

# MANDÍK CPV12-H



**MANDÍK®**

# MANDÍK CPV12-H

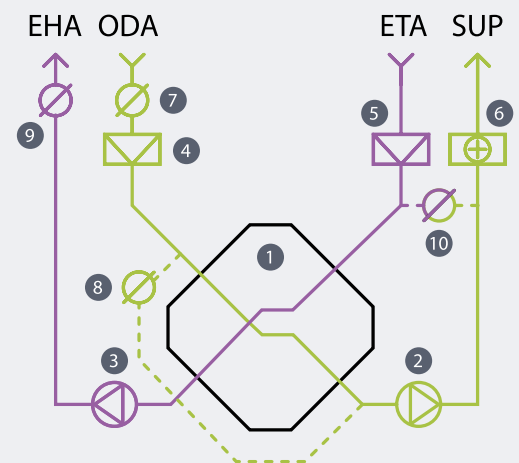
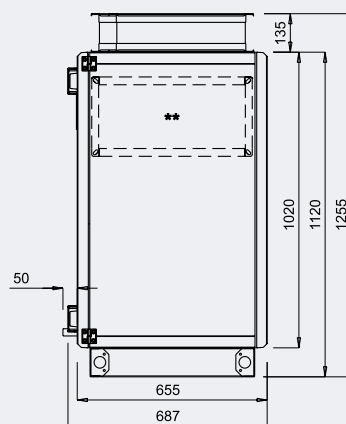
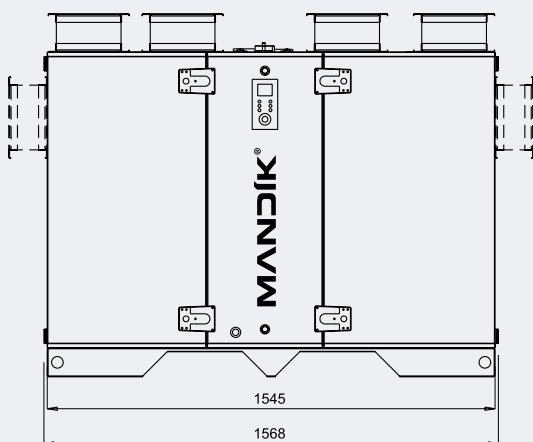
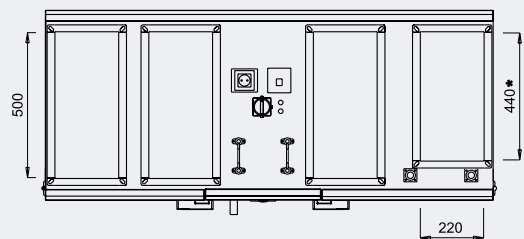


Nominal airflow:	1200 [m <sup>3</sup> /h]
Input power:	1~230 V / 50 Hz – water heating / condenser 3~400 V / 50 Hz – electric heating
The maximum operating current:	4 [A] – water heating / condenser 13.5 / 14.5 / 16.5 [A]* – electric heating
External surface finish:	RAL 9010 + RAL 5012 (standard version)
Internal surface finish:	RAL 9010 (standard version)
Weight:	180 [kg]
Sheathing insulation:	mineral wool, 65 kg/m <sup>3</sup>

\* power grades of electric heating

## Levels of acoustic performance:

Frequency band	LwA [dB]	63	125	250	500	1000	2000	4000	8000	[Hz]
Suction inlet	76.1	75.9	66.6	83.2	69.7	65.5	61.4	60.3	57.2	[dB]
Discharge inlet	79.3	78	70.7	83.2	73.8	72.8	71.8	65.5	63.4	[dB]
Suction outlet	74.7	74.9	66.6	81.1	69.7	65.5	61.4	59.3	56.2	[dB]
Discharge outlet	78.5	77	69.7	81.1	72.8	72.8	71.8	64.5	62.4	[dB]
Noise to the ambient	62		44.4	61.3	49.4	48.3	45.6	36.1	27.1	[dB]



