

# DUPLEX Inter-H

Brand new decentral ventilation unit with heat recovery for under-ceiling installation

## Determination

Indoor ventilation units DUPLEX Inter-H are designed for balanced-pressure ventilation in classrooms, open area offices, facilities, restaurants, retail units and everywhere else where direct installation to the areas where the low noise is required.

## Basic description

The units have high heat recovery efficiency, very low noise levels, low installed power input and minimum installation and design planning requirements.

The units are produced in two sizes: **DUPLEX 770 Inter-H** and **1000 Inter-H**.

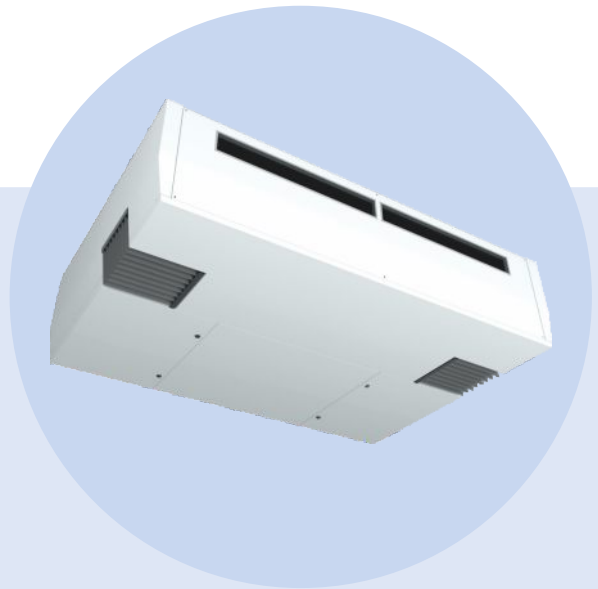
The units are fitted with the top-of-the-range ATREA aMotion control system for running all necessary functions.

DUPLEX Inter-H units include flexibly mounted EC fans, a counterflow heat recovery exchanger, a slide-out supply air filter, a heat recovery exchanger bypass, self-powered shut-off dampers and a control box. The drainless condensate pan is heated using an electric cell with automatic switching function.

In the unit there are placed splitter acoustic attenuators, exhaust and supply filter and integrated CO<sub>2</sub> sensor as a standard.

## Compliance with European standards

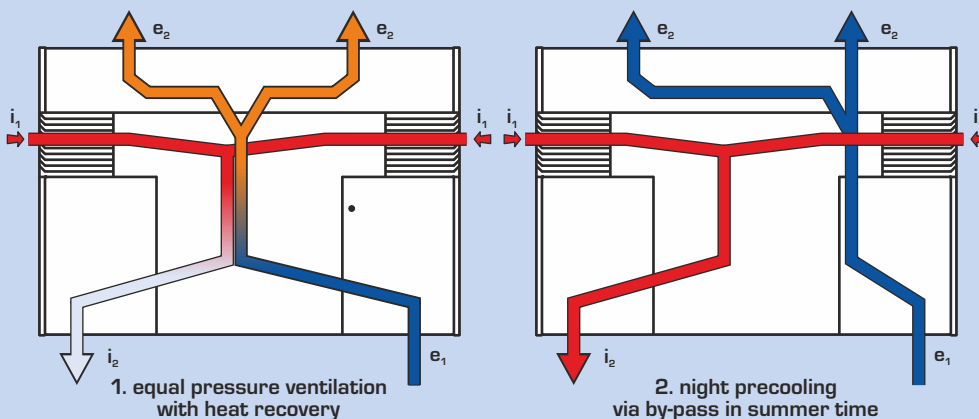
- Commission (EU) Regulation No. 1253/2014 (Ecodesign) for 2018
- Casing characteristics according to EN 1886
- EC motors compliant with ErP 2015
- Hygienic design according to VDI 6022



## Advantages of DUPLEX Inter-H units

- The most silent school unit on the market – sound pressure 29 dBA at a flow rate of 650 m<sup>3</sup>/h
- Air flow up to 1100 m<sup>3</sup>/h
- High heat recovery efficiency of up to 93 %
- Height only 550 mm
- Demanding condensate drainage eliminated (!)
- Integrated preheater as standard included in the unit price
- Integrated infrared CO<sub>2</sub> sensor included in the unit price
- 4 options of the connection port position (to be decided at the installation)
- An option for unit to be partly installed in the suspended ceiling (to be decided at the installation)
- Quick and easy installation – original installation kit
- Unit to be split into 2 parts for easier handling and manipulation (through the door)
- Interior design – additional cladding option installation after the unit has been commissioned after the very final phase of the construction works
- Optional reheater – easily to be fitted additionally
- Full bypass for free-cooling (heat recovery exchanger is 100% bypassed)
- Built-in aMotion controls – web server, ModBus, remote service access, alarm notification, optional controllers
- Service switch – disconnects the unit from power supply
- Limit switch (automatically switches off the unit when the door is opened)
- VDI 6022 – manufactured in full compliance with requirements

## OPERATING MODES



## SELECTION SOFTWARE



For the detailed design of DUPLEX series units, accessories and control systems we recommend using our dedicated design software. You can find it on our website at [www.atrea.eu](http://www.atrea.eu).



