A pressure sensor, digital VAV controller and damper actuator all in one, providing a compact solution with a communications capability for pressure-independent VAV and CAV systems in the comfort zone

- **Control (0)2 … 10 V or via MP-Bus**
- **MP-Bus: Control device with MP interface,**
  Gateway: BACnet / LON / Modbus / KNX
- **DCV – Fan Optimiser function:**
  COU24-A-MP or DDC
- **Conversion of sensor signals**
- **Service socket for operating devices**
- **NFC interface for smartphone App**

LMV-D3-MP
NMV-D3-MP
SMV-D3-MP

MP-BUS

LHV-D3-MP

Belimo Assistant App

NFC

Brief description

Application
The VAV-Compact has PI control characteristics and is used for pressure-independent control of VAV units in the comfort zone.

Pressure measurement
The integrated D3 differential pressure sensor is also suitable for very small volumetric flows. The maintenance-free sensor technology enables versatile applications in the comfort zone: in residential construction, offices, hospitals, hotels, cruise ships, etc..

Actuator
VAV unit manufacturers offer different actuator variants (rotary or linear actuator) for different VAV units structures.

Control function
Volumetric flow (VAV-CAV) or Open-Loop (for integration in an external VAV control loop).

VAV (VVS) – variable volumetric flow
Demand-dependant setting of volumetric flows $\dot{V}_{min}$ … $_{max}$ on a modulating reference variable (0/2 … 10 V / MP-Bus), e.g. room temperature / CO2 controller, DDC or Bus system, for energy-saving air conditioning in individual rooms or zones.

CAV (KVS) – constant volumetric flow
Step mode (via switching contact) for constant volume applications
CLOSED / $\dot{V}_{min}$ / $\dot{V}_{mid}$ / $\dot{V}_{max}$ / OPEN.

DCV – Demand Controlled Ventilation
With Belimo Fan Optimiser COU24-A-MP or MP partner solution with integrated Optimiser function.

Bus operation
Belimo MP devices (VAV / damper and valve actuators) can be connected to a MP master device via the MP-Bus:
– MP partner solution: DDC controller with integrated MP-Bus protocol
– Gateway for the integration in BACnet, KNX, LonWorks® and Modbus applications
In Bus operation an additional sensor (0…10 V / passive) such as temperature or a switch for the higher-level system can be integrated.
See separate MP-Bus documentation at www.belimo.eu.

Operating and service devices
Smartphone Assistant App: Contactless operating via the integrated NFC interface.
Service tool ZTH, PC-Tool service socket: locally pluggable or via MP-Bus.

Electrical connection
The connection is made with the integrated connection cable.

Sales, mounting and setting
VAV-Compact will be mounted by the VAV unit manufacturer (OEM), the application will be set and calibrated accordingly. The VAV-Compact is sold exclusively via the OEM channel for this reason.

Type overview MP versions

Type	Torque	Power consumption	Rating	Weight
LMV-D3-MP	5 Nm	2 W	3.5 VA (max. 8 A @ 5 ms)	Approx. 500 g
NMV-D3-MP	10 Nm	3 W	5 VA (max. 8 A @ 5 ms)	Approx. 700 g
SMV-D3-MP	20 Nm	3 W	5.5 VA (max. 8 A @ 5 ms)	Approx. 830 g
LHV-D3-MP	150 N	2.5 W	4.5 VA (max. 8 A @ 5 ms)	Approx. 550 g

OEM version
In addition to the standard Belimo version, there are OEM VAV-Compact versions available for VAV unit manufacturers' variants. These versions are customised and labelled specifically for OEM on the sensors, damper spindles and fastening systems used. See documentation of the VAV unit manufacturer.
Designation, e.g.: LMV-D3-MP ABC (ABC = Customer designation)

Other versions
The VAV-Compact is also available with a built-in interface for direct integration in KNX, LONWORKS® and Modbus.
See www.belimo.eu for more information and documentation.

Safety notes

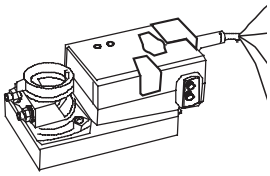
- **The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.**
- **Outdoor applications: possible only in the absence of direct effects on the actuator from (sea)water, snow, ice, sunlight and aggressive gases and when it is guaranteed that the ambient conditions do not deviate at any time from the limit values specified in the datasheet.**
- **Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.**
- **The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.**
- **Cables must not be removed from the device.**
- **When calculating the torque required, the specifications supplied by the damper manufacturers (cross-section, construction, place of installation), and the ventilation conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Electrical installation

Notes

– Supply via safety isolating transformer!

– In conventionally controlled systems it is recommended that the connections 1 to 5 (PP) are led to accessible terminals (e.g. floor distributor) in order to allow remote access for diagnostics and service work.



