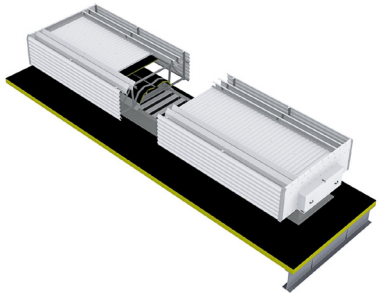
UDC
SMOKE AND HEAT EXHAUST UNIT



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Dual purpose UDC unit combines two features together. Its primary fucntion is to operate as the smoke exhaust unit during the fire. Its secondary function is to work for technological and natural ventilation purposes.

The unit is characterized by a vertical direction of air outflow. It is an ideal device for removing large heat gains. For this reason, it is especially suitable for use in industrial facilities such as power plants, combined heat and power plants, glassworks, steel mills, where large amounts of heat are emitted during production or technological processes.

The device is delivered as a monoblock, which significantly reduces the installation time of the system. The prefabricated modular construction allows to connect devices in blocks up to 21 m long. The basic equipment includes dampers to regulate the amount of air removed or to close the ventilator during technological breaks.

The device provides full protection against rain or snow penetration into the room, at the same time guaranteeing continuous work at removing heat gains. The device is insensitive to icing and heavy snowfall.

The device also has a certificate in accordance with the PN-EN 12101-2 standard, which is synonymous with the possibility of removing smoke during a fire while maintaining the same properties, performance and required load capacity of the structure. Optionally, the roof ventilator can be made in Corrosiveness class C4 or C5-I according to PN-EN ISO 12944-2. Optionally, the roof ventilator can be equipped with an acoustic silencer.

Certificates:

- Declaration of performance 018-CPR-2017,
- Certificate of Constancy of Performance issued by IFI Aachen 1368-CPR-C-7172,
- Resistance to high temperature B60060 and B30060,
- Tested at low working temperature T (-25).

Material and finish:

- The internal structure is made of galvanized steel profiles, covered with paint in a RAL color,
- Tousing elements are made of galvanized steel sheet, covered with paint in RAL color, and with additional protective layer applied on the inside,
- Tegulating dampers are made of galvanized steel sheet, covered with RAL paint, with an additional protective layer on the inside.
- The mounting material is made of galvanized steel,
- Optionally roof ventilators can be made of other materials than those given above (e.g. stainless steel),
- The actuators are thermally protected. Operating range of the device with electric actuators is -25°C ÷ 60°C. The scope of the device's operation with pneumatic actuators is -20°C ÷ 60°C.

Wight and dimensions

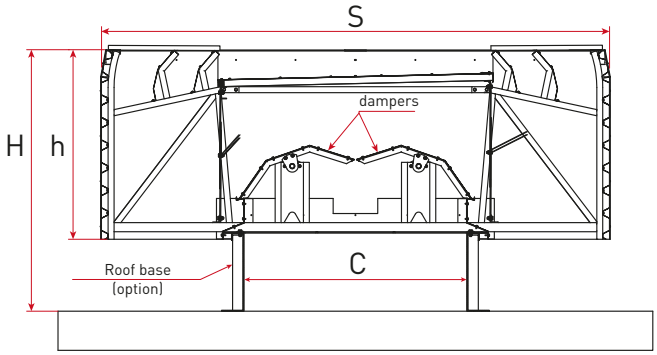

Figure 1. Udc dimensions.

Table 1. External dimensions.

External dimensions		
C	mm	1 500
D	mm	2 600 ÷ 21 000
S	mm	3 418
h	mm	1 257
$H = h + h_p$	mm	1 557*

SMOKE AND FIRE ZONE

Certificate in compliance with the standard:
PN-EN 12101-2

SO SN RAL

Table 2. Parameters of the ventilator without noise insulating panels.