VENTILATION UNITS WITH HEAT RECOVERY

ATREA s.r.o., Čs. armády 32  
466 05 Jablonec n. Nisou  
Czech Republic



Phone: +420 483 368 111  
Fax: +420 483 368 112  
E-mail: [export@atrea.com](mailto:export@atrea.com)

[www.atrea.eu](http://www.atrea.eu)

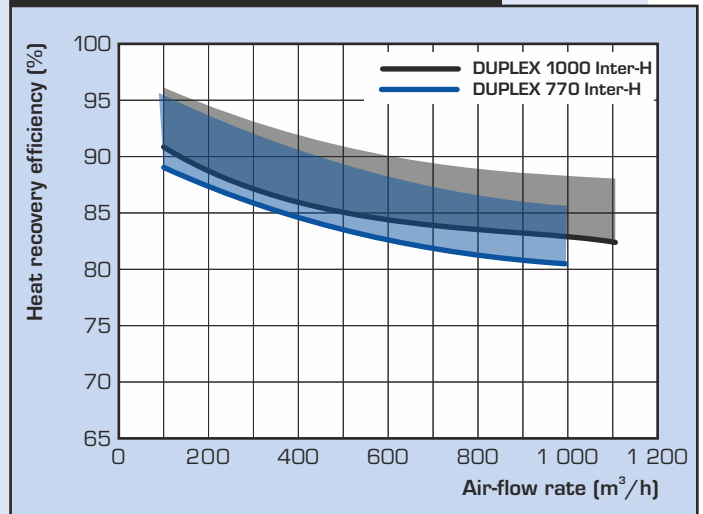
# PERFORMANCE GRAPHS

## TECHNICAL DATA

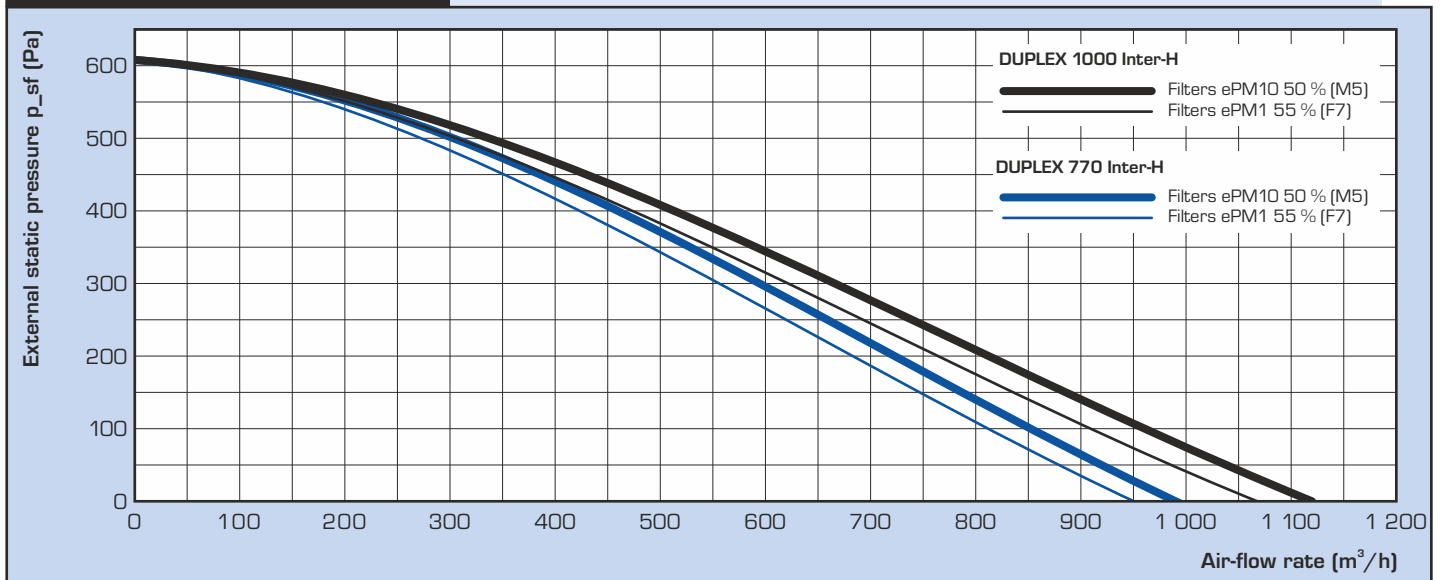
| DUPLEX Inter-H                         |                   | 770   | 1 000 |
|--|-------------------|---|-------|
| Maximal air-flow rate                  | m <sup>3</sup> /h | 950   | 1,100 |
| Nominal air-flow rate                  | m <sup>3</sup> /h | 730   | 950   |
| Heat recovery efficiency <sup>1)</sup> | %                 | up to 93 %  |       |
| Power consumption – fans               | W                 | see graph   |       |
| Electric preheater                     | W                 | 2,200   |       |
| Voltage                                | V                 | 230   |       |
| Frequency                              | Hz                | 50  |       |
| Fan speed – max                        | min <sup>-1</sup> | 1,910   |       |
| Filter class                           | -                 | ePM10 50 % (M5) / ePM10 50 % (M5),<br>optional ePM1 55 % (F7) |       |
| Electric reheater                      | W                 | optional  |       |
| Built-in control system – auto         | -                 | CO <sub>2</sub>   |       |
| 100 % by-pass                          | -                 | standard  |       |
| Weight                                 | kg                | 267   | 278   |