No.	Designation	Wire colour	Function
1	⊥ –	black	AC/DC 24 V supply
2	~ +	red	
3	◄ Y	white	Reference signal / override / sensor
5	► U	orange	– Actual value signal – MP bus connection

See separate documentation for description of functions and applications

Technical Data

Electrical data	Nominal voltage	AC/DC 24 V, 50/60 Hz
	Operating range	AC 19.2 ... 28.8V / DC 21.6 ... 28.8V
	Performance data	See Overview of types (page 1)
	Connecting	Cable, 4 x 0.75 mm², preassembled
Volumetric flow controllers	Control function	VAV/CAV and Open-Loop
	$\dot{V}_{nom}$ 1)	OEM specific nominal volumetric flow setting, suitable for VAV unit
	Δp @ $\dot{V}_{nom}$ 1)	38 … 500 Pa
	$\dot{V}_{max}$	20 … 100 % of $\dot{V}_{nom}$, adjustable
	$\dot{V}_{mid}$	>$\dot{V}_{min}$ … <$\dot{V}_{max}$, adjustable
	$\dot{V}_{min}$	0 … 100 % of $\dot{V}$nom, adjustable (<$\dot{V}$max)
Analogue control - VAV	Mode (Y)	0 … 10 V / 2 … 10 V / (Y and U5 individually) adjustable, input resistance 100 kΩ (0/4 … 20 mA with 500 Ω resistance)
	Actual value signal (U)	0 ... 10 V / 2 ... 10 V, max. 0.5 mA Volumetric flow / damper position / Δp, selectable
Stepped control - CAV	Operating stages	CLOSED / $\dot{V}_{min}$ / $\dot{V}_{mid}$ *) / $\dot{V}_{max}$ / OPEN *) *) AC 24 V supply required
Bus mode	Communication	Belimo MP bus
	Addressing	MP1 … 8 (analogue control: PP)
	Bus master	DDC with MP interface (see Belimo MP Partners List www.belimo.eu)
	Control	The setpoint specification in % between the set $\dot{V}$min / $\dot{V}$max values
	Sensor integration	Passive sensor (PT1000, Ni1000, …) or active sensor (0 … 10 V) Switching contact (0 / 1) (switching capacity 16 mA @ 24 V)
Operation and servicing	Assistant App (Smartphone)	Contactless connection via the integrated NFC interface
	Service tool ZTH, PC-Tool	Local plug / Remote via PP/MP connection or MP master
	LED	Supply , status and communication display
	Push-button	Addressing, angle of rotation adaptation and test function
Actuator	Rotary/linear version	Brushless, non-blocking actuator with power-save mode
	Direction of rotation 1)	left / right or up / down, adjustable
	Angle of rotation	95° or 150 / 200 / 300 mm stroke, adjustable mechanical or electronic limiting
	Gear disengagement	Push-button self-resetting without functional impairment
	Position indication	Mechanical or accessible (Tool, Bus-Master)
	Spindle holder	Spindle clamp for round and square shafts form fit, OEM versions
Volumetric flow measurement	Differential pressure sensor	Belimo D3 sensor, dynamic measurement principle
	Measurement range, operating range	–20 … 500 Pa, 0 … 500 Pa
	Overload capability	±3000 Pa
	Altitude compensation	Adaptation to system altitude (adjustable between 0 … 3000 m above sea level)
	Installation position	Any, no reset necessary
	Materials in contact with medium	Glass, epoxy resin, PA, TPE
	Measuring air conditions	Comfort zone 0 … 50°C / 5 … 95% rH, non-condensing
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC / EN	IP54
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Rated current voltage Supply / control	0.8 kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity range	95% r.h., non-condensing
	Maintenance	Maintenance-free. Depending on the application, the differential pressure sensor (measuring cross, disc, …) of the VAV unit is checked occasionally and cleaned if required.

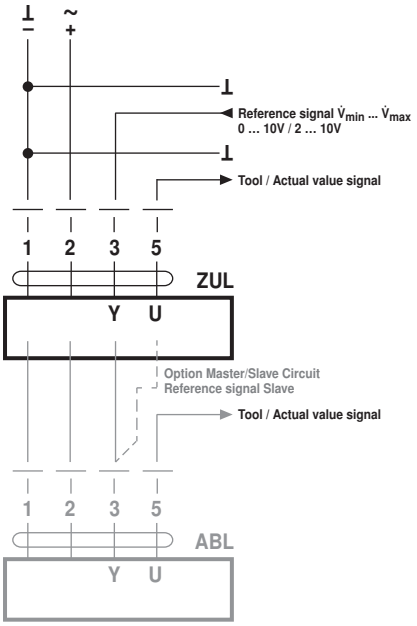
1) Setting by VAV manufacturer (OEM)

FCC: see US-relevant notes on page 12

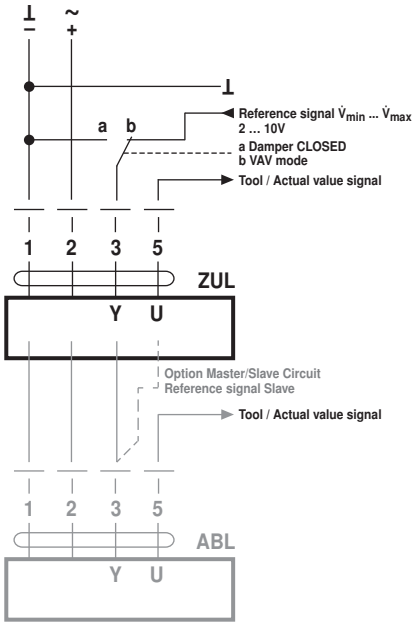
VAV – variable operation $\dot{V}_{min}$...$\dot{V}_{max}$

Wiring diagrams

Example 1:
VAV, analogue reference signal



Example 2:
VAV with shut-off (CLOSED), 2 ... 10V mode



Description:

Damper CLOSED via 0 ... 10 V reference signal (Mode 2 ... 10 V)

Setting parameters:
Mode 2 … 10 V, Shut off level 0.1 V or 0.5 V

If the required switching threshold of 0.1 V cannot be attained, the value can be switched to 0.5 V with PC-Tool.