Size of the opening		Ventilator without noise insulating panels		Weight	
C x D	A	C_{v0}	A_a	Steel application	Aluminum
mm x mm	m²	[-]	m²	kg	kg
1 500 x 2 600	3,9	0,57	2,22	513	329
1 500 x 2 700	4	0,57	2,28	522	
1 500 x 2 800	4,2	0,57	2,39	548	345
1 500 x 3 000	4,5	0,57	2,57	567	355
1 500 x 6 000	9	0,56	5,04	932	559
1 500 x 9 000	13,5	0,56	7,28	1 297	762
1 500 x 12 000	18	0,55	9,9	1 678	971
1 500 x 15 000	22,5	0,55	12,38	2 070	1 201
1 500 x 18 000	27	0,54	14,58	2 435	1 405
1 500 x 21 000	31,5	0,54	17,01	2 799	1 613

Table 3. Parameters of the ventilator with noise insulating panels.

Size of the opening		Ventilator with noise insulating panels		Weight
C x D	A_v	C_{v0***}	A_a	
mm x mm	m²	[-]	m²	kg
1 500 x 2 600	3,9	0,43	1,68	**
1 500 x 2 700	4	0,43	1,72	**
1 500 x 2 800	4,2	0,43	1,81	**
1 500 x 3 000	4,5	0,43	1,94	**
1 500 x 6 000	9	0,42	3,78	**
1 500 x 9 000	13,5	0,42	5,67	**
1 500 x 12 000	18	0,41	7,38	**
1 500 x 15 000	22,5	0,41	9,23	**
1 500 x 18 000	27	0,4	10,8	**
1 500 x 21 000	31,5	0,4	12,6	**

Key:

C – Width of the opening for roof ventilator [mm]

D – Length of the opening for roof ventilator [mm]

S – Width of the roof ventilator [mm]

h – Height of the roof ventilator without the base [mm]

$\mathbf{h_p}$ – wysokość podstawy dachowej [mm]

H – Height of the base [mm]

$\mathbf{A_v}$ – Geometric area of the opening for roof ventilator [m²]

$\mathbf{A_a}$ – effective area of the roof ventilator [m²]

$\mathbf{C_{v0}}$ – Air outflow coefficient without consideration of a sidewind influence [-]

* - Height of the base according to the clients' request. Suggested height of the base 300 mm.
** - Weight is specified individually depending of noise insulating panels used and their spacing.
*** - For noise insulating panel 22 1500mm long

Technical features:

- Certificate in accordance with PN-EN 12101-2: 2005,
- width of the opening for the dual-function ventilator: 1.5 m,
- width of the opening for a single-function ventilator: 1 ÷ 3 m,
- length of the opening for the ventilator: from 2.6 m up to 21m,
- Possibility of using the set of ventilators up to 21m in length with or without noise insulating panels,
- The scope of unit's operation for natural ventilation is -25ºC ÷ 60 ºC,
- the use of a dual-function ventilator enables reduction of the number and size of openings in the roof, and savings in maintenance and spare parts,
- constant performance in case of icing and snowfall, the devices retain their functions also during freezing rainfall,
- they remain stable under wind load 1,5 kN (WL 1 500) [WL=1,5kN/m²],
- possibility of presenting additional static tests for applications in tower buildings up to 2.2 kN (Wind load)
- acoustic resistance of the unit's housing without noise silencing panels: R ,6 dB,
- devices with length of more than 3 m are assembled from three-meter parts, due to facilitating their transportation and of devices and their assembly.

Regulating mechanism:

- electric,
- pneumatic,
- electric – pneumatic.

Drives

Electric drive by means of the Belimo EF230A-S2 actuator for a dual function device:

Figure 2. Actuator Belimo EF230A-S2.

- Each device should be equipped with 2 actuators and a temperature sensor,
- 230V 50/60 Hz power supply,
- function: opening / closing,
- closing time of the diffuser: <75 s,
- opening time of the ventilator: <20 s,
- the connection diagram for the actuator is in the actuator datasheet.

Electric drive by means of the Belimo EF24A-S2 actuator for a single-function device (used for aeration):

- Each device should be equipped with 2 actuators and a temperature sensor,
- AC / DC 24 V power supply,
- function: opening / closing,
- closing time of the diffuser: <75 s,
- opening time of the ventilator: <20 s,
- the connection diagram for the actuator is in the actuator datasheet.

