

FläktGroup[®]

AIRTREND Ltd
Predstavništvo u Beogradu
Kumanovska 14, 11000 Beograd
Tel: 011/3836886, 3085740
Faks: 011/3444113
e-mail: gobrid@eunet.rs
web: www.airtrend.rs

OPTIVENT[®] ULTRA VAV damper

TECHNICAL DATA



VAV DAMPER ULSA, ULDA

ULSA



ULDA

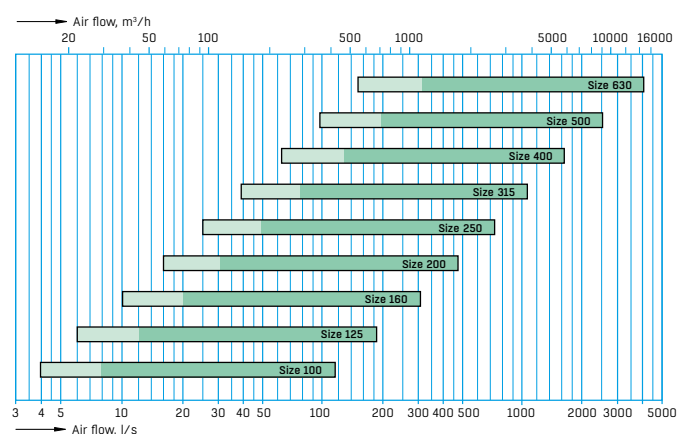


VAV dampers are used to regulate and control air flow for supply and extract air. They are highly versatile, and can be used to control room temperature and air quality, among other things.

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 with compact controller 227VMZ correspond to air velocity 0.5 - 15 m/s. (Light green 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
- FW 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)
- Available in six 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 C.

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

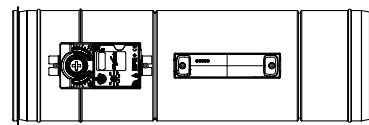
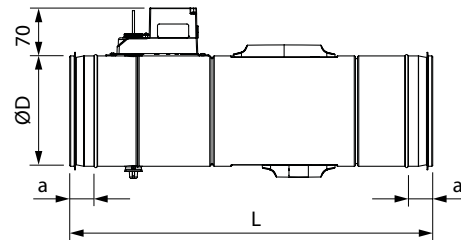
This damper can be used both for variable and constant flow and, if appropriate, forced shut off, open, V_{min} and V_{max} , for both supply and extract air.

ENERGY EFFICIENCY

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

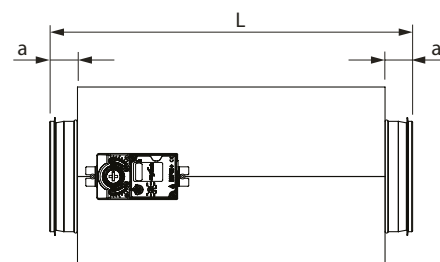
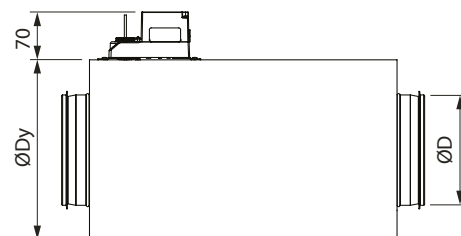
DIMENSIONS AND WEIGHTS

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 |

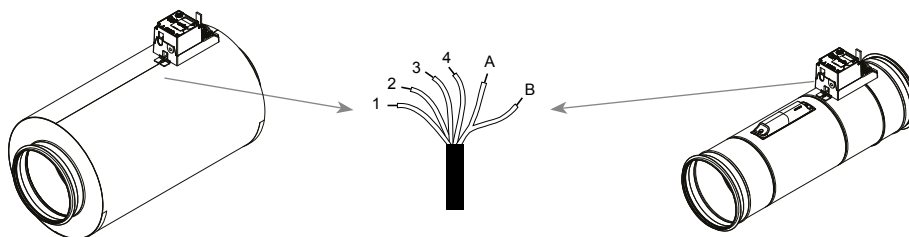
ULDA (INSULATED)



