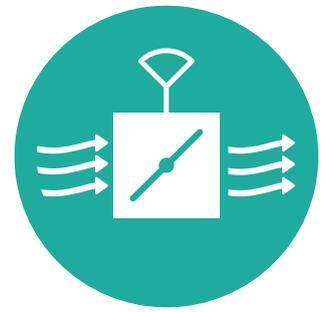
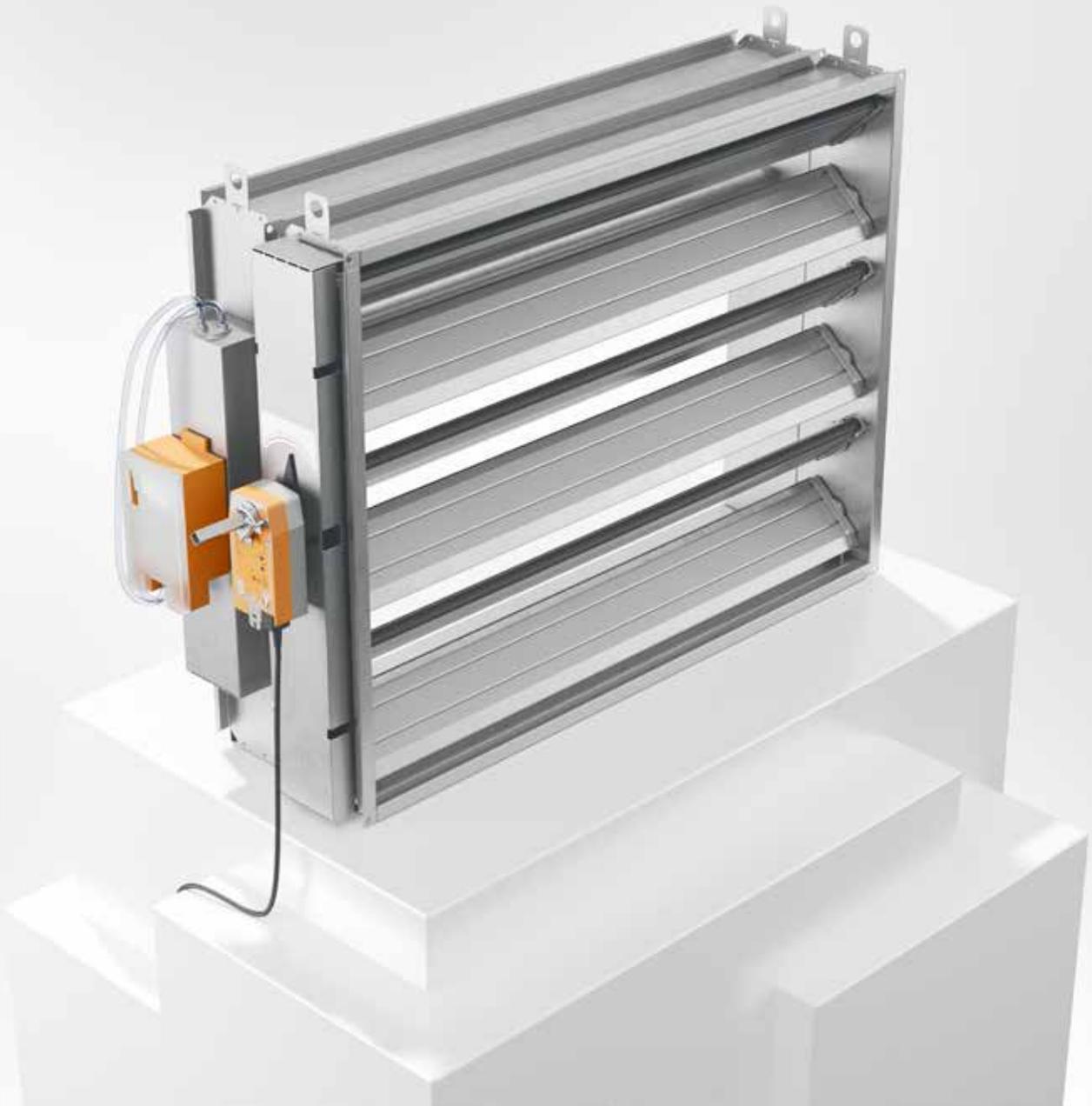


