



Product manual

Variable air volume damper

Airflow regulation

Variable air volume damper

VAV ensures volume flow control regulation by a given set-point. Set-point can be given as air volume flow or overpressure/ underpressure. Parametrization is carried out in the factory in accordance with clients request. Advantages of variable air volume dampers are high regulation precision and no maintainance required.



DESCRIPTION

VAV dampers are used to control a variable or constant airflow volume in duct ventilation systems. All VAV dampers are equipped with compact VAV actuator, which has in-built pressure differential sensor and PID logic control. Actuator sensor is connected with rubber hoses to the measuring cross which is used for measuring the duct airflow. By having a real time information about the volume airflow in the duct, VAV's can dynamically respond to the changes in the setpoint (temperature, CO2 or humidity) and ensure optimized ventilation with lowest possible energy consumption.

MATERIALS

Casing and damper blade of the VAV damper are produced out of galvanized steel sheet. Sealing gaskets are produced out of EPDM rubber, and measuring cross is made out of aluminium tubes.

DIMENSIONS

Diameter øDn [mm]	Casing length L [mm]	Insulated diameter øDz [mm]	Insulated casing Lz [mm]	Standard parametrization		Low velocity parametrization	
				Vmin [m³/h]	Vmax [m³/h]	Vmin [m³/h]	Vmax [m³/h]
100	400	198	330	37	343	17	170
125	400	223	330	54	540	26	265
160	400	258	330	90	900	43	434
200	400	298	330	145	1469	70	700
250	500	348	430	217	2215	106	1060
315	600	413	534	380	3680	175	2000
355	600	453	534	482	4275	249	2492
400	600	498	534	615	6047	361	3800
500	750	598	606	973	9484	565	5800
630	850	728	786	1435	12482	897	9000

Motor drives
☒ LM 5 Nm ☐ NM 10 Nm * MF 5 Nm actuator version (max dimensions 400)

Type	ød 100 - ød 400	
MP	Belimo LMV-D3-MP	Belimo NMV-D3-MP
MOD-S	Siemens GDB181.1E/MO	Siemens GLB181.1E/MO
MOD/BAC	Belimo LMV-D3-MOD/BAC	Belimo NMV-D3-MOD/BAC



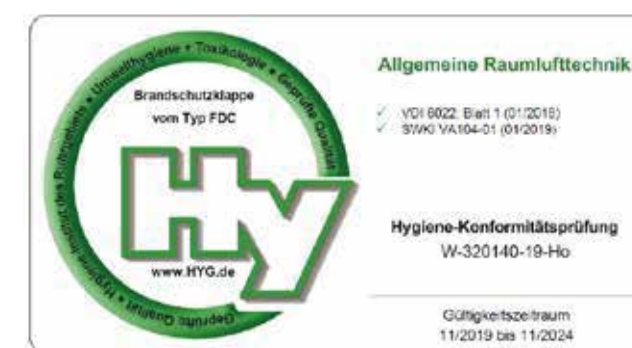
PRODUCT OVERVIEW

AIRFLOW REGULATION

TESTS AND CERTIFICATES

All our dampers are submitted to a number of tests by official test institutes. Reports of these tests form the basis for the approvals of our dampers. Klimaoprema VAV dampers are also suitable for installation in buildings with high hygienic demands such as hospitals, clinics and pharmaceutical areas.

To confirm this, our products are tested by an independent Institute of Hygiene, based in Gelsenkirchen, Ruhr, and comply with directives and guidelines in VDI 6022.