ODA – fresh air  
SUP – outlet air EHA

ETA – inlet air  
EHA – waste air

- 1 Plate recuperator
- 2 Inlet fan
- 3 Outlet fan
- 4 Inlet filter
- 5 Outlet filter
- 6 Heater
- 7 Inlet damper
- 8 By-pass damper
- 9 Outlet damper
- 10 Mixing damper

\* for water heating / condenser; for electric heating = 500 mm

\*\* possible SUP/EHA outlets to side, size 500 × 220 mm

## Filtration

Supply (inlet): F7, compact, 250 × 570 × 96 mm

Discharge (outlet): M5, compact, 250 × 570 × 96 mm

## Recuperation

Cross-flow heat exchanger (plate type, counter-flow)

Temperature efficiency in the winter: 75.6 [%] \*

Temperature efficiency in the summer: 83.2 [%] \*\*

\* in the conditions according to EN 308, ODA = 5 °C / 20 % rH, ETA = 25 °C / 20 % rH

\*\* in the conditions according to ODA = 32 °C / 45 % rH, ETA = 25 °C / 50 % rH

## Mixing

Possible installation of the damper for mixing the outlet air with the fresh air, including possibility to set up the minimum and maximum rate of mixing.

## Heating

### Water heating CPV12

Power	STANDARD				INCREASED				HIGH			
$Q_t, t_{sup}$	6.1 kW, $t_{sup} = +22\text{ °C}$				7.3 kW, $t_{sup} = +25\text{ °C}$				8.5 kW, $t_{sup} = +28\text{ °C}$			
medium – water	80/60 °C	70/50 °C	50/40 °C	45/35 °C	80/60 °C	70/50 °C	50/40 °C	45/35 °C	80/60 °C	70/50 °C	50/40 °C	45/35 °C
Number of rows	1	2	2	2	2	2	2	3	2	2	3	4
flow of medium [m <sup>3</sup> /h]	0.26	0.26	0.52	0.52	0.26	0.26	0.52	0.52	0.37	0.37	0.74	0.74
pressure loss of medium [kPa]	2.2	4.1	14.7	15	2.2	4.1	14.7	15	7.4	7.6	7.7	4.5
Connections	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15

material of the tube / lamella Cu/Al

### Electric heating CPV12

Power	STANDARD		INCREASED		HIGH	
$Q_t, t_{sup}$	6.1 kW, $t_{sup} = +22\text{ °C}$		7.3 kW, $t_{sup} = +25\text{ °C}$		8.5 kW, $t_{sup} = +28\text{ °C}$	
Heating spirals	5 × 1.5 kW		5 × 1.5 kW		6 × 1.5 kW	
Current [A]	10		11		13	

The heater is equipped with operating (+50 °C) and emergency (+80 °C) thermostat

### Condenser CPV12

Power	STANDARD		INCREASED		HIGH	
$Q_t, t_{sup}$	6.1 kW, $t_{sup} = +22\text{ °C}$		7.3 kW, $t_{sup} = +25\text{ °C}$		8.5 kW, $t_{sup} = +28\text{ °C}$	
Cooling medium	R410A	R407C	R410A	R407C	R410A	R407C
Number of rows	2	2	3	3	4	4
flow of medium [m <sup>3</sup> /h]	0.9	1.4	1.1	1.7	1.4	2.1
Volume [l]	1.1	1.1	1.6	1.6	2.1	2.1
Connections in/out	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16

With condensing temperature = 50 °C, one-way direction – heating only, one-circuit, material of the tube / lamella Cu/Al