<sup>1)</sup> According to air volume

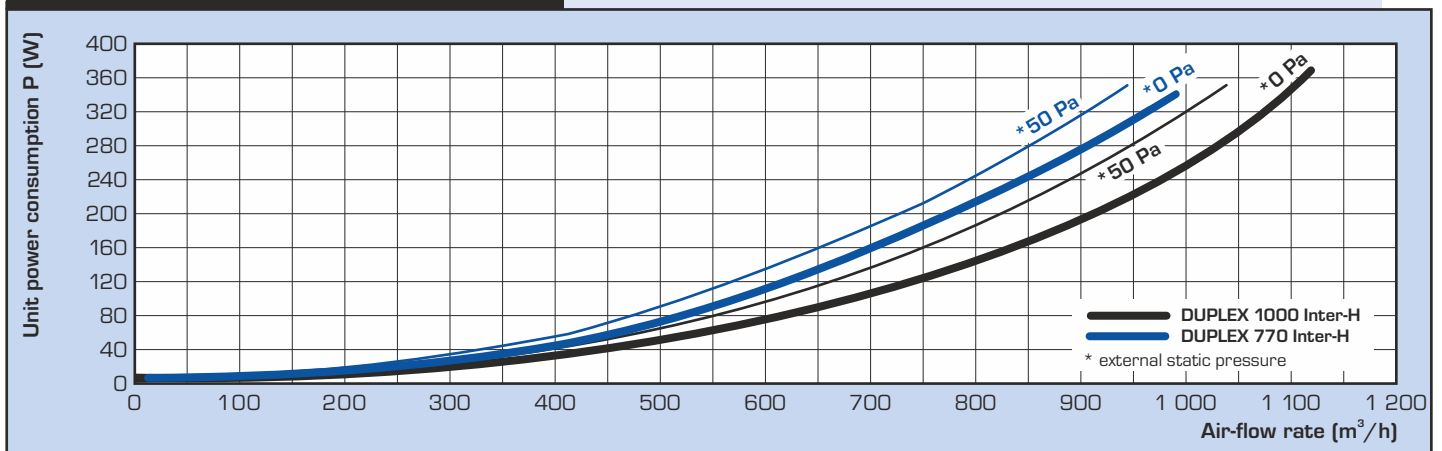
## HEAT RECOVERY EFFICIENCY



## PERFORMANCE SUMMARY



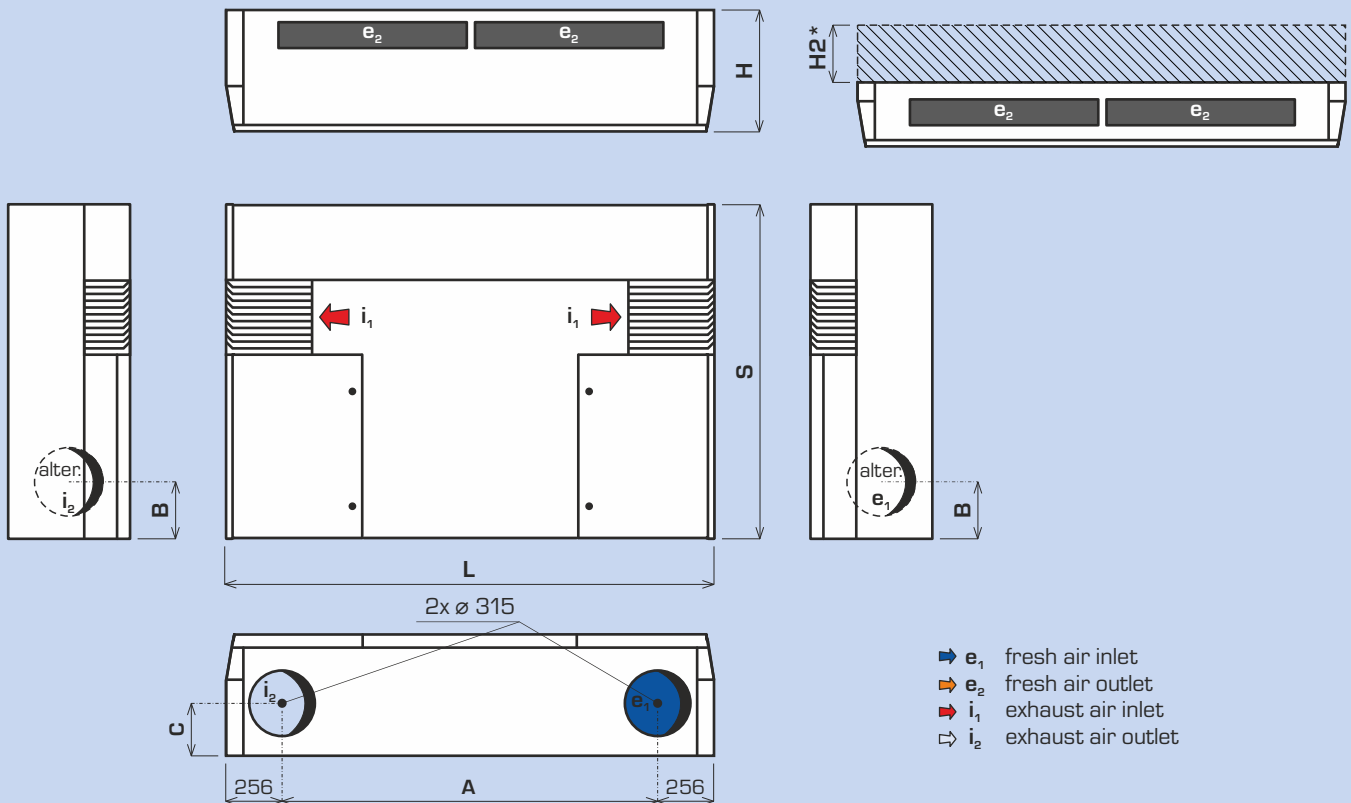
## POWER INPUT CHARACTERISTICS



# BASIC DIMENSIONS

## BASIC DIMENSIONS

Front panel can be turned over as an option when the unit is partly installed in the suspended ceiling

