



**Volumetric flows
under control.**

**Volumetric flow and pressure control
from Belimo**

Volumetric flow and pressure control.

Ensuring comfort and pressure ratios in an energy-saving manner

Be it in comfort zones (offices, hotels) or in sensitive working environments (industrial, pharmaceutical or health care sectors), Belimo field devices ensure an optimum room climate and defined pressure ratios with minimum energy consumption.

Health, well-being and productivity greatly depend on the atmosphere around you. Ventilation concepts according to DIN EN 15232 require modern, energy-efficient VAV control concepts and ensure demand-regulated operation from the fan of the air handling unit to the room. Not as much as possible, but as much as necessary.

Metering air flow with the Belimo VAV product range

Since their market launch in 1983, Belimo's VAV solutions have set standards in volumetric flow control in comfort zones. The extremely sensitive sensors, combined with actuator technology that has been tested millions of times, enable precise Δp recording and the control of even the smallest of volumetric flows. They also guarantee the implementation of modern, requirement-controlled ventilation concepts according to DIN EN 15232.

Integration in a bus system forms the basis for controlling the fan load equally and in a cost-optimised way. In this regard, damper requirement positions in the zones are determined and transmitted to the ventilation system via a bus system as a limit value request.

VAV-Compact – volumetric flow control with a single device

Actuator, controller and sensor in a single device, the VAV-Compact is the economical solution for variable and constant volumetric flow systems for the comfort zone. Variants with rotary actuators and linear actuators are available for VAV/CAV units of various designs. In addition to conventional analogue control, Modbus/BACnet, KNX and Belimo MP-Bus® versions are available for integration into higher-level control systems. Integrating an additional sensor into the bus system offers additional customer benefits.



VAV-Universal – maximum flexibility for increased requirements

Thanks to the new, modular structure of the VAV-Universal product range, it's easy to create the ideal combination of controller and damper motorisation for any VAV, duct pressure and room pressure application.

Two Δp sensor variants are available – the dynamic D3 sensor and the static M1 sensor (diaphragm). The actuator range with plug-and-play function includes rotary actuators with 5/10/20 Nm torque, super-fast actuators with 2.5/4/7 s running time and fail-safe actuators.

In addition to conventional analogue control, the VAV-Universal can be integrated via the selectable BACnet/Modbus/Belimo MP-Bus[®] interfaces.

VAV system solution for living areas

Special, compact CMV control units are available for distribution boxes used in controlled apartment ventilation.

Simple parameterisation, setup and monitoring

The integrated NFC interface (Near Field Communication) of the VAV-Compact and VAV-Universal controllers allows you to use the system with your own smartphone/tablet – for simple and efficient commissioning and configuration – wirelessly with the Belimo Assistant. The ZIP-BT-NFC is available for connection via Bluetooth.

For configuration at the VAV unit manufacturer (OEM) or during commissioning for bus addressing, both also in a de-energised state. Simple operational check thanks to the graphical trend analysis.

The Belimo Assistant can be downloaded for free from Google Play or the App Store. The Windows Version can be downloaded from our Website.



