Air Flow Measurement and Control

Volumetric Flows Under Control

Discover the advantages
www.belimo.us

BELIMO

Efficient air flow control

Proper building ventilation requires modern, energy-efficient control devices that ensure demand-regulated operation from the air handling fan to the room to maintain the amount of outdoor air required for acceptable indoor air quality. Proper air system performance can be challenging. Belimo field devices can provide fresh air to zones to maintain optimum room climate and/or specified pressure ratio with minimal energy consumption. They are designed for comfort zones (offices, hotels) and sensitive working environments (industrial, pharmaceutical, or healthcare), delivering the right amount of air as needed.

Leveraging Building Data

Airflow and measurement actuators with BACnet MS/TP, Modbus RTU, or MP-Bus connections directly communicate with the Building Automation System (BAS). BAS integration leverages building data to enable optimizing ventilation rates based on fan loads, occupancy, or CO2 levels. Actuators can receive active sensor signals and pass them to the BAS, simplifying installation and saving valuable inputs and outputs. Select models offer Near Field Communication (NFC) for quick programming, commissioning, and troubleshooting.

System Performance

Belimo's actuators communicate directly with the Building Automation System (BAS) using BACnet MS/TP, Modbus RTU, or MP-Bus.

Energy Savings

Patented technology provides higher efficiency with lower power consumption and reduces carbon emissions over the product's life.

Controllability

Maintains pressure independent operation eliminating the need for manual balancing, reducing installation and commissioning.

"Belimo makes HVAC control devices that we can trust and provide a long-lasting system for our clients."

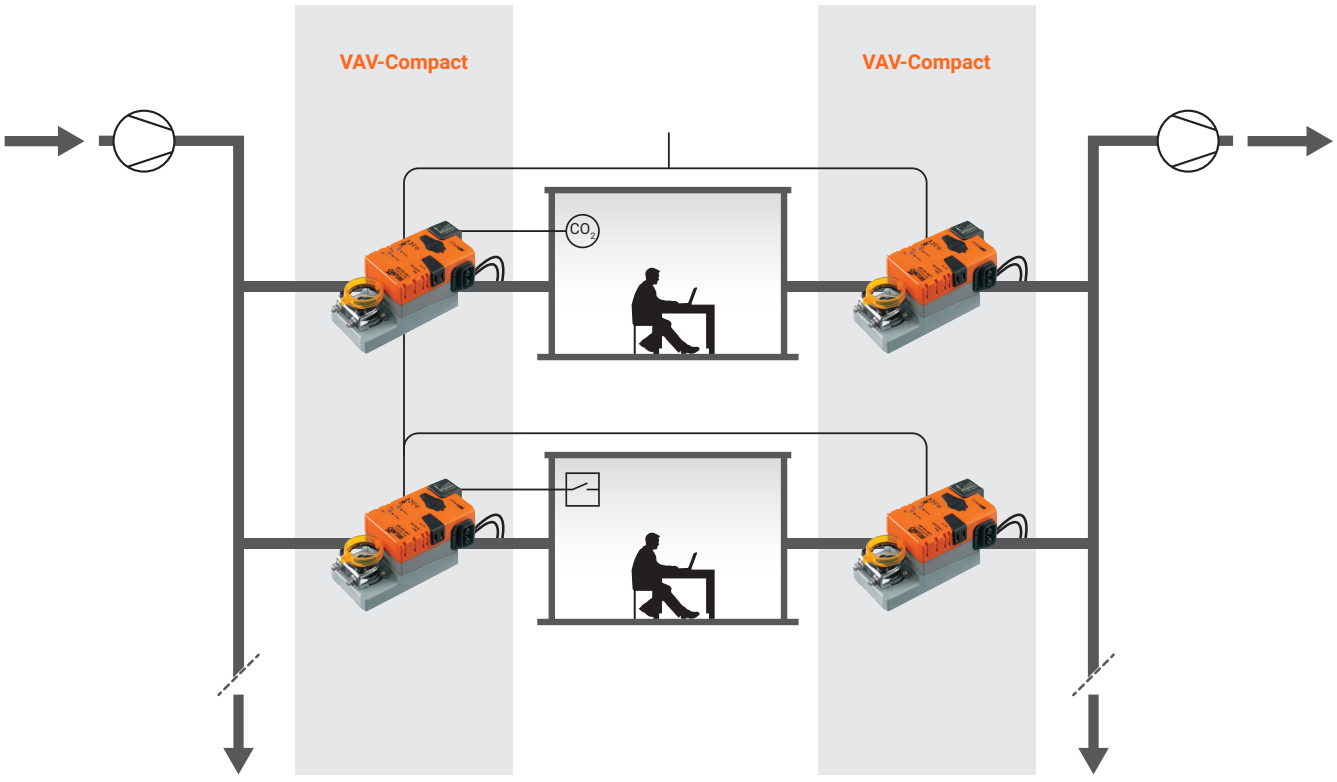
Matt Paonessa, Project Engineer
Andersen Construction, Seattle, WA

Pressure independent airflow

VAV Compact

Belimo's proven VAV compact is a standalone networked damper actuator with an integrated differential pressure sensor to provide proper ventilation with low energy consumption regardless of pressure fluctuations in the system. The VAV Compact offers easy installation and commissioning for small-to-mid-size installation.