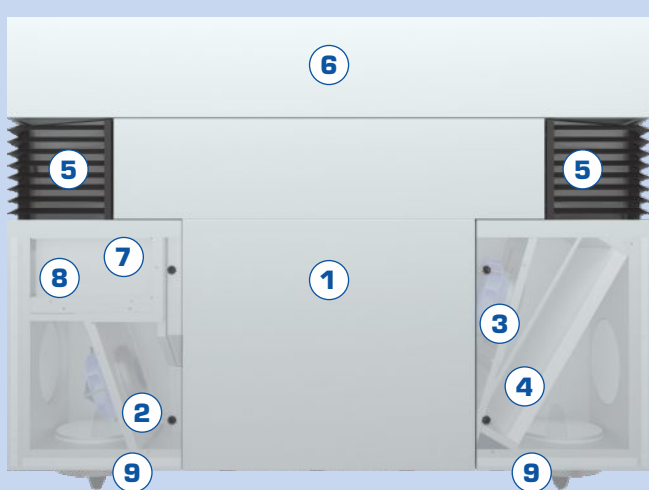


- ➔ e<sub>1</sub> fresh air inlet
- ➔ e<sub>2</sub> fresh air outlet
- ➔ i<sub>1</sub> exhaust air inlet
- ➔ i<sub>2</sub> exhaust air outlet

\* The lowest possible edge of the suspended ceiling

| Unit DUPLEX  |    | L     | S     | H   | H2       | A     | B   | C   |
|--------------|----|-------|-------|-----|----------|-------|-----|-----|
| 770 Inter-H  | mm | 1,940 | 1,527 | 550 | max. 315 | 1,428 | 320 | 227 |
| 1000 Inter-H | mm | 2,222 | 1,527 | 550 | max. 315 | 1,710 | 320 | 227 |

## BASIC COMPONENTS



### Legend:

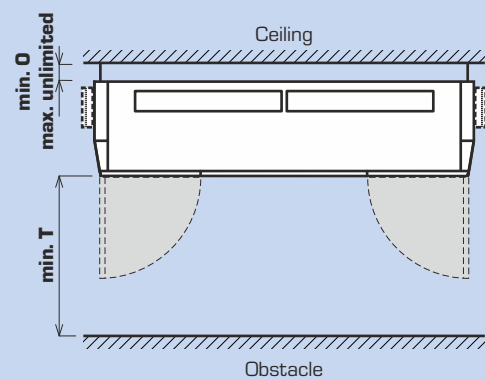
- 1 Counter-flow plastic exchanger
- 2 EC fan (exhaust)
- 3 EC fan (supply)
- 4 Supply air filter
- 5 Exhaust air filter
- 6 Supply splitter acoustic attenuators
- 7 Control box
- 8 Main switch
- 9 Mechanical shut off dumpers with return springs

## HANDLING SPACE

DUPLEX Inter-H units must be installed with the prescribed handling space around the unit in mind.

Handling space under the unit must be maintained for opening the front door, replacing filters and providing servicing and installation access to each unit part.

Each drawing shows the minimum handling space.



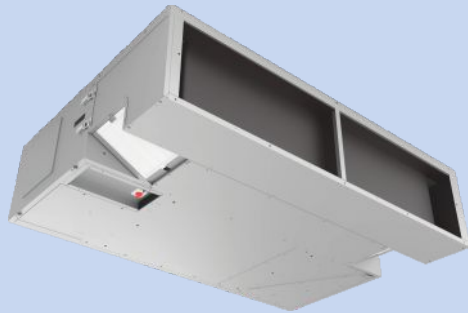
| Unit DUPLEX  |    | T   |
|--------------|----|-----|
| 770 Inter-H  | mm | 690 |
| 1000 Inter-H | mm | 690 |

# UNIT CASING

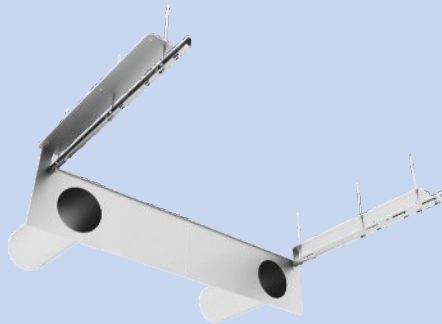
## UNIT CASING OPTIONS

### BASIC COMPONENTS

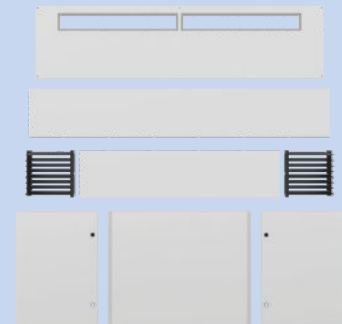
The units can be supplied in various ports configurations. Possible configurations and related order numbers can be found in the diagrams below.



