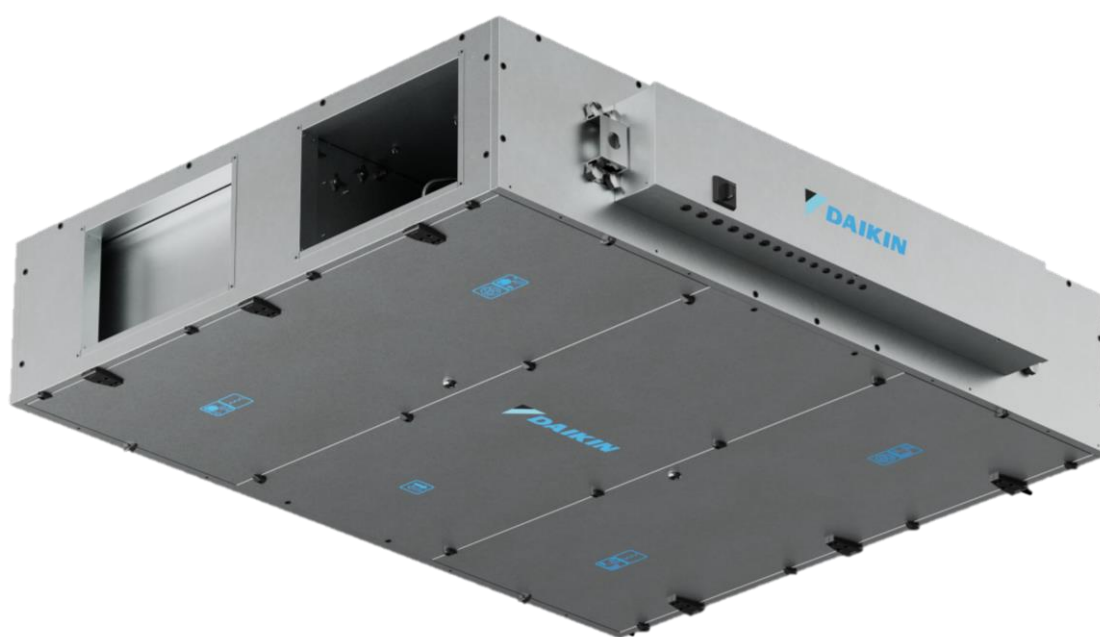




## Air Handling Unit Technical Data

# Compact L



# Index

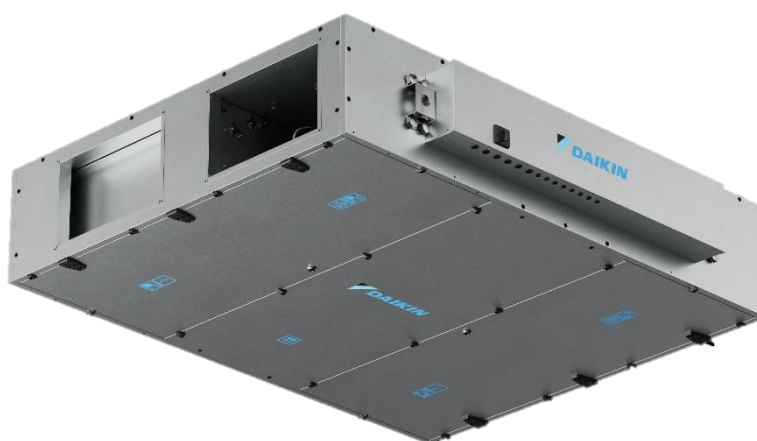
|                                                  |    |
|--------------------------------------------------|----|
| 1. Features .....                                | 4  |
| 2. Unit description .....                        | 5  |
| 3. Standard material name – Base module .....    | 6  |
| 4. Connection side: right and left handing ..... | 8  |
| 5. Specifications.....                           | 9  |
| 5.1. Technical data Compact L Pro .....          | 9  |
| 5.2. Declaration EU. REG. 1253/2014.....         | 11 |
| 5.3. Electrical data .....                       | 12 |
| 5.4. Bearing structure .....                     | 12 |
| 5.5. Insulation .....                            | 12 |
| 5.6. Heat exchanger.....                         | 12 |
| 5.7. Fan .....                                   | 12 |
| 5.7.1. Pro version.....                          | 12 |
| 5.7.2. Smart version.....                        | 13 |
| 5.8. Filter .....                                | 13 |
| 5.9. Control .....                               | 14 |
| 5.9.1. Pro version.....                          | 14 |
| 5.9.2. Smart version.....                        | 15 |
| 5.10. Default values .....                       | 17 |
| 5.10.1. Pro version.....                         | 17 |
| 5.10.2. Smart version.....                       | 18 |
| 5.11. Antifreeze Logic .....                     | 20 |
| 5.11.1. Pro version.....                         | 20 |
| 5.11.2. Smart version.....                       | 20 |
| 5.12. Operating limits .....                     | 22 |
| 5.12.1. Pro version.....                         | 23 |
| 5.12.2. Smart version.....                       | 23 |
| 6.1. Accessories list.....                       | 24 |
| 6.2. Accessories for Pro & Smart version .....   | 25 |
| 6.2.1. Compact filter .....                      | 25 |
| 6.2.2. Silencer .....                            | 26 |
| 6.2.3. Rails.....                                | 27 |
| 6.2.4. Duct transitions .....                    | 27 |
| 6.2.5. Flexible joints.....                      | 28 |
| 6.3. Accessories for Pro version only.....       | 28 |

|                                                          |    |
|----------------------------------------------------------|----|
| 6.3.1. Useful information.....                           | 28 |
| 6.3.2. Coils .....                                       | 29 |
| 6.3.3. Droplet eliminator .....                          | 34 |
| 6.3.4. Frost switch.....                                 | 34 |
| 6.3.5. Valves and actuators .....                        | 34 |
| 6.3.6. External Damper and actuators.....                | 35 |
| 6.3.7. Pressure transducer.....                          | 35 |
| 6.4. Accessories for Smart version only.....             | 36 |
| 6.4.1. Electric preheater .....                          | 36 |
| 7. Performance .....                                     | 37 |
| 7.1. Performance data.....                               | 37 |
| 7.2. Thermal efficiency .....                            | 40 |
| 7.3. Sound emission.....                                 | 42 |
| 7.4. Dimensional Drawings .....                          | 48 |
| 8. Compact L Pro with integrated heating water coil..... | 52 |

## 1. Features

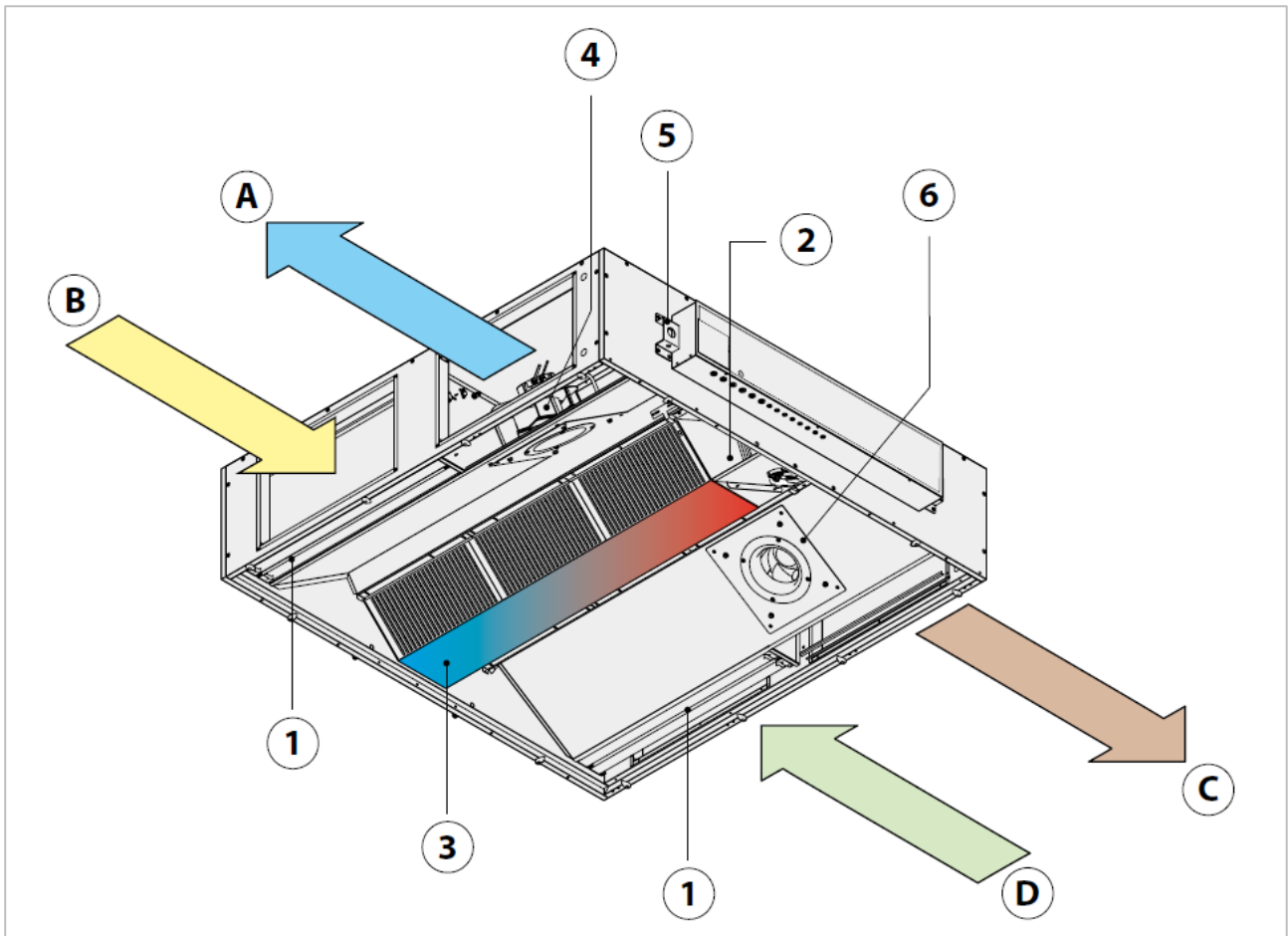
### Heat recovery unit for decentralised ventilation system

- Available in 6 sizes with an air flow from 150 up to 4000 m<sup>3</sup>/h
- Up to 700 Pa of external static pressure, depending on the model sizes
- Smallest size is 280 mm of height, while the biggest size is 500 mm of height
- Energy saving solution thanks to the modulating automatic bypass
- Reduced energy consumption thanks to EC fans with IE4 motor efficiency
- Free-cooling operation and energy efficient defrost logic
- Counter flow plate heat exchanger with efficiency up to 93%
- Double filter on supply and return, up to ePM<sub>1</sub> 50% (F7) + ePM<sub>1</sub> 80% (F9)
- Possibility to have pre – filter (ISO Coarse 55% (G4), ePM<sub>10</sub> 55% (M5), ePM<sub>1</sub> 50% (F7)
- CO<sub>2</sub> level management thanks to optional CO<sub>2</sub> sensor
- Water, DX and electric coil for a fully air treatment
- 50mm double skin panels, mineral wool insulated
- Modbus and BACnet compatible (accessory)
- Ideal solution for light commercial applications as: retail shops, small and large offices, hotels, cinemas, theatres, school, colleges, universities, etc
- Left or right versions\*
- Available also with integrated water heating coil
- Smart (Daikin F1-F2/P1-P2 communication protocol) or Pro (Open protocol) version
- CAV and VAV control solutions



\* For left/right handing please refer to page 7

## 2. Unit description



### Components

1. Filter and pre – filter
2. By-pass
3. Heat Exchanger
4. Supply Fan
5. Bracket for ceiling suspension
6. Return Fan

### Airflow direction

- A. Supply Air
- B. Return Air
- C. Exhaust Air
- D. Fresh Air

### 3. Standard material name – Base module

|           | Product |               | Components      | Size         |   | Connection side | Model revision              | Controls           |
|-----------|---------|---------------|-----------------|--------------|---|-----------------|-----------------------------|--------------------|
| Digit     | 1       | 2             | 3               | 4            | 5 | 6               | 7                           | 8                  |
| Character | A       | L             | B               | 0            | 2 | R               | C                           | S                  |
|           | A = AHU | L = Compact L | B = Base Module | 02 = Size 02 |   | R = Right       | A = 1 <sup>st</sup> release | M = Microtech      |
|           |         |               |                 | 03 = Size 03 |   | L = Left        | B = 2 <sup>nd</sup> release | S = Smart solution |
|           |         |               |                 | ..           |   |                 | C = 3 <sup>rd</sup> release |                    |
|           |         |               |                 | 07 = Size 07 |   |                 |                             |                    |

Standard unit will be provided with:

- aluminium counter flow plate heat exchanger
- EC Fan with IE4/IE5 motor efficiency class
- ePM<sub>1</sub> 50% (F7) filter on supply air
- ePM<sub>10</sub> 55% (M5) filter on return air
- Double skin panel (inner Aluzinc AZ185, outer Aluzinc AZ185)
- Control:
  - Pro version: programmable controller
  - Smart version: Smart controller (VAM control)

For Pro version, the room thermostat and user interface ALC00822A is included with the main unit.

For Smart version, the BRC thermostat/remocon is not included with the main unit and has to be provided separately.

## Nomenclature:

| Compact L Pro | Main Unit |          |
|---------------|-----------|----------|
|               | Right     | Left     |
| Size 02       | ALB02RCM  | ALB02LCM |
| Size 03       | ALB03RCM  | ALB03LCM |
| Size 04       | ALB04RCM  | ALB04LCM |
| Size 05       | ALB05RCM  | ALB05LCM |
| Size 06       | ALB06RCM  | ALB06LCM |
| Size 07       | ALB07RCM  | ALB07LCM |

| Compact L Smart | Main Unit |          |
|-----------------|-----------|----------|
|                 | Right     | Left     |
| Size 02         | ALB02RCS  | ALB02LCS |
| Size 03         | ALB03RCS  | ALB03LCS |
| Size 04         | ALB04RCS  | ALB04LCS |
| Size 05         | ALB05RCS  | ALB05LCS |
| Size 06         | ALB06RCS  | ALB06LCS |
| Size 07         | ALB07RCS  | ALB07LCS |

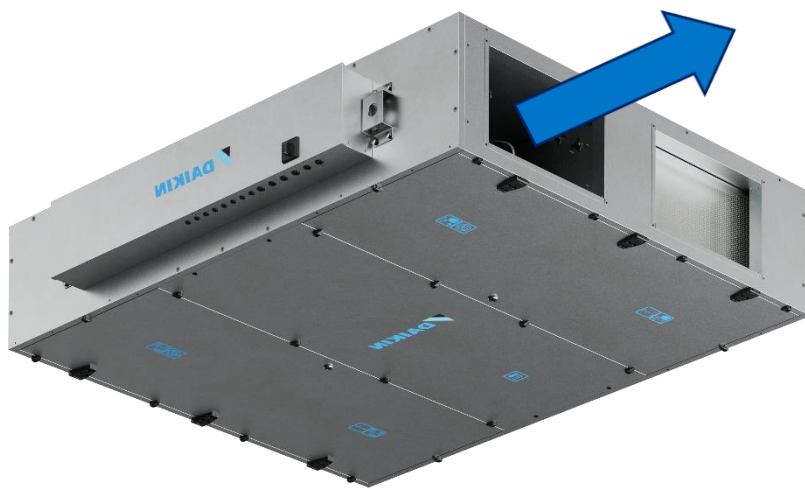
| Compact L Pro<br>with water coil | Main Unit |           |
|----------------------------------|-----------|-----------|
|                                  | Right     | Left      |
| Size 02                          | ALB02RCMW | ALB02LCMW |
| Size 03                          | ALB03RCMW | ALB03LCMW |
| Size 04                          | ALB04RCMW | ALB04LCMW |
| Size 05                          | ALB05RCMW | ALB05LCMW |
| Size 06                          | ALB06RCMW | ALB06LCMW |
| Size 07                          | ALB07RCMW | ALB07LCMW |

## 4. Connection side: right and left handing

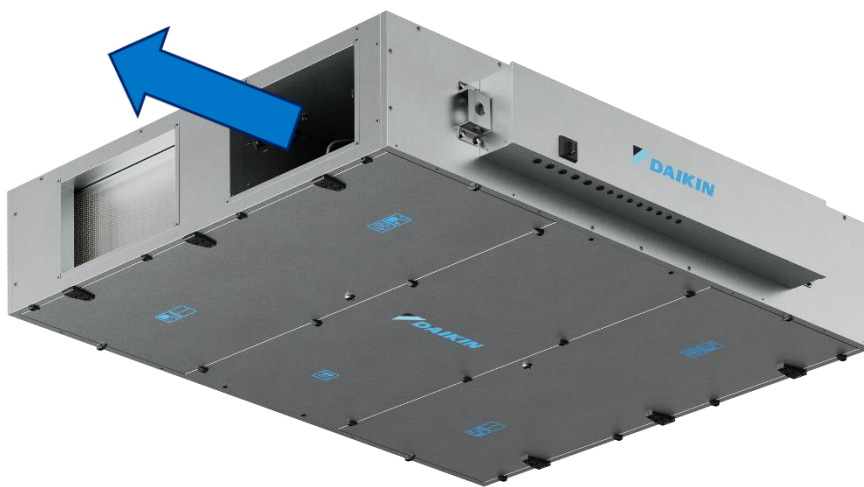
The below images refer to a bottom view of the Compact L Pro installed in the false ceiling.  
The rule that is used to determine the connection side (right or left handing) is the following:

“Location of the electrical box looking in the supply air direction (bigger blue, standing below the unit ceiling suspended)”.