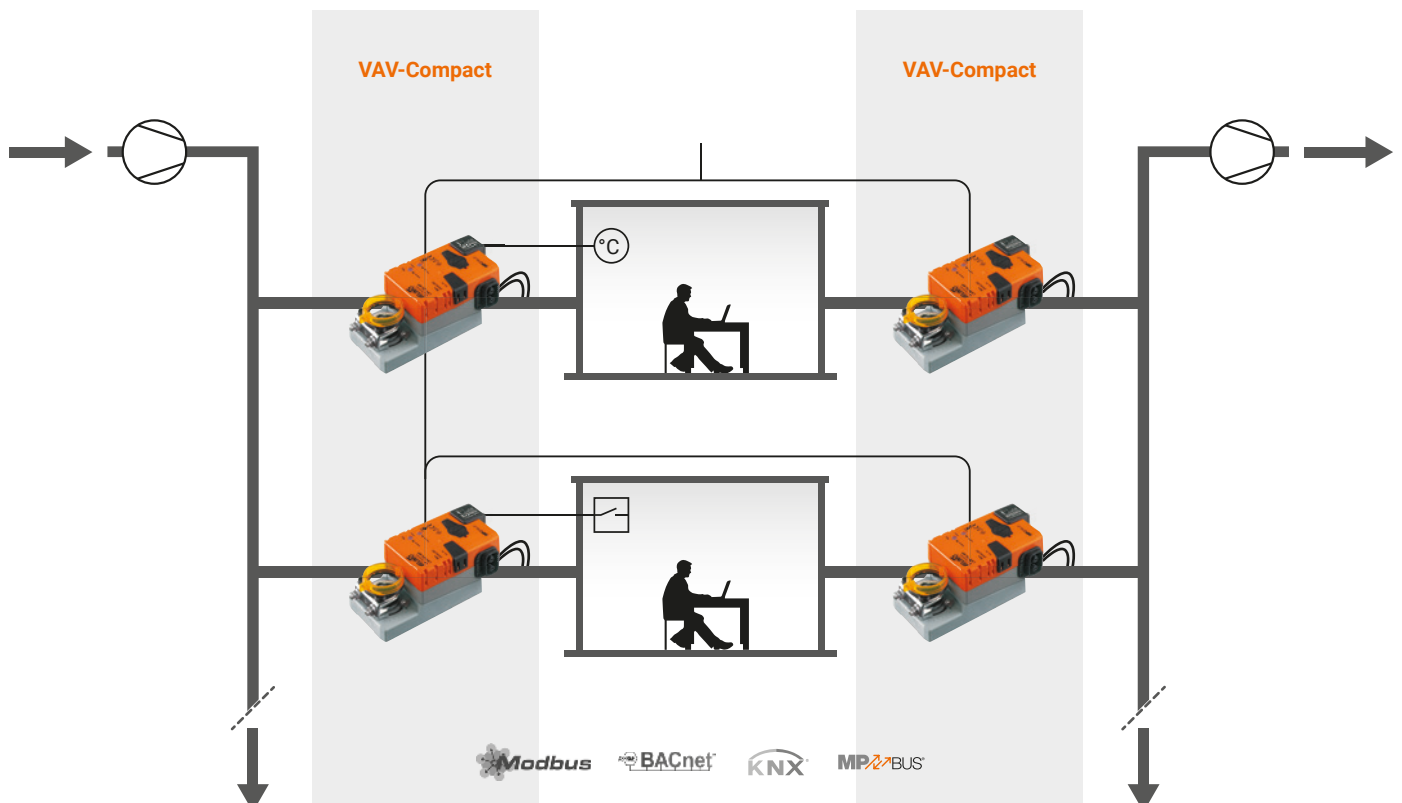
VAV-Compact.

Modern technology and sensors, convincing operation concept

Belimo launched the first VAV-Compact on the market back in 1990, as an inexpensive unit consisting of an integrated differential pressure sensor, controller and actuator. The concept of the trendsetter product is convincing and has shaped the market. To date, nearly 5 million units of these have been installed in variable volumetric flow systems. Around 90% of all VAV units in Europe are fitted with VAV-Compact controllers.



The system solution for volumetric flow systems, the VAV-Compact with the D3 sensor (dynamic Δp sensor for the comfort range) and the M1 sensor (static Δp sensor with membrane for contaminated media), is ready for the requirements of tomorrow. The result is balanced room comfort with the lowest energy consumption. Another highlight is the two-part interaction concept with local operation using the Belimo Assistant and the self explanatory service tool ZTH EU.



The better original.

VAV-Compact

Applications

Volumetric flow control (VAV):
VAV/CAV, Position Control (Open Loop)

Tool socket

Service tool ZTH EU



LED displays

Power and communication



Connection / functions

- AC/DC 24 V
- Step control:
CLOSED, MIN, MID, MAX, OPEN
- Modulating control: MIN...MAX
- Switchable control:
0...10 V / 2...10 V
BACnet MS/TP
Modbus RTU
Hybrid mode
Belimo MP-Bus®



Δp sensor

- D3, dynamic 0...500 Pa
- M1, static 0...600 Pa
for contaminated media
- Volumetric flow display
(m³/h, l/s, cfm)
- Δp display (Pa)
- Display of direction of flow



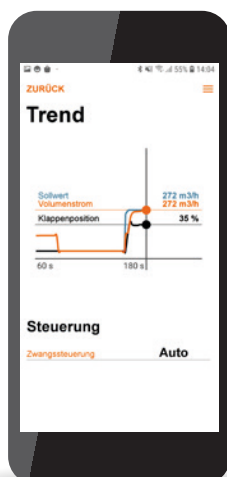
Internal actuator

Condition detection
(running time, gear
disengagement, etc.)



NFC interface

For smartphone/tablet or
PC/laptop (Windows)
operation, also de-energised.

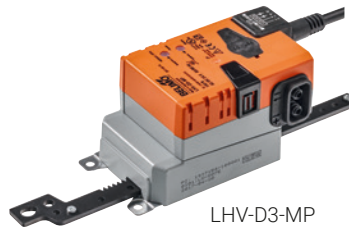


VAV-Compact product range.

