



Product manual

Rectangular control valve vav

Airflow regulation



PRODUCT OVERVIEW



AIRFLOW REGULATION

Rectangular control valve vav

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

B [mm]	H [mm]	Aef [m²]	Vmin [m³/h]	Vmax [m³/h]
200	100	0,0170	130	720
300		0,0255	190	1080
400		0,0340	255	1440
200	150	0,0255	193	1080
300		0,0382	285	1620
400		0,0510	382	2160
200	200	0,0340	255	1440
300		0,0510	380	2160
400		0,0680	505	2880
500		0,0850	630	3600
600	250	0,1020	755	4320
300		0,0637	475	2700
400		0,0850	630	3600
500		0,1062	785	4500
600	300	0,1275	945	5400
300		0,0765	570	3240
400		0,1020	755	4320
500		0,1275	940	5400
600		0,1530	1130	6480
700		0,1785	1320	7560
800		0,2040	1505	8640
900		0,2295	1695	9720
1000		0,2550	1880	10800
400	350	0,1190	880	5040
500		0,1487	1098	6300
600		0,1785	1318	7560
700		0,2082	1537	8820
800		0,2380	1755	10080
900		0,2677	1977	11340
1000		0,2955	2195	12600
400	400	0,1360	1005	5760
500		0,1700	1255	7200
600		0,2040	1505	8640
700		0,2380	1755	10080
800		0,2720	2005	11520
900		0,3060	2260	12960
1000	500	0,3401	2510	14400
500		0,2125	1570	9000
600		0,2550	1880	10800
700		0,2975	2195	12600
800		0,3400	2510	14400
900		0,3825	2820	16200
1000	600	0,4250	3135	18000
600		0,3060	2260	12960
700		0,3570	2635	15120
800		0,4080	3010	17280
900	700	0,4590	3385	19440
1000		0,5100	3760	21600
700	800	0,4165	3070	17640
800		0,4760	3510	20160
900		0,5355	3950	22680
1000	900	0,5950	4385	25200
800		0,5440	4010	23040
900		0,6120	4515	25920
1000	1000	0,6800	5015	28800
900		0,6885	5075	29160
1000		0,7650	5640	32400
1000	1000	0,8500	6265	36000



PRODUCT OVERVIEW

Motor drives

☒ LM 5 Nm ☐ NM 10 Nm

* MF 5 Nm actuator version (max dimensions 700 x 600)



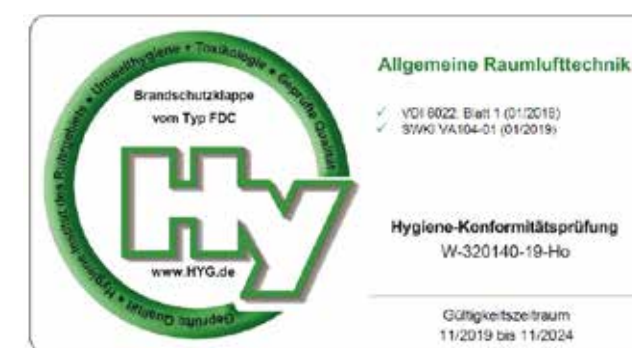
PRODUCT OVERVIEW

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.



with Belimo controller

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

- High regulation precision.
- No maintenance required.
- Airtightness classes according to EN 1751, C0/C3
- Hygiene certificate according to VDI 6022.



PRODUCT OVERVIEW

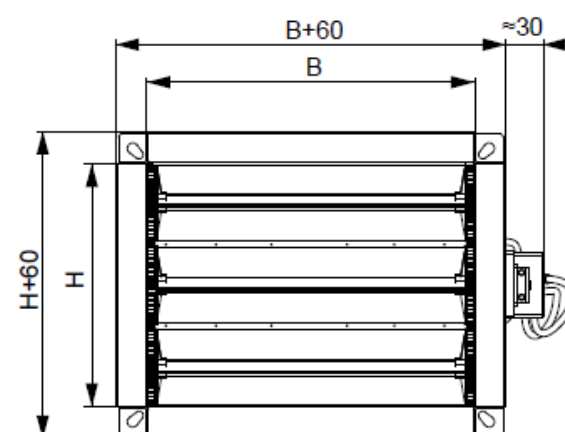
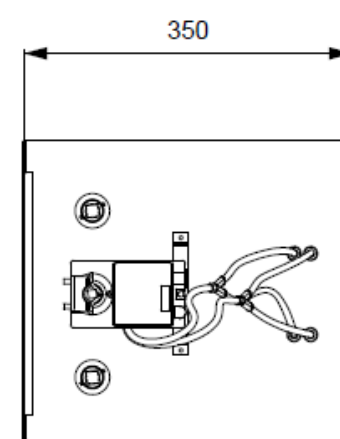
AIRFLOW REGULATION

