OPTIMA VAV DAMPERS—Overview

OPTIMA make Variable Air Volume (OVAV) box is a part of an Air Conditioning system. It is located inside the duct work. VAV Dampers are designed to control the air flow to a specific area, called “Zone”.

The VAV regulates the volume of the air to the zone by opening or closing the damper, thus controlling the amount of conditioned air directed to the zone. Each zone in a building has a thermostat along with the VAV, monitoring when to open or shut the damper based upon the temperature needs of the zone. Because the supply air temperature, in this simplest of VAV systems, is constant, the air flow rate must vary to meet the rising and falling heat gains or losses within the thermal zone served.

The product range has many features and options to meet the requirements of consultants, contractors, local and national authorities. Dampers are available to suit low/medium and high velocity applications.

OPTIMA VAV DAMPERS—Advantages

There are two primary advantages to VAV systems.

1. Fan capacity control, especially with modern electronic variable speed drives, reduces the energy consumed by fans which can be a substantial part of the total cooling energy requirements of a building.

2. Dehumidification is greater with VAV systems than it is with constant volume system which modulates the discharge air temperature to attain part load cooling capacity.

Control of the system's fan capacity is critical in VAV systems. Without proper and rapid flow rate control, the system's ductwork, or its sealing, can easily be damaged by over pressurization.

In the cooling mode of operation, as the temperature in the space is satisfied, a VAV box closes to limit the flow of cool air into the space. As the temperature increases in the space, the box opens to bring the temperature back down. The fan maintains a constant static pressure in the discharge duct regardless of the position of the VAV box.

Therefore, as the boxes close, the fan slows down or restricts the amount of air going into the supply duct. As the boxes open, the fan speeds up and allows more air flow into the duct, maintaining a constant static pressure. With the ability to run the system on part load when not in use, or to have a higher level of independent room control the VAV boxes are used in a variety of locations including retail stores, auditoriums, office spaces and some large homes.
VAV BY PASS Dampers

Model: OVAV-2000

By Pass VAVs Terminal unit is a single duct pressure dependent air terminal unit designed for use with popular constant volume low and medium pressure packaged air handling systems.

Temperature control is achieved by supplying only enough conditioned air to the space to satisfy room thermostat demand. Excess air is diverted (bypassed) directly to the return air ceiling plenum for free or ducted return. Airflow to each occupied zone will vary on thermostat demand. The added advantage of multi-zone systems is that - supplying centralized air distribution from unwanted zones to demand related zones.

The primary damper modulates in response to a zone thermostat demand, to vary the amount of conditioned air delivered to the occupied zone. Damper modulation will range from “full shut off” to “full open” to a mechanically set minimum air volume.

Because the supply air temperature, in this simplest of VAV systems, is constant, the air flow rate must vary to meet the rising and falling heat gains or losses within the thermal zone served.

As the temperature increases in the space, the box opens to bring the temperature back down. The fan maintains a constant static pressure in the discharge duct regardless of the position of the VAV box.

FEATURES

• Unique, Minimum Operating Pressures.
• Compact low profile design is ideally suited for installation in tight spaces.
• Capacities of VAV-2000 units range from 80 – 3200 CFM. Eight standard sizes of different capacity models available from 80 CFM to 3200 CFM.
  • MODEL OVAV-2000/02
  • MODEL OVAV-2000/04
  • MODEL OVAV-2000/06
  • MODEL OVAV-2000/08
  • MODEL OVAV-2000/12
  • MODEL OVAV-2000/16
  • MODEL OVAV-2000/24
  • MODEL OVAV-2000/32
  • MODEL OVAV-2000/40 (Special customized for higher CFM beyond 3200)
• Electronic thermostat provide accurate modulating – on/off. Standard supply is modulating 0 – 10v. Thermostat from NEPTRONIC is standard. Other suitable makes are optional.
• To achieve lower noise levels, VAV-2000 units can be provided with integral sound attenuators.
• This VAV-2000 is standard with BELIMO controls. Technical details of Actuator are enclosed herewith. Controls of other manufacturers are supplied as option.
• Minimum Air Volume stop can be set mechanically on actuator. It must be field adjusted as required for the application.
• Electronic thermostat and actuator provide accurate modulating control.
CONSTRUCTION – Bypass VAV