Using the Belimo Assistant App, ZTH handheld, or the PC-Tool with a graphical trend display, it's never been easier to set, commission, monitor, or evaluate Belimo actuators.



Modbus

BTL BACnet TESTING LABORATORIES

MP BUS® TECHNOLOGY BY BELIMO

VAV Compact Applications

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

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

Direct connection
with the ZTH or PC-Tool on -MFT, -MP, and -MOD series actuators

LED displays
Power and communication

Δp sensor
- D3, dynamic 0...2 in WC [0...500 Pa]
- Volumetric flow display (m^3/h, l/s, cfm)
- Δp display in WC, Pa
- Display of direction of flow

Manual gear release
Easy installation and troubleshooting.

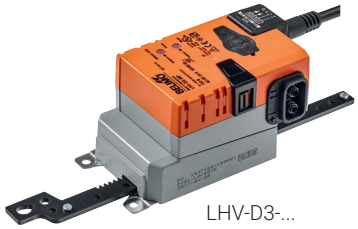
NFC interface
Provides data access, field adjustable, commissioning and troubleshooting with the Belimo Assistant App and a smartphone

VAV compact product range

Actuator with integrated Δp sensor and VAV functionality

NMV-D3-..

LMV-D3-...



LHV-D3-...

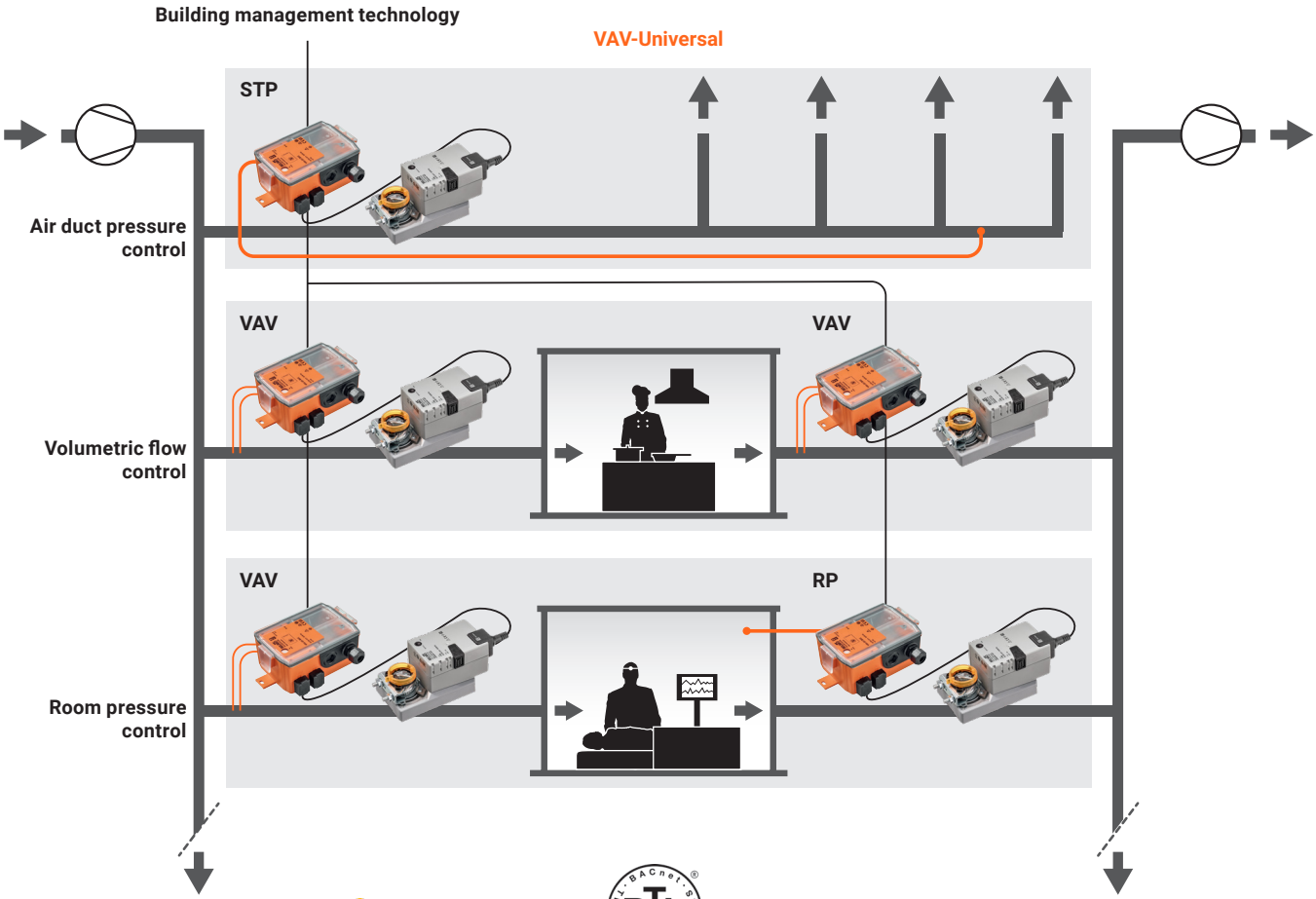
	Power Supply	Power Consumption		Running Time	Application			Operation and Servicing				Housing Type	Cabling	Drive Type		Control Input			Feedback		Sensor Integration (Select 1 of 3)		
	AC 24 V ± 20%, 50/60 Hz VDC ±10%	VA Rating	Wattage Running (Holding)	Motor Drive (Seconds)	CAV (0...3000 fpm)	VAV (0...3000 fpm)	Open Loop (0...3000 fpm)	NFC Interface for Android	NFC for iPhone via ZIP-BT-NFC	PC-Tool	ZTH	NEMA 1 or 2	Conduit Connector Available	Rotary "M", Linear "L"	Integrated Damper Blade	2...10 V or 4...20 mA (w/500 Ω Resistor)	BACnet: MS/TP or Modbus RTU	MP Bus	2...10 V (Default) Adjustable with MFT	Optional Accessories: Aux. Switch (S1A, S2A), Potentiometer (P..A GR)	Passive (PT1000, 10k2, etc.)	