cert. n. 0545

# One way Cassette fan coil unit

## Carisma Coanda

# CCN
# CCN-ECM

TECHNICAL CATALOGUE

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Sabiana take part to the Eurovent program of fan coil performance certification. The official figures are published in the web site **www.eurovent-certification.com**. The tested performances are:

**Total cooling emission at the following conditions:**
- water temperature +7 °C E.W.T. +12 °C L.W.T.
- air temperature +27 °C d.b. +19 °C w.b.

**Heating emission (2 pipe units) at the following conditions:**
- water temperature +45 °C E.W.T. +40 °C L.W.T.
- air temperature +20 °C

**Sensible cooling emission at the following conditions:**
- water temperature +7 °C E.W.T. +12 °C L.W.T.
- air temperature +27 °C d.b. +19 °C w.b.

**Heating emission (4 pipe units) at the following conditions:**
- water temperature +65 °C E.W.T. +55 °C L.W.T.
- air temperature +20 °C

**Fan absorption** **Water side pressure drop** **Sound power**

## INTRODUCTION

Thanks to the particular air handling section the **Carisma Coanda** generate an airflow with a "coanda" effect.

This single-piece unit is suitable for installation in a suspended ceiling.

Air intake is from the bottom while the air supply is parallel to the ceiling, through practical and functional intake and outlet grids. The "coanda" effect creates excellent circulation of the air inside the room.

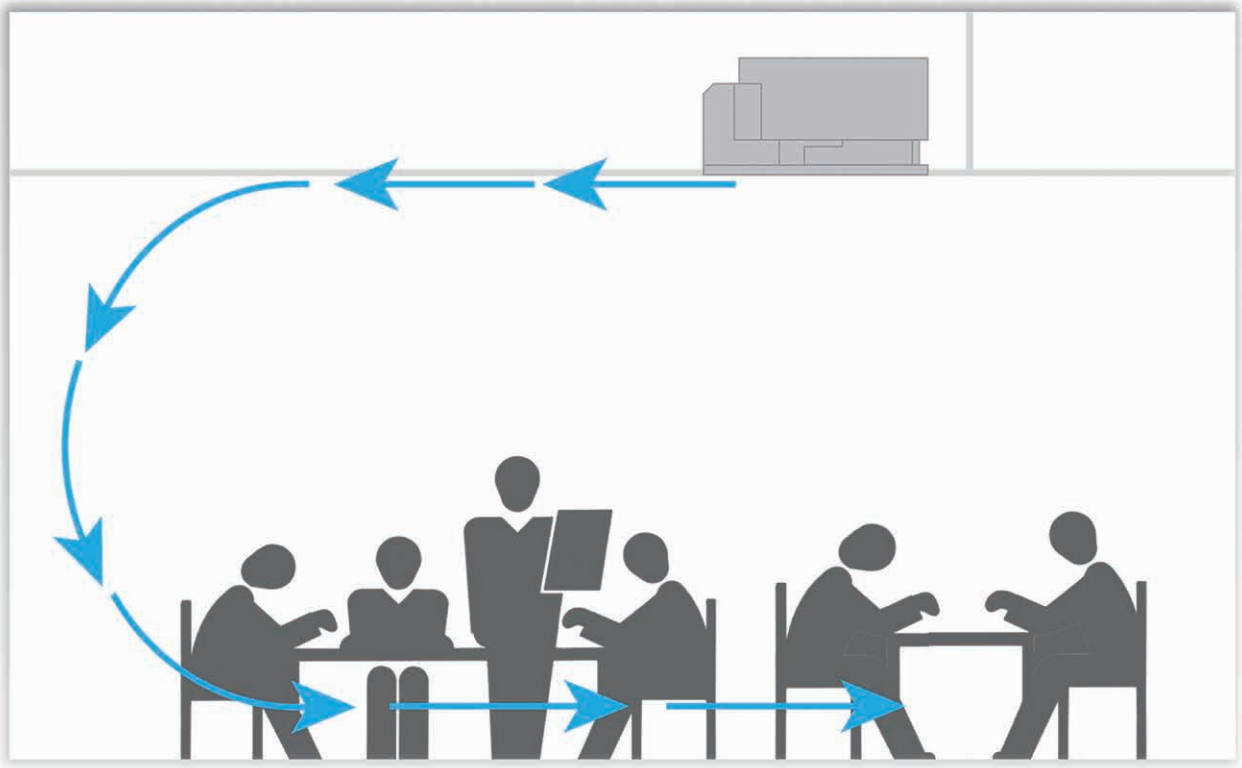
In addition to the traditional AC asynchronous motors are available innovative electronic motors of brushless and sensorless type with extremely low energy consumption, controlled by an inverter board.

A continious variation of the air flow rate allows to control and regulate the ambient temperature with precision, so that the electric consumption decreases by more than 50% with further benefits in terms of very low noise levels.

Every unit can be supplied with 1 coil (2 pipe system) and possibly an electric heater or with 2 coils (4 pipe system) with one or two rows, for water supply at a low temperature.

Fresh air may be mixed with room air. A condensate pump may also be supplied as an accessory.

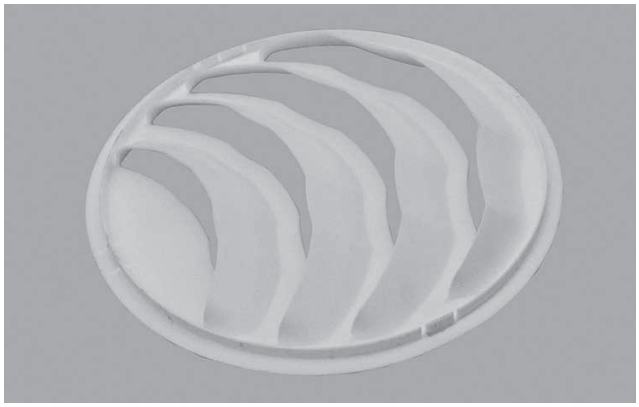
In addition to the conventional temperature and speed control systems, there is also the possibility to control operation of each unit through a single remote control with central supervisor software installed on a PC (called Sabianet).



# CONSTRUCTIONAL FEATURES OF THE MAIN COMPONENTS

## Casing

Made of 1 mm galvanized steel, of 2 lateral corners and a lower panel insulated with 6 mm polyolefin (PO) foam (class M1).



## Diffuser with intake grille

In prepainted metal sheet in RAL 9003 colour with intake grille that can be opened for inspection and maintenance of the air filter.

## Fan assembly

The fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

## Electric motor

The motor is for single phase supply and has six speeds, three of which are connected, with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class B.
The speeds connected in the factory are indicated by "MIN, MED and MAX" in the following tables.

## Coil

It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process.
The coil has two Ø 1/2 inch BSP internal connections.
The coil has Ø 1/8" inch BSP air vent and drain.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
**The connection side cannot be changed on site.**

## Condensate collection tray

Made of "L"-shaped plastic (ABS UL94 HB) fitted on the inner casing; the tray is insulated with 3 mm polyolefin (PO) foam (class M1).
The outside diameter of the condensate discharge pipe is Ø 15 mm.

## Air filter

Polypropylene cellular fabric regenerating filter.

## Round diffuser

The **Carisma Coanda** are supplied with round diffusers suitably designed to generate an airflow with "coanda" effect.
The direction of diffuser air flow can be adjusted on site.

# TECHNICAL FEATURES

## 3 row coil unit - 2 pipe units

The following standard rating conditions are used:

**COOLING**
Entering air temperature: + 27 °C d.b. + 19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

**HEATING**
Entering air temperature: + 20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

| MODEL | | CCN 13 | | | | | | CCN 23 | | | | | | CCN 33 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Speed | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| | | MIN | MED | | | MAX | | MIN | MED | | MAX | | | MIN | MED | | MAX | | |
| Air flow | $m^3/h$ | 140 | 180 | 220 | 245 | 280 | 305 | 200 | 240 | 305 | 380 | 470 | 560 | 290 | 360 | 440 | 540 | 620 | 680 |
| Cooling total emission (E) | kW | 0,86 | 1,04 | 1,23 | 1,32 | 1,45 | 1,54 | 1,35 | 1,59 | 1,94 | 2,33 | 2,75 | 3,15 | 1,94 | 2,34 | 2,80 | 3,28 | 3,68 | 3,97 |
| Cooling sensible emission (E) | kW | 0,64 | 0,79 | 0,95 | 1,02 | 1,13 | 1,21 | 0,98 | 1,16 | 1,43 | 1,73 | 2,07 | 2,40 | 1,41 | 1,71 | 2,07 | 2,45 | 2,76 | 2,99 |
| Heating emission (E) | kW | 0,91 | 1,12 | 1,34 | 1,45 | 1,62 | 1,75 | 1,33 | 1,59 | 1,96 | 2,38 | 2,86 | 3,29 | 1,91 | 2,32 | 2,80 | 3,34 | 3,77 | 4,07 |
| Dp Cooling (E) | kPa | 2,9 | 4,0 | 5,2 | 5,9 | 7,8 | 8,5 | 2,9 | 3,9 | 5,5 | 7,6 | 10,3 | 13,1 | 7,7 | 10,6 | 14,5 | 19,4 | 23,5 | 27,0 |
| Dp Heating (E) | kPa | 2,8 | 4,0 | 5,0 | 5,7 | 7,4 | 8,1 | 2,3 | 3,1 | 4,5 | 6,4 | 8,8 | 11,3 | 5,1 | 7,1 | 9,9 | 13,5 | 16,8 | 19,1 |
| Motor power input (E) | W | 16 | 22 | 32 | 38 | 49 | 66 | 24 | 27 | 34 | 44 | 57 | 71 | 27 | 33 | 42 | 59 | 72 | 84 |
| Sound power (Lw) (E) | dB(A) | 35 | 41 | 46 | 49 | 52 | 55 | 33 | 36 | 42 | 48 | 54 | 57 | 35 | 41 | 46 | 52 | 55 | 57 |
| Sound pressure (Lp) (1) | dB(A) | 26 | 32 | 37 | 40 | 43 | 46 | 24 | 27 | 33 | 39 | 45 | 48 | 26 | 32 | 37 | 43 | 46 | 48 |

**(E)** Eurovent certified performance (MIN-MED-MAX speed)
**(1)** The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 $m^3$ room and a reverberation time of 0.5 sec.
**MIN-MED-MAX** = Speeds connected in the factory

## 4 row coil unit - 2 pipe units

The following standard rating conditions are used:

**COOLING**
Entering air temperature: + 27 °C d.b. + 19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

**HEATING**
Entering air temperature: + 20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

| MODEL | | CCN 14 | | | | | | CCN 24 | | | | | | CCN 34 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Speed | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| | | MIN | MED | | | MAX | | MIN | MED | | MAX | | | | MIN | | MED | MAX | |
| Air flow | $m^3/h$ | 140 | 180 | 220 | 245 | 280 | 305 | 200 | 240 | 305 | 380 | 470 | 560 | 290 | 360 | 440 | 540 | 620 | 680 |
| Cooling total emission (E) | kW | 0,95 | 1,17 | 1,40 | 1,52 | 1,69 | 1,80 | 1,42 | 1,69 | 2,09 | 2,53 | 3,03 | 3,51 | 2,02 | 2,46 | 2,96 | 3,50 | 3,95 | 4,28 |
| Cooling sensible emission (E) | kW | 0,69 | 0,86 | 1,04 | 1,13 | 1,26 | 1,36 | 1,02 | 1,21 | 1,51 | 1,84 | 2,22 | 2,59 | 1,45 | 1,78 | 2,15 | 2,57 | 2,91 | 3,17 |
| Heating emission (E) | kW | 0,95 | 1,18 | 1,43 | 1,56 | 1,74 | 1,88 | 1,41 | 1,69 | 2,12 | 2,60 | 3,17 | 3,71 | 1,97 | 2,40 | 2,92 | 3,40 | 3,97 | 4,33 |
| Dp Cooling (E) | kPa | 4,7 | 6,6 | 9,2 | 10,6 | 12,9 | 14,6 | 4,4 | 6,0 | 8,6 | 12,1 | 16,8 | 21,7 | 4,7 | 6,7 | 9,3 | 12,6 | 15,5 | 17,9 |
| Dp Heating (E) | kPa | 3,7 | 5,4 | 7,7 | 8,9 | 10,8 | 12,4 | 3,5 | 4,9 | 7,2 | 10,4 | 14,7 | 19,4 | 3,7 | 5,3 | 7,4 | 10,2 | 12,7 | 14,8 |
| Motor power input (E) | W | 16 | 22 | 32 | 38 | 49 | 66 | 24 | 27 | 34 | 44 | 57 | 71 | 27 | 33 | 42 | 59 | 72 | 84 |
| Sound power (Lw) (E) | dB(A) | 35 | 41 | 46 | 49 | 52 | 55 | 33 | 36 | 42 | 48 | 54 | 57 | 35 | 41 | 46 | 52 | 55 | 57 |
| Sound pressure (Lp) (1) | dB(A) | 26 | 32 | 37 | 40 | 43 | 46 | 24 | 27 | 33 | 39 | 45 | 48 | 26 | 32 | 37 | 43 | 46 | 48 |

**(E)** Eurovent certified performance (MIN-MED-MAX speed)
**(1)** The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 $m^3$ room and a reverberation time of 0.5 sec.
**MIN-MED-MAX** = Speeds connected in the factory

## 3+1 row coil unit - 4 pipe units

The following standard rating conditions are used:

### COOLING

Entering air temperature: + 27 °C d.b. + 19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

### HEATING

Entering air temperature: + 20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

| MODEL | | CCN 13+1 | | | | | | CCN 23+1 | | | | | | CCN 33+1 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Speed | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| | | MIN | MED | | | MAX | | MIN | MED | | MAX | | | MIN | | MED | MAX | | |
| Air flow | $m^3/h$ | 140 | 180 | 220 | 245 | 280 | 305 | 200 | 240 | 305 | 380 | 470 | 560 | 290 | 360 | 440 | 540 | 620 | 680 |
| Cooling total emission (E) | kW | 0,86 | 1,04 | 1,23 | 1,32 | 1,45 | 1,54 | 1,35 | 1,59 | 1,94 | 2,33 | 2,75 | 3,15 | 1,94 | 2,34 | 2,80 | 3,28 | 3,68 | 3,97 |
| Cooling sensible emission (E) | kW | 0,64 | 0,79 | 0,95 | 1,02 | 1,13 | 1,21 | 0,98 | 1,16 | 1,43 | 1,73 | 2,07 | 2,40 | 1,41 | 1,71 | 2,07 | 2,45 | 2,76 | 2,99 |
| Heating emission (E) | kW | 0,81 | 0,95 | 1,10 | 1,17 | 1,28 | 1,36 | 1,31 | 1,50 | 1,77 | 2,06 | 2,39 | 2,69 | 1,86 | 2,17 | 2,52 | 2,89 | 3,19 | 3,41 |
| Dp Cooling (E) | kPa | 3,6 | 5,0 | 6,7 | 7,7 | 9,1 | 10,3 | 2,9 | 3,9 | 5,5 | 7,6 | 10,3 | 13,1 | 7,7 | 10,6 | 14,5 | 19,4 | 23,5 | 27,0 |
| Dp Heating (E) | kPa | 1,3 | 1,7 | 2,2 | 2,5 | 2,9 | 3,2 | 0,7 | 0,9 | 1,3 | 1,6 | 2,1 | 2,6 | 1,6 | 2,1 | 2,7 | 3,5 | 4,1 | 4,7 |
| Motor power input (E) | W | 16 | 22 | 32 | 38 | 49 | 66 | 24 | 27 | 34 | 44 | 57 | 71 | 27 | 33 | 42 | 59 | 72 | 84 |
| Sound power (Lw) (E) | dB(A) | 35 | 41 | 46 | 49 | 52 | 55 | 33 | 36 | 42 | 48 | 54 | 57 | 35 | 41 | 46 | 52 | 55 | 57 |
| Sound pressure (Lp) (1) | dB(A) | 26 | 32 | 37 | 40 | 43 | 46 | 24 | 27 | 33 | 39 | 45 | 48 | 26 | 32 | 37 | 43 | 46 | 48 |

**(E)** Eurovent certified performance (MIN-MED-MAX speed)
**(1)** The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 $m^3$ room and a reverberation time of 0.5 sec.
**MIN-MED-MAX** = Speeds connected in the factory

# COOLING EMISSION

## 3 row coil units

### Entering air temperature: 27 °C – R.H.: 50%

| Model | Vn | | Qv | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| | | | $m^3/h$ | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN 13 | 6 | | 305 | 1,66 | 1,20 | 286 | 7,8 | 1,47 | 1,12 | 254 | 6,3 | 1,07 | 0,97 | 185 | 3,7 | 0,84 | 0,84 | 145 | 2,5 |
| | 5 | MAX | 280 | 1,57 | 1,13 | 270 | 7,0 | 1,39 | 1,06 | 239 | 5,6 | 1,02 | 0,92 | 176 | 3,3 | 0,80 | 0,80 | 138 | 2,2 |
| | 4 | | 245 | 1,42 | 1,02 | 245 | 5,8 | 1,26 | 0,95 | 217 | 4,7 | 0,93 | 0,82 | 160 | 2,8 | 0,72 | 0,72 | 124 | 1,8 |
| | 3 | | 220 | 1,33 | 0,94 | 228 | 5,1 | 1,18 | 0,89 | 203 | 4,2 | 0,88 | 0,77 | 151 | 2,5 | 0,67 | 0,67 | 115 | 1,5 |
| | 2 | MED | 180 | 1,12 | 0,79 | 192 | 3,8 | 1,00 | 0,74 | 172 | 3,1 | 0,75 | 0,64 | 129 | 1,8 | 0,57 | 0,57 | 98 | 1,1 |
| | 1 | MIN | 140 | 0,93 | 0,64 | 161 | 2,7 | 0,83 | 0,60 | 143 | 2,2 | 0,62 | 0,52 | 107 | 1,3 | 0,46 | 0,46 | 80 | 0,8 |
| CCN 23 | 6 | | 560 | 3,40 | 2,39 | 585 | 14,9 | 3,05 | 2,25 | 524 | 12,2 | 2,29 | 1,95 | 394 | 7,4 | 1,71 | 1,71 | 294 | 4,4 |
| | 5 | | 470 | 2,97 | 2,07 | 511 | 11,7 | 2,66 | 1,94 | 458 | 9,6 | 2,00 | 1,68 | 345 | 5,8 | 1,48 | 1,48 | 255 | 3,4 |
| | 4 | MAX | 380 | 2,50 | 1,73 | 429 | 8,6 | 2,25 | 1,62 | 386 | 7,1 | 1,70 | 1,41 | 292 | 4,3 | 1,24 | 1,24 | 213 | 2,5 |
| | 3 | | 305 | 2,09 | 1,43 | 359 | 6,3 | 1,88 | 1,34 | 323 | 5,2 | 1,43 | 1,16 | 245 | 3,2 | 1,03 | 1,03 | 176 | 1,8 |
| | 2 | MED | 240 | 1,71 | 1,16 | 295 | 4,4 | 1,54 | 1,09 | 265 | 3,6 | 1,17 | 0,94 | 202 | 2,2 | 0,83 | 0,83 | 143 | 1,2 |
| | 1 | MIN | 200 | 1,45 | 0,98 | 249 | 3,3 | 1,30 | 0,92 | 223 | 2,7 | 1,00 | 0,79 | 171 | 1,7 | 0,70 | 0,70 | 120 | 0,9 |
| CCN 33 | 6 | | 680 | 4,28 | 2,98 | 735 | 25,8 | 3,83 | 2,80 | 658 | 21,2 | 2,90 | 2,43 | 498 | 13,0 | 2,14 | 2,14 | 367 | 7,6 |
| | 5 | | 620 | 3,96 | 2,75 | 681 | 22,5 | 3,56 | 2,58 | 612 | 18,6 | 2,70 | 2,24 | 464 | 11,4 | 1,97 | 1,97 | 338 | 6,6 |
| | 4 | MAX | 540 | 3,53 | 2,44 | 607 | 18,4 | 3,17 | 2,29 | 545 | 15,2 | 2,41 | 1,99 | 415 | 9,3 | 1,75 | 1,75 | 301 | 5,3 |
| | 3 | | 440 | 3,01 | 2,06 | 517 | 13,8 | 2,71 | 1,94 | 466 | 11,4 | 2,07 | 1,68 | 356 | 7,0 | 1,48 | 1,48 | 254 | 3,9 |
| | 2 | MED | 360 | 2,52 | 1,71 | 433 | 10,0 | 2,27 | 1,61 | 390 | 8,3 | 1,74 | 1,39 | 299 | 5,2 | 1,23 | 1,23 | 211 | 2,8 |
| | 1 | MIN | 290 | 2,08 | 1,41 | 358 | 7,2 | 1,88 | 1,32 | 324 | 6,0 | 1,44 | 1,14 | 248 | 3,7 | 1,01 | 1,01 | 174 | 2,0 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## Entering air temperature 26 °C – R.H.: 50%

| Model | Vn | | Qv | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| | | | $m^3/h$ | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN 13 | 6 | | 305 | 1,46 | 1,12 | 252 | 6,3 | 1,27 | 1,05 | 219 | 5,0 | 0,92 | 0,92 | 159 | 2,9 | 0,76 | 0,76 | 131 | 2,1 |
| | 5 | MAX | 280 | 1,38 | 1,06 | 238 | 5,6 | 1,21 | 0,99 | 208 | 4,4 | 0,87 | 0,87 | 150 | 2,5 | 0,72 | 0,72 | 124 | 1,8 |
| | 4 | | 245 | 1,26 | 0,95 | 217 | 4,7 | 1,10 | 0,89 | 190 | 3,7 | 0,76 | 0,76 | 131 | 2,0 | 0,65 | 0,65 | 112 | 1,5 |
| | 3 | | 220 | 1,18 | 0,89 | 203 | 4,1 | 1,03 | 0,83 | 177 | 3,3 | 0,72 | 0,71 | 123 | 1,7 | 0,61 | 0,61 | 105 | 1,3 |
| | 2 | MED | 180 | 1,00 | 0,74 | 172 | 3,1 | 0,88 | 0,69 | 151 | 2,4 | 0,61 | 0,59 | 105 | 1,3 | 0,52 | 0,52 | 89 | 1,0 |
| | 1 | MIN | 140 | 0,82 | 0,60 | 142 | 2,2 | 0,72 | 0,56 | 125 | 1,8 | 0,51 | 0,48 | 88 | 1,0 | 0,42 | 0,42 | 73 | 0,7 |
| CCN 23 | 6 | | 560 | 3,03 | 2,25 | 521 | 12,2 | 2,67 | 2,10 | 459 | 9,7 | 1,89 | 1,80 | 325 | 5,3 | 1,56 | 1,56 | 268 | 3,8 |
| | 5 | | 470 | 2,64 | 1,94 | 455 | 9,5 | 2,33 | 1,81 | 401 | 7,6 | 1,66 | 1,55 | 286 | 4,2 | 1,34 | 1,34 | 231 | 2,9 |
| | 4 | MAX | 380 | 2,23 | 1,63 | 383 | 7,1 | 1,97 | 1,52 | 338 | 5,7 | 1,42 | 1,30 | 244 | 3,2 | 1,14 | 1,14 | 195 | 2,1 |
| | 3 | | 305 | 1,87 | 1,35 | 321 | 5,1 | 1,65 | 1,26 | 283 | 4,1 | 1,20 | 1,08 | 206 | 2,3 | 0,94 | 0,94 | 161 | 1,5 |
| | 2 | MED | 240 | 1,52 | 1,09 | 262 | 3,6 | 1,35 | 1,02 | 233 | 2,9 | 0,98 | 0,87 | 169 | 1,7 | 0,76 | 0,76 | 131 | 1,0 |
| | 1 | MIN | 200 | 1,29 | 0,92 | 221 | 2,7 | 1,15 | 0,86 | 197 | 2,2 | 0,84 | 0,73 | 144 | 1,2 | 0,64 | 0,64 | 109 | 0,8 |
| CCN 33 | 6 | | 680 | 3,81 | 2,81 | 655 | 21,2 | 3,37 | 2,62 | 579 | 17,0 | 2,42 | 2,25 | 416 | 9,5 | 1,95 | 1,95 | 335 | 6,5 |
| | 5 | | 620 | 3,53 | 2,59 | 607 | 18,5 | 3,13 | 2,42 | 538 | 14,9 | 2,25 | 2,08 | 387 | 8,4 | 1,80 | 1,80 | 309 | 5,6 |
| | 4 | MAX | 540 | 3,15 | 2,30 | 542 | 15,1 | 2,79 | 2,15 | 480 | 12,2 | 2,02 | 1,84 | 348 | 6,9 | 1,59 | 1,59 | 274 | 4,5 |
| | 3 | | 440 | 2,69 | 1,94 | 462 | 11,3 | 2,38 | 1,81 | 409 | 9,1 | 1,74 | 1,56 | 299 | 5,2 | 1,36 | 1,36 | 234 | 3,4 |
| | 2 | MED | 360 | 2,25 | 1,61 | 386 | 8,3 | 2,00 | 1,51 | 343 | 6,7 | 1,46 | 1,29 | 251 | 3,8 | 1,12 | 1,12 | 192 | 2,4 |
| | 1 | MIN | 290 | 1,86 | 1,33 | 320 | 6,0 | 1,66 | 1,24 | 286 | 4,8 | 1,21 | 1,06 | 209 | 2,8 | 0,92 | 0,92 | 159 | 1,7 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## Entering air temperature: 25 °C – R.H.: 50%