### Right handing



### Left handing



## 5. Specifications

### 5.1. Technical data Compact L Pro

#### 5.1.1. Nominal data

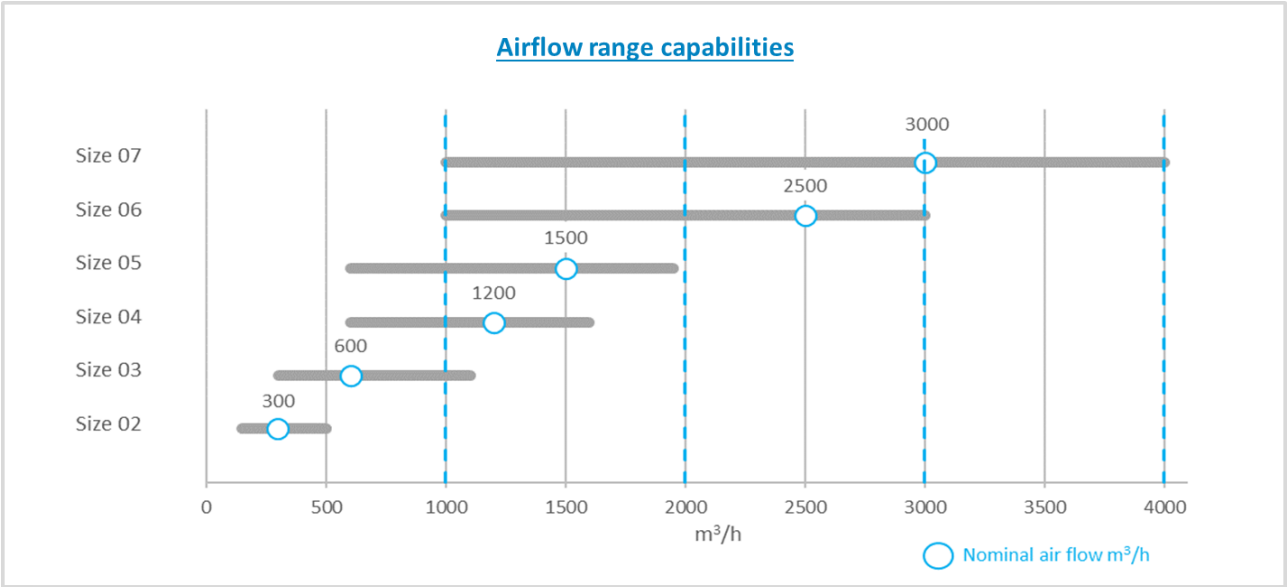
|                                        |                       | ALB02*C*    | ALB03*C* | ALB04*C* | ALB05*C* | ALB06*C* | ALB07*C* |
|----------------------------------------|-----------------------|-------------|----------|----------|----------|----------|----------|
| Airflow                                | m3/h                  | 300         | 600      | 1200     | 1500     | 2500     | 3000     |
| HE Thermal efficiency <sup>1.</sup>    | %                     | 86          | 86,5     | 87,6     | 86,4     | 82,3     | 81,6     |
| External static pressure               | Pa                    | 100         | 100      | 100      | 100      | 100      | 100      |
| Current                                | A                     | 0,57        | 1,26     | 2,13     | 3,00     | 4,13     | 5,52     |
| Power input                            | kW                    | 0,13        | 0,29     | 0,49     | 0,69     | 0,95     | 1,27     |
| SFPv <sup>2</sup>                      | kW/m3/s               | 1,07        | 1,41     | 1,21     | 1,34     | 1,17     | 1,35     |
| Electrical supply                      | Phase (ph)            | 1           |          |          |          |          |          |
|                                        | Frequency (Hz)        | 50/60       |          |          |          |          |          |
|                                        | Voltage (V)           | 220/240 Vac |          |          |          |          |          |
|                                        | Max internal fuse (A) | 16          |          |          |          |          |          |
| Main unit Dimensions                   | Width (mm)            | 920         | 1100     | 1600     | 1600     | 2000     | 2000     |
|                                        | Height (mm)           | 280         | 350      | 415      | 415      | 500      | 500      |
|                                        | Length (mm)           | 1660        | 1800     | 2000     | 2000     | 2000     | 2000     |
| Rectangular duct flange                | Width (mm)            | 250         | 400      | 500      | 500      | 700      | 700      |
|                                        | Height (mm)           | 150         | 200      | 300      | 300      | 400      | 400      |
| Unit sound power level                 | dBA                   | 52          | 55       | 57       | 58       | 59       | 62       |
| Unit sound pressure level <sup>3</sup> | dBA                   | 45          | 48       | 50       | 51       | 52       | 55       |
| Net weight                             | Kg                    | 125         | 170      | 255      | 265      | 310      | 320      |
| Gross weight                           | Kg                    | 135         | 180      | 270      | 280      | 325      | 335      |

1. Winter design condition: Outdoor: -5°C/80% Indoor: 22°C/50%

2. SFPv is a parameter that quantifies the fan efficiency (the lower it is the better will be). This reduces if airflow decreases.

3. EN 3744. Surrounding, Directivity (Q) = 4, @1m distance in non-reverberant field. Allowances on declared values: +/- 3dB.

5.1.2. Nominal Air flow



For any performances out of the nominal condition here above mentioned kindly refer to the online selection available online at [tools.daikinapplied.eu](https://tools.daikinapplied.eu)

## 5.2. Declaration EU. REG. 1253/2014

|                                                  |                       |                   | ALB02*B*                                                                                                                                            | ALB03*B* | ALB04*B* | ALB05*B* | ALB06*B* | ALB07*B* |
|--------------------------------------------------|-----------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|
| Manufacturer's name                              |                       |                   | Daikin Applied Europe S.p.A.                                                                                                                        |          |          |          |          |          |
| Typology (NRVU, UVU / BVU) *                     |                       |                   | NRVU BVU                                                                                                                                            |          |          |          |          |          |
| Type of drive                                    |                       |                   | Variable Speed Drive                                                                                                                                |          |          |          |          |          |
| Type of HRS                                      |                       |                   | Other                                                                                                                                               |          |          |          |          |          |
| HRS Thermal efficiency                           |                       | %                 | 78,3                                                                                                                                                | 80,4     | 80,4     | 79,1     | 75,0     | 74,2     |
| Nominal NVRU Flow rate                           | Supply                | m <sup>3</sup> /s | 0,08                                                                                                                                                | 0,17     | 0,33     | 0,44     | 0,69     | 0,83     |
|                                                  | Return                | m <sup>3</sup> /s | 0,08                                                                                                                                                | 0,17     | 0,33     | 0,44     | 0,69     | 0,83     |
| Effective Electric Power input                   | Total                 | kW                | 0,13                                                                                                                                                | 0,29     | 0,49     | 0,69     | 0,95     | 1,27     |
| SFP internal                                     | W/(m <sup>3</sup> /s) |                   | 450                                                                                                                                                 | 615      | 519      | 631      | 533      | 645      |
| Face velocity at design air flow rate            | Supply                | m/s               | 0,83                                                                                                                                                | 1,06     | 1,18     | 1,57     | 1,58     | 1,9      |
|                                                  | Return                | m/s               | 0,83                                                                                                                                                | 1,06     | 1,18     | 1,57     | 1,58     | 1,9      |
| Internal Pressure Drop of Ventilation Components | Supply                | Pa                | 115                                                                                                                                                 | 163      | 135      | 194      | 172      | 220      |
|                                                  | Return                | Pa                | 86                                                                                                                                                  | 130      | 113      | 166      | 139      | 181      |
| Nominal External Pressure                        | Supply                | Pa                | 100                                                                                                                                                 | 100      | 100      | 100      | 100      | 100      |
|                                                  | Return                | Pa                | 100                                                                                                                                                 | 100      | 100      | 100      | 100      | 100      |
| Static efficiency of fans **                     | Supply                | %                 | 63                                                                                                                                                  | 60       | 60       | 68       | 61       | 64       |
|                                                  | Return                | %                 | 63                                                                                                                                                  | 60       | 60       | 68       | 61       | 64       |
| Maximum external Leakage Rate                    | +400                  | %                 | < 5 %                                                                                                                                               | < 5 %    | < 4 %    | < 3 %    | < 3 %    | < 2 %    |
|                                                  | -400                  | %                 | < 3 %                                                                                                                                               | < 3 %    | < 2 %    | < 2 %    | < 2 %    | < 1 %    |
| Maximum internal Leakage Rate                    |                       | %                 | 1,5 %                                                                                                                                               | 1,5 %    | 1,5 %    | 1,5 %    | 1,5 %    | 1,5 %    |
| Summer Outdoor Conditions                        | Temp.                 | °C                | 34                                                                                                                                                  |          |          |          |          |          |
|                                                  | Humidity              | %                 | 50                                                                                                                                                  |          |          |          |          |          |
| Winter Outdoor Conditions                        | Temp.                 | °C                | -5                                                                                                                                                  |          |          |          |          |          |
|                                                  | Humidity              | %                 | 80                                                                                                                                                  |          |          |          |          |          |
| Filter Energy Classification                     |                       |                   | -                                                                                                                                                   |          |          |          |          |          |
| Filter Service Warning ***                       |                       |                   | Displayed on HMI controller                                                                                                                         |          |          |          |          |          |
| Sound Power Level                                |                       | dBA               | 52                                                                                                                                                  | 55       | 57       | 58       | 59       | 62       |
| Pre-/Dis- assembly instructions                  |                       |                   | <a href="https://www.daikinapplied.eu/ahu-instructions-for-pre-disassembly/">https://www.daikinapplied.eu/ahu-instructions-for-pre-disassembly/</a> |          |          |          |          |          |

### 5.3. Electrical data

|                     |                  |    | ALB02*C* | ALB03*C* | ALB04*C* | ALB05*C* | ALB06*C* | ALB07*C* |
|---------------------|------------------|----|----------|----------|----------|----------|----------|----------|
| Power supply        | Phase            | ph | 1        |          |          |          |          |          |
|                     | Frequency        | Hz | 50/60    |          |          |          |          |          |
|                     | Voltage          | V  | 220-240  |          |          |          |          |          |
| Full load condition | FLA <sup>1</sup> | A  | 2,9      | 4,5      | 4,5      | 4,7      | 7,1      | 11,7     |
|                     | FLI              | W  | 371      | 1033     | 1033     | 1073     | 1633     | 2733     |

1. Calculated at 230V

### 5.4. Bearing structure

The units feature double-skin panels that consist of two folded steel sheets. Panel thickness is 50 mm for all unit sides. The standard version is provided with aluzinc steel for outer and inner skin. The units are constructed with removable or hinged doors allowing full maintenance access. The units are equipped with rectangular flanges to be connected to a rectangular ducts network. If needed transitions from rectangular to circular flange can be ordered as accessory.

### 5.5. Insulation

Insulation material used is mineral wool with a density of 90 kg/m<sup>3</sup> (EN 1602).

Thermal conductivity is 0,036 W/m\*K and mineral wool is A1 class for fire classification (EN13501-1)

### 5.6. Heat exchanger

The units feature a counterflow plate heat exchanger (PHE).

The PHE is able to recover up to 93% of thermal energy in wet conditions.

They are made of aluminium alloy with a minimum content of iron and copper (to avoid corrosion issues).

PHE is Eurovent certificated and protected by minimum M5 (ePM<sub>10</sub> 55%) & F7 (ePM<sub>1</sub> 50%) grade pleated filters on extract and supply.

PHE incorporates an automatic bypass with actuator and a condensation drain pan with opportune slope.

### 5.7. Fan

#### 5.7.1. Pro version

The units have IP54 EC fan/motor assemblies conform with Reg. EU No. 327/2011. Fans provide low specific fan power (SFP) and a stepless speed control.

According to their energy balance, performances, flow and noise characteristics the rotor shall be made by plastic (reinforced if necessary). The airflow rate shall be measured on the fan arrangement in real time.

Fans can provide a constant air volume regardless filter clogging or duct/system pressure drops (within the fans operation limits).

They are also able to provide a fixed pressure value regardless the supplied air volume or the pressure drops' changes in the system, while keeping the airflow information coming from the fans. In terms of power supply, the unit must operate on 220/240 V AC, 50/60 Hz single-phase main supply.

#### 5.7.2. Smart version

The units have IP54 EC fan/motor assemblies conform to Reg. EU No. 327/2011. Fans provide low specific fan power (SFP) and a stepless speed control.

According to their energy balance, performances, flow and noise characteristics the rotor shall be made by plastic (reinforced if necessary).

Fans can run at least at 2 speeds (to be selected among 45 different operating points).

In terms of power supply, the unit must operate on 220/240 V AC, 50/60 Hz single-phase main supply.

### 5.8. Filter

Filter types and filter efficiencies are classified in accordance with ISO 16890 Group Classification.

Filter types shall be panel (compact) made in synthetic material and 48mm thickness maximum.

All the filters - regardless of their type – are mounted in opportune rails equipped with a mechanical frame that maintains the filters in pressure and ensure minimum leakage.

The total filter list is: G4 (ISO Coarse 55%), M5 (ePM<sub>10</sub> 55%), F7 (ePM<sub>1</sub> 50%) and F9 (ePM<sub>1</sub> 80%). They can be combined in order to meet any kind of requirement.

The units come standard with M5 (ePM<sub>10</sub> 55%), and F7 (ePM<sub>1</sub> 50%) filters respectively for extract and supply air side.

In accordance with the ISO 16890, the unit is able to reach SUP 1 level from ODA 3 level (See the table at the next page).

| Outdoor Air Quality                     | Supply air class     |                      |                        |                       |
|-----------------------------------------|----------------------|----------------------|------------------------|-----------------------|
|                                         | SUP 1 (High)         | SUP 2 (Medium)       | SUP 3 (Moderate)       | SUP 4 (Low)           |
| ODA 1 (Pure Air)                        | ePM <sub>1</sub> 70% | ePM <sub>1</sub> 50% | ePM <sub>2.5</sub> 50% | ePM <sub>10</sub> 50% |
| ODA 2 (Dust)                            | ePM <sub>1</sub> 80% | ePM <sub>1</sub> 70% | ePM <sub>2.5</sub> 70% | ePM <sub>10</sub> 80% |
| ODA 3 (Very high concentration of dust) | ePM <sub>1</sub> 90% | ePM <sub>1</sub> 80% | ePM <sub>2.5</sub> 80% | ePM <sub>10</sub> 90% |

The recommended filter combination depending on ODA and SUP categories are summarised in the following table.

| Outdoor Air Quality                        | Supply air class                                         |                           |                           |                           |
|--------------------------------------------|----------------------------------------------------------|---------------------------|---------------------------|---------------------------|
|                                            | SUP 1<br>(High)                                          | SUP 2<br>(Medium)         | SUP 3<br>(Moderate)       | SUP 4<br>(Low)            |
| ODA 1<br>(Pure Air)                        | F9 (ePM <sub>1</sub> 80%)                                | F7 (ePM <sub>1</sub> 50%) | F7 (ePM <sub>1</sub> 50%) | F7 (ePM <sub>1</sub> 50%) |
| ODA 2<br>(Dust)                            | F9 (ePM <sub>1</sub> 80%)                                | F9 (ePM <sub>1</sub> 80%) | F9 (ePM <sub>1</sub> 80%) | F7 (ePM <sub>1</sub> 50%) |
| ODA 3<br>(Very high concentration of dust) | F7 (ePM <sub>1</sub> 50%) +<br>F9 (ePM <sub>1</sub> 80%) | F9 (ePM <sub>1</sub> 80%) | F9 (ePM <sub>1</sub> 80%) | F9 (ePM <sub>1</sub> 80%) |

For easy reference, the EN779 has been replaced by the ISO 16890. The new naming is included in the following table.

| Filter name (EN 779) | Filter name (ISO 16890) | ePM <sub>1</sub> | ePM <sub>2,5</sub> | ePM <sub>10</sub> |
|----------------------|-------------------------|------------------|--------------------|-------------------|
| G4                   | ISO Coarse 55%          | N/A              | N/A                | N/A               |
| M5                   | ePM <sub>10</sub> 55%   | -                | -                  | 55%               |
| F7                   | ePM <sub>1</sub> 50%    | 50%              | 65%                | 85%               |
| F9                   | ePM <sub>1</sub> 80%    | 80%              | 85%                | 95%               |

The units, in fact, can accommodate on supply air stream two filters: F7 (ePM<sub>1</sub> 50%) and F9 (ePM<sub>1</sub> 80%).

In order to avoid the fast clogging of the fine filter from gross particles, units can also provide a class G4 pre - filter either on supply or exhaust side.

According to the hygienic requirements of the VDI 6022, filter frames are designed in such a way so they can be easily extracted and cleaned.

The filter maintenance is carried out from the bottom side opening the hinged doors.

The filters replacement trigger is activated through pressure differential switches, following the provision of EU 1253.

Replacement filters are available as a standard accessory.

## 5.9. Control

### 5.9.1. Pro version

Unit control system is provided on the basis of a programmable direct digital controller (DDC). Its software allows user configuration settings based on original manufacturer logics.

The unit controls are factory mounted and fully operational at site.

A web server (HMI) is also provided as a standard feature.

The unit offers the possibility to be integrated into BACnet/IP or Modbus-RS485 based BMS through dedicated accessories. The unit is connectable to a Cloud monitoring system (optional).

The unit is able to operate either in CAV or VAV systems.

For the constant air volume (CAV) logic the unit provides a constant airflow regardless of system pressure drops.