Model: OVAV-2000

- Casing – made from 0.9mm (or 20guage) Galvanized steel sheets with Round inlet as standard. Other shapes like flat oval or rectangular optional.
- Outlets – are rectangular with suitable flanges and corners OR with slip and drive connections. Other shapes optional.
- Damper Blade - made from 0.9mm (or 20guage) GI steel sheet with flexible gasket to ensure low leakage as per DW 142 class C.
- Driveshaft - 12mm diameter plated steel shaft with brass bushings. An indicator mark on the end of the shaft shows damper position.
- Insulation - an acoustically and thermally lined insulation ½ inch or 13mm thick, density 32kg/m3. The Fiber glass wool insulation is lined with glass cloth from one side to prevent erosion of glass fibers.
- Loose liner edges are sealed and covered with sheet metal stiffeners in accordance with requirements of UL181 and NFPA 90A.
- Leakage at regulator shut-off will not exceed 3% of maximum air volume at 750Pa inlet static pressure.
- All units are equipped with modulating actuator which accepts 1–10v or 2–10v signals from suitable Thermostats.
- VAV Boxes are electrically insulated from controls with the help of a rubber sheet partition.
- Each and every unit is tested at final assembly stage for its operation before packing.
## Dimensional Data

**OVAV 2000 SERIES**

### Dimensions Listed in Inches

<table>
<thead>
<tr>
<th>Unit Size</th>
<th>Discharge</th>
<th>By-Pass Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
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### Diagram

- **NOTE:** LEFT HAND COIL CONNECTION SHOWN RIGHT HAND AVAILABLE.

### Dimensions Listed in Inches

- **BASIC ASSEMBLY**

<table>
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<tr>
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<td>32</td>
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<td>10</td>
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</tbody>
</table>

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Discharge NC levels are based on:

- 5 foot rectangular 12" x 12" duct lined with 1" fiberglass insulation
- Rectangular tee attenuation entering branch duct.
- 6 foot lined flex duct (8" diameter)
- Maximum of 300 CFM per outlet
- Space effect factor (5000 ft') at 5 feet from outlet
- End reflection
- Environmental adjustment factor

Radiated NC levels are based on:

- Plenum/ceiling effect - 5/8" mineral fiber tile, 35 lb/ft3 - 3 foot plenum
- Space effect factor (5000 ft3) at 10 feet from source
- Environmental adjustment factor

NOTES:

- Ps static pressure difference from inlet to discharge.
- Dash (--) indicates sound power db or NC level less than 10.
- Ps is the minimum pressure drop required to deliver CFM shown with the primary damper in wide open position (Bypass Closed).
# OAVV 2000 SERIES

## Modulating Control For By-Pass VAV

**BELIMO**

- Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations
- For air control dampers up to approx. 1 m²
- Torque 5 Nm
- Nominal voltage AC/DC 24 V
- Control: modulating DC 0 ... 10 V, position feedback DC 2 ... 10 V

