

KRUGER

**DECENTRALIZED HEAT
RECOVERY UNIT**

PURECLASS SERIES



**SMART VENTILATION
SYSTEMS**



**HEAT
RECOVERY**



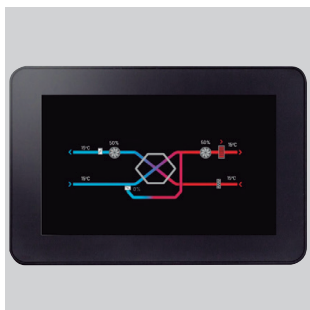
**LOW PROFILE
EASY INSTALLATION**



Applications

Decentralized Heat Recovery Unit features a Eurovent-certified heat exchanger (up to 92% efficiency) and energy efficient with EC motors.

The unit provides continuous ventilation by extracting stale air and supplying fresh filtered air, making it ideal for improving indoor air quality in schools, offices, and public buildings. Requires no ductwork, simplifying installation, especially in existing buildings without a ventilation system.



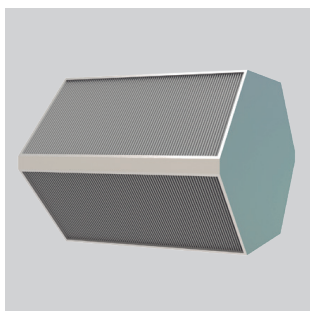
Remote controller (ETD)

5" Touch display.
The remote panel is not included and have to be order separately. One remote controller can manage up to 5 PURECLASS 800 CL units.



Installer friendly

Simple access to all the components. The integrated condensation pump allows the installation at a distance from the building's drainage pipes.



Aluminium heat exchanger

High efficient sensible heat exchanger (up to 92%).

Construction

Casing : Made of a self-supporting structure composed of two layers: Inner layer of galvanized steel with internal M1 thermo-acoustic insulation of melamine foam 10 mm. thickness, 9,5 kg/m3 density and outer layer made of aluminum white RAL-9003 painted.

Access to filters and fans : through the existing hinged doors in the lower side of the equipment.

Installation : Included 4 brackets for ceiling fixing.
Heat recovery: High efficiency counter-flow heat exchanger made in Aluminium.

High efficiency fans : with EC motor including integrated electronic protection. Integrated dampers (Aluminum slats with actuator in supply air side and backdraft damper in exhaust side).

Control

Integrated ADVANCED controller. Main characteristics:

- Airflow manual and automatic adjustment.
- Constant Air Volume without the need to add any accessories.
- Variable Air Volume based on an external 0-10V signal from an external CO2 sensor accessory (PURECLASS CO2 versions incorporate the sensor inside)
- Bypass automatic control for free cooling and heat exchanger frost protection.
- Alarms indication.
- Modbus communication.

Filters

- ISO ePM2.5 98.5% filters (F7 + F9) are used on the supply air side.
- ISO ePM10 50% filter (M5) is used on the extract air side.

By-pass

100% fresh air bypass integrated with manual and automatic control. The bypass is particularly useful when the indoors temperature is higher than outdoors and free cooling is preferable.

Built-in CO2 Sensor

Available upon request for integration in the extraction plenum.

Other data

Single-phase electrical supply 230V 50Hz. Nominal airflow of 800 m³/h with clean filter

DECENTRALIZED HEAT RECOVERY UNIT PURECLASS 800 CL

KRUGER

Versatile installation

Suitable for ceiling and false ceiling installation.



REFERENCE

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | U | R | E | C | L | A | S | S | 8 | 0 | 0 | C | L | Ø | C | O | 2 | C | P | F | 7 | F | 9 |
| 1 | | | | | | | | | 2 | | | 3 | | 4 | 5 | | | 6 | 7 | | | | |

- 1 - Serie:**
PURECLASS: High efficiency decentralized heat recovery units
- 2 - Size:**
800: Nominal airflow 800 m³/h
- 3 - Type of installation**
CL : Version for ceiling installation
- 4 - Coils configuration:**
Ø: Without coils
- 5 - CO₂ sensor**
Ø: Without integrated CO₂ sensor. Compatible with external room sensors (accessories)
CO2: With integrated CO₂ sensor in the extract air side (located into the unit)
- 6 - Condensate collection system**
CP: Integrated condensation pump
- 7 - Filters configuration**
F7 F9: Filters included in the unit:
 - Supply air: ISO ePM2.5 98.5% filters (F7+F9)
 - Extract air: ISO ePM10 50% filter (M5)

TECHNICAL CHARACTERISTICS

| Model | Airflow rate (m³/h) | | Heat exchanger efficiency* ¹ (%) | Sound level dB(A)* ² | | Weight (kg) |
|---------------------------|---------------------|-----------------|---|---------------------------------|-------------------------------|-------------|
| | Nominal | Maximum (Boost) | | Nominal airflow* ³ | Maximum (Boost)* ⁴ | |
| PURECLASS 800 CL CP F7 F9 | 800 | 1000 | 84,5 | 35 | 42 | 152 |

*1 Wet efficiency referred to nominal airflow. Outdoor -5°C 80% Rel.Hum. Indoor 20°C 50%.

