

# OPTIVENT<sup>®</sup> ULTRA VAV damper

TECHNICAL DATA



## VAV DAMPER ULSA, ULDA

ULSA



ULDA

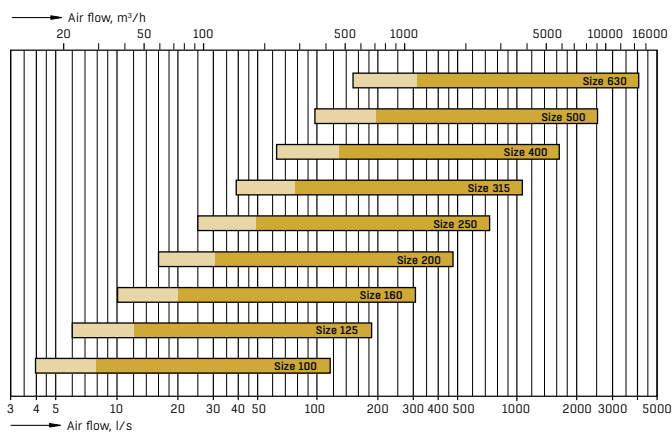


VAV dampers are used to regulate and control air flow for supply and extract air. They are highly versatile, and can be used to control room temperature and air quality, among other things.

The OPTIVENT® ULTRA offers all benefits from the Optivent® series of VAV dampers, but with the added ultrasound technology for measuring air flow. With high accuracy in the whole airflow range and excellent resilience to dust, the OPTIVENT® ULTRA works well in all types of environments, also more challenging ones, such as classrooms and patient rooms.

No pressure drop of the air flow measurement and a broad manageable airflow range means high comfort in the whole of the building and in every situation. This well-balanced system has no physical probe that can cause turbulence and noise, for silent and maintenance free operation.

### QUICK SELECTION



The air flow limits correspond to air velocity 0.5 - 15 m/s (sizes 100 - 315) or 0,5 - 13 m/s (sizes 400 - 630). (Light brown area = 0.5 - 1 m/s.)

### BENEFITS

- Good indoor air quality
- Energy efficient
- Both variable and constant flow
- Forced shut-off for supply and extract air
- UltraSound air flow measuring sensor
- Accurate and versatile
- Low noise
- Large air flow range
- No pressure loss of the air flow measurement
- Small influence of dust
- Small influence of disturbances
- Modbus as standard
- Maintenance free

### SPECIFICATIONS

- VAV damper for supply and extract air
- ULSA, non-insulated casing
- ULDA, insulated casing
- Integrated UltraSound Technology by FläktGroup air flow measurement sensor
- FG compact controller as standard
- Setting up values with screwdriver or BMS
- Real time air flow display
- Operating range 0.5 - 15 m/s (sizes 100 - 315) or 0,5 - 13 m/s (sizes 400 - 630)
- Operating temperature 5 - 50 °C
- Available in nine sizes for duct diameters between 100 - 630 mm

### PRODUCT CODE EXAMPLE

Flow variator for supply or extract air ULSA-5-125-1

## DESIGN AND FUNCTIONALITY



### DESIGN

The OPTIVENT® ULTRA is equipped with a UltraSound technology air flow measuring sensor, damper blade with non-insulated casing (ULSA) or insulated casing (ULDA).

Control equipment is installed on the apparatus casing.

Connection dimensions are 100 - 630 mm.

Casing air leakage is according to EN 1751:2014 class B.

### MATERIAL

The damper has stable bearings made of nylon and its shaft is mounted in maintenance free nylon headings. Damper is equipped with EPDM rubber blade and closed blade air leakage is according to EN 1751:2014, class 3.

The casing of the ULDA has double walls and intermediate glass wool insulation with a minimum thickness of 50 mm, resulting in low acoustic radiation.

Components in contact with ventilation air conforms to corrosivity classes C3 in accordance with EN-ISO 12944-2.

All duct connections have spigot dimensions and are equipped with sealing rings made of rubber.