Active (0...10 V) e.g. Temperature, Humidity, etc.	Contact Closure (Switching Capacity 16 mA @ 24 V), e.g. Switches, Occupancy Switches
NMV-D3-MP	■	5	3 (1.5)	150	■	■	■	■	■	■	■	2	■	M		■		■	■	■	■	■	■
NMV-D3-MOD	■	5	3 (1.5)	150	■	■	■			■	■	2	■	M		■	■	■	■	■		■	■
NMV-D3-MFT	■	5	3 (1.5)	150	■	■	■			■	■	2	■	M		■		■	■	■		■	■
LMV-D3-MP	■	3.5	2 (1)	150	■	■	■	■	■	■	■	2	■	M		■		■	■	■	■	■	■
LMV-D3-MOD	■	4	2 (1)	150	■	■	■			■	■	2	■	M		■	■	■	■	■		■	■
LMV-D3-MFT	■	3.5	2 (1)	150	■	■	■			■	■	2	■	M		■		■	■	■		■	■
LHV-D3-MP-100	■	4.5	2.5 (1.5)	150	■	■	■	■	■	■	■	2	■	L (4")		■		■	■	■	■	■	■
LHV-D3-MP-200	■	4.5	2.5 (1.5)	150	■	■	■	■	■	■	■	2	■	L (8")		■		■	■	■	■	■	■
LHV-D3-MP-300	■	4.5	2.5 (1.5)	150	■	■	■	■	■	■	■	2	■	L (12")		■		■	■	■	■	■	■
CMBV-100-MFT	■	2.5	1.5 (1)	70	■	■	■			■	■	1		M	4"	■		■	■				
CMBV-125-MFT	■	2.5	1.5 (1)	70	■	■	■			■	■	1		M	5"	■		■	■				
CMBV-150-MFT	■	2.5	1.5 (1)	70	■	■	■			■	■	1		M	6"	■		■	■				

Maximum flexibility

VAV Universal

The VAV Universal product line with an integrated differential pressure sensor is the ideal solution for VAV, duct pressure, and room pressure applications. Two sensors are available: the D3 dynamic sensor for comfort applications and the M1 diaphragm sensor for polluted air.

Mechanical fail-safe, fail-safe, and quick running actuators are available. Sensor and communication modules are equipped with NFC capabilities as well as BACnet MS/TP and Modbus RTU functionality.