### Technical data sheet

<table>
<thead>
<tr>
<th><strong>Technical data sheet</strong></th>
<th><strong>Damper actuator LM24A-SR</strong></th>
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<tr>
<td><strong>Electrical data</strong></td>
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<tr>
<td>Nominal voltage</td>
<td>AC 24 V, 50/60 Hz DC 24 V</td>
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<td>Nominal voltage range</td>
<td>16.2 ... 28.8 V</td>
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<tr>
<td>Power consumption at rest</td>
<td>1 W @ nominal torque 0.4 W</td>
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<td>For wire sizing</td>
<td>2 VA</td>
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<tr>
<td>Connection</td>
<td>Cable 1 m, 4 x 0.75 mm²</td>
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<tr>
<td>Torque (nominal torque)</td>
<td>Min. 5 Nm @ nominal voltage</td>
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<tr>
<td>Control</td>
<td>Control signal Y</td>
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<tr>
<td>Working range</td>
<td>DC 0 ... 10 V, typical input impedance 100 kΩ</td>
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<tr>
<td>DC 2 ... 10 V</td>
<td>DC 2 ... 10 V</td>
</tr>
<tr>
<td>Position feedback (Measuring voltage)</td>
<td>DC 2 ... 10 V, max. 1 mA</td>
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<tr>
<td>Position accuracy</td>
<td>±5%</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Reversible with switch 0 / 1</td>
</tr>
<tr>
<td>Direction of rotation at Y = 0 V</td>
<td>at switch position 0 ° resp. 1 °</td>
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<tr>
<td>Manual override</td>
<td>Gearing latch disengaged with pushbutton, self-resetting</td>
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<tr>
<td>Angle of rotation</td>
<td>Max. 95° ± 0.5°, limited on both sides by means of adjustable, mechanical end stops</td>
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<tr>
<td>Running time</td>
<td>150 s</td>
</tr>
<tr>
<td>Sound power level</td>
<td>Max. 35 dB (A)</td>
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<tr>
<td>Position indication</td>
<td>Mechanical, plug-in</td>
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<tr>
<td>Safety</td>
<td>Safety extra-low voltage</td>
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<tr>
<td>Degree of protection</td>
<td>IP54 (in any mounting position)</td>
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<tr>
<td>EMC</td>
<td>CE according to 69/688/EEC</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>Type 1 (to EN 60730-1)</td>
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<td>Ambient temperature range</td>
<td>−30 ... +50°C</td>
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<tr>
<td>Non-operating temperature</td>
<td>−40 ... +80°C</td>
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<tr>
<td>Ambient humidity range</td>
<td>95% r.H., non-condensing (EN 60730-1)</td>
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<tr>
<td>Maintenance</td>
<td>Maintenance-free</td>
</tr>
<tr>
<td>Dimensions</td>
<td>See “Dimensions” on page 2</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 500 g</td>
</tr>
</tbody>
</table>

### Safety notes

- The damper actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.
- Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- 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.
- The cable must not be removed from the device.
- When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the airflow 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.

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OVAV 2000 SERIES

**Product features**

- **Mode of operation**: The actuator is controlled by means of a standard control signal DC 0...10 V. It opens to the position dictated by this signal. The measuring voltage U allows the damper position (0...100%) to be electrically indicated and serves as a follow-up control signal for other actuators.
- **Simple direct mounting**: Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.
- **Manual override**: Manual operation is possible with the self-resetting pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed).
- **Adjustable angle of rotation**: Adjustable angle of rotation with mechanical end stops.
- **High functional reliability**: The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

**Accessories**

<table>
<thead>
<tr>
<th>Description</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary switch S.A.</td>
<td>T2-S.A.</td>
</tr>
<tr>
<td>Feedback potentiometer P.A.</td>
<td>T2-P.A.</td>
</tr>
<tr>
<td>Range controller SBQ24</td>
<td>T2-SBQ24</td>
</tr>
<tr>
<td>Positioner SQ..24</td>
<td>T2-SQ..24</td>
</tr>
<tr>
<td>Digital position indication ZAD24</td>
<td>T2-ZAD24</td>
</tr>
<tr>
<td>Shaft extension AV6-20</td>
<td>T2-Z-LM.A.</td>
</tr>
</tbody>
</table>

**Electrical installation**

**Notes**
- Connection via safety isolating transformer.
- Other actuators can be connected in parallel.
- Please note the performance data.