### FUNCTIONALITY

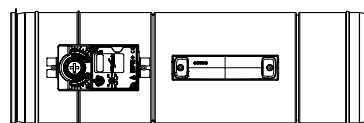
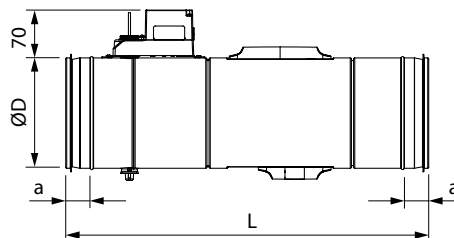
This damper can be used both for variable and constant flow and, if appropriate, forced shut off, open,  $V_{min}$  and  $V_{max}$ , for both supply and extract air.

### ENERGY EFFICIENCY

Zero pressure drop and high accuracy regardless of airflow rate means no wasted energy for unnecessary fan drive and excess airflow.

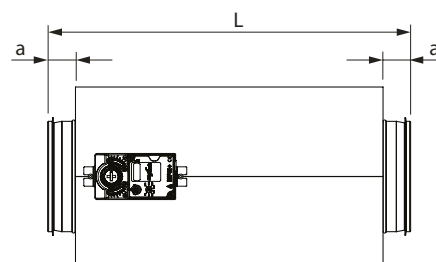
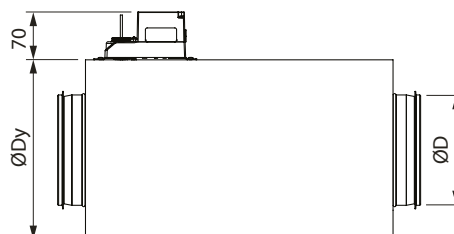
## DIMENSIONS AND WEIGHTS

### ULSA (NON-INSULATED)



Size	ØD [mm]	a [mm]	L [mm]	Weight [kg]
100	99	35	461	1,5
125	124	35	489	1,8
160	159	35	524	2,3
200	199	35	585	3,0
250	249	40	650	4,2
315	314	40	813	5,8
400	399	60	950	12,7
500	499	60	1000	16,6
630	629	60	1150	24,0

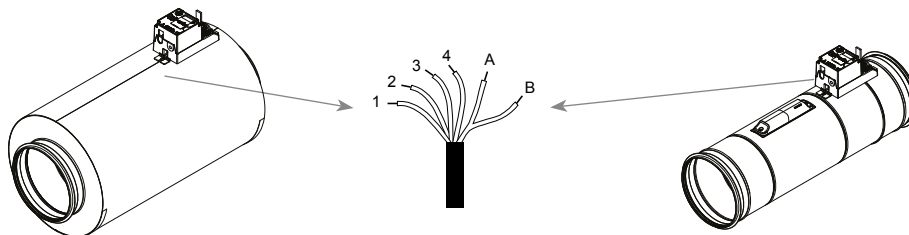
### ULDA (INSULATED)



Size	ØD [mm]	ØDy [mm]	a [mm]	L [mm]	Weight [kg]
100	99	200	35	461	3,1
125	124	225	35	489	3,7
160	159	260	35	524	4,7
200	199	300	35	585	6,2
250	249	350	40	650	8,1
315	314	415	40	813	12,2
400	399	500	60	950	22,0
500	499	600	60	1000	28,5
630	629	730	60	1150	41,3

