

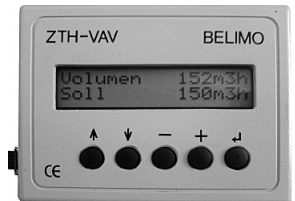
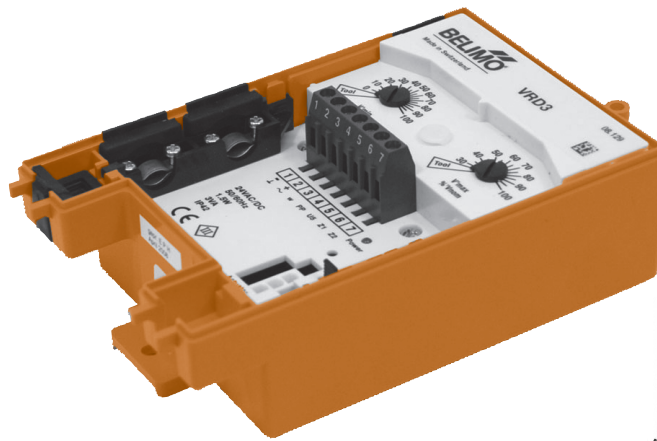
Plug-ready VAV-Universal system solution with integrated, almost static Belimo D3 pressure sensor for non-pressure-dependent VAV and CAV applications in enclosed spaces.

Control:

DC 2 ... 10 V / 0 ... 10 V / contacts

Settings:

- at the controller \dot{V}_{\min} / \dot{V}_{\max} or
- with VAV adjustment tool ZTH-VAV



Brief description

Application	The digital VAV-Universal solution VRD3 with its PI control characteristics is used for pressure-independent control of VAV units in the comfort zone.
Pressure measurement	The integrated maintenance-free Belimo D3 differential pressure sensor allows a variety of applications ranging from offices, hospitals and hotels all the way to cruise ships.
Actuator	The following actuator models are available, depending on the area of application, size and structural shape of the VAV unit: <ul style="list-style-type: none"> – Rotary actuator 0 ... 95°↔, depending on the size 5, 10, 20 Nm – Rotary actuator 0 ... 95°↔ with safety position current-free CLOSED or OPEN, 4 or 20 Nm – Rotary actuator 0 ... 1800°↔ e.g. for iris dampers 3 Nm – Linear actuation 100, 200 or 300 mm linear motion, 150 N
Control function:	VAV or CAV operation
Bus mode	The utilisation of the VRD3 in MP-Bus systems (UK24LON, Fan Optimiser COU24-A-MP, etc.) is not possible. The VAV-Compact series and the VAV-Universal VRP-M system solution is available for these bus applications.
VAV – variable air volume	For variable air volume applications based on a modulating reference variable, e.g. supplied by a room temperature controller or a DDC system; it facilitates demand-related, power-saving ventilation in individual rooms or in zones of air conditioning systems. The \dot{V}_{\min} ... \dot{V}_{\max} working range can be subdivided by selecting a mode. Available are the following: DC 2 ... 10 / 0 ... 10 V.
CAV – constant volume flow	For constant air volume applications, e.g. in step mode, controlled by means of an occupancy switch. The following operating modes are available: CLOSED / \dot{V}_{\min} / \dot{V}_{\max} / OPEN
Function indication	Functional readiness display with green LED.
Operating and service devices	<ul style="list-style-type: none"> • VAV adjustment and diagnostics device ZTH-VAV: pluggable at the service socket of the VRD3 or at the PP interface (terminal 4). • Belimo PC-Tool: cannot be used with the VRD3
Assembly and connection	The connection is made by screw terminal. The actuator is connected with a plug-ready, pre-assembled cable.
OEM factory settings	The VRD3 system solution is mounted on the VAV unit by the unit manufacturer, who adjusts and tests it according to the application. The VRD3 solution is sold exclusively through the OEM channel for this reason.