**Dimensions [mm]**

**Dimentional drawings**

Call us to discuss your requirements and know how to employ the Model VAV Dampers.
VAV Pressure Independent Damper

Model: OVAV - 1100

OPTIMA make Model OVAV–1100 Pressure Independent terminal unit, is the zone-level flow control device. It is basically a quality, calibrated air damper with an automatic actuator. The VAV terminal unit is connected to either a local or a central control system. Pressure Independent VAVs combine the advantages of proven air handling concepts to give complete zoning flexibility at a medium cost from a single zone source.

OPTIMA make Model OVAV–1100 provides excellent temperature control and central air-flow distribution with unlimited zoning. The added advantage of multi-zone systems is that - supplying centralized air distribution from unwanted zones to demand related zones. Easy and simple to install, can be used with packaged / ducted / Air handling units and can be conveniently maintained.

ADVANTAGES

Conventional air conditioning systems have traditionally relied upon constant air volume with a variable temperature, whereas OPTIMA make Pressure Independent VAV, Model OVAV – 1100 series offers considerable advantages as below

- Reduced system energy consumption cost.
- Reduced set up and installation cost
- Greater flexibility in varying loads which are easier zoned resulting in occupancy controlled comfort.
- Closer air volume control due to self correcting facility for adverse conditions in upstream system pressure.
- Multi – tenanted or disciplined building can be controlled by the occupant.
PRINCIPLE OF OPERATION

AIR VELOCITY SENSOR DEVICE

OPTIMA make Pressure Independent VAV model OVAV–1100 series, incorporates a specially designed, multi point airflow velocity sensor which is located at the inlet of VAV, which senses the airflow pressure and conveys the same to controller. The inlet velocity pressure signals are amplified for increased sensitivity and control response. These multiple sensing points are coupled to an actuator with built-in pressure controller which provides a more accurate indication of delivering constant air volume under varying inlet flow and static pressure conditions, representing a pressure Independent operation of VAV. The VAV damper modulates in response to variable static pressure to deliver a constant air volume \( V_{\text{const}} \) within the limits of \( V_{\text{min}} \) to \( V_{\text{max}} \).

If a zone modulating thermostat is connected to the VAV, than it delivers a variable air volume within the limits of \( V_{\text{min}} \) to \( V_{\text{max}} \) with response to room thermostat demand. Damper modulation will range from \( V_{\text{min}} \) to \( V_{\text{max}} \) or “full shut off” to “full open” as programmed, by supplying variable air volume to the conditioned zone. As the VAV damper modulates in response to the room thermostat demand, and once it is satisfied, the air volume to the occupied zone is reduced.

FEATURES

- 7 standard sizes with capacity range from 54 – 5980 m³h.
  - MODEL OVAV-1100/12
  - MODEL OVAV-1100/14
  - MODEL OVAV-1100/16
  - MODEL OVAV-1100/20
  - MODEL OVAV-1100/25
  - MODEL OVAV-1100/31
  - MODEL OVAV-1100/40
- Accurate control with low leakage damper and having proportional control between volume flow range 10 to 100% depending upon controller used.
- Air valve completely sealed achieving low leakage values.
- Multipoint averaging sensor accomplishing an accurate supply control.
- Low operating pressure.
- Low maintenance application.
- Reduced field Installations.

CONSTRUCTION

- Casing – made from 0.9mm (or 20guage) Galvanized steel sheets with round inlets.
- Outlets – are rectangular with suitable flanges and corners OR with slip and drive connections.
- Damper - made from 0.9mm (or 20guage) Gi steel sheet with flexible gasket to ensure low leakage as per DW142 class C.
- Averaging differential cross flow sensor which regulates damper independent of static pressure. This measures the differential pressure at the inlet and transfer to actuator.
- Driveshaft - 12mm diameter plated steel shaft with brass bushings. An indicator mark on the end of the shaft shows damper position.
- Insulation - an acoustically and thermally lined insulation \( \frac{1}{2} \) inch or 13mm thick, density 32kg/m³. The Fiber glass wool insulation is lined with glass cloth from one side to prevent erosion of glass fibers.
- Loose liner edges are sealed and covered with sheet metal stiffeners in accordance with requirements of UL181 and NFPA 90A.
- Control system packages are housed within an enclosed control box for transportation reasons and safety requirements. All ancillary control components are factory fitted and tested and tested prior to dispatch.
ADDITIONAL FEATURES