*2 Sound pressure level, measured in a free field, at a distance of 3 m.

*3 800 m³/h with clean filters.

*4 1000 m³/h with clogged filters (maximum fan speed).

ELECTRICAL DATA

| Model | Voltage | Fans absorbed power | | Maximum absorbed current (A) |
|---------------------------|-----------|---------------------------|---------------------------|------------------------------|
| | | Nominal* ¹ (W) | Maximum* ² (W) | |
| PURECLASS 800 CL CP F7 F9 | 230V 50Hz | 246 | 518 | 2,2 |

*1 800 m³/h with clean filters. Both fans included.

*2 Maximum speed (boost mode) and clogged filters. Both fans included.

ACOUSTIC DATA RELATIVE TO THE SOUND POWER RADIATED BY THE CASING

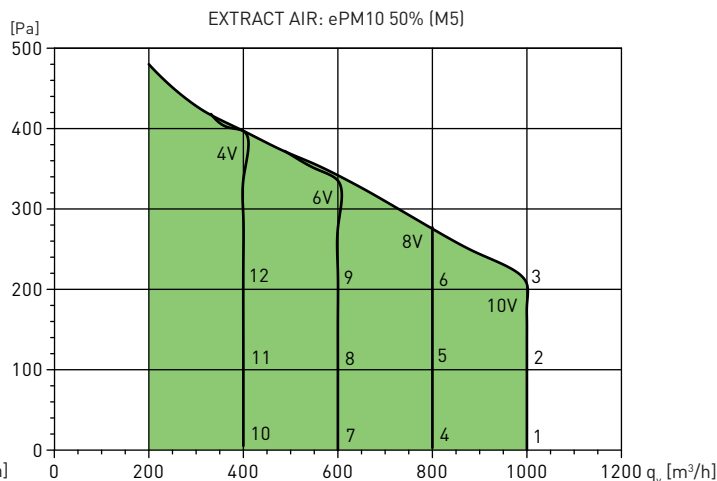
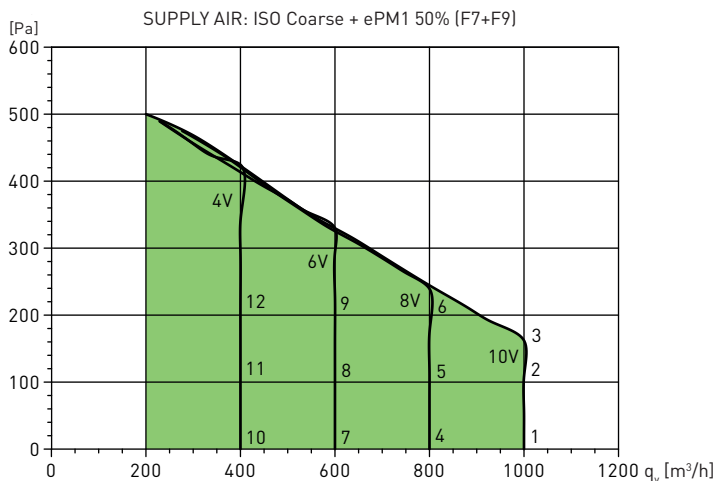
| Airflow (m³/h) | Sound power Lw (dB(A)) | | | | | | | | | Sound pressure Lp* (dB(A)) |
|----------------|------------------------|--------|--------|--------|---------|---------|---------|---------|-------|----------------------------|
| | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Total | |
| 500 | 32 | 35 | 47 | 42 | 39 | 29 | 30 | 28 | 49 | 28 |
| 800 | 43 | 46 | 51 | 51 | 48 | 42 | 37 | 32 | 56 | 35 |
| 1000 | 49 | 52 | 53 | 55 | 52 | 44 | 39 | 32 | 60 | 38 |

* Sound pressure level in dB(A), measured at 3 m. distance in free field, with clean filters.

CHARACTERISTIC CURVES

- q_v = Flow rate [m³/h].
- p_{st} = Static pressure in Pa.
- P_{abs} = Absorbed power [W] per each fan.