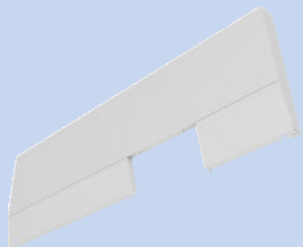
DUPLEX Inter-H (zinc, ready for casing)



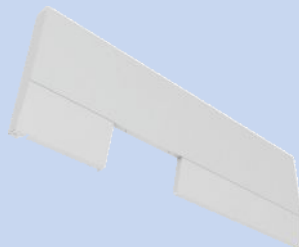
Mounting accessories incl. connection ducts



Unit casing - white colour - main parts



Unit casing - white colour - left side - full



Unit casing - white colour - right side - full



Unit casing - white colour - left side - open



Unit casing - white colour - right side - open

**TOP VIEW (FLOOR PLAN)**

|  | 770     | 1000    |
|--|---------|---------|
| DUPLEX Inter-H (incl. preheater, zinc, ready for casing) | A351001 | A351000 |
| Mounting accessories incl. connection ducts              | A351010 |         |
| Unit casing - white colour - main parts                  | A351025 | A351020 |
| Unit casing - white colour - right side - full           | A351021 |         |
| Unit casing - white colour - left side - full            | A351023 |         |

**TOP VIEW (FLOOR PLAN)**

|  | 770     | 1000    |
|--|---------|---------|
| DUPLEX Inter-H (incl. preheater, zinc, ready for casing) | A351001 | A351000 |
| Mounting accessories incl. connection ducts              | A351010 |         |
| Unit casing - white colour - main parts                  | A351025 | A351020 |
| Unit casing - white colour - right side - open           | A351022 |         |
| Unit casing - white colour - left side - full            | A351023 |         |

**TOP VIEW (FLOOR PLAN)**

|  | 770     | 1000    |
|--|---------|---------|
| DUPLEX Inter-H (incl. preheater, zinc, ready for casing) | A351001 | A351000 |
| Mounting accessories incl. connection ducts              | A351010 |         |
| Unit casing - white colour - main parts                  | A351025 | A351020 |
| Unit casing - white colour - right side - full           | A351021 |         |
| Unit casing - white colour - left side - open            | A351024 |         |

**TOP VIEW (FLOOR PLAN)**

|  | 770     | 1000    |
|--|---------|---------|
| DUPLEX Inter-H (incl. preheater, zinc, ready for casing) | A351001 | A351000 |
| Mounting accessories incl. connection ducts              | A351010 |         |
| Unit casing - white colour - main parts                  | A351025 | A351020 |
| Unit casing - white colour - right side - open           | A351022 |         |
| Unit casing - white colour - left side - open            | A351024 |         |

## DETAIL OF INSTALLATION AND FACADE PENETRATION

**1** DUPLEX Inter-H

**2** Suspension rail \*

the connecting material for mounting the suspension rail is not part of the delivery, the unit can be suspended from the ceiling with any distance between the ceiling and the unit

**3** Counter-flow flap (2x) \*\*

also serves as an internal coupling between the unit port and the pipe bushing, part of the delivery