| Model | Vn | | Qv | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| | | | $m^3/h$ | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN 13 | 6 | | 305 | 1,27 | 1,05 | 219 | 5,0 | 1,08 | 0,97 | 186 | 3,8 | 0,84 | 0,84 | 145 | 2,5 | 0,68 | 0,68 | 118 | 1,7 |
| | 5 | MAX | 280 | 1,21 | 0,99 | 208 | 4,5 | 1,03 | 0,92 | 177 | 3,4 | 0,80 | 0,80 | 138 | 2,2 | 0,65 | 0,65 | 112 | 1,5 |
| | 4 | | 245 | 1,10 | 0,89 | 190 | 3,7 | 0,94 | 0,83 | 162 | 2,9 | 0,72 | 0,72 | 124 | 1,8 | 0,59 | 0,59 | 102 | 1,3 |
| | 3 | | 220 | 1,03 | 0,83 | 177 | 3,3 | 0,88 | 0,77 | 151 | 2,5 | 0,67 | 0,67 | 115 | 1,6 | 0,55 | 0,55 | 94 | 1,1 |
| | 2 | MED | 180 | 0,87 | 0,69 | 149 | 2,4 | 0,75 | 0,64 | 129 | 1,9 | 0,57 | 0,57 | 98 | 1,1 | 0,46 | 0,46 | 79 | 0,8 |
| | 1 | MIN | 140 | 0,72 | 0,56 | 125 | 1,8 | 0,62 | 0,52 | 107 | 1,4 | 0,46 | 0,46 | 80 | 0,8 | 0,38 | 0,38 | 66 | 0,6 |
| CCN 23 | 6 | | 560 | 2,66 | 2,11 | 457 | 9,7 | 2,30 | 1,96 | 395 | 7,5 | 1,72 | 1,72 | 296 | 4,5 | 1,41 | 1,41 | 242 | 3,2 |
| | 5 | | 470 | 2,32 | 1,82 | 400 | 7,7 | 2,01 | 1,69 | 346 | 5,9 | 1,48 | 1,48 | 255 | 3,5 | 1,21 | 1,21 | 209 | 2,5 |
| | 4 | MAX | 380 | 1,97 | 1,52 | 338 | 5,7 | 1,71 | 1,42 | 293 | 4,4 | 1,25 | 1,25 | 214 | 2,5 | 1,03 | 1,03 | 176 | 1,8 |
| | 3 | | 305 | 1,65 | 1,26 | 283 | 4,1 | 1,43 | 1,17 | 245 | 3,2 | 1,03 | 1,03 | 176 | 1,8 | 0,85 | 0,85 | 146 | 1,3 |
| | 2 | MED | 240 | 1,35 | 1,02 | 233 | 2,9 | 1,17 | 0,95 | 202 | 2,3 | 0,83 | 0,83 | 143 | 1,2 | 0,68 | 0,68 | 117 | 0,9 |
| | 1 | MIN | 200 | 1,14 | 0,86 | 195 | 2,2 | 1,00 | 0,80 | 171 | 1,7 | 0,67 | 0,67 | 115 | 0,9 | 0,58 | 0,58 | 99 | 0,7 |
| CCN 33 | 6 | | 680 | 3,36 | 2,63 | 577 | 17,0 | 2,91 | 2,45 | 500 | 13,2 | 2,14 | 2,14 | 367 | 7,7 | 1,76 | 1,76 | 302 | 5,5 |
| | 5 | | 620 | 3,12 | 2,43 | 536 | 14,9 | 2,71 | 2,26 | 466 | 11,6 | 1,98 | 1,98 | 340 | 6,7 | 1,63 | 1,63 | 280 | 4,7 |
| | 4 | MAX | 540 | 2,78 | 2,15 | 478 | 12,2 | 2,42 | 2,00 | 416 | 9,5 | 1,75 | 1,75 | 301 | 5,4 | 1,44 | 1,44 | 248 | 3,8 |
| | 3 | | 440 | 2,37 | 1,82 | 407 | 9,1 | 2,07 | 1,69 | 356 | 7,1 | 1,49 | 1,49 | 256 | 4,0 | 1,23 | 1,23 | 211 | 2,8 |
| | 2 | MED | 360 | 1,99 | 1,51 | 342 | 6,7 | 1,74 | 1,40 | 299 | 5,2 | 1,23 | 1,23 | 211 | 2,9 | 1,02 | 1,02 | 175 | 2,0 |
| | 1 | MIN | 290 | 1,65 | 1,24 | 284 | 4,8 | 1,44 | 1,15 | 248 | 3,8 | 0,98 | 0,97 | 169 | 1,9 | 0,83 | 0,83 | 143 | 1,4 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## 4 row coil units

### Entering air temperature: 27 °C – R.H.: 50%

| Model | Vn | | Qv | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| | | | m³/h | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN 14 | 6 | | 305 | 1,94 | 1,35 | 334 | 16,7 | 1,73 | 1,26 | 298 | 13,7 | 1,29 | 1,09 | 223 | 8,2 | 0,95 | 0,95 | 164 | 4,9 |
| | 5 | MAX | 280 | 1,82 | 1,26 | 313 | 14,6 | 1,63 | 1,18 | 281 | 12,0 | 1,22 | 1,02 | 210 | 7,3 | 0,90 | 0,90 | 155 | 4,3 |
| | 4 | | 245 | 1,63 | 1,12 | 281 | 12,1 | 1,46 | 1,05 | 251 | 9,9 | 1,10 | 0,91 | 190 | 6,0 | 0,80 | 0,80 | 138 | 3,5 |
| | 3 | | 220 | 1,51 | 1,04 | 259 | 10,5 | 1,36 | 0,97 | 234 | 8,6 | 1,03 | 0,84 | 177 | 5,3 | 0,74 | 0,74 | 127 | 3,0 |
| | 2 | MED | 180 | 1,26 | 0,86 | 216 | 7,6 | 1,13 | 0,81 | 194 | 6,2 | 0,86 | 0,70 | 148 | 3,8 | 0,62 | 0,62 | 106 | 2,1 |
| | 1 | MIN | 140 | 1,03 | 0,69 | 178 | 5,3 | 0,92 | 0,65 | 159 | 4,4 | 0,70 | 0,56 | 121 | 2,7 | 0,50 | 0,50 | 87 | 1,5 |
| CCN 24 | 6 | | 560 | 3,78 | 2,59 | 650 | 24,7 | 3,40 | 2,43 | 585 | 20,4 | 2,58 | 2,11 | 444 | 12,6 | 1,86 | 1,86 | 320 | 7,0 |
| | 5 | | 470 | 3,26 | 2,22 | 561 | 19,0 | 2,93 | 2,08 | 504 | 15,7 | 2,24 | 1,80 | 386 | 9,7 | 1,59 | 1,59 | 274 | 5,4 |
| | 4 | MAX | 380 | 2,72 | 1,84 | 467 | 13,7 | 2,45 | 1,73 | 421 | 11,4 | 1,88 | 1,50 | 323 | 7,1 | 1,32 | 1,32 | 226 | 3,8 |
| | 3 | | 305 | 2,25 | 1,51 | 386 | 9,8 | 2,03 | 1,42 | 348 | 8,1 | 1,56 | 1,23 | 268 | 5,1 | 1,08 | 1,08 | 185 | 2,7 |
| | 2 | MED | 240 | 1,81 | 1,21 | 312 | 6,8 | 1,64 | 1,14 | 283 | 5,6 | 1,26 | 0,98 | 217 | 3,5 | 0,82 | 0,82 | 142 | 1,7 |
| | 1 | MIN | 200 | 1,52 | 1,02 | 261 | 4,9 | 1,38 | 0,95 | 237 | 4,1 | 1,07 | 0,83 | 183 | 2,6 | 0,70 | 0,69 | 120 | 1,2 |
| CCN 34 | 6 | | 680 | 4,61 | 3,16 | 792 | 20,3 | 4,14 | 2,97 | 711 | 16,8 | 3,15 | 2,57 | 541 | 10,4 | 2,26 | 2,26 | 388 | 5,8 |
| | 5 | MAX | 620 | 4,25 | 2,91 | 731 | 17,6 | 3,82 | 2,73 | 657 | 14,6 | 2,91 | 2,37 | 500 | 9,0 | 2,08 | 2,08 | 357 | 5,0 |
| | 4 | MED | 540 | 3,77 | 2,56 | 649 | 14,2 | 3,39 | 2,41 | 583 | 11,8 | 2,59 | 2,09 | 446 | 7,3 | 1,84 | 1,84 | 317 | 4,0 |
| | 3 | | 440 | 3,18 | 2,15 | 547 | 10,5 | 2,87 | 2,02 | 493 | 8,7 | 2,20 | 1,75 | 378 | 5,4 | 1,55 | 1,55 | 266 | 2,9 |
| | 2 | MIN | 360 | 2,64 | 1,78 | 454 | 7,5 | 2,38 | 1,67 | 409 | 6,3 | 1,83 | 1,45 | 314 | 3,9 | 1,27 | 1,27 | 218 | 2,1 |
| | 1 | | 290 | 2,17 | 1,45 | 374 | 5,4 | 1,96 | 1,36 | 338 | 4,5 | 1,51 | 1,18 | 260 | 2,8 | 0,98 | 0,98 | 169 | 1,3 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## Entering air temperature 26 °C – R.H.: 50%

| Model | Vn | | Qv | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| | | | $m^3/h$ | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN 14 | 6 | | 305 | 1,72 | 1,26 | 297 | 13,6 | 1,51 | 1,18 | 260 | 10,9 | 1,07 | 1,00 | 185 | 6,0 | 0,87 | 0,87 | 150 | 4,2 |
| | 5 | MAX | 280 | 1,62 | 1,18 | 279 | 12,0 | 1,42 | 1,10 | 244 | 9,6 | 1,01 | 0,94 | 174 | 5,3 | 0,82 | 0,82 | 141 | 3,7 |
| | 4 | | 245 | 1,45 | 1,06 | 250 | 9,9 | 1,28 | 0,99 | 221 | 7,9 | 0,92 | 0,84 | 159 | 4,4 | 0,73 | 0,73 | 126 | 3,0 |
| | 3 | | 220 | 1,35 | 0,98 | 232 | 8,6 | 1,19 | 0,91 | 204 | 6,9 | 0,86 | 0,78 | 148 | 3,9 | 0,68 | 0,68 | 117 | 2,6 |
| | 2 | MED | 180 | 1,13 | 0,81 | 194 | 6,2 | 1,00 | 0,76 | 172 | 5,0 | 0,72 | 0,65 | 123 | 2,8 | 0,56 | 0,56 | 96 | 1,8 |
| | 1 | MIN | 140 | 0,92 | 0,65 | 159 | 4,3 | 0,81 | 0,61 | 140 | 3,5 | 0,59 | 0,52 | 102 | 2,0 | 0,45 | 0,45 | 78 | 1,3 |
| CCN 24 | 6 | | 560 | 3,37 | 2,44 | 579 | 20,3 | 2,99 | 2,28 | 514 | 16,3 | 2,17 | 1,95 | 373 | 9,3 | 1,69 | 1,69 | 291 | 6,0 |
| | 5 | | 470 | 2,91 | 2,09 | 501 | 15,6 | 2,58 | 1,95 | 444 | 12,6 | 1,88 | 1,67 | 324 | 7,2 | 1,45 | 1,45 | 250 | 4,6 |
| | 4 | MAX | 380 | 2,43 | 1,73 | 417 | 11,3 | 2,16 | 1,62 | 371 | 9,2 | 1,58 | 1,39 | 271 | 5,3 | 1,21 | 1,21 | 207 | 3,3 |
| | 3 | | 305 | 2,01 | 1,42 | 345 | 8,1 | 1,79 | 1,33 | 307 | 6,6 | 1,32 | 1,14 | 226 | 3,8 | 0,99 | 0,99 | 170 | 2,3 |
| | 2 | MED | 240 | 1,62 | 1,14 | 279 | 5,6 | 1,45 | 1,07 | 250 | 4,5 | 1,07 | 0,91 | 185 | 2,6 | 0,79 | 0,79 | 136 | 1,6 |
| | 1 | MIN | 200 | 1,37 | 0,96 | 235 | 4,1 | 1,22 | 0,89 | 209 | 3,3 | 0,90 | 0,76 | 154 | 2,0 | 0,66 | 0,66 | 113 | 1,1 |
| CCN 34 | 6 | | 680 | 4,11 | 2,98 | 706 | 16,7 | 3,64 | 2,78 | 625 | 13,5 | 2,64 | 2,38 | 453 | 7,7 | 2,07 | 2,07 | 355 | 5,0 |
| | 5 | MAX | 620 | 3,80 | 2,74 | 653 | 14,5 | 3,36 | 2,56 | 578 | 11,7 | 2,45 | 2,19 | 421 | 6,7 | 1,90 | 1,90 | 326 | 4,3 |
| | 4 | MED | 540 | 3,37 | 2,41 | 580 | 11,7 | 2,99 | 2,25 | 514 | 9,5 | 2,18 | 1,93 | 375 | 5,4 | 1,68 | 1,68 | 289 | 3,5 |
| | 3 | | 440 | 2,84 | 2,03 | 488 | 8,7 | 2,53 | 1,89 | 435 | 7,0 | 1,85 | 1,62 | 318 | 4,0 | 1,41 | 1,41 | 242 | 2,5 |
| | 2 | MIN | 360 | 2,36 | 1,67 | 405 | 6,2 | 2,10 | 1,56 | 361 | 5,1 | 1,55 | 1,34 | 266 | 2,9 | 1,16 | 1,16 | 199 | 1,8 |
| | 1 | | 290 | 1,94 | 1,37 | 334 | 4,4 | 1,73 | 1,28 | 298 | 3,6 | 1,28 | 1,09 | 221 | 2,1 | 0,95 | 0,95 | 164 | 1,3 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## Entering air temperature: 25 °C – R.H.: 50%

| Model | Vn | | Qv | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| | | | $m^3/h$ | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN 14 | 6 | | 305 | 1,51 | 1,18 | 260 | 10,9 | 1,30 | 1,09 | 224 | 8,4 | 0,96 | 0,96 | 166 | 5,0 | 0,78 | 0,78 | 135 | 3,5 |
| | 5 | MAX | 280 | 1,42 | 1,11 | 244 | 9,6 | 1,22 | 1,03 | 210 | 7,4 | 0,90 | 0,90 | 155 | 4,4 | 0,73 | 0,73 | 126 | 3,1 |
| | 4 | | 245 | 1,28 | 0,99 | 221 | 7,9 | 1,10 | 0,92 | 190 | 6,1 | 0,80 | 0,80 | 138 | 3,5 | 0,66 | 0,66 | 114 | 2,5 |
| | 3 | | 220 | 1,19 | 0,91 | 204 | 6,9 | 1,03 | 0,85 | 177 | 5,4 | 0,75 | 0,75 | 129 | 3,1 | 0,61 | 0,61 | 105 | 2,2 |
| | 2 | MED | 180 | 0,99 | 0,76 | 170 | 5,0 | 0,86 | 0,70 | 148 | 3,9 | 0,62 | 0,62 | 106 | 2,2 | 0,51 | 0,51 | 87 | 1,5 |
| | 1 | MIN | 140 | 0,81 | 0,61 | 140 | 3,5 | 0,70 | 0,56 | 121 | 2,7 | 0,50 | 0,50 | 87 | 1,5 | 0,41 | 0,41 | 71 | 1,1 |
| CCN 24 | 6 | | 560 | 2,98 | 2,29 | 512 | 16,4 | 2,59 | 2,12 | 445 | 12,8 | 1,86 | 1,86 | 320 | 7,2 | 1,53 | 1,53 | 263 | 5,1 |
| | 5 | | 470 | 2,57 | 1,96 | 443 | 12,6 | 2,24 | 1,82 | 386 | 9,9 | 1,59 | 1,59 | 274 | 5,5 | 1,31 | 1,31 | 226 | 3,9 |
| | 4 | MAX | 380 | 2,15 | 1,62 | 369 | 9,2 | 1,88 | 1,51 | 323 | 7,2 | 1,27 | 1,27 | 218 | 3,6 | 1,10 | 1,10 | 189 | 2,8 |
| | 3 | | 305 | 1,78 | 1,33 | 305 | 6,6 | 1,56 | 1,24 | 268 | 5,2 | 1,06 | 1,04 | 182 | 2,6 | 0,90 | 0,90 | 154 | 2,0 |
| | 2 | MED | 240 | 1,44 | 1,07 | 248 | 4,5 | 1,26 | 0,99 | 217 | 3,6 | 0,87 | 0,83 | 150 | 1,9 | 0,72 | 0,72 | 124 | 1,3 |
| | 1 | MIN | 200 | 1,21 | 0,90 | 207 | 3,3 | 1,06 | 0,83 | 182 | 2,6 | 0,74 | 0,70 | 127 | 1,4 | 0,60 | 0,60 | 103 | 1,0 |
| CCN 34 | 6 | | 680 | 3,63 | 2,79 | 624 | 13,5 | 3,16 | 2,59 | 543 | 10,5 | 2,27 | 2,27 | 390 | 5,9 | 1,87 | 1,87 | 321 | 4,2 |
| | 5 | MAX | 620 | 3,35 | 2,56 | 576 | 11,7 | 2,92 | 2,38 | 502 | 9,2 | 2,09 | 2,09 | 359 | 5,1 | 1,72 | 1,72 | 295 | 3,6 |
| | 4 | MED | 540 | 2,97 | 2,26 | 511 | 9,5 | 2,59 | 2,10 | 446 | 7,4 | 1,85 | 1,85 | 318 | 4,1 | 1,52 | 1,52 | 262 | 2,9 |
| | 3 | | 440 | 2,52 | 1,90 | 433 | 7,0 | 2,20 | 1,76 | 378 | 5,5 | 1,49 | 1,48 | 256 | 2,8 | 1,28 | 1,28 | 220 | 2,1 |
| | 2 | MIN | 360 | 2,09 | 1,57 | 359 | 5,0 | 1,83 | 1,46 | 314 | 4,0 | 1,25 | 1,22 | 214 | 2,0 | 1,06 | 1,06 | 182 | 1,5 |
| | 1 | | 290 | 1,72 | 1,28 | 296 | 3,6 | 1,51 | 1,19 | 260 | 2,8 | 1,04 | 1,00 | 179 | 1,5 | 0,86 | 0,86 | 148 | 1,1 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

# HEATING EMISSION

## 3 row coil units

### Entering air temperature: 20 °C

| Model | Vn | | Qv | WT: 70 / 60 °C | | | WT: 60 / 50 °C | | | WT: 50 / 40 °C | | | WT: 50 / 45 °C | | | WT: 45 / 40 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| | | | m³/h | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN 13 | 6 | | 305 | 3,54 | 304 | 6,3 | 2,71 | 233 | 4,1 | 1,87 | 161 | 2,2 | 2,16 | 372 | 9,5 | 1,75 | 301 | 6,7 |
| | 5 | MAX | 280 | 3,29 | 283 | 5,6 | 2,51 | 216 | 3,6 | 1,74 | 150 | 1,9 | 2,01 | 346 | 8,4 | 1,62 | 279 | 5,9 |
| | 4 | | 245 | 2,94 | 253 | 4,6 | 2,25 | 194 | 2,9 | 1,56 | 134 | 1,6 | 1,80 | 310 | 6,9 | 1,45 | 249 | 4,8 |
| | 3 | | 220 | 2,71 | 233 | 4,0 | 2,07 | 178 | 2,5 | 1,44 | 124 | 1,4 | 1,66 | 286 | 6,0 | 1,34 | 230 | 4,2 |
| | 2 | MED | 180 | 2,26 | 194 | 2,9 | 1,73 | 149 | 1,9 | 1,20 | 103 | 1,0 | 1,38 | 237 | 4,3 | 1,12 | 193 | 3,0 |
| | 1 | MIN | 140 | 1,84 | 158 | 2,0 | 1,41 | 121 | 1,3 | 0,98 | 84 | 0,7 | 1,12 | 193 | 3,0 | 0,91 | 157 | 2,1 |
| CCN 23 | 6 | | 560 | 6,64 | 571 | 10,7 | 5,10 | 439 | 6,9 | 3,55 | 305 | 3,8 | 4,06 | 698 | 16,1 | 3,29 | 566 | 11,3 |
| | 5 | | 470 | 5,77 | 496 | 8,3 | 4,43 | 381 | 5,4 | 3,09 | 266 | 3,0 | 3,52 | 605 | 12,5 | 2,86 | 492 | 8,8 |
| | 4 | MAX | 380 | 4,79 | 412 | 6,0 | 3,68 | 316 | 3,9 | 2,57 | 221 | 2,1 | 2,93 | 504 | 9,0 | 2,38 | 409 | 6,4 |
| | 3 | | 305 | 3,95 | 340 | 4,3 | 3,03 | 261 | 2,8 | 2,12 | 182 | 1,5 | 2,41 | 415 | 6,4 | 1,96 | 337 | 4,5 |
| | 2 | MED | 240 | 3,20 | 275 | 2,9 | 2,46 | 212 | 1,9 | 1,72 | 148 | 1,1 | 1,95 | 335 | 4,4 | 1,59 | 273 | 3,1 |
| | 1 | MIN | 200 | 2,68 | 230 | 2,2 | 2,07 | 178 | 1,4 | 1,45 | 125 | 0,8 | 1,64 | 282 | 3,3 | 1,33 | 229 | 2,3 |
| CCN 33 | 6 | | 680 | 8,20 | 705 | 18,0 | 6,30 | 542 | 11,7 | 4,40 | 378 | 6,4 | 5,01 | 862 | 27,1 | 4,07 | 700 | 19,1 |
| | 5 | | 620 | 7,61 | 654 | 15,8 | 5,85 | 503 | 10,3 | 4,09 | 352 | 5,6 | 4,65 | 800 | 23,8 | 3,77 | 648 | 16,8 |
| | 4 | MAX | 540 | 6,73 | 579 | 12,7 | 5,18 | 445 | 8,3 | 3,62 | 311 | 4,6 | 4,11 | 707 | 19,2 | 3,34 | 574 | 13,5 |
| | 3 | | 440 | 5,65 | 486 | 9,4 | 4,35 | 374 | 6,1 | 3,04 | 261 | 3,4 | 3,45 | 593 | 14,1 | 2,80 | 482 | 9,9 |
| | 2 | MED | 360 | 4,67 | 402 | 6,7 | 3,60 | 310 | 4,4 | 2,52 | 217 | 2,4 | 2,85 | 490 | 10,1 | 2,32 | 399 | 7,1 |
| | 1 | MIN | 290 | 3,85 | 331 | 4,8 | 2,96 | 255 | 3,1 | 2,08 | 179 | 1,7 | 2,35 | 404 | 7,2 | 1,91 | 329 | 5,1 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