## EC fan (inlet / outlet)

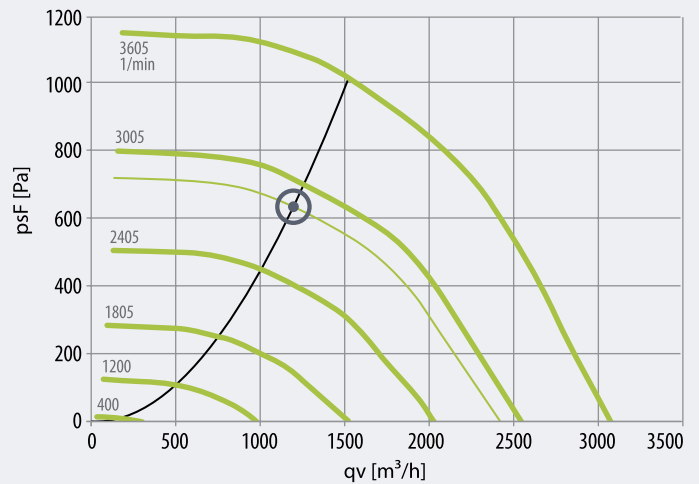
Input power: 0.4/0.38 [kW]\*

Voltage: 230 [V]

Current: 1.79/1.69 [A]

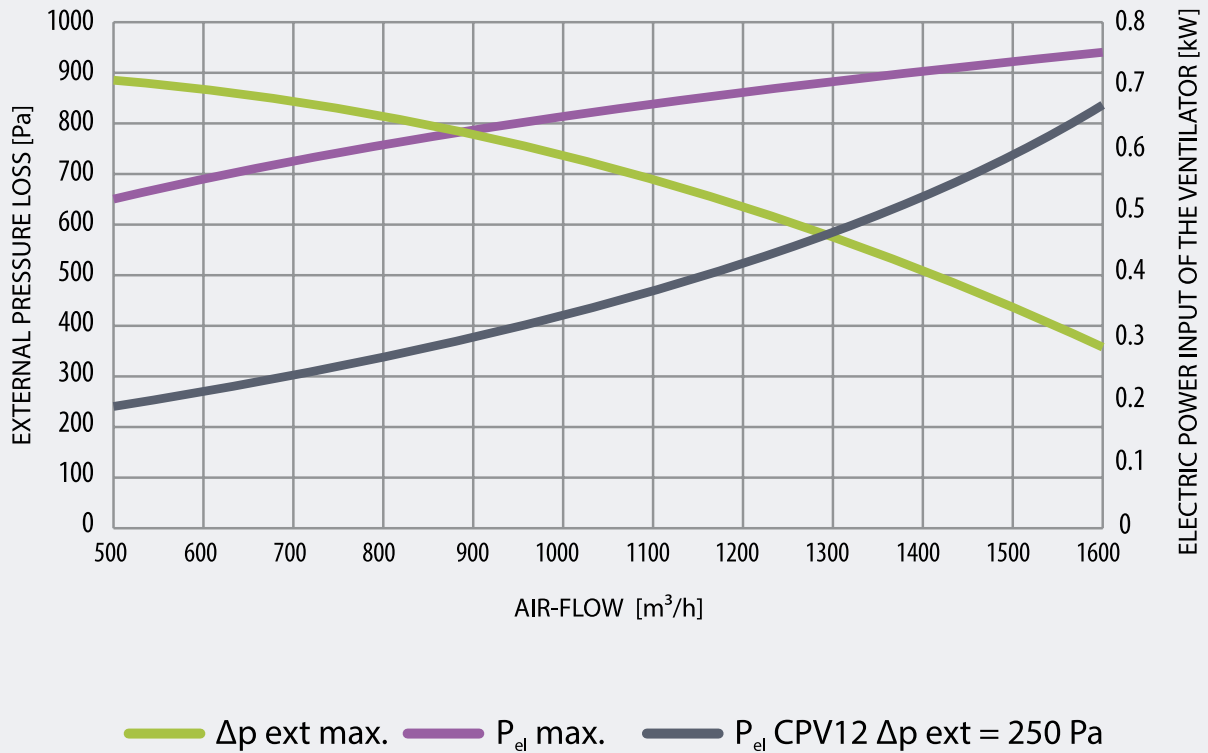
RPM 2918/2857 [RPM]

\* in case of external pressure loss 250 Pa, air performance 1200 m<sup>3</sup>/h, water heating – standard performance