RVP-C with Belimo controller

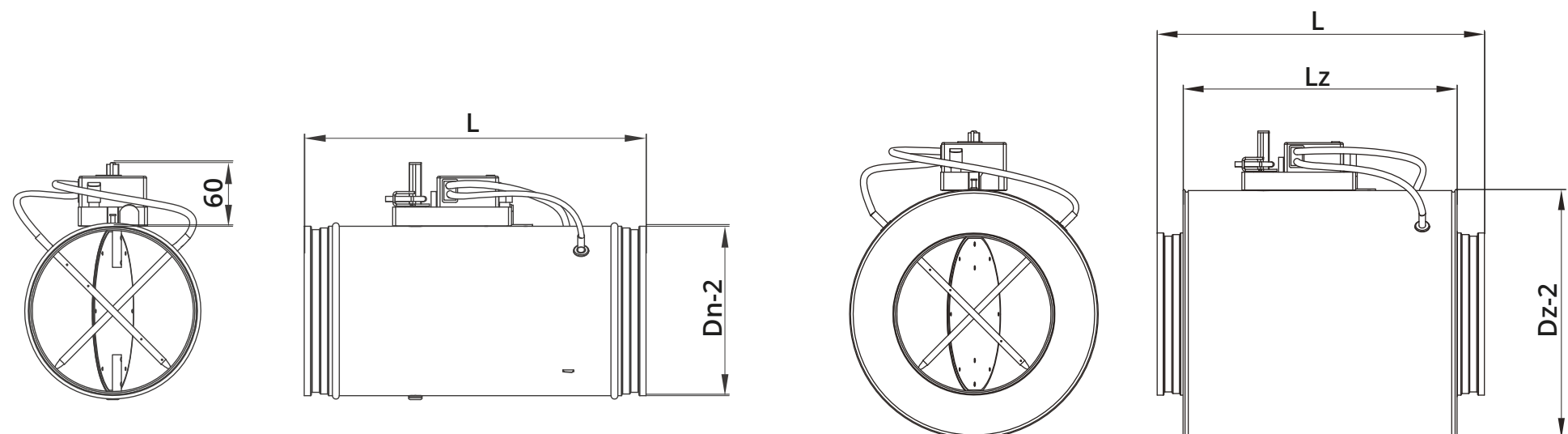
Volume flow control regulation by a given set-point. Factory parametrization in accordance with clients request.

- High regulation precision.
- No maintainance required.
- Airtightness classes according to EN 1751, C 3
- Hygiene certificate according to VDI 6022.



PRODUCT OVERVIEW

AIRFLOW REGULATION





Belimo motor drive

- motor drives : Belimo (MP, ModBus/Bacnet,
- power supply - AC 24V, 50/60 Hz
- DC 24V
- diagnostic socket for service and PC-Tool software