## 4 row coil units

### Entering air temperature: 20 °C

| Model | Vn | | Qv | WT: 70 / 60 °C | | | WT: 60 / 50 °C | | | WT: 50 / 40 °C | | | WT: 50 / 45 °C | | | WT: 45 / 40 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| | | | m³/h | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN 14 | 6 | | 305 | 3,80 | 327 | 11,7 | 2,92 | 251 | 7,6 | 2,03 | 175 | 4,2 | 2,32 | 399 | 17,7 | 1,88 | 323 | 12,4 |
| | 5 | MAX | 280 | 3,52 | 303 | 10,2 | 2,70 | 232 | 6,6 | 1,88 | 162 | 3,6 | 2,15 | 370 | 15,4 | 1,74 | 299 | 10,8 |
| | 4 | | 245 | 3,14 | 270 | 8,4 | 2,42 | 208 | 5,5 | 1,69 | 145 | 3,0 | 1,92 | 330 | 12,7 | 1,56 | 268 | 8,9 |
| | 3 | | 220 | 2,89 | 249 | 7,2 | 2,22 | 191 | 4,7 | 1,55 | 133 | 2,6 | 1,77 | 304 | 10,9 | 1,43 | 246 | 7,7 |
| | 2 | MED | 180 | 2,37 | 204 | 5,1 | 1,83 | 157 | 3,3 | 1,28 | 110 | 1,8 | 1,45 | 249 | 7,7 | 1,18 | 203 | 5,4 |
| | 1 | MIN | 140 | 1,92 | 165 | 3,5 | 1,48 | 127 | 2,3 | 1,03 | 89 | 1,3 | 1,17 | 201 | 5,3 | 0,95 | 163 | 3,7 |
| CCN 24 | 6 | | 560 | 7,46 | 642 | 18,2 | 5,75 | 495 | 11,8 | 4,04 | 347 | 6,6 | 4,56 | 784 | 27,3 | 3,71 | 638 | 19,4 |
| | 5 | | 470 | 6,37 | 548 | 13,8 | 4,92 | 423 | 9,0 | 3,46 | 298 | 5,0 | 3,90 | 671 | 20,7 | 3,17 | 545 | 14,7 |
| | 4 | MAX | 380 | 5,22 | 449 | 9,7 | 4,03 | 347 | 6,3 | 2,84 | 244 | 3,5 | 3,19 | 549 | 14,6 | 2,60 | 447 | 10,4 |
| | 3 | | 305 | 4,25 | 366 | 6,7 | 3,28 | 282 | 4,4 | 2,31 | 199 | 2,5 | 2,60 | 447 | 10,1 | 2,12 | 365 | 7,2 |
| | 2 | MED | 240 | 3,40 | 292 | 4,5 | 2,63 | 226 | 3,0 | 1,85 | 159 | 1,7 | 2,08 | 358 | 6,9 | 1,69 | 291 | 4,9 |
| | 1 | MIN | 200 | 2,82 | 243 | 3,3 | 2,18 | 187 | 2,2 | 1,54 | 132 | 1,2 | 1,73 | 298 | 4,9 | 1,41 | 243 | 3,5 |
| CCN 34 | 6 | | 680 | 8,72 | 750 | 13,9 | 6,71 | 577 | 9,1 | 4,70 | 404 | 5,0 | 5,33 | 917 | 20,9 | 4,33 | 745 | 14,8 |
| | 5 | MAX | 620 | 8,00 | 688 | 12,0 | 6,16 | 530 | 7,8 | 4,31 | 371 | 4,3 | 4,89 | 841 | 18,0 | 3,97 | 683 | 12,7 |
| | 4 | MED | 540 | 7,04 | 605 | 9,6 | 5,42 | 466 | 6,2 | 3,80 | 327 | 3,4 | 4,30 | 740 | 14,4 | 3,40 | 585 | 10,2 |
| | 3 | | 440 | 5,87 | 505 | 6,9 | 4,52 | 389 | 4,5 | 3,18 | 273 | 2,5 | 3,59 | 617 | 10,4 | 2,92 | 502 | 7,4 |
| | 2 | MIN | 360 | 4,83 | 415 | 4,9 | 3,72 | 320 | 3,2 | 2,62 | 225 | 1,8 | 2,95 | 507 | 7,4 | 2,40 | 413 | 5,3 |
| | 1 | | 290 | 3,96 | 341 | 3,5 | 3,06 | 263 | 2,3 | 2,15 | 185 | 1,3 | 2,42 | 416 | 5,2 | 1,97 | 339 | 3,7 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

## 1 row additional coil units

### For 3 or 4 row version

### Entering air temperature: 20 °C

| Model | Vn | | Qv | WT: 80 / 70 °C | | | WT: 75 / 65 °C | | | WT: 70 / 60 °C | | | WT: 65 / 55 °C | | | WT: 60 / 50 °C | | | WT: 55 / 45 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| | | | $m^3/h$ | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN 13+1 | 6 | | 305 | 1,95 | 168 | 5,8 | 1,75 | 151 | 4,9 | 1,56 | 134 | 4,0 | 1,36 | 117 | 3,2 | 1,17 | 101 | 2,5 | 0,97 | 83 | 1,8 |
| | 5 | MAX | 280 | 1,83 | 157 | 5,2 | 1,65 | 142 | 4,4 | 1,47 | 126 | 3,6 | 1,28 | 110 | 2,9 | 1,10 | 95 | 2,2 | 0,92 | 79 | 1,6 |
| | 4 | | 245 | 1,67 | 144 | 4,4 | 1,51 | 130 | 3,7 | 1,34 | 115 | 3,1 | 1,17 | 101 | 2,5 | 1,00 | 86 | 1,9 | 0,84 | 72 | 1,4 |
| | 3 | | 220 | 1,57 | 135 | 3,9 | 1,41 | 121 | 3,3 | 1,25 | 108 | 2,7 | 1,10 | 95 | 2,2 | 0,94 | 81 | 1,7 | 0,78 | 67 | 1,3 |
| | 2 | MED | 180 | 1,35 | 116 | 3,0 | 1,22 | 105 | 2,5 | 1,08 | 93 | 2,1 | 0,95 | 82 | 1,7 | 0,81 | 70 | 1,3 | 0,68 | 58 | 1,0 |
| | 1 | MIN | 140 | 1,15 | 99 | 2,3 | 1,03 | 89 | 1,9 | 0,92 | 79 | 1,6 | 0,81 | 70 | 1,3 | 0,69 | 59 | 1,0 | 0,58 | 50 | 0,7 |
| CCN 23+1 | 6 | | 560 | 3,84 | 330 | 4,7 | 3,46 | 298 | 3,9 | 3,07 | 264 | 3,2 | 2,37 | 204 | 1,0 | 2,31 | 199 | 2,0 | 1,93 | 166 | 1,5 |
| | 5 | | 470 | 3,41 | 293 | 3,8 | 3,07 | 264 | 3,2 | 2,73 | 235 | 2,6 | 2,10 | 181 | 0,8 | 2,05 | 176 | 1,6 | 1,71 | 147 | 1,2 |
| | 4 | MAX | 380 | 2,94 | 253 | 2,9 | 2,65 | 228 | 2,5 | 2,35 | 202 | 2,0 | 1,82 | 157 | 0,6 | 1,77 | 152 | 1,3 | 1,48 | 127 | 0,9 |
| | 3 | | 305 | 2,52 | 217 | 2,2 | 2,27 | 195 | 1,9 | 2,02 | 174 | 1,6 | 1,57 | 135 | 0,5 | 1,52 | 131 | 1,0 | 1,27 | 109 | 0,7 |
| | 2 | MED | 240 | 2,14 | 184 | 1,7 | 1,93 | 166 | 1,4 | 1,71 | 147 | 1,2 | 1,33 | 114 | 0,4 | 1,29 | 111 | 0,7 | 1,08 | 93 | 0,5 |
| | 1 | MIN | 200 | 1,86 | 160 | 1,3 | 1,68 | 144 | 1,1 | 1,49 | 128 | 0,9 | 1,16 | 100 | 0,3 | 1,13 | 97 | 0,6 | 0,94 | 81 | 0,4 |
| CCN 33+1 | 6 | | 680 | 4,84 | 416 | 8,2 | 4,36 | 375 | 7,0 | 3,89 | 335 | 5,8 | 3,41 | 293 | 4,7 | 2,94 | 253 | 3,6 | 2,46 | 212 | 2,7 |
| | 5 | | 620 | 4,53 | 390 | 7,3 | 4,08 | 351 | 6,2 | 3,64 | 313 | 5,1 | 3,19 | 274 | 4,1 | 2,75 | 237 | 3,2 | 2,31 | 199 | 2,4 |
| | 4 | MAX | 540 | 4,10 | 353 | 6,2 | 3,70 | 318 | 5,2 | 3,30 | 284 | 4,3 | 2,89 | 249 | 3,5 | 2,49 | 214 | 2,7 | 2,09 | 180 | 2,0 |
| | 3 | MED | 440 | 3,57 | 307 | 4,8 | 3,22 | 277 | 4,1 | 2,87 | 247 | 3,4 | 2,52 | 217 | 2,7 | 2,17 | 187 | 2,1 | 1,82 | 157 | 1,6 |
| | 2 | | 360 | 3,07 | 264 | 3,7 | 2,77 | 238 | 3,1 | 2,47 | 212 | 2,6 | 2,17 | 187 | 2,1 | 1,87 | 161 | 1,6 | 1,57 | 135 | 1,2 |
| | 1 | MIN | 290 | 2,64 | 227 | 2,8 | 2,38 | 205 | 2,4 | 2,12 | 182 | 2,0 | 1,86 | 160 | 1,6 | 1,61 | 138 | 1,3 | 1,35 | 116 | 0,9 |
| CCN 14+1 | 6 | | 305 | 1,95 | 168 | 5,8 | 1,75 | 151 | 4,9 | 1,56 | 134 | 4,0 | 1,36 | 117 | 3,2 | 1,17 | 101 | 2,5 | 0,97 | 83 | 1,8 |
| | 5 | MAX | 280 | 1,83 | 157 | 5,2 | 1,65 | 142 | 4,4 | 1,47 | 126 | 3,6 | 1,28 | 110 | 2,9 | 1,10 | 95 | 2,2 | 0,92 | 79 | 1,6 |
| | 4 | | 245 | 1,67 | 144 | 4,4 | 1,51 | 130 | 3,7 | 1,34 | 115 | 3,1 | 1,17 | 101 | 2,5 | 1,00 | 86 | 1,9 | 0,84 | 72 | 1,4 |
| | 3 | | 220 | 1,57 | 135 | 3,9 | 1,41 | 121 | 3,3 | 1,25 | 108 | 2,7 | 1,10 | 95 | 2,2 | 0,94 | 81 | 1,7 | 0,78 | 67 | 1,3 |
| | 2 | MED | 180 | 1,35 | 116 | 3,0 | 1,22 | 105 | 2,5 | 1,08 | 93 | 2,1 | 0,95 | 82 | 1,7 | 0,81 | 70 | 1,3 | 0,68 | 58 | 1,0 |
| | 1 | MIN | 140 | 1,15 | 99 | 2,3 | 1,03 | 89 | 1,9 | 0,92 | 79 | 1,6 | 0,81 | 70 | 1,3 | 0,69 | 59 | 1,0 | 0,58 | 50 | 0,7 |
| CCN 24+1 | 6 | | 560 | 3,84 | 330 | 4,7 | 3,46 | 298 | 3,9 | 3,07 | 264 | 3,2 | 2,37 | 204 | 1,0 | 2,31 | 199 | 2,0 | 1,93 | 166 | 1,5 |
| | 5 | | 470 | 3,41 | 293 | 3,8 | 3,07 | 264 | 3,2 | 2,73 | 235 | 2,6 | 2,10 | 181 | 0,8 | 2,05 | 176 | 1,6 | 1,71 | 147 | 1,2 |
| | 4 | MAX | 380 | 2,94 | 253 | 2,9 | 2,65 | 228 | 2,5 | 2,35 | 202 | 2,0 | 1,82 | 157 | 0,6 | 1,77 | 152 | 1,3 | 1,48 | 127 | 0,9 |
| | 3 | | 305 | 2,52 | 217 | 2,2 | 2,27 | 195 | 1,9 | 2,02 | 174 | 1,6 | 1,57 | 135 | 0,5 | 1,52 | 131 | 1,0 | 1,27 | 109 | 0,7 |
| | 2 | MED | 240 | 2,14 | 184 | 1,7 | 1,93 | 166 | 1,4 | 1,71 | 147 | 1,2 | 1,33 | 114 | 0,4 | 1,29 | 111 | 0,7 | 1,08 | 93 | 0,5 |
| | 1 | MIN | 200 | 1,86 | 160 | 1,3 | 1,68 | 144 | 1,1 | 1,49 | 128 | 0,9 | 1,16 | 100 | 0,3 | 1,13 | 97 | 0,6 | 0,94 | 81 | 0,4 |
| CCN 34+1 | 6 | | 680 | 4,84 | 416 | 8,2 | 4,36 | 375 | 7,0 | 3,89 | 335 | 5,8 | 3,41 | 293 | 4,7 | 2,94 | 253 | 3,6 | 2,46 | 212 | 2,7 |
| | 5 | MAX | 620 | 4,53 | 390 | 7,3 | 4,08 | 351 | 6,2 | 3,64 | 313 | 5,1 | 3,19 | 274 | 4,1 | 2,75 | 237 | 3,2 | 2,31 | 199 | 2,4 |
| | 4 | MED | 540 | 4,10 | 353 | 6,2 | 3,70 | 318 | 5,2 | 3,30 | 284 | 4,3 | 2,89 | 249 | 3,5 | 2,49 | 214 | 2,7 | 2,09 | 180 | 2,0 |
| | 3 | | 440 | 3,57 | 307 | 4,8 | 3,22 | 277 | 4,1 | 2,87 | 247 | 3,4 | 2,52 | 217 | 2,7 | 2,17 | 187 | 2,1 | 1,82 | 157 | 1,6 |
| | 2 | MIN | 360 | 3,07 | 264 | 3,7 | 2,77 | 238 | 3,1 | 2,47 | 212 | 2,6 | 2,17 | 187 | 2,1 | 1,87 | 161 | 1,6 | 1,57 | 135 | 1,2 |
| | 1 | | 290 | 2,64 | 227 | 2,8 | 2,38 | 205 | 2,4 | 2,12 | 182 | 2,0 | 1,86 | 160 | 1,6 | 1,61 | 138 | 1,3 | 1,35 | 116 | 0,9 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

## 2 row additional coil units

### 3 row version only

### Entering air temperature: 20 °C

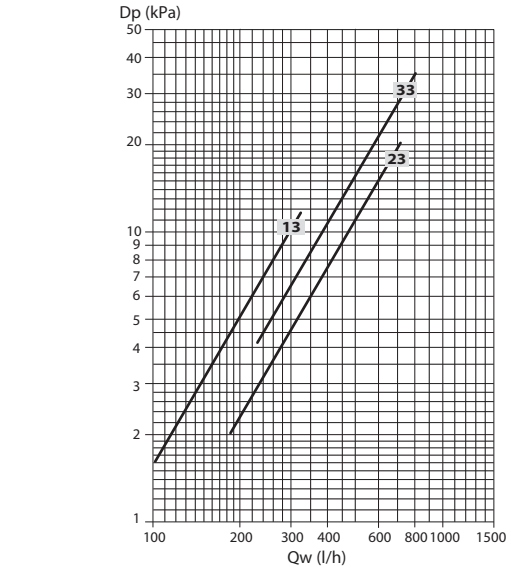
| Model | Vn | | Qv | WT: 65 / 55 °C | | | WT: 60 / 50 °C | | | WT: 55 / 45 °C | | | WT: 50 / 40 °C | | | WT: 45 / 40 °C | | | WT: 45 / 35 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| | | | $m^3/h$ | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN 13+2 | 6 | | 305 | 2,38 | 205 | 15,5 | 2,05 | 176 | 12,2 | 1,73 | 149 | 9,2 | 1,41 | 121 | 6,5 | 1,33 | 229 | 20,0 | 1,09 | 94 | 4,2 |
| | 5 | MAX | 280 | 2,23 | 192 | 13,8 | 1,92 | 165 | 10,8 | 1,62 | 139 | 8,2 | 1,32 | 114 | 5,8 | 1,25 | 215 | 17,8 | 1,02 | 88 | 3,7 |
| | 4 | | 245 | 2,02 | 174 | 11,6 | 1,75 | 151 | 9,1 | 1,47 | 126 | 6,9 | 1,20 | 103 | 4,9 | 1,13 | 194 | 15,0 | 0,92 | 79 | 3,1 |
| | 3 | | 220 | 1,88 | 162 | 10,3 | 1,63 | 140 | 8,1 | 1,37 | 118 | 6,1 | 1,12 | 96 | 4,3 | 1,05 | 181 | 13,3 | 0,86 | 74 | 2,8 |
| | 2 | MED | 180 | 1,60 | 138 | 7,7 | 1,38 | 119 | 6,0 | 1,16 | 100 | 4,6 | 0,95 | 82 | 3,2 | 0,89 | 153 | 9,9 | 0,73 | 63 | 2,1 |
| | 1 | MIN | 140 | 1,35 | 116 | 5,7 | 1,16 | 100 | 4,5 | 0,98 | 84 | 3,4 | 0,80 | 69 | 2,4 | 0,75 | 129 | 7,4 | 0,62 | 53 | 1,6 |
| CCN 23+2 | 6 | | 560 | 4,66 | 401 | 12,7 | 4,03 | 347 | 10,0 | 3,40 | 292 | 7,6 | 2,78 | 239 | 5,4 | 2,61 | 449 | 16,5 | 2,15 | 185 | 3,5 |
| | 5 | | 470 | 4,08 | 351 | 10,1 | 3,53 | 304 | 8,0 | 2,99 | 257 | 6,0 | 2,44 | 210 | 4,3 | 2,29 | 394 | 13,1 | 1,89 | 163 | 2,8 |
| | 4 | MAX | 380 | 3,47 | 298 | 7,6 | 3,00 | 258 | 6,0 | 2,54 | 218 | 4,5 | 2,09 | 180 | 3,3 | 1,96 | 337 | 10,0 | 1,62 | 139 | 2,1 |
| | 3 | | 305 | 2,95 | 254 | 5,7 | 2,55 | 219 | 4,5 | 2,16 | 186 | 3,4 | 1,77 | 152 | 2,4 | 1,65 | 284 | 7,4 | 1,37 | 118 | 1,6 |
| | 2 | MED | 240 | 2,43 | 209 | 4,1 | 2,11 | 181 | 3,2 | 1,78 | 153 | 2,4 | 1,46 | 126 | 1,7 | 1,36 | 234 | 5,3 | 1,14 | 98 | 1,1 |
| | 1 | MIN | 200 | 2,07 | 178 | 3,1 | 1,79 | 154 | 2,4 | 1,52 | 131 | 1,8 | 1,25 | 108 | 1,3 | 1,16 | 200 | 4,0 | 0,97 | 83 | 0,9 |
| CCN 33+2 | 6 | | 680 | 5,83 | 501 | 22,5 | 5,06 | 435 | 17,8 | 4,28 | 368 | 13,5 | 3,50 | 301 | 9,6 | 3,27 | 562 | 29,1 | 2,73 | 235 | 6,3 |
| | 5 | | 620 | 5,42 | 466 | 19,8 | 4,70 | 404 | 15,6 | 3,98 | 342 | 11,8 | 3,26 | 280 | 8,5 | 3,04 | 523 | 25,6 | 2,54 | 218 | 5,6 |
| | 4 | MAX | 540 | 4,86 | 418 | 16,3 | 4,22 | 363 | 12,9 | 3,57 | 307 | 9,8 | 2,92 | 251 | 7,0 | 2,72 | 468 | 21,1 | 2,28 | 196 | 4,6 |
| | 3 | MED | 440 | 4,20 | 361 | 12,6 | 3,65 | 314 | 10,0 | 3,09 | 266 | 7,6 | 2,53 | 218 | 5,4 | 2,36 | 406 | 16,4 | 1,98 | 170 | 3,6 |
| | 2 | | 360 | 3,54 | 304 | 9,3 | 3,07 | 264 | 7,4 | 2,60 | 224 | 5,6 | 2,14 | 184 | 4,0 | 1,98 | 341 | 12,1 | 1,67 | 144 | 2,7 |
| | 1 | MIN | 290 | 2,96 | 255 | 6,8 | 2,57 | 221 | 5,4 | 2,18 | 187 | 4,1 | 1,79 | 154 | 3,0 | 1,66 | 286 | 8,8 | 1,40 | 120 | 1,9 |

**WT:** Water temperature
**Vn:** Nominal speeds
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

# WATER SIDE PRESSURE DROP

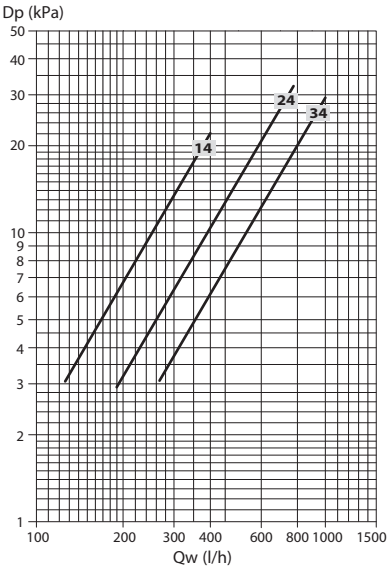
## Main coil

### 3 row coil




Dp = pressure drop
Qw = water flow rate

### 4 row coil



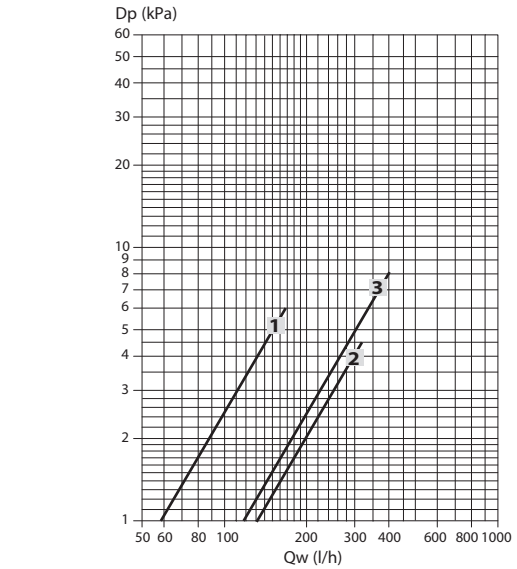

Dp = pressure drop
Qw = water flow rate

Pressure drop for mean water temperature of 10 °C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

| | Mean water temperature (°C) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| K correction factor | 0,94 | 0,90 | 0,86 | 0,82 | 0,78 | 0,74 | 0,70 |

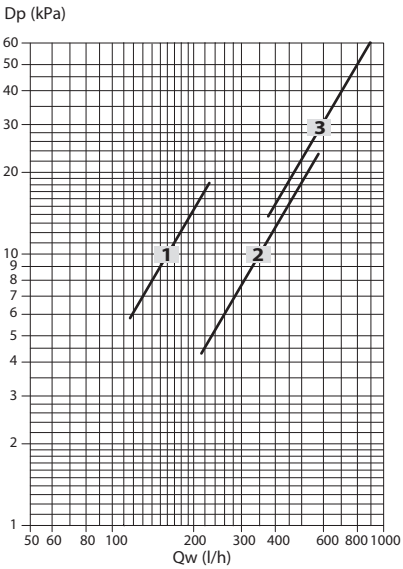
## Additional coil

### 1 row additional coil




Dp = pressure drop
Qw = water flow rate

### 2 row additional coil




Dp = pressure drop
Qw = water flow rate

Pressure drop for mean water temperature of 60 °C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

| | Mean water temperature (°C) | | | |
|---|---|---|---|---|
| | 40 | 50 | 70 | 80 |
| K correction factor | 1,12 | 1,06 | 0,94 | 0,88 |

# OPERATING LIMITS

| Description | | UoM | Value |
|---|---|---|---|
| Water flow | Coil maximum working pressure | bars | 16 |
| | | kPa | 1600 |
| | Lowest water inlet temperature (1) | °C | + 6 |
| | Highest water inlet temperature | °C | + 80 |
| Power supply | Single-phase rated operating voltage | V/Hz | 230/50 |

**(1)** for entering water temperatures below + 6 °C, contact the technical department

## Installation height

| Model | CCN 1 | CCN 2 | CCN 3 |
|---|---|---|---|
| Minimum installation height | 2,6 | | |
| Maximum installation height | 3,2 | | 3,5 |

## Water flow limits for main coil

| Model | | CCN 13 | CCN 23 | CCN 33 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 100 | 150 | |
| Water flow rate Max. | l/h | 500 | 1000 | 1500 |

| Model | | CCN 14 | CCN 24 | CCN 34 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 100 | 150 | 200 |
| Water flow rate Max. | l/h | 750 | 1000 | 2000 |

## Water flow limits for additional coil

| Model | | CCN 13+1 | CCN 23+1 | CCN 33+1 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 50 | 100 | |
| Water flow rate Max. | l/h | 250 | 450 | 650 |

| Model | | CCN 13+2 | CCN 23+2 | CCN 33+2 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 50 | 100 | |
| Water flow rate Max. | l/h | 250 | 450 | 650 |

## Motor electrical data - max. absorption

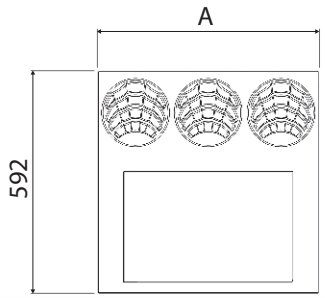
### 230 V 50 Hz

| Model | | CCN 1 | CCN 2 | CCN 3 |
|---|---|---|---|---|
| Motor absorption | W | 66 | 71 | 84 |
| Current absorbed | A | 0,30 | 0,32 | 0,38 |