**4** Mounting sheet metal template \*

**5** Facade outlet

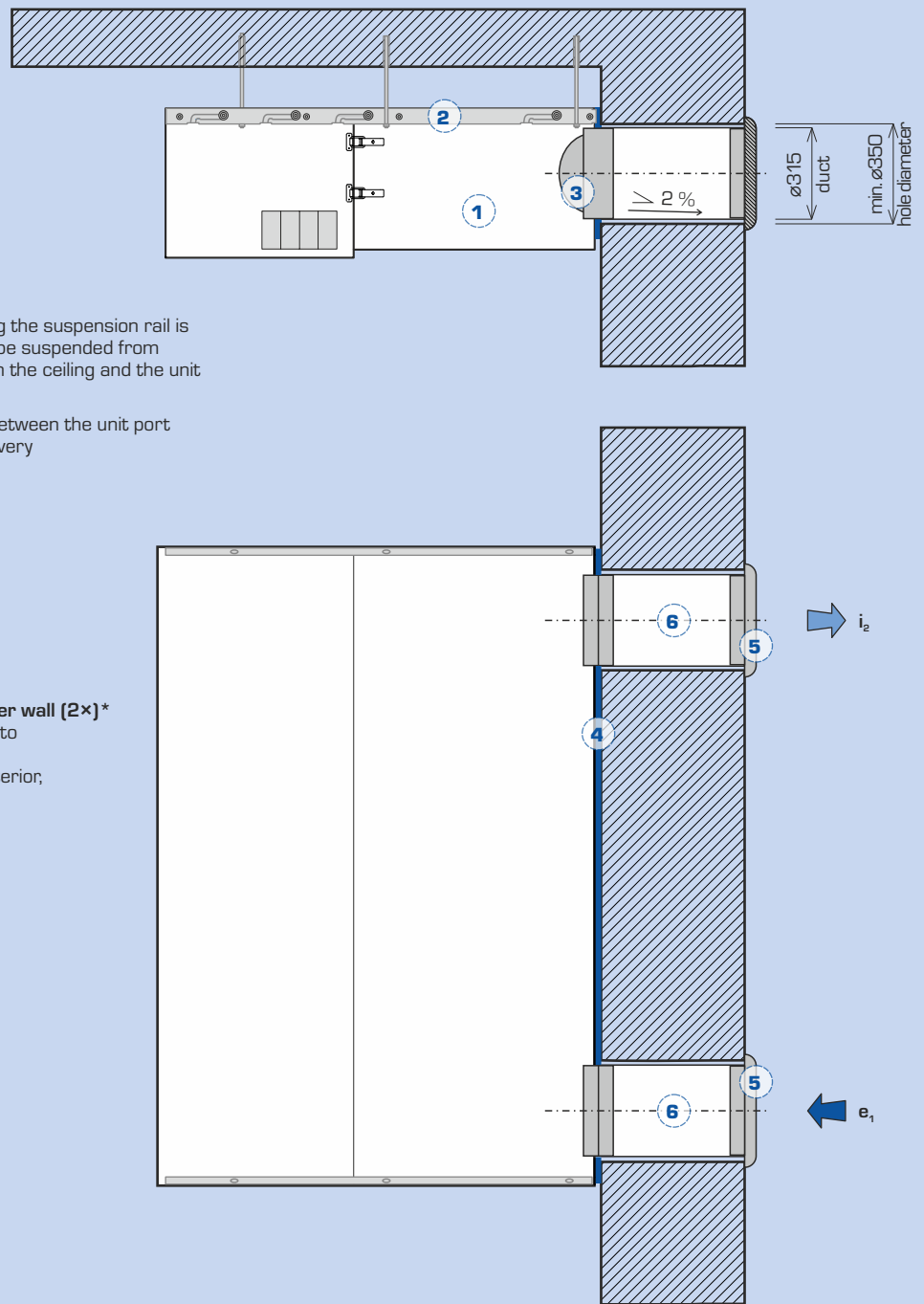
not a part of the delivery

**6** Duct passage through the perimeter wall (2x) \*

length 700 mm,  $\varnothing 315$  mm, shorten to the required length during assembly, install at a 2% slope towards the exterior, fix with low-expansion PU foam, min. diameter of the hole in the perimeter wall 350 mm

\* Part of the delivery

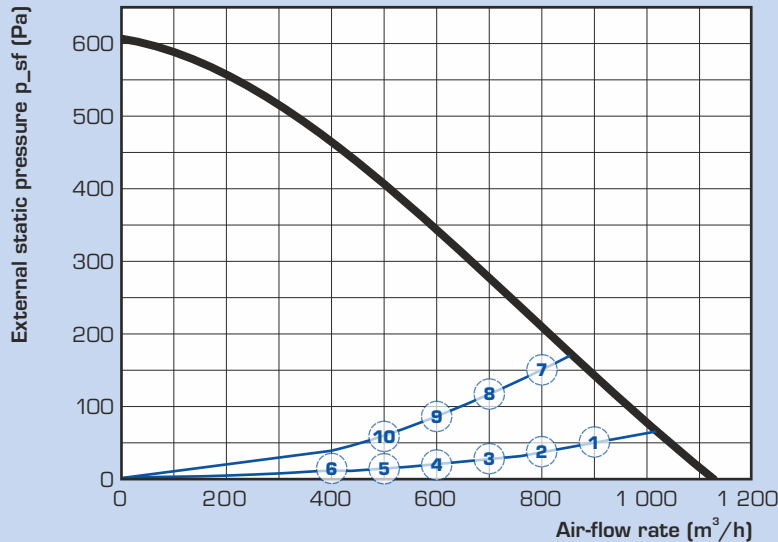
\*\* Part of the unit



## DUPLEX 1000 INTER-H

The acoustic power to surrounding with ePM10 50 % (M5) filters

| Acoustic power                           | Flow rate [m <sup>3</sup> /h] | External pressure [Pa] | L <sub>WA</sub> [dB(A)] | L <sub>w</sub> [dB] |        |        |        |         |         |         |         | L <sub>pA</sub> 3 m [dB(A)] | L <sub>pA</sub> 1 m [dB(A)] |
|--|-------------------------------|------------------------|-------------------------|---------------------|--------|--------|--------|---------|---------|---------|---------|-----------------------------|-----------------------------|
|  |                               |                        |                         | 63 Hz               | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |                             |                             |
| L <sub>WA</sub> to surrounding - point 1 | 900                           | 50                     | <b>41</b>               | 56                  | 55     | 45     | 28     | <25     | <25     | <25     | <25     | <b>21</b>                   | <b>30</b>                   |
| L <sub>WA</sub> to surrounding - point 2 | 800                           | 40                     | <b>39</b>               | 55                  | 52     | 44     | 26     | <25     | <25     | <25     | <25     | <b>19</b>                   | <b>28</b>                   |
| L <sub>WA</sub> to surrounding - point 3 | 700                           | 30                     | <b>38</b>               | 54                  | 51     | 43     | <25    | <25     | <25     | <25     | <25     | <b>18</b>                   | <b>27</b>                   |
| L <sub>WA</sub> to surrounding - point 4 | 600                           | 22                     | <b>36</b>               | 51                  | 50     | 39     | <25    | <25     | <25     | <25     | <25     | <b>16</b>                   | <b>25</b>                   |
| L <sub>WA</sub> to surrounding - point 5 | 500                           | 15                     | <b>34</b>               | 48                  | 49     | 35     | <25    | <25     | <25     | <25     | <25     | <b>14</b>                   | <b>23</b>                   |
| L <sub>WA</sub> to surrounding - point 6 | 400                           | 10                     | <b>33</b>               | 45                  | 48     | 31     | <25    | <25     | <25     | <25     | <25     | <b>13</b>                   | <b>22</b>                   |