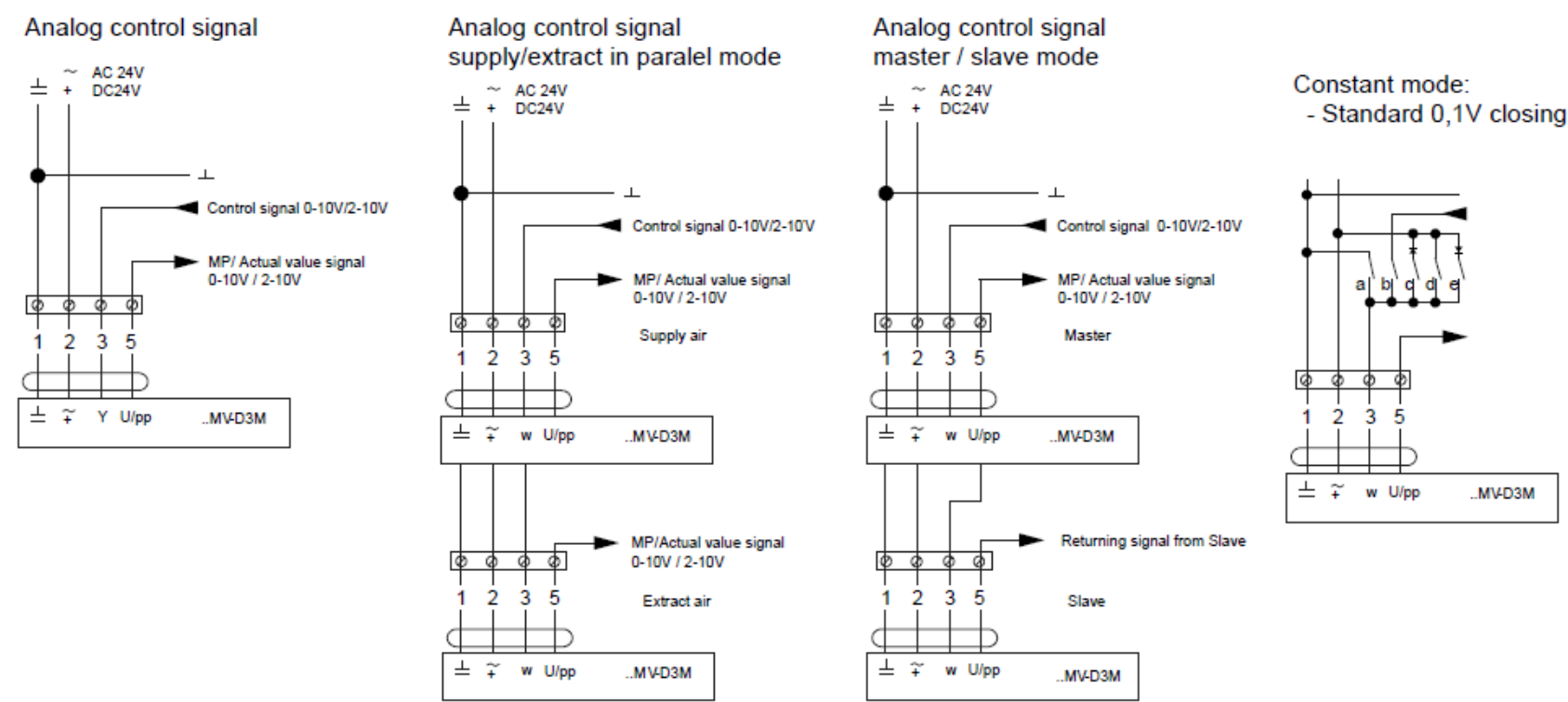
Type	Torque	Energy consumption	Dimensioning	Weight
LMV-D3-MP	5Nm	2W	4VA (max- 8A @ 5ms)	≈ 500g
NMV-D3-MP	10Nm	3W	5VA (max- 8A @ 5ms)	≈ 700g
LMV-D3-MOD/BAC	5Nm	2W	4VA (max- 8A @ 5ms)	≈ 500g
NMV-D3-MOD/BAC	10Nm	3W	5VA (max- 8A @ 5ms)	≈ 700g

Control variables	
Vnom	specific nominal volume flow, suitable for VAV units
Δp @ Vnom	50...450 Pa
Vmax	20...100%
Vmin	0...100%
Vmid	50% od Vmin do Vmax
Classic control	
VAV mod for referent variables Y (connection 3)	- DC 2...10V / (4...20mA with 500Ω impedance) - DC 0...10V / (0...20mA with 500Ω impedance) - Adjustable DC 0...10V }input impedance min. 100 kOhm
Actual signal value mod U5 (connection 5)	- DC 2...10V - DC 0...10V - Adjustable : volume flow, damper position or differential pressure } max. 0.5 mA
CAV mode (constant volume flow)	CLOSED / Vmin / Vmid / Vmax / OPEN* (*only with AC 24V supply)
Actuator	
Connection	Cable, 4 x 0,75 mm²
Protection	
Safety class	III Safety extra - low voltage
Level of protection	IP54
Electromagnetic compliance	CE according to 89/336/EEC
Mode	Type 1 (according to EN 60730-1)
Rated power	0,5kV (according to EN 60730-1)
Operating temperature	0...+50 °C
Non operating temperature	-20...+80 °C
Relative humidity	5...95% r.h., no condensation (according to EN 60730-1)
Maintainance	Not required