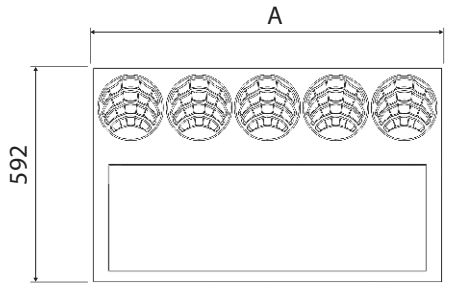
# DIMENSION, WEIGHT AND WATER CONTENT

## Dimensions

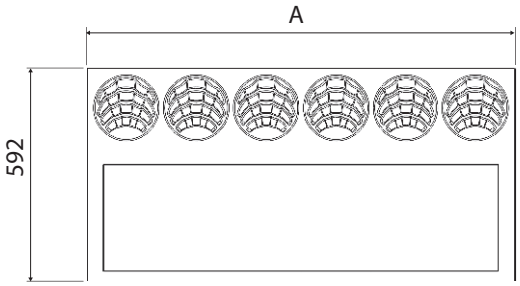
### Carisma Coanda diffusers size 1 - 3

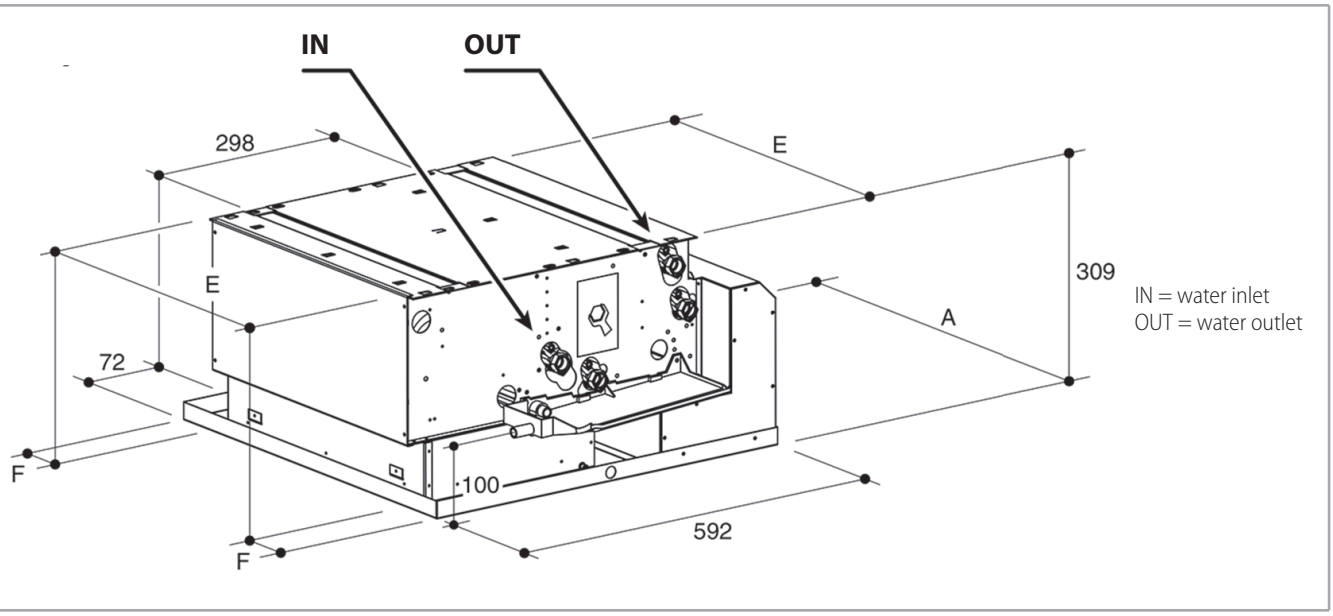



### Carisma Coanda diffusers size 2 - 5



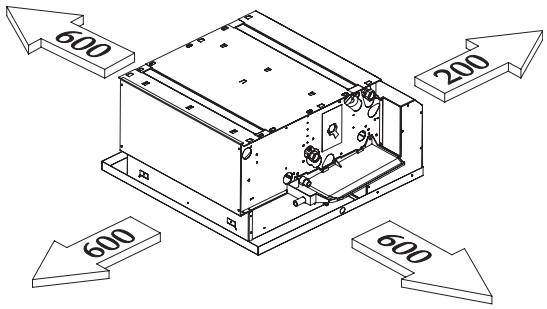

### Carisma Coanda diffusers size 3 - 6



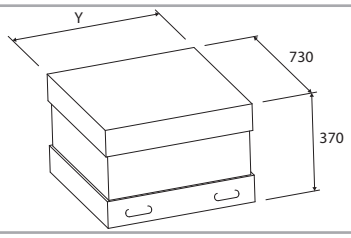

| Model | | CCN 1 | CCN 2 | CCN 3 |
|---|---|---|---|---|
| A | mm | 592 | 970 | 1192 |
| E | mm | 454 | 884 | 1099 |
| F | mm | 78,0 | 43,0 | 46,5 |

### Maintenance technical room




### Coil connections on the left

## Packed unit




| Model | | CCN 1 | CCN 2 | CCN 3 |
|---|---|---|---|---|
| Y | mm | 750 | 1130 | 1350 |

## Weight

### Weights with packaging

| Model | | CCN 1 | CCN 2 | CCN 3 |
|---|---|---|---|---|
| 3 rows | kg | 18 | 34 | 44 |
| 3+1 rows | kg | 20 | 40 | 51 |
| 3+2 rows | kg | 23 | 46 | 58 |
| 4 rows | kg | 20 | 37 | 48 |
| 4+1 rows | kg | 23 | 42 | 54 |

### Weights without packaging

| Model | | CCN 1 | CCN 2 | CCN 3 |
|---|---|---|---|---|
| 3 rows | kg | 16 | 33 | 42 |
| 3+1 rows | kg | 19 | 38 | 48 |
| 3+2 rows | kg | 22 | 43 | 54 |
| 4 rows | kg | 18 | 35 | 45 |
| 4+1 rows | kg | 21 | 40 | 51 |

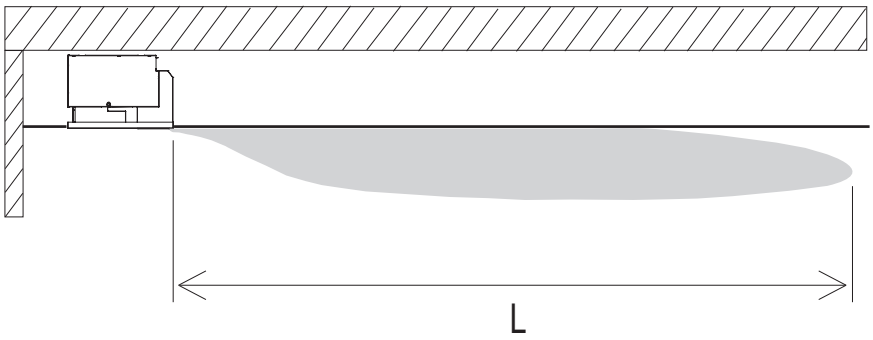
## Water content

| Model | | CCN 1 | CCN 2 | CCN 3 |
|---|---|---|---|---|
| 3 rows | l | 0,6 | 1,3 | 1,7 |
| 4 rows | l | 0,8 | 1,7 | 2,4 |
| +1 row | l | 0,2 | 0,4 | 0,5 |
| +2 rows | l | 0,4 | 0,8 | 1,0 |

# AIR THROW

## Heating

### Heating



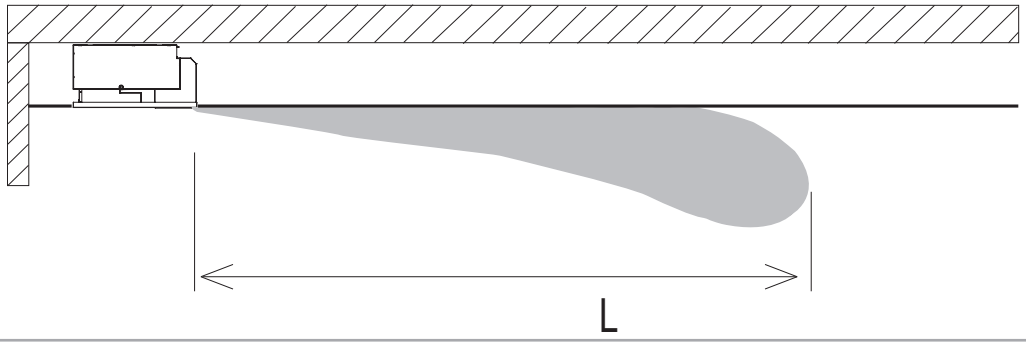

### Heating air throw

| MODEL | | CCN 13 | | | | | | CCN 23 | | | | | | CCN 33 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Speed | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| Air throw - heating | m | 3,8 | 4,5 | 5,8 | 6,3 | 6,8 | 7,2 | 4,0 | 5,0 | 6,1 | 7,0 | 8,0 | 9,0 | 4,5 | 5,2 | 6,3 | 7,5 | 8,8 | 9,5 |

| MODEL | | CCN 14 | | | | | | CCN 24 | | | | | | CCN 34 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Speed | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| Air throw - heating | m | 3,8 | 4,5 | 5,8 | 6,3 | 6,8 | 7,2 | 4,0 | 5,0 | 6,1 | 7,0 | 8,0 | 9,0 | 4,5 | 5,2 | 6,3 | 7,5 | 8,8 | 9,5 |

## Cooling

### Cooling




### Cooling air throw

| MODEL | | CCN 13 | | | | | | CCN 23 | | | | | | CCN 33 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Speed | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| Air throw - cooling | m | 3,0 | 3,6 | 4,6 | 5,0 | 5,4 | 5,7 | 3,2 | 4,0 | 4,8 | 5,6 | 6,4 | 7,2 | 3,6 | 4,1 | 5,0 | 6,0 | 7,0 | 7,6 |

| MODEL | | CCN 14 | | | | | | CCN 24 | | | | | | CCN 34 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Speed | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| Air throw - cooling | m | 3,0 | 3,6 | 4,6 | 5,0 | 5,4 | 5,7 | 3,2 | 4,0 | 4,8 | 5,6 | 6,4 | 7,2 | 3,6 | 4,1 | 5,0 | 6,0 | 7,0 | 7,6 |

## WALL ELECTRONIC CONTROLS

All the units of the **Carisma Coanda CCN** range can be supplied with a wide range of controls that allows managing one single unit or several units (with the use of speed switches or with the use of the power units).
The options range from the basic **WM-3V**, for 3 speed control only, to the highly sophisticated electronic room thermostats **WM-T**, **WM-TQR** and **T2T**, that regulate the room temperature and are suitable when the user wants to set the fan speed.
The most evolved versions **WM-AU**, **T-MB** and **WM-503-AC-EC**, allow both the manual and the automatic speed switch.

**Note:** all the controls are described in detail in the "Fan Coil Control Range literature".

## Controls

**WM-3V control**

230V 50Hz

**WM-T control**

230V 50-60Hz

**WM-TQR control**

230V 50-60Hz

**WM-AU control (*)**

230V 50-60Hz

**T-MB control (*)**


230V 50-60Hz

**WM-503-AC-EC control (**)**


230V 50Hz

**T2T control**

230V 50-60Hz

**(*) To be used with UPM-AU or UP-AU only**
**(**) To be used with UP-503-AC-EC only**

# CONSTRUCTIONAL FEATURES OF THE MAIN COMPONENTS

## One way Cassette fan coil with electronic motor and inverter board

### Casing

Made of 1 mm galvanized steel, of 2 lateral corners and a lower panel insulated with 6 mm polyolefin (PO) foam (class M1).

### Diffuser with intake grille

In prepainted metal sheet in RAL 9003 colour with intake grille that can be opened for inspection and maintenance of the air filter.

### Fan assembly

The fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

### Electronic motor

Electronic motor with three phase permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC sinusoidal wave.
The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply.
The electric power supply required for the machine is therefore single-phase with voltage of 230 - 240 V and frequency of 50 - 60 Hz.

### Coil

It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The main coil and additional coil are equipped with two Ø 1/2" BSP female gas connections.
The connections are equipped with Ø 1/8" BSP air vent and drain.
The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
**The connection side cannot be changed on site.**

### Condensate collection tray

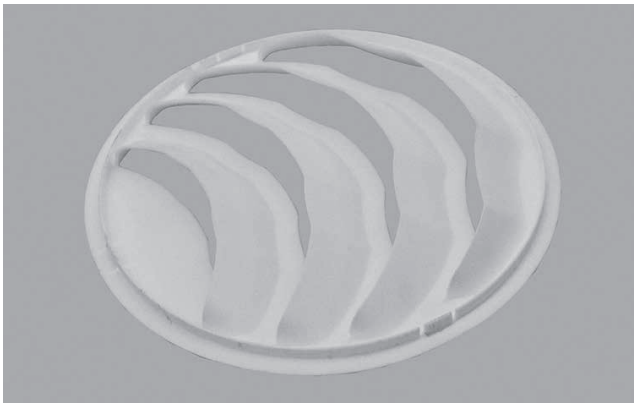
Made of "L"-shaped plastic (ABS UL94 HB) fitted on the inner casing;
the tray is insulated with 3 mm polyolefin (PO) foam (class M1).
The outside diameter of the condensate discharge pipe is Ø 15 mm.

### Air filter

Polypropylene cellular fabric regenerating filter.

### Round diffuser

The **Carisma Coanda** are supplied with round diffusers suitably designed to generate an airflow with "coanda" effect.
The direction of diffuser air flow can be adjusted on site.



# TECHNICAL FEATURES

## 3 row coil unit - 2 pipe units

The following standard rating conditions are used:

**COOLING**
Entering air temperature: + 27 °C d.b. + 19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

**HEATING**
Entering air temperature: + 20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

| MODEL | | CCN-ECM 13 | | | | | CCN-ECM 23 | | | | | CCN-ECM 33 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inverter power | | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 |
| | | MIN | | MED | | MAX | MIN | | MED | | MAX | MIN | | MED | | MAX |
| Air flow | $m^3/h$ | 130 | 165 | 205 | 250 | 295 | 215 | 295 | 370 | 450 | 540 | 275 | 345 | 430 | 525 | 620 |
| Cooling total emission (E) | kW | 0,81 | 0,99 | 1,17 | 1,35 | 1,53 | 1,45 | 1,90 | 2,29 | 2,71 | 3,12 | 1,86 | 2,30 | 2,76 | 3,25 | 3,71 |
| Cooling sensible emission (E) | kW | 0,61 | 0,75 | 0,90 | 1,05 | 1,21 | 1,06 | 1,41 | 1,71 | 2,05 | 2,37 | 1,36 | 1,69 | 2,04 | 2,42 | 2,79 |
| Heating emission (E) | kW | 0,85 | 1,05 | 1,26 | 1,47 | 1,70 | 1,43 | 1,90 | 2,32 | 2,78 | 3,21 | 1,82 | 2,26 | 2,74 | 3,27 | 3,77 |
| Dp Cooling (E) | kPa | 2,1 | 3,0 | 4,0 | 5,2 | 6,5 | 3,2 | 5,2 | 7,3 | 9,8 | 12,6 | 5,8 | 8,4 | 11,7 | 15,7 | 19,8 |
| Dp Heating (E) | kPa | 1,9 | 2,7 | 3,7 | 4,9 | 6,4 | 2,6 | 4,3 | 6,1 | 8,4 | 10,9 | 4,6 | 6,8 | 9,6 | 13,0 | 16,8 |
| Motor power input (E) | W | 8 | 11 | 14 | 21 | 29 | 8 | 11 | 16 | 24 | 37 | 10 | 13 | 19 | 29 | 42 |
| Sound power (Lw) (E) | dB(A) | 35 | 41 | 46 | 51 | 55 | 34 | 40 | 46 | 52 | 56 | 36 | 42 | 48 | 54 | 58 |
| Sound pressure (Lp) (1) | dB(A) | 26 | 32 | 37 | 42 | 46 | 25 | 31 | 37 | 43 | 47 | 27 | 33 | 39 | 45 | 49 |

**(E)** Eurovent certified performance (MIN-MED-MAX speed)
**(1)** The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 $m^3$ room and a reverberation time of 0.5 sec.

## 4 row coil unit - 2 pipe units

The following standard rating conditions are used:

**COOLING**
Entering air temperature: + 27 °C d.b. + 19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

**HEATING**
Entering air temperature: + 20 °C
Water temperature: +45 °C E.W.T. +40 °C L.W.T.

| MODEL | | CCN-ECM 14 | | | | | CCN-ECM 24 | | | | | CCN-ECM 34 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inverter power | | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 |
| | | MIN | | MED | | MAX | MIN | | MED | | MAX | MIN | | MED | | MAX |
| Air flow | $m^3/h$ | 130 | 165 | 205 | 250 | 295 | 215 | 295 | 370 | 450 | 540 | 275 | 345 | 430 | 525 | 620 |
| Cooling total emission (E) | kW | 0,90 | 1,11 | 1,33 | 1,55 | 1,78 | 1,54 | 2,04 | 2,49 | 2,98 | 3,46 | 1,94 | 2,41 | 2,92 | 3,46 | 3,98 |
| Cooling sensible emission (E) | kW | 0,66 | 0,81 | 0,98 | 1,16 | 1,35 | 1,11 | 1,48 | 1,82 | 2,19 | 2,56 | 1,40 | 1,75 | 2,13 | 2,54 | 2,94 |
| Heating emission (E) | kW | 0,89 | 1,10 | 1,34 | 1,58 | 1,85 | 1,52 | 2,05 | 2,53 | 3,07 | 3,62 | 1,87 | 2,34 | 2,85 | 3,42 | 3,97 |
| Dp Cooling (E) | kPa | 4,1 | 5,9 | 8,1 | 10,9 | 13,9 | 5,0 | 8,2 | 11,6 | 15,9 | 20,8 | 4,3 | 6,4 | 8,9 | 12,1 | 15,5 |
| Dp Heating (E) | kPa | 3,3 | 4,8 | 6,7 | 9,2 | 11,8 | 4,0 | 6,8 | 9,9 | 13,9 | 18,5 | 3,4 | 5,0 | 7,1 | 9,8 | 12,7 |
| Motor power input (E) | W | 8 | 11 | 14 | 21 | 29 | 8 | 11 | 16 | 24 | 37 | 10 | 13 | 19 | 29 | 42 |
| Sound power (Lw) (E) | dB(A) | 35 | 41 | 46 | 51 | 55 | 34 | 40 | 46 | 52 | 56 | 36 | 42 | 48 | 54 | 58 |
| Sound pressure (Lp) (1) | dB(A) | 26 | 32 | 37 | 42 | 46 | 25 | 31 | 37 | 43 | 47 | 27 | 33 | 39 | 45 | 49 |

**(E)** Eurovent certified performance (MIN-MED-MAX speed)
**(1)** The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 $m^3$ room and a reverberation time of 0.5 sec.

## 3+1 row coil unit - 4 pipe units

The following standard rating conditions are used:

### COOLING

Entering air temperature: + 27 °C d.b. + 19 °C w.b.
Water temperature: +7 °C E.W.T. +12 °C L.W.T.

### HEATING

Entering air temperature: + 20 °C
Water temperature: +65 °C E.W.T. +55 °C L.W.T.

| MODEL | | CCN-ECM 13+1 | | | | | CCN-ECM 23+1 | | | | | CCN-ECM 33+1 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inverter power | | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 |
| | | MIN | | MED | | MAX | MIN | | MED | | MAX | MIN | | MED | | MAX |
| Air flow | $m^3/h$ | 130 | 165 | 205 | 250 | 295 | 215 | 295 | 370 | 450 | 540 | 275 | 345 | 430 | 525 | 620 |
| Cooling total emission (E) | kW | 0,81 | 0,99 | 1,17 | 1,35 | 1,53 | 1,45 | 1,90 | 2,29 | 2,71 | 3,12 | 1,86 | 2,30 | 2,76 | 3,25 | 3,71 |
| Cooling sensible emission (E) | kW | 0,61 | 0,75 | 0,90 | 1,05 | 1,21 | 1,06 | 1,41 | 1,71 | 2,05 | 2,37 | 1,36 | 1,69 | 2,04 | 2,42 | 2,79 |
| Heating emission (E) | kW | 0,76 | 0,90 | 1,04 | 1,18 | 1,33 | 1,38 | 1,73 | 2,02 | 2,33 | 2,64 | 1,79 | 2,12 | 2,48 | 2,85 | 3,19 |
| Dp Cooling (E) | kPa | 2,1 | 3,0 | 4,0 | 5,2 | 6,5 | 3,2 | 5,2 | 7,3 | 9,8 | 12,6 | 5,8 | 8,4 | 11,7 | 15,7 | 19,8 |
| Dp Heating (E) | kPa | 1,2 | 1,5 | 2,0 | 2,5 | 3,1 | 0,8 | 1,2 | 1,6 | 2,0 | 2,5 | 1,5 | 2,0 | 2,7 | 3,4 | 4,1 |
| Motor power input (E) | W | 8 | 11 | 14 | 21 | 29 | 8 | 11 | 16 | 24 | 37 | 10 | 13 | 19 | 29 | 42 |
| Sound power (Lw) (E) | dB(A) | 35 | 41 | 46 | 51 | 55 | 34 | 40 | 46 | 52 | 56 | 36 | 42 | 48 | 54 | 58 |
| Sound pressure (Lp) (1) | dB(A) | 26 | 32 | 37 | 42 | 46 | 25 | 31 | 37 | 43 | 47 | 27 | 33 | 39 | 45 | 49 |

**(E)** Eurovent certified performance (MIN-MED-MAX speed)
**(1)** The sound pressure levels are 9 dB (A) lower than the sound power levels, apply to the reverberant field of a 100 $m^3$ room and a reverberation time of 0.5 sec.

# COOLING EMISSION

## 3 row coil units

### Entering air temperature: 27 °C – R.H.: 50%

| | | | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| Model | Vdc | m³/h | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN-ECM 13 | 10 | 295 | 1,66 | 1,20 | 286 | 7,5 | 1,47 | 1,13 | 253 | 6,1 | 1,08 | 0,98 | 186 | 3,5 | 0,86 | 0,86 | 148 | 2,3 |
| | 7,5 | 250 | 1,46 | 1,05 | 251 | 6,0 | 1,30 | 0,99 | 223 | 4,8 | 0,96 | 0,86 | 165 | 2,8 | 0,75 | 0,75 | 129 | 1,8 |
| | 5 | 205 | 1,26 | 0,90 | 216 | 4,6 | 1,13 | 0,84 | 194 | 3,7 | 0,84 | 0,73 | 144 | 2,2 | 0,64 | 0,64 | 109 | 1,4 |
| | 3 | 165 | 1,07 | 0,75 | 184 | 3,4 | 0,96 | 0,70 | 165 | 2,8 | 0,71 | 0,61 | 122 | 1,7 | 0,54 | 0,54 | 93 | 1,0 |
| | 1 | 130 | 0,88 | 0,61 | 152 | 2,4 | 0,79 | 0,57 | 136 | 2,0 | 0,59 | 0,50 | 102 | 1,2 | 0,44 | 0,44 | 76 | 0,7 |
| CCN-ECM 23 | 10 | 540 | 3,36 | 2,37 | 578 | 14,3 | 3,01 | 2,22 | 518 | 11,7 | 2,27 | 1,93 | 391 | 7,1 | 1,70 | 1,70 | 293 | 4,3 |
| | 7,5 | 450 | 2,92 | 2,04 | 502 | 11,1 | 2,62 | 1,92 | 450 | 9,1 | 1,99 | 1,67 | 342 | 5,5 | 1,47 | 1,47 | 252 | 3,2 |
| | 5 | 370 | 2,47 | 1,71 | 426 | 8,3 | 2,21 | 1,60 | 381 | 6,8 | 1,68 | 1,39 | 290 | 4,2 | 1,23 | 1,23 | 212 | 2,4 |
| | 3 | 295 | 2,05 | 1,41 | 352 | 5,9 | 1,84 | 1,32 | 316 | 4,9 | 1,41 | 1,15 | 242 | 3,0 | 1,02 | 1,02 | 175 | 1,7 |
| | 1 | 215 | 1,56 | 1,06 | 269 | 3,7 | 1,41 | 1,00 | 243 | 3,0 | 1,08 | 0,86 | 186 | 1,9 | 0,76 | 0,76 | 131 | 1,0 |
| CCN-ECM 33 | 10 | 620 | 3,99 | 2,78 | 686 | 22,5 | 3,59 | 2,61 | 617 | 18,6 | 2,73 | 2,27 | 469 | 11,4 | 2,00 | 2,00 | 344 | 6,6 |
| | 7,5 | 525 | 3,50 | 2,42 | 602 | 17,8 | 3,14 | 2,27 | 540 | 14,7 | 2,40 | 1,98 | 413 | 9,0 | 1,74 | 1,74 | 299 | 5,1 |
| | 5 | 430 | 2,97 | 2,04 | 511 | 13,3 | 2,67 | 1,91 | 459 | 11,0 | 2,04 | 1,66 | 351 | 6,8 | 1,47 | 1,47 | 253 | 3,8 |
| | 3 | 345 | 2,47 | 1,69 | 424 | 9,6 | 2,23 | 1,58 | 383 | 7,9 | 1,71 | 1,38 | 294 | 4,9 | 1,22 | 1,22 | 209 | 2,7 |
| | 1 | 275 | 2,00 | 1,36 | 344 | 6,6 | 1,81 | 1,27 | 311 | 5,5 | 1,39 | 1,11 | 239 | 3,4 | 0,97 | 0,97 | 167 | 1,8 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

