               |                                |                             |                             | 127              | 084          | 151              | 099          | 193              | 119          | 288              | 179          | 372              | 234          | 537              | 344          | 623              | 392          | 725              | 430          |
| 7                             | 14                             | 29                          | 21                          | 137              | 101          | 189              | 143          | 294              | 185          | 384              | 255          | 532              | 362          | 662              | 471          | 768              | 537          | 894              | 589          |
|                               |                                |                             |                             | 121              | 089          | 161              | 118          | 220              | 139          | 327              | 215          | 459              | 307          | 597              | 415          | 693              | 473          | 806              | 519          |
|                               |                                |                             |                             | 103              | 075          | 127              | 089          | 171              | 109          | 250              | 164          | 337              | 220          | 479              | 320          | 556              | 366          | 647              | 400          |
| 9                             | 12                             | 29                          | 21                          | 179              | 117          | 243              | 163          | 337              | 203          | 454              | 283          | 584              | 382          | 741              | 500          | 860              | 570          | 1000             | 625          |
|                               |                                |                             |                             | 155              | 101          | 199              | 132          | 245              | 150          | 378              | 236          | 495              | 321          | 658              | 438          | 763              | 499          | 888              | 548          |
|                               |                                |                             |                             | 128              | 084          | 150              | 098          | 186              | 116          | 281              | 176          | 352              | 226          | 513              | 335          | 595              | 382          | 693              | 419          |
| 9                             | 14                             | 29                          | 21                          | 145              | 104          | 197              | 146          | 295              | 185          | 388              | 256          | 515              | 355          | 643              | 463          | 746              | 528          | 868              | 579          |
|                               |                                |                             |                             | 127              | 091          | 165              | 119          | 217              | 138          | 327              | 215          | 442              | 300          | 577              | 407          | 669              | 464          | 779              | 509          |
|                               |                                |                             |                             | 107              | 076          | 128              | 090          | 167              | 108          | 247              | 163          | 321              | 213          | 459              | 314          | 532              | 358          | 620              | 393          |
| 9                             | 16                             | 29                          | 21                          | 104              | 090          | 144              | 127          | 243              | 165          | 311              | 227          | 435              | 326          | 532              | 424          | 617              | 483          | 718              | 530          |
|                               |                                |                             |                             | 093              | 079          | 126              | 105          | 182              | 125          | 267              | 193          | 379              | 277          | 486              | 374          | 564              | 426          | 656              | 468          |
|                               |                                |                             |                             | 080              | 067          | 101              | 080          | 142              | 098          | 206              | 147          | 283              | 199          | 397              | 290          | 461              | 331          | 536              | 363          |
| 11                            | 14                             | 29                          | 21                          | 149              | 105          | 201              | 147          | 290              | 183          | 385              | 255          | 490              | 346          | 615              | 453          | 713              | 516          | 830              | 566          |
|                               |                                |                             |                             | 129              | 092          | 166              | 119          | 210              | 136          | 321              | 213          | 417              | 291          | 549              | 397          | 637              | 453          | 741              | 496          |
|                               |                                |                             |                             | 107              | 076          | 125              | 089          | 159              | 105          | 239              | 159          | 299              | 205          | 432              | 304          | 501              | 347          | 583              | 380          |
| 11                            | 16                             | 29                          | 21                          | 112              | 093          | 152              | 130          | 244              | 165          | 313              | 228          | 416              | 319          | 510              | 416          | 592              | 474          | 689              | 520          |
|                               |                                |                             |                             | 099              | 081          | 130              | 106          | 180              | 124          | 266              | 192          | 360              | 270          | 462              | 365          | 536              | 416          | 624              | 456          |
|                               |                                |                             |                             | 183              | 068          | 102              | 080          | 138              | 097          | 202              | 145          | 265              | 192          | 374              | 282          | 434              | 321          | 505              | 353          |
| 11                            | 18                             | 29                          | 21                          | 177              | 077          | 110              | 110          | 187              | 144          | 229              | 199          | 328              | 288          | 389              | 375          | 451              | 428          | 525              | 469          |
|                               |                                |                             |                             | 068              | 068          | 092              | 092          | 141              | 110          | 199              | 169          | 291              | 246          | 362              | 331          | 420              | 377          | 489              | 414          |
|                               |                                |                             |                             | 058              | 058          | 073              | 070          | 110              | 087          | 157              | 129          | 222              | 177          | 305              | 258          | 354              | 294          | 412              | 323          |
| 3                             | 6                              | 31                          | 23                          | 298              | 159          | 408              | 220          | 526              | 277          | 730              | 386          | 954              | 511          | 1239             | 670          | 1437             | 764          | 1673             | 838          |
|                               |                                |                             |                             | 257              | 138          | 330              | 177          | 385              | 203          | 605              | 320          | 801              | 428          | 1085             | 584          | 1259             | 666          | 1465             | 730          |
|                               |                                |                             |                             | 212              | 114          | 244              | 131          | 294              | 156          | 447              | 237          | 561              | 299          | 830              | 445          | 963              | 507          | 1121             | 556          |