For the variable air volume (VAV) logic the unit guarantees a constant static pressure in a specific point of the system through dedicated accessory (pressure transducer: AUE00PTUA). VAV control works with a master and slave configuration. Supply side (master) keeps constant static pressure in a specific point while the return (slave) follows the supply air flow rate (or vice versa). The supply or return airflow measurement remains available for reading.

The unit is able to control the indoor air quality by controlling and monitoring the CO<sub>2</sub> level (CO<sub>2</sub> sensor is optional). In fact, when the threshold value is overcome, the control forces the fan to increase the extracted and supplied air volume in order to decrease the CO<sub>2</sub> level faster.

When signals are received, the units vary its fan speed proportionally until the desired set points are met.

An optional humidity sensor is available for the control of the humidity condition when a cooling coil is present. If temperature control is also needed, a post heating coil has to be present too.

The automatic operation of the bypass, instead, is determined by an algorithm that varies output based on temperature evaluations. Bypass control provides free cooling operation based on dry bulb temperatures and enthalpies (optional) through additional humidity probes (accessories). Defrost operation together with a modulating internal water heating coil (if available) is also possible, in order to give the best solution in terms of energy efficiency and cost reduction.

Units fit four temperature probes to measure: Supply air temperature, Return Air temperature, Fresh air and Exhaust Air Temperature.

| Compact L Pro Control   |                                            |
|-------------------------|--------------------------------------------|
| Control platform        | Programmable controller                    |
| Remote controller       | Room controller: ALC00822A                 |
|                         | Commissioning tool: ALC00895A              |
| CO <sub>2</sub> control | Yes, ALP00COA (mandatory accessory)        |
| RH% control             | Yes, ALP00HUA (mandatory accessory)        |
| BMS Connectivity        | BACnet/IP: ALC00908A (accessory)           |
|                         | Modbus – RS485: ALC00902A (accessory)      |
| Ethernet connection     | WEB – Human Machine Interface (web server) |
| Cloud connection        | Daikin on Site                             |

#### 5.9.2. Smart version

Compact L Smart can be directly integrated into DIII-net ecosystem and controlled through any Daikin local, centralised controllers (iTAB, iTM, iTC) or Cloud controllers (Daikin Cloud Service).

This communication, based on the common F1-F2 and P1-P2 protocol, guarantees also fully compatibility with SkyAir and VRV systems.

The remote controller BRC1[E/H] is not provided with the main module and has to be provided separately. Compact L Smart comes standard with 2 sensors fitted on the fresh and return air side.

The temperature control done by the unit is to compare outside temperature with inside temperature, to decide whether to operate in “heat exchange” or in “bypass mode” in case the user selects “auto mode” (please refer to the table below).

| Mode                            | Description                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auto mode                       | Using information from the air conditioner (cooling, heating, fan and set temperature) and heat reclaim ventilation unit (indoor and outdoor temperatures), this mode automatically changes between Energy Reclaim Ventilation and Bypass mode |
| Energy Reclaim Ventilation mode | The outdoor air is supplied to the room after passing through a heat exchanger element, where heat is exchanged with the return air                                                                                                            |
| Bypass mode                     | The outdoor air bypasses the heat exchanger element. This means that outdoor air is supplied to the room without exchanging heat with the return air                                                                                           |

The unit is connectable to a Cloud monitoring system (optional).

BACnet or Modbus integration is possible through interfaces (optional).

The unit is able to control the indoor air quality by controlling and monitoring the CO<sub>2</sub> level (CO<sub>2</sub> sensor is optional).

| Compact L Smart Control      |                                       |
|------------------------------|---------------------------------------|
| Control platform             | Daikin Control PCB                    |
| Remote controller            | Room controller: Optional BRC 1 [E/H] |
| Co2 control                  | Optional, BRYMA2000 sensor            |
| BACnet or Modbus integration | Through interfaces (optional)         |
| Cloud connection             | Daikin Cloud Service                  |

## 5.10. Default values

### 5.10.1. Pro version

| Compact L                              | Material Name            | ALB02*C*                    | ALB03*C* | ALB04*C* | ALB05*C* | ALB06*C* | ALB07*C* |
|----------------------------------------|--------------------------|-----------------------------|----------|----------|----------|----------|----------|
| Costant air volume (CAV) <sup>1</sup>  | Auto (m <sup>3</sup> /h) | 300                         | 600      | 1200     | 1500     | 2500     | 3000     |
|                                        | Eco (m <sup>3</sup> /h)  | 150                         | 300      | 600      | 750      | 1250     | 1500     |
| Variable air volume (VAV) <sup>2</sup> | Auto (Pa)                | 100                         |          |          |          |          |          |
|                                        | Eco (Pa)                 | 50                          |          |          |          |          |          |
| Supply air Temperature                 | Winter                   | 22° C                       |          |          |          |          |          |
|                                        | Summer                   | 22° C                       |          |          |          |          |          |
| CO <sub>2</sub> Control <sup>3</sup>   | Trigger value (ppm)      | 1000                        |          |          |          |          |          |
|                                        | Max forcing %            | 25 of the maximum fan speed |          |          |          |          |          |
| Schedule                               | Time                     | 08:00 – 18:00               |          |          |          |          |          |
|                                        | Day                      | Monday - Friday             |          |          |          |          |          |
| Filter Replacement <sup>4</sup>        | ePM10 55%<br>ePM1 50%    | 250 Pa                      |          |          |          |          |          |

1. Pre-set values (Default)
2. Values fixed but not enabled (VAV kit required: AUE00PTUA)
3. Values fixed but not enabled (ALP00COA CO2 probe accessory mandatory)
4. Trigger value for filters' replacement. In case of non – standard filters, the installer needs to change manually the differential pressure value in accordance with the filter class. The recommended values are mentioned in the filter accessory section.

#### Note:

The unit gets delivered with its nominal air flow rate set up at factory. To adjust its operation to the selected parameters, kindly select the optional commissioning module ALC00895A or refer to Daikin Service Dept. Alternatively, you can also commission the units using the web server access.

### 5.10.2. Smart version

Factory set values for nominal operating airflow and corresponding setting for the BRC1[E/H]. Please refer to the IOM, in order to determine new operating points and new unit setting for various speeds.

| Size 02                       |     |                  |     |  |  |
|-------------------------------|-----|------------------|-----|--|--|
| Supply                        |     | Exhaust          |     |  |  |
| Volume Flow rate              | ESP | Volume Flow rate | ESP |  |  |
| 300                           | 100 | 300              | 100 |  |  |
| RPM                           |     | RPM              |     |  |  |
| 2966                          |     | 2773             |     |  |  |
| Fan speed (High – Ultra High) |     |                  |     |  |  |
| 17(27)-4-01                   |     |                  |     |  |  |
| Fan Curve Supply              |     | Fan Curve Return |     |  |  |
| 19(29)-2-09                   |     | 19(29)-3-03      |     |  |  |

| Size 03                       |     |                  |     |  |  |
|-------------------------------|-----|------------------|-----|--|--|
| Supply                        |     | Exhaust          |     |  |  |
| Volume Flow rate              | ESP | Volume Flow rate | ESP |  |  |
| 600                           | 150 | 600              | 150 |  |  |
| RPM                           |     | RPM              |     |  |  |
| 2508                          |     | 2400             |     |  |  |
| Fan speed (High – Ultra High) |     |                  |     |  |  |
| 17(27)-4-01                   |     |                  |     |  |  |
| Fan Curve Supply              |     | Fan Curve Return |     |  |  |
| 19(29)-2-06                   |     | 19(29)-3-01      |     |  |  |

| Size 04                       |     |                  |     |  |  |
|-------------------------------|-----|------------------|-----|--|--|
| Supply                        |     | Exhaust          |     |  |  |
| Volume Flow rate              | ESP | Volume Flow rate | ESP |  |  |
| 1200                          | 100 | 1200             | 100 |  |  |
| RPM                           |     | RPM              |     |  |  |
| 2912                          |     | 2885             |     |  |  |
| Fan speed (High – Ultra High) |     |                  |     |  |  |
| 17(27)-4-01                   |     |                  |     |  |  |
| Fan Curve Supply              |     | Fan Curve Return |     |  |  |
| 19(29)-2-12                   |     | 19(29)-3-08      |     |  |  |



## 5.11. Antifreeze Logic

### 5.11.1. Pro version

This function is used to avoid plate heat exchanger freezing as it activates a sequence of actions to counteract the risk of frost formation.

The antifreeze logic is activated whenever exhaust temperatures fall below pre-set configurable value ( $T_{\text{FREEZE}}$ ) and pressure drop across the heat exchanger, monitored thanks to a pressure transducer, exceeds a pre-set threshold (warning threshold) while it's being disabled when the  $T_{\text{EXH}}$  has returned higher than  $T_{\text{FREEZE}}$  or pressure drop on PHE comes back below the calculated threshold.

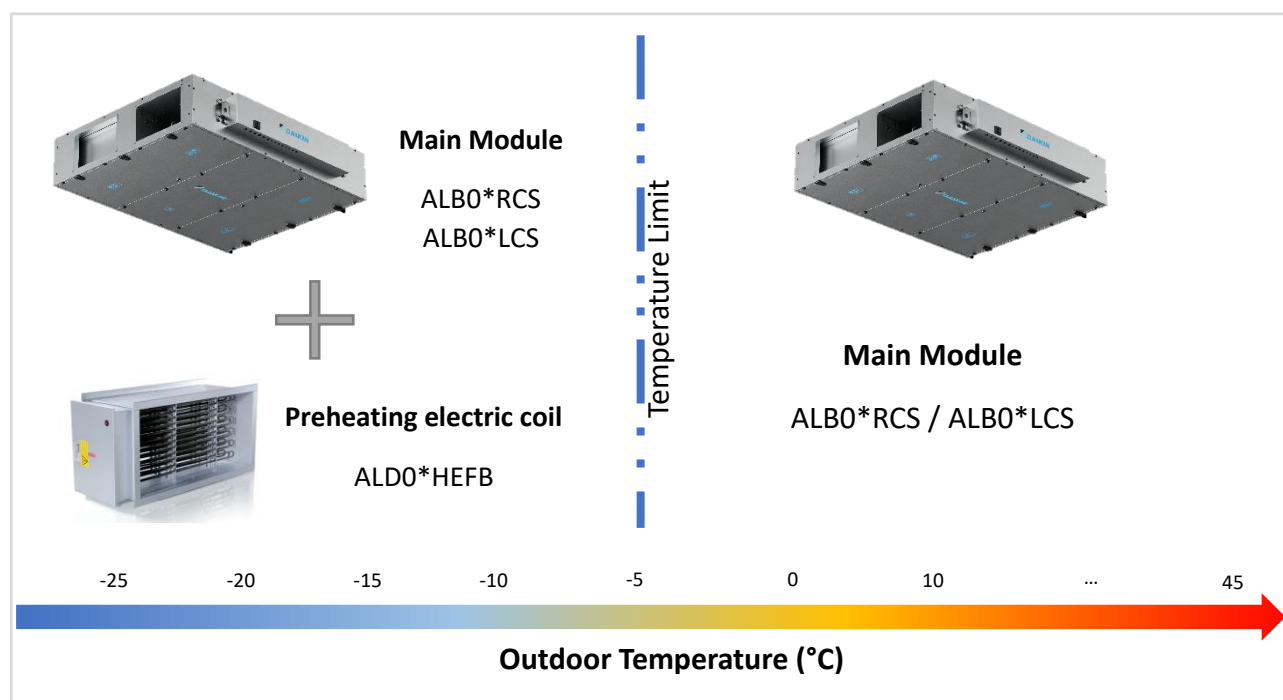
- $T_{\text{EXH}} < T_{\text{FREEZE}}$  & pressure drop on PHE > warning threshold → **Enable Antifreeze logic**
- $T_{\text{EXH}} > T_{\text{FREEZE}}$  or pressure drop on PHE < warning threshold → **Disable Antifreeze logic**

Once the logic is active, the actions performed are the following:

|                    |                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Antifreeze enabled | 1) Bypass damper is gradually open up to 100% and heating coils (pre, main, post) or electric heaters (pre, post) are activated if present |
|                    | 2) Supply airflow is gradually reduced                                                                                                     |
|                    | 3) Unit goes in alarm and stops if the pressure drop on the PHE increase a pre-configured value (fault threshold)                          |
|                    | 4) A manual reset is required to turn on the AHU                                                                                           |

### 5.11.2. Smart version

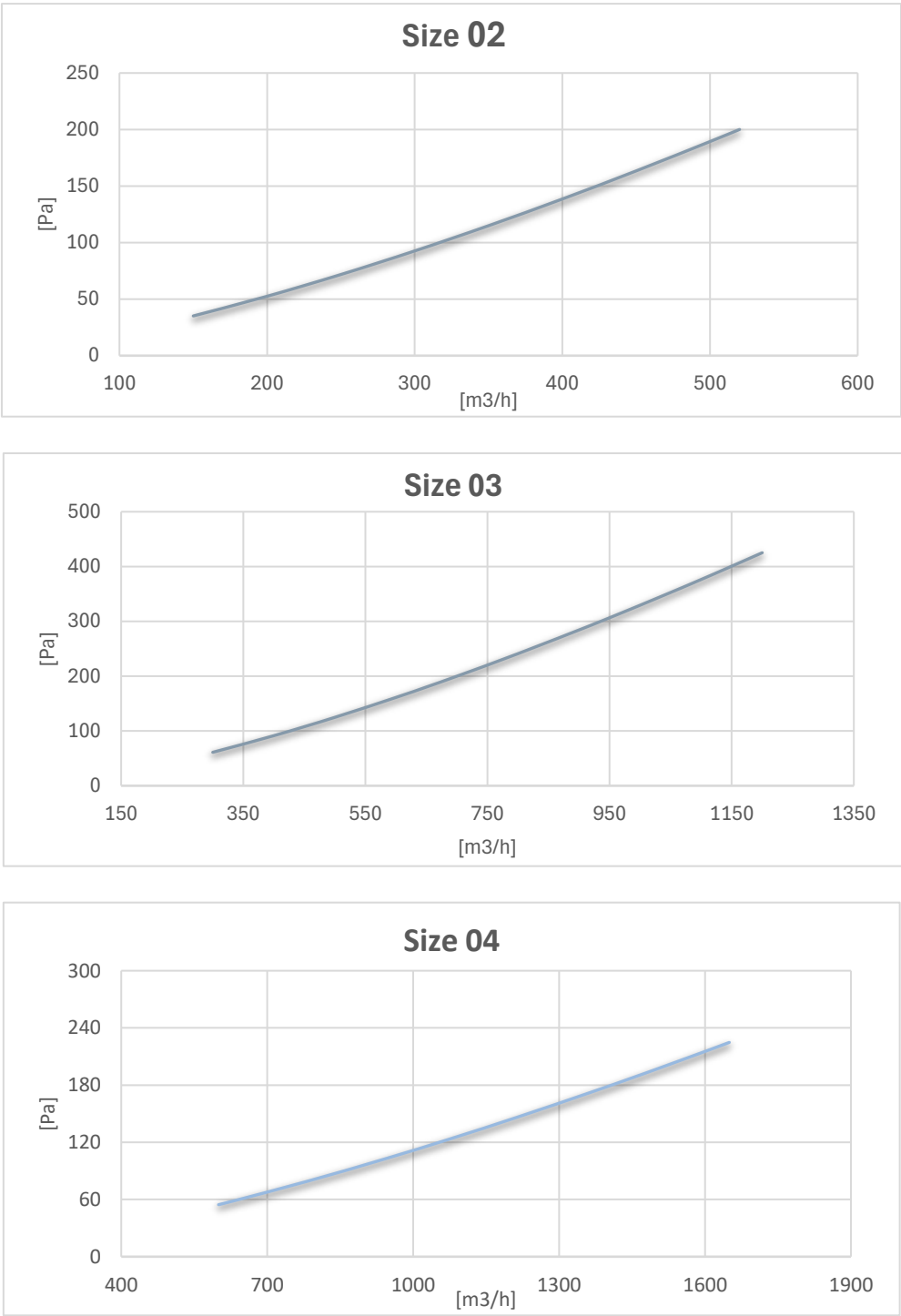
In accordance with the image here below showed, adding a pre-electrical heater (ALD0\*HEFB) is mandatory for outdoor temperature lower than  $-5^{\circ}\text{C}$  for either tackling or preventing frost issue.