Actuator with integrated Δp sensor and VAV controller



L/N/SMV-...



LHV-D3-MP

	Application	Sensor				Actuator	Supply	Control				Tool				
	Volumetric flow VAV / CAV	Position Control (Open Loop)	Comfort zone	D3, dynamic, 0...500 Pa	Contaminated media	M1, static (membrane), 0...600 Pa	Rotary 0...90°, 120...300 s	Linear 0...300 mm, 150 N, 120...300 s	AC/DC 24 V	0...10 / 2...10 V	MP-Bus®	Modbus/BACnet	Hybrid Mode (Modbus/BACnet)	KNX	Belimo Assistant	ZTHEU
Actuators																
LHV-D3-MP	■	■	■	■	-	-	-	■	■	■	■	-	-	-	■	■
LMV-D3-MP	■	■	■	■	-	-	5 Nm	-	■	■	■	-	-	-	■	■
NMV-D3-MP	■	■	■	■	-	-	10 Nm	-	■	■	■	-	-	-	■	■
SMV-D3-MP	■	■	■	■	-	-	20 Nm	-	■	■	■	-	-	-	■	■
LMV-M1-MP	■	■	■	-	■	■	5 Nm	-	■	■	■	-	-	-	■	■
NMV-M1-MP	■	■	■	-	■	■	10 Nm	-	■	■	■	-	-	-	■	■
LMV-D3-MOD	■	■	■	■	-	-	5 Nm	-	■	■	■	■	■	-	-	■
NMV-D3-MOD	■	■	■	■	-	-	10 Nm	-	■	■	■	■	■	-	-	■
SMV-D3-MOD	■	■	■	■	-	-	20 Nm	-	■	■	■	■	■	-	-	■
LMV-M1-MOD	■	■	■	-	■	■	5 Nm	-	■	■	■	■	■	-	-	■
NMV-M1-MOD	■	■	■	-	■	■	10 Nm	-	■	■	■	■	■	-	-	■
LMV-D3-KNX	■	■	■	■	-	-	5 Nm	-	■	-	-	-	-	■	-	■
NMV-D3-KNX	■	■	■	■	-	-	10 Nm	-	■	-	-	-	-	■	-	■

■ Comfort applications with D3 sensor

■ Contaminated areas with M1 sensor (compatibility test with the intended media required)

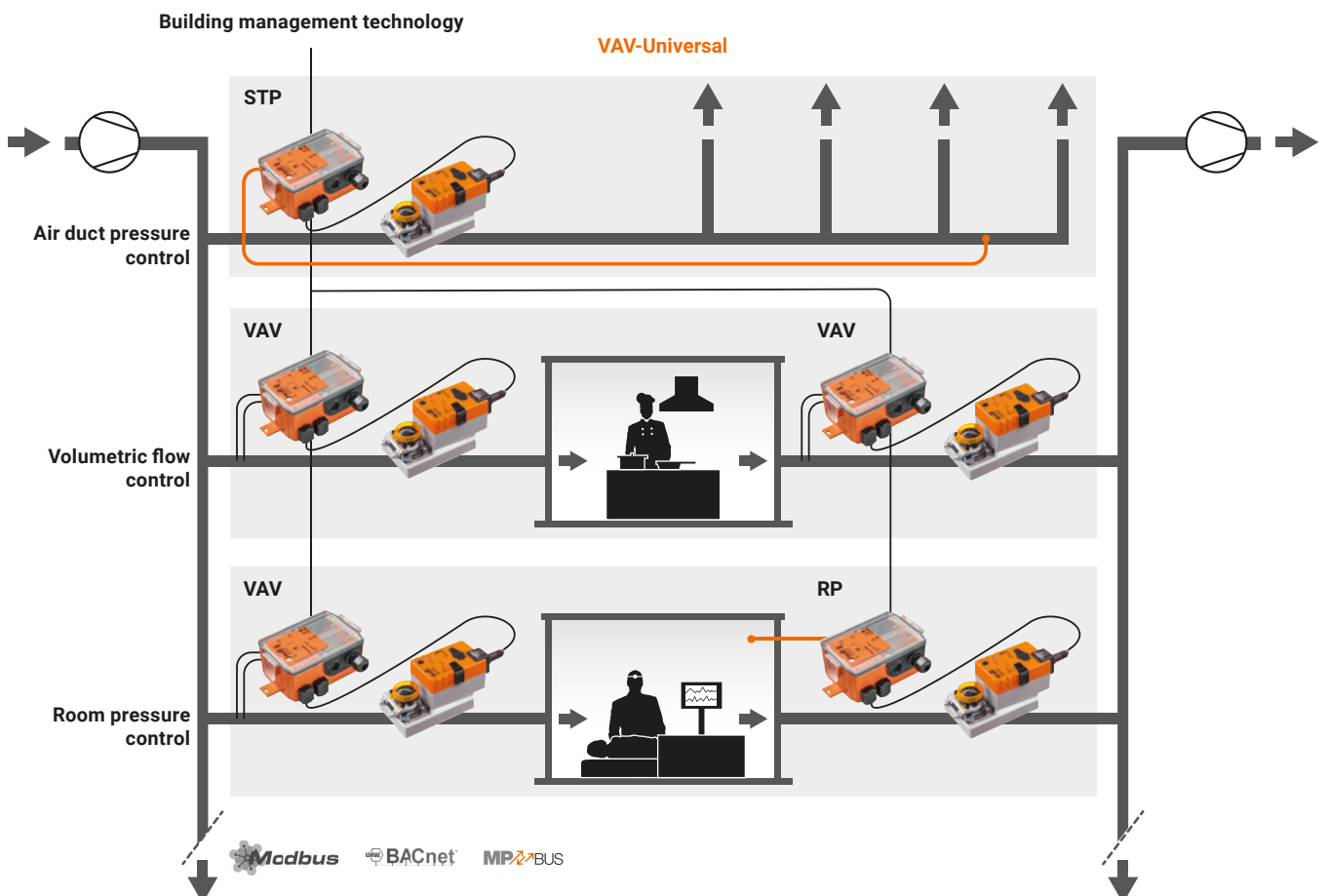
VAV-Universal.