Function:	*Standard 0.1 V:*	*Shut-off level 0.5 V:*
Damper CLOSED	<0.1 V	<0.5 V
$\dot{V}_{min}$	>0.1 ... 2 V	>0.5 V ... 2 V
$\dot{V}_{min}$ ... $\dot{V}_{max}$	2 ... 10 V	2 ... 10 V

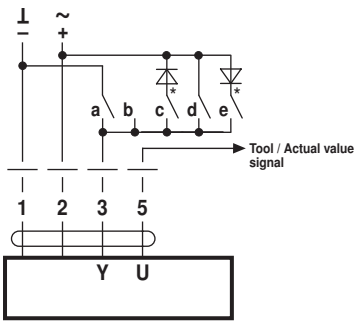
In CAV applications shut-off level must not be set to 0.5 V, otherwise the open connection 3 is interpreted as damper CLOSED.

CAV – step mode CLOSED / $\dot{V}_{min}$ / $\dot{V}_{mid}$ / $\dot{V}_{max}$ / OPEN

CAV control

VAV-Compact can be adapted to the desired CAV function pattern for constant volumetric flow applications with PC-Tool by using the "CAV function":
– Damper CLOSED – $\dot{V}_{min}$ – $\dot{V}_{max}$ – damper OPEN (standard)
– Damper CLOSED – $\dot{V}_{min}$ – $\dot{V}_{mid}$ – $\dot{V}_{max}$ – damper OPEN (NMV-D2M compatible)

Wiring diagrams



Notes

- Note that the contacts are mutually interlocking.
- DC supply: * c and e are not available with DC 24 V.
- Setting parameters in CAV applications:
  Mode 2 … 10 V, Shut-off level 0.1 V
  In CAV applications shut-off level must not be set to 0.5 V, otherwise the open connection 3 is interpreted as damper CLOSED.

PC-Tool "CAV Function" setting:
2 ... 10 V, Shut-off level 0.1 V

CAV Function CLOSED – $\dot{V}_{min}$ – $\dot{V}_{max}$ – OPEN (standard)

	a	b	c	d	e
Signal	⊥ –		~	~ +	~
Switching terminal 3	3	3	3	3	3
Mode 2 ... 10 V	CLOSED	$\dot{V}_{min}$	CLOSED *	$\dot{V}_{max}$	OPEN *
Mode 0 ... 10 V	$\dot{V}_{min}$	$\dot{V}_{min}$	CLOSED *	$\dot{V}_{max}$	OPEN *

PC-Tool "CAV Function" setting:
CLOSED – $\dot{V}_{min}$ – $\dot{V}_{max}$. Shut-off level CLOSED: 0.1 V

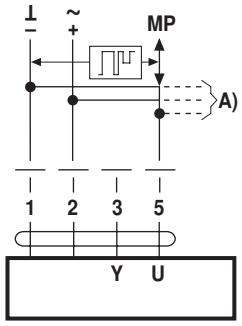
CAV function CLOSED – $\dot{V}_{min}$ – $\dot{V}_{mid}$ – $\dot{V}_{max}$ – OPEN

	a	b	c	d	e
Signal	⊥ –		~	~ +	~
Switching terminal 3	3	3	3	3	3
Mode 2 ... 10 V	CLOSED	$\dot{V}_{min}$	$\dot{V}_{mid}$ *	$\dot{V}_{max}$	OPEN *
Mode 0 ... 10 V	$\dot{V}_{min}$	$\dot{V}_{min}$	$\dot{V}_{mid}$ *	$\dot{V}_{max}$	OPEN *

PC-Tool "CAV Function" setting:
CLOSED – $\dot{V}_{min}$ – $\dot{V}_{mid}$ – $\dot{V}_{max}$ (NMV-D2M compatible)

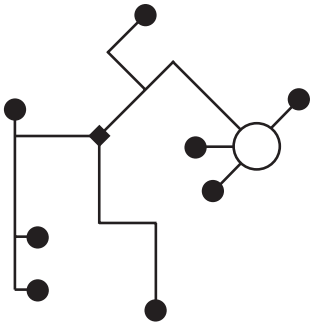
MP-Bus operation – VAV / CAV function

Connection on the MP-Bus



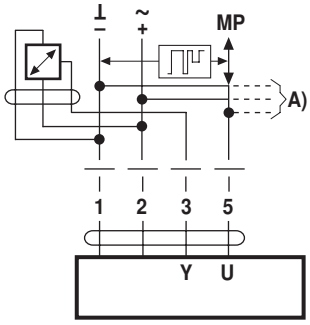
A) Additional actuators and sensors (max. 8)

Power topology



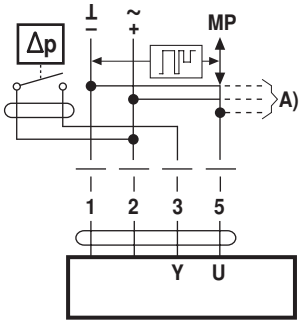
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).
Supply and communication in one and the same 3-wire cable
- no shielding or twisting necessary
- no terminating resistors required

Connection of active sensors



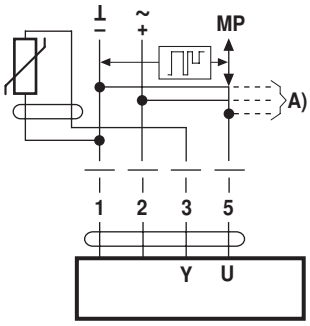
A) Additional actuators and sensors (max. 8)
- Supply AC / DC 24 V
- Output signal DC 0...10 V (max. DC 0...32 V)
- Resolution 30 mV