| 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 |

DESIGN AND FUNCTIONALITY

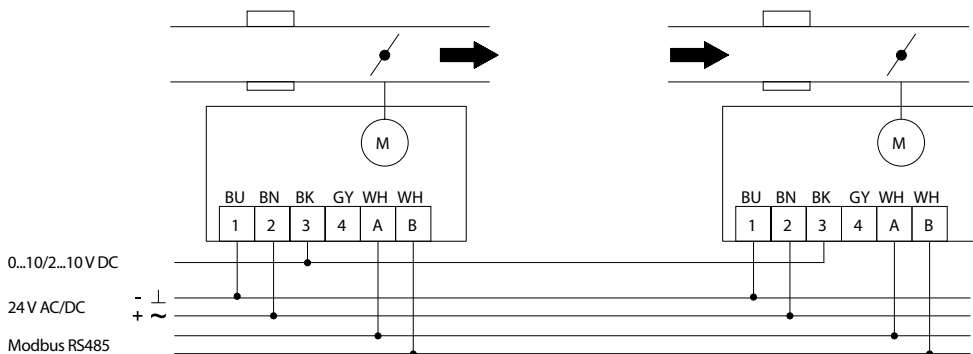
WIRING



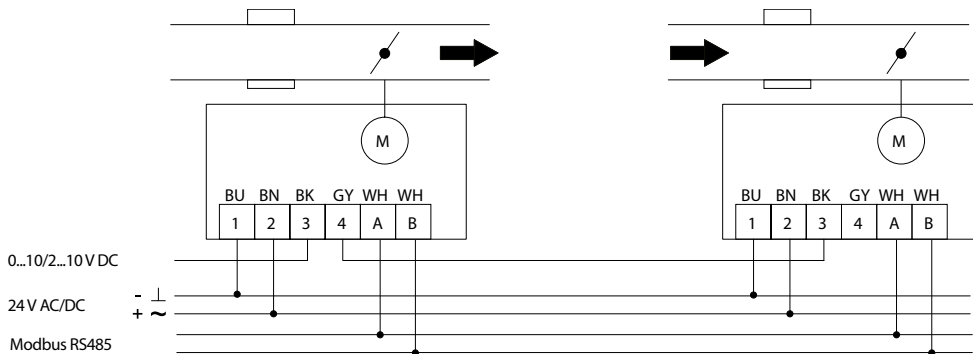
| 1 | 2 | 3 | 4 | A | B |
|----------------------|----------------------|----------------------|----------------------|-----------------|---|
| 24 VAC ⊥ 24 VDC - | 24 VAC ~ 24 VDC + | 0...10 V 2...10 V | 0...10 V 2...10 V | Modbus RS485 | |
| Operating voltage | | Control signal | Feedback signal | |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

The following wiring solutions are possible:

Parallel control



Master-slave (same sizes)