## WIRING

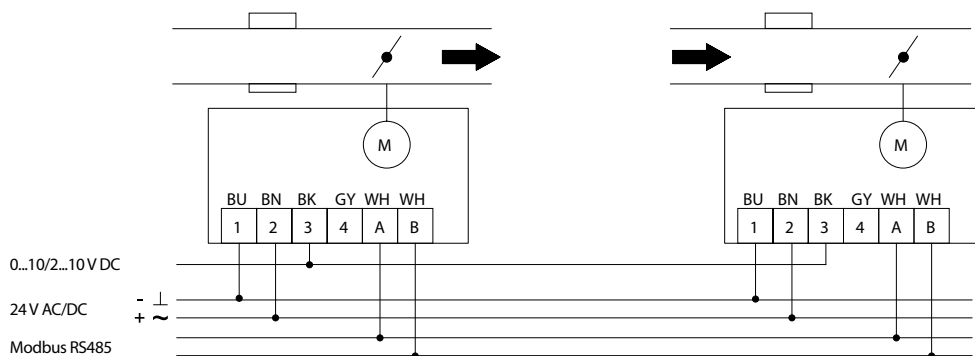
### WIRING



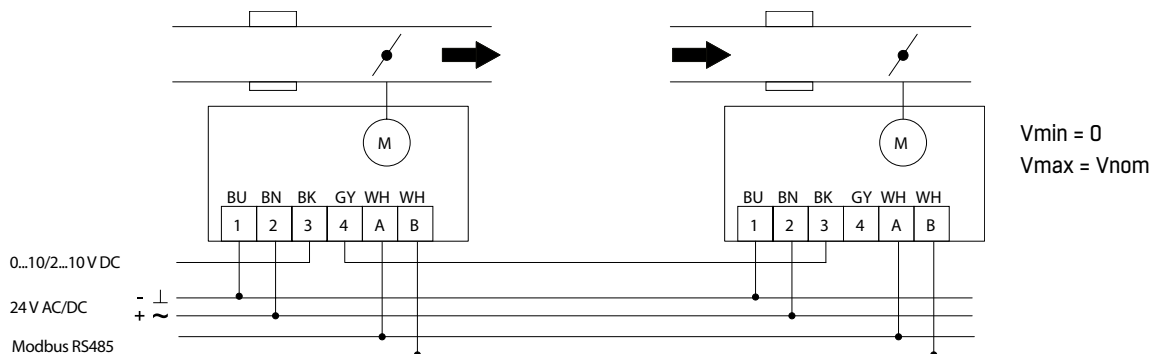
1	2	3	4	A	B
24 VAC ⊥ 24 VDC -	24 VAC ~ 24 VDC +	0...10 V 2...10 V	0...10 V 2...10 V	Modbus RS485	
Operating voltage		Control signal	Feedback signal		
blue (BU)	brown (BN)	black (BK)	grey (GY)	white (WH)	

The following wiring solutions are possible:

#### Parallel control



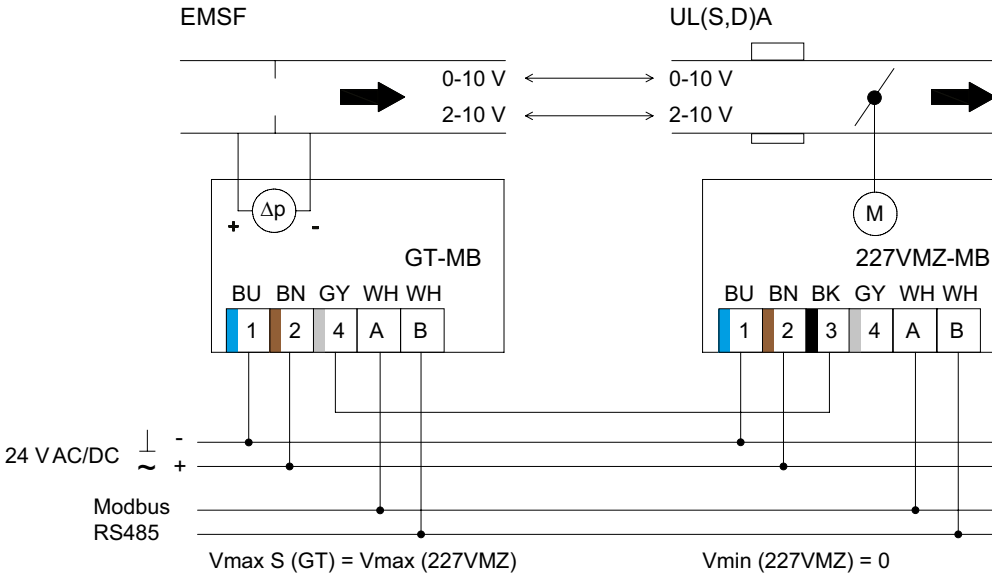
#### Master-slave (same sizes)