- All units are equipped with modulating actuator which accepts 1–10v or 2–10v signals from thermostats.
- Electronic Thermostat and actuator (BELIMO make), provide accurate pressure independent control by modulating/ floating when actuator accepts 1 – 10v or 2 – 10v signals from thermostats.
- Units can be provided with integral and extended attenuators to achieve required noise levels. (Model : VAV 1120)
- Optional electric re-heat coils are attached externally for heating or de-humidifying application.
- All VAV's are designed to produce low NC levels while adding minimal pressure drop to the system static.
- Leakage at regulator shut-off will not exceed 3% of maximum air volume at 750Pa inlet static pressure.
- For reference and guidance, a field wiring diagram is illustrated and all VAV terminal units are delivered complete with identification labels highlighting the model type, unit size, design minimum and maximum volume, location reference and tag numbers if required.

OPTIONS AVAILABLE

Extended terminal box construction for additional attenuation. Secondary Attenuator
Ancillary connecting Flange. Direct digital controllers. Access door for damper inspection

HEATER ATTACHMENT

When a reheat stage is required, the electronic thermostat will also modulate the reheat coil proportionately in accordance with room temperature offset. The reheat coil is activated based on a fixed duty cycle. The amount of “on time” during the cycle varies with room temperature offset. This feature provides performance similar to thyristor controller.
ELECTRIC REHEAT

Electric reheat are factory mounted to the terminal units prior to shipping. The assembly is constructed from high quality heavy gauge galvanized mild steel and features flange connections for the terminal unit and discharge octopus outlet respectively. Heating elements are of the black sheathed heat type incorporating alu/zinc fins.

The assembly is factory wired and features as standard an automatic reset thermal cut-out and line Terminal block.

Code EH

Options available:
- Positive pressure air flow switch.
- Integral isolator switch or door interlock
- Disconnection switch
- Main supply breaker fuse
- Magnetic contractors
- Mercury contractors
- 24 volt control transformer
- Manual reset thermal cut-out
- Secondary security cut-out
- Fully welded construction for dust free applications.

Recommended selection criteria:
The table adjacent identifies the general capacities available for electric reheat coils, the selection highlights the maximum stage limit is KW; however the units can be split electrically into one, two and three stages. The following formula can be used to determine the adequate KW selection for air temperature rise required.

\[ \text{KW} = m_3/s \times aT \times 1.2 \]
**OVAV 1000 SERIES**

**VAV 1100**

**Description**

Basic Unit

**VAV 1120**

Extended box comprising of basic unit with attenuator section

<table>
<thead>
<tr>
<th>VA</th>
<th>A</th>
<th>B</th>
<th>ØD</th>
<th>H</th>
<th>L</th>
<th>V</th>
<th>W</th>
<th>Qmax</th>
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<td>0.222</td>
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</table>

**Notes**

- V (m³) is the overall volume of the basic unit (VAV 1100)
- W (kg) is the weight of the basic unit (VAV 1100)
- (EC) Electronic Controlled
- (Qmin and Qmax are the airflow rates in m³/h
- 1 l/s = 3.6 m³/h
OVAV 1000 SERIES

OVAV 1130

Integrated variable air volume valve for specific control of zone conditions to ensure an accurate regulating and proportional control of air in ductwork systems.
The modulating air control valve feature a low leakage robust single blade damper housed within a circular chamber.
Damper rotation is via a steel shaft revolving in a self lubricating bearing providing an unequalled low friction damper operation. The damper interface within the chamber is sealed with a flexible gasket located on the damper blade.
The assembly features a unique cross flow sensor located in the upstream section of the valve chamber. The sensing points collectively average the primary air velocity pressure across the entire inlet area. The averaging differential cross flow sensor integrates and monitors the pressure to achieve accurate flow reading.