Maximum flexibility for increased requirements

The modular design of the VAV-Universal product range with integrated Δp sensor enables the ideal combination of controller and damper motorisation for each VAV, duct pressure and room pressure application.



- Two Δp sensor variants are available: the D3 sensor (dynamic Δp sensor for the comfort range) and the M1 sensor (static Δp sensor with membrane for contaminated media).
- The damper actuator product range with the plug-and-play function includes full-rotation actuators, very fast running actuators as well as rotary actuators with fail-safe.
- Integrated NFC interface for simple commissioning and configuration with a smartphone/tablet using the Belimo Assistant.



Flexible. Efficient. Universal.

VAV-Universal

Applications

- Volumetric flow control:
 - VAV/CAV, position control (external VAV control), measuring volumetric flow
- Air duct pressure control
- Room pressure/room pressure volumetric flow cascade

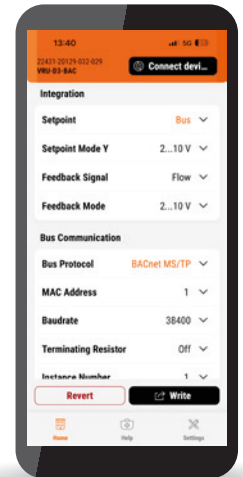
Tool socket

Service tool ZTH EU



LED displays

- 24 V (status)
- Belimo Assistant



NFC interface

For smartphone/tablet or PC/laptop (Windows) operation, also de-energised.

Connection / functions

- AC/DC 24 V
- Step control: CLOSED, MIN, MAX, OPEN, motor stop
- Modulating control: MIN...MAX
- Override control inputs: CLOSED, MAX, OPEN, motor stop
- Switchable control:
 - 0...10 V / 2...10 V
 - BACnet MS/TP
 - Modbus RTU
 - Hybrid mode
 - Belimo MP-Bus®



Δp sensor

- D3, dynamic 0...500 Pa
- M1(R), static 0...600 Pa (-75...75 Pa) for contaminated media
- Volumetric flow display (m³/h, l/s, cfm)
- Δp display (Pa)
- Display sensor error, hose connection



External actuator

Digital control and status recording (running time, gear disengagement, etc.)

VAV-Universal product range.