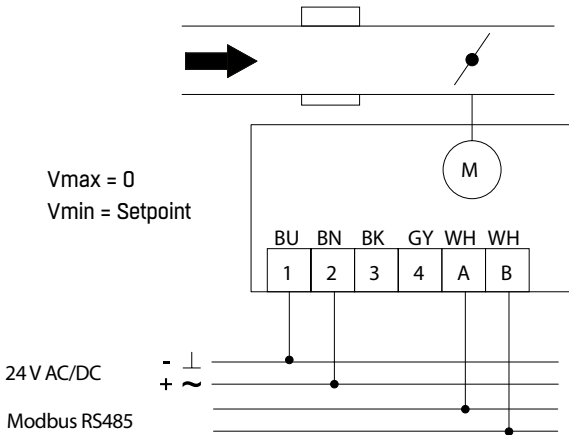
## WIRING

### WIRING (CONT.)

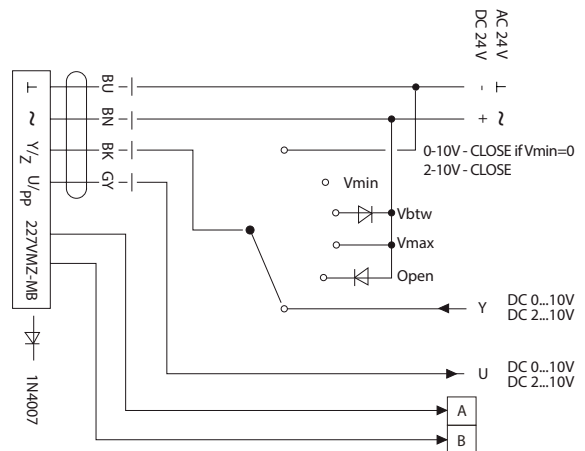
#### EMSF control



#### CAV constant air volume



#### Forced control

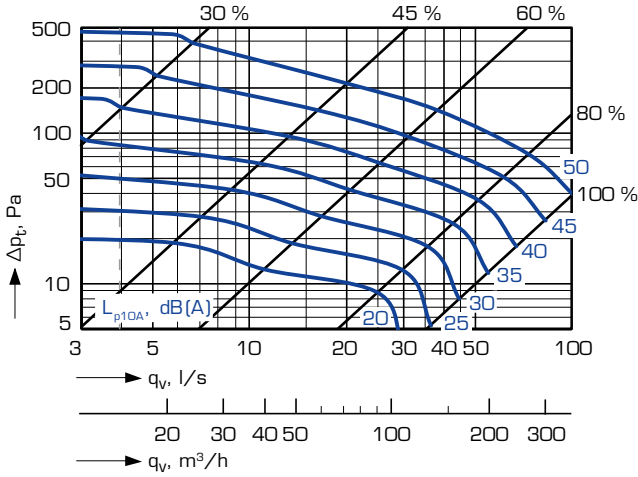


## SOUND PRESSURE LEVELS AND AIR FLOW

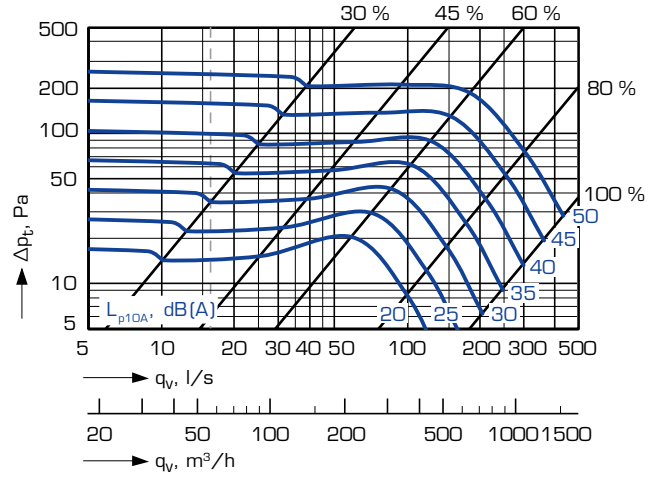
### SOUND PRESSURE LEVELS IN ROOM

Damper blade opening 30% = operating area begins.