PURECLASS 800 CL

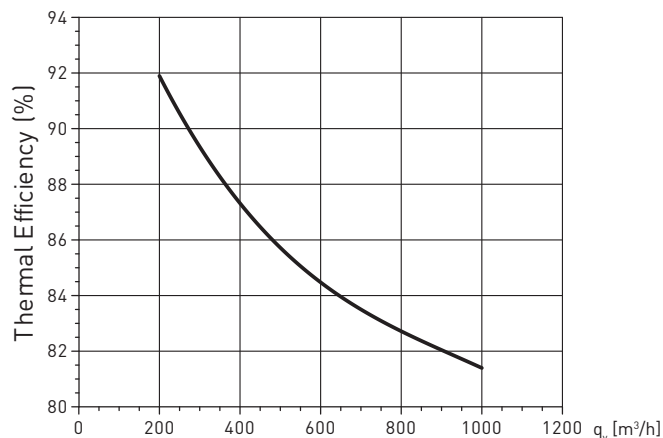


| Point | Fan voltage regulation | Airflow (m³/h) | Static pressure (Pa) | Fan absorbed power (W) | Breakout noise dB(A) | |
|-------|------------------------|----------------|----------------------|------------------------|----------------------|----------------------|
| | | | | | Sound power Lw(A) | Sound pressure Lp(A) |
| 1 | 10V | 1.000 | 0 | 210 | 59 | 38 |
| 2 | 10V | 1.000 | 100 | 259 | 61 | 40 |
| 3 | 10V | 1.000 | 162 | 248 | 63 | 42 |
| 4 | 8V | 800 | 0 | 123 | 56 | 35 |
| 5 | 8V | 800 | 100 | 183 | 59 | 38 |
| 6 | 8V | 800 | 200 | 173 | 61 | 40 |
| 7 | 6V | 600 | 0 | 71 | 49 | 28 |
| 8 | 6V | 600 | 100 | 93 | 54 | 33 |
| 9 | 6V | 600 | 200 | 110 | 59 | 38 |
| 10 | 4V | 400 | 0 | 33 | 46 | 25 |
| 11 | 4V | 400 | 100 | 48 | 51 | 30 |
| 12 | 4V | 400 | 200 | 65 | 56 | 35 |

| Point | Fan voltage regulation | Airflow (m³/h) | Static pressure (Pa) | Fan absorbed power (W) | Breakout noise dB(A) | |
|-------|------------------------|----------------|----------------------|------------------------|----------------------|----------------------|
| | | | | | Sound power Lw(A) | Sound pressure Lp(A) |
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| 2 | 10V | 1.000 | 100 | 259 | 61 | 40 |
| 3 | 10V | 1.000 | 200 | 243 | 63 | 42 |
| 4 | 8V | 800 | 0 | 123 | 56 | 35 |
| 5 | 8V | 800 | 100 | 183 | 58,5 | 38 |
| 6 | 8V | 800 | 200 | 173 | 61 | 40 |
| 7 | 6V | 600 | 0 | 71 | 49 | 28 |
| 8 | 6V | 600 | 100 | 93 | 54 | 33 |
| 9 | 6V | 600 | 200 | 110 | 59 | 38 |
| 10 | 4V | 400 | 0 | 33 | 46 | 25 |
| 11 | 4V | 400 | 100 | 48 | 51 | 30 |
| 12 | 4V | 400 | 200 | 65 | 56 | 35 |

HEAT EXCHANGER PERFORMANCE

EFFICIENCY VS AIRFLOW



Summer conditions

Outside air: 35 °C / 40% R.H.

Extract air: 26 °C / 40% R.H.

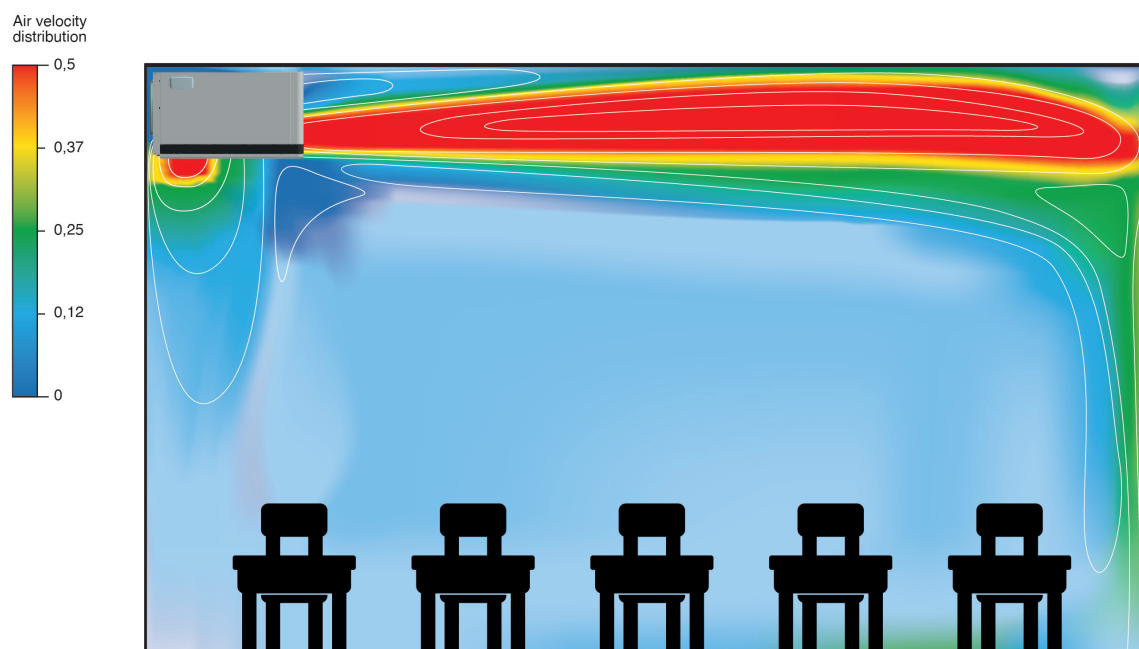
| Air flow (m³/h) | Efficiency (%) | Transferred power (kW) | Air outlet Temperature (°C) | Air outlet Rel. Hum. (%) |
|-----------------|----------------|------------------------|-----------------------------|--------------------------|
| 200 | 91,9 | 0,5 | 26,7 | 64 |
| 400 | 87,3 | 1 | 27,1 | 62,5 |
| 600 | 84,5 | 1,5 | 27,4 | 61,6 |
| 800 | 82,7 | 1,9 | 27,5 | 61 |
| 1000 | 81,4 | 2,4 | 27,6 | 60,6 |