| 3                             | 8                              | 31                          | 23                          | 269              | 146          | 368              | 202          | 490              | 259          | 673              | 399          | 895              | 485          | 1154             | 633          | 1339             | 722          | 1558             | 791          |
|                               |                                |                             |                             | 233              | 127          | 301              | 165          | 362              | 192          | 561              | 299          | 756              | 408          | 1016             | 554          | 1179             | 632          | 1372             | 693          |
|                               |                                |                             |                             | 194              | 105          | 226              | 148          | 278              | 148          | 419              | 224          | 535              | 288          | 785              | 425          | 911              | 485          | 1060             | 531          |
| 3                             | 10                             | 31                          | 23                          | 239              | 130          | 325              | 185          | 451              | 240          | 612              | 331          | 833              | 458          | 1066             | 597          | 1237             | 681          | 1439             | 746          |
|                               |                                |                             |                             | 207              | 116          | 269              | 152          | 335              | 179          | 514              | 278          | 708              | 387          | 944              | 524          | 1095             | 597          | 1274             | 655          |
|                               |                                |                             |                             | 173              | 097          | 205              | 114          | 260              | 140          | 388              | 210          | 507              | 275          | 736              | 404          | 854              | 461          | 994              | 505          |
| 5                             | 8                              | 31                          | 23                          | 275              | 149          | 376              | 206          | 490              | 259          | 676              | 360          | 880              | 479          | 1140             | 627          | 1322             | 715          | 1539             | 784          |
|                               |                                |                             |                             | 237              | 129          | 304              | 166          | 358              | 190          | 561              | 299          | 740              | 401          | 1000             | 548          | 1160             | 625          | 1350             | 685          |
|                               |                                |                             |                             | 195              | 105          | 226              | 123          | 273              | 146          | 415              | 222          | 519              | 281          | 767              | 417          | 890              | 475          | 1035             | 521          |
| 5                             | 10                             | 31                          | 23                          | 245              | 137          | 335              | 189          | 453              | 241          | 618              | 453          | 821              | 453          | 1054             | 592          | 1223             | 675          | 1423             | 740          |
|                               |                                |                             |                             | 213              | 119          | 275              | 154          | 334              | 179          | 416              | 279          | 694              | 382          | 930              | 519          | 1079             | 592          | 1256             | 649          |
|                               |                                |                             |                             | 177              | 099          | 207              | 115          | 257              | 138          | 383              | 209          | 493              | 269          | 721              | 397          | 836              | 453          | 973              | 496          |
| 5                             | 12                             | 31                          | 23                          | 211              | 123          | 290              | 172          | 412              | 222          | 554              | 307          | 755              | 427          | 961              | 556          | 1115             | 634          | 1297             | 695          |
|                               |                                |                             |                             | 185              | 108          | 242              | 141          | 305              | 167          | 467              | 258          | 644              | 361          | 854              | 488          | 991              | 556          | 1153             | 610          |
|                               |                                |                             |                             | 156              | 090          | 185              | 106          | 237              | 130          | 353              | 195          | 463              | 257          | 670              | 377          | 777              | 430          | 905              | 471          |
| 7                             | 10                             | 31                          | 23                          | 250              | 139          | 341              | 192          | 451              | 240          | 451              | 240          | 619              | 334          | 802              | 446          | 930              | 508          | 1083             |              |

# TECHNICAL DATA AT CONDITIONS NON STANDARD

## 2 PIPES 4 ROWS

| Water Temperature<br>IN<br>°C | Water Temperature<br>OUT<br>°C | Air Temperature<br>DB<br>°C | Air Temperature<br>WB<br>°C | 412              |      | 420              |      | 425              |      | 435              |      | 450              |      | 460              |      | 480              |      | 490              |      |
|-------------------------------|--------------------------------|-----------------------------|-----------------------------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|
|                               |                                |                             |                             | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      |
|                               |                                |                             |                             | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens |
|                               |                                |                             |                             | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] |
| 3                             | 6                              | 21                          | 15                          | 151              | 104  | 213              | 159  | 295              | 197  | 393              | 269  | 505              | 354  | 632              | 468  | 702              | 519  | 822              | 548  |
|                               |                                |                             |                             | 130              | 090  | 190              | 141  | 224              | 151  | 326              | 223  | 424              | 297  | 560              | 410  | 622              | 455  | 728              | 480  |
|                               |                                |                             |                             | 108              | 075  | 150              | 109  | 173              | 117  | 236              | 162  | 303              | 212  | 434              | 312  | 482              | 346  | 564              | 365  |
| 3                             | 8                              | 21                          | 15                          | 125              | 091  | 169              | 139  | 262              | 180  | 334              | 238  | 447              | 326  | 547              | 429  | 607              | 476  | 711              | 502  |
|                               |                                |                             |                             | 109              | 0379 | 154              | 124  | 202              | 139  | 280              | 200  | 380              | 275  | 490              | 377  | 544              | 418  | 637              | 441  |
|                               |                                |                             |                             | 091              | 067  | 125              | 097  | 157              | 109  | 206              | 148  | 277              | 198  | 388              | 291  | 431              | 323  | 504              | 340  |
| 3                             | 10                             | 21                          | 15                          | 093              | 076  | 119              | 118  | 222              | 160  | 263              | 205  | 377              | 293  | 448              | 385  | 497              | 427  | 582              | 450  |
|                               |                                |                             |                             | 082              | 067  | 112              | 106  | 173              | 125  | 224              | 174  | 325              | 249  | 408              | 340  | 453              | 377  | 530              | 398  |