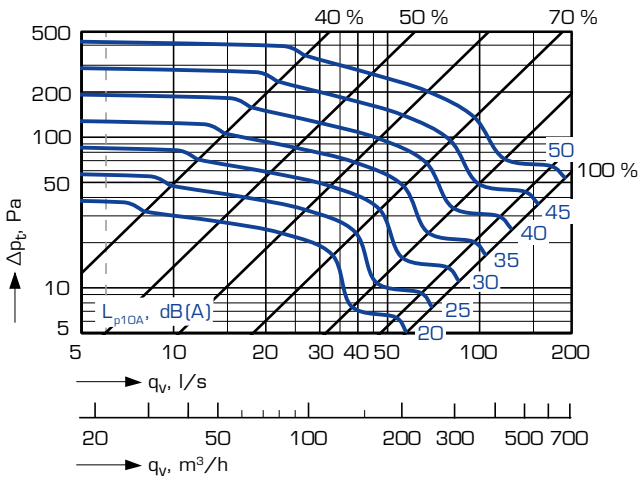
**ULSA/ULDA-100**



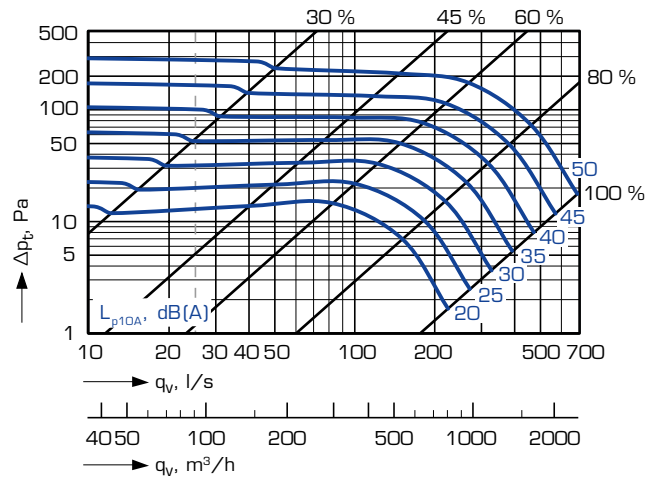
**ULSA/ULDA-200**



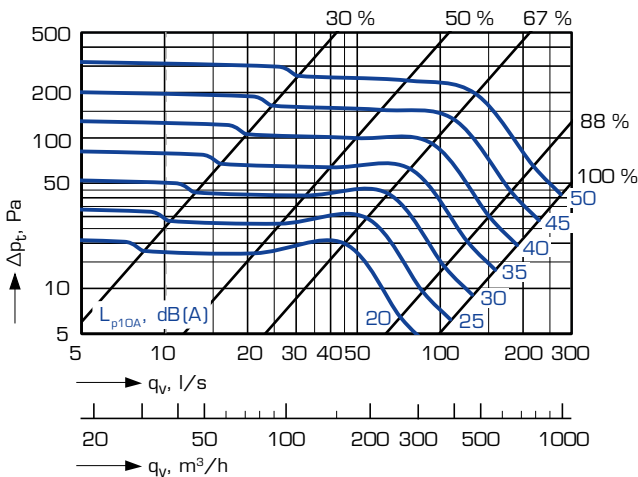
**ULSA/ULDA-125**



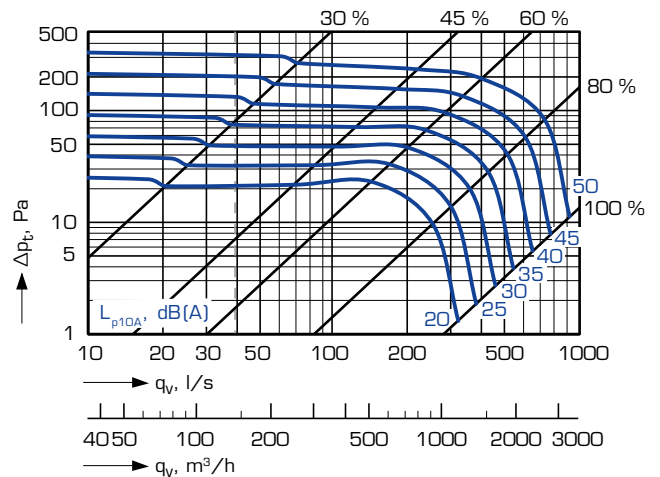
**ULSA/ULDA-250**



**ULSA/ULDA-160**



**ULSA/ULDA-315**



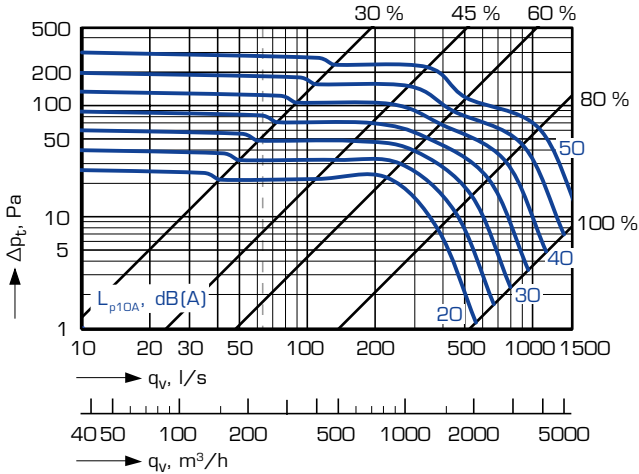