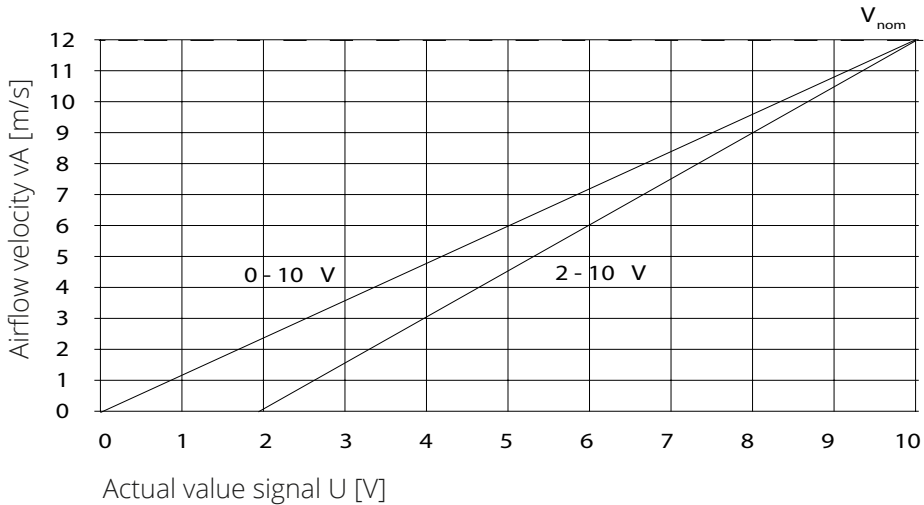
Operation specification:

Rated voltage	DC 15 V (from regulator VRP...)		
Voltage range	DC 13,5...16,5 V		
Mesuring range	0...100 Pa 0...300 Pa 0...600 Pa		
Mesuring principle	Inductive membrane differential presure mesurement		
Output signal	DC 0...10 V (proportional pressure for VRP..)		
Linearity	±1% from extreme value (FS)		
Histeresis	0,1% typ.		
Temperature influence			
zero position	±0,1% / K	±0,05% / K	±0,05% / K
Mesuring range	±0,1% / K t = +10...+40°C (referent temperature to = 5 °C)		
Installation position	Vertical		
Position dependance	Max. ±4,5 Pa za 90° rotation from horizontal		
Electric connection	Cable 1 m , with 4 pole connector		
Protection class	III (safety extra-low voltage) IP4		
Operating temperature	0...+50 °C		
Storage temperature	0...+80 °C		
Humidity test	to EN 60335-1		

Wiring diagram



ACTUATORS



0 - 10 V $V_{act} = \frac{U_{act} - V_{nom}}{10}$

2 - 10 V $V_{act} = \frac{U_{act} - 2}{8} * V_{nom}$



MAINTENANCE

AIRFLOW REGULATION

TRANSPORT

After arrival, check the VAV damper for transport damage and shortcomings. In case of any damage or shortcomings, immediately contact your supplier.

STORAGE

If the damper is not installed immediately:

- Remove any wrapping.
- Protect fire damper from dust and contamination.
- Do not expose the VAV damper to the effects of weather - store the damper in a dry place.
- Do not store the unit below -20 °C or above 50 °C.

Please properly dispose of packaging material!

MAINTENANCE AND OPERATION

Klimaoprema VAV dampers are designed with fully enclosed drive mechanism outside of the duct and as such do not require cleaning and regular maintenance. However, activation mechanism should be inspected for proper operation on regular basis.

- Provide at least one annual check of the damper
- After each intervention, provide a systematic cleaning of dust and especially the solenoid and its movable plate
- Check the if the electrical terminals are tightened
- Cleaning instruction: clean with a sponge, with water or a mild detergent
- Disinfection instruction: spray disinfectant (disinfectant may contain alcohol which is flammable, take precaution to avoid ignition)

It is not permitted to alter the dampers in any way nor perform any changes to their structure (except for the service procedures described in this manual) without the manufacturer's consent.

Provide at least one annual check of the damper. The functional test must be carried out in compliance with the basic maintenance principles of the European norms EN 13306, EN 15423 and EN15650.

COMMISSIONING

- Carefully unpack - be careful of sharp edges and do not use excessive force for unpacking
- Inspect the product - check the volume flow damper for damage
- Installation of the volume flow damper - according to the installation instructions.
- Before commissioning: check the product functions

FUNCTIONS

Electric actuator: Signal testing - the damper blade must close/open

ECONOX

AIRFLOW REGULATION

Images are for informational purposes only and may differ from the actual product.
Follow the latest versions of the catalog on the website.