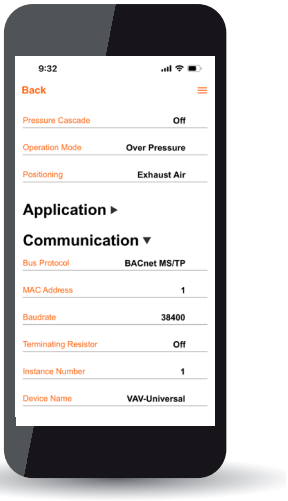
Modbus

BTL BACnet Testing Laboratories

MP BUS TECHNOLOGY BY BELIMO

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



LED displays
- 24 V (status)
- Belimo Assistant App

Direct connection
with the ZTH or PC-Tool

NFC interface
Provides data access with the Belimo Assistant App and a smartphone

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...2 in WC [0...500 Pa]
- M1(R), diaphragm 0...2.4 in WC [0...600 Pa] (-.3... .3 in WC [-75...75 Pa]) for polluted fluid
- Volumetric flow display (m^3/h, l/s, cfm)
- Δp display in WC, Pa
- Display sensor error, hose connection

Actuator Flexibility
Non fail-safe, fail-safe, and quick running actuators available

VAV universal product range

VAV universal sensor/communication module

	Power Supply	Power Consumption		Application								Operation and Servicing				Housing Type	Cabling	Control Input			Feedback		Sensor Integration (Select 1 of 3)		
	AC 24 V ± 20%, 50/60 Hz VDC ±10%	VA Rating	Wattage Running (Holding)	CAV (0...3000 fpm)	VAV (0...3000 fpm)	Volumetric Flow Measurement	Open Loop (0...3000 fpm)	Duct Pressure Control	Room Pressure Control	Room Pressure Control with Bypass	Volumetric Flow and Room Pressure Cascade Control	NFC Interface for Android	NFC for iPhone via ZIP-BT-NFC*	PC-Tool	ZTH	NEMA 1	Conduit Connector Available	2...10 V or 4...20 mA (w/500 Ω Resistor)	BACnet: MS/TP or Modbus RTU	MP Bus	2...10 V (Default) Adjustable with MFT	BACnet: MS/TP or Modbus RTU	Passive (PT1000, 10k2, etc.)	Active (0...10 V) e.g. Temperature, Humidity, etc.	Contact Closure (Switching Capacity 16 mA @ 24 V), e.g. Switches, Occupancy Switches
VRU-D3-BAC	■	2	1.5	■	■	■	■	■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
VRU-M1-BAC	■	2	1.5	■	■	■	■	■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
VRU-M1R-BAC	■	2	1.5						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