----- Velocity in the duct 0.5 m/s.

## SOUND PRESSURE LEVELS, AIR FLOW AND SOUND DATA

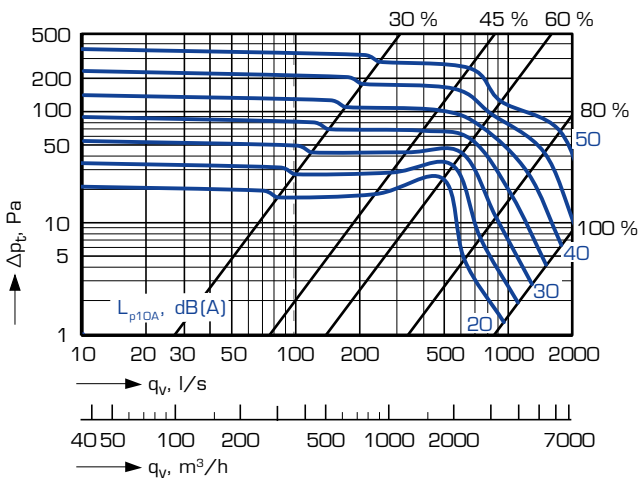
### SOUND PRESSURE LEVELS IN ROOM

Damper blade opening 30% = operating area begins.

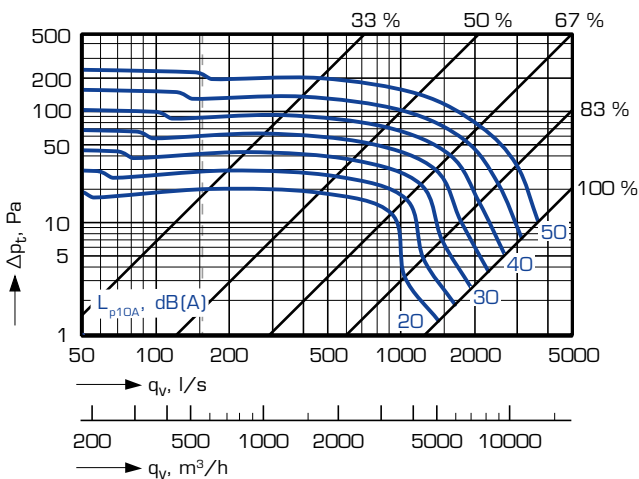
#### ULSA/ULDA-400



#### ULSA/ULDA-500



#### ULSA/ULDA-630



----- Velocity in the duct 0.5 m/s.