### Entering air temperature 26 °C – R.H.: 50%

| | | | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| Model | Vdc | m³/h | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN-ECM 13 | 10 | 295 | 1,46 | 1,13 | 251 | 6,0 | 1,28 | 1,06 | 220 | 4,8 | 0,94 | 0,94 | 162 | 2,8 | 0,78 | 0,78 | 134 | 2,0 |
| | 7,5 | 250 | 1,29 | 0,99 | 222 | 4,8 | 1,13 | 0,92 | 194 | 3,8 | 0,82 | 0,82 | 141 | 2,1 | 0,68 | 0,68 | 117 | 1,5 |
| | 5 | 205 | 1,12 | 0,84 | 192 | 3,7 | 0,98 | 0,79 | 168 | 2,9 | 0,69 | 0,68 | 118 | 1,6 | 0,59 | 0,59 | 101 | 1,2 |
| | 3 | 165 | 0,95 | 0,71 | 163 | 2,8 | 0,84 | 0,66 | 144 | 2,2 | 0,59 | 0,56 | 101 | 1,2 | 0,49 | 0,49 | 84 | 0,9 |
| | 1 | 130 | 0,78 | 0,57 | 135 | 2,0 | 0,69 | 0,54 | 119 | 1,6 | 0,49 | 0,46 | 85 | 0,9 | 0,40 | 0,40 | 69 | 0,6 |
| CCN-ECM 23 | 10 | 540 | 2,99 | 2,23 | 515 | 11,7 | 2,64 | 2,08 | 455 | 9,3 | 1,88 | 1,79 | 324 | 5,1 | 1,55 | 1,55 | 267 | 3,6 |
| | 7,5 | 450 | 2,61 | 1,93 | 448 | 9,1 | 2,30 | 1,80 | 395 | 7,3 | 1,66 | 1,55 | 285 | 4,1 | 1,34 | 1,34 | 230 | 2,8 |
| | 5 | 370 | 2,20 | 1,61 | 379 | 6,8 | 1,95 | 1,50 | 336 | 5,4 | 1,41 | 1,29 | 243 | 3,1 | 1,13 | 1,13 | 195 | 2,0 |
| | 3 | 295 | 1,83 | 1,33 | 315 | 4,9 | 1,62 | 1,24 | 278 | 3,9 | 1,18 | 1,06 | 203 | 2,2 | 0,93 | 0,93 | 160 | 1,4 |
| | 1 | 215 | 1,40 | 1,00 | 241 | 3,0 | 1,24 | 0,93 | 214 | 2,4 | 0,91 | 0,80 | 157 | 1,4 | 0,70 | 0,70 | 121 | 0,9 |
| CCN-ECM 33 | 10 | 620 | 3,56 | 2,62 | 612 | 18,5 | 3,16 | 2,45 | 543 | 14,9 | 2,28 | 2,11 | 392 | 8,4 | 1,83 | 1,83 | 314 | 5,6 |
| | 7,5 | 525 | 3,12 | 2,28 | 537 | 14,6 | 2,77 | 2,13 | 477 | 11,8 | 2,01 | 1,83 | 346 | 6,7 | 1,59 | 1,59 | 274 | 4,4 |
| | 5 | 430 | 2,65 | 1,92 | 456 | 10,9 | 2,36 | 1,79 | 406 | 8,8 | 1,72 | 1,54 | 296 | 5,0 | 1,35 | 1,35 | 232 | 3,2 |
| | 3 | 345 | 2,21 | 1,59 | 380 | 7,9 | 1,97 | 1,49 | 338 | 6,4 | 1,44 | 1,28 | 247 | 3,7 | 1,11 | 1,11 | 190 | 2,3 |
| | 1 | 275 | 1,79 | 1,28 | 308 | 5,5 | 1,60 | 1,19 | 275 | 4,4 | 1,18 | 1,02 | 203 | 2,6 | 0,89 | 0,89 | 153 | 1,6 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## Entering air temperature: 25 °C – R.H.: 50%

| | | | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| Model | Vdc | m³/h | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN-ECM 13 | 10 | 295 | 1,28 | 1,06 | 220 | 4,8 | 1,09 | 0,98 | 188 | 3,6 | 0,86 | 0,86 | 148 | 2,4 | 0,70 | 0,70 | 121 | 1,7 |
| | 7,5 | 250 | 1,13 | 0,92 | 194 | 3,8 | 0,97 | 0,86 | 167 | 2,9 | 0,75 | 0,75 | 129 | 1,9 | 0,61 | 0,61 | 105 | 1,3 |
| | 5 | 205 | 0,98 | 0,79 | 168 | 2,9 | 0,84 | 0,73 | 144 | 2,2 | 0,64 | 0,64 | 109 | 1,4 | 0,53 | 0,53 | 90 | 1,0 |
| | 3 | 165 | 0,83 | 0,66 | 143 | 2,2 | 0,72 | 0,61 | 124 | 1,7 | 0,54 | 0,54 | 93 | 1,0 | 0,45 | 0,45 | 77 | 0,7 |
| | 1 | 130 | 0,69 | 0,54 | 119 | 1,6 | 0,59 | 0,50 | 102 | 1,2 | 0,44 | 0,44 | 76 | 0,7 | 0,36 | 0,36 | 62 | 0,5 |
| CCN-ECM 23 | 10 | 540 | 2,63 | 2,09 | 453 | 9,4 | 2,28 | 1,94 | 393 | 7,2 | 1,70 | 1,70 | 293 | 4,3 | 1,40 | 1,40 | 241 | 3,1 |
| | 7,5 | 450 | 2,30 | 1,80 | 395 | 7,3 | 1,99 | 1,68 | 342 | 5,7 | 1,47 | 1,47 | 252 | 3,3 | 1,22 | 1,22 | 209 | 2,3 |
| | 5 | 370 | 1,94 | 1,51 | 334 | 5,4 | 1,69 | 1,40 | 291 | 4,2 | 1,24 | 1,24 | 214 | 2,4 | 1,02 | 1,02 | 176 | 1,7 |
| | 3 | 295 | 1,62 | 1,24 | 278 | 3,9 | 1,41 | 1,16 | 242 | 3,1 | 1,02 | 1,02 | 175 | 1,7 | 0,84 | 0,84 | 144 | 1,2 |
| | 1 | 215 | 1,23 | 0,94 | 212 | 2,4 | 1,08 | 0,87 | 186 | 1,9 | 0,76 | 0,76 | 131 | 1,0 | 0,63 | 0,63 | 109 | 0,7 |
| CCN-ECM 33 | 10 | 620 | 3,15 | 2,46 | 541 | 14,9 | 2,74 | 2,29 | 471 | 11,6 | 2,01 | 2,01 | 345 | 6,7 | 1,66 | 1,66 | 285 | 4,7 |
| | 7,5 | 525 | 2,76 | 2,13 | 475 | 11,8 | 2,40 | 1,99 | 413 | 9,2 | 1,74 | 1,74 | 299 | 5,2 | 1,44 | 1,44 | 248 | 3,7 |
| | 5 | 430 | 2,35 | 1,80 | 404 | 8,8 | 2,05 | 1,67 | 353 | 6,9 | 1,48 | 1,48 | 255 | 3,9 | 1,22 | 1,22 | 210 | 2,7 |
| | 3 | 345 | 1,96 | 1,49 | 337 | 6,4 | 1,71 | 1,38 | 294 | 5,0 | 1,22 | 1,22 | 209 | 2,7 | 1,01 | 1,01 | 173 | 1,9 |
| | 1 | 275 | 1,59 | 1,20 | 273 | 4,4 | 1,39 | 1,11 | 239 | 3,5 | 0,95 | 0,94 | 163 | 1,8 | 0,81 | 0,81 | 139 | 1,3 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## 4 row coil units

### Entering air temperature: 27 °C – R.H.: 50%

| | | | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| Model | Vdc | m³/h | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| | 10 | 295 | 1,92 | 1,34 | 330 | 15,9 | 1,72 | 1,26 | 296 | 13,0 | 1,30 | 1,09 | 224 | 7,8 | 0,96 | 0,96 | 165 | 4,7 |
| | 7,5 | 250 | 1,68 | 1,16 | 289 | 12,4 | 1,50 | 1,09 | 258 | 10,2 | 1,14 | 0,95 | 196 | 6,2 | 0,83 | 0,83 | 143 | 3,6 |
| CCN-ECM 14 | 5 | 205 | 1,43 | 0,98 | 245 | 9,2 | 1,28 | 0,92 | 219 | 7,6 | 0,97 | 0,80 | 166 | 4,6 | 0,71 | 0,71 | 121 | 2,6 |
| | 3 | 165 | 1,19 | 0,81 | 205 | 6,8 | 1,07 | 0,76 | 184 | 5,6 | 0,82 | 0,66 | 141 | 3,4 | 0,59 | 0,59 | 101 | 1,9 |
| | 1 | 130 | 0,97 | 0,65 | 167 | 4,7 | 0,87 | 0,61 | 150 | 3,9 | 0,67 | 0,53 | 116 | 2,4 | 0,47 | 0,47 | 81 | 1,3 |
| | 10 | 540 | 3,72 | 2,56 | 640 | 23,6 | 3,34 | 2,40 | 575 | 19,5 | 2,55 | 2,08 | 439 | 12,1 | 1,84 | 1,84 | 317 | 6,7 |
| | 7,5 | 450 | 3,20 | 2,19 | 550 | 18,0 | 2,88 | 2,06 | 495 | 14,9 | 2,21 | 1,79 | 379 | 9,3 | 1,58 | 1,58 | 271 | 5,1 |
| CCN-ECM 24 | 5 | 370 | 2,67 | 1,81 | 460 | 13,2 | 2,41 | 1,70 | 415 | 10,9 | 1,85 | 1,48 | 319 | 6,8 | 1,31 | 1,31 | 226 | 3,7 |
| | 3 | 295 | 2,20 | 1,48 | 378 | 9,3 | 1,98 | 1,39 | 340 | 7,7 | 1,53 | 1,21 | 263 | 4,8 | 1,07 | 1,07 | 184 | 2,5 |
| | 1 | 215 | 1,65 | 1,11 | 284 | 5,6 | 1,49 | 1,04 | 257 | 4,7 | 1,15 | 0,90 | 198 | 2,9 | 0,76 | 0,75 | 131 | 1,4 |
| | 10 | 620 | 4,28 | 2,94 | 736 | 17,6 | 3,85 | 2,76 | 662 | 14,6 | 2,94 | 2,40 | 505 | 9,0 | 2,11 | 2,11 | 363 | 5,0 |
| | 7,5 | 525 | 3,72 | 2,54 | 640 | 13,7 | 3,35 | 2,38 | 576 | 11,4 | 2,57 | 2,07 | 442 | 7,1 | 1,83 | 1,83 | 315 | 3,9 |
| CCN-ECM 34 | 5 | 430 | 3,13 | 2,13 | 539 | 10,1 | 2,83 | 2,00 | 487 | 8,4 | 2,17 | 1,73 | 373 | 5,2 | 1,53 | 1,53 | 263 | 2,8 |
| | 3 | 345 | 2,59 | 1,75 | 445 | 7,2 | 2,34 | 1,64 | 402 | 6,0 | 1,80 | 1,43 | 309 | 3,7 | 1,26 | 1,26 | 216 | 2,0 |
| | 1 | 275 | 2,08 | 1,40 | 358 | 4,9 | 1,88 | 1,31 | 323 | 4,1 | 1,45 | 1,14 | 249 | 2,6 | 0,96 | 0,95 | 165 | 1,2 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

### Entering air temperature 26 °C – R.H.: 50%

| | | | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| Model | Vdc | m³/h | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| | 10 | 295 | 1,71 | 1,26 | 294 | 13,0 | 1,51 | 1,18 | 260 | 10,3 | 1,08 | 1,01 | 186 | 5,7 | 0,88 | 0,88 | 152 | 4,0 |
| | 7,5 | 250 | 1,49 | 1,09 | 256 | 10,1 | 1,32 | 1,02 | 227 | 8,1 | 0,95 | 0,87 | 163 | 4,5 | 0,76 | 0,76 | 131 | 3,1 |
| CCN-ECM 14 | 5 | 205 | 1,27 | 0,92 | 218 | 7,6 | 1,13 | 0,86 | 194 | 6,1 | 0,82 | 0,74 | 140 | 3,4 | 0,65 | 0,65 | 111 | 2,2 |
| | 3 | 165 | 1,07 | 0,77 | 184 | 5,5 | 0,94 | 0,72 | 162 | 4,5 | 0,69 | 0,61 | 119 | 2,5 | 0,54 | 0,54 | 93 | 1,6 |
| | 1 | 130 | 0,86 | 0,62 | 148 | 3,8 | 0,77 | 0,57 | 133 | 3,1 | 0,56 | 0,49 | 97 | 1,8 | 0,43 | 0,43 | 74 | 1,1 |
| | 10 | 540 | 3,32 | 2,41 | 572 | 19,4 | 2,95 | 2,25 | 508 | 15,7 | 2,15 | 1,93 | 370 | 8,9 | 1,68 | 1,68 | 289 | 5,8 |
| | 7,5 | 450 | 2,86 | 2,06 | 491 | 14,9 | 2,55 | 1,93 | 438 | 12,0 | 1,87 | 1,66 | 321 | 6,9 | 1,44 | 1,44 | 247 | 4,3 |
| CCN-ECM 24 | 5 | 370 | 2,39 | 1,71 | 412 | 10,8 | 2,13 | 1,60 | 367 | 8,8 | 1,56 | 1,37 | 269 | 5,1 | 1,20 | 1,20 | 207 | 3,1 |
| | 3 | 295 | 1,97 | 1,40 | 339 | 7,6 | 1,75 | 1,31 | 301 | 6,2 | 1,30 | 1,12 | 223 | 3,6 | 0,98 | 0,98 | 168 | 2,2 |
| | 1 | 215 | 1,48 | 1,04 | 255 | 4,6 | 1,32 | 0,97 | 227 | 3,8 | 0,98 | 0,83 | 169 | 2,2 | 0,73 | 0,73 | 126 | 1,3 |
| | 10 | 620 | 3,83 | 2,77 | 658 | 14,5 | 3,39 | 2,59 | 583 | 11,7 | 2,48 | 2,22 | 426 | 6,7 | 1,93 | 1,93 | 332 | 4,3 |
| | 7,5 | 525 | 3,33 | 2,39 | 573 | 11,3 | 2,96 | 2,23 | 509 | 9,1 | 2,16 | 1,92 | 372 | 5,2 | 1,68 | 1,68 | 289 | 3,3 |
| CCN-ECM 34 | 5 | 430 | 2,80 | 2,00 | 482 | 8,3 | 2,50 | 1,87 | 430 | 6,8 | 1,83 | 1,60 | 315 | 3,9 | 1,40 | 1,40 | 241 | 2,4 |
| | 3 | 345 | 2,32 | 1,65 | 399 | 5,9 | 2,07 | 1,54 | 356 | 4,8 | 1,53 | 1,32 | 263 | 2,8 | 1,15 | 1,15 | 197 | 1,7 |
| | 1 | 275 | 1,86 | 1,32 | 320 | 4,1 | 1,66 | 1,23 | 286 | 3,3 | 1,23 | 1,05 | 212 | 1,9 | 0,92 | 0,92 | 158 | 1,1 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

## Entering air temperature: 25 °C – R.H.: 50%

| | | | WT: 7 / 12 °C | | | | WT: 8 / 13 °C | | | | WT: 10 / 15 °C | | | | WT: 12 / 17 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) | Pc | Ps | Qw | Dp(c) |
| Model | Vdc | $m^3/h$ | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa | kW | kW | l/h | kPa |
| CCN-ECM 14 | 10 | 295 | 1,51 | 1,18 | 260 | 10,4 | 1,30 | 1,10 | 224 | 8,0 | 0,97 | 0,97 | 167 | 4,7 | 0,79 | 0,79 | 136 | 3,4 |
| | 7,5 | 250 | 1,32 | 1,02 | 227 | 8,1 | 1,14 | 0,95 | 196 | 6,3 | 0,84 | 0,84 | 144 | 3,6 | 0,69 | 0,69 | 119 | 2,6 |
| | 5 | 205 | 1,12 | 0,87 | 192 | 6,1 | 0,98 | 0,80 | 168 | 4,7 | 0,71 | 0,71 | 121 | 2,7 | 0,59 | 0,59 | 101 | 1,9 |
| | 3 | 165 | 0,94 | 0,72 | 162 | 4,5 | 0,82 | 0,67 | 141 | 3,5 | 0,59 | 0,59 | 101 | 1,9 | 0,49 | 0,49 | 84 | 1,4 |
| | 1 | 130 | 0,76 | 0,58 | 131 | 3,1 | 0,67 | 0,53 | 116 | 2,4 | 0,45 | 0,45 | 78 | 1,2 | 0,39 | 0,39 | 67 | 0,9 |
| CCN-ECM 24 | 10 | 540 | 2,94 | 2,26 | 506 | 15,7 | 2,56 | 2,10 | 441 | 12,3 | 1,84 | 1,84 | 317 | 6,9 | 1,52 | 1,52 | 262 | 4,9 |
| | 7,5 | 450 | 2,54 | 1,93 | 436 | 12,0 | 2,21 | 1,80 | 379 | 9,4 | 1,58 | 1,58 | 271 | 5,2 | 1,31 | 1,31 | 225 | 3,7 |
| | 5 | 370 | 2,12 | 1,60 | 365 | 8,8 | 1,85 | 1,49 | 319 | 6,9 | 1,26 | 1,25 | 217 | 3,5 | 1,09 | 1,09 | 188 | 2,7 |
| | 3 | 295 | 1,75 | 1,31 | 301 | 6,2 | 1,53 | 1,22 | 263 | 4,9 | 1,05 | 1,03 | 180 | 2,5 | 0,89 | 0,89 | 153 | 1,8 |
| | 1 | 215 | 1,31 | 0,98 | 226 | 3,8 | 1,15 | 0,91 | 198 | 3,0 | 0,80 | 0,76 | 138 | 1,6 | 0,66 | 0,66 | 114 | 1,1 |
| CCN-ECM 34 | 10 | 620 | 3,38 | 2,59 | 581 | 11,7 | 2,95 | 2,41 | 507 | 9,2 | 2,12 | 2,12 | 364 | 5,1 | 1,75 | 1,75 | 301 | 3,6 |
| | 7,5 | 525 | 2,94 | 2,24 | 506 | 9,1 | 2,57 | 2,08 | 442 | 7,2 | 1,84 | 1,84 | 317 | 4,0 | 1,52 | 1,52 | 262 | 2,8 |
| | 5 | 430 | 2,48 | 1,88 | 427 | 6,8 | 2,17 | 1,75 | 373 | 5,3 | 1,48 | 1,47 | 255 | 2,7 | 1,27 | 1,27 | 219 | 2,0 |
| | 3 | 345 | 2,06 | 1,54 | 354 | 4,8 | 1,80 | 1,44 | 309 | 3,8 | 1,24 | 1,21 | 213 | 1,9 | 1,05 | 1,05 | 180 | 1,4 |
| | 1 | 275 | 1,65 | 1,23 | 284 | 3,3 | 1,45 | 1,15 | 249 | 2,6 | 1,01 | 0,97 | 174 | 1,4 | 0,83 | 0,83 | 143 | 1,0 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Pc:** Cooling total emission
**Ps:** Cooling sensible emission
**Qw:** Water flow rate
**Dp(c):** Dp Cooling

# HEATING EMISSION

## 3 row coil units

### Entering air temperature: 20 °C

| | | | WT: 70 / 60 °C | | | WT: 60 / 50 °C | | | WT: 50 / 40 °C | | | WT: 50 / 45 °C | | | WT: 45 / 40 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| Model | Vdc | $m^3/h$ | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN-ECM 13 | 10 | 295 | 3,44 | 296 | 6,0 | 2,63 | 226 | 3,9 | 1,82 | 313 | 2,1 | 2,10 | 361 | 9,1 | 1,70 | 292 | 6,4 |
| | 7,5 | 250 | 2,98 | 256 | 4,7 | 2,28 | 196 | 3,0 | 1,58 | 272 | 1,6 | 1,82 | 313 | 7,0 | 1,47 | 253 | 4,9 |
| | 5 | 205 | 2,54 | 218 | 3,5 | 1,94 | 167 | 2,3 | 1,35 | 232 | 1,2 | 1,55 | 267 | 5,3 | 1,26 | 217 | 3,7 |
| | 3 | 165 | 2,12 | 182 | 2,6 | 1,62 | 139 | 1,7 | 1,13 | 194 | 0,9 | 1,30 | 224 | 3,9 | 1,05 | 181 | 2,7 |
| | 1 | 130 | 1,72 | 148 | 1,8 | 1,32 | 114 | 1,1 | 0,92 | 158 | 0,6 | 1,05 | 181 | 2,7 | 0,85 | 146 | 1,9 |
| CCN-ECM 23 | 10 | 540 | 6,49 | 558 | 10,2 | 4,98 | 428 | 6,6 | 3,47 | 597 | 3,6 | 3,96 | 681 | 15,4 | 3,21 | 552 | 10,9 |
| | 7,5 | 450 | 5,60 | 482 | 7,9 | 4,30 | 370 | 5,1 | 3,00 | 516 | 2,8 | 3,42 | 588 | 11,9 | 2,78 | 478 | 8,4 |
| | 5 | 370 | 4,67 | 402 | 5,8 | 3,59 | 309 | 3,7 | 2,51 | 432 | 2,1 | 2,85 | 490 | 8,6 | 2,32 | 399 | 6,1 |
| | 3 | 295 | 3,82 | 329 | 4,0 | 2,94 | 253 | 2,6 | 2,06 | 354 | 1,4 | 2,34 | 402 | 6,1 | 1,90 | 327 | 4,3 |
| | 1 | 215 | 2,88 | 248 | 2,4 | 2,22 | 191 | 1,6 | 1,55 | 267 | 0,9 | 1,76 | 303 | 3,7 | 1,43 | 246 | 2,6 |
| CCN-ECM 33 | 10 | 620 | 7,61 | 654 | 15,8 | 5,85 | 503 | 10,3 | 4,09 | 703 | 5,6 | 4,65 | 800 | 23,8 | 3,77 | 648 | 16,8 |
| | 7,5 | 525 | 6,59 | 567 | 12,3 | 5,07 | 436 | 8,0 | 3,55 | 611 | 4,4 | 4,03 | 693 | 18,5 | 3,27 | 562 | 13,0 |
| | 5 | 430 | 5,53 | 476 | 9,0 | 4,25 | 366 | 5,9 | 2,98 | 513 | 3,2 | 3,38 | 581 | 13,5 | 2,74 | 471 | 9,6 |
| | 3 | 345 | 4,54 | 390 | 6,4 | 3,50 | 301 | 4,2 | 2,45 | 421 | 2,3 | 2,78 | 478 | 9,6 | 2,26 | 389 | 6,8 |
| | 1 | 275 | 3,65 | 314 | 4,3 | 2,82 | 243 | 2,8 | 1,98 | 341 | 1,6 | 2,23 | 384 | 6,5 | 1,82 | 313 | 4,6 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

## 4 row coil units

### Entering air temperature: 20 °C

| | | | WT: 70 / 60 °C | | | WT: 60 / 50 °C | | | WT: 50 / 40 °C | | | WT: 50 / 45 °C | | | WT: 45 / 40 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| Model | Vdc | $m^3/h$ | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN-ECM 14 | 10 | 295 | 3,69 | 317 | 11,1 | 2,83 | 243 | 7,2 | 1,97 | 339 | 3,9 | 2,25 | 387 | 16,7 | 1,83 | 315 | 11,8 |
| | 7,5 | 250 | 3,19 | 274 | 8,6 | 2,45 | 211 | 5,6 | 1,71 | 294 | 3,1 | 1,95 | 335 | 13,0 | 1,58 | 272 | 9,2 |
| | 5 | 205 | 2,68 | 230 | 6,3 | 2,06 | 177 | 4,1 | 1,44 | 248 | 2,3 | 1,64 | 282 | 9,5 | 1,33 | 229 | 6,7 |
| | 3 | 165 | 2,22 | 191 | 4,5 | 1,71 | 147 | 3,0 | 1,19 | 205 | 1,6 | 1,36 | 234 | 6,8 | 1,10 | 189 | 4,8 |
| | 1 | 130 | 1,78 | 153 | 3,1 | 1,37 | 118 | 2,0 | 0,96 | 165 | 1,1 | 1,09 | 187 | 4,7 | 0,89 | 153 | 3,3 |
| CCN-ECM 24 | 10 | 540 | 7,27 | 625 | 17,3 | 5,60 | 482 | 11,3 | 3,93 | 676 | 6,3 | 4,44 | 764 | 26,1 | 3,62 | 623 | 18,5 |
| | 7,5 | 450 | 6,17 | 531 | 13,0 | 4,76 | 409 | 8,5 | 3,35 | 576 | 4,7 | 3,77 | 648 | 19,6 | 3,07 | 528 | 13,9 |
| | 5 | 370 | 5,08 | 437 | 9,2 | 3,93 | 338 | 6,0 | 2,76 | 475 | 3,4 | 3,11 | 535 | 13,9 | 2,53 | 435 | 9,9 |
| | 3 | 295 | 4,11 | 353 | 6,3 | 3,17 | 273 | 4,2 | 2,24 | 385 | 2,3 | 2,51 | 432 | 9,6 | 2,05 | 353 | 6,8 |
| | 1 | 215 | 3,04 | 261 | 3,7 | 2,35 | 202 | 2,5 | 1,66 | 286 | 1,4 | 1,86 | 320 | 5,6 | 1,52 | 261 | 4,0 |
| CCN-ECM 34 | 10 | 620 | 8,00 | 688 | 12,0 | 6,16 | 530 | 7,8 | 4,31 | 741 | 4,3 | 4,89 | 841 | 18,0 | 3,97 | 683 | 12,7 |
| | 7,5 | 525 | 6,89 | 593 | 9,2 | 5,30 | 456 | 6,0 | 3,72 | 640 | 3,3 | 4,21 | 724 | 13,8 | 3,42 | 588 | 9,8 |
| | 5 | 430 | 5,74 | 494 | 6,7 | 4,43 | 381 | 4,4 | 3,11 | 535 | 2,4 | 3,51 | 604 | 10,0 | 2,85 | 490 | 7,1 |
| | 3 | 345 | 4,70 | 404 | 4,7 | 3,62 | 311 | 3,1 | 2,55 | 439 | 1,7 | 2,87 | 494 | 7,1 | 2,34 | 402 | 5,0 |
| | 1 | 275 | 3,75 | 323 | 3,2 | 2,90 | 249 | 2,1 | 2,04 | 351 | 1,2 | 2,30 | 396 | 4,8 | 1,87 | 322 | 3,4 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