|                               |                                |                             |                             | 070              | 057  | 095              | 084  | 137              | 099  | 170              | 130  | 242              | 182  | 332              | 265  | 369              | 294  | 432              | 310  |
| 5                             | 8                              | 21                          | 15                          | 127              | 092  | 173              | 141  | 253              | 175  | 332              | 237  | 425              | 315  | 520              | 417  | 577              | 463  | 676              | 488  |
|                               |                                |                             |                             | 109              | 080  | 156              | 125  | 192              | 134  | 275              | 198  | 358              | 264  | 463              | 365  | 514              | 405  | 602              | 427  |
|                               |                                |                             |                             | 091              | 067  | 124              | 097  | 148              | 104  | 199              | 144  | 257              | 189  | 362              | 279  | 402              | 310  | 471              | 326  |
| 5                             | 10                             | 21                          | 15                          | 099              | 079  | 128              | 121  | 217              | 158  | 269              | 208  | 362              | 286  | 430              | 377  | 477              | 418  | 559              | 441  |
|                               |                                |                             |                             | 086              | 069  | 118              | 109  | 168              | 123  | 226              | 174  | 310              | 242  | 389              | 332  | 432              | 369  | 506              | 388  |
|                               |                                |                             |                             | 073              | 058  | 097              | 085  | 131              | 096  | 168              | 130  | 228              | 175  | 313              | 256  | 347              | 284  | 407              | 300  |
| 5                             | 12                             | 21                          | 15                          | 064              | 064  | 098              | 098  | 172              | 137  | 190              | 173  | 284              | 252  | 330              | 330  | 366              | 366  | 429              | 386  |
|                               |                                |                             |                             | 057              | 056  | 089              | 089  | 136              | 108  | 164              | 147  | 248              | 214  | 298              | 293  | 331              | 325  | 387              | 343  |
|                               |                                |                             |                             | 049              | 048  | 071              | 071  | 108              | 086  | 126              | 111  | 189              | 158  | 250              | 229  | 278              | 254  | 325              | 288  |
| 7                             | 10                             | 21                          | 15                          | 101              | 080  | 130              | 123  | 207              | 153  | 265              | 206  | 337              | 275  | 399              | 364  | 443              | 404  | 519              | 426  |
|                               |                                |                             |                             | 087              | 069  | 118              | 109  | 157              | 117  | 220              | 172  | 285              | 231  | 358              | 319  | 397              | 354  | 465              | 373  |
|                               |                                |                             |                             | 072              | 058  | 096              | 085  | 120              | 091  | 159              | 126  | 206              | 165  | 284              | 244  | 315              | 271  | 369              | 285  |
| 7                             | 12                             | 21                          | 15                          | 070              | 066  | 101              | 101  | 167              | 135  | 196              | 175  | 268              | 245  | 321              | 321  | 356              | 356  | 417              | 376  |
|                               |                                |                             |                             | 061              | 058  | 091              | 091  | 129              | 105  | 166              | 148  | 232              | 208  | 284              | 284  | 315              | 315  | 369              | 332  |
|                               |                                |                             |                             | 052              | 049  | 072              | 072  | 101              | 083  | 124              | 110  | 173              | 151  | 229              | 221  | 254              | 245  | 298              | 259  |
| 7                             | 14                             | 21                          | 15                          | 049              | 049  | 077              | 077  | 115              | 112  | 137              | 137  | 206              | 206  | 269              | 269  | 299              | 299  | 350              | 315  |
|                               |                                |                             |                             | 044              | 044  | 070              | 070  | 092              | 089  | 117              | 117  | 177              | 177  | 240              | 240  | 266              | 266  | 312              | 281  |
|                               |                                |                             |                             | 038              | 038  | 057              | 057  | 174              | 071  | 090              | 090  | 031              | 131  | 189              | 189  | 210              | 210  | 246              | 221  |
| 9                             | 12                             | 21                          | 15                          | 072              | 067  | 102              | 102  | 156              | 130  | 192              | 174  | 241              | 234  | 306              | 306  | 340              | 340  | 398              | 358  |
|                               |                                |                             |                             | 062              | 058  | 091              | 091  | 118              | 100  | 160              | 145  | 206              | 197  | 270              | 270  | 300              | 300  | 351              | 316  |
|                               |                                |                             |                             | 051              | 049  | 071              | 071  | 091              | 078  | 116              | 107  | 151              | 141  | 208              | 208  | 231              | 231  | 270              | 243  |
| 9                             | 14                             | 21                          | 15                          | 052              | 052  | 080              | 080  | 111              | 111  | 140              | 140  | 200              | 200  | 260              | 260  | 289              | 289  | 338              | 304  |
|                               |                                |                             |                             | 046              | 046  | 072              | 072  | 087              | 087  | 119              | 119  | 170              | 170  | 231              | 231  | 256              | 256  | 300              | 270  |
|                               |                                |                             |                             | 039              | 039  | 058              | 058  | 069              | 069  | 089              | 089  | 125              | 125  | 181              | 181  | 201              | 201  | 235              | 212  |
| 9                             | 16                             | 21                          | 15                          | 034              | 034  | 055              | 055  | 084              | 084  | 098              | 098  | 156              | 156  | 204              | 204  | 226              | 226  | 265              | 239  |
|                               |                                |                             |                             | 030              | 030  | 050              | 050  | 067              | 067  | 084              | 084  | 134              | 134  | 182              | 182  | 202              | 202  | 237              | 213  |
|                               |                                |                             |                             | 026              | 026  | 041              | 041  | 054              | 054  | 065              | 065  | 101              | 101  | 145              | 145  | 161              | 161  | 189              | 170  |
| 11                            | 14                             | 21                          | 15                          | 053              | 053  | 081              | 081  | 105              | 105  | 139              | 139  | 189              | 189  | 246              | 246  | 273              | 273  | 320              | 288  |
|                               |                                |                             |                             | 046              | 046  | 072              | 072  | 082              | 082  | 116              | 116  | 159              | 159  | 217              | 217  | 241              | 241  | 282              | 254  |