Connection of external switching contact



A) Additional actuators and sensors (max. 8)
- Switching current 16 mA @ 24 V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.5 V

Connection of passive sensors



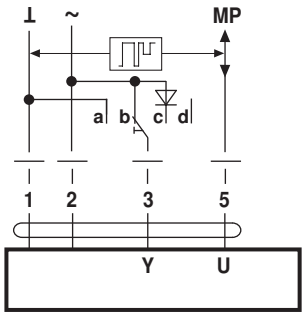
Ni1000	–28...+98 °C	850...1600 Ω [2]
PT1000	–35...+155 °C	850...1600 Ω [2]
NTC	–10...+160 °C [1]	200 Ω...60 kΩ [2]

A) Additional actuators and sensors (max. 8)
1) Depending on the type
2) Resolution 1 Ohm

Local override control

If no sensor is integrated, then connection 3 (Y) is available for the protective circuit of a local override control.
Options: CLOSED – $\dot{V}_{max}$ – OPEN

Note: Functions only with AC 24V supply!

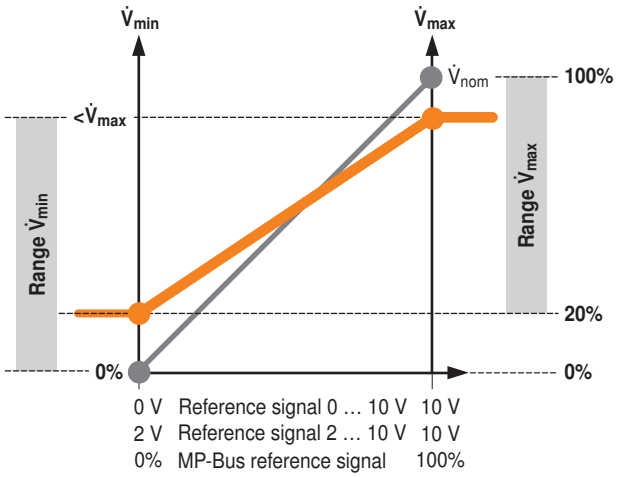


a Damper CLOSED
b $\dot{V}_{Max}$
c Damper OPEN
d Bus mode

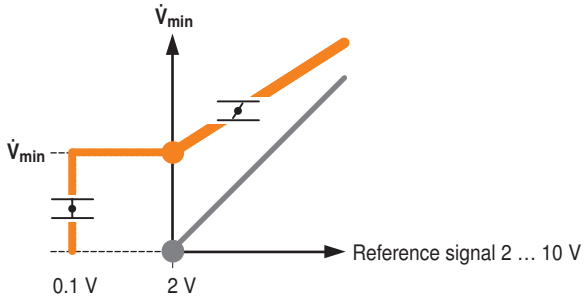
See www.belimo.eu / Bus and System Integration for detailed information on MP-Bus and installation (max. signal cable lengths, etc.)

Control functions - VAV / CAV

VAV-operating volumetric flow – Setting and control



Damper CLOSED via 0 ... 10 V reference signal (Mode 2 ... 10 V)



Description:

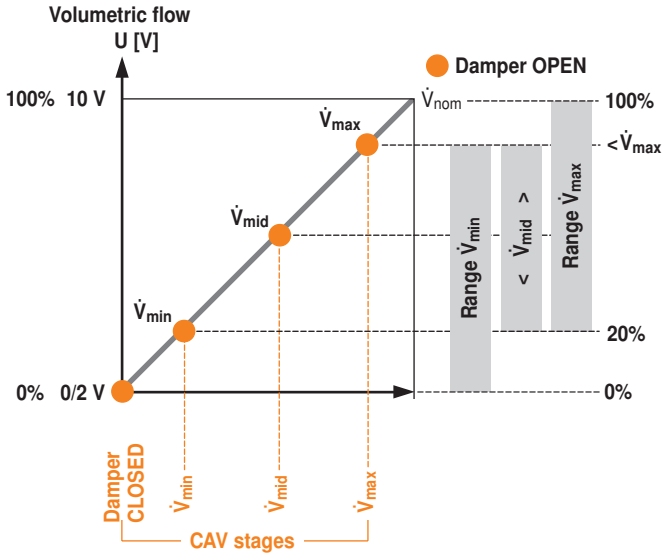
Setting parameters: Mode 2 … 10 V, Shut-off level 0.1 V or 0.5 V

If the required switching threshold of 0.1 V cannot be attained, the value can be switched to 0.5 V with PC-Tool.

Function	Standard 0.1 V	Shut-off level 0.5 V
Damper CLOSED	<0.1 V	<0.5 V
V̇min	>0.1 ... 2 V	>0.5 V ... 2 V
V̇min ... V̇max	2 ... 10V	2 ... 10V

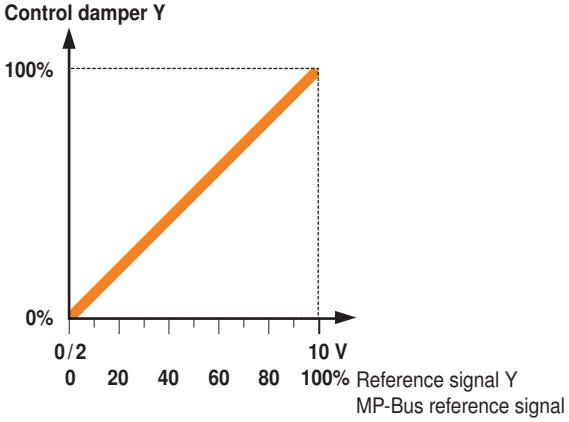
In CAV applications shut-off level must not be set to 0.5 V, otherwise the open connection 3 is interpreted as damper CLOSED.