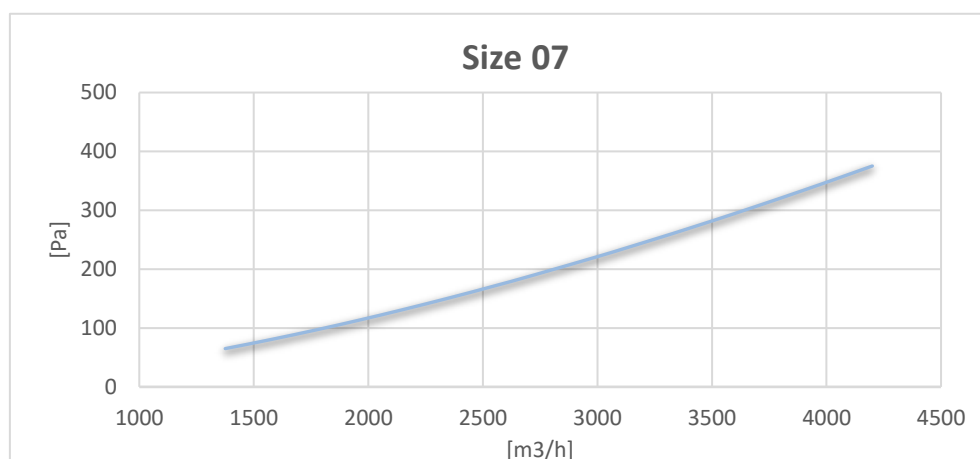
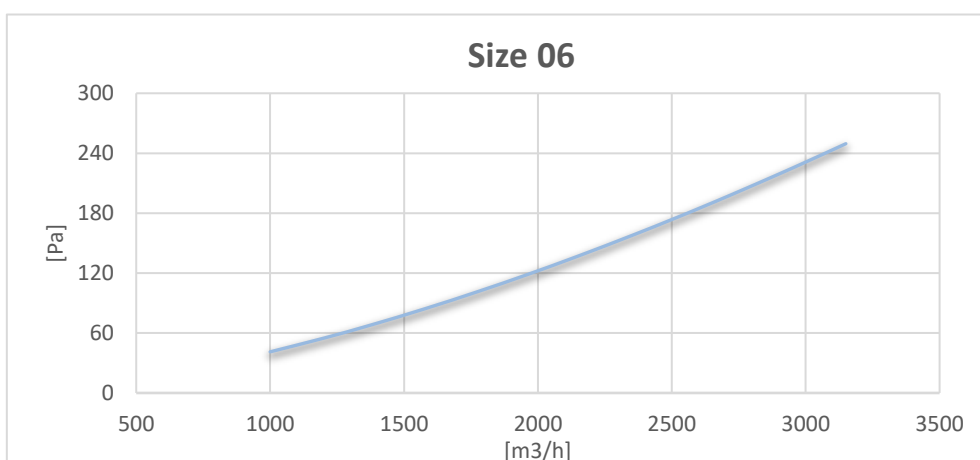
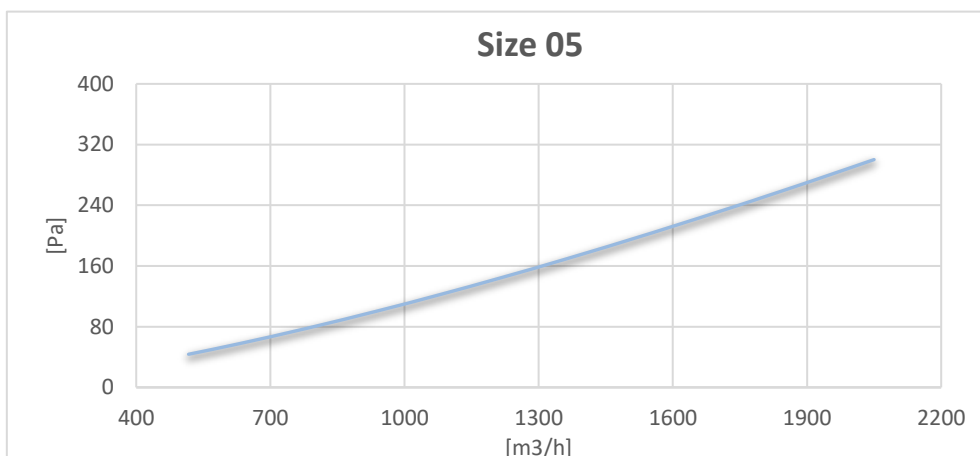


The unit has been equipped with a differential pressure switch to prevent a possible risk of icing at heat exchanger level which is factory setted according to the following table.

| Frost prevents differential pressure switch factory settings |     |     |     |     |     |     |
|--------------------------------------------------------------|-----|-----|-----|-----|-----|-----|
| Size                                                         | 02  | 03  | 04  | 05  | 06  | 07  |
| Pa                                                           | 200 | 425 | 225 | 300 | 250 | 375 |

Depending on the working condition, the installer must adjust the setting according the charts below.





## 5.12. Operating limits

Compact L heat recovery units are designed for use in indoor environments, installed in a false ceiling. The unit cannot operate in environments containing explosive material and with a high concentration of dust. Thanks to its compactness, each machine is able to adapt to different needs in terms of air flow and thermodynamic treatments. The optimised choice of every detail, the search for maximum efficiency in each component, the adoption of specific materials and constructive solutions transform environment friendliness and energy savings into valid and advanced technological solutions.

### 5.12.1. Pro version

Please note the Compact T Pro controller automatically activates the antifreeze logic as explained in the dedicated paragraph 4.11 “Antifreeze logic” . The antifreeze function can be also enabled/disabled in the software through the commissioning module (material name ALC00895A). The unit cannot operate in permanent way in the antifreeze mode.

In the report, downloaded from Astra web selection software, the heat recovery system performance calculation doesn't consider the frost formation.

|                                                                                  | Size | Lower limit temperature (°C) | Upper limit temperature (°C) |
|----------------------------------------------------------------------------------|------|------------------------------|------------------------------|
| Outside air temperature                                                          | All  | -38°C                        | 46°C                         |
| Operating environment temperature                                                | All  | -5°C                         | 46°C                         |
| Temperature of environment with the machine off (e.g., storage, transport, etc.) | All  | -40°C                        | 60°C                         |

In case the inlet outdoor air temperature is below -15°C an electric preheater or water preheating coil is advised.

### 5.12.2. Smart version

|                                                                                  | Size | Lower limit temperature (°C) | Upper limit temperature (°C) |
|----------------------------------------------------------------------------------|------|------------------------------|------------------------------|
| Inlet outdoor air temperature                                                    | All  | -5                           | 46                           |
| Operating environment temperature                                                | All  | 5                            | 46                           |
| Temperature of environment with the machine off (e.g., storage, transport, etc.) | All  | -40                          | 60                           |

Inlet air temperature has to be higher than -5°C. In case the outdoor air temperature is below -5°C electric preheater (ALD0\*HEFB) is required.

## 6. Accessories

### 6.1. Accessories list

| Category               | Accessories                        | ALB02*C*                                       | ALB03*C*  | ALB04*C*<br>ALB05*C* | ALB06*C*<br>ALB07*C* |
|------------------------|------------------------------------|------------------------------------------------|-----------|----------------------|----------------------|
| Compact filter         | ISO Coarse 55% (G4)                | ALF02G4A                                       | ALF03G4A  | ALF05G4A             | ALF07G4A             |
|                        | ePM10 55% (M5)                     | ALF02M5A                                       | ALF03M5A  | ALF05M5A             | ALF07M5A             |
|                        | ePM1 50% (F7)                      | ALF02F7A                                       | ALF03F7A  | ALF05F7A             | ALF07F7A             |
|                        | ePM1 80% (F9)                      | ALF02F9A                                       | ALF03F9A  | ALF05F9A             | ALF07F9A             |
| Silencer               | 900 mm depth                       | ALS0290A                                       | ALS0390A  | ALS0590A             | ALS0790A             |
| Probes                 | CO <sub>2</sub>                    | ALP00COA                                       |           |                      |                      |
|                        | Humidity (%RH)                     | ALP00HUA                                       |           |                      |                      |
|                        | Temperature                        | ALP00TEA                                       |           |                      |                      |
| Coil module            | Electric preheater (Pro version)   | ALD02HEFA                                      | ALD03HEFA | ALD05HEFA            | ALD07HEFA            |
|                        | Electric preheater (Smart version) | ALD02HEFB                                      | ALD03HEFB | ALD05HEFB            | ALD07HEFB            |
|                        | Electric Post heater               | ALD02HESA                                      | ALD03HESA | ALD05HESA            | ALD07HESA            |
|                        | Water coil (cool/heat)             | ALD02CWSA                                      | ALD03CWSA | ALD05CWSA            | ALD07CWSA            |
|                        | Water heating (pre/post - heating) | ALD02HWUA                                      | ALD03HWUA | ALD05HWUA            | ALD07HWUA            |
|                        | DX coil (cool/heat)                |                                                |           | ALD05CDSA            | ALD07CDSA            |
| Mechanical accessories | Rail                               | ALA02RLA                                       | ALA03RLA  | ALA05RLA             | ALA07RLA             |
|                        | Duct transition                    | ALA02RCA                                       | ALA03RCA  | ALA05RCA             | ALA07RCA             |
|                        | Flexible joints                    | ALA02FXB                                       | ALA03FXB  | ALA05FXB             | ALA07FXB             |
|                        | Droplet eliminator                 | ALA02DEA                                       | ALA03DEA  | ALA05DEA             | ALA07DEA             |
|                        | External damper                    | ALA02EDA                                       | ALA03EDA  | ALA05EDA             | ALA07EDA             |
| Valves                 | 2-way water cool/heat              | ALV02CW2A                                      | ALV03CW2A | ALV05CW2A            | ALV07CW2A            |
|                        | 3-way water cool/heat              | ALV02CW3A                                      | ALV03CW3A | ALV05CW3A            | ALV07CW3A            |
| Electrical Accessories | Modulating actuator                | ATE00AMVA (for water valves)                   |           |                      |                      |
|                        | Modulating actuator                | ATE00AMDA (for external damper)                |           |                      |                      |
|                        | Spring return actuator             | AUE00ASUA (for external damper)                |           |                      |                      |
|                        | Frost switch                       | ALE00FSUA                                      |           |                      |                      |
|                        | Pressure transducer                | AUE00PTUA                                      |           |                      |                      |
| Controls               | Bacnet Interface                   | ALC00908A (POL908)                             |           |                      |                      |
|                        | Modbus Interface                   | ALC00902A (POL902)                             |           |                      |                      |
|                        | Room Thermostat                    | ALC00822A (POL822 - included in the main unit) |           |                      |                      |
|                        | Commissioning module               | ALC00895A (POL895)                             |           |                      |                      |
|                        | Expansion module                   | ALC00955A (POL95                               |           |                      |                      |

## 6.2. Accessories for Pro & Smart version

### 6.2.1. Compact filter

The unit is provided as standard with ePM<sub>1</sub> 50% (F7) filter on supply side and ePM<sub>10</sub> 55% (M5) filter on return. On both side, supply and return, up to two filtration stages as available. Other filters available are ePM<sub>1</sub> 80% (F9) filter and ISO Coarse 55% (G4).

A pressure transducer (AUE00PTUA) is available in the option list to monitor pressure drop on additional filters independently from first stage (VDI6022 requirement). It is also possible to monitor two filtration stage without the pressure transducer. Please refer to the dedicated IOM for more details. The table below summarizes the material names and the pressure drop for each filter, when it is clean, at nominal air flow for all the sizes.

| Material Name | Main Unit Size | Description                   | ΔP Clean (Pa) |
|---------------|----------------|-------------------------------|---------------|
| ALF02G4A      | 02             | ISO Coarse 55%<br>(G4)        | 35            |
| ALF03G4A      | 03             |                               | 45            |
| ALF05G4A      | 04             |                               | 33            |
|               | 05             |                               | 42            |
| ALF07G4A      | 06             |                               | 47            |
|               | 07             |                               | 58            |
| ALF02M5A      | 02             | ePM <sub>10</sub> 55%<br>(M5) | 26            |
| ALF03M5A      | 03             |                               | 32            |
| ALF05M5A      | 04             |                               | 24            |
|               | 05             |                               | 31            |
| ALF07M5A      | 06             |                               | 35            |
|               | 07             |                               | 43            |
| ALF02F7A      | 02             | ePM <sub>1</sub> 50%<br>(F7)  | 62            |
| ALF03F7A      | 03             |                               | 77            |
| ALF05F7A      | 04             |                               | 57            |
|               | 05             |                               | 72            |
| ALF07F7A      | 06             |                               | 82            |
|               | 07             |                               | 101           |
| ALF02F9A      | 02             | ePM <sub>1</sub> 80%<br>(F9)  | 124           |
| ALF03F9A      | 03             |                               | 157           |
| ALF05F9A      | 04             |                               | 116           |
|               | 05             |                               | 147           |
| ALF07F9A      | 06             |                               | 167           |
|               | 07             |                               | 205           |

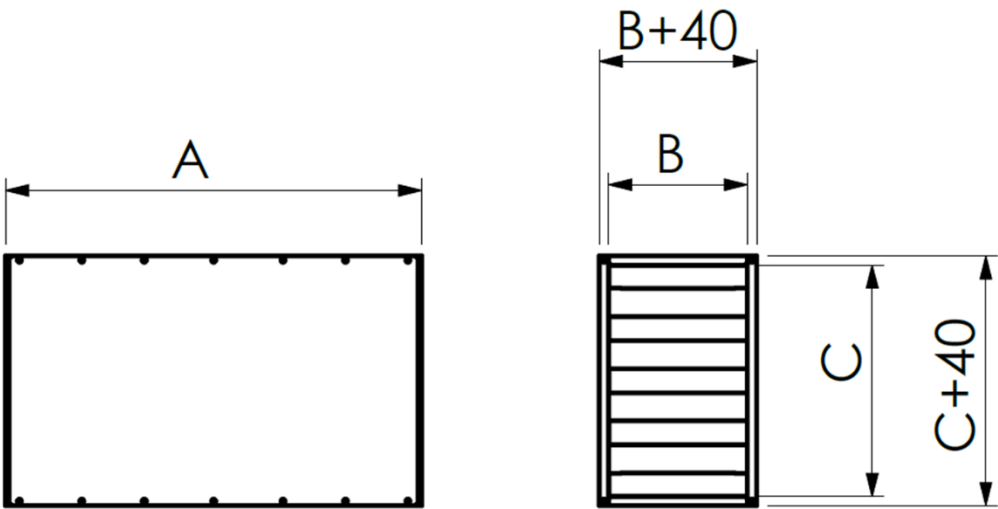
The pressure drop is referring to nominal airflow.

6.2.2. Silencer

Some installations can require a low sound level. Silencer for supply and or return duct is available for each size to decrease the noise. The length of silencer is 900mm. They are rectangular, in this way no duct transitions are needed. In the next table there are attenuation data for each frequency:

|                  |    |     |     |     |      |      |      |      |
|------------------|----|-----|-----|-----|------|------|------|------|
| Frequency [Hz]   | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Attenuation [dB] | 5  | 9   | 16  | 30  | 39   | 39   | 31   | 26   |

The values in the table are valid for all sizes.



| Material Name | Size | A (mm) | B (mm) | C (mm) | Weight (kg) | Pressure drop <sup>2</sup> (Pa) |
|---------------|------|--------|--------|--------|-------------|---------------------------------|
| ALS0290A      | 02   | 900    | 150    | 250    | 16          | 7                               |
| ALS0390A      | 03   |        | 250    | 400    | 28          | 8                               |
| ALS0590A      | 04   |        | 300    | 500    | 33          | 9                               |
| ALS0590A      | 05   |        |        |        | 33          | 12                              |
| ALS0790A      | 06   |        | 400    | 700    | 47          | 13                              |
| ALS0790A      | 07   |        |        |        | 47          | 15                              |

1. External measures. For Duct measures please to refer at table at page 8 (nominal data)
2. The pressure drop is referring to nominal airflow.

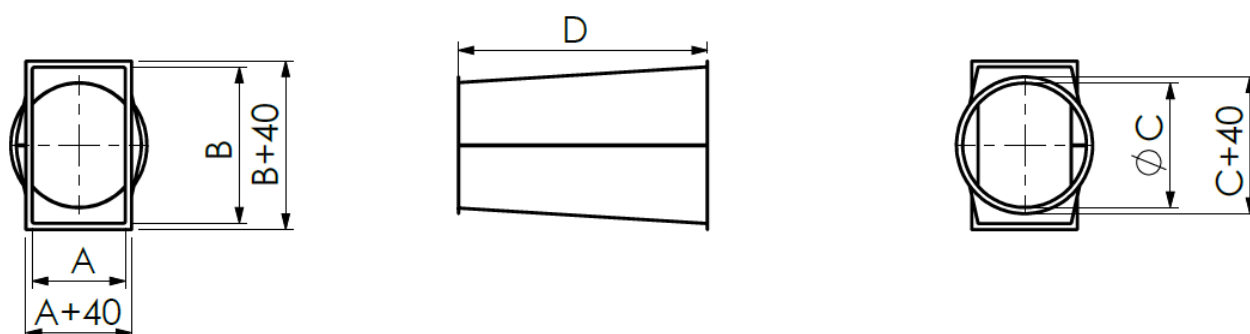
### 6.2.3. Rails

Maintenance is very important for air handling units. The filters have to be replaced many times during work life of an air handling unit. Rails allow to have sliding doors to an easy and quick maintenance even when the space available is limited. Following table contains main info about the rails.

| Material Name | Main unit size | Description | Length (mm) | Width (mm) | Height (mm) | Weight (kg) |
|---------------|----------------|-------------|-------------|------------|-------------|-------------|
| ALA02RLA      | 02             | Rail        | 1660        | 101,5      | 51          | 4           |
| ALA03RLA      | 03             |             | 1800        | 101,5      | 51          | 4           |
| ALA05RLA      | 04             |             | 2000        | 101,5      | 51          | 5           |
|               | 05             |             |             |            |             |             |
| ALA07RLA      | 06             |             | 2000        | 101,5      | 51          | 5           |
|               | 07             |             |             |            |             |             |

### 6.2.4. Duct transitions

Duct transitions are useful when the installation requires circular connections. Compact L Duct connections are rectangular and through this accessory it is possible switch from rectangular to circular connections.