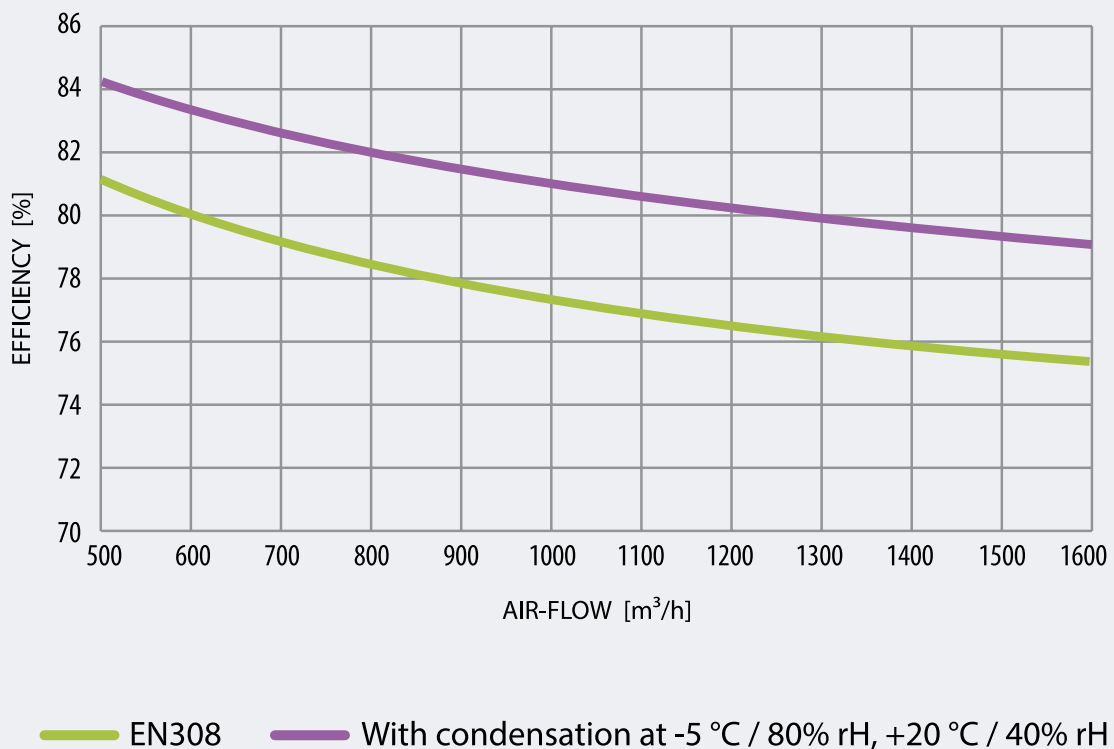


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## Maximum external pressure CPV12 standard – inlet part



## Efficiency of the heat exchanger ZZT



## STANDARD EQUIPMENT

### SURFACE TREATMENT:

- Outer surface and end element – powder coating
- Inner surface and in-building – powder coating

### COMPONENTS:

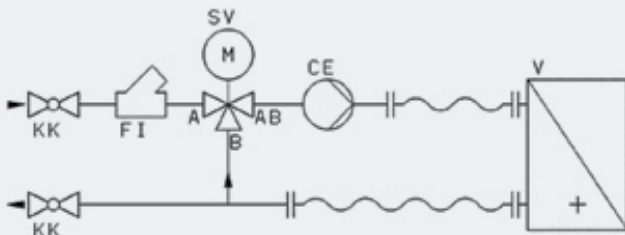
- Counter-flow heat exchanger (aluminium)
- by-pass recuperation
- EC fans (free impellers) – inlet / outlet
- filtration – F7 inlet, M5 outlet
- lamella hot-water heater / electric heater / condenser
- suction damper of fresh air
- discharge damper of waste air
- by-pass damper
- mixing damper / circulation
- buffering inserts, square shape, 2× suction, 2× discharge
- base frame of the unit