CAV operating volumetric flow – setting

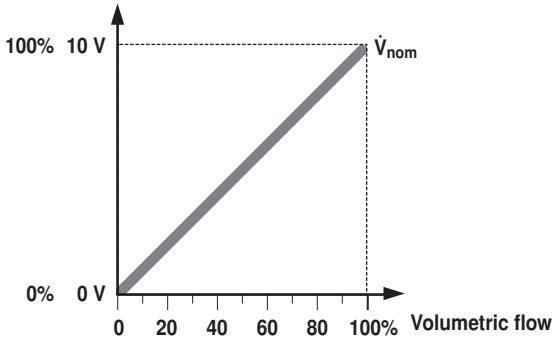


Open-Loop (separate external VAV-Control)

Control damper Y



Volumetric flow sensor value



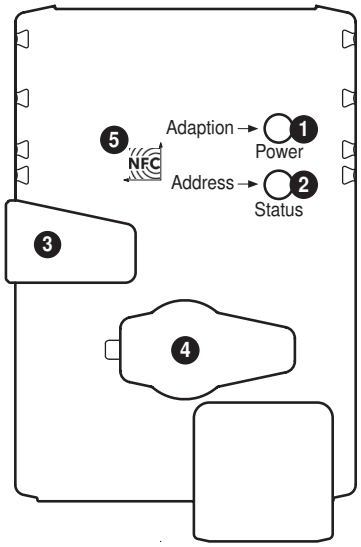
Setting and Tool function

Designation	Adjustment values, limits, explanations	Units	Tools [5]			Remarks
			Assistant App	ZTH EU	PC-Tool	
System specific data						
Position	16 characters e.g.: Office 4 6.OG ZL	Text	r/w	r	r/w	
Designation	16 Characters: Unit designation, etc.	Text	r	r	r/w	
Address	PP / MP1…8		r/w [1]	r/w	r/w	PP: 0…10 / 2…10 V MP1…8: MP mode
V̇max	20…100 % [V̇nom]	m³/h / l/s / cfm	r/w	r/w	r/w	>/= V̇min
V̇mid	V̇min…V̇max	m³/h / l/s / cfm	r/w	r/w	r/w	
V̇min	0…100 % [V̇nom]	m³/h / l/s / cfm	r/w	r/w	r/w	</= V̇max
System altitude	0…3000	Meter	-	r/w	r/w	Adaptation Δp-Sensor to system altitude (above sea level)
Controller settings						
Controller function	Volumetric flow / open loop		-	-	r/w	
Mode	0…10 / 2…10	Volt	r/w [1]	r/w [1]	r/w	
CAV function	CLOSED/V̇min/V̇max; Shut-off level CLOSED 0.1 V CLOSED/V̇min/V̇max; Shut-off level CLOSED 0.5 V V̇min/V̇mid/V̇max; (NMV-D2M comp.)		-	-	r/w	For an explanation see [2]
Positioning signal Y	Start value: 0...30; Stop value: 2...32	Volt	r	r	r/w	
Feedback U	Volume / damper position / Δp		-	-	r/w	Definition feedback signal
Feedback U	Start value: 0.0...8.0; Stop value: 2.0...10	Volt	-	-	r/w	
Response when switched on (Power-On) [4]	No action / Adaption / Synchronisation		-	-	r/w	
Synchronisation behaviour	Y=0 % Y=100 %		-	-	r/w	Synchronisation to damper position 0 or 100 %
Bus fail position	Last set point / Damper CLOSED V̇min / V̇max / Damper OPEN		-	-	r/w	
Unit specific settings *) Write function only available for VAV manufacturer						
V̇nom	0…60'000 m³/h	m³/h / l/s / cfm	r	r	r/(w*)	Unit specific adjustment value
Δp@V̇nom	38…500 Pa	Pa	-	r	r/(w*)	Unit specific adjustment value
NFC interface	read / read&write		r	-	r/(w*)	
Label print function			-	-	w	Incl. customer logo
Other settings						
Direction of rotation (for Y = 100%)	cw/ccw or ▲/▼		r/w [1]	r/w [1]	r/w	
Range of rotation	Adapted[3] / programmed 30…95	°	-	-	r/w	
Torque	100 / 75 / 50 / 25	%			r/w	% of nominal torque
Renovating Existing systems (Retrofit of old VAV units with leaking damper *) Parameters are only accessible by VAV manufacturers and Retrofit Partners)						
Supress damper leak	Yes/No		-	-	r/(w*)	Supresses volume display with the damper closed
Operating data						
Setpoint / actual value Damper position		m³/h / l/s / cfm Pa / %	r	r	r	Trend display with print function and data storage on HD
Simulation	Damper CLOSED / OPEN V̇min / V̇mid / V̇max / motor stop		-	w	w	
Running times	Operating time, running time Ratio	h %	-	-	r	
Alarm messages	Setting range enlarged, mech. overload, Stop&Go ratio too high		-	-	r/w	
Series number	Device ID.		r	r	r	incl. date of manufacture
Type	Type designation		r	r	r	
Version display	Firmware, Config table ID		-	r	r	
Configuration data						
Print, create PDF			-	-	Yes	
Save to file			-	-	Yes	
Log data / book	Activity log		-	-	Yes	incl. complete setting data

Explanations

1) Access only on operating level 2
2) Shut-off level 0.1 / 0.5V - Application: VAV mode, in Mode 2…10 V, Damper CLOSED via 0…10 V control signal.
If the required switching threshold of 0.1 V cannot be attained, the threshold can be switched to 0.5 V.
Note on CAV application: the shut-off level must not be set to 0.5 V. If the line 3 (Y) is open, damper will be CLOSED instead, min will be activated.
3) within the mechanical limit.
4) The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaption, which is when the operating range and position feedback adjust themselves to the mechanical setting range. The actuator then moves into the required position in order to ensure the volumetric flow defined by the positioning signal.
5) See www.belimo.eu for function and version history.