In the following table main info for transitions (dimensions, material name) are summarized.

| Material Name | Size | A (mm) | B (mm) | C (mm) | D (mm) |
|---------------|------|--------|--------|--------|--------|
| ALA02RCA      | 02   | 150    | 200    | 160    | 800    |
| ALA03RCA      | 03   | 200    | 400    | 250    | 800    |
| ALA05RCA      | 04   | 300    | 500    | 400    | 800    |
|               | 05   | 300    | 500    | 400    | 800    |
| ALA07RCA      | 06   | 400    | 700    | 500    | 800    |
|               | 07   | 400    | 700    | 500    | 800    |

### 6.2.5. Flexible joints

Flexible joints allow to absorb vibrations and prevent their transmission to the ductwork structure. They are strongly recommended to avoid any kind of problems due to vibrations.

| Material Name | Size | A (mm) | B (mm) | C (mm) |
|---------------|------|--------|--------|--------|
| ALA02FXB      | 02   | 150    | 200    | 150    |
| ALA03FXB      | 03   | 200    | 400    | 150    |
| ALA05FXB      | 04   | 300    | 500    | 150    |
|               | 05   | 300    | 500    | 150    |
| ALA07FXB      | 06   | 400    | 700    | 150    |
|               | 07   | 400    | 700    | 150    |

## 6.3. Accessories for Pro version only

### 6.3.1. Useful information

- Both pre (ALD\*\*HEFA) and post (ALD\*\*HESA) electric coils must be equipped with an additional temperature probe (ALP00TEA) fitted in the duct and wired to the terminal. Both electric heaters work in modulating way.
- Both water heating (ALD\*\*HWSA) and water-cooling (ALD\*\*CWSA) coil must be equipped with an additional temperature probe (ALP00TEA) fitted in the duct and wired to the terminal. In addition, either a 2- or 3-ways valves (ALV\*\*CW2A, ALV\*\*CW3A) must be ordered along with its modulating actuators for water valve (mandatory option ATE00AMVA)
- On Astra Web selection software for Compact L Pro version, the temperature probe is automatically added when a coil is selected.
- On Astra Web selection software for Compact L Pro version, the modulating actuators is automatically added when a water valve is selected.
- The accessory compatibility might be limited on the basis of the control features and/or for the position of the accessories. Kindly refer to your sales representative in case of doubts. Main incompatibilities are summarised below:
  - Electric pre heating and water pre heating
  - Electric post heating and water post heating
  - Water and DX coil
- For Modbus (ALC00902A) and BACnet (ALC00908A) modules selection there is no exclusion
- Room thermostat (ALC00822A) is supplied with the main unit (ALB0\*\*CM) as a standard item

- Commissioning module (ALC00895A) is required for purpose of either airflow volumes or static pressure value changes from the ones set at factory
- The unit gets delivered with its nominal air flow rate set up at factory. To adjust its operation to the project-specific parameters, kindly select the optional commissioning module ALC00895A or refer to Daikin Service Dept. Alternatively, you can also commission the units using the web server HMI access (default feature)

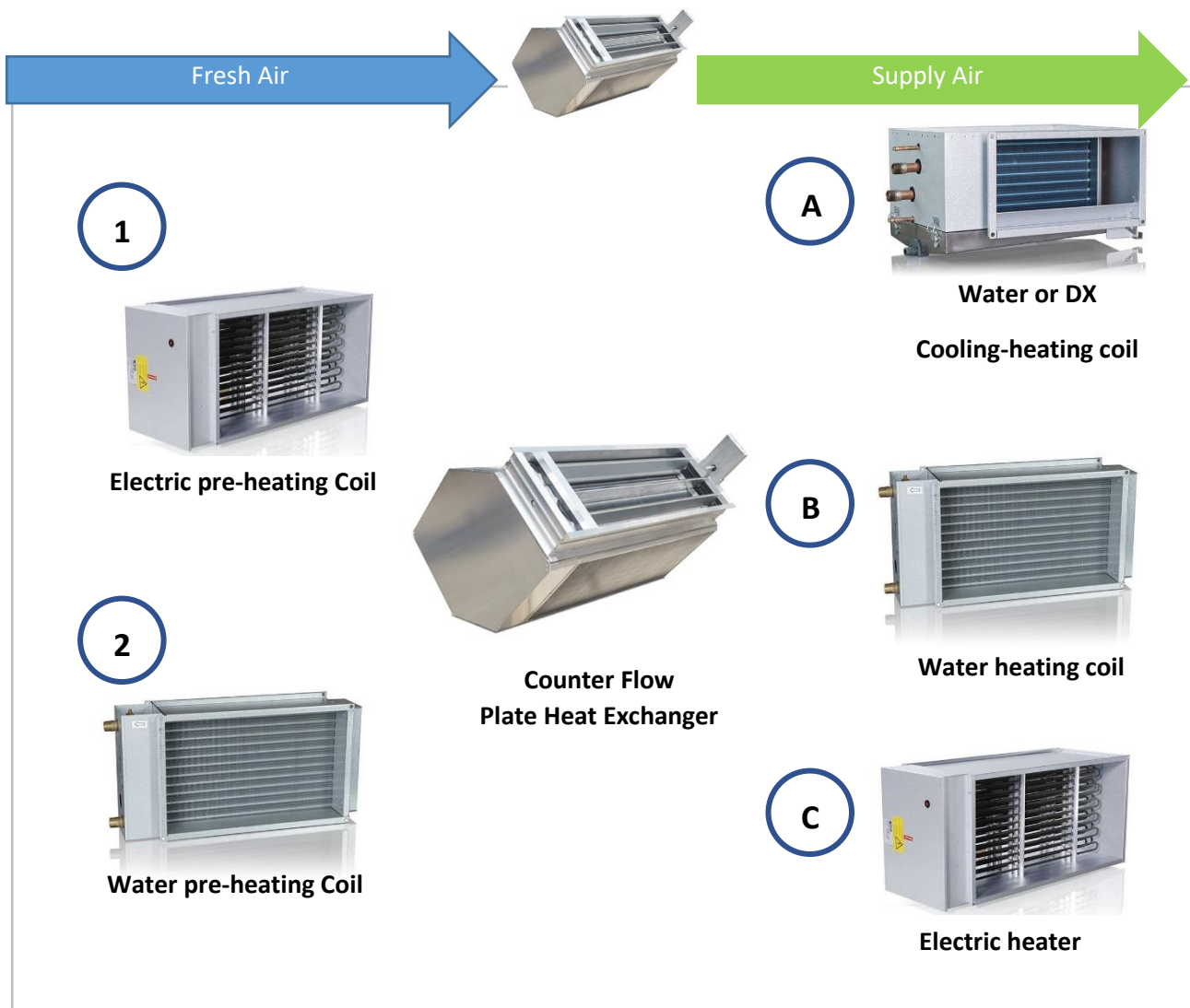
### 6.3.2. Coils

Compact L Pro version can be equipped with different types of coils, all provided as accessory, to guarantee the thermal comfort. Compact L Pro can be equipped with up to three coils (pre, main and post) and all of them work on modulating way at the same time.

An electric heater (1) or water heating coil (2) are available as accessories as preheating coil.

To manage the thermal load in both winter and summer seasons, a DX or water-based coils (A) are available as main coil option. A water coil (B) and an electric heater (C) are available as heating only or post heating options.

Astra Web selection software automatically adds a temperature probe (ALP00TEA) whenever needed.



### 6.3.2.1. DX Coil

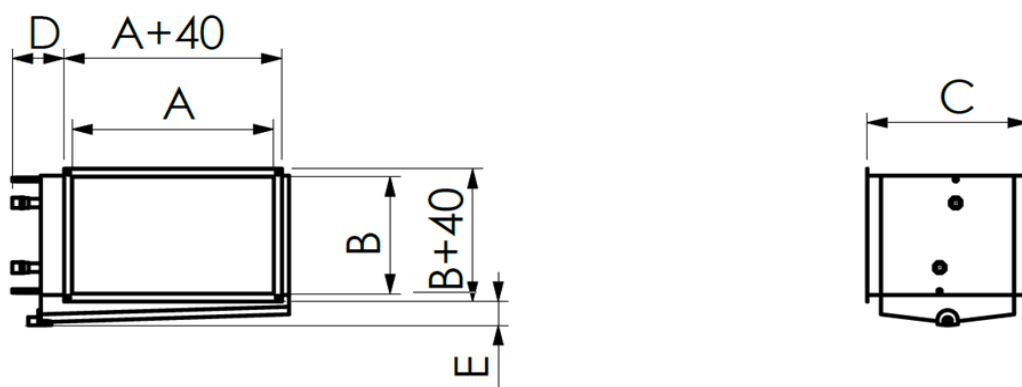
A cooling and heating DX coil, starting from size 04, is available as accessory to guarantee the thermal treatment. The coil is mounted outside the main module and it must be ducted. Please follow the dedicated IOM for further information on the installation procedure.

The Daikin Electronic Valve Kit (EKEXVA\*) model, which has to be site fitted, is specified in the technical report. It has to be ordered separately along with the control box.

The Daikin Electronic Valve Kit (EKEXV\*) model which has to be site installed, is specified in the technical report. It has to be ordered separately along with the control box (EKEACB).

DX coil can work with R410 and R32 refrigerant. On Astra web selection software, user can select the type of refrigerant and the selection software automatically adds the additional temperature probe (ALP00TEA) when a DX coil is selected.

External dampers are available as an option and they can be required with spring return actuators in case R32 refrigerant is used to be compliant with the IEC60335-2-40 ed. 7 standard where applicable. In the following table, main technical data of the DX coil for Compact L are summarized.



| Material Name                   | ALD05CDSA    |    | ALD07CDSA      |    |  |  |
|---------------------------------|--------------|----|----------------|----|--|--|
| Size                            | 04           | 05 | 06             | 07 |  |  |
| Type of coil                    | P22          |    |                |    |  |  |
| Rows                            | 3            |    |                |    |  |  |
| Finning space (mm)              | 2,5          |    |                |    |  |  |
| Fluid Volume (dm <sup>3</sup> ) | 1,46         |    | 2,5            |    |  |  |
| Min Power (kw)                  | 5,0          |    | 7,9            |    |  |  |
| Max Power (kw)                  | 9,9          |    | 15,4           |    |  |  |
| Recommended EXV                 | 50 – 63 – 80 |    | 80 – 100 – 125 |    |  |  |
| Manifolds (")                   | 3/8"         |    |                |    |  |  |
| Distributors (")                | 5/8"         |    |                |    |  |  |
| A (mm)                          | 500          |    | 700            |    |  |  |
| B (mm)                          | 300          |    | 400            |    |  |  |
| C (mm)                          | 395          |    |                |    |  |  |
| D (mm)                          | 125          |    |                |    |  |  |
| E (mm)                          | 60           |    |                |    |  |  |
| Weight (kg)                     | 15           |    | 23             |    |  |  |

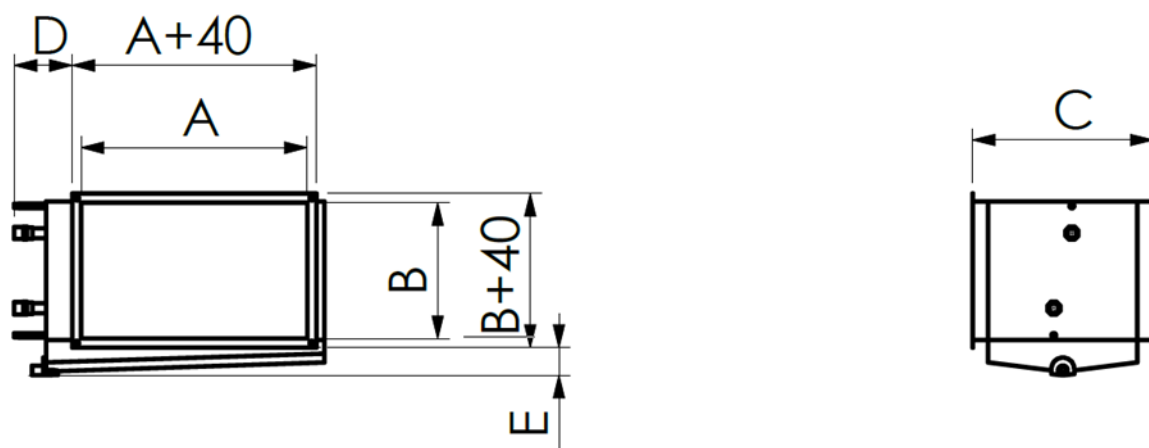
### 6.3.2.2. Water cooling/heating coil

A cooling and heating water coil is available as accessory to guarantee the thermal treatment.

In addition, either a 2- or 3-way valves (ALV\*\*CW2A, ALV\*\*CW3A) has to be ordered along with modulating actuators (ATE00AMVA). Astra Web selection software will automatically add the actuator whenever the valve option is selected.

In the Astra Web selection software the additional temperature probe (ALP00TEA) is automatically added when a DX coil is selected.

The coil is mounted outside the main module and it must be ducted. Please follow the dedicated IOM for further information on the installation procedure.



In the following table, main technical info of the water coil for Compact L are summarized.

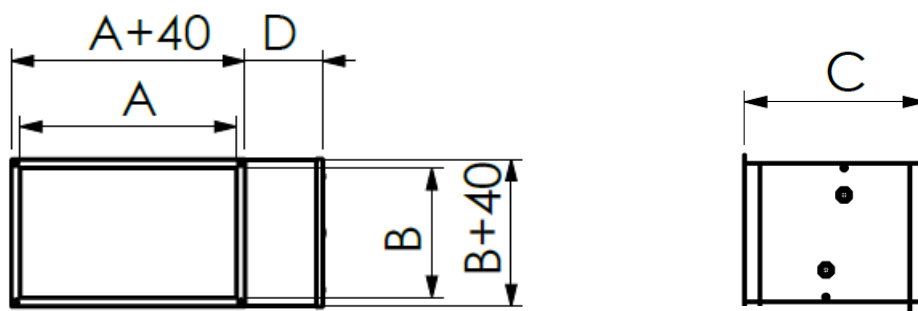
| Material Name                   | ALD02CWSA  | ALD03CWSA | ALD05CWSA | ALD07CWSA |
|---------------------------------|------------|-----------|-----------|-----------|
| Size                            | 02         | 03        | 04 – 05   | 06 - 07   |
| Description                     | Water coil |           |           |           |
| Type of coil                    | P22        |           |           | P32       |
| Rows                            | 4          |           |           |           |
| Finning space (mm)              | 2          |           |           |           |
| Fluid Volume (dm <sup>3</sup> ) | 0,47       | 0,95      | 1,76      | 4,46      |
| Connection                      | ¾"         | ¾"        | ¾"        | 1"        |
| A (mm)                          | 250        | 400       | 500       | 700       |
| B (mm)                          | 150        | 200       | 300       | 400       |
| C (mm)                          | 395        |           |           |           |
| D (mm)                          | 114        |           |           |           |
| E (mm)                          | 60         |           |           |           |
| Weight (kg)                     | 5          | 11        | 15        | 23        |

The overall dimensions include the coil connections.

### 6.3.2.3. Water heating coil

A heating coil is available as accessory as pre heating, heating only (in case main coil is not installed) or post heating.

In the Astra Web selection software the additional temperature probe (ALP00TEA) is automatically added when a DX coil is selected. The coil is mounted outside the main module and it must be ducted. Please follow the dedicated IOM for further information on the installation procedure.



Following table summarizes main technical data pre heating water coil.

| Material Name                   | ALD02HWUA  | ALD03HWUA | ALD05HWUA | ALD07HWUA |
|---------------------------------|------------|-----------|-----------|-----------|
| Size                            | 02         | 03        | 04 – 05   | 06 - 07   |
| Description                     | Water coil |           |           |           |
| Type of coil                    | P22        |           |           | P32       |
| Rows                            | 2          |           |           |           |
| Finning space (mm)              | 2.5        |           |           |           |
| Fluid Volume (dm <sup>3</sup> ) | 0,23       | 0,47      | 0,88      | 2,22      |
| Connection                      | ½"         | ¾"        | ¾"        | 1"        |
| A (mm)                          | 415        | 565       | 665       | 865       |
| B (mm)                          | 150        | 200       | 300       | 400       |
| C (mm)                          | 190        |           |           |           |
| D (mm)                          | 86         |           |           |           |
| Weight (kg)                     | 5          | 5         | 7         | 11        |

#### 6.3.2.4. Electric heater (pre and post)

To guarantee a complete air treatment an electric heater can be selected:

- as preheating (ALD0\*HEFA)
- as post heating (ALD0\*HESA)
- As heating only (ALD0\*HEFA)

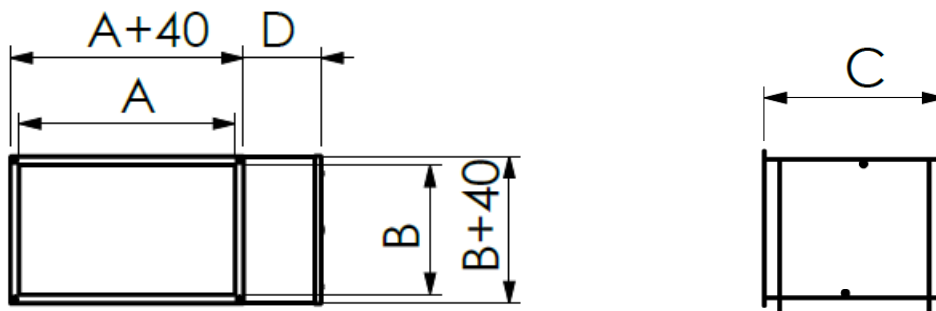


Table below summarizes main information about electric heaters.

| Material Name | Main Unit Size | Description           | A (mm) | B (mm) | C (mm) | D (mm) | Weight (kg) | Electric Data | Max Output (kW) |  |
|---------------|----------------|-----------------------|--------|--------|--------|--------|-------------|---------------|-----------------|--|
| ALD02HEFA     | 02             | Electric Pre heating  | 250    | 150    | 370    | 200    | 7,5         | 230/1/50      | 1,5             |  |
| ALD03HEFA     | 03             |                       | 400    | 200    | 370    |        | 10          | 230/1/50      | 3               |  |
| ALD05HEFA     | 04             |                       | 500    | 300    | 370    |        | 14          | 400/3/50      | 7,5             |  |
|               | 05             |                       |        |        |        |        |             |               |                 |  |
| ALD07HEFA     | 06             |                       | 700    | 400    | 370    |        | 21          | 400/3/50      | 15              |  |
|               | 07             |                       |        |        |        |        |             |               |                 |  |
| ALD02HESA     | 02             | Electric post heating | 250    | 150    | 370    | 200    | 7,5         | 230/1/50      | 2,1             |  |
| ALD03HESA     | 03             |                       | 400    | 200    | 370    |        | 10          | 400/1/50      | 4               |  |
| ALD05HESA     | 04             |                       | 500    | 300    | 370    |        | 18          | 400/3/50      | 10              |  |
|               | 05             |                       |        |        |        |        |             |               |                 |  |
| ALD07HESA     | 06             |                       | 700    | 400    | 370    |        | 21          | 400/3/50      | 15              |  |
|               | 07             |                       |        |        |        |        |             |               |                 |  |

### 6.3.3. Droplet eliminator

A droplet eliminator can be added when a cooling water or DX coil is used, in order to avoid the risk of water droplets being carried over to the supply duct. Warning in the selection software appears whenever the project conditions require to have it. Please refer to the dedicated IOM for coils for further information. Table below summarizes main information about droplet eliminator.

| Material Name | ALD02DEA           | ALD03DEA | ALD05DEA | ALD07DEA |
|---------------|--------------------|----------|----------|----------|
| Size          | 02                 | 03       | 04 – 05  | 06 - 07  |
| Description   | Droplet Eliminator |          |          |          |
| Lenght (mm)   | 250                | 400      | 500      | 700      |
| Depth (mm)    | 120                |          |          |          |
| Height (mm)   | 150                | 200      | 300      | 400      |

### 6.3.4. Frost switch

The frost switch (ALE00FSUA) protects the water coils from freezing and when air temperature is below 5°C, the unit stops to operate. The frost switch auto resets if conditions allow a safe functioning of the AHU again. It can be mounted only after pre heating water coil (in the fresh duct) or in supply duct, just after the main module.