AIR DISTRIBUTION CHARTS

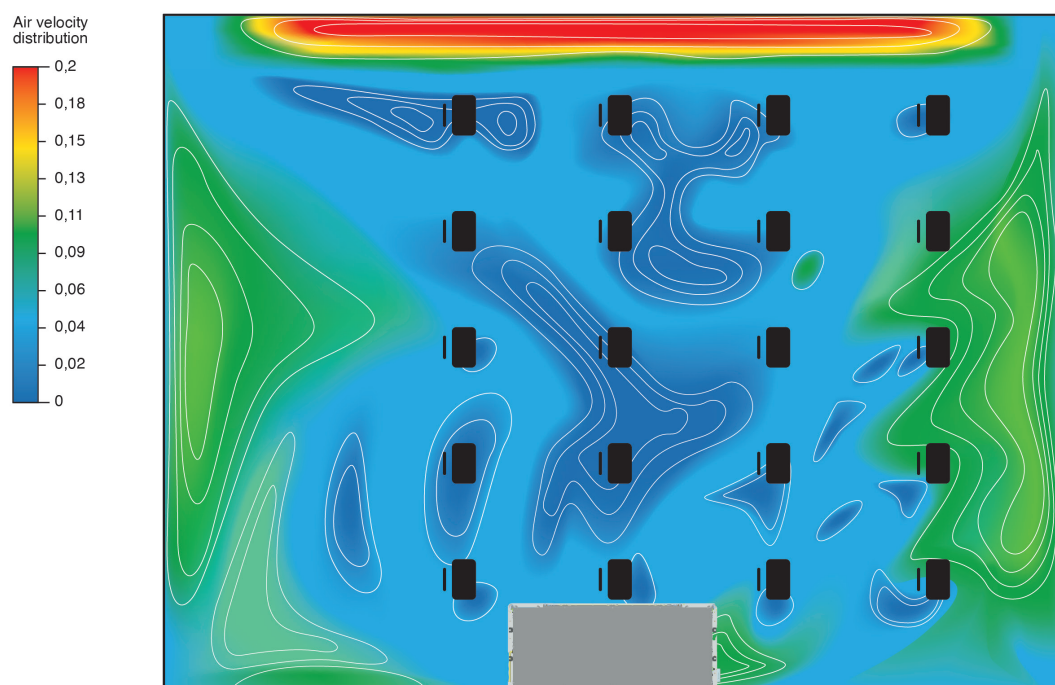
SIMULATION 1:

- 1 unit PURECLASS 800 CL
- Reduced airflow rate (500 m³/h).
- Classroom dimension (LxWxH): 8x6x3,5 m.