# 1 row additional coil units

## For 3 or 4 row version

### Entering air temperature: 20 °C

| | | | WT: 80 / 70 °C | | | WT: 75 / 65 °C | | | WT: 70 / 60 °C | | | WT: 65 / 55 °C | | | WT: 60 / 50 °C | | | WT: 55 / 45 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Qv | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| Model | Vdc | $m^3/h$ | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN-ECM 13+1 | 10 | 295 | 1,90 | 163 | 5,5 | 1,71 | 147 | 4,7 | 1,52 | 131 | 3,8 | 1,33 | 114 | 3,1 | 1,14 | 98 | 2,4 | 0,95 | 82 | 1,8 |
| | 7,5 | 250 | 1,69 | 145 | 4,5 | 1,52 | 131 | 3,8 | 1,35 | 116 | 3,1 | 1,18 | 101 | 2,5 | 1,02 | 88 | 1,9 | 0,85 | 73 | 1,4 |
| | 5 | 205 | 1,48 | 127 | 3,5 | 1,33 | 114 | 3,0 | 1,18 | 101 | 2,5 | 1,04 | 89 | 2,0 | 0,89 | 77 | 1,5 | 0,74 | 64 | 1,1 |
| | 3 | 165 | 1,28 | 110 | 2,8 | 1,16 | 100 | 2,3 | 1,03 | 89 | 1,9 | 0,90 | 77 | 1,5 | 0,77 | 66 | 1,2 | 0,64 | 55 | 0,9 |
| | 1 | 130 | 1,09 | 94 | 2,1 | 0,98 | 84 | 1,7 | 0,87 | 75 | 1,4 | 0,76 | 65 | 1,2 | 0,66 | 57 | 0,9 | 0,55 | 47 | 0,7 |
| CCN-ECM 23+1 | 10 | 540 | 3,77 | 324 | 4,5 | 3,39 | 292 | 3,8 | 3,01 | 259 | 3,1 | 2,64 | 227 | 2,5 | 2,26 | 194 | 2,0 | 1,89 | 163 | 1,4 |
| | 7,5 | 450 | 3,33 | 286 | 3,6 | 2,99 | 257 | 3,1 | 2,66 | 229 | 2,5 | 2,33 | 200 | 2,0 | 2,00 | 172 | 1,6 | 1,67 | 144 | 1,2 |
| | 5 | 370 | 2,88 | 248 | 2,8 | 2,59 | 223 | 2,4 | 2,31 | 199 | 2,0 | 2,02 | 174 | 1,6 | 1,74 | 150 | 1,2 | 1,45 | 125 | 0,9 |
| | 3 | 295 | 2,46 | 212 | 2,1 | 2,22 | 191 | 1,8 | 1,97 | 169 | 1,5 | 1,73 | 149 | 1,2 | 1,49 | 128 | 0,9 | 1,24 | 107 | 0,7 |
| | 1 | 215 | 1,97 | 169 | 1,4 | 1,77 | 152 | 1,2 | 1,58 | 136 | 1,0 | 1,38 | 119 | 0,8 | 1,19 | 102 | 0,6 | 1,00 | 86 | 0,5 |
| CCN-ECM 33+1 | 10 | 620 | 4,53 | 390 | 7,3 | 4,08 | 351 | 6,2 | 3,64 | 313 | 5,1 | 3,19 | 274 | 4,1 | 2,75 | 237 | 3,2 | 2,31 | 199 | 2,4 |
| | 7,5 | 525 | 4,04 | 347 | 6,0 | 3,64 | 313 | 5,1 | 3,24 | 279 | 4,2 | 2,85 | 245 | 3,4 | 2,45 | 211 | 2,6 | 2,06 | 177 | 2,0 |
| | 5 | 430 | 3,51 | 302 | 4,7 | 3,17 | 273 | 4,0 | 2,82 | 243 | 3,3 | 2,48 | 213 | 2,7 | 2,14 | 184 | 2,1 | 1,79 | 154 | 1,5 |
| | 3 | 345 | 3,01 | 259 | 3,6 | 2,71 | 233 | 3,0 | 2,42 | 208 | 2,5 | 2,12 | 182 | 2,0 | 1,83 | 157 | 1,6 | 1,54 | 132 | 1,2 |
| | 1 | 275 | 2,53 | 218 | 2,6 | 2,28 | 196 | 2,2 | 2,04 | 175 | 1,8 | 1,79 | 154 | 1,5 | 1,54 | 132 | 1,2 | 1,30 | 112 | 0,9 |
| CCN-ECM 14+1 | 10 | 295 | 1,90 | 163 | 5,5 | 1,71 | 147 | 4,7 | 1,52 | 131 | 3,8 | 1,33 | 114 | 3,1 | 1,14 | 98 | 2,4 | 0,95 | 82 | 1,8 |
| | 7,5 | 250 | 1,69 | 145 | 4,5 | 1,52 | 131 | 3,8 | 1,35 | 116 | 3,1 | 1,18 | 101 | 2,5 | 1,02 | 88 | 1,9 | 0,85 | 73 | 1,4 |
| | 5 | 205 | 1,48 | 127 | 3,5 | 1,33 | 114 | 3,0 | 1,18 | 101 | 2,5 | 1,04 | 89 | 2,0 | 0,89 | 77 | 1,5 | 0,74 | 64 | 1,1 |
| | 3 | 165 | 1,28 | 110 | 2,8 | 1,16 | 100 | 2,3 | 1,03 | 89 | 1,9 | 0,90 | 77 | 1,5 | 0,77 | 66 | 1,2 | 0,64 | 55 | 0,9 |
| | 1 | 130 | 1,09 | 94 | 2,1 | 0,98 | 84 | 1,7 | 0,87 | 75 | 1,4 | 0,76 | 65 | 1,2 | 0,66 | 57 | 0,9 | 0,55 | 47 | 0,7 |
| CCN-ECM 24+1 | 10 | 540 | 3,77 | 324 | 4,5 | 3,39 | 292 | 3,8 | 3,01 | 259 | 3,1 | 2,64 | 227 | 2,5 | 2,26 | 194 | 2,0 | 1,89 | 163 | 1,4 |
| | 7,5 | 450 | 3,33 | 286 | 3,6 | 2,99 | 257 | 3,1 | 2,66 | 229 | 2,5 | 2,33 | 200 | 2,0 | 2,00 | 172 | 1,6 | 1,67 | 144 | 1,2 |
| | 5 | 370 | 2,88 | 248 | 2,8 | 2,59 | 223 | 2,4 | 2,31 | 199 | 2,0 | 2,02 | 174 | 1,6 | 1,74 | 150 | 1,2 | 1,45 | 125 | 0,9 |
| | 3 | 295 | 2,46 | 212 | 2,1 | 2,22 | 191 | 1,8 | 1,97 | 169 | 1,5 | 1,73 | 149 | 1,2 | 1,49 | 128 | 0,9 | 1,24 | 107 | 0,7 |
| | 1 | 215 | 1,97 | 169 | 1,4 | 1,77 | 152 | 1,2 | 1,58 | 136 | 1,0 | 1,38 | 119 | 0,8 | 1,19 | 102 | 0,6 | 1,00 | 86 | 0,5 |
| CCN-ECM 34+1 | 10 | 620 | 4,53 | 390 | 7,3 | 4,08 | 351 | 6,2 | 3,64 | 313 | 5,1 | 3,19 | 274 | 4,1 | 2,75 | 237 | 3,2 | 2,31 | 199 | 2,4 |
| | 7,5 | 525 | 4,04 | 347 | 6,0 | 3,64 | 313 | 5,1 | 3,24 | 279 | 4,2 | 2,85 | 245 | 3,4 | 2,45 | 211 | 2,6 | 2,06 | 177 | 2,0 |
| | 5 | 430 | 3,51 | 302 | 4,7 | 3,17 | 273 | 4,0 | 2,82 | 243 | 3,3 | 2,48 | 213 | 2,7 | 2,14 | 184 | 2,1 | 1,79 | 154 | 1,5 |
| | 3 | 345 | 3,01 | 259 | 3,6 | 2,71 | 233 | 3,0 | 2,42 | 208 | 2,5 | 2,12 | 182 | 2,0 | 1,83 | 157 | 1,6 | 1,54 | 132 | 1,2 |
| | 1 | 275 | 2,53 | 218 | 2,6 | 2,28 | 196 | 2,2 | 2,04 | 175 | 1,8 | 1,79 | 154 | 1,5 | 1,54 | 132 | 1,2 | 1,30 | 112 | 0,9 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

## 2 row additional coil units

### 3 row version only

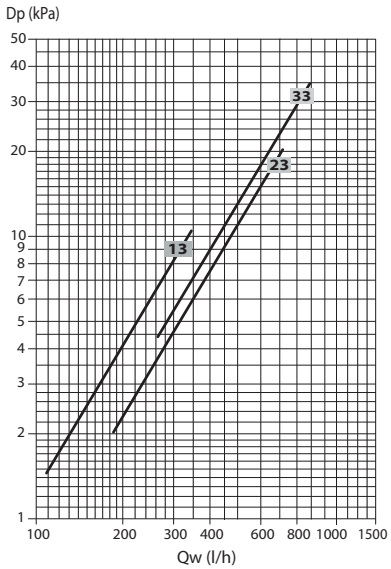
| Model | Vdc | Qv | WT: 65 / 55 °C | | | WT: 60 / 50 °C | | | WT: 55 / 45 °C | | | WT: 50 / 40 °C | | | WT: 45 / 40 °C | | | WT: 45 / 35 °C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) | Ph | Qw | Dp(h) |
| | | $m^3/h$ | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa | kW | l/h | kPa |
| CCN-ECM 13+2 | 10 | 295 | 2,32 | 200 | 14,8 | 2,00 | 172 | 11,6 | 1,69 | 145 | 8,8 | 1,37 | 118 | 6,2 | 1,30 | 224 | 19,2 | 1,06 | 91 | 4,0 |
| | 7,5 | 250 | 2,04 | 175 | 11,9 | 1,77 | 152 | 9,3 | 1,49 | 128 | 7,0 | 1,21 | 104 | 5,0 | 1,14 | 196 | 15,4 | 0,94 | 81 | 3,2 |
| | 5 | 205 | 1,77 | 152 | 9,2 | 1,53 | 132 | 7,2 | 1,29 | 111 | 5,4 | 1,05 | 90 | 3,9 | 0,99 | 170 | 11,9 | 0,81 | 70 | 2,5 |
| | 3 | 165 | 1,51 | 130 | 6,9 | 1,30 | 112 | 5,5 | 1,10 | 95 | 4,1 | 0,90 | 77 | 2,9 | 0,84 | 144 | 9,0 | 0,69 | 59 | 1,9 |
| | 1 | 130 | 1,26 | 108 | 5,1 | 1,09 | 94 | 4,0 | 0,92 | 79 | 3,0 | 0,75 | 65 | 2,2 | 0,71 | 122 | 6,6 | 0,58 | 50 | 1,4 |
| CCN-ECM 23+2 | 10 | 540 | 4,56 | 392 | 12,3 | 3,94 | 339 | 9,7 | 3,33 | 286 | 7,3 | 2,72 | 234 | 5,2 | 2,55 | 439 | 15,9 | 2,11 | 181 | 3,4 |
| | 7,5 | 450 | 3,98 | 342 | 9,6 | 3,44 | 296 | 7,6 | 2,91 | 250 | 5,7 | 2,38 | 205 | 4,1 | 2,23 | 384 | 12,5 | 1,84 | 158 | 2,7 |
| | 5 | 370 | 3,42 | 294 | 7,4 | 2,97 | 255 | 5,8 | 2,51 | 216 | 4,4 | 2,05 | 176 | 3,2 | 1,92 | 330 | 9,6 | 1,59 | 137 | 2,1 |
| | 3 | 295 | 2,86 | 246 | 5,4 | 2,48 | 213 | 4,3 | 2,10 | 181 | 3,2 | 1,72 | 148 | 2,3 | 1,60 | 275 | 7,0 | 1,33 | 114 | 1,5 |
| | 1 | 215 | 2,21 | 190 | 3,4 | 1,91 | 164 | 2,7 | 1,62 | 139 | 2,1 | 1,33 | 114 | 1,5 | 1,24 | 213 | 4,4 | 1,03 | 89 | 1,0 |
| CCN-ECM 33+2 | 10 | 620 | 5,42 | 466 | 19,8 | 4,70 | 404 | 15,6 | 3,98 | 342 | 11,8 | 3,26 | 280 | 8,5 | 3,04 | 523 | 25,6 | 2,54 | 218 | 5,6 |
| | 7,5 | 525 | 4,77 | 410 | 15,8 | 4,14 | 356 | 12,5 | 3,51 | 302 | 9,5 | 2,87 | 247 | 6,8 | 2,67 | 459 | 20,5 | 2,24 | 193 | 4,5 |
| | 5 | 430 | 4,12 | 354 | 12,2 | 3,58 | 308 | 9,7 | 3,03 | 261 | 7,3 | 2,49 | 214 | 5,3 | 2,31 | 397 | 15,8 | 1,94 | 167 | 3,5 |
| | 3 | 345 | 3,45 | 297 | 8,9 | 3,00 | 258 | 7,1 | 2,54 | 218 | 5,4 | 2,08 | 179 | 3,9 | 1,93 | 332 | 11,6 | 1,63 | 140 | 2,5 |
| | 1 | 275 | 2,82 | 243 | 6,3 | 2,45 | 211 | 5,0 | 2,08 | 179 | 3,8 | 1,71 | 147 | 2,7 | 1,58 | 272 | 8,1 | 1,33 | 114 | 1,8 |

**WT:** Water temperature
**Vdc:** Inverter power
**Qv:** Air flow
**Ph:** Heating emission
**Qw:** Water flow rate
**Dp(h):** Dp Heating

# WATER SIDE PRESSURE DROP

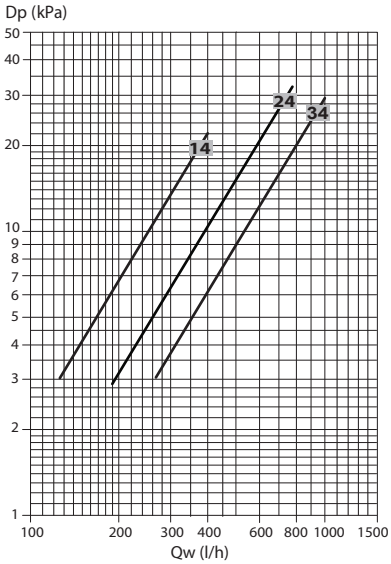
## Main coil

### 3 row coil




Dp = pressure drop
Qw = water flow rate

### 4 row coil



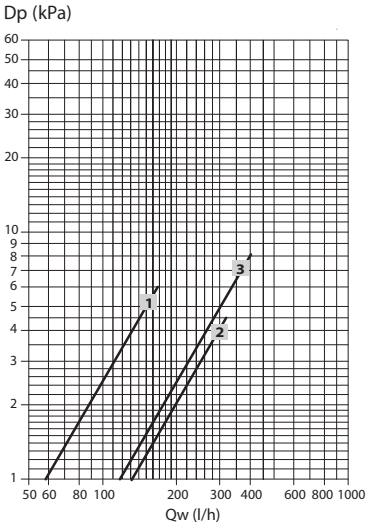

Dp = pressure drop
Qw = water flow rate

Pressure drop for mean water temperature of 10 °C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

| | Mean water temperature (°C) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| K correction factor | 0,94 | 0,90 | 0,86 | 0,82 | 0,78 | 0,74 | 0,70 |

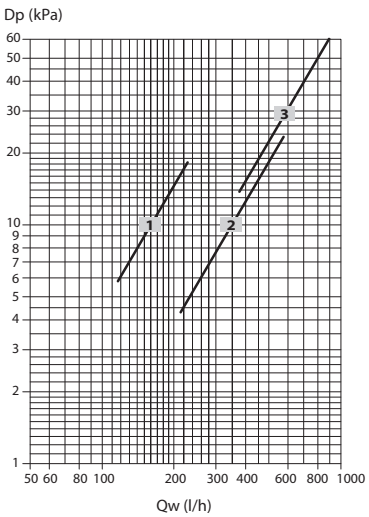
## Additional coil

### 1 row additional coil




Dp = pressure drop
Qw = water flow rate

### 2 row additional coil




Dp = pressure drop
Qw = water flow rate

Pressure drop for mean water temperature of 60 °C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

| | Mean water temperature (°C) | | | |
|---|---|---|---|---|
| | 40 | 50 | 70 | 80 |
| K correction factor | 1,12 | 1,06 | 0,94 | 0,88 |

# OPERATING LIMITS

| Description | | UoM | Value |
|---|---|---|---|
| Water flow | Coil maximum working pressure | bars | 16 |
| | | kPa | 1600 |
| | Lowest water inlet temperature (1) | °C | + 6 |
| | Highest water inlet temperature | °C | + 80 |
| Power supply | Single-phase rated operating voltage | V/Hz | 230/50 |

**(1)** for entering water temperatures below + 6 °C, contact the technical department

## Installation height

| Model | CCN-ECM 1 | CCN-ECM 2 | CCN-ECM 3 |
|---|---|---|---|
| Minimum installation height | 2,6 | | |
| Maximum installation height | 3,2 | | 3,5 |

## Water flow limits for main coil

| Model | | CCN-ECM 13 | CCN-ECM 23 | CCN-ECM 33 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 100 | 150 | |
| Water flow rate Max. | l/h | 500 | 1000 | 1500 |

| Model | | CCN-ECM 14 | CCN-ECM 24 | CCN-ECM 34 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 100 | 150 | 200 |
| Water flow rate Max. | l/h | 750 | 1000 | 2000 |

## Water flow limits for additional coil

| Model | | CCN-ECM 13+1 | CCN-ECM 23+1 | CCN-ECM 33+1 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 50 | 100 | |
| Water flow rate Max. | l/h | 250 | 450 | 650 |

| Model | | CCN-ECM 13+2 | CCN-ECM 23+2 | CCN-ECM 33+2 |
|---|---|---|---|---|
| Water flow rate Min. | l/h | 50 | 100 | 100 |
| Water flow rate Max. | l/h | 250 | 450 | 650 |

## Motor electrical data - max. absorption

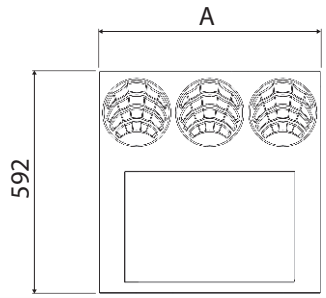
### 230 V 50 Hz

| Model | | CCN-ECM 1 | CCN-ECM 2 | CCN-ECM 3 |
|---|---|---|---|---|
| Motor absorption | W | 29 | 37 | 42 |
| Current absorbed | A | 0,24 | 0,29 | 0,35 |

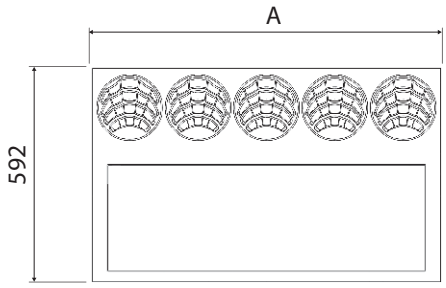
# DIMENSION, WEIGHT AND WATER CONTENT

## Dimensions

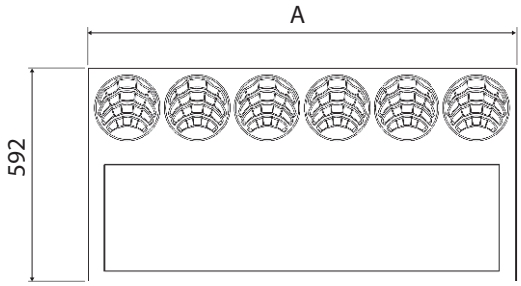
**Carisma Coanda diffusers size 1 - 3**

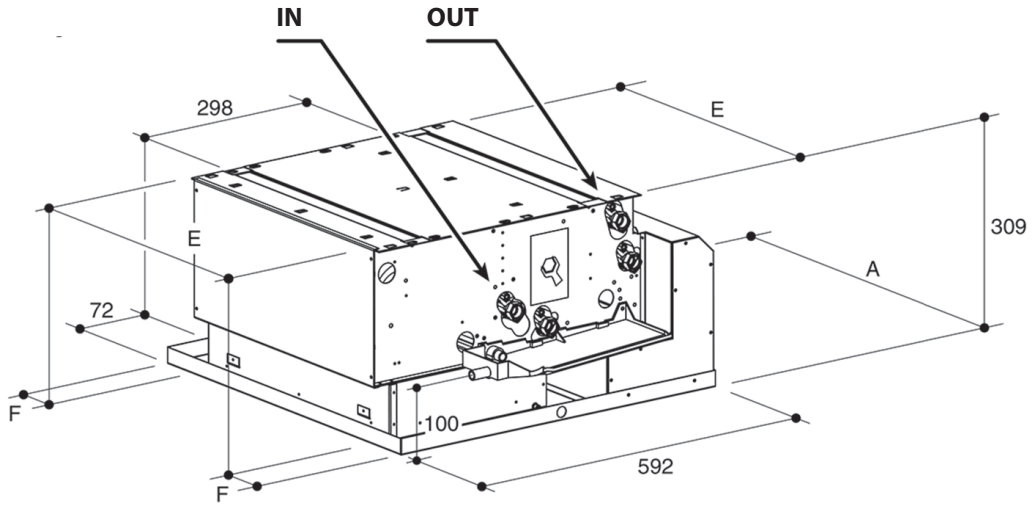



**Carisma Coanda diffusers size 2 - 5**




**Carisma Coanda diffusers size 3 - 6**

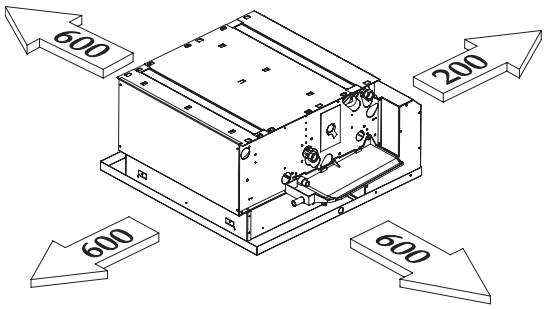


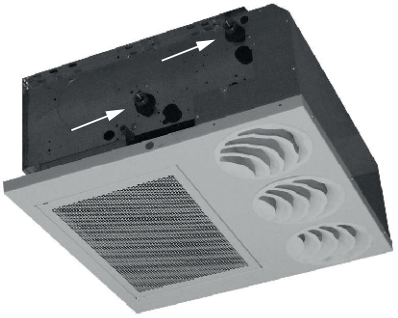

IN = water inlet
OUT = water outlet

| Model | | CCN-ECM 1 | CCN-ECM 2 | CCN-ECM 3 |
|---|---|---|---|---|
| A | mm | 592 | 970 | 1192 |
| E | mm | 454 | 884 | 1099 |
| F | mm | 78,0 | 43,0 | 46,5 |

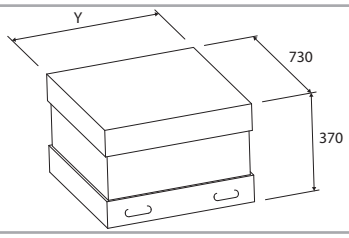
### Maintenance technical room




### Coil connections on the left



## Packed unit




| Model | | CCN-ECM 1 | CCN-ECM 2 | CCN-ECM 3 |
|---|---|---|---|---|
| Y | mm | 750 | 1130 | 1350 |

## Weight

### Weights with packaging

| Model | | CCN-ECM 1 | CCN-ECM 2 | CCN-ECM 3 |
|---|---|---|---|---|
| 3 rows | kg | 18 | 34 | 44 |
| 3+1 rows | kg | 20 | 40 | 51 |
| 3+2 rows | kg | 23 | 46 | 58 |
| 4 rows | kg | 20 | 37 | 48 |
| 4+1 rows | kg | 23 | 42 | 54 |