Please refer to the dedicated IOM for more details.

### 6.3.5. Valves and actuators

The valves need when a water coil is selected. Four types of valves are available, according to the type of coil installed, heating or cooling, and the number of ways, two or three.

The table below summarize the material name for Compact L valves.

| Material Name | Size    | Cooling/Heating | 2 or 3 ways | DN | KVs (m <sup>3</sup> /h) |
|---------------|---------|-----------------|-------------|----|-------------------------|
| ALV02CW2A     | 02      | Cooling         | 2           | 15 | 0,6                     |
| ALV03CW2A     | 03      | Cooling         | 2           | 15 | 1,6                     |
| ALV05CW2A     | 04 - 05 | Cooling         | 2           | 20 | 2,5                     |
| ALV07CW2A     | 06 - 07 | Cooling         | 2           | 20 | 6,0                     |
| ALV02CW3A     | 02      | Cooling         | 3           | 15 | 0,6                     |
| ALV03CW3A     | 03      | Cooling         | 3           | 15 | 1,6                     |
| ALV05CW3A     | 04 - 05 | Cooling         | 3           | 20 | 2,5                     |
| ALV07CW3A     | 06 - 07 | Cooling         | 3           | 20 | 6,0                     |

The modulating actuator (ATE00AMVA) is automatically added in Astra when a valve is selected.

|                      |           |
|----------------------|-----------|
| Control Type         | DC 2-10 V |
| Torque               | 5 Nm      |
| Voltage AC/DC        | AC/DC 24V |
| Degree of protection | IP54      |

### 6.3.6. External Damper and actuators

External dampers can be installed on all the four air flow connections at the same time.

For the external dampers it is possible to select:

- modulating actuator (ATE00AMDA)
- spring return modulating actuator (AUE00ASDA)

On Asta web selection software, dampers can only be selected in pairs, for exhaust and outdoor or for fresh and return air flow and the user can choose the type of actuator.

In the table below the material names for external dampers are summarized.

| Size          | 02       | 03       | 04-05    | 06-07    |
|---------------|----------|----------|----------|----------|
| Material Name | ALA02EDA | ALA03EDA | ALA05EDA | ALA05EDA |

Please note the items in the table refers to one damper only (i.e., 1 ALA0\*EDA → 1 external damper).

### 6.3.7. Pressure transducer

A pressure transducer (AUE00PTUA) can be added from the option list in Astra web selection software for following functionalities:

- Pressure drop monitoring of additional supply and/or return filter (please refer to the dedicated IOM for more details.
- Variable air volume control in master and slave configuration

## 6.4. Accessories for Smart version only

### 6.4.1. Electric preheater

Only coil available for Smart version is pre heating electric coil. In the following table, main info is summarized:

| Material Name | Main unit size | Description        | Depth (mm) | Width (mm) | Height (mm) | Weigh t (kg) | V, ph, Hz | Output (kW) |
|---------------|----------------|--------------------|------------|------------|-------------|--------------|-----------|-------------|
| ALD02HEFB     | 02             | Electric preheater | 370        | 470        | 195         | 7            | 230/1/50  | 1,5         |
| ALD03HEFB     | 03             |                    |            | 620        | 245         | 10           |           | 3           |
| ALD05HEFB     | 04             |                    |            | 720        | 345         | 15           | 400/3/50  | 7,5         |
|               | 05             |                    |            |            |             |              |           |             |
| ALD07HEFB     | 06             |                    |            | 920        | 445         | 21           |           | 15          |
|               | 07             |                    |            |            |             |              |           |             |

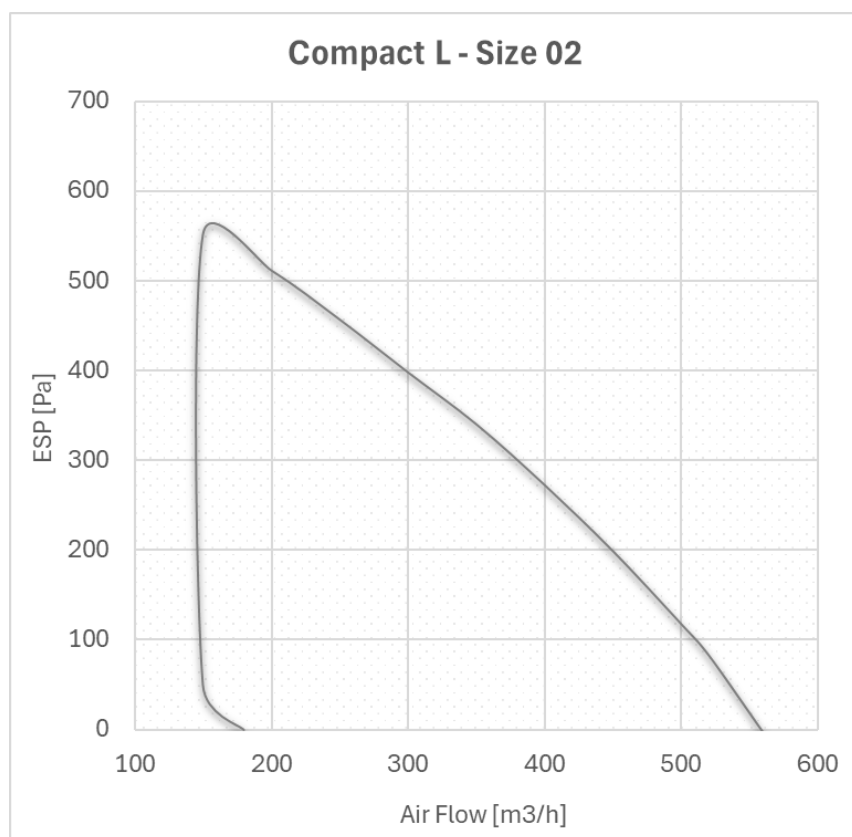
## 7. Performance

This section summarizes the main technical data for each size: envelope for each unit, thermal efficiency of the heat exchanger and sound emission at different operating points. More details about measurements done are collected in the next paragraphs.

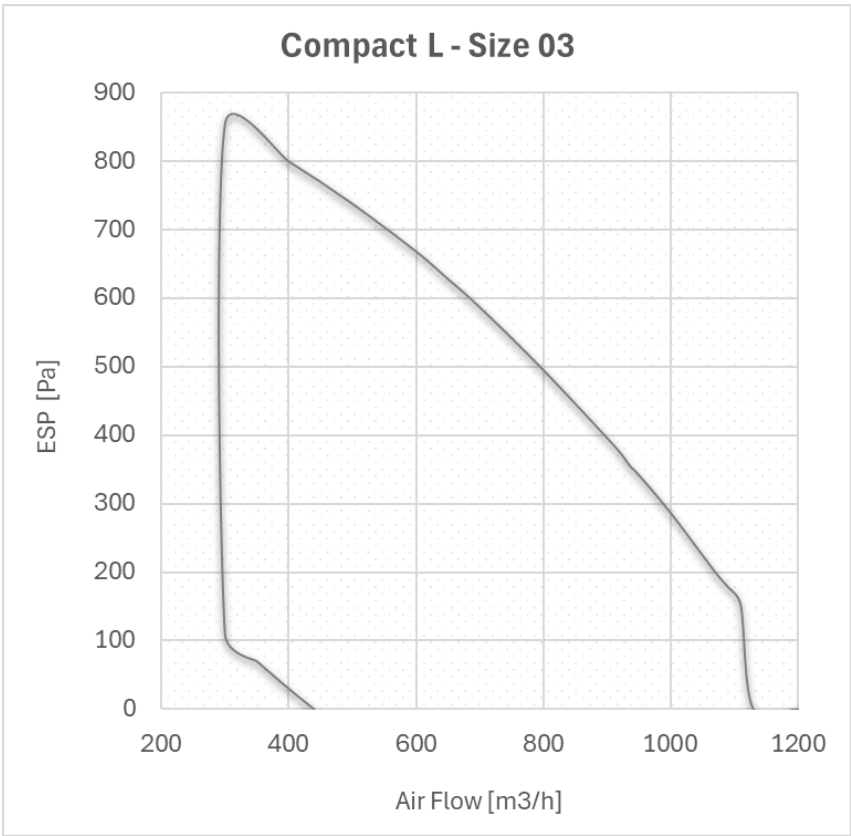
### 7.1. Performance data

The diagrams show the available external pressure for the duct system given the airflow.