### CONTROL, ELECTRO EQUIPMENT:

- switchboard, in-built
- PLC, display (possible parametrization), web interface (possible parametrization)
- servo-drives of dampers – inlet / outlet / by-pass / mixing
- switching the pressure difference of filters – inlet / outlet
- temperature sensors – fresh / behind recuperation / inlet / outlet / recuperation frost
- capillary thermostat (anti-frost) of the hot-water heater
- control of performance of electric heat (PWM, SSR)
- service switch
- socket 230 V
- socket RJ45
- probes to measure pressure difference of the ventilator – inlet / outlet

## ACCESSORIES

### MIXING JUNCTIONS:

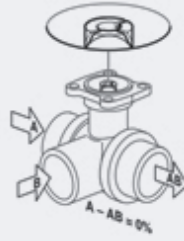
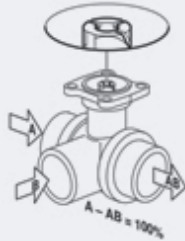


- KK – closing ball valve
- FI – filter
- SV – regulation ball valve with actuator
- CE – pump
- V – water exchanger

- Mixing junction of the hot-water heater CPV12,  $Q_t = 6.1$  kW
  - Heat-bearing medium: water 80/60 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 70/50 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 50/40 °C USJR 25-60-1.6-SR Rp 3/4" Rp 3/4", 0.6 m<sup>3</sup>/h
  - Heat-bearing medium: water 45/35 °C USJR 25-60-1.6-SR Rp 3/4" Rp 3/4", 0.6 m<sup>3</sup>/h
- Mixing junction of the hot-water heater CPV12,  $Q_t = 7.3$  kW
  - Heat-bearing medium: water 80/60 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 70/50 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 50/40 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h
  - Heat-bearing medium: water 45/35 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h
- Mixing junction of the hot-water heater CPV12,  $Q_t = 8.5$  kW
  - Heat-bearing medium: water 80/60 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 70/50 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 50/40 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h
  - Heat-bearing medium: water 45/35 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h

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## 3-WAY VALVES



- 3-way valve of the water heater CPV12,  $Q_t = 6.1$  kW  
Heat-bearing medium: water 80/60 °C BELIMO, R3015-P4-S1,  $kvs = 0.4$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 70/50 °C BELIMO, R3015-P4-S1,  $kvs = 0.4$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 50/40 °C BELIMO, R3015-P63-S1,  $kvs = 0.63$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 45/35 °C BELIMO, R3015-P63-S1,  $kvs = 0.63$  m<sup>3</sup>/h, DN = 15.5 Nm
- 3-way valve of the water heater CPV12,  $Q_t = 7.3$  kW  
Heat-bearing medium: water 80/60 °C BELIMO, R3015-P4-S1,  $kvs = 0.4$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 70/50 °C BELIMO, R3015-P4-S1,  $kvs = 0.4$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 50/40 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 45/35 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6$  m<sup>3</sup>/h, DN = 15.5 Nm
- 3-way valve of the water heater CPV12,  $Q_t = 8.5$  kW  
Heat-bearing medium: water 80/60 °C BELIMO, R3015-P4-S1,  $kvs = 0.4$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 70/50 °C BELIMO, R3015-P4-S1,  $kvs = 0.4$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 50/40 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6$  m<sup>3</sup>/h, DN = 15.5 Nm  
Heat-bearing medium: water 45/35 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6$  m<sup>3</sup>/h, DN = 15.5 Nm

## ACTUATORS FOR 3-WAY VALVES

- BELIMO LR24A-SR, AC/DC 24 V, 0–10 V, 5 Nm

## CO<sub>2</sub> SENSOR

- PROTRONIX AS CO2-DG, 0–10 V, 400–2000 ppm

## REMOTE CONTROL

- DIGICONTROL ROOM4D  
*Temperature adjustment, control of rotational speed of the ventilator, integrated temperature sensor, 2× DO (0 V / 24 V DC) CAN-Bus, DALI, KNX, Modbus*