### DUCT SOUND

UL(S,D)A	Correction of sound level $K_{oct}$ (dB)							
	63	125	250	500	1000	2000	4000	8000
100	10	14	13	8	4	-2	-9	-18
125	14	15	12	7	3	-3	-8	-16
160	14	13	11	5	2	-4	-9	-16
200	9	11	9	4	1	-3	-8	-17
250	10	9	7	4	-1	-2	-8	-15
315	14	8	5	2	0	-2	-9	-15
400	10	9	8	4	-1	-8	-12	-8
500	11	8	7	3	-1	-7	-10	-8
630	8	7	6	3	0	-7	-13	-15
Tolerance ±	6	3	2	2	2	2	2	3

The sound power levels of the duct for every octave band are obtained by adding to the total sound pressure level  $L_{p10A'}$  dB(A), the correction  $K_{oct}$  presented in the table according to the following formula:

$$L_{W_{oct}} = L_{p10A'} + K_{oct}$$

Correction  $K_{oct}$  is average value in range of use of the VAV damper.

### SOUND TRANSMITTED THROUGH CASING

ULSA	Correction of sound level $K_c$ (dB)							
	63	125	250	500	1000	2000	4000	8000
100	7	-7	-5	-17	-30	-36	-39	-42
125	-3	-9	-18	-21	-27	-34	-40	-42
160	-4	-11	-12	-19	-25	-28	-35	-39
200	-4	-9	-18	-24	-29	-32	-39	-39
250	-11	-11	-16	-19	-26	-30	-36	-35
315	-3	-8	-22	-15	-22	-31	-33	-43
400	-7	-14	-22	-16	-26	-25	-28	-46
500	3	-6	-18	-27	-33	-37	-41	-57
630	-2	-9	-17	-32	-31	-24	-29	-39
Tolerance ±	6	3	2	2	2	2	2	3

ULDA	Correction of sound level $K_c$ (dB)							
	63	125	250	500	1000	2000	4000	8000
100	4	-9	-9	-19	-34	-41	-44	-47
125	-5	-13	-20	-21	-32	-35	-41	-47
160	-5	-16	-12	-20	-28	-34	-38	-45
200	-4	-9	-18	-27	-34	-36	-44	-47
250	-11	-11	-16	-20	-30	-35	-43	-45
315	-4	-7	-23	-16	-26	-36	-44	-52
400	-11	-14	-22	-18	-28	-30	-39	-50
500	1	-6	-18	-28	-35	-40	-47	-57
630	-2	-10	-18	-34	-34	-29	-38	-43
Tolerance ±	6	3	2	2	2	2	2	3

The power levels of the sound transmitted through casing of the flow variator for every octave band are obtained by adding to the total sound pressure level  $L_{p10A'}$  dB(A), the correction  $K_c$  presented in the table according to the following formula:

$$L_{W_c} = L_{p10A'} + K_c$$

Correction  $K_c$  is average value in range of use of the VAV damper.

## MEASURING ACCURACY AND SPECIFICATIONS TEXT

### MEASURING ACCURACY

See OPTIVENT® ULTRA Installation, Commissioning and Maintenance document (DC\_10055GB).