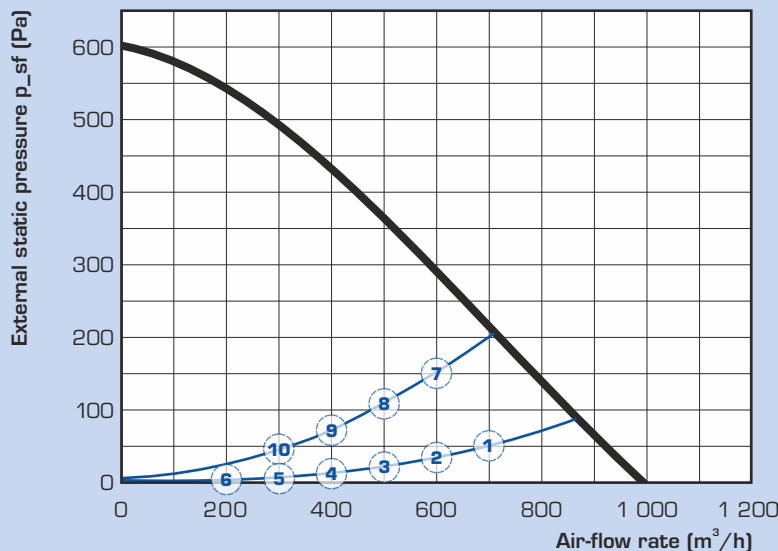


| Working point | Sound pressure at distance of 3 m / 1 m [dBA] |
|---------------|---|
| 1             | 21 / 30                                       |
| 2             | 19 / 28                                       |
| 3             | 18 / 27                                       |
| 4             | 16 / 25                                       |
| 5             | 14 / 23                                       |
| 6             | 13 / 22                                       |
| 7             | 20 / 29                                       |
| 8             | 18 / 28                                       |
| 9             | 17 / 26                                       |
| 10            | 15 / 25                                       |

## DUPLEX 770 INTER-H

The acoustic power to surrounding with ePM10 50 % (M5) filters

| Acoustic power                           | Flow rate [m <sup>3</sup> /h] | External pressure [Pa] | L <sub>WA</sub> [dB(A)] | L <sub>w</sub> [dB] |        |        |        |         |         |         |         | L <sub>pA</sub> 3 m [dB(A)] | L <sub>pA</sub> 1 m [dB(A)] |
|--|-------------------------------|------------------------|-------------------------|---------------------|--------|--------|--------|---------|---------|---------|---------|-----------------------------|-----------------------------|
|  |                               |                        |                         | 63 Hz               | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |                             |                             |
| L <sub>WA</sub> to surrounding - point 1 | 700                           | 50                     | <b>43</b>               | 60                  | 55     | 48     | 34     | <25     | <25     | <25     | <25     | <b>23</b>                   | <b>32</b>                   |
| L <sub>WA</sub> to surrounding - point 2 | 600                           | 37                     | <b>42</b>               | 57                  | 55     | 48     | 33     | <25     | <25     | <25     | <25     | <b>22</b>                   | <b>31</b>                   |
| L <sub>WA</sub> to surrounding - point 3 | 700                           | 26                     | <b>41</b>               | 56                  | 54     | 43     | 32     | <25     | <25     | <25     | <25     | <b>21</b>                   | <b>30</b>                   |
| L <sub>WA</sub> to surrounding - point 4 | 600                           | 16                     | <b>40</b>               | 56                  | 54     | 44     | 31     | <25     | <25     | <25     | <25     | <b>20</b>                   | <b>29</b>                   |
| L <sub>WA</sub> to surrounding - point 5 | 500                           | 9                      | <b>40</b>               | 55                  | 53     | 43     | 31     | <25     | <25     | <25     | <25     | <b>19</b>                   | <b>29</b>                   |
| L <sub>WA</sub> to surrounding - point 6 | 400                           | 4                      | <b>39</b>               | 55                  | 48     | 42     | 31     | <25     | <25     | <25     | <25     | <b>19</b>                   | <b>28</b>                   |



| Working point | Sound pressure at distance of 3 m / 1 m [dBA] |
|---------------|---|
| 1             | 23 / 32                                       |
| 2             | 22 / 31                                       |
| 3             | 21 / 30                                       |
| 4             | 20 / 29                                       |
| 5             | 19 / 29                                       |
| 6             | 19 / 28                                       |
| 7             | 25 / 34                                       |
| 8             | 21 / 31                                       |
| 9             | 20 / 29                                       |
| 10            | 19 / 28                                       |

## DUPLEX INTER - BASIC UNIT

### DUPLEX Inter-H



#### DUPLEX Inter-H

The basic compact unit configuration includes supply and extractor fans with free-running impeller and anti-vibration mounting, a removable counterflow heat recovery exchanger from thin-walled plastic panels, slide-out supply and extraction air filters (filter class ePM10 50 % (M5) or ePM1 55 % (F7)) and a condensate pan. The door provide easy access to all integrated components.



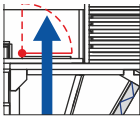
#### Fans

DUPLEX Inter-H units feature high-efficiency fans with free-running impeller and backward-curved blades. The fans comply with the requirements of the ErP 2015 European standard.



#### Heat recovery exchanger

The counterflow-type heat recovery exchanger is made of plastic and is highly efficient. The efficiency rates of plastic heat recovery exchangers in DUPLEX Inter-H are up to 93 %.