Classroom side view

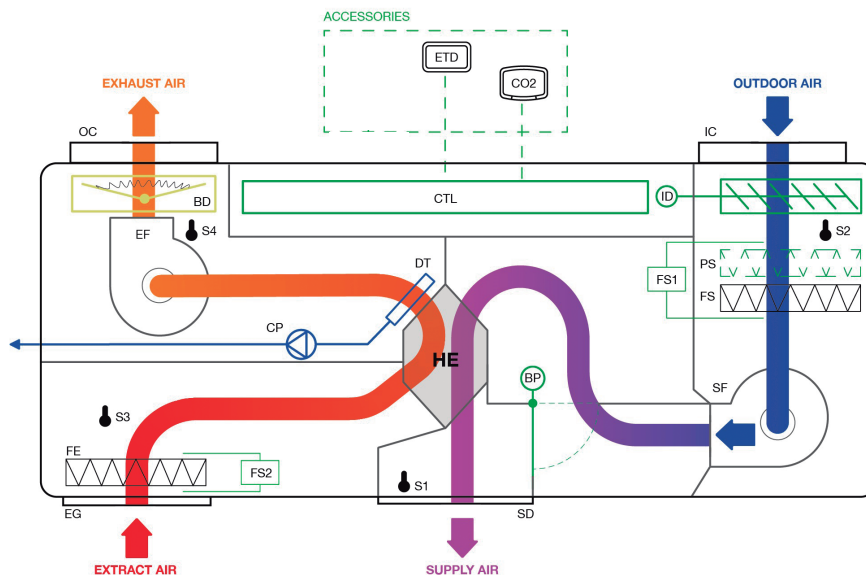


Classroom top view



MAIN COMPONENTS

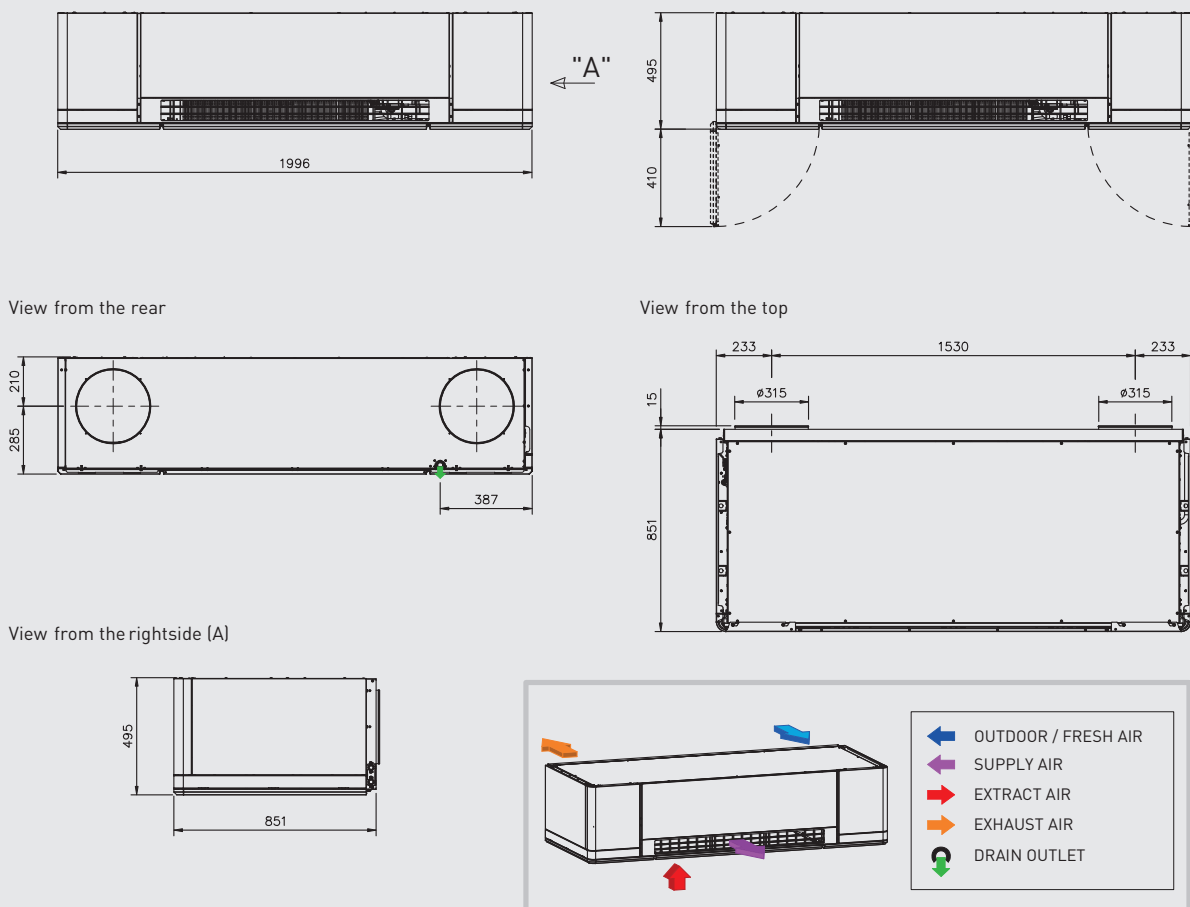
PURECLASS 800 CL
Without heaters



- SF Supply fan
 - EF Extract fan
 - HE Heat exchanger
 - DT Drain tray
 - CP Condensation pump
 - FS Supply air filter
 - PS Supply air prefilter (Accessory)
 - FE Extract air filter
 - BP Bypass damper with actuator
 - BD Backdraft damper (spring)
 - ID Supply air damper with actuator
 - EG Extract air grid*
 - SD Supply air diffuser
 - OC Exhaust air outlet coupling
 - IC Outdoor air inlet coupling
 - CTL ADVANCED controller
 - S1 Supply air temperature probe
 - S2 Outdoor air temperature probe
 - S3 Extract air temperature probe
 - S4 Exhaust air temperature probe
 - F51 Supply air filter clogging detector (Pressure switch)
 - F52 Extract air filter clogging detector (Pressure switch)
 - ETD External touch display (Accessory)
 - CO2 External CO₂ sensor (Accessory)
- NOTE: Schematic position does not correspond to real position in the unit.