|                               |                                |                             |                             | 039              | 039  | 057              | 057  | 064              | 064  | 086              | 086  | 115              | 115  | 168              | 168  | 186              | 186  | 218              | 197  |
| 11                            | 16                             | 21                          | 15                          | 037              | 037  | 058              | 058  | 083              | 083  | 102              | 102  | 151              | 151  | 197              | 197  | 219              | 219  | 256              | 230  |
|                               |                                |                             |                             | 033              | 033  | 052              | 052  | 065              | 065  | 087              | 087  | 129              | 129  | 176              | 176  | 195              | 195  | 229              | 206  |
|                               |                                |                             |                             | 028              | 028  | 042              | 042  | 052              | 052  | 066              | 066  | 096              | 096  | 138              | 138  | 153              | 153  | 179              | 161  |
| 11                            | 18                             | 21                          | 15                          | 016              | 016  | 031              | 031  | 051              | 051  | 052              | 052  | 098              | 098  | 131              | 131  | 145              | 145  | 170              | 153  |
|                               |                                |                             |                             | 015              | 015  | 028              | 028  | 042              | 042  | 046              | 046  | 086              | 086  | 119              | 119  | 132              | 132  | 155              | 139  |
|                               |                                |                             |                             | 013              | 013  | 024              | 024  | 034              | 034  | 037              | 037  | 066              | 066  | 096              | 096  | 107              | 107  | 125              | 112  |
| 3                             | 6                              | 23                          | 17                          | 186              | 115  | 267              | 176  | 356              | 218  | 481              | 298  | 618              | 390  | 786              | 516  | 872              | 573  | 1022             | 604  |
|                               |                                |                             |                             | 159              | 099  | 238              | 156  | 270              | 166  | 398              | 247  | 518              | 326  | 692              | 451  | 768              | 501  | 900              | 528  |
|                               |                                |                             |                             | 132              | 083  | 196              | 120  | 208              | 129  | 287              | 179  | 369              | 232  | 533              | 343  | 592              | 381  | 693              | 401  |
| 3                             | 8                              | 23                          | 17                          | 161              | 103  | 226              | 158  | 325              | 202  | 425              | 269  | 563              | 364  | 705              | 479  | 783              | 532  | 917              | 560  |
|                               |                                |                             |                             | 139              | 090  | 204              | 141  | 250              | 156  | 355              | 225  | 476              | 306  | 627              | 421  | 696              | 467  | 815              | 493  |
|                               |                                |                             |                             | 117              | 076  | 163              | 110  | 194              | 121  | 260              | 166  | 344              | 220  | 490              | 323  | 544              | 359  | 637              | 378  |
| 3                             | 10                             | 23                          | 17                          | 131              | 090  | 179              | 180  | 288              | 183  | 359              | 238  | 199              | 334  | 612              | 439  | 649              | 487  | 796              | 514  |
|                               |                                |                             |                             | 115              | 078  | 164              | 124  | 224              | 143  | 303              | 201  | 426              | 283  | 550              | 387  | 611              | 430  | 715              | 453  |
|                               |                                |                             |                             | 098              | 067  | 135              | 098  | 176              | 113  | 227              | 150  | 313              | 206  | 438              | 300  | 486              | 333  | 569              | 351  |
| 5                             | 8                              | 23                          | 17                          | 162              | 104  | 229              | 159  | 315              | 197  | 421              | 268  | 540              | 353  | 677              | 467  | 751              | 518  | 880              | 546  |
|                               |                                |                             |                             | 139              | 090  | 205              | 141  | 239              | 150  | 349              | 222  | 453              | 295  | 598              | 408  | 664              | 453  | 777              | 477  |
|                               |                                |                             |                             | 116              | 075  | 161              | 109  | 184              | 116  | 252              | 165  | 323              | 210  | 463              | 311  | 514              | 345  | 602              | 364  |
| 5                             | 10                             | 23                          | 17                          | 137              | 092  | 187              | 141  | 282              | 181  | 362              | 240  | 482              | 326  | 592              | 430  | 657              | 477  | 770              | 503  |
|                               |                                |                             |                             | 118              | 080  | 187              | 126  | 217              | 140  | 303              | 201  | 408              | 275  | 529              | 378  | 587              | 420  | 688              | 442  |
|                               |                                |                             |                             | 099              | 067  | 169              | 098  | 169              | 109  | 223              | 148  | 297              | 198  | 417              | 290  | 463              | 322  | 542              | 339  |
| 5                             | 12                             | 23                          | 17                          | 104              | 078  | 136              | 121  | 242              | 162  | 290              | 208  | 411              | 295  | 491              | 388  | 545              | 431  | 638              | 454  |
|                               |                                |                             |                             | 092              | 068  | 126              | 108  | 188              | 126  | 247              | 176  | 353              | 250  | 446              | 343  | 495              | 381  | 580              | 401  |
|                               |                                |                             |                             | 078              | 058  | 106              | 086  | 149              | 100  | 186              | 132  | 262              | 183  | 361              | 266  | 401              | 295  | 469              | 311  |
| 7                             | 10                             | 23                          | 17                          | 137              | 092  | 188              | 141  | 270              | 175  | 357              | 238  | 455              | 314  | 559              | 416  | 620              | 462  | 727              | 487  |
|                               |                                |                             |                             | 118              | 080  | 169              | 125  | 205              | 134  | 295              | 198  | 383              | 263  | 497              | 364  | 552              | 404  | 646              | 426  |
|                               |                                |                             |                             |                  |      |                  |      |                  |      |                  |      |                  |      |                  |      |                  |      |                  |      |

# TECHNICAL DATA AT CONDITIONS NON STANDARD

## 2 PIPES 4 ROWS

|                               |           |                             |          | 412              |      | 420              |      | 425              |      | 435              |      | 450              |      | 460              |      | 480              |      | 490              |      |
|-------------------------------|-----------|-----------------------------|----------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|
| Water Temperature<br>IN<br>°C | OUT<br>°C | Air Temperature<br>DB<br>°C | WB<br>°C | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      |