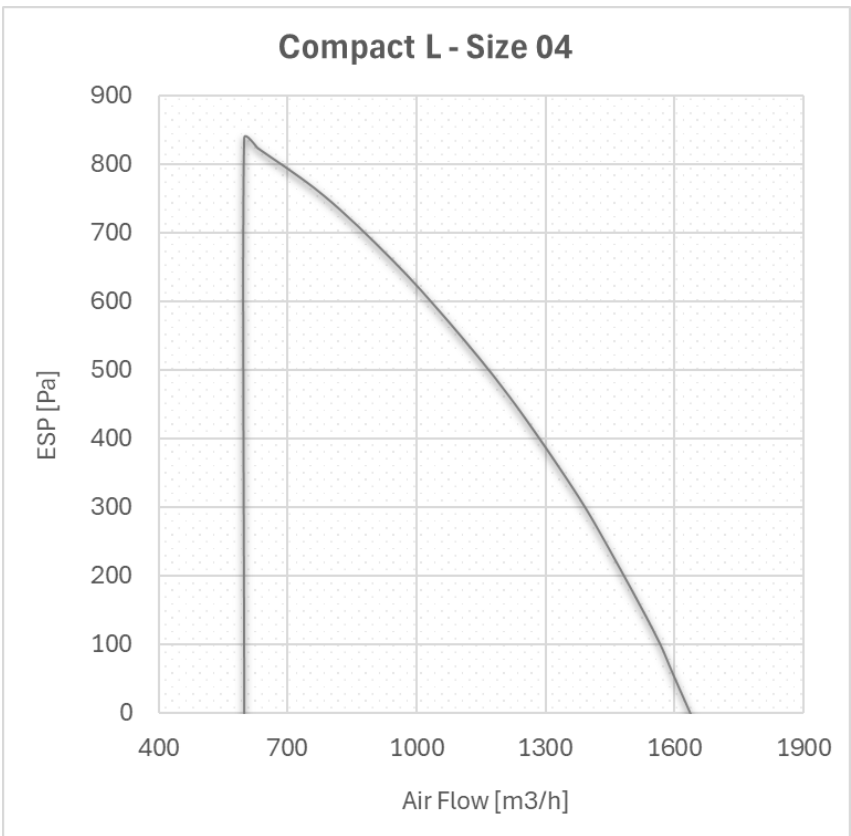
*Size 02*



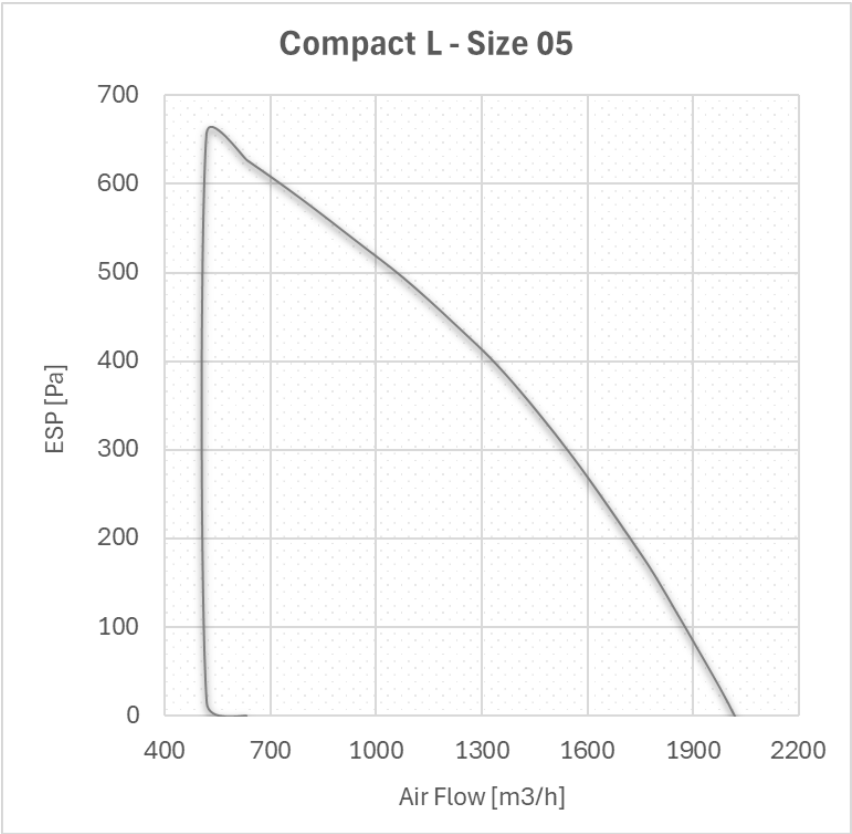
Size 03



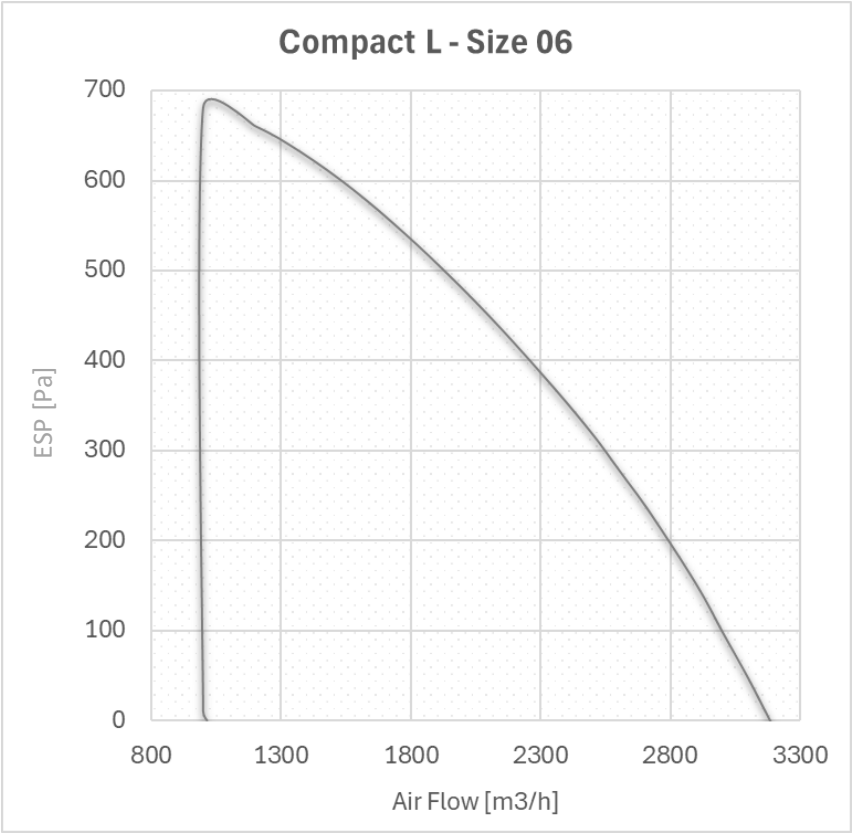
Size 04



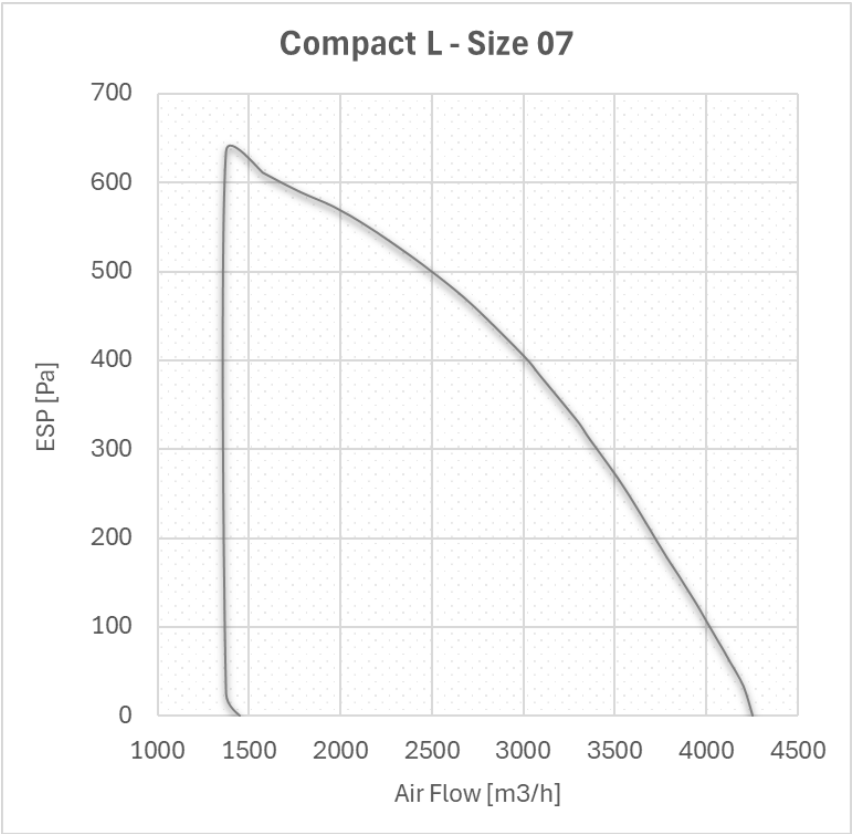
Size 05



Size 06



Size 07

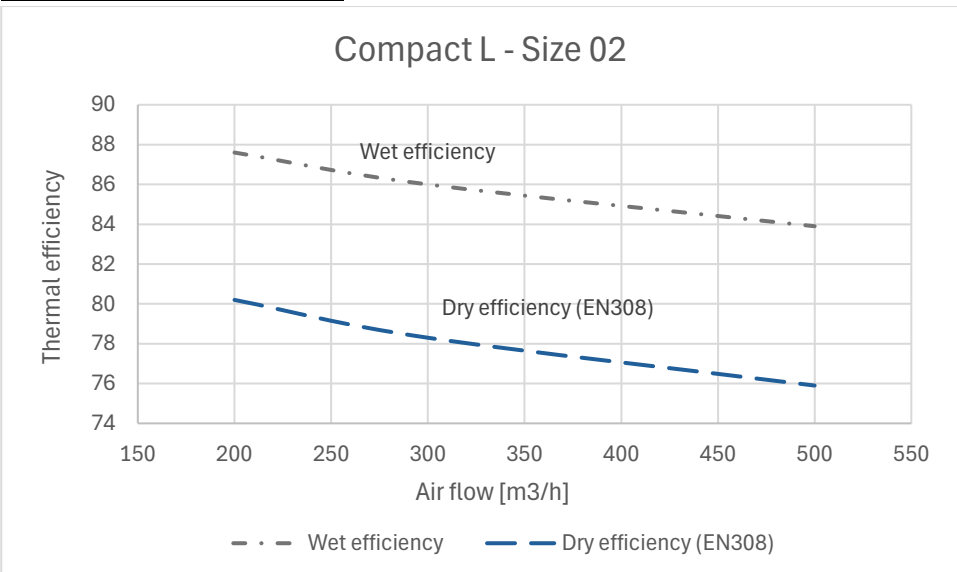


7.2. Thermal efficiency

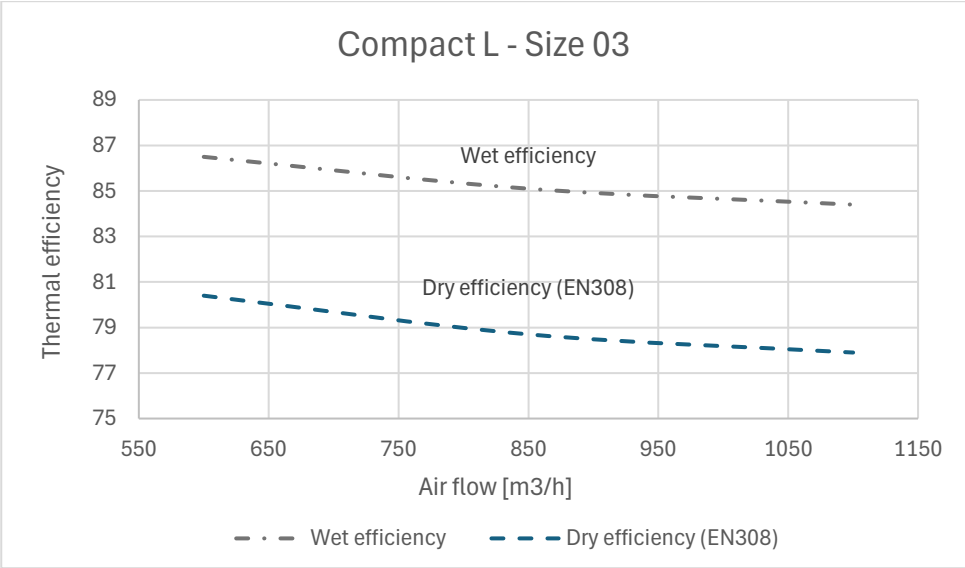
The charts indicate the thermal efficiency of the heat exchanger at the following conditions:

- Wet efficiency: -5°C/ RH 80% Outdoor and +22°C/50% Indoor
- With air ratio 1:1 and according to EN308

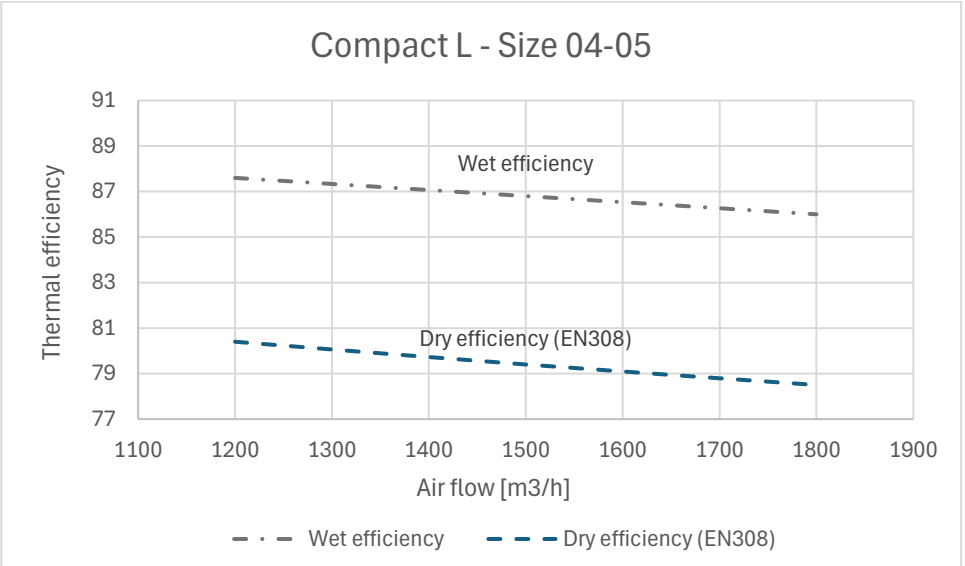
Thermal efficiency: Size 02



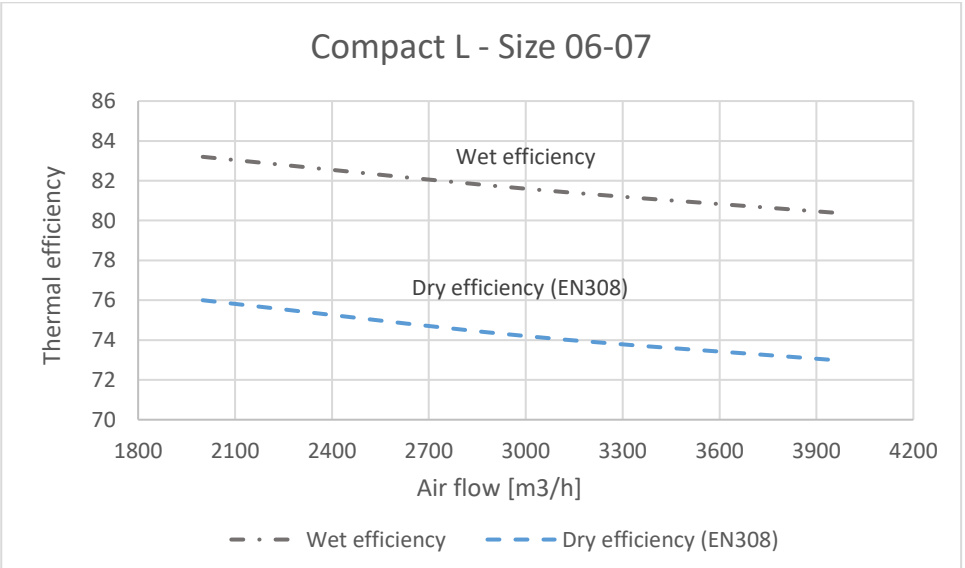
Thermal efficiency: Size 03



Thermal efficiency: Size 04 - 05



Thermal efficiency: Size 06 - 07



### 7.3. Sound emission

**Surrounding power level:** The airborne is the sound power emitted by the unit. The surrounding power level is the logarithmic sum of the two airborne values (supply and return).

**Surrounding pressure level:** It is calculated in accordance with EN3744. The evaluation is done at 1 meter from the source and with a directivity factor equal to 4, in non-reverberant field.

#### Sound Level Size 02

*Air flow: 200 m<sup>3</sup>/h, ESP: 50 Pa*

| Point A                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 59 | 61  | 55  | 48  | 43   | 42   | 28   | 17   | 52        |
|                            | Supply outlet     | 59 | 64  | 64  | 64  | 52   | 55   | 47   | 40   | 64        |
|                            | Return inlet      | 58 | 59  | 52  | 46  | 40   | 39   | 25   | 15   | 49        |
|                            | Return outlet     | 58 | 62  | 61  | 61  | 50   | 53   | 45   | 38   | 61        |
|                            | Surrounding power | 53 | 55  | 50  | 51  | 41   | 35   | 25   | 13   | 49        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 42        |

*Air flow: 400 m<sup>3</sup>/h, ESP: 50 Pa*

| Point B                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 63 | 66  | 56  | 49  | 44   | 45   | 34   | 28   | 54        |
|                            | Supply outlet     | 63 | 69  | 65  | 64  | 54   | 59   | 54   | 51   | 66        |
|                            | Return inlet      | 62 | 65  | 54  | 46  | 43   | 44   | 33   | 26   | 53        |
|                            | Return outlet     | 62 | 68  | 63  | 62  | 52   | 58   | 52   | 49   | 64        |
|                            | Surrounding power | 57 | 60  | 51  | 51  | 42   | 39   | 32   | 24   | 51        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 44        |

*Air flow: 200 m<sup>3</sup>/h, ESP: 150 Pa*

| Point C          | Frequency (Hz) | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|------------------|----------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB) | Supply inlet   | 63 | 65  | 63  | 56  | 51   | 48   | 34   | 24   | 59        |
|                  | Supply outlet  | 63 | 68  | 72  | 72  | 60   | 62   | 54   | 47   | 71        |
|                  | Return inlet   | 62 | 64  | 61  | 54  |      |      |      |      |           |

### Sound Level Size 03

*Air flow: 600 m<sup>3</sup>/h, ESP: 50 Pa*

| Point A                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 64 | 65  | 61  | 49  | 49   | 46   | 33   | 22   | 56        |
|                            | Supply outlet     | 64 | 68  | 69  | 65  | 59   | 60   | 53   | 45   | 67        |
|                            | Return inlet      | 63 | 64  | 59  | 47  | 47   | 44   | 32   | 20   | 54        |
|                            | Return outlet     | 63 | 67  | 67  | 63  | 56   | 58   | 51   | 43   | 65        |
|                            | Surrounding power | 58 | 59  | 55  | 52  | 47   | 40   | 31   | 18   | 53        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 46        |

*Air flow: 1000 m<sup>3</sup>/h, ESP: 50 Pa*

| Point B                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 70 | 71  | 66  | 53  | 54   | 53   | 42   | 33   | 62        |
|                            | Supply outlet     | 70 | 74  | 74  | 69  | 63   | 66   | 61   | 56   | 73        |
|                            | Return inlet      | 69 | 70  | 64  | 52  | 53   | 52   | 41   | 31   | 60        |
|                            | Return outlet     | 69 | 73  | 73  | 68  | 62   | 65   | 60   | 55   | 71        |
|                            | Surrounding power | 64 | 65  | 61  | 56  | 52   | 46   | 39   | 29   | 58        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 51        |

*Air flow: 600 m<sup>3</sup>/h, ESP: 150 Pa*

| Point C          | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB) | Supply inlet      | 65 | 68  | 64  | 54  | 53   | 49   | 36   | 26   | 60        |
|                  | Supply outlet     | 65 | 70  | 73  | 70  | 62   | 63   | 56   | 49   | 71        |
|                  | Return inlet      | 65 | 66  | 63  | 52  | 51   | 48   | 35   | 24   | 58        |
|                  | Return outlet     | 65 | 69  | 71  | 68  | 60   | 61   | 54   | 47   | 69        |
|                  | Surrounding power | 60 | 61  |     |     |      |      |      |      |           |

### Sound Level Size 04

*Air flow: 1200 m<sup>3</sup>/h, ESP: 50 Pa*

| Point A                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 62 | 64  | 61  | 53  | 54   | 53   | 42   | 33   | 59        |
|                            | Supply outlet     | 62 | 67  | 70  | 68  | 63   | 67   | 61   | 56   | 72        |
|                            | Return inlet      | 63 | 65  | 61  | 53  | 54   | 53   | 42   | 33   | 59        |
|                            | Return outlet     | 63 | 68  | 69  | 68  | 63   | 67   | 61   | 56   | 72        |
|                            | Surrounding power | 57 | 59  | 57  | 56  | 53   | 47   | 40   | 30   | 57        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 50        |

*Air flow: 1500 m<sup>3</sup>/h, ESP: 50 Pa*

| Point B                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 67 | 69  | 66  | 58  | 59   | 58   | 48   | 40   | 64        |
|                            | Supply outlet     | 67 | 72  | 74  | 74  | 69   | 72   | 67   | 64   | 77        |
|                            | Return inlet      | 66 | 68  | 66  | 58  | 59   | 58   | 47   | 40   | 64        |
|                            | Return outlet     | 66 | 71  | 74  | 74  | 69   | 72   | 67   | 64   | 77        |
|                            | Surrounding power | 61 | 63  | 61  | 62  | 58   | 53   | 45   | 37   | 62        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 55        |

*Air flow: 1200 m<sup>3</sup>/h, ESP: 150 Pa*

| Point C          | Frequency (Hz) | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|------------------|----------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB) | Supply inlet   | 60 | 62  | 62  | 52  | 54   | 53   | 42   | 34   | 59        |
|                  | Supply outlet  | 60 | 65  | 70  | 68  | 63   | 67   | 62   | 57   | 72        |
|                  | Return inlet   | 61 | 63  | 61  | 52  | 54   | 53   | 42   | 34   | 59        |
|                  | Return outlet  | 61 | 66  | 70  | 68  | 63   | 67   | 62   | 57   | 72        |
|                  |                |    |     |     |     |      |      |      |      |           |

### Sound Level Size 05

*Air flow: 1600 m<sup>3</sup>/h, ESP: 50 Pa*

| Point A                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 72 | 68  | 62  | 50  | 50   | 47   | 39   | 31   | 58        |
|                            | Supply outlet     | 63 | 66  | 74  | 68  | 64   | 68   | 62   | 58   | 73        |
|                            | Return inlet      | 70 | 66  | 61  | 50  | 49   | 47   | 38   | 31   | 57        |
|                            | Return outlet     | 62 | 65  | 74  | 68  | 63   | 68   | 62   | 58   | 73        |
|                            | Surrounding power | 57 | 57  | 61  | 56  | 53   | 49   | 40   | 32   | 58        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 51        |

*Air flow: 1800 m<sup>3</sup>/h, ESP: 50 Pa*

| Point B                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 74 | 70  | 64  | 52  | 52   | 49   | 41   | 34   | 60        |
|                            | Supply outlet     | 68 | 67  | 75  | 70  | 66   | 71   | 64   | 62   | 75        |
|                            | Return inlet      | 72 | 68  | 63  | 51  | 51   | 49   | 41   | 34   | 59        |
|                            | Return outlet     | 63 | 67  | 76  | 70  | 66   | 71   | 64   | 62   | 75        |
|                            | Surrounding power | 61 | 59  | 63  | 58  | 55   | 51   | 43   | 36   | 60        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 53        |

*Air flow: 1600 m<sup>3</sup>/h, ESP: 150 Pa*

| Point C          | Frequency (Hz) | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|------------------|----------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB) | Supply inlet   | 74 | 71  | 64  | 52  | 51   | 48   | 40   | 32   | 60        |
|                  | Supply outlet  | 68 | 68  | 75  | 70  | 65   | 70   | 63   | 59   | 74        |
|                  | Return inlet   | 73 | 70  | 63  | 51  | 50   | 48   | 40   | 32   | 59        |
|                  | Return outlet  | 65 | 67  | 74  | 69  | 64   | 69   | 62   | 58   | 73        |