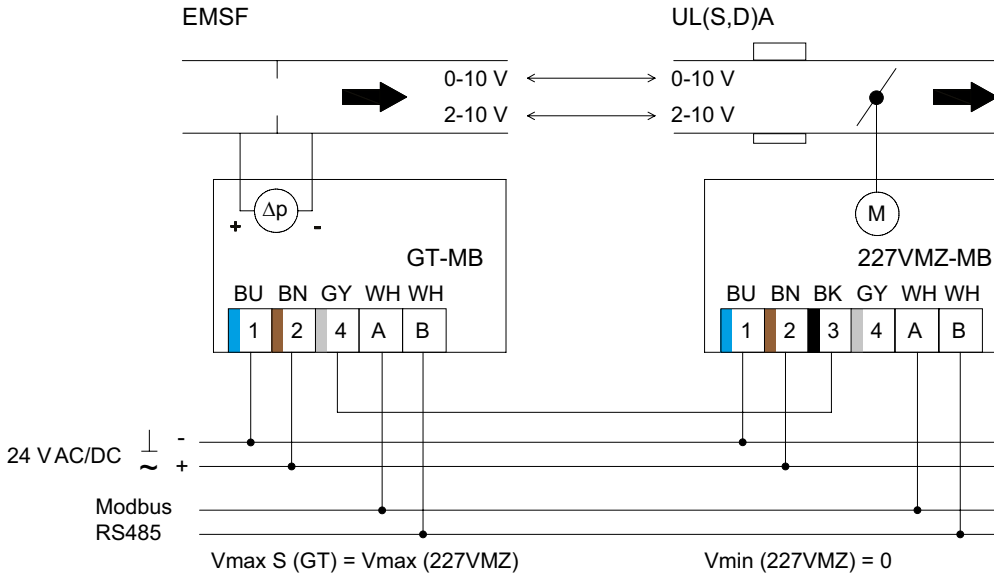


V_{min} = 0
V_{max} = V_{nom}

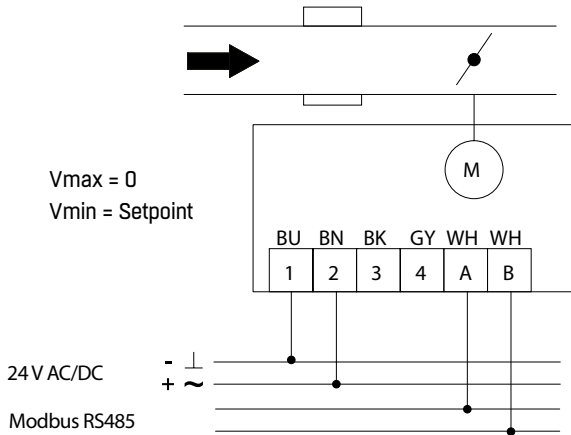
DESIGN AND FUNCTIONALITY

WIRING (CONT.)