Display and operation



1 Push-button and LED display green

Off:	No power supply or fault
On:	Operation
Press key:	Triggering the angle of rotation adaptation

2 Push-button and LED display yellow

Off:	Normal operation
Flickering:	MP communication active
On:	Adaptation or synchronising process active
Flashing:	Addressing request sent to MP master
Press key:	Confirmation of the addressing

3 Gear disengagement key

Press key:	Gear disengaged, motor stops, manual override possible
Release key:	Gear engaged, synchronisation starts, followed by standard operation

4 Service plug For connecting the parameterisation and service tools

5 NFC Logo operated with Belimo Assistant App

MP-Bus mode: display panel wiring

1 Off and **2** On AC supply: connection 1 (⊥) and 2 (~) reversed

1 Off and **2** Off DC supply: connection 1 (–) and 2 (+) reversed

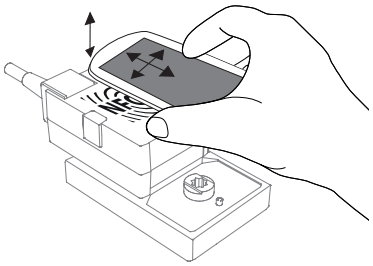
The test is performed once to switch on the 24 V supply.
For this test, the MP master must be connected to VAV-Compact.

NFC, Smartphone – Assistant App

Devices marked with NFC-Logo can be operated contactless via the NFC interface with Assistant App (..MV-D3-MP as of MY 2015).

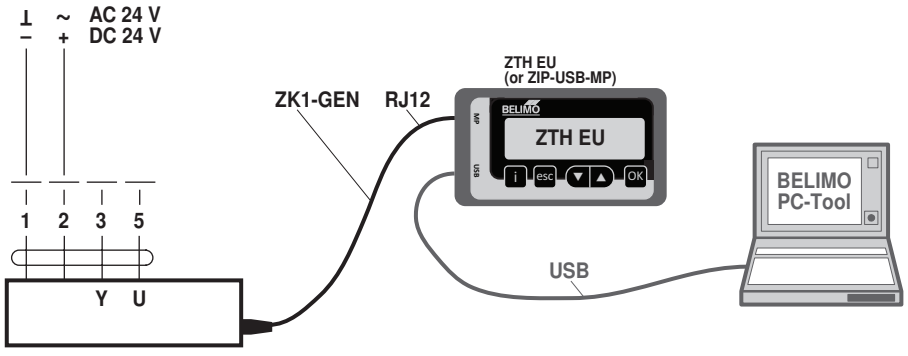
Prerequisites:
– NFC-enabled Android smartphone
– Belimo Assistant App (Google Play Store)

The optimum tuning range is located within the antenna range indicated by the arrows.
Align smartphone on the VAV-Compact so that both NFC antennas are superimposed.



ZTH / PC-Tool - local service connection

The settings and diagnostics of the VAV-Compact can be performed easily and rapidly with the Belimo PC-Tool or with the ZTH-EU service tool. When using the PC-Tool, the ZTH EU serves as an interface converter.

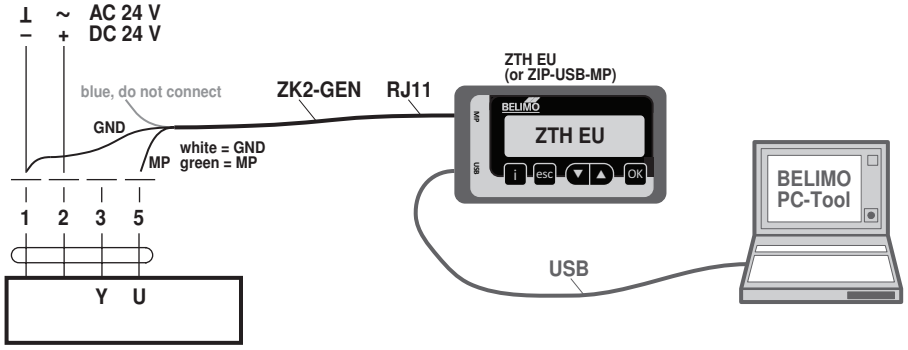


Download PC-Tool (MFT-P) from www.belimo.eu

Display and operation

ZTH / PC-Tool - remote connection

The VAV-Compact can communicate with the service tools via the MP connection (wire 5). The connection can be made in operating mode in the junction box, tool socket of room controllers CR 24 or the control cabinet terminals. In MP-Bus mode, the tool is connected to MP master. When using the PC-Tool, the ZTH EU serves as an interface converter.