Various pneumatic, analog and digital controls can be factory fitted (optional extra) to suit the specific design criteria. Sound attenuators (SAR) shown adjacent are available in various dimensions to meet the required duct borne sound levels. For the attenuation rates:
- V (m³) is the overall volume for the basic unit
- W (kg) is the weight of the basic unit
- (PC) Pneumatic Controlled
- (EC) Electronic Controlled
- Q min and Q max are the air flow rates in m³/h
- 1 l/s = 3.6 m³/h

<table>
<thead>
<tr>
<th>VA</th>
<th>OD</th>
<th>E</th>
<th>H</th>
<th>L</th>
<th>V</th>
<th>W</th>
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<th>Q min (EC)</th>
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<td>10</td>
<td>4200</td>
<td>600</td>
<td>5990</td>
</tr>
</tbody>
</table>
Modulating Control For Pressure Independent VAV

**Technical data**

**Supply**
- Nominal voltage: AC 24V, 50/60 Hz, DC 24V
- Operating range: AC 19.2 – 28.8V, DC 21.6 – 28.8V

**Differential pressure sensor**
- Type, principle of operation: Belimo D3 sensor, dynamic response
- Operating range: 0 – 600 Pa
- Overload capability: ±1000 Pa
- Installation position: Any, no reset necessary
- Materials in contact with medium: Glass, epoxy resin, PA, TPE
- Control function: – VAV-CAV
  - Open-loop operation

**Adjustment values**
- V<sub>max</sub>: OEM-specific nominal volumetric flow setting, suitable for the VAV unit
- Dp @ V<sub>max</sub>: 50 – 400 Pa
- V<sub>max</sub>: 20 – 100% of V<sub>max</sub>
- V<sub>min</sub>: 0 – 100% of V<sub>max</sub>
- V<sub>50%</sub>: 50% of V<sub>max</sub> to V<sub>min</sub>

**Classic control**
- VAV mode for reference value input Y (Connection 3):
  - DC 2 – 10V / (4 – 20 mA with 500 Ω resistance)
  - DC 0 – 10V / (0 – 20 mA with 500 Ω resistance)
  - Adjustable DC 0 – 10V
- Input impedance: min. 100 kΩ
- Mode for actual value signal U<sub>5</sub> (Connection 5):
  - DC 2 – 10V
  - DC 0 – 10V
- Adjustable volumetric flow, damper position or differential pressure
  - max. 0.5 mA

**CAV operating modes (constant volumetric flow)**
- CLOSED / V<sub>max</sub> / (V<sub>max</sub>*) / V<sub>min</sub> / OPEN * (* only with AC 24V supply)

**MP-Bus function**
- Address in bus operation: MP1 ... 8 (classic operation: PP)
- LowWare® / MODBUS RTU / BACnet with BELIMO Interface UK24LON / UK24MCOD / UK24BAC
- 1 ... 8 BELIMO MP devices (VAV / damper actuator / valve actuator)
- DDC controller: DDC controllers/programmable controller with an integrated MP interface from various manufacturers
- Fan optimiser (fan control) with BELIMO Fan Optimiser COU24-A-MP
- Sensor integration (not available for LMV-D3-MFT-RM): Passive (Pt1000, Ni1000, etc.) and active sensors (0 ... 10V), e.g., temperature, humidity
- Communication solution (LowWare or BACnet): With BELIMO T24H2(0-2V), + T24-MP
- only MP2 and MP3 addressing available
- Operating and service: Plugable / PC-Tool (V3.0 or higher) / service tool ZTH-GEN AP
- Communication: PP/MP-Bus, max. DC 15V, 1200 baud
- Push-button: Adaptation / addressing
- LED display: – 24V supply
- – Status / bus function