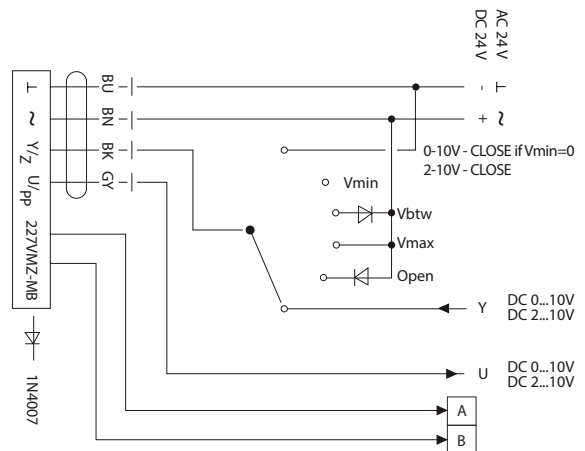
EMSF control



CAV constant air volume



Forced control

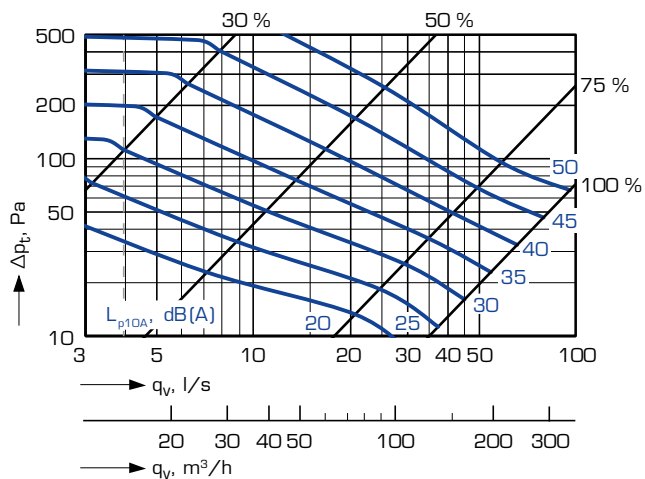


SOUND PRESSURE LEVELS AND AIR FLOW

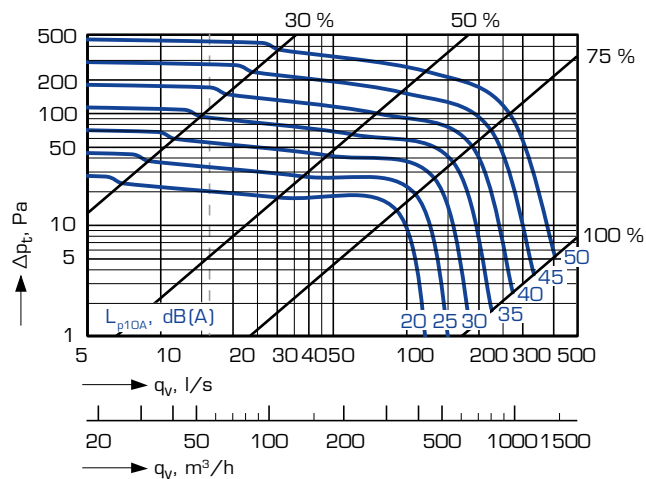
SOUND PRESSURE LEVELS IN ROOM

Damper blade opening 30% = operating area begins.