DIMENSIONS (mm)

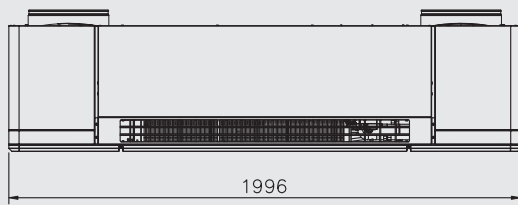
PURECLASS 800 CL



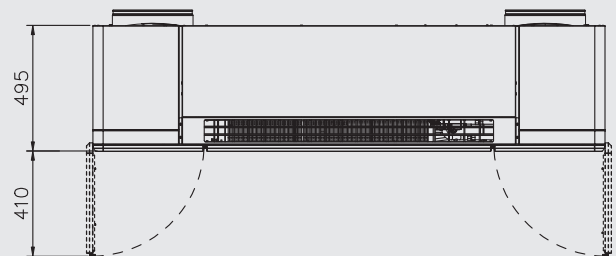
DIMENSIONS (mm)

PURECLASS 800 CL

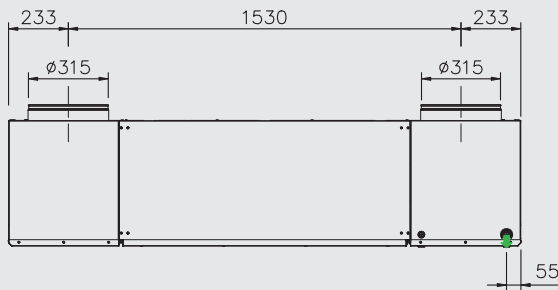
Combined with accessory PB-V1 PURECLASS 800 CL (For outdoor connections on top)



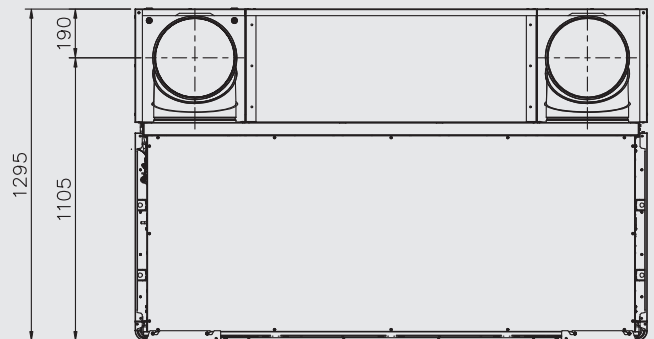
"A"



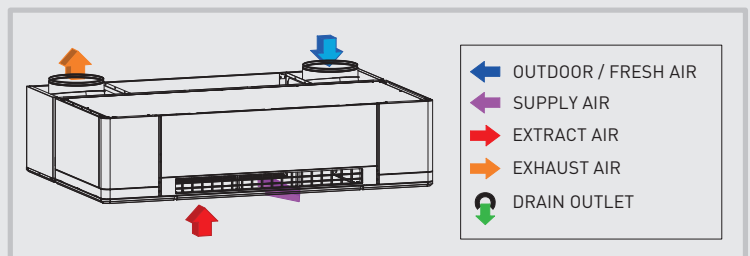
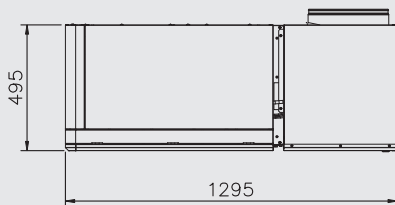
View from the rear



View from the top



View from the rightside ("A")