Accessories

Room controller
(2 ... 10 V control)

Description	Type
Room temperature controller, AO: VAV; DI: Standby/EHO/C-O	CR24-B1
Room temperature controller, AO: VAV/Htg 3-point; DI: Standby/EHO/Ventilation	CR24-B2
Room temperature controller, AO: VAV/Htg EI-RH; DI: Standby/EHO/Boost	CR24-B2E
Room temperature controller, AO: VAV/Htg 3-point; H/C 0...10V; DI: Standby/EHO/C-O/Boost	CR24-B3
Residential ventilation controller, AO: 2 x VAV/Htg-Valve; DI: EHO/Override Kitchen+Bath	CRA24-B3
Contactor step control, 3 positions (Min/COMF/Max)	CRA24-B1P
Positioner, 0...100%	CRP24-B1

Gateways

Description	Type
Gateway MP to BACnet MS/TP, AC/DC 24 V	UK24BAC
Gateway MP to Modbus RTU, AC/DC 24 V	UK24MOD
Gateway MP to KNX/EIB, AC/DC 24 V, EIBA certified	UK24EIB
Gateway MP to LonWorks®, AC/DC 24 V, LonMark certified	UK24LON

Fan Optimisers

Description	Type
Fan Optimiser to VAV-Compact MP, VRP-M	COU24-A-MP

VAV-Compact / VAV-Universal

Description
VAV-Compact: Version with integrated LonWorks®, Modbus and KNX interface
VAV-Universal: VAV pressure controller, Δp sensors, actuator(spring-return, fast runner, etc.)
see www.belimo.eu for more information and documentation

Electrical accessories

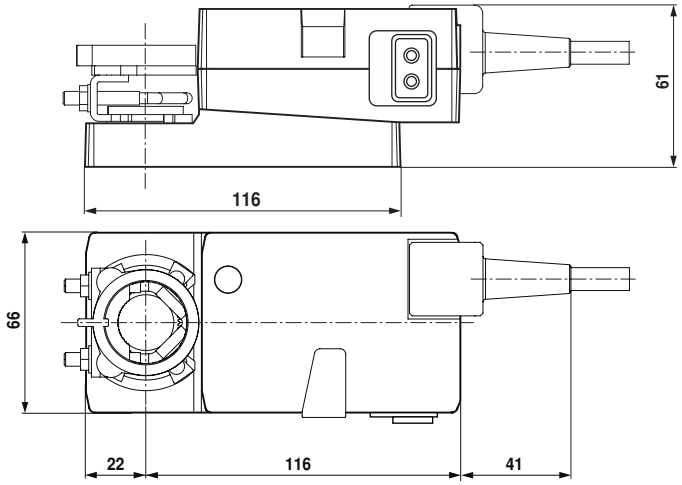
Description	Type
Connection cable 5 m, to ZTH / ZIP-USB-MP (RJ12) with service plug	ZK1-GEN
Connection cable 5 m, to ZTH / ZIP-USB-MP (RJ11) with free wire ends	ZK2-GEN

Tools

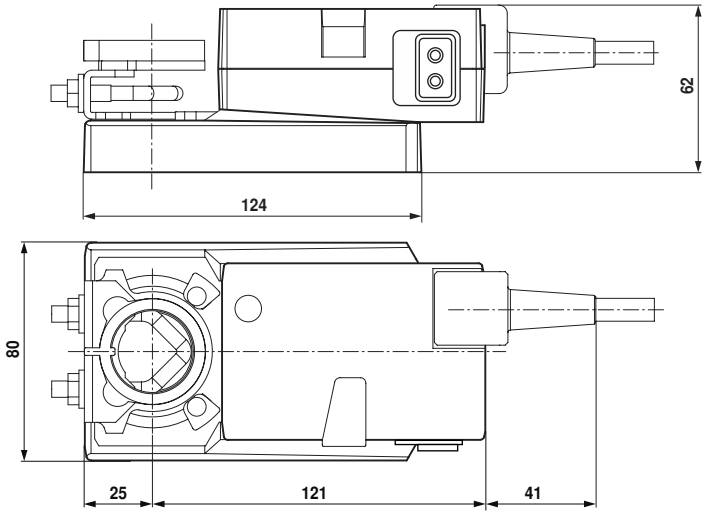
Description	Type
Service Tool, for MF/MP/Modbus/LONWORKS actuators and VAV controllers	ZTH EU
Belimo PC-Tool, software for adjustments and diagnostics	MFT-P
Belimo Assistant App, for Android smartphone	

Dimensions [mm]