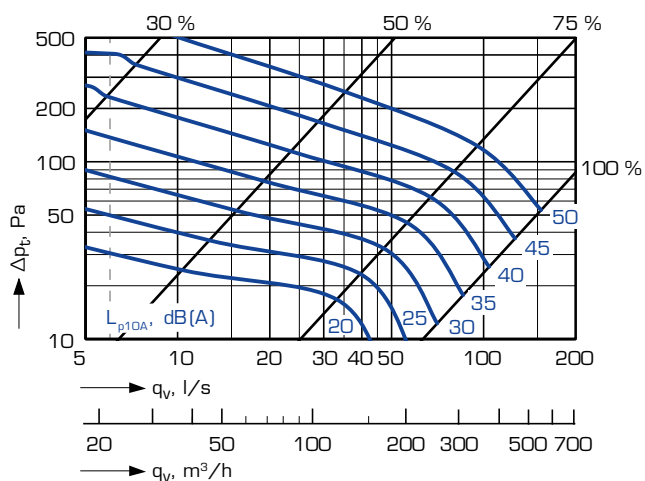
ULSA/ULDA-100



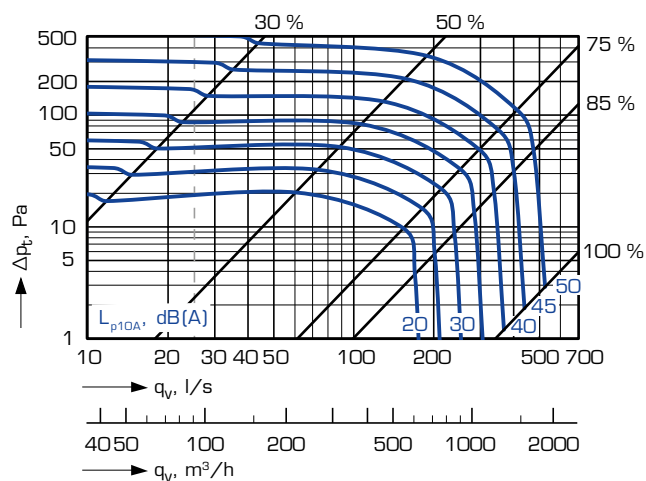
ULSA/ULDA-200



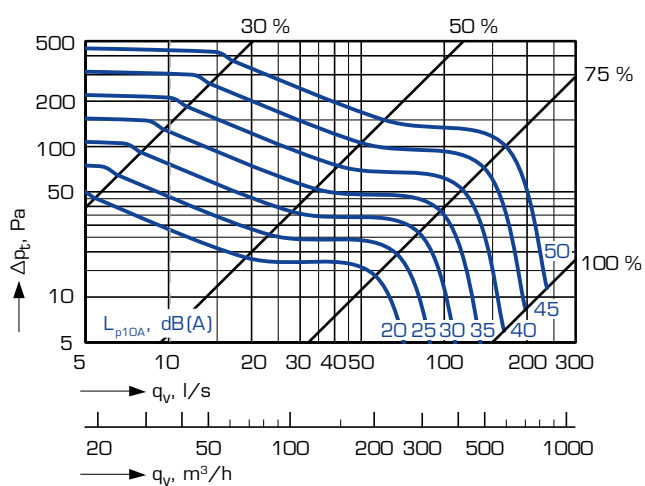
ULSA/ULDA-125



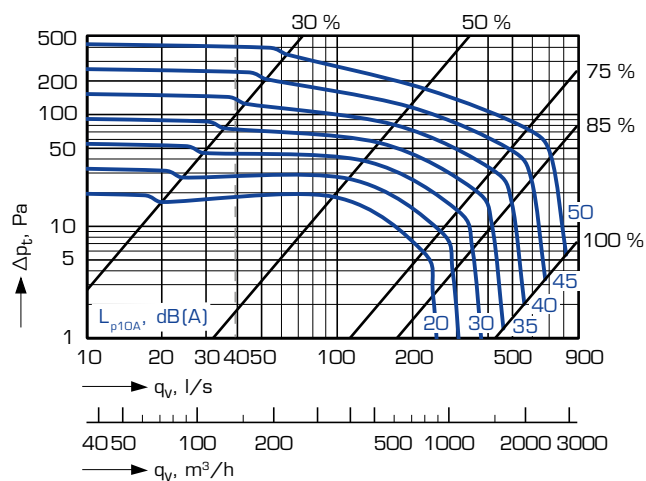
ULSA/ULDA-250



ULSA/ULDA-160



ULSA/ULDA-315



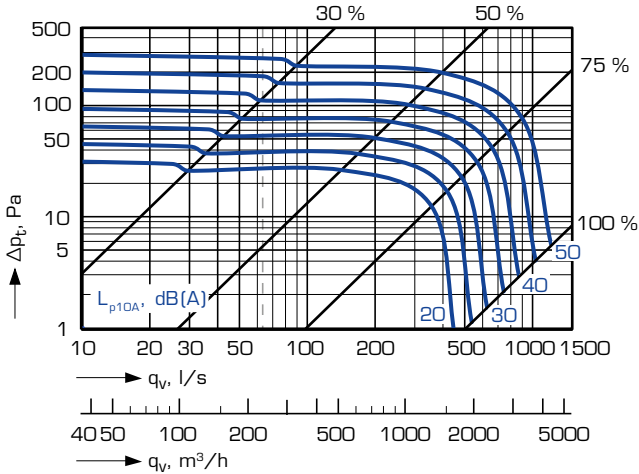
----- Velocity in the duct 0.5 m/s.

SOUND PRESSURE LEVELS, AIR FLOW AND SOUND DATA

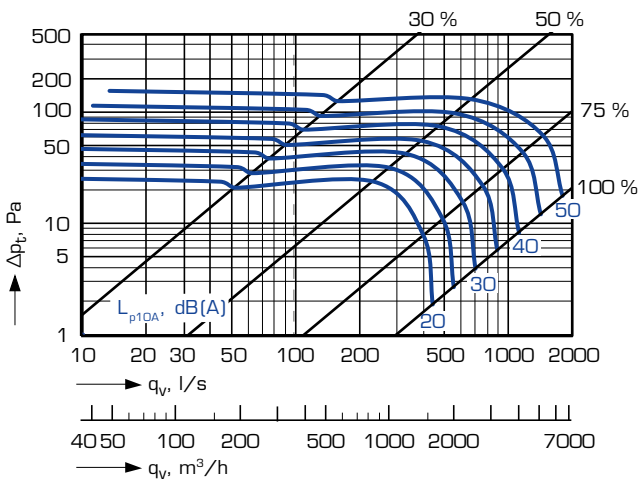
SOUND PRESSURE LEVELS IN ROOM

Damper blade opening 30% = operating area begins.