Pneumatic drive individually selected for the ventilator:

Figure 3. Pneumatic actuator.

- Recommended operating pressure 6 - 10 bar,
- maximum static operating pressure 60 bar,
- assembly and supply of air through connecting elements depending on the model at the top, in the middle or at the bottom,
- ambient temperature range from -20 ° C to 60 ° C,
- dual-function pneumatic cylinder with a section of 32 mm.

Electro-pneumatic mechanism selected individually for the ventilator

Opening of the ventilator for natural ventilation purposes is carried out by means of the electric actuator. Opening of the ventilator for fire ventilation purposes is carried out by means of the pneumatic cylinder; by activating the CO_2 cartridge, the power supply gets disconnected and full opening of the ventilator is carried out.

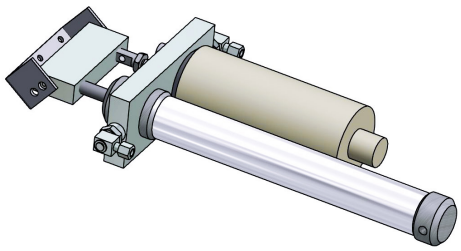

Figure 4. Electro-pneumatic mechanism.

- Voltage: 230 V AC
- Frequency: 50 HZ
- Input power: 200W / 0.92 A
- Lifting speed: 10 mm / s
- Connection cable: H05W-F 4x 1.00 mm² ca 1.2 m lg
- Color: compatible with RAL 9002
- Weight: 2.0 kg

Execution:

- Usually roof ventilators are made in C3 corrosiveness class according to PN-EN ISO 12944-2,
- optionally, roof ventilators can be made in class C4 or C5-I corrosivieness class according to PN-EN ISO 12944-2 Other executions on special request,
- optionally roof ventilators can be made in the EX execution. The device is intended for transportation of gases from the gas group A and B,
- optionally roof base can be provided
  - Suggested height 300 mm,
- it is possible to implement automation dedicated to the object that controls the operation of the ventilators, which can be adjusted depending on the temperature or differential pressure in the object.
- optionally roof ventilators can be equipped with silencers with various sizes according to customer requirements.

Acoustic silencers:

- Silencing ability up to 35 dB
  for version 22 3000x1500xL = 3000,
- increased silencing for higher frequency bands,
- As a standard, housing and silencer frame made from galvanized steel sheet,
- silencer elements made in accordance with EN 13501, construction class, non-combustible.

Table 4. Optional dimensions of silencers 22.

Thickness of noise silencing panel B_t	mm	200					
Width of the opening for silencer A_t	mm	1 500					
Length of noise silencing panel C_t	mm	500	750	1 000	1 250	1 500	3 000
Distance between noise silencing panels	mm	200					

UDC - smoke and heat exhaust unit

While ordering, please provide the information using the following method:

UDC - <R> - <S> x <D> - <Z> - <N> - <T> - <K> - <RAL>

R	Type of the ventilator:*	
	none	**- dual purpose unit**
	1	- single purpose unit
S	Width of the opening for ventilator mm	
D	Length of the opening for ventilator mm	
Z	Installation of the ventilator:*	
	none	**- single**
	L1	- linear side
	L2	- linear meddle
N	Driver:*	
	EF230	**- electric drive by means of Belimo EF230A-S2 actuator**
	EF24	- electric drive by means of Belimo EF24A-S2
	NP	- pneumatic cylinder
	NEP	- electro-pneumatic drive
T	Silencer for ventilator 22 AA DxS:*	
	none	**- no silencer**
	L	- length of noise silencing panles mm
K	Ventilator with corrosiveness class according to PN-EN ISO 12944-2 standard:*	
	none	**- C3 according to PN-EN ISO 12944-2**
	C4	- C4 according to PN-EN ISO 12944-2
	C5-I	- C5-I according to PN-EN ISO 12944-2
RAL	RAL color (for SL or AL. finish]*	

* optional values - default values will be used if optional values are not specified

Order example: **UDC -1500x3000 - EF230A-S2- 22 AA-L500-C4**