### Sound Level Size 06

*Air flow: 2100 m<sup>3</sup>/h, ESP: 50 Pa*

| Point A                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 64 | 64  | 56  | 45  | 46   | 45   | 39   | 26   | 54        |
|                            | Supply outlet     | 66 | 68  | 67  | 64  | 62   | 67   | 63   | 54   | 71        |
|                            | Return inlet      | 64 | 63  | 54  | 44  | 45   | 45   | 39   | 25   | 53        |
|                            | Return outlet     | 66 | 67  | 65  | 64  | 61   | 66   | 62   | 53   | 70        |
|                            | Surrounding power | 61 | 59  | 54  | 52  | 51   | 47   | 41   | 27   | 55        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 48        |

*Air flow: 2600 m<sup>3</sup>/h, ESP: 50 Pa*

| Point B                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 67 | 67  | 61  | 49  | 50   | 49   | 44   | 33   | 57        |
|                            | Supply outlet     | 69 | 71  | 73  | 68  | 67   | 71   | 67   | 60   | 75        |
|                            | Return inlet      | 68 | 67  | 61  | 49  | 50   | 48   | 44   | 32   | 57        |
|                            | Return outlet     | 70 | 71  | 73  | 68  | 66   | 70   | 67   | 59   | 75        |
|                            | Surrounding power | 64 | 62  | 60  | 56  | 56   | 51   | 46   | 33   | 59        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 52        |

*Air flow: 2100 m<sup>3</sup>/h, ESP: 150 Pa*

| Point C          | Frequency (Hz) | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|------------------|----------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB) | Supply inlet   | 65 | 66  | 61  | 47  | 48   | 47   | 40   | 28   | 56        |
|                  | Supply outlet  | 67 | 70  | 72  | 66  | 64   | 69   | 64   | 56   | 73        |
|                  | Return inlet   | 65 | 65  | 59  | 46  | 47   | 46   | 40   | 27   | 55        |
|                  |                |    |     |     |     |      |      |      |      |           |

## Sound Level Size 07

*Air flow: 3100 m<sup>3</sup>/h, ESP: 50 Pa*

| Point A                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 64 | 63  | 66  | 53  | 53   | 51   | 39   | 31   | 60        |
|                            | Supply outlet     | 64 | 68  | 78  | 71  | 69   | 75   | 65   | 58   | 78        |
|                            | Return inlet      | 62 | 63  | 65  | 51  | 51   | 49   | 38   | 29   | 59        |
|                            | Return outlet     | 62 | 68  | 76  | 69  | 68   | 73   | 64   | 56   | 76        |
|                            | Surrounding power | 58 | 59  | 64  | 58  | 58   | 54   | 43   | 31   | 62        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 55        |

*Air flow: 3600 m<sup>3</sup>/h, ESP: 50 Pa*

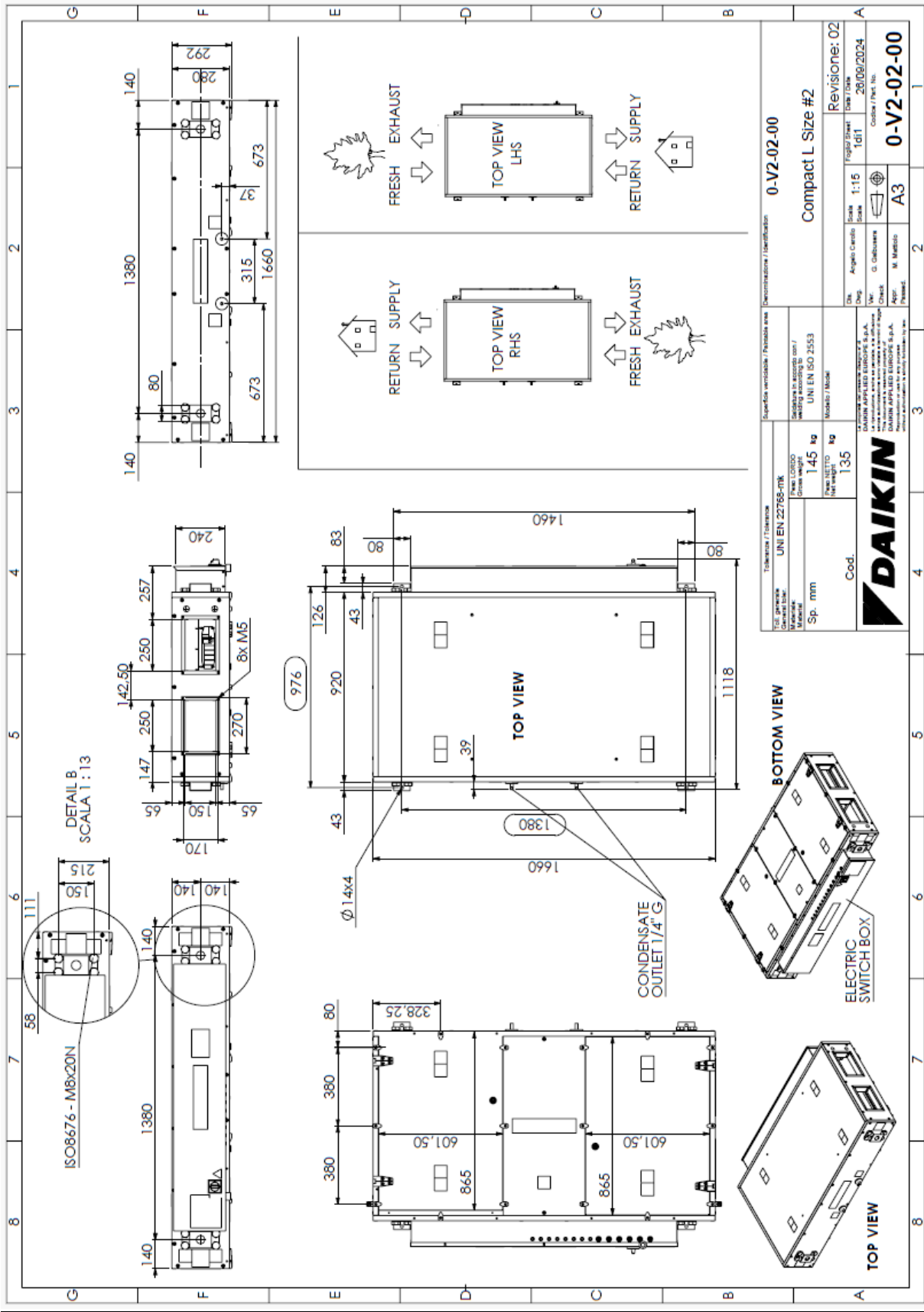
| Point B                    | Frequency (Hz)    | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|----------------------------|-------------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB)           | Supply inlet      | 65 | 63  | 69  | 55  | 55   | 53   | 42   | 34   | 62        |
|                            | Supply outlet     | 65 | 68  | 79  | 73  | 72   | 78   | 69   | 61   | 81        |
|                            | Return inlet      | 63 | 62  | 67  | 53  | 54   | 52   | 42   | 33   | 61        |
|                            | Return outlet     | 64 | 67  | 78  | 71  | 71   | 76   | 68   | 60   | 80        |
|                            | Surrounding power | 59 | 59  | 66  | 60  | 60   | 58   | 47   | 34   | 64        |
| Surrounding pressure (dBA) |                   |    |     |     |     |      |      |      |      | 57        |

*Air flow: 3100 m<sup>3</sup>/h, ESP: 150 Pa*

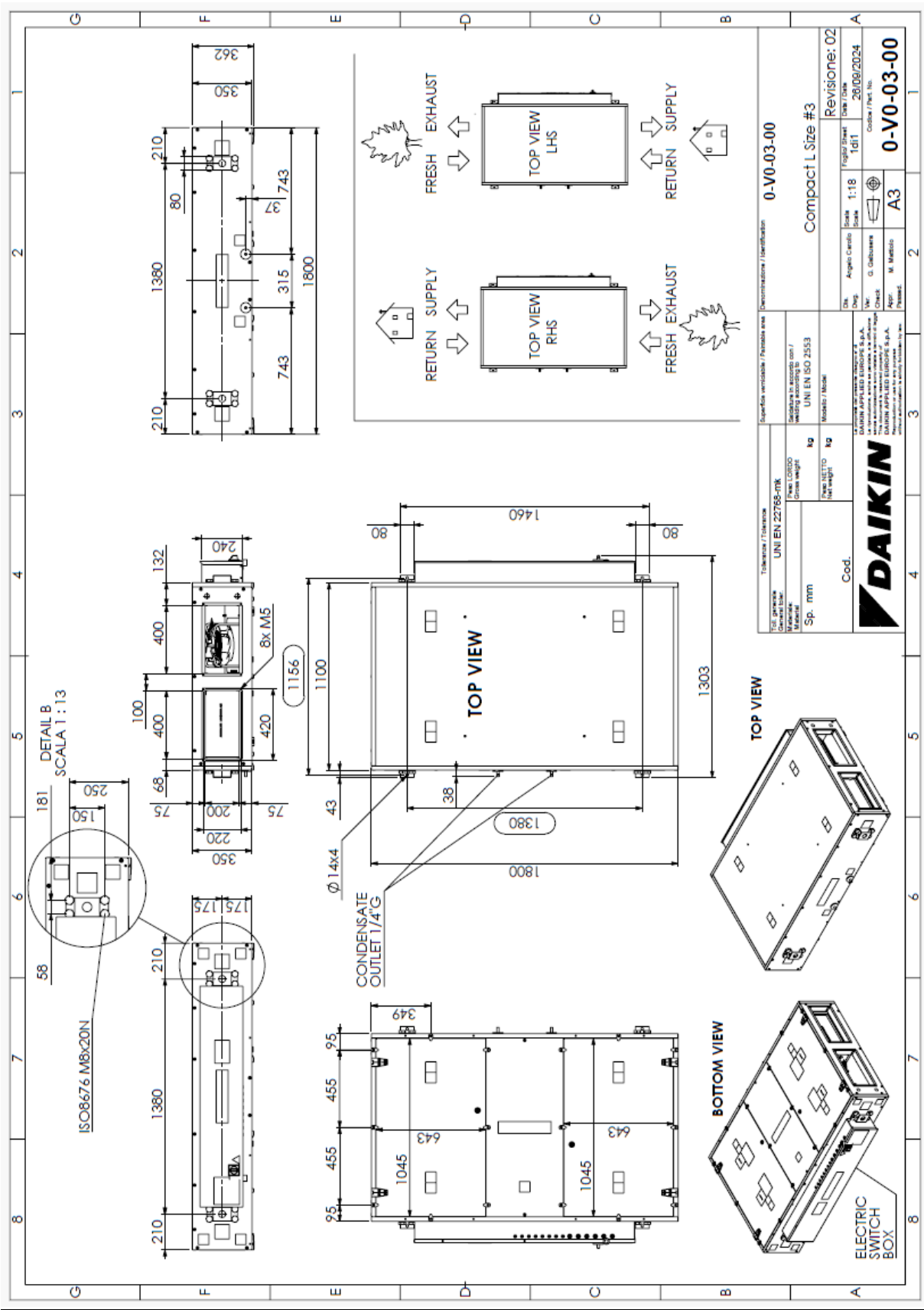
| Point C          | Frequency (Hz) | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Avg (dBA) |
|------------------|----------------|----|-----|-----|-----|------|------|------|------|-----------|
| Sound power (dB) | Supply inlet   | 66 | 66  | 70  | 55  | 54   | 53   | 41   | 33   | 63        |
|                  | Supply outlet  | 66 | 71  | 82  | 73  | 71   | 77   | 68   | 60   | 80        |
|                  | Return inlet   | 64 | 64  | 68  | 53  | 53   | 51   | 40   | 31   | 61        |

7.4. Dimensional Drawings

Dimension Drawing: Size 02



Dimension Drawing: Size 03







## 8. Compact L Pro with integrated heating water coil

Compact L Pro is available with an integrated heating water coil. This version of Compact L Pro allows saving space and time to install an external coil.

Nomenclature:

| Compact L Pro with<br>Internal water heating coil |           |           |
|---------------------------------------------------|-----------|-----------|
| Size                                              | Right     | Left      |
| Size 02                                           | ALB02RCMW | ALB02LCMW |
| Size 03                                           | ALB03RCMW | ALB03LCMW |
| Size 04                                           | ALB04RCMW | ALB04LCMW |
| Size 05                                           | ALB05RCMW | ALB05LCMW |
| Size 06                                           | ALB06RCMW | ALB06LCMW |
| Size 07                                           | ALB07RCMW | ALB07LCMW |

Note 1: For air inlet temperature below 0°C ethylene glycol has to be added for antifreeze protection reason. Please find in the below table the percentage of ethylene glycol based on outdoor temperature:

| Freezing Point                            |   |      |      |       |       |       |       |
|-------------------------------------------|---|------|------|-------|-------|-------|-------|
| Ethylene glycol solution<br>(% by volume) | 0 | 10   | 20   | 30    | 40    | 50    | 60    |
| Temperature °C                            | 0 | -3,2 | -7,8 | -14,1 | -22,3 | -33,8 | -48,3 |

Following table summarise main information about the water coils installed inside the main unit.

| Description                     | Size 02 | Size 03 | Size 04 | Size 05 | Size 06 | Size 07 |
|---------------------------------|---------|---------|---------|---------|---------|---------|
| Type of coil                    | P22     |         |         |         |         |         |
| Rows                            | 2       |         |         |         |         |         |
| Fin space (mm)                  | 2,5     |         |         |         |         |         |
| Fluid volume (dm <sup>3</sup> ) | 0,21    | 0,46    | 0,73    |         | 1,50    |         |
| Connections                     | ½"      | ½"      | ¾"      |         | ¾"      |         |
| Length (mm)                     | 220     | 380     | 450     |         | 700     |         |
| Height (mm)                     | 150     | 200     | 275     |         | 375     |         |

An additional temperature probes has to be added in Astra selection software and it has to be wired according to the IOM while the POL955 (expansion module A) is already installed in the main unit.

In the next table for each size, some technical data are reported.

For an accurate performance evaluation, please refer to Astra selection software.

| Air Flow<br>(m <sup>3</sup> /h) | Size | Air Temperature (°C) |        | Power<br>(kW) | Air pressure<br>drop<br>(Pa) | Water Temperature (°C) |        | Water<br>flow<br>(l/s) | Water<br>pressure<br>drop<br>(kPa) |
|---------------------------------|------|----------------------|--------|---------------|------------------------------|------------------------|--------|------------------------|------------------------------------|
|                                 |      | Inlet                | Outlet |               |                              | Inlet                  | Outlet |                        |                                    |
| 150                             | 02   | 0                    | 22,7   | 1,2           | 8                            | 45                     | 40     | 0,06                   | 7                                  |
| 300                             | 02   | 0                    | 17,7   | 1,8           | 25                           | 45                     | 40     | 0,09                   | 16                                 |
| 450                             | 02   | 0                    | 15,0   | 2,3           | 48                           | 45                     | 40     | 0,11                   | 25                                 |
| 500                             | 03   | 0                    | 20,1   | 3,4           | 15                           | 45                     | 40     | 0,16                   | 13                                 |
| 600                             | 03   | 0                    | 18,8   | 3,9           | 20                           | 45                     | 40     | 0,18                   | 16                                 |
| 800                             | 03   | 0                    | 16,8   | 4,6           | 31                           | 45                     | 40     | 0,22                   | 22                                 |
| 1000                            | 04   | 0                    | 18,4   | 6,3           | 20                           | 45                     | 40     | 0,30                   | 8                                  |
| 1200                            | 04   | 0                    | 17,1   | 7,0           | 28                           | 45                     | 40     | 0,34                   | 10                                 |
| 1350                            | 04   | 0                    | 16,3   | 7,6           | 33                           | 45                     | 40     | 0,36                   | 12                                 |
| 1500                            | 05   | 0                    | 15,6   | 8,0           | 40                           | 45                     | 40     | 0,38                   | 13                                 |
| 1600                            | 05   | 0                    | 15,2   | 8,3           | 44                           | 45                     | 40     | 0,40                   | 14                                 |
| 1750                            | 05   | 0                    | 14,6   | 8,8           | 51                           | 45                     | 40     | 0,42                   | 15                                 |
| 2000                            | 06   | 0                    | 18,9   | 13,0          | 19                           | 45                     | 40     | 0,62                   | 8                                  |
| 2250                            | 06   | 0                    | 18,1   | 13,9          | 22                           | 45                     | 40     | 0,66                   | 9                                  |
| 2500                            | 06   | 0                    | 17,3   | 14,9          | 27                           | 45                     | 40     | 0,71                   | 10                                 |
| 2750                            | 07   | 0                    | 16,7   | 15,7          | 31                           | 45                     | 40     | 0,75                   | 12                                 |
| 3000                            | 07   | 0                    | 16,1   | 16,5          | 36                           | 45                     | 40     | 0,79                   | 13                                 |
| 3250                            | 07   | 0                    | 15,6   | 17,3          | 41                           | 45                     | 40     | 0,83                   | 14                                 |

This publication is drawn up only as technical support and does not constitute a binding commitment for Daikin Applied Europe S.p.A. Daikin Applied Europe S.p.A. has drawn up the content to the best of its ability. No explicit or implicit guarantee is given as to the completeness, precision or reliability of its content. All the data and specifications contained herein are subject to change without notice. The data stated at the time of the order prevail. Daikin Applied Europe S.p.A. accepts no liability whatsoever for any direct or indirect damage, in the broadest sense of the word, deriving from or associated with the use and/or interpretation of this publication.

All content is protected by the copyright of Daikin Applied Europe S.p.A.