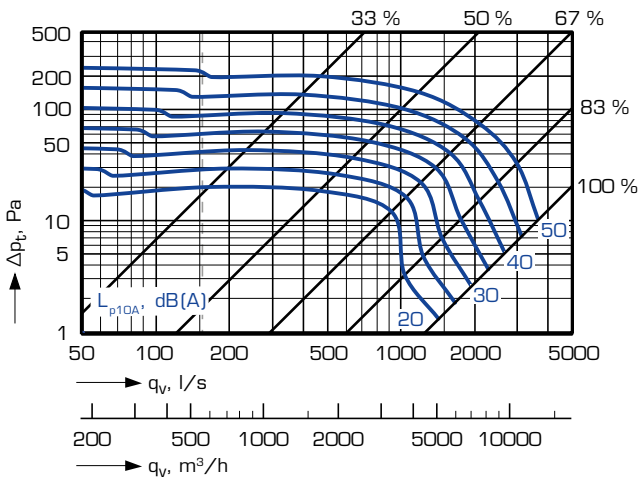
ULSA/ULDA-400



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 | 37 | 22 | 15 | 10 | 4 | -8 | -14 | -10 |
| 125 | 32 | 18 | 13 | 9 | 3 | -10 | -14 | -11 |
| 160 | 32 | 18 | 12 | 8 | 1 | -9 | -13 | -11 |
| 200 | 30 | 17 | 10 | 6 | 1 | -8 | -11 | -11 |
| 250 | 26 | 16 | 11 | 7 | -2 | -10 | -14 | -11 |
| 315 | 26 | 14 | 9 | 5 | -1 | -9 | -14 | -11 |
| 400 | 21 | 13 | 8 | 4 | -1 | -8 | -15 | -15 |
| 500 | 17 | 10 | 8 | 3 | 0 | -7 | -15 | -19 |
| 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 |

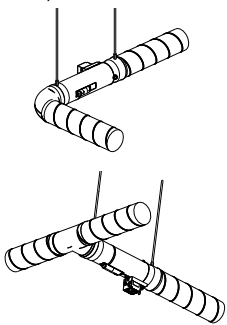
The power levels of the sound transmitted through casing of the flow variator for every octave band are obtained by adding to the total sound pressure level L_{p10A} , dB(A), the correction K_c presented in the table according to the following formula:

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

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

MEASURING ACCURACY AND SPECIFICATIONS TEXT

MEASURING ACCURACY

| Installation | Velocity in the duct (m/s) | | |
|---|----------------------------|-----------|-----------|
| | 0,5 - 1 | > 1 | > 4 |
| After disturbance \varnothing 100-400 (safety distance = 0 x D)  | $\pm 10\%$ or 1 l/s | $\pm 8\%$ | $\pm 6\%$ |
| In the straight tube (safety distance > 2 x D) | $\pm 8\%$ or 1 l/s | $\pm 5\%$ | $\pm 4\%$ |

Valid when the damper blade opening is > 30%. Recommended maximum air velocity with shorter than 2 x D safety distances is 8 m/s. With sizes 500 and 630 should the safety distance be at least 2 x D.

To achieve the accuracies presented in the table, the installation parameter must be set according to the separate commissioning instructions.

With other installations, please consult FläktGroup technical support.

NOMINAL AIR FLOW

| Size | q_{nom} (l/s) |
|------|-----------------|
| 100 | 118 |
| 125 | 184 |
| 160 | 302 |
| 200 | 471 |
| 250 | 736 |
| 315 | 1169 |
| 400 | 1664 |
| 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 and regularly based in operation. Air tightness of the closed damper is class 3 and for the casing class C in accordance with EN 1751:2014. Override controls are open, closed, V_{min} and V_{max} . It can be installed after bend and T-piece without safety distance with high accuracy.

Code:

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

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

PRODUCT CODE 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

ACCESSORIES

Room controller (Modbus connection)

STRA-04

Transformer

STRZ-24-1

CO₂-sensor

STRZ-18-1-2

External temperature sensor

STRZ-05-04

PIR Occupancy detector

STRZ-09-1

Mounting clamp

BDPC-1-aaa

Size (aaa)

100, 125, 160, 200, 250, 315

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, 72, 73

Size, cm (bbb)

Length, cm (ccc)

BDER-70 fixed casing, glass wool absorbent.

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

BDER-72 openable casing, glass wool 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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