## VISUALIZATION

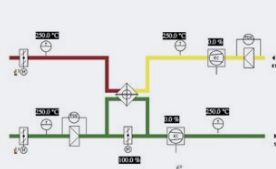
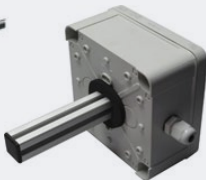
- License for visualization Webserver  
*Overall graphic view of the unit with the current condition of action elements and sensors of control system (measuring and regulation)*

## ROUTER

- TP-LINK TL-WR841ND  
*WiFi router 802.11b/g/n až 300 Mbps, 1× WAN, 4× LAN*

## SIPHON FOR CONDENSATE OUTLET

- HL136NGG, DN32, vacual with ball



# ORDER CODE FOR THE COMPACT UNITS OF CPV SERIES

Type of unit	Size of unit	Heating	Cooling	Filtration	Equipment of damper	Outlets
<b>CPV</b>	<b>12</b>	<b>XXX</b>	<b>XXX</b>	<b>XXXX</b>	<b>XXX</b>	<b>XXX</b>
<b>1<sup>st</sup> sign C</b> = compact <b>2<sup>nd</sup> sign P</b> = plate recuperation <b>3<sup>rd</sup> sign V</b> = vertical	<b>1<sup>st</sup>-, 2<sup>nd</sup> sign</b> = * 100 = Vn [m <sup>3</sup> /h] 12 = 1200 m <sup>3</sup> /h 24 = 2400 m <sup>3</sup> /h 36 = 3600 m <sup>3</sup> /h 48 = 4800 m <sup>3</sup> /h 60 = 6000 m <sup>3</sup> /h	<b>1<sup>st</sup> sign</b> = type of heating 1 = water heater 2 = condenser 3 = electric heater <b>2<sup>nd</sup> sign</b> = medium 0 = no (electric heater) 1 = water 80/60 °C 2 = water 70/50 °C 3 = water 50/40 °C 4 = water 45/35 °C 5 = cooling agent R410A 6 = cooling agent R407C <b>3<sup>rd</sup> sign</b> = heat power 1 = LOW (SUP = +22 °C) 2 = MEDIUM (SUP = +25 °C) 3 = HIGH (SUP = +28 °C)	<b>XXX</b> = none	<b>1<sup>st</sup> sign</b> = type of inlet filtration <b>3<sup>rd</sup> sign</b> = type of outlet filtration 2 = M5 3 = F7 <b>2<sup>nd</sup> sign</b> = type of inlet filter <b>4<sup>th</sup> sign</b> = type of outlet filter 1 = frame with thickness 96 mm	<b>1<sup>st</sup> sign</b> = mixing damper not installed 0 = mixing damper installed* <b>2<sup>nd</sup> sign</b> = Inlet damper 0 = mixing damper not installed 1 = inlet damper installed* <b>3<sup>rd</sup> sign</b> = outlet damper 0 = outlet damper not installed 1 = outlet damper installed*	<b>1<sup>st</sup> sign</b> = right* <b>2<sup>nd</sup> sign</b> = location of SUP and EHA outlets 1 = top wall* 2 = side walls <b>3<sup>rd</sup> sign</b> = type of outlets 1 = rectangular outlets*

## Example of the unit:

Nominal air flow:

1200 m<sup>3</sup>/h

Water heater, medium 80/60 °C, heat performance LOW (6.1 kW)

Cooling:

no

inlet = F7 frame with thickness 96 mm, outlet: M5 frame with thickness 96 mm

Dampers:

Flow direction SUP:

to the right -> right version

Outlets SUP and EHA:

on the top wall

Type of outlets:

rectangular shape

Note:

\* standard version Paint:

In case of requirement for a version other than standard, this should be noted in the purchase order.

Painting is divided into 2 parts (as standard)

1) RAL colour of the unit (outer) + inner + in-building: RAL9010 (standard version)

2) RAL colour of the central panel + buffering inserts + base frame RAL9006 (standard version)

Optionally, the parts of the unit may be combined in various ways; such as the overall outer surface (sheathing, buffering inserts, base frame) in one colour; inner surface (sheathing, in-building) in another colour, etc.

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