### NOMINAL AIR FLOW

Size	$q_{nom}$ (l/s)
100	118
125	184
160	302
200	471
250	736
315	1169
400	1634
500	2552
630	4052

### SPECIFICATIONS TEXT EXAMPLE

Pressure independent supply and extract VAV/ CAV damper for Demand Controlled Ventilation with integrated air flow and temperature measuring. Air flow measurement is based on ultra sound technology. Air flow and temperature measurement have no pressure loss. Air flow range from 0,5 m/s to 15 m/s with high accuracy. Air flow measurement is resistant to dust. Air flow and set up values like  $V_{min}$  and  $V_{max}$  can be read from the controller's display. Can be controlled via analogical and/or Modbus control. Set up can be made with a screwdriver or via BMS. Automatic calibration in power up but not regularly based in operation as a default. Air tightness of the closed damper is class 3 and for the casing class B in accordance with EN 1751:2014. Override controls are open, closed,  $V_{min}$  and  $V_{max}$ . Operational temperature is between 5 to 50 °C. Installation is recommended to have safety distance before the damper, if it is not possible then installation parameter should be used for the respective minimum safety distance.

#### Code:

VAV damper for supply air ULDA-5-160-1.

- Insulated casing
- Actuator 227VMZ-MB
- Size 160 mm
- Galvanised casing



## PRODUCT CODE, SPARE PARTS AND ACCESSORIES

### PRODUCT CODE

VAV damper, round

ULaA-b-ccc-d

#### Execution (a)

S = without insulation

D = with insulation

#### Actuator (b)

5 = Compact controller for Modbus 227VMZ-MB

6 = Compact controller for Modbus, IPSUM-version 227VMZ-MB-ST

#### Size (ccc)

100, 125, 160, 200, 250, 315, 400, 500, 630

#### Material (d)

1 = Corrosivity class C3, galvanized sheet steel

### SPARE PARTS

#### Compact controller for Modbus 227VMZ-MB

sizes 100-315

**227VMZ-24-05-MB-16**

sizes 400-630

**227VMZ-24-10-MB-16**

#### Compact controller for Modbus, IPSUM-version 227VMZ-MB-ST

sizes 100-315

**227VMZ-24-05MB16ST**

sizes 400-630

**227VMZ-24-10MB16ST**

### ACCESSORIES

Room controller (Modbus connection)

**STRA-04**

Transformer

**STRZ-24-1**

CO<sub>2</sub>-sensor

**STRZ-18-1-2**

External temperature sensor

**STRZ-05-04**

PIR Occupancy detector

**STRZ-09-1**

Mounting clamp

**HVSZ-03-aaa**

Size (aaa)

100, 125, 160, 200, 250, 315, 400, 500

Circular attenuator

**BDER-aa-bbb-ccc**

Model (aa)

30, 40, 44, 45, 60, 61

Size, cm (bbb)

Length, cm (ccc)

**BDER-40** straight M1-certified sound absorber with 50 mm polyester fibre filling.

**BDER-44** straight M1-certified sound absorber with 100 mm polyester fibre filling.

**BDER-45** straight M1-certified sound absorber with 100 mm polyester fibre filling and a 100 mm baffle.

**BDER-30** straight sound absorber with 50 mm mineral wool filling, fire resistance class EI 30 \*) (SITAC 2525/80).

**BDER-60** straight sound absorber with 100 mm mineral wool filling, fire resistance class EI 60 \*) (SITAC 2525/80).

**BDER-61** straight sound absorber with 100 mm mineral wool filling and a 100 mm baffle, fire resistance class EI 60 \*) (SITAC 2525/80).

Rectangular attenuator with circular spigots

**BDER-aa-bbb-ccc**

Model (aa)

70, 71, 73

Size, cm (bbb)

Length, cm (ccc)

**BDER-70** fixed casing, glass wool absorbent.

**BDER-71** fixed casing, M1-certified, polyester absorbent.

**BDER-73** openable casing, M1-certified, polyester absorbent.

Sound attenuator can be selected with the software program SELECT or through contact with your nearest FläktGroup office.

## EXCELLENCE IN SOLUTIONS

FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

### PRODUCT FUNCTIONS BY FLÄKTGROUP

Air Treatment | Air Movement | Air Diffusion | Air Distribution | Air Filtration  
Air Management & ATD's | Air Conditioning & Heating | Controls | Service

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