|                               |           |                             |          | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens |
|                               |           |                             |          | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] |
| 3                             | 6         | 25                          | 19       | 221              | 126  | 324              | 192  | 419              | 237  | 573              | 325  | 737              | 423  | 948              | 559  | 1052             | 620  | 1232             | 654  |
|                               |           |                             |          | 190              | 108  | 288              | 170  | 318              | 180  | 473              | 269  | 616              | 353  | 832              | 488  | 924              | 542  | 1082             | 571  |
|                               |           |                             |          | 158              | 090  | 223              | 131  | 245              | 139  | 341              | 195  | 437              | 251  | 636              | 371  | 706              | 412  | 827              | 434  |
| 3                             | 8         | 25                          | 19       | 198              | 115  | 286              | 175  | 391              | 222  | 519              | 298  | 685              | 399  | 870              | 525  | 966              | 583  | 1131             | 614  |
|                               |           |                             |          | 172              | 099  | 256              | 155  | 299              | 170  | 433              | 249  | 576              | 335  | 769              | 460  | 854              | 511  | 1000             | 538  |
|                               |           |                             |          | 144              | 083  | 202              | 121  | 232              | 133  | 316              | 182  | 414              | 240  | 596              | 352  | 662              | 391  | 775              | 412  |
| 3                             | 10        | 25                          | 19       | 171              | 102  | 242              | 156  | 356              | 205  | 458              | 269  | 625              | 371  | 783              | 487  | 869              | 541  | 1018             | 570  |
|                               |           |                             |          | 149              | 089  | 219              | 140  | 276              | 159  | 385              | 226  | 530              | 313  | 698              | 429  | 775              | 476  | 907              | 502  |
|                               |           |                             |          | 126              | 075  | 176              | 110  | 216              | 125  | 285              | 168  | 386              | 227  | 548              | 331  | 608              | 367  | 712              | 387  |
| 5                             | 8         | 25                          | 19       | 199              | 115  | 288              | 176  | 380              | 216  | 515              | 296  | 660              | 387  | 841              | 512  | 934              | 568  | 1093             | 599  |
|                               |           |                             |          | 171              | 099  | 256              | 155  | 288              | 165  | 425              | 245  | 552              | 324  | 740              | 447  | 821              | 496  | 962              | 523  |
|                               |           |                             |          | 142              | 083  | 199              | 120  | 222              | 127  | 307              | 178  | 393              | 230  | 568              | 340  | 630              | 377  | 738              | 398  |
| 5                             | 10        | 25                          | 19       | 175              | 104  | 247              | 159  | 350              | 201  | 460              | 270  | 606              | 363  | 761              | 478  | 845              | 531  | 989              | 559  |
|                               |           |                             |          | 151              | 090  | 223              | 141  | 1268             | 155  | 383              | 226  | 511              | 305  | 675              | 419  | 749              | 465  | 878              | 490  |
|                               |           |                             |          | 127              | 076  | 177              | 110  | 208              | 121  | 280              | 166  | 369              | 219  | 526              | 321  | 584              | 356  | 684              | 376  |
| 5                             | 12        | 25                          | 19       | 145              | 091  | 200              | 140  | 312              | 184  | 393              | 241  | 541              | 205  | 668              | 440  | 741              | 488  | 868              | 515  |
|                               |           |                             |          | 127              | 080  | 183              | 125  | 242              | 143  | 332              | 203  | 461              | 283  | 598              | 388  | 664              | 431  | 777              | 454  |
|                               |           |                             |          | 108              | 067  | 149              | 099  | 190              | 113  | 247              | 151  | 338              | 334  | 474              | 299  | 526              | 332  | 616              | 350  |
| 7                             | 10        | 25                          | 19       | 175              | 104  | 248              | 159  | 337              | 195  | 453              | 267  | 578              | 350  | 727              | 464  | 807              | 515  | 945              | 543  |
|                               |           |                             |          | 150              | 089  | 221              | 140  | 255              | 149  | 374              | 221  | 484              | 293  | 642              | 405  | 713              | 450  | 835              | 474  |
|                               |           |                             |          | 124              | 075  | 173              | 108  | 196              | 115  | 270              | 161  | 345              | 208  | 495              | 308  | 549              | 342  | 644              | 360  |
| 7                             | 12        | 25                          | 19       | 149              | 092  | 205              | 142  | 304              | 180  | 393              | 241  | 520              | 325  | 641              | 429  | 712              | 476  | 833              | 502  |
|                               |           |                             |          | 129              | 080  | 185              | 126  | 233              | 139  | 328              | 201  | 440              | 274  | 572              | 377  | 635              | 418  | 744              | 441  |
|                               |           |                             |          | 108              | 068  | 149              | 099  | 181              | 109  | 241              | 148  | 319              | 197  | 450              | 289  | 500              | 321  | 585              | 338  |
| 7                             | 14        | 25                          | 19       | 116              | 079  | 154              | 123  | 263              | 163  | 321              | 211  | 448              | 296  | 540              | 390  | 599              | 433  | 702              | 456  |
|                               |           |                             |          | 102              | 069  | 143              | 110  | 205              | 127  | 272              | 178  | 384              | 251  | 488              | 344  | 542              | 382  | 634              | 402  |
|                               |           |                             |          | 087              | 059  | 119              | 087  | 161              | 100  | 204              | 133  | 284              | 183  | 393              | 267  | 436              | 296  | 511              | 312  |
| 9                             | 12        | 25                          | 19       | 148              | 092  | 204              | 141  | 290              | 174  | 385              | 237  | 489              | 313  | 603              | 414  | 669              | 460  | 784              | 484  |
|                               |           |                             |          | 127              | 079  | 183              | 125  | 220              | 133  | 318              | 197  | 411              | 262  | 535              | 362  | 594              | 402  | 696              | 424  |
|                               |           |                             |          | 105              | 066  | 144              | 097  | 169              | 103  | 229              | 143  | 294              | 187  | 417              | 276  | 463              | 305  | 542              | 323  |
| 9                             | 14        | 25                          | 19       | 120              | 081  | 158              | 124  | 255              | 159  | 320              | 210  | 425              | 287  | 511              | 379  | 567              | 421  | 664              | 443  |
|                               |           |                             |          | 104              | 070  | 145              | 111  | 196              | 123  | 268              | 176  | 362              | 242  | 460              | 333  | 511              | 370  | 598              | 390  |
|                               |           |                             |          | 088              | 059  | 118              | 087  | 152              | 096  | 198              | 130  | 265              | 175  | 367              | 256  | 407              | 284  | 477              | 300  |