VRU controller with integrated Δp sensor



	Application		Sensor			Control				Tool		
	Volumetric flow VAV/CAV ¹⁾	Duct pressure STP 20...500 (600) Pa	Room pressure ²⁾	Comfort zone	Contaminated air ³⁾	Sensor type, principle Measuring ranges	0...10 / 2...10 V	MP-Bus®	Modbus/BACnet	Hybrid Mode (Modbus/BACnet)	Belimo Assistant	ZTHEU
VRU-D3-BAC	■	■	-	■	-	D3, dynamic 0...500 Pa	■	■	■	■	■	■
VRU-M1-BAC	■	■	-	■	■	M1, static 0...600 Pa	■	■	■	■	■	■
VRU-M1R-BAC	-	-	■	■	■	M1R, static -75...75 Pa	■	■	■	■	■	■

¹⁾ VAV-CAV, position control (open-loop), measure volumetric flow

²⁾ Room pressure control, room pressure cascade control (Δp , volumetric flow)

³⁾ Contaminated areas with M1 sensor (compatibility test with the intended media required)

Actuators for VRU controller



		Running time	Torque	VST plug connection
LM24A-VST	Standard	120 s	5 Nm	■
NM24A-VST			10 Nm	■
SM24A-VST			20 Nm	■
LMQ24A-VST	Very fast running actuators	2.4 s	4 Nm	■
NKQ24A-VST	Very fast runner with fail-safe	4 s	6 Nm	■
NMQ24A-VST	Very fast running actuators	4 s	8 Nm	■
SMQ24A-VST	Very fast running actuators	7 s	16 Nm	■
LF24-VST	Fail-safe actuators	120 s	4 Nm	■
NF24A-VST			10 Nm	■
SF24A-VST			20 Nm	■

CMV.

Quiet, precise, discreet.

CMV – the innovative VAV control system for living area ventilation

It is now mandatory that modern, energy-optimised buildings require controlled apartment ventilation. In order to control the small air volumes exactly, new, innovative solutions are needed, such as the unique CMV-...-MP from Belimo. As a complete control system, it combines all of the components responsible for this in a single device: air velocity sensor, volumetric flow controller and damper actuator with integrated damper blade.

All parts are tailored exactly to one another and thus ready for immediate utilisation. Installed in the interior, the unit provides exact control of the air volume with minimised energy utilisation and without irritating flow noise.

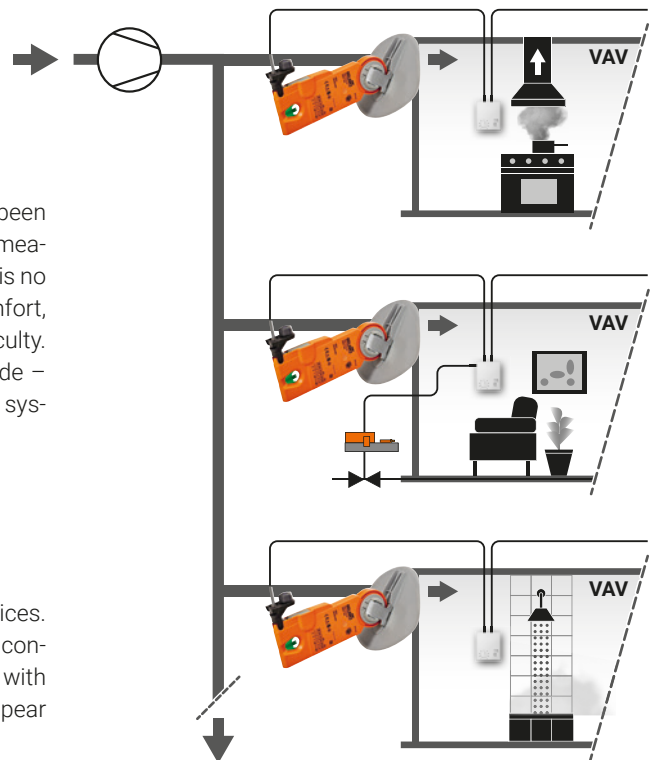


Precise and inconspicuous

The innovative concept of the internal damper actuator has been expanded with the CMV-...-MP to include a precise air velocity measurement. The exact regulation of the air velocity to 0.3...7 m/s is no longer just wishful thinking, and the balancing act between comfort, hygiene and energy savings can be accomplished without difficulty. All components – sensor, controller, actuator and damper blade – can be easily installed in the most diverse domestic ventilation systems.

Quiet and energy-saving

Lower air resistance ensures low-noise and energy-efficient devices. The flow technology-optimised construction of the CMV-...-MP considerably reduces the air resistance surface in comparison with conventional structures. This means that the flow noises disappear and the energy consumption of the system is reduced.



All inclusive.

Belimo is the global market leader in the development, production, and sales of field devices for the energy-efficient control of heating, ventilation and air-conditioning systems. The focus of our core business is on damper actuators, control valves, sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.



5-year warranty



On site around the globe



Complete product range



Tested quality



Short delivery times



Comprehensive support

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