PLUG & PLAY CONTROL ADVANCED FUNCTIONS

| | ADVANCED |
|--|----------|
| MAIN ELEMENTS | |
| Electrical board including controller and components. | ✓ |
| Remote control with touch panel (including a 10m cable). | ✓ |
| Filter clogging detector pressure switches (2 units). | ✓ |
| Air temperature probes (supply, extract, outdoor and exhaust) | ✓ |
| Bypass actuator. | ✓ |
| FUNCTIONS | |
| Fans adjustments | |
| Automatic airflow adjustment in VAV mode, based on an external 0-10V signal (CO ₂ sensor accessory). | ✓ |
| Automatic fans speed adjustment in CAV mode (Constant Arflow). The fans speed is adjusted to compensate filters fouling. Supply and extract fans independent control allowing the configuration of differents airflow values for each one (no accessories required). | ✓ |
| BOOST* function (high-airflow timed activation via external volt-free contact). | ✓ |
| Automatic airflow adjustment, according to a configurable time schedule (Configurable Timer). | ✓ |
| REMOTE ON/OFF* function via external volt-free contact. | ✓ |
| Temperature regulation | |
| Display of the temperatures in the remote control panel ETD (Accessory). | ✓ |
| Control of the supply temperature by opening the bypass (when the outside temperature allows it). | ✓ |
| Bypass adjustment | |
| Manual opening/closign of bypass. | ✓ |
| Automatic operation of bypass free-cooling function. | ✓ |
| Automatic operation of bypass as part of the heat exchanger defrost strategy. | ✓ |
| SECURITY FUNCTIONS | |
| Control of clogged filters via pressure switches (included). | ✓ |
| Unit supervision with alarms shown in the remote control panel ETD (Accessory). | ✓ |
| Fan failure detection. | ✓ |
| Temperature probes failure detection. | ✓ |
| Fire alarm function*. Activation of a predetermined behaviour of supply and extract fans after receive the input from the building fire switchboard. | ✓ |
| COMMUNICATION | |
| Wired remote control (10m cable). | ✓ |
| Digital input for REMOTE ON/OFF* function. | ✓ |
| Digital input for BOOST* function (High speed timed activation). | ✓ |
| Digital input for FIRE* central integration. | ✓ |
| ALARM digital output. | ✓ |
| Fans status (Run/Stop) digital output. | ✓ |
| Can be integrated into the BMS - Modbus RTU (RS-485). | ✓ |

✓ Available / Included.

✓ Available through ETD (Accessory).

* These functions (Boost, Remote ON/OFF, Fire alarm) are not available for all versions. The number of digital inputs is limited and depends on the version. See the O&M manual to verify the available functions for each version, as well as how to enable them.

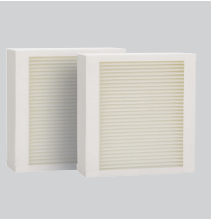
SPECIFIC ACCESSORIES

REMOTE CONTROLLER



ETD
5" Touch display.
The remote panel is not included and have to be order separately. One remote controller can manage up to 5 PURECLASS 800 CL units.

FILTERS

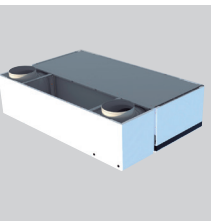


AFR PURECLASS
Filter replacement / accessory.

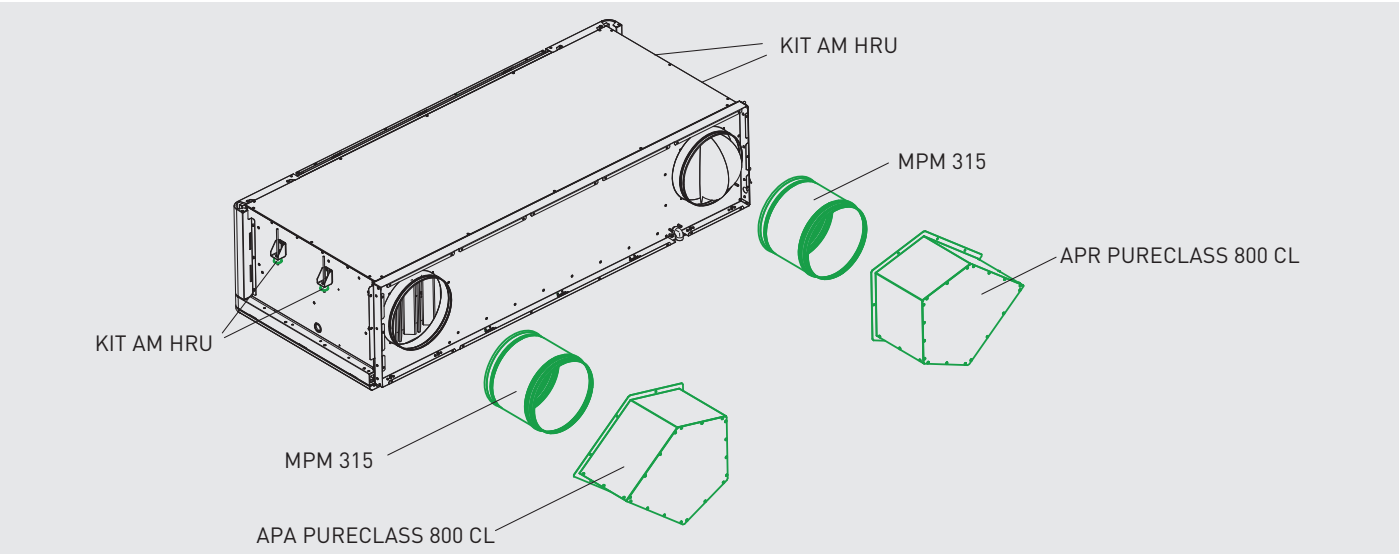
| Side | Filter | Type | | Dimensions | | |
|-------------|-----------------------------|----------------|--------|-------------|------------|------------|
| | | ISO-16890 | EN-779 | Length (mm) | Width (mm) | Frame (mm) |
| Supply air | AFR PURECLASS 800 CL G4-SUP | ISO Coarse 60% | G4 | 441 | 365 | 48 |
| | AFR PURECLASS 800 CL M5-SUP | ePM10 50% | M5 | 441 | 365 | 48 |
| | AFR PURECLASS 800 CL F7-SUP | ePM1 50% | F7 | 441 | 365 | 48 |
| | AFR PURECLASS 800 CL F9-SUP | ePM1 80% | F9 | 441 | 365 | 48 |
| Extract air | AFR PURECLASS 800 CL M5-EXT | ePM10 50% | M5 | 1104* | 158 | 48 |

*The extraction filter is divided into two half-length filters.