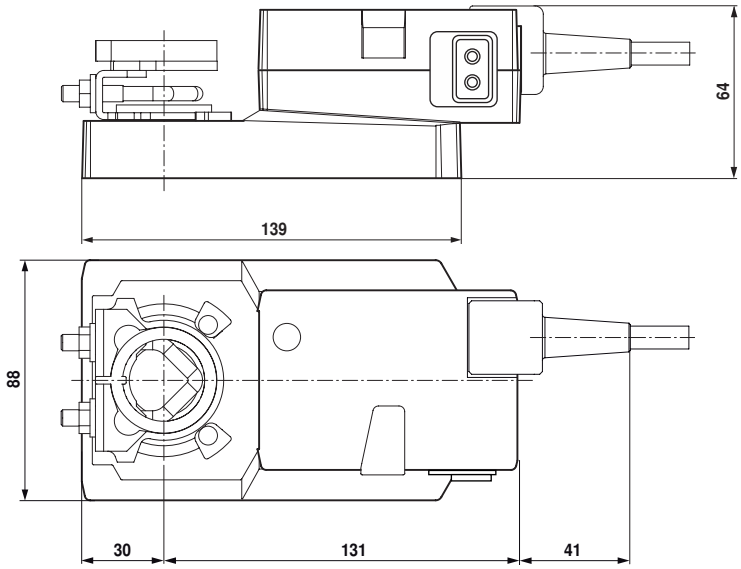
Dimensional drawings LMV-D3-MP



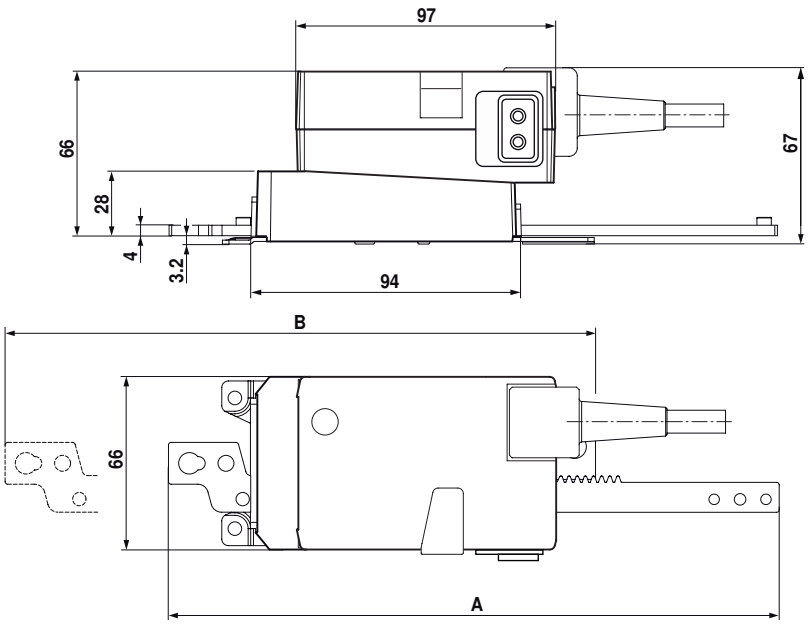
Dimensional drawings NMV-D3-MP



Dimensional drawings SMV-D3-MP



Dimensional drawings LHV-D3-MP



Type	Max. stroke	A	B
LHV-D3-MP100	100	233,5	264,2
LHV-D3-MP200	200	333,5	364,2
LHV-D3-MP300	300	433,5	464,2

FCC notes (relevant only for US market)

This device complies with part 15 of the FCC:
Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio / T.V. technician for help.

Further documentation

- Overview of MP co-operation partner
- Tool connections

VAV-Compact
Model overview / feature comparison

BELIMO

	-MF	-MP	-KNX	LON	-MOD
		MP-BUS	KNX	LonMark	BACnet Modbus
Field of application: Supply and exhaust air in the comfort zone and sensor-compatible media	X	X	X	X	X
AC/DC 24 V supply	X	X	X	X	X
Integrated Δp sensor, dynamic D3, measuring range:	–20…500 Pa	–20…500 Pa	–20…500 Pa	–20…500 Pa	–20…500 Pa
Actuator variants: – Rotary actuator – Linear actuator	5 / 10 Nm –	5 / 10 / 20 Nm 150 / 200 / 300 mm	5 / 10 / 20* Nm 150* / 200* / 300* mm	5 / 10 / 20* Nm 150* / 200* / 300* mm	5 / 10 / 20* Nm 150* / 200* / 300* mm
VAV function $\dot{V}_{min}$ … $\dot{V}_{max}$	X	X	X	X	X
CAV stages $\dot{V}_{min}$ / $\dot{V}_{mid}$ / $\dot{V}_{max}$	X	X	–	–	–
Open Loop (external V control)	X	X	X	X	X
DCV (Optimiser function)	–	DDC MP Partners Belimo fan optimiser	Yes, programmable	Yes, programmable	Yes, programmable
Analog control	0/2...10 V	0/2...10 V	–	–	0/2...10 V
With bus control	–	X	X	X	X
Bus specification	–	Belimo MP bus	KNX S mode	LONWORKS® FTT-10A	Modbus RTU / BACnet MS/TP / RS485
Direct integration DDC MP Partners	–	X	–	–	–
Integration via Gateway – BACnet – KNX – LONWORKS® – Modbus RTU	–	 X X X X	–	–	–
Number of bus devices	–	8 per strand	64 per line segment	64 per bus segment	32 per strand
Sensor integration – passive (resistance) – active (0…10 V) – Switching contact	–	 X X X	 – X X	 – X X	 – X X
Optional control function	–	–	–	Temperature / CO_2	–
Local forced (override)	–	CLOSED / $\dot{V}_{max}$ / OPEN	CLOSED / $\dot{V}_{max}$ / OPEN	CLOSED / $\dot{V}_{max}$ / OPEN	CLOSED / $\dot{V}_{max}$ / OPEN
Aids	–	MP-Bus Tester MP Monitor	ETS Product database	–	–
Integration tools	–	PC-Tool	ETS	LNS Tool + Plug-in	…
TypeList function (Retrofit, OEM)	–	X	(–)	(–)	(–)
Tool connection (U – PP/MP)	PP	PP/MP	PP	PP	PP
Service socket ZTH / PC-Tool	X	X	X	X	X
NFC interface	–	X	–	–	–
Assistant App	–	X	–	–	–
Service tool ZTH EU	X	X	X	X	X
PC-Tool – Parameter – Save data – Trend, Logbook – Label Print	X	X	X	X	X

* on request