OPTIONS

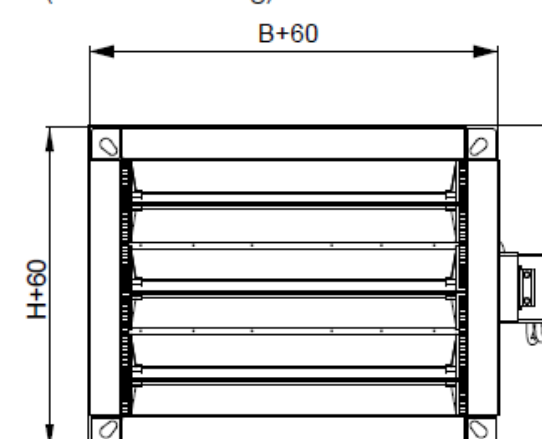
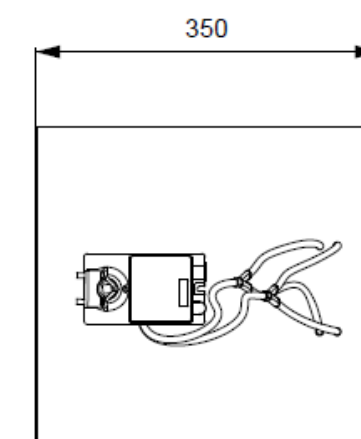
- Constant, variable, 3-stage control
- Single, master-slave and parallel modes of operation
- Insulated casing (30mm)

MP - Belimo MP

MOD-BAC - Belimo Modbus / Bacnet



(Insulated casing)



Compact VAV solutions		
	Belimo L(N)MV-D3-MP	Belimo L(N)MV-D3-MOD
Applications		
VAV/CAV control	•	•
Actuators		
Torque	5(10) Nm	5(10) Nm
Running time	Variable	Variable
Control		
0/2..10V	•	•
Via contacts (CAV)	•	
MP-Bus	•	
Modbus RTU		•
LonWorks		
KNX		
Bacnet		•
PP Bus		
Pressure sensor		
	0..450Pa	0..450Pa
Accessories		
KOER Codis E35-VAV	•	
Room temperature controler /	•	
Fan optimiser / COU24-A-MP	•	
MP gateways / UK24xxx	•	
PC Tool / MFT-P	•	•
Service tool / ZTH-GEN	•	•
Siemens software ASC941		
AST20		
Supply / Inputs		
AC/DC 24V	•	•
Feedback signal	Airflow / Damper position / Δp	Modbus Bacnet / Not relevant

* if not otherwise specified, regulator is set to standard factory values V_{max} and V_{min} .



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) }input impedance min. 100 kOhm - Adjustable DC 0...10V
Actual signal value mod U5 (connection 5)	- DC 2...10V - DC 0...10V } max. 0.5 mA - Adjustable : volume flow, damper position or differential pressure
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