### Weights without packaging

| Model | | CCN-ECM 1 | CCN-ECM 2 | CCN-ECM 3 |
|---|---|---|---|---|
| 3 rows | kg | 16 | 33 | 42 |
| 3+1 rows | kg | 19 | 38 | 48 |
| 3+2 rows | kg | 22 | 43 | 54 |
| 4 rows | kg | 18 | 35 | 45 |
| 4+1 rows | kg | 21 | 40 | 51 |

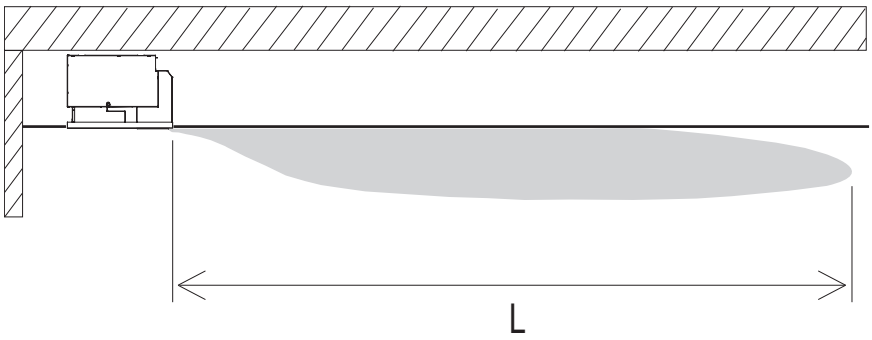
## Water content

| Model | | CCN-ECM 1 | CCN-ECM 2 | CCN-ECM 3 |
|---|---|---|---|---|
| 3 rows | l | 0,6 | 1,3 | 1,7 |
| 4 rows | l | 0,8 | 1,7 | 2,4 |
| +1 row | l | 0,2 | 0,4 | 0,5 |
| +2 rows | l | 0,4 | 0,8 | 1,0 |

# AIR THROW

## Heating

### Heating



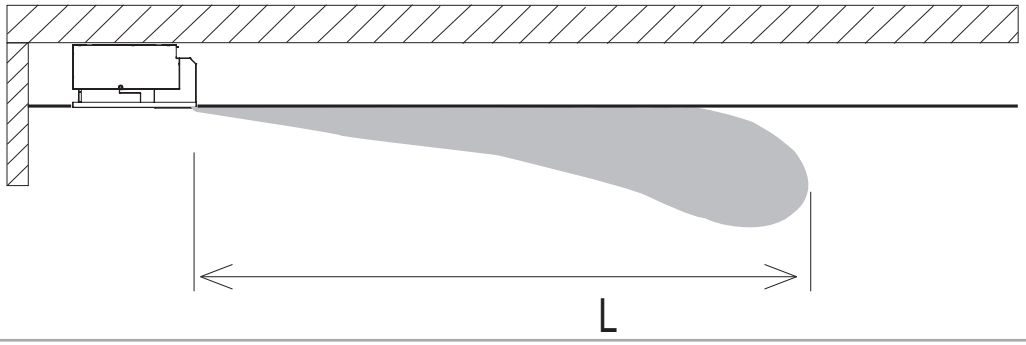

### Heating air throw

| MODEL | | CCN-ECM 13 | | | | | CCN-ECM 23 | | | | | CCN-ECM 33 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inverter power | | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 |
| Air throw - heating | m | 3,7 | 4,2 | 5,2 | 6,3 | 7,0 | 4,4 | 5,9 | 6,9 | 7,8 | 8,8 | 4,3 | 5,0 | 6,1 | 7,3 | 8,8 |

| MODEL | | CCN-ECM 14 | | | | | CCN-ECM 24 | | | | | CCN-ECM 34 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inverter power | | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 |
| Air throw - heating | m | 3,7 | 4,2 | 5,2 | 6,3 | 7,0 | 4,4 | 5,9 | 6,9 | 7,8 | 8,8 | 4,3 | 5,0 | 6,1 | 7,3 | 8,8 |

## Cooling

### Cooling




### Cooling air throw

| MODEL | | CCN-ECM 13 | | | | | CCN-ECM 23 | | | | | CCN-ECM 33 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inverter power | | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 |
| Air throw - cooling | m | 2,9 | 3,3 | 4,1 | 5,0 | 5,6 | 3,5 | 4,7 | 5,5 | 6,2 | 7,0 | 3,4 | 4,0 | 4,9 | 5,8 | 7,0 |

| MODEL | | CCN-ECM 14 | | | | | CCN-ECM 24 | | | | | CCN-ECM 34 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inverter power | | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 | 1 | 3 | 5 | 7,5 | 10 |
| Air throw - cooling | m | 2,9 | 3,3 | 4,1 | 5,0 | 5,6 | 3,5 | 4,7 | 5,5 | 6,2 | 7,0 | 3,4 | 4,0 | 4,9 | 5,8 | 7,0 |

# CONFIGURATION AND ELECTRONIC CONTROLS

All the units of the Carisma Coanda CCN-ECM range can be supplied with a wide range of controls that allows managing one single unit or several units (with the use of the power units).
The room temperature can be controlled through electronic room thermostats, with different solutions according to every ambient conditions.

The WM-AU, T-MB, WM-S-ECM and WM-503-AC-EC electronic thermostats control the room temperature precisely and are suitable when the user wants to set the fan speed.
Note: all the controls are described in detail in the "Fan Coil Control Range literature".

## Configuration

For this fan coil configuration, the 1-10 Vdc signal, which controls the inverter, must be supplied by a controller with the following signal specifications:

**Fan Drive Signal**
Fan OFF = 0 Vdc
Fan ON > 1 Vdc
Max. speed = 10 Vdc

**Blac-ECM Inverter board**
0÷10 Vdc Circuit Input Impedance Value = 68 kOhm

## Controls

**WM-AU control (*)**

230V 50-60Hz

**T-MB control (*)**


230V 50-60Hz

**WM-503-AC-EC control (**)**


230V 50Hz

**WM-S-ECM control**


230V 50Hz

**(*) To be used with UPM-AU or UP-AU only**
**(**) To be used with UP-503-AC-EC only**

## CONTROLS FOR MB VERSION

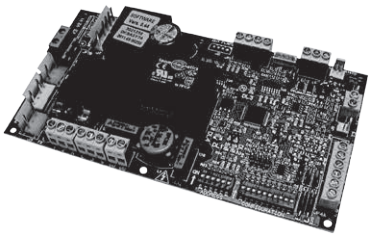
All the **Carisma CCN / CCN-ECM** units can be supplied with a wide range of controls, which allows managing one single unit or several units by using the Modbus RTU - RS 485 communication protocol.
Units can be managed according to the Master/Slave logic (up to 20 units) or by supervisory components.

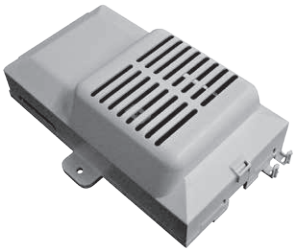
The system consists of a MB board and a series of controls, such as the **T-MB** wall control, the **RT03 infra-red remote control**, the **PSM-DI** multifunction control panel, the **Sabianet** supervisory program, the **T-DI** Touch screen multifunction panel and the Web Gateway for **Sabiana Cloud SabWeb**.

**Note:** all the controls are described in detail in the "Fan Coil Control Range literature".

## Controls

### MB electronic board





### T-MB control


### RT03 remote control

### PC and Sabianet screenshot

## T-DI Touch screen multifunction control panel

The T-DI multifunction control panel lets supervise and control more units with MB or SIOS boards; the panel is equipped with a 7 inches touch screen display and a serie of graphical pages that allows an easy reading of the data sent by the fan coils and the management of up to 60 units (max. 60 units: SIOS + MB).
With the T-DI multifunction control panel it is also possible to control the units at a distance with the specific Sabiana Cloud App for Android and iOS.
The Sabiana Cloud application is simple to use and lets have complete control of all the connected units.

**T-DI Touch screen multifunction control panel**

## Web gateway for Cloud

With the Web gateway for "Sabiana Cloud" it is possible to control at a distance up to 60 units, equipped with MB or SIOS boards (max. 60 units: SIOS + MB), with the specific APP for Android and iOS.
The "Sabiana Cloud" APP is simple to use and lets have complete control of all the connected units.

**Web gateway for Cloud**

## PSM-DI multifunction control panel

With the PSM-DI multifunction control panel it is possible to control remotely up to 60 units, equipped with MB or SIOS boards (max. 60 units: SIOS + MB).
The PSM-DI multifunction control panel supervises via Bus network all the connected units.
The remote connection (stand-alone) is not possible.

**PSM-DI multifunction control panel**

## KNX BUS SYSTEM

The KNX bus system is a building automation standard for controlling, managing and monitoring a wide range of products for:

- Heating, cooling, ventilation.
- Lighting.
- Alarm systems.
- Audio and video systems.
- Electricity and gas.

Since 2016, Sabiana is a certified member of the KNX association and the certified products can be added to this system in compliance with the tests carried out at KNX laboratories.

## KNX devices

The Sabiana WM-KNX room thermostat controls and adjusts the temperature of a room or area in a building. In combination with one or several UP-KNX power units, the thermostat is able to control the operation of terminal units such as fan coils. The appliance consists of an LCD display with adjustable backlight and a sensor for measuring the room temperature.
WM-KNX is suitable for installation in a wall recessed box (to be used with UP-KNX and with PL mounting plate only).

**Note:** all the controls are described in detail in the "Fan Coil Control Range literature".

**Recessed thermostat WM-KNX**

**Power unit UP-KNX**

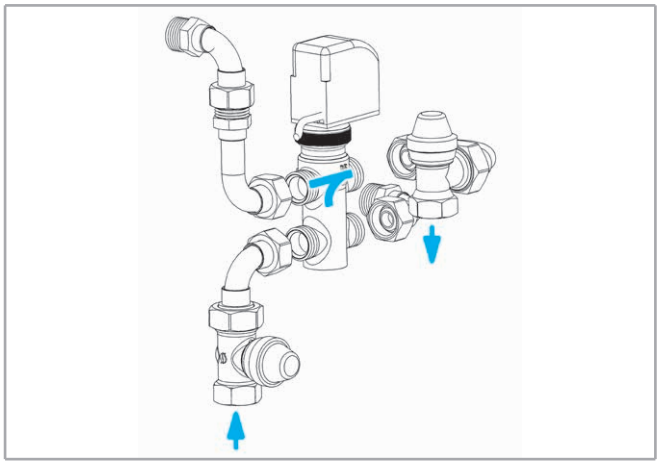
**WM-KNX with rectangular plate**

**WM-KNX with square plate**

# ACCESSORIES

## VBP main coil 3 way valve

Control valve kit: 3 way valve, ON-OFF 230 V, with electric motor and mounting kit with micrometric lockshield valve.

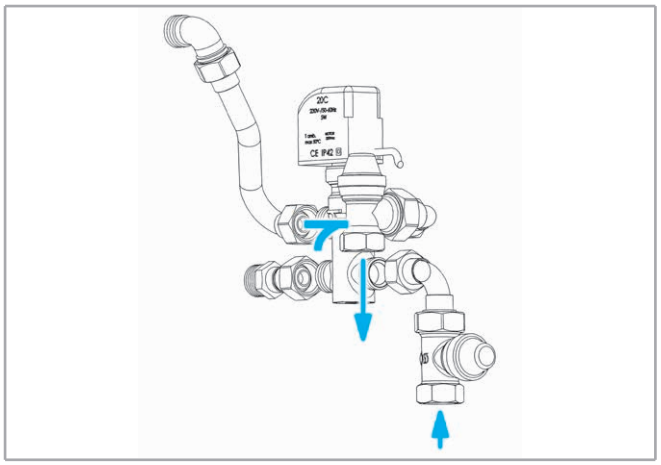


| Model | Valve | | | Micrometric lockshield valve | | | FITTED | | NOT FITTED | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DN | (Ø) | Kvs | DN | (Ø) | Kvs | Code | ID | Code | ID |
| 1 - 2 | 15 | 1/2" | 1,6 | 15 | 1/2" | 2 | 9066561 | VBPM-C G1-5 | 9066560 | VBPS-C G1-5 |
| 3 | 20 | 3/4" | 2,5 | 15 | 1/2" | 2 | 9060471 | VBPM-C G6-9 | 9060474 | VBPS-C G6-9 |

Water side pressure drop (Kvs) diagrams to p. 44

## VBA additional coil 3 way valve

Control valve kit: 3 way valve, ON-OFF 230 V, with electric motor and mounting kit with micrometric lockshield valve.

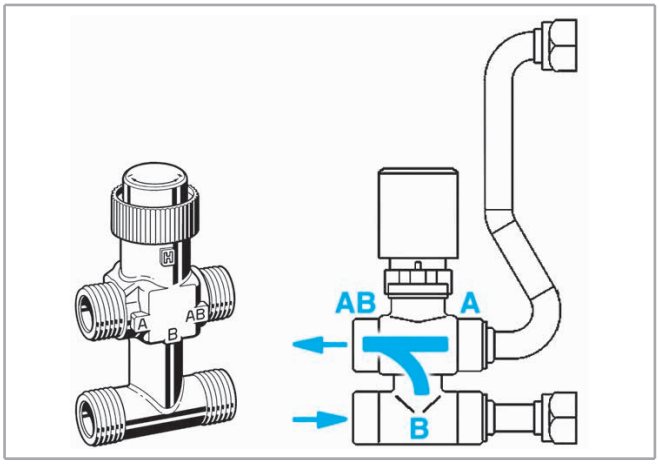


| Model | Valve | | | Micrometric lockshield valve | | | FITTED | | NOT FITTED | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DN | (Ø) | Kvs | DN | (Ø) | Kvs | Code | ID | Code | ID |
| 1 ÷ 3 | 15 | 1/2" | 1,6 | 15 | 1/2" | 2 | 9060472 | VBAM-C G1-9 | 9060475 | VBAS-C G1-9 |

Water side pressure drop (Kvs) diagrams to p. 44

## VS simplified kit for 3 way valve

3 way valve, ON-OFF 230 V with electric motor and mounting kit without micrometric lockshield valve.
Valve with flat connection.

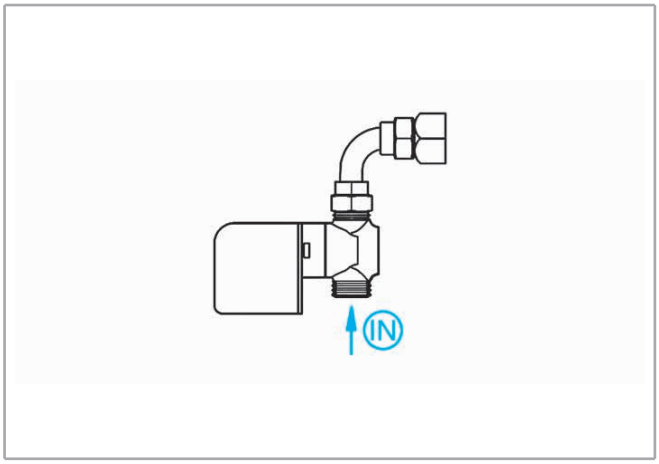



| Model | DN | (Ø) | Kvs | MAIN COIL | | | |
|---|---|---|---|---|---|---|---|
| | | | | FITTED | | NOT FITTED | |
| | | | | Code | ID | Code | ID |
| 1 - 2 | 15 | 1/2″ | 1,6 | 9066571 | VSPM-C G1-5 | 9066570 | VSPS-C G1-5 |
| 3 | 20 | 3/4″ | 2,5 | 9060484 | VSPM-C G6-9 | 9060481 | VSPS-C G6-9 |
| | | | | ADDITIONAL COIL | | | |
| 1 ÷ 3 | 15 | 1/2″ | 1,6 | 9060483 | VSAM-C G1-9 | 9060480 | VSAS-C G1-9 |

Water side pressure drop (Kvs) diagrams to p. 44

## V2 2 way valve for main and additional coil

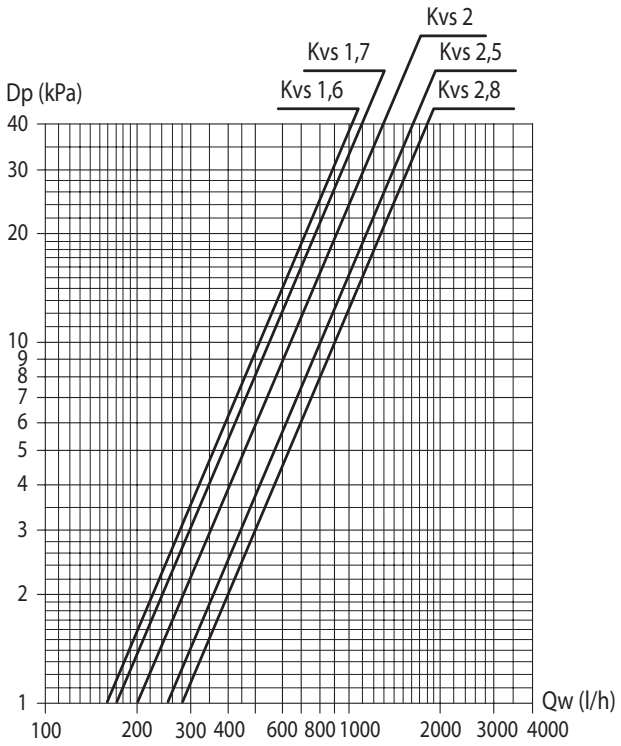
2 way valve ON-OFF 230 V with electric motor and mounting kit.




| Model | DN | (Ø) | Kvs | MAIN COIL | | | |
|---|---|---|---|---|---|---|---|
| | | | | FITTED | | NOT FITTED | |
| | | | | Code | ID | Code | ID |
| 1 - 2 | 15 | 1/2″ | 1,7 | 9060476 | V2M-C G1-5 | 9060478 | V2S-C G1-5 |
| 3 | 20 | 3/4″ | 2,8 | 9060477 | V2M-C G6-9 | 9060479 | V2S-C G6-9 |
| | | | | ADDITIONAL COIL | | | |
| 1 ÷ 3 | 15 | 1/2″ | 1,7 | 9060476 | V2M-C G1-5 | 9060478 | V2S-C G1-5 |

Water side pressure drop (Kvs) diagrams to p. 44

## Valves pressure drop




Dp = pressure drop
Qw = water flow rate

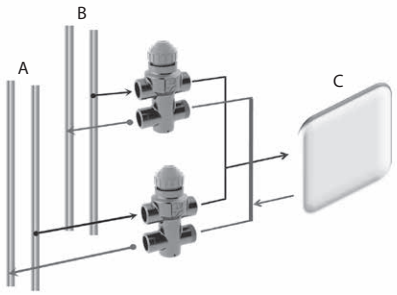
## 3 way double valve kit for 4 tube installation and single coil

The kit consists of:

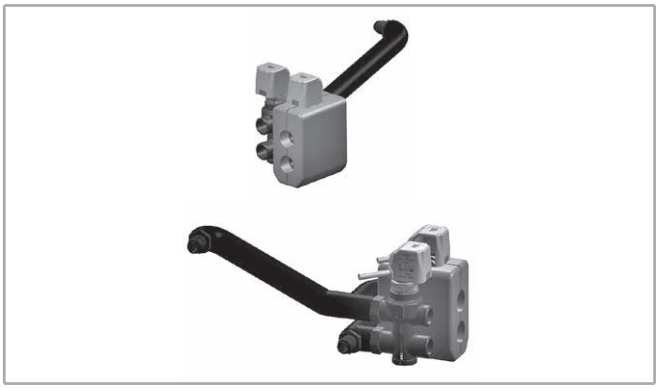
- 2 special 3 way valves.
- 2 230 Volt ON-OFF actuators with internal safety micro switch.
- Insulated pipe kit.
- External valve insulation sleeve.

The kit uses a special 3 way valve which allows the transformation of the fan coil, equipped with one single coil, into a 4 tube installation.

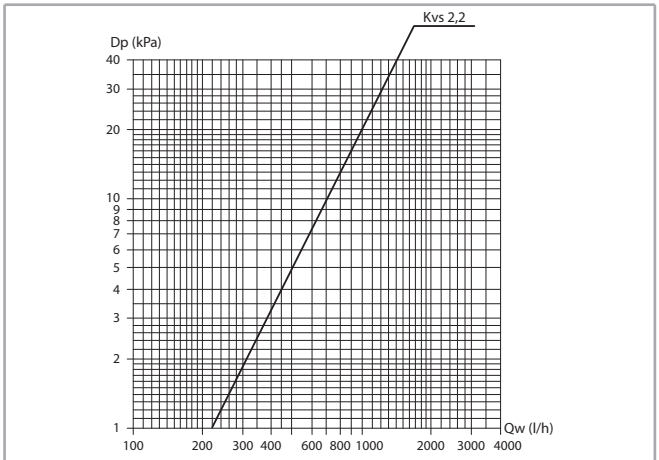
The new 4X2 valve has been designed to keep the water flow between flow and return perfectly separated, allowing its use in parallel.
Therefore, it can be used on 4 pipe fan coil systems with one single heat-exchange coil on board the fan coil.




**A** Hot water
**B** Cold water
**C** Single coil

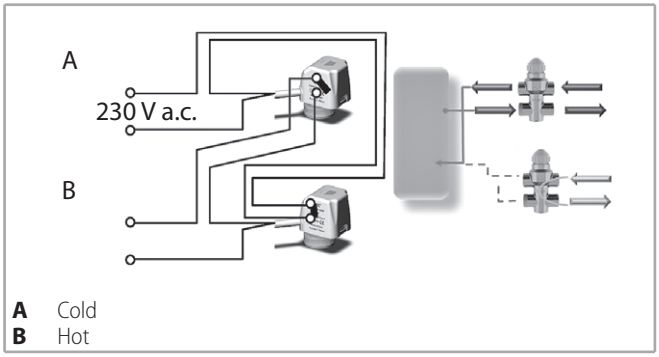


| Model | (Ø) | Kvs | FITTED | | NOT FITTED | |
|---|---|---|---|---|---|---|
| | | | Code | ID | Code | ID |
| 1÷3 | 3/4" | 2,2 | 9066572W | V3M4X2 | 9066562W | V3S4X2 |

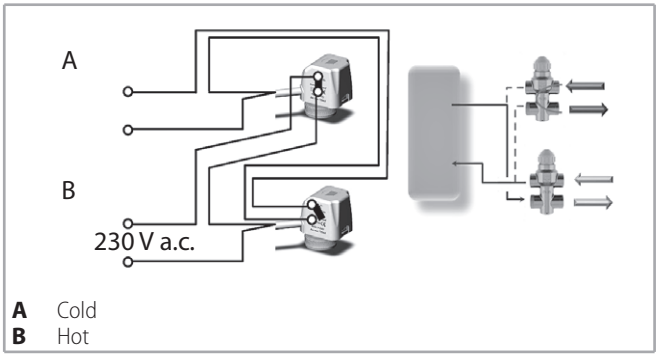



Dp = pressure drop
Qw = water flow rate

### Double actuator electrical connections




**A** Cold
**B** Hot



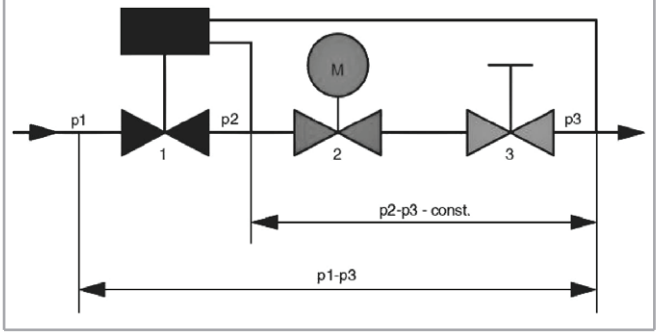

**A** Cold
**B** Hot

## Balancing valves independent from the system pressure

- The balancing valve and a combined 2 way valve allow the regulation of the water flow value autonomously, regardless of the system pressure, and the control of the flow by using an ON/OFF electro-thermal actuator.
- The balancing valve allows you to balance the hydraulic system by supplying the required water flow, for each fan-coil, and to maintain it even under partial load conditions.
- A graduated ring nut placed under the valve allows you to set the flow rate value and also allows direct reading of the set value.

### Valve operation logic

- "p1" the valve inlet pressure.
- "p3" the outlet pressure.
- "p2" the diaphragm activation pressure, which allows differential pressure "p2" – "p3" to be maintained at a constant value, in order to guarantee the water to flow at the set value.



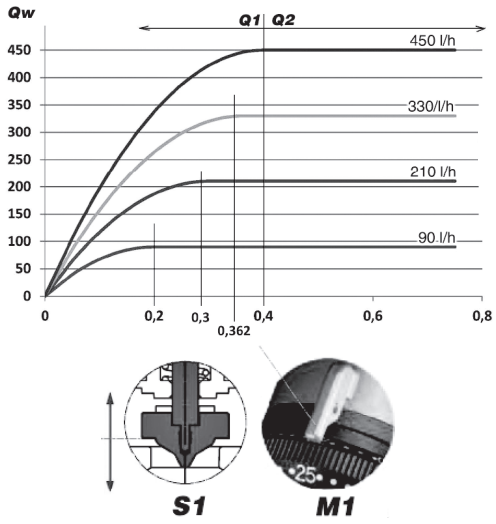

The minimum differential pressure "p1" – "p3", required to guarantee the correct value of the set water flow rate, is indicated in the diagrams on p. 47.
This is an essential factor to size the system pressure drop and pump pressure head.
The flow rate is kept at a constant value only if the valve pressure drop is higher than the indicated value.