#### Bypass damper

A plate heat recovery exchanger bypass including actuator. When the bypass opens, the flow through the heat recovery exchanger automatically closes to eliminate heat transfer.



#### Electric pre-heater

2.2 kW electric pre-heaters EDO.INT 2,2 are included as standard in the basic configuration of DUPLEX Inter-H unit. Preheating is operated by the unit's control system in such a way so as to prevent heat recovery exchanger freezing.



#### CO<sub>2</sub> concentration sensor

DUPLEX Inter-H units include a CO<sub>2</sub> concentration sensor as a standard basic configuration feature. It is an NDIR type sensor with infrared sensor and is integrated in the unit in the exhaust air intake. It enables coupled control based on current room occupancy.

## DUPLEX INTER-H - OPTIONAL ACCESSORIES



- Electric re-heaters EDO.INT and 1,1 EDO.INT 2,2 are determined for supply air re-heating with power of up to 2.2 kW
- Designed for **integration in the unit** as an optional accessory to be installed at the set position inside the unit including the mounting frame

## OVERVIEW OF ORDER NUMBERS FOR DUPLEX INTER-H

|  |   |                  |  |  |   |
|--|---|------------------|--|--|---|
|  | <b>DUPLEX 770 Inter-H</b><br>(incl. preheater, zinc, ready for casing)      | Ord. No. A351001 |  | <b>aTouch 4,3</b><br>controller with 4.3" color touch screen<br>(for aMotion L, E regulation)            | Ord. No. A145500                                    |
|  | <b>DUPLEX 1000 Inter-H</b><br>(incl. preheater, zinc, ready for casing)     | Ord. No. A351000 |  |  |   |
|  | <b>Mounting accessories</b><br>incl. connection ducts                       | Ord. No. A351010 |  | <b>aDot (B)</b><br>design controller with display - basic print - black<br>(for aMotion L, E regulation) | Ord. No. A145550                                    |
|  | <b>Electric heater EDO.INT 1,1 kW</b><br>(770 IH, for additional assembly)  | Ord. No. A351013 |  | <b>aDot (W)</b><br>design controller with display - basic print - white<br>(for aMotion L, E regulation) | Ord. No. A145551                                    |
|  | <b>Electric heater EDO.INT 2,2 kW</b><br>(1000 IH, for additional assembly) | Ord. No. A351011 |  |  |   |
|  | <b>Unit casing - white colour - main parts</b><br>(770 IH)                  | Ord. No. A351025 |  | <b>FK 1000 INT - M5</b>  | Ord. No. A351090                                    |
|  | <b>Unit casing - white colour - main parts</b><br>(1000 IH)                 | Ord. No. A351020 |  |  | <b>FK 1000 INT - F7</b>                             |
|  | <b>Unit casing - white colour - right side - full</b>                       | Ord. No. A351021 |  |  | <b>FK 900 cartridge M5</b><br>(900, 1000 M, 800 ME) |
|  | <b>Unit casing - white colour - right side - open</b>                       | Ord. No. A351022 |  |  |   |
|  | <b>Unit casing - white colour - left side - full</b>                        | Ord. No. A351023 |  |  |   |
|  | <b>Unit casing - white colour - left side - open</b>                        | Ord. No. A351024 |  |  |   |

# CONTROL SYSTEM

As a standard feature DUPLEX Inter-H units include the top-of-the-range aMotion digital control system enabling remote access through a web-based server.

The aMotion type digital control module is the latest in operation control. It provides all basic functions and also includes a wide range of other inputs and outputs for connection to sensors. All optional components including the power supply are connected through the terminal board on the top section of the unit.

Also included as standard is a built-in smoke detector which disconnects the unit if smoke is drawn in.

## AMOTION CONTROL SYSTEM FOR DUPLEX INTER-H UNITS

### Control system „aMotion“

#### Standard functions of the aMotion control system

- EC fan speed control (according to mode settings)
- Automatic bypass damper position control (heat and cold recovery)
- Critical condition assessment and prevention based on temperature readings
- Weekly ventilation programme and temperature setting
- A built-in web server and Ethernet interface for communication with remote access through the Internet
- 4 contact inputs
- Power inputs for switching using 230 V voltage (4 inputs - 3 delayed, 1 immediate)
- An option to connect two CO<sub>2</sub> or relative humidity sensors, up to two sensors with a contact or 0-10 V input
- Outputs for controlling the electrical pre-heater and heater (impulse switching by 10 V) or hot-water air heater (controlled by 0-10 V signal)
- Operation of the unit in selected modes - balanced-pressure ventilation / night pre-cooling / overpressure ventilation
- Automatic switching between modes according to temperature settings
- Power control according to current CO<sub>2</sub> concentration including automatic power increase
- Automatic switching between heating and non-heating seasons
- Web server / ModBUS communication as a standard feature

#### BACnet / KNX converter

- An optional converter for connection to a parent system using a BACnet or KNX protocol

#### CO<sub>2</sub> concentration

- Optional sensor-based automatic operation - CO<sub>2</sub> concentration (one sensor supplied), another air quality, relative humidity or VOC sensor can be connected (optional accessory)

#### EPS

- Optional EPS signal connection (electronic fire alarm signal) for disconnecting the unit in the event of fire alarm

#### Smoke detector

- A built-in smoke detector is also a standard feature of the unit

#### aTouch (touch-screen)



#### aDot (touch-screen)



#### aSpace (internet interface)



#### CO<sub>2</sub> sensor (1× as standard)