| 9                             | 16        | 25                          | 19       | 083              | 067  | 104              | 104  | 208              | 140  | 239              | 179  | 344              | 256  | 397              | 337  | 441              | 374  | 516              | 394  |
|                               |           |                             |          | 074              | 059  | 097              | 094  | 163              | 110  | 204              | 152  | 299              | 217  | 365              | 298  | 405              | 331  | 475              | 349  |
|                               |           |                             |          | 063              | 050  | 085              | 074  | 129              | 087  | 155              | 114  | 225              | 159  | 302              | 232  | 335              | 258  | 393              | 271  |
| 11                            | 14        | 25                          | 19       | 119              | 080  | 156              | 123  | 239              | 152  | 311              | 206  | 392              | 274  | 469              | 363  | 521              | 403  | 610              | 425  |
|                               |           |                             |          | 102              | 069  | 141              | 109  | 181              | 117  | 257              | 172  | 331              | 230  | 420              | 318  | 466              | 353  | 546              | 372  |
|                               |           |                             |          | 084              | 058  | 113              | 085  | 139              | 091  | 185              | 126  | 238              | 164  | 331              | 243  | 367              | 270  | 430              | 284  |
| 11                            | 16        | 25                          | 19       | 087              | 068  | 106              | 106  | 199              | 136  | 238              | 179  | 321              | 247  | 366              | 326  | 406              | 362  | 476              | 381  |
|                               |           |                             |          | 076              | 060  | 099              | 094  | 153              | 106  | 201              | 150  | 276              | 209  | 335              | 287  | 372              | 319  | 436              | 336  |
|                               |           |                             |          | 064              | 050  | 084              | 074  | 120              | 083  | 150              | 112  | 205              | 151  | 275              | 222  | 305              | 246  | 358              | 260  |
| 11                            | 18        | 25                          | 19       | 053              | 053  | 082              | 082  | 144              | 116  | 144              | 144  | 225              | 213  | 278              | 278  | 309              | 309  | 361              | 325  |
|                               |           |                             |          | 047              | 047  | 075              | 075  | 115              | 091  | 126              | 123  | 201              | 182  | 248              | 248  | 275              | 275  | 322              | 290  |
|                               |           |                             |          | 040              | 040  | 060              | 060  | 092              | 073  | 099              | 094  | 157              | 134  | 199              | 195  | 221              | 216  | 259              | 228  |
| 3                             | 6         | 27                          | 19       | 224              | 140  | 323              | 215  | 426              | 263  | 580              | 361  | 739              | 471  | 941              | 624  | 1045             | 693  | 1223             | 730  |
|                               |           |                             |          | 192              | 121  | 287              | 190  | 322              | 200  | 478              | 299  | 617              | 393  | 827              | 545  | 918              | 605  | 1075             | 638  |
|                               |           |                             |          | 159              | 100  | 223              | 146  | 247              | 154  | 344              | 216  | 438              | 278  | 634              | 413  | 704              | 458  | 824              | 483  |
| 3                             | 8         | 27                          | 19       | 202              | 129  | 285              | 198  | 398              | 248  | 529              | 335  | 689              | 447  | 865              | 590  | 960              | 655  | 1125             | 690  |
|                               |           |                             |          | 174              | 112  | 256              | 176  | 304              | 190  | 439              | 279  | 580              | 375  | 766              | 517  | 850              | 574  | 996              | 605  |
|                               |           |                             |          | 145              | 094  | 202              | 136  | 235              | 148  | 319              | 204  | 416              | 268  | 595              | 395  | 660              | 438  | 774              | 462  |
| 3                             | 10        | 27                          | 19       | 176              | 117  | 243              | 180  | 366              | 232  | 470              | 307  | 631              | 420  | 781              | 554  | 867              | 615  | 1015             | 648  |
|                               |           |                             |          | 153              | 102  | 220              | 161  | 282              | 179  | 394              | 258  | 535              | 354  | 697              | 487  | 774              | 541  | 906              | 570  |
|                               |           |                             |          | 129              | 086  | 178              | 126  | 220              | 140  | 290              | 191  | 389              | 255  | 549              | 374  | 609              | 415  | 714              | 438  |
| 5                             | 8         | 27                          | 19       | 202              | 129  | 287              | 198  | 387              | 242  | 523              | 333  | 663              | 435  | 835              | 577  | 927              | 640  | 1086             | 675  |
|                               |           |                             |          | 173              | 111  | 255              | 175  | 292              | 184  | 431              | 275  | 555              | 363  | 736              | 504  | 817              | 559  | 957              | 590  |
|                               |           |                             |          | 143              | 093  | 199              | 135  | 224              | 142  | 309              | 199  | 394              | 257  | 566              | 382  | 628              | 424  | 736              | 447  |
| 5                             | 10        | 27                          | 19       | 179              | 119  | 248              | 182  | 358              | 228  | 470              | 307  | 611              | 411  | 757              | 543  | 840              | 603  | 984              | 635  |
|                               |           |                             |          | 155              | 103  | 223              | 162  | 273              | 175  | 391              | 258  | 515              | 345  | 673              | 476  | 747              | 528  | 875              | 557  |
|                               |           |                             |          | 129              | 086  | 178              | 126  | 211              | 136  | 284              | 188  | 371              | 247  | 526              | 364  | 584              | 404  | 684              | 426  |
| 5                             | 12        | 27                          | 19       | 151              | 106  | 203              | 164  | 323              | 212  | 407              | 279  | 549              | 384  | 667              | 507  | 740              | 563  | 867              | 593  |
|                               |           |                             |          | 132              | 093  | 185              | 146  | 249              | 164  | 342              | 235  | 468              | 324  | 599              | 446  | 665              | 495  | 779              | 522  |
|                               |           |                             |          | 111              | 078  | 151              | 115  | 195              | 129  | 253              | 174  | 342              | 234  | 477              | 343  | 529              | 381  | 620              | 401  |
| 7                             | 10        | 27                          | 19       | 178              | 118  | 247              | 182  | 344              | 221  | 462              | 304  | 582              | 398  | 721              | 529  | 800              | 587  | 937              | 619  |
|                               |           |                             |          | 152              | 102  | 221              | 161  | 260              | 169  | 380              | 252  |                  |      |                  |      |                  |      |                  |      |

# TECHNICAL DATA AT CONDITIONS NON STANDARD

## 2 PIPES 4 ROWS

|                               |           |                             |          |                  |      | 412              | 420  | 425              | 435  | 450              | 460  | 480              | 490  |                  |      |                  |      |
|-------------------------------|-----------|-----------------------------|----------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|
| Water Temperature<br>IN<br>°C | OUT<br>°C | Air Temperature<br>DB<br>°C | WB<br>°C | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      | Cooling Capacity |      |