### Minimum operating differential pressure

The minimum differential pressure and the balancing valve pressure drop must be considered to size the system pumps.

The flow rate remains stable only if the water side pressure drop will be more than the one shown in the p. 47 diagrams.
The following diagram shows an example of the flow rate trend according to the pressure drop and calibration required.

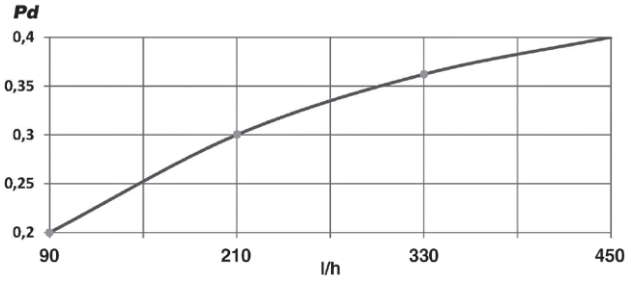
**Example DN 10 Model**




Qw = Water flow rate
Pd = Min. differential pressure "p1" - "p3" (bar)
Q1 = Area with inconstant water flow
Q2 = Area with constant water flow
S1 = Position of the adjustment valve plunger
M1 = Position of the knob

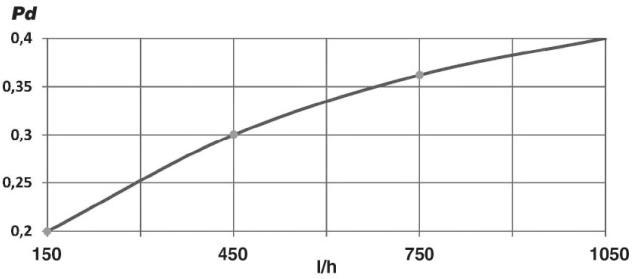
The valve upstream-downstream minimum differential pressure ("p1" – "p3"), which depends on the valve calibrationvalue, must be exceeded to access the constant flow rate field.

**DN 10 Model**




Pd = Min. differential pressure "p1" – "p3" (bar)

**DN 15 Model**

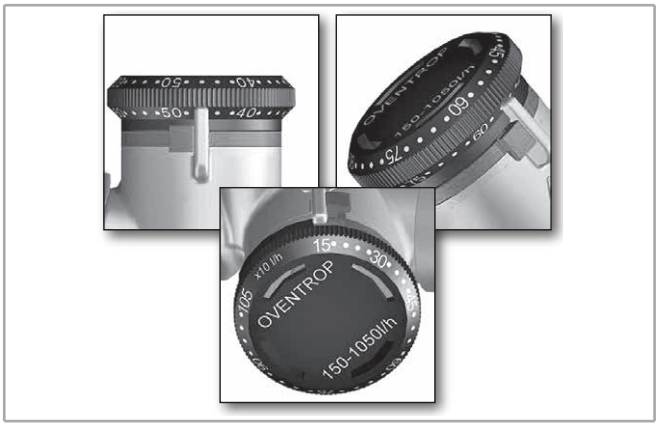



Pd = Min. differential pressure "p1" – "p3" (bar)

E.g., when sizing the system pump, in which the DN 10 valves will be installed and in which 210 l/h are constantly required for each device, consider a useful pressure of 0.3 bar (to compensate the pressure drop of the valve) for each balancing valve. Therefore, the pressure drop values produced by the system balancing valves must be summed and the pump must be sized to produce a pressure equal to or greater than the value obtained previously.

## Benefits

- Reduced dimensions.
- Easy installation on 2 or 4 pipe devices.
- Pre-regulation of the nominal value set even with installed actuator.
- Easy display of the nominal value set. Nominal values are indicated in 10 l/h without any conversion.
- Guarantee of constant flow rate set even with partial loads.
- Pre-regulation can be blocked and leaded with the locking ring.




## Technical specifications

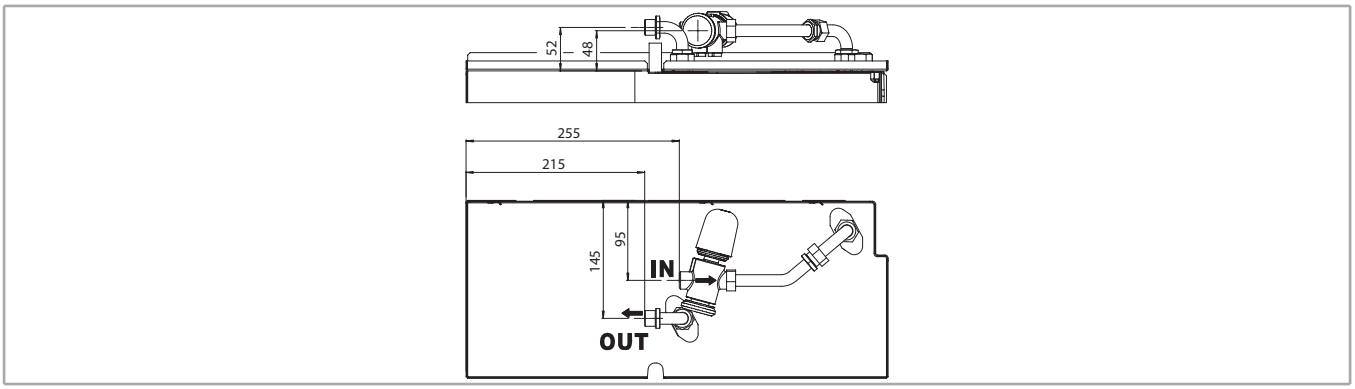
| DN model | Flow rate range (l/h) | Kvs |
|---|---|---|
| DN 10 | 90 - 450 | 1,1 |
| DN 15 | 150 - 1050 | 1,8 |

## Operation limits of the balancing valves

- Maximum operating temperature: 120 °C
- Highest working pressure: 16 bar
- Maximum % of water/glycol mixture: 50%
- Minimum operating temperature: -10 °C
- Maximum differential pressure: 4 bar

## Balancing valves for main coil

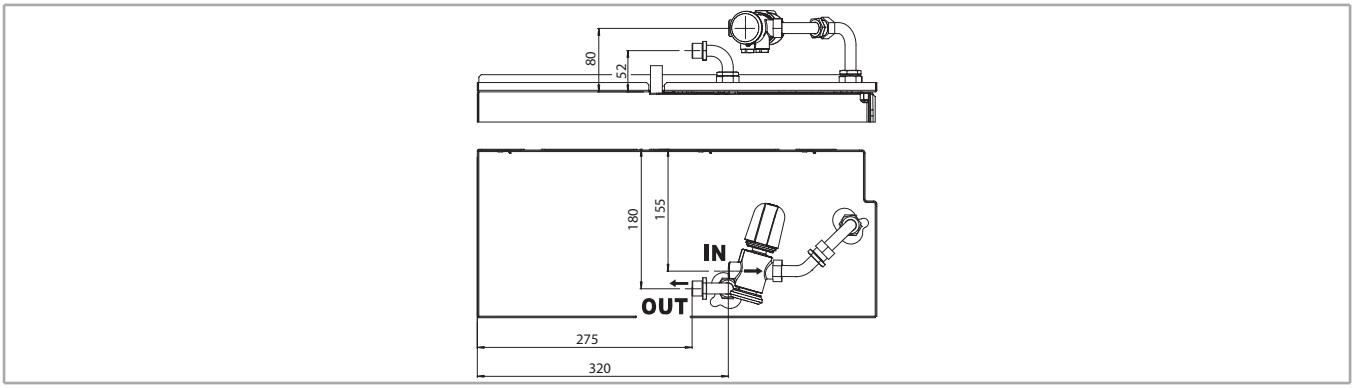
2 way valve for main coil and assembly kit.
The valve is supplied equipped with 230 Volt electro-thermal actuator for the ON/OFF control.




| Model | DN | (Ø) | Qwr | FITTED | | NOT FITTED | |
|---|---|---|---|---|---|---|---|
| | | | | Code | ID | Code | ID |
| 1 | 10 | 1/2" | 90-450 | 9066660 | V20VBPM 90-450 | 9066650 | V20VBPS 90-450 |
| 2 - 3 | 15 | 3/4" | 150-1050 | 9066661 | V20VBPM 150-1050 | 9066651 | V20VBPS 150-1050 |

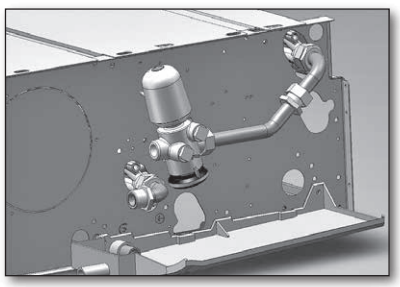
## Balancing valves for additional coil

2 way valve for additional coil and assembly kit.
The valve is supplied equipped with 230 Volt electro-thermal actuator for the ON/OFF control.

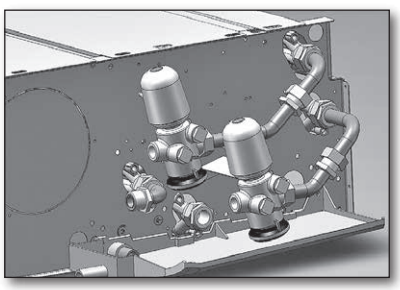



| Model | DN | (Ø) | Qwr | FITTED | | NOT FITTED | |
|---|---|---|---|---|---|---|---|
| | | | | Code | ID | Code | ID |
| 1÷3 | 10 | 1/2" | 90-450 | 9066663 | V20VBPAM 90-450 | 9066653 | V20VBPAS 90-450 |

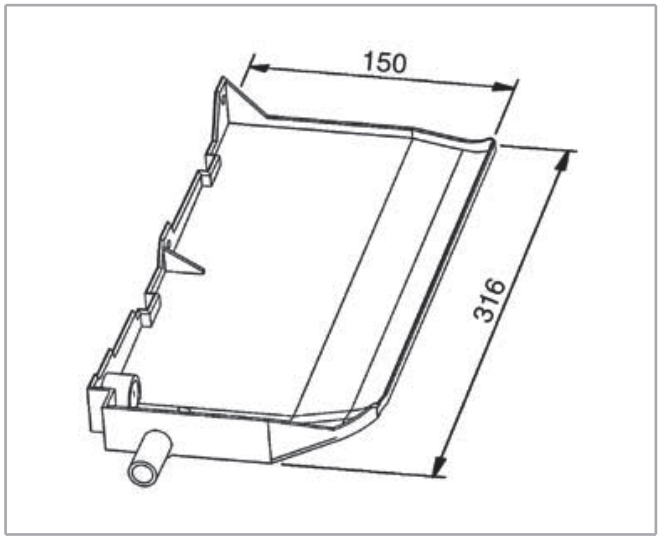
**2 pipe unit**



**4 pipe unit**



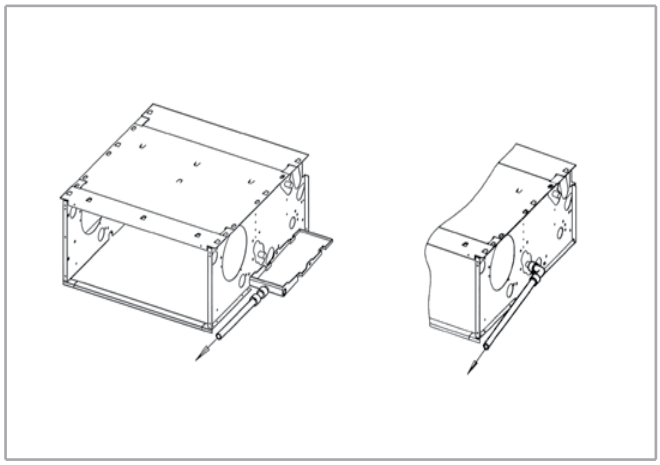
## BSO-C extension condensate collection tray to cover valve assembly




| Model | Connection side | ID | Code |
|---|---|---|---|
| 1 ÷ 3 | left | BSO-C-SX | 6060402 |
| 1 ÷ 3 | right | BSO-C-DX | 6060403 |

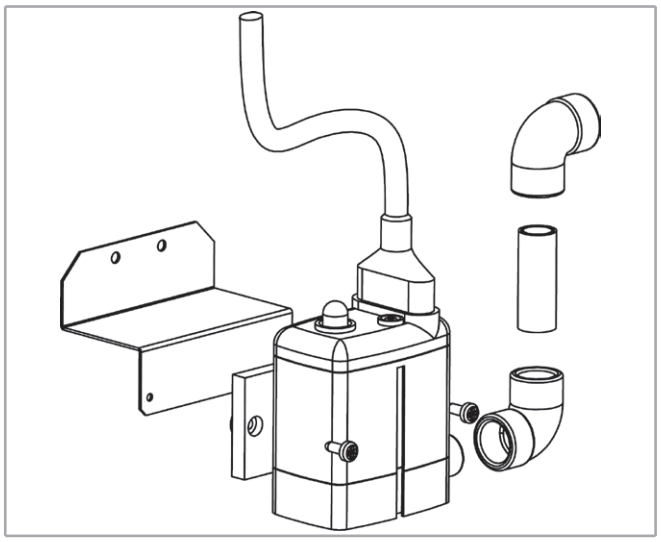
## SCR plastic condensate drain pipe with fast connection

It helps regular drainage of condensate thereby preventing the formation of bends



| Model | ID | Code |
|---|---|---|
| 1 - 3 | SCR-C | 6060420 |

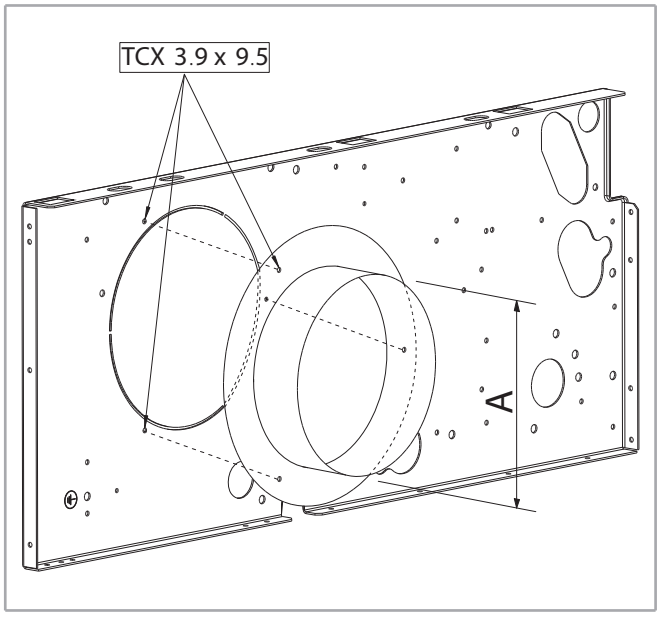
## PCC condensate drain pump



| Model | FITTED | |
|---|---|---|
| | ID | Code |
| 1 ÷ 3 | PCC-M | 9064011 |

| Height for vertical flow (m) | Water flow (l/h) depending on the length of horizontal flow | |
|---|---|---|
| | 5 m | 10 m |
| 1 | 6,8 | 6,3 |
| 2 | 5,5 | 5,0 |
| 3 | 4,2 | 3,8 |
| 4 | 3,0 | 2,6 |

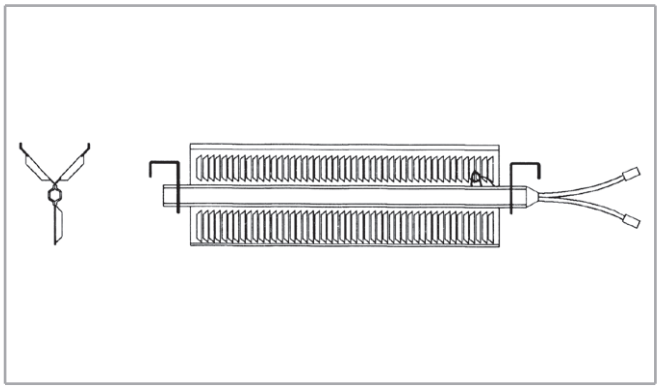
## FRC fresh air connection




| Model | ID | A | Code |
|---|---|---|---|
| 1 - 3 | FRC 100 | 98 | 6064191 |
| 1 - 3 | FRC 120 | 122 | 6064192 |

## BEL electric heater

1 PHASE 230 V.
Electric heater with integral: safety thermostat and relay control.
The electric heater must be fitted on the fan coil unit on site and can not be added later.



| Model | ID | Watt (W) | Code |
|---|---|---|---|
| 1 | BEL-CCN 1 / 4 | 350 | 9064051 |
| | BEL-CCN 1 / 6 | 550 | 9064031 |
| 2 | BEL-CCN 2 / 7 | 700 | 9064052 |
| | BEL-CCN 2 / 12 | 1150 | 9064032 |
| 3 | BEL-CCN 3 / 9 | 900 | 9064053 |
| | BEL-CCN 3 / 14 | 1400 | 9064033 |

# CCN-H AND CCN-ECM-H VARIANTS

## Main components

The variants CCN-H / CCN-ECM-H are available with low air intake grid and frontal air outled grid fitted on a plenum. The emissions of these versions are the same as the corresponding Coanda standard versions. It is but possible to extract the air from an indoor ambient and enter it into another ambient.

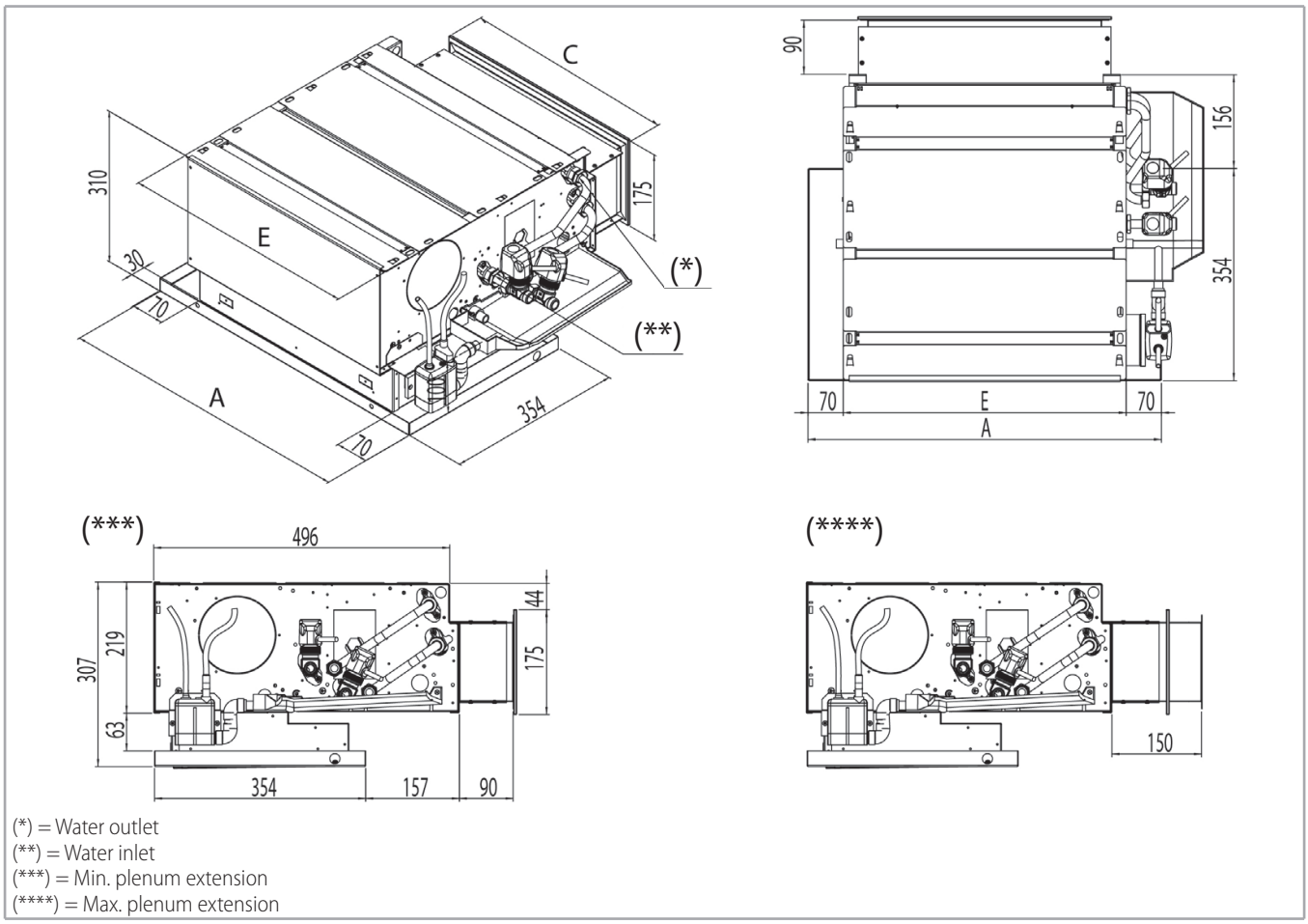
### The CCN-H / CCN-ECM-H versions

The CCN-H and CCN-ECM-H versions reproduce the entire range of the CCN / CCN-ECM versions (3 sizes with 3, 4,+1 and + 2 row coils) and they can be used with all the accessories offered in the standard versions.
The -H version includes:

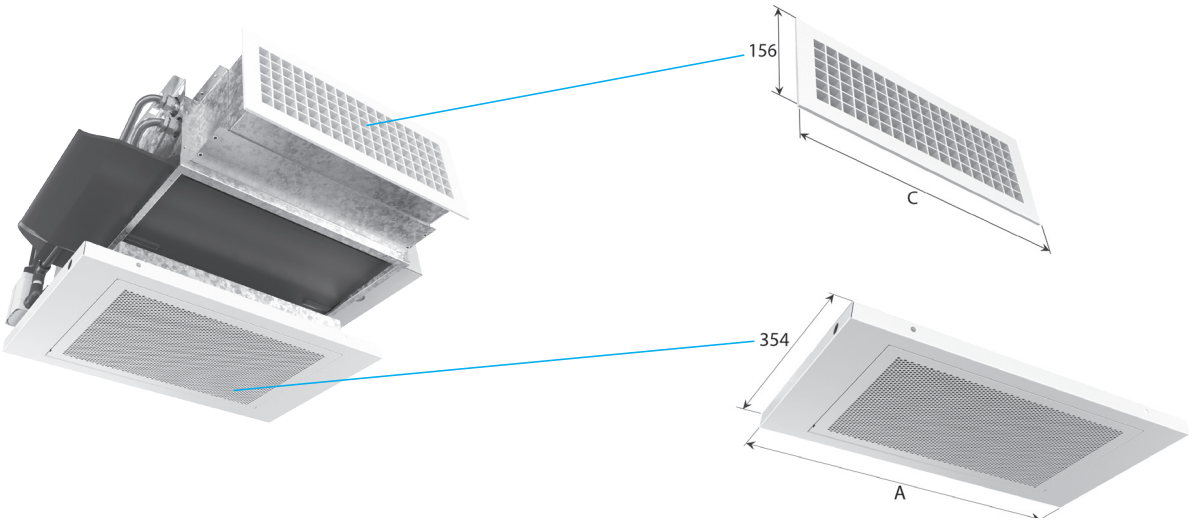
- Basic unit of the standard version
- In prepainted metal sheet in RAL 9003 colour with intake grille
- Frontal telescopic plenum made of galvanized steel 1,0 mm thick extensible from 90 to 150 mm
- Double louvre frontal air outlet grid made of anodized aluiminium, to be fitted directly on the telescopic plenum.

## H Variant Dimension and Weight

### Dimensions




(*) = Water outlet
(**) = Water inlet
(***) = Min. plenum extension
(****) = Max. plenum extension




| Model | | 1 | 2 | 3 |
|---|---|---|---|---|
| A | mm | 592 | 970 | 1192 |
| E | mm | 454 | 884 | 1099 |
| C | mm | 425 | 825 | 1025 |

## Weight

### Weights with packaging

| Model | | 1 | 2 | 3 |
|---|---|---|---|---|
| 3 rows | kg | 13 | 29 | 39 |
| 3+1 rows | kg | 15 | 35 | 46 |
| 3+2 rows | kg | 18 | 41 | 53 |
| 4 rows | kg | 15 | 32 | 43 |
| 4+1 rows | kg | 18 | 37 | 49 |

### Weights without packaging

| Model | | 1 | 2 | 3 |
|---|---|---|---|---|
| 3 rows | kg | 11 | 28 | 37 |
| 3+1 rows | kg | 14 | 33 | 43 |
| 3+2 rows | kg | 17 | 38 | 49 |
| 4 rows | kg | 13 | 30 | 40 |
| 4+1 rows | kg | 16 | 35 | 46 |

The packaging dimensions and the water content are the same as those of the standard version.

# notes

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*Refer to the documentation of the Quality Management System for details of application to reference standard requirements.*

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