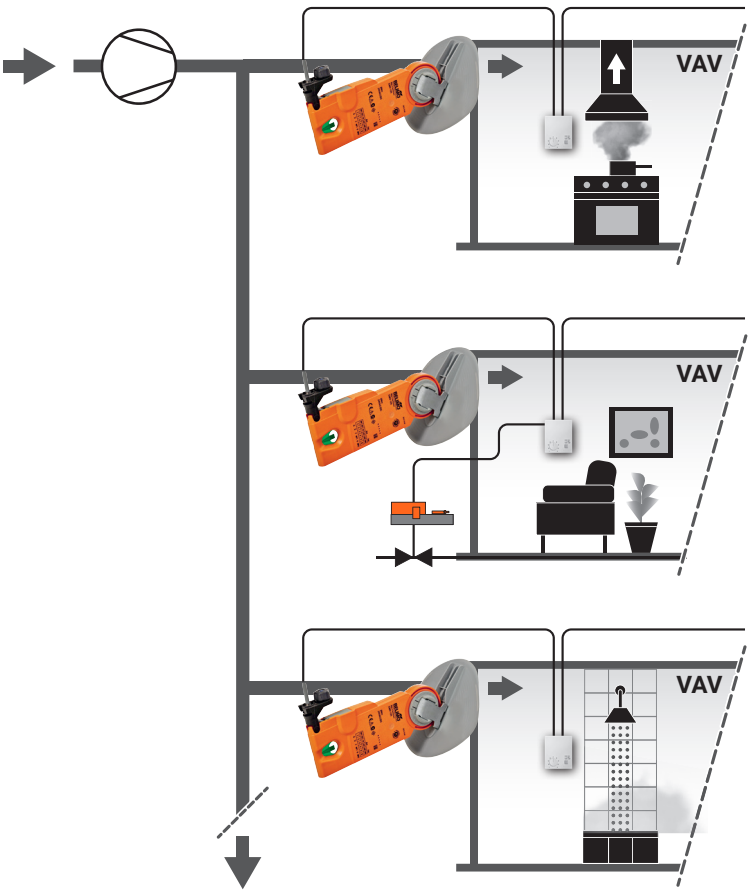
VAV universal actuator series

	Torque Rating	Power Supply	Power Consumption		Running Time		Application								Operation and Servicing	Housing Type	Cabling	Drive Type	Control Input			Position Feedback
	in-lbs (Nm)	AC 24 V ± 20%, 50/60 Hz VDC ±10%	VA Rating	Wattage Running (Holding)	Motor Drive (Seconds)	Fail-Safe (Seconds)	CAV (0...3000 fpm)	VAV (0...3000 fpm)	Volumetric Flow Measurement	Open Loop (0...3000 fpm)	Duct Pressure Control	Room Pressure Control	Room Pressure Control with Bypass	Volumetric Flow and Room Pressure Cascade Control	Operation and Servicing via Sensors/ Communication Module	NEMA 2	20" [0.5 m] Cable with VST Connector	Rotary "M", Linear "L"	2...10 V or 4...20 mA (w/500 Ω Resistor) (via Sensor/Communications Module)	BACnet: MS/TP or Modbus RTU (via Sensor/Communications Module)	MP Bus (via Sensor/Communications Module)	Feedback Through Sensor/ Communication Module
LM24A-VST	45 (5)	■	2	1 (.4)	120		■	■		■	■	■	■	■	■	■	■	M	■	■	■	■
NM24A-VST	90 (10)	■	4	2 (.4)	120		■	■		■	■	■	■	■	■	■	■	M	■	■	■	■
LF24-VST	35 (4)	■	5	2.5 (1)	120	20	■	■		■	■	■		■	■	■	■	M	■	■	■	■
NF24A-VST	90 (10)	■	8	5 (2.5)	120	20	■	■		■	■	■		■	■	■	■	M	■	■	■	■
SF24A-VST	180 (20)	■	11	8.5 (3.5)	120	20	■	■		■	■	■		■	■	■	■	M	■	■	■	■
LMQ24A-VST	35 (4)	■	23	13 (2)	2.4		■	■		■		■	■	■	■	■	■	M	■	■	■	■
NMQ24A-VST	70 (8)	■	23	13 (2)	4		■	■		■		■	■	■	■	■	■	M	■	■	■	■
NKQ24A-VST	54 (6)	■	22	11 (3)	4	4	■	■		■		■	■	■	■	■	■	M	■	■	■	■

Quiet and discreet

CMBV

The CMBV is an air flow measurement and control system that combines several components into a single device: a flow anemometer, damper actuator, and integrated damper blade. Installed in the duct's interior, the CMBV maintains the exact air flow required with minimal energy and noise level. The CMBV is designed to reduce air resistance in comparison with conventional structures. With Belimo's communication protocol, MP-Bus, the duct temperature can also be measured, increasing the product's utility even further.



CMBV product range

VAV control unit with integrated damper actuator

	Power Supply	Power Consumption		Running Time	Application			Operation and Servicing		Housing Type	Drive Type		Control Input			Feedback
	AC 24 V ± 20%, 50/60 Hz VDC ±10%	VA Rating	Wattage Running (Holding)	Motor Drive (Seconds)	CAV (0...3000 fpm)	VAV (0...3000 fpm)	Open Loop (0...3000 fpm)	PC-Tool	ZTH	NEMA 1 or 2	Rotary "M", Linear "L"	Integrated Damper Blade	2...10 V or 4...20 mA (w/500 Ω Resistor)	BACnet: MS/TP or Modbus RTU	MP Bus	2...10 V (Default) Adjustable with MFT
CMBV-100-MFT	■	2.5	1.5 (1)	70	■	■	■	■	■	1	M	4"	■		■	■
CMBV-125-MFT	■	2.5	1.5 (1)	70	■	■	■	■	■	1	M	5"	■		■	■
CMBV-150-MFT	■	2.5	1.5 (1)	70	■	■	■	■	■	1	M	6"	■		■	■

Exceptional service

At Belimo, we continually invest in new technologies that increase customer value by improving occupant comfort, energy efficiency, simplified installation, and maintenance-free operation. Our sales team is available to consult and provide insight and advice on how to achieve the best solution to help increase your system performance. Belimo will continue to focus on providing you with exceptional product availability, fast delivery times, and world-class customer service and technical support. We remain dedicated to continuously improve our standards and are committed to providing you the highest value possible.

Whatever your HVAC application, our global network of support experts are on hand and ready to assist.

- 5-year warranty
- Global support
- Tested quality
- On-time delivery
- Extensive service
- Complete product range

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