**Actuator**
- Brushless, non-blocking actuator with power-save mode
- Direction of rotation: ccw / cw
- Adaption: Capture of setting range and resolution to control range
- Gear disengagement: Push-button self-resetting without functional impairment
- Sound power level: max. 35 dB

**Actuator - rotating**
- Angle of rotation: 90°±1, adjustable mechanical or electronic limiting
- Position indication: Mechanical with pointer (not available for LMV-D3-MFT-RM)
- Spindle holder: – Spindle clamp, spindle round 10 ... 26 mm / spindle square 8 ... 16 mm
  - Form fit in various versions, e.g. 9 x 9 mm
- Connection: Cable, 4 x 0.75 mm²

**Safety**
- Protection class: III Safety extra-low voltage
- Degree of protection: IP64
- Electromagnetic compatibility: CE according to EN50336/IEC
Modulating Control For Pressure Independent VAV

A pressure sensor, digital VAV controller and damper actuator all in one, providing a VAV Compact solution with a communications capability for pressure-independent VAV and CAV systems in the comfort zone. VAV-Cav or Open-Loop operation for integration in an external VAV control loop.

BElIMO

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

Application

- The integrated maintenance-free Belimo D3 differential pressure sensor is also suitable for very small volumetric flows. It is for this reason that it covers versatile applications in the comfort zone, e.g. in residential construction, offices, hospitals, hotels, cruise ships, etc.

Pressure measurement

- VAV-Cav or Open-Loop operation for integration in an external VAV control loop.

Control function

- Damper position for fan optimiser systems, current volumetric flow or pressure value.

Feedback

- Variable volumetric flow applications with a modulating reference variable, e.g. room temperature controller, direct digital control or bus system, it enables demand-related, energy-saving ventilation of individual rooms or zones. The operating range V min … V max can be connected via selectable mode.

VAV - variable volumetric flow

- The following are available: DC 2 ... 10V, 0 ... 10V / adjustable range / bus operation

CAV - constant volumetric flow

- For constant volumetric flow applications, e.g. in step mode, controlled by means of a switch.

Bus function

- The following operating modes can be selected from: CLOSED / V min / V mid / V max / OPEN.

Operating and service devices

- Up to eight Belimo MP-devices (VAV / damper actuator / valve actuator) can be connected together over the MP-Bus and integrated into the following systems:

Assemble and connection

- LowVorx® applications with Belimo UK24DLN interface
- MODBUS RTU applications with Belimo UK24MOD interface
- BACnet applications with Belimo UK24BAC interface
- Communication functions with Belimo T24-V24-V2 (V2) + T24-MP (Only available for MP2 & MP3)

Test function / test display

- DDC controller with integrated MP-Bus protocol
- Fan optimiser applications with optimiser COU24-A-MP

OEM factory settings

- 1 sensor (0...10V or passive), e.g. a temperature sensor or a switch, can optionally be integrated into the higher-level DDC or bus system via the MP-Bus.

The VAV Compact is mounted on the VAV unit by the unit manufacturer, who adjusts and tests it according to the application. The VAV Compact is sold exclusively via the OEM channel for this reason.

* Type LMV-D3-MFT-RM, same as the LMV-D3-MP in function but without a position indicator and additional connection facility for sensor or switch.

Type overview

<table>
<thead>
<tr>
<th>Type</th>
<th>Torque</th>
<th>Power consumption</th>
<th>Dimensioning</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMV-D3-MFT-RM (LMV-D3-MP)</td>
<td>5 Nm</td>
<td>2 W</td>
<td>4 VA (max. 8 A @ 5 ms)</td>
<td>Approx. 500g</td>
</tr>
<tr>
<td>NLV-D3-MP</td>
<td>10 Nm</td>
<td>3 W</td>
<td>5 VA (max. 8 A @ 5 ms)</td>
<td>Approx. 700g</td>
</tr>
</tbody>
</table>