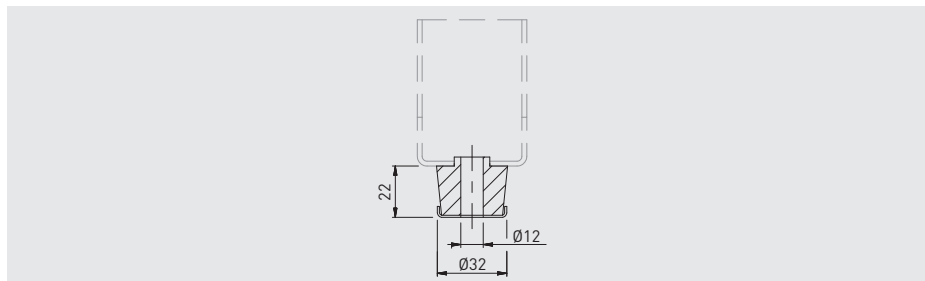
MOUNTING ACCESSORIES



PB-V1 PURECLASS 800 CL
Kit that allows to orient the outdoor air intakes and exhaust discharge towards the top.

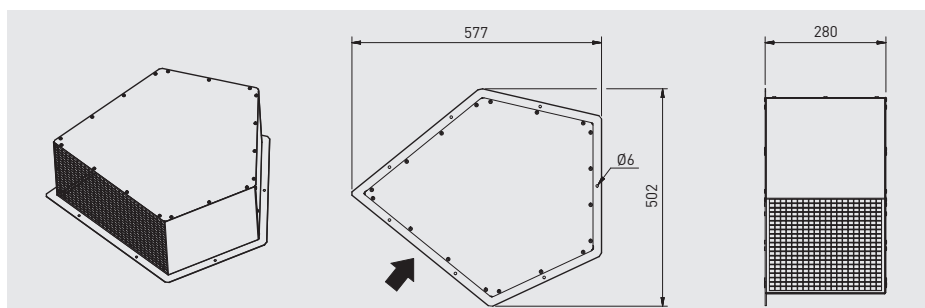


MOUNTING ACCESSORIES (Cont.)



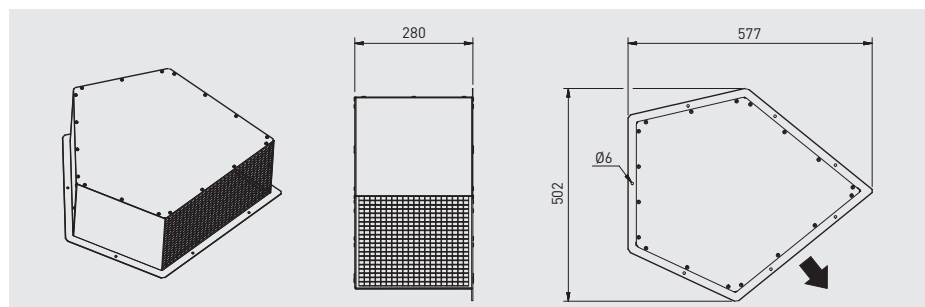
KIT AM HRU

Kit composed by 4 antivibration pads, specifics for ceiling installation.



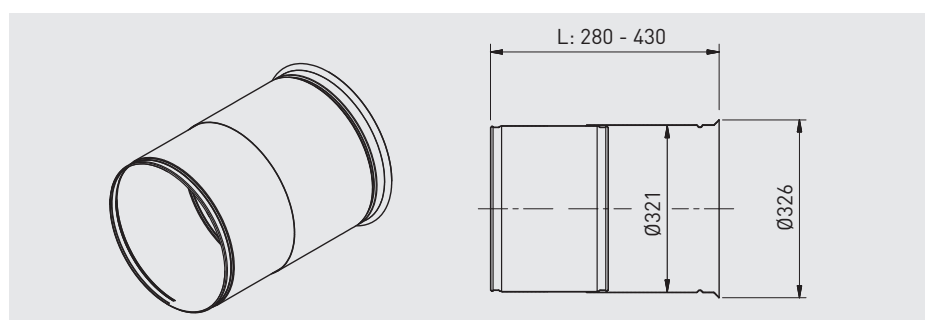
APA PURECLASS 800 CL

Protection guard. Intake side.



APR PURECLASS 800 CL

Protection guard. Exhaust side



MMPM 315

Wall telescopic sleeve.



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A member of

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