|                               |           |                             |          | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens | Total            | Sens |
|                               |           |                             |          | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] | [kW]             | [kW] |
| 3                             | 6         | 29                          | 21       | 261              | 150  | 381              | 228  | 490              | 279  | 386              | 386  | 859              | 499  | 1104             | 661  | 1225             | 734  |
|                               |           |                             |          | 223              | 129  | 338              | 201  | 371              | 212  | 319              | 319  | 716              | 416  | 968              | 577  | 1074             | 640  |
|                               |           |                             |          | 185              | 107  | 261              | 155  | 285              | 266  | 230              | 230  | 506              | 294  | 738              | 436  | 819              | 484  |
| 3                             | 8         | 29                          | 21       | 240              | 139  | 345              | 213  | 464              | 266  | 361              | 361  | 811              | 477  | 1031             | 629  | 1144             | 698  |
|                               |           |                             |          | 206              | 120  | 308              | 188  | 354              | 203  | 300              | 300  | 680              | 399  | 909              | 551  | 1009             | 612  |
|                               |           |                             |          | 172              | 101  | 241              | 146  | 273              | 158  | 219              | 219  | 486              | 285  | 701              | 420  | 778              | 466  |
| 3                             | 10        | 29                          | 21       | 215              | 128  | 305              | 196  | 434              | 251  | 335              | 335  | 757              | 452  | 951              | 596  | 1056             | 662  |
|                               |           |                             |          | 186              | 111  | 274              | 174  | 333              | 193  | 280              | 280  | 639              | 390  | 845              | 523  | 938              | 581  |
|                               |           |                             |          | 157              | 094  | 218              | 135  | 259              | 151  | 206              | 206  | 461              | 273  | 658              | 401  | 730              | 445  |
| 5                             | 8         | 29                          | 21       | 239              | 139  | 345              | 213  | 452              | 260  | 358              | 358  | 785              | 465  | 1001             | 616  | 1111             | 684  |
|                               |           |                             |          | 205              | 120  | 307              | 188  | 342              | 197  | 296              | 296  | 655              | 388  | 879              | 538  | 976              | 597  |
|                               |           |                             |          | 169              | 099  | 237              | 144  | 263              | 152  | 214              | 214  | 464              | 274  | 672              | 407  | 746              | 452  |
| 5                             | 10        | 29                          | 21       | 218              | 129  | 309              | 198  | 425              | 246  | 334              | 334  | 736              | 443  | 926              | 585  | 1028             | 649  |
|                               |           |                             |          | 187              | 112  | 276              | 175  | 324              | 189  | 278              | 278  | 618              | 371  | 819              | 513  | 909              | 569  |
|                               |           |                             |          | 156              | 094  | 217              | 136  | 250              | 146  | 203              | 203  | 443              | 265  | 634              | 391  | 704              | 434  |
| 5                             | 12        | 29                          | 21       | 192              | 118  | 266              | 181  | 393              | 231  | 308              | 308  | 678              | 418  | 842              | 552  | 935              | 613  |
|                               |           |                             |          | 166              | 102  | 241              | 161  | 302              | 178  | 258              | 258  | 574              | 352  | 751              | 485  | 834              | 538  |
|                               |           |                             |          | 140              | 086  | 193              | 126  | 235              | 140  | 190              | 190  | 416              | 253  | 589              | 372  | 654              | 413  |
| 7                             | 10        | 29                          | 21       | 216              | 128  | 307              | 197  | 411              | 240  | 330              | 330  | 706              | 430  | 890              | 571  | 988              | 634  |
|                               |           |                             |          | 185              | 110  | 273              | 174  | 310              | 182  | 273              | 273  | 590              | 359  | 784              | 498  | 870              | 553  |
|                               |           |                             |          | 153              | 092  | 212              | 134  | 238              | 141  | 197              | 197  | 418              | 254  | 602              | 377  | 668              | 418  |
| 7                             | 12        | 29                          | 21       | 193              | 118  | 268              | 182  | 383              | 226  | 306              | 306  | 654              | 408  | 812              | 540  | 901              | 599  |
|                               |           |                             |          | 166              | 103  | 241              | 161  | 291              | 174  | 255              | 255  | 551              | 342  | 721              | 473  | 800              | 525  |
|                               |           |                             |          | 139              | 086  | 191              | 125  | 225              | 135  | 187              | 187  | 396              | 245  | 562              | 361  | 624              | 401  |
| 7                             | 14        | 29                          | 21       | 166              | 107  | 224              | 165  | 348              | 211  | 280              | 280  | 592              | 383  | 722              | 560  | 801              | 622  |
|                               |           |                             |          | 144              | 093  | 204              | 147  | 268              | 163  | 235              | 235  | 503              | 323  | 648              | 444  | 719              | 493  |
|                               |           |                             |          | 121              | 079  | 166              | 115  | 209              | 128  | 174              | 174  | 367              | 233  | 513              | 342  | 569              | 380  |
| 9                             | 12        | 29                          | 21       | 191              | 117  | 265              | 181  | 367              | 219  | 302              | 302  | 621              | 394  | 773              | 524  | 858              | 582  |
|                               |           |                             |          | 163              | 101  | 237              | 160  | 277              | 167  | 250              | 250  | 520              | 329  | 682              | 458  | 757              | 508  |
|                               |           |                             |          | 135              | 084  | 185              | 123  | 212              | 129  | 171              | 181  | 369              | 234  | 527              | 347  | 585              | 385  |
| 9                             | 14        | 29                          | 21       | 167              | 107  | 225              | 166  | 337              | 206  | 278              | 278  | 566              | 372  | 689              | 493  | 765              | 547  |
|                               |           |                             |          | 144              | 093  | 203              | 147  | 256              | 158  | 232              | 232  | 478              | 312  | 615              | 432  | 683              | 480  |
|                               |           |                             |          | 120              | 078  | 163              | 114  | 198              | 123  | 170              | 170  | 345              | 224  | 484              | 330  | 537              | 366  |
| 9                             | 16        | 29                          | 21       | 137              | 096  | 177              | 149  | 299              | 190  | 251              | 251  | 498              | 346  | 591              | 458  | 656              | 508  |
|                               |           |                             |          | 119              | 084  | 163              | 133  | 231              | 148  | 211              | 211  | 426              | 292  | 535              | 403  | 594              | 447  |
|                               |           |                             |          | 100              | 071  | 135              | 104  | 180              | 116  | 157              | 157  | 313              | 211  | 431              | 310  | 478              | 344  |