Technical data

Supply	
Nominal voltage	AC 24 V, 50 / 60 Hz / DC 24 V
Nominal voltage range	AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V
Power consumption	2 W / 3.5 VA, without actuator
Differential pressure sensor, installed	
Type, principle of operation	Belimo D3-Sensor, Dynamic with almost static behaviour
Operating range	For VRD3 application: 2 ... 300 Pa
Overload capability	±3000 Pa
Installation position	Non-position-dependent, no zero-point compensation necessary
Materials in contact with medium	Glass, epoxy resin, PA, TPE
Control function:	
Application	VAV and CAV units – Single duct installations – Supply / exhaust air units – Dual duct installations – Mixed units
Pressure range	2 ... 300 Pa
Max. system primary pressure	≤1000 Pa <i>Information for VAV unit manufacturer:</i> ΔP @ \dot{V}_{nom} : useful adjusting range 50 ... 300 Pa >1000 ... 1500 Pa ΔP @ \dot{V}_{nom} : useful adjusting range 150 ... 300 Pa
Characterising	VAV units, OEM-independent, with linearization to match the differential pressure sensor
Medium	Supply and exhaust air in the comfort zone and in applications with sensor-compatible media
Measuring air conditions	0 ... +50°C / 5 ... 90% r.H., non-condensating
Operating volumetric flow	
\dot{V}_{nom}	OEM-specific nominal volumetric flow setting, suitable for the VAV unit
\dot{V}_{max}	30 ... 100% of \dot{V}_{nom}
\dot{V}_{min}	0 ... 100% of \dot{V}_{nom}
VAV – input w, terminal 3	
Mode DC 2 ... 10 V	Switch-selectable VRD3 ↔ VRD2 (compatible with predecessor model, see page 4) \dot{V}_{min} ... \dot{V}_{max} , CLOSED with activation <0.1 V (see pg. 5 ... 7)
Mode DC 0 ... 10 V	\dot{V}_{min} ... \dot{V}_{max}
Input impedance	~100 kΩ
CAV – input w, terminal 3	
	– Compatible with L/N/SMV-D2M-MP (see pg. 5 ... 7) – Operating stages CLOSED, \dot{V}_{min} , \dot{V}_{max} , OPEN
Override – input Z1 / Z2	
Z1 – terminal 6	Requires AC 24 V power supply OPEN
Z2 – terminal 7	CLOSED, \dot{V}_{min} , \dot{V}_{max}
Actual volumetric flow signal [U5] – terminal 5	
	– DC 2 ... 10 / 0 ... 10 V for 0 ... 100% \dot{V}_{nom} – Max. load 0.5 mA
Operating	
local	Potentiometer for \dot{V}_{min} / \dot{V}_{max} setting
Tool	VAV adjustment tool ZTH-VAV, connection via service plug or PP connection
Actuator (...V models)	
5 / 10 / 20 Nm, depending on application	– Direction of rotation (l / r or ↑ / ↓) (see pg. 10)
Connection can be plugged into VRD3	– Angle of rotation limitation or stroke limitation – Adaption, adjusting range modification and/or resolution to control range – Manual disengagement
Sound power level	– Max. 35 dB(A), SM24A-V max. 45 dB(A) – LF24-A-V Motor max. 35 dB(A), spring ≈ 62 dB(A), SF24A-V Motor max. 40 dB(A), spring ≈ 62 dB(A)
Damper rotation	Clamp, for axle round / square or positive fit e.g. 8 x 8 mm
Connection	
Supply and control	7-pin screw terminals for 2 x 1.5 mm ²
Tool connection	RJ12 socket
Actuator	3-pin plug for ...V actuator
Safety	
Protection class	III Safety extra-low voltage
Degree of protection	IP40
EMC	CE according to 2004/108/EC
Mode of operation	Type 1 (EN 60730-1)
Rated impulse voltage	0.8 kV (EN 60730-1)

Technical data
(continued)
environment conditions

Control pollution degree	2 (EN 60730-1)
Ambient temperature	0 ... 50 °C
Non-operating temperature	-20 ... +80 °C
Ambient humidity	95% r.H., non-condensating (EN 60730-1)
Maintenance	Maintenance-free

Dimensions / Weight

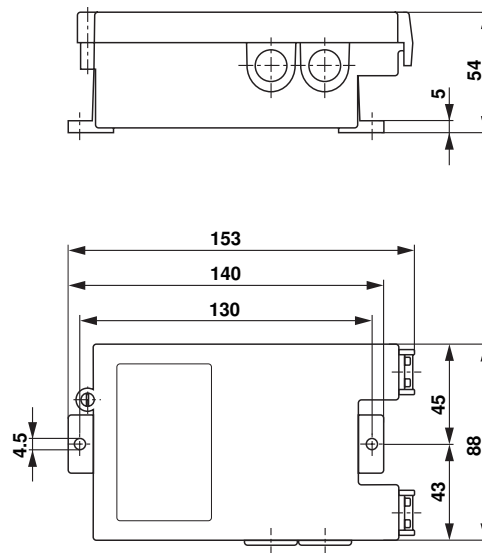
Dimensions	See «Dimensions» on page 3
Weight	Approx. 440 g

Safety notes


- The VRD3 system solution 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 does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the actuator.
- 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.

Dimensions [mm]

Dimensional drawings
(For actuators, see separate data sheets)


Compatibility VRD3 ↔ VRD2

The VRD3 corresponds in its dimensions and connections to the VRD2.