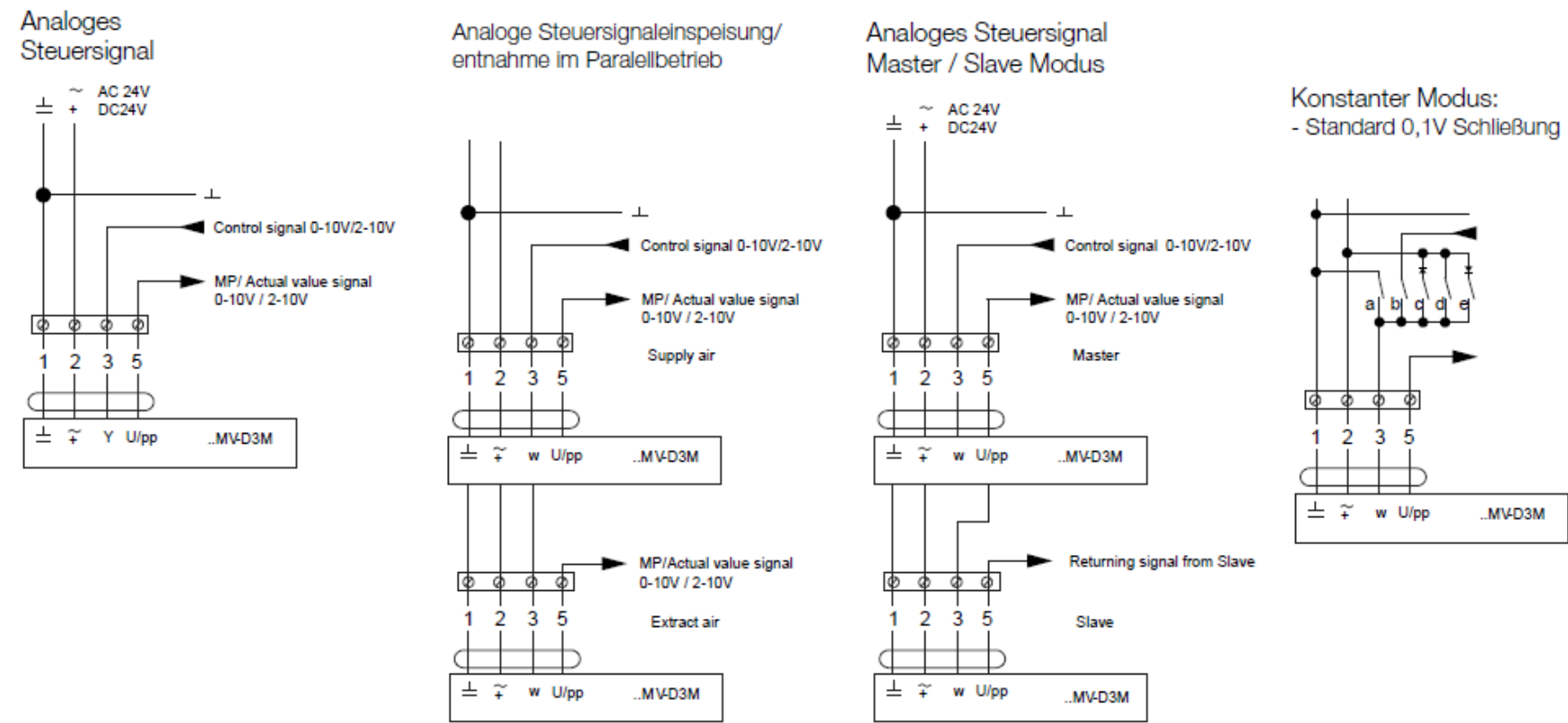


ACTUATORS

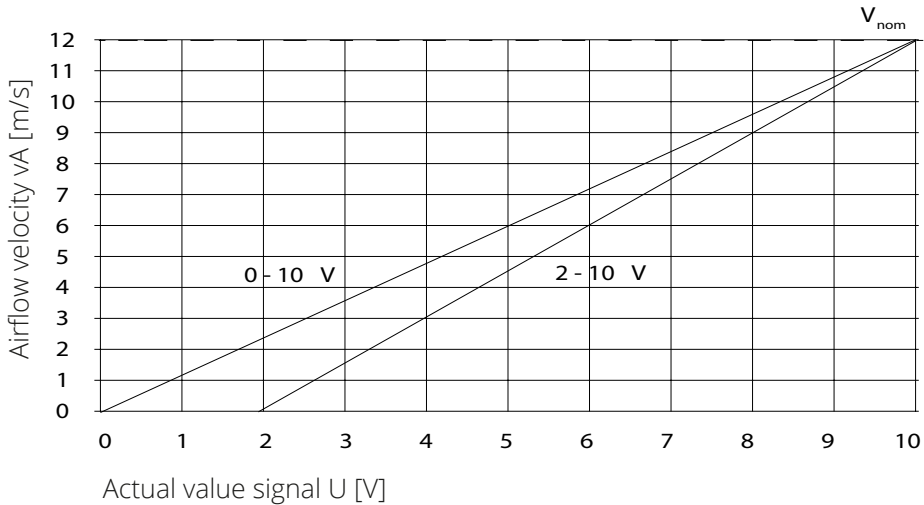
Operation specification:

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)
Hysteresis	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 REGULA

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 RVP-P - 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.