| 11                            | 14        | 29                          | 21       | 163              | 106  | 221              | 164  | 319              | 199  | 273              | 273  | 529              | 358  | 643              | 476  | 714              | 528  |
|                               |           |                             |          | 139              | 092  | 198              | 145  | 240              | 152  | 226              | 226  | 444              | 299  | 572              | 416  | 635              | 462  |
|                               |           |                             |          | 115              | 076  | 156              | 112  | 183              | 117  | 164              | 164  | 316              | 213  | 446              | 316  | 495              | 351  |
| 11                            | 16        | 29                          | 21       | 170              | 096  | 177              | 149  | 286              | 185  | 249              | 249  | 469              | 335  | 554              | 445  | 615              | 494  |
|                               |           |                             |          | 118              | 083  | 162              | 132  | 218              | 143  | 208              | 208  | 398              | 282  | 499              | 390  | 554              | 433  |
|                               |           |                             |          | 099              | 070  | 132              | 103  | 168              | 112  | 153              | 153  | 289              | 202  | 399              | 268  | 443              | 297  |
| 11                            | 18        | 29                          | 21       | 104              | 084  | 130              | 130  | 244              | 169  | 221              | 221  | 393              | 308  | 446              | 408  | 495              | 453  |
|                               |           |                             |          | 091              | 073  | 117              | 117  | 189              | 132  | 186              | 186  | 340              | 261  | 411              | 359  | 456              | 398  |
|                               |           |                             |          | 077              | 062  | 101              | 092  | 158              | 104  | 139              | 139  | 254              | 189  | 339              | 278  | 376              | 309  |
| 3                             | 6         | 31                          | 23       | 299              | 158  | 440              | 239  | 558              | 294  | 407              | 407  | 984              | 523  | 1272             | 692  | 1412             | 768  |
|                               |           |                             |          | 256              | 135  | 390              | 211  | 422              | 222  | 335              | 335  | 819              | 436  | 1113             | 603  | 1235             | 669  |
|                               |           |                             |          | 212              | 112  | 300              | 162  | 324              | 171  | 241              | 241  | 578              | 328  | 845              | 455  | 938              | 505  |
| 3                             | 8         | 31                          | 23       | 279              | 148  | 406              | 225  | 533              | 281  | 384              | 384  | 938              | 502  | 1203             | 662  | 1335             | 735  |
|                               |           |                             |          | 240              | 128  | 361              | 199  | 405              | 214  | 318              | 318  | 785              | 420  | 1057             | 579  | 1173             | 643  |
|                               |           |                             |          | 200              | 107  | 281              | 154  | 313              | 160  | 231              | 231  | 559              | 299  | 810              | 440  | 899              | 488  |
| 3                             | 10        | 31                          | 23       | 256              | 138  | 368              | 209  | 504              | 267  | 359              | 359  | 887              | 480  | 1127             | 631  | 1251             | 700  |
|                               |           |                             |          | 221              | 119  | 330              | 186  | 386              | 205  | 299              | 299  | 746              | 403  | 996              | 553  | 1106             | 614  |
|                               |           |                             |          | 185              | 100  | 260              | 145  | 300              | 159  | 219              | 219  | 536              | 288  | 770              | 423  | 855              | 470  |
| 5                             | 8         | 31                          | 23       | 278              | 148  | 406              | 225  | 520              | 275  | 381              | 381  | 712              | 491  | 1172             | 650  | 1301             | 722  |
|                               |           |                             |          | 238              | 127  | 359              | 198  | 393              | 208  | 314              | 314  | 760              | 409  | 1027             | 566  | 1140             | 628  |
|                               |           |                             |          | 197              | 150  | 277              | 152  | 301              | 160  | 226              | 226  | 536              | 289  | 782              | 428  | 868              | 475  |
| 5                             | 10        | 31                          | 23       | 257              | 138  | 371              | 211  | 495              | 262  | 358              | 358  | 865              | 470  | 1102             | 621  | 1223             | 689  |
|                               |           |                             |          | 221              | 119  | 331              | 187  | 377              | 200  | 297              | 297  | 725              | 393  | 970              | 543  | 1077             | 603  |
|                               |           |                             |          | 184              | 100  | 258              | 144  | 291              | 155  | 216              | 216  | 517              | 280  | 746              | 413  | 828              | 458  |
| 5                             | 12        | 31                          | 23       | 233              | 128  | 331              | 195  | 465              | 248  | 334              | 334  | 811              | 447  | 1022             | 590  | 1134             | 655  |
|                               |           |                             |          | 202              | 111  | 298              | 174  | 356              | 191  | 278              | 278  | 684              | 376  | 906              | 517  | 1005             | 574  |
|                               |           |                             |          | 169              | 093  | 236              | 135  | 277              | 149  | 204              | 204  | 492              | 270  | 704              | 396  | 781              | 440  |
| 7                             | 10        | 31                          | 23       | 255              | 137  | 369              | 210  | 481              | 256  | 354              | 354  | 835              | 458  | 1066             | 607  | 1183             | 674  |
|                               |           |                             |          | 218              | 118  | 327              | 185  | 363              | 194  | 292              | 292  | 696              | 381  | 935              | 529  | 1038             | 587  |
|                               |           |                             |          | 180              | 098  | 253              | 142  | 278              | 149  | 210              | 210  | 492              | 270  | 714              | 400  | 793              | 444  |
| 7                             | 12        | 31                          | 23       | 234              | 128  | 333              | 196  | 454              | 243  | 332              | 332  | 786              | 437  | 992              | 578  | 1101             | 642  |
|                               |           |                             |          | 201              | 111  | 297              | 174  | 345              | 186  | 275              | 275  | 660              | 366  | 876              | 506  | 972              | 562  |
|                               |           |                             |          | 168              | 093  | 233              | 134  | 266              | 144  | 201              | 201  | 471              | 261  | 676              | 385  | 750              | 427  |
| 7                             | 14        | 31                          | 23       | 208              | 118  | 291              | 181  | 422              | 229  | 307              | 307  | 729              | 414  | 908              | 547  | 1008             | 607  |
|                               |           |                             |          | 180              | 102  | 263              | 161  | 324              | 177  | 257              | 257  | 616              | 348  | 808              | 480  | 897              | 533  |
|                               |           |                             |          | 151              | 086  | 210              | 125  | 252              | 138  | 189              | 189  | 445              | 250  | 632              | 368  | 702              | 408  |
|                               |           |                             |          |                  |      |                  |      |                  |      |                  |      |                  |      |                  |      |                  |      |

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