BVAV-3

Rectangular variable/constant
flow device

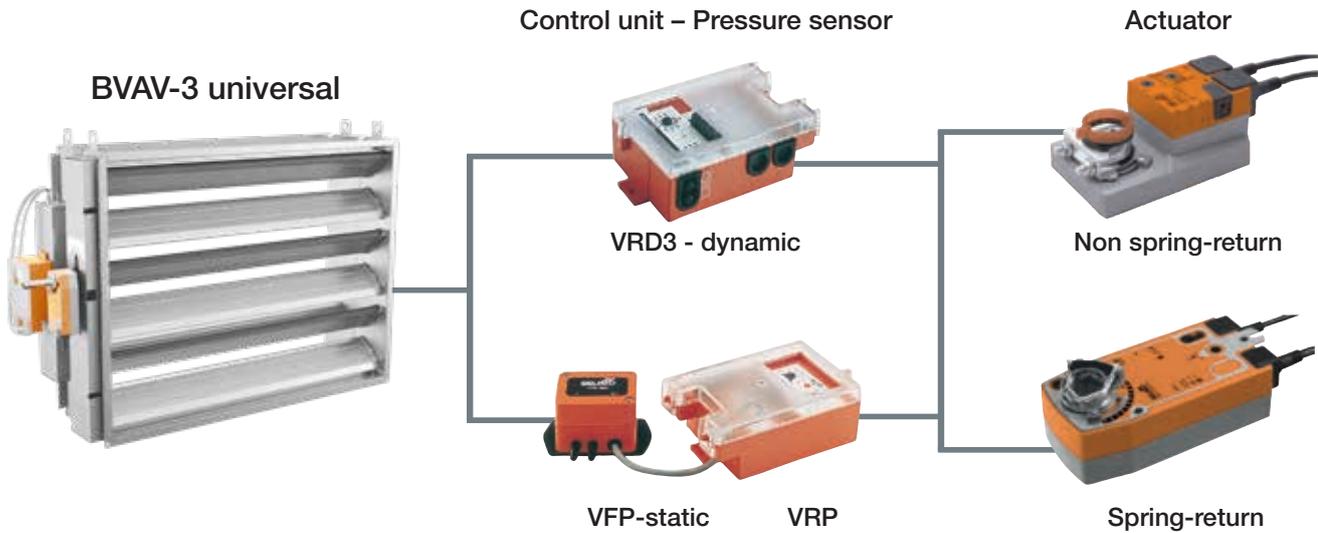


VAV, CAV & FLOW
MEASURING DAMPERS



19/10/2016





Quick facts

- Sizes from 200-200 mm.
Max width 1600 mm, max height 1300mm.
- Universal version
- Dynamic pressure sensor.
Static pressure sensor as option.
- Max and min. air flow calibrated before delivery
- Available in MagiCAD

Use

BVAV is a variable/constant air flow device, complete with actuator, control unit and measuring device.

The actuator is separate in the universal version.

Minimum and maximum flows can be adjusted manually using two potentiometers on the regulator. Dynamic pressure sensor is standard.

The air flow device is also available with a static pressure sensor for dirtier environments.

Material, surface treatment

Casing and parts in hot galvanised sheet steel as per environmental class C3. The measuring tube is manufactured in extruded aluminium.

The device is delivered as standard in pressure class A and air tightness class 1. For higher pressure and environmental requirements it is possible to offer alternative materials for the casing and parts.

Specification

Example: **Variable/constant air flow device
BVAV - 3 - 400 - 200 - 2 - 1 - 500/300**

Version:

Rectangular = 3

Size:

W x H mm, see Dimensions

Actuator:

Non spring-return = 2

Spring-return = 3

Control unit - Pressure sensor:

Dynamic = 1

Static = 2

Set air flow:

Max/Min air flow, l/s

NOTE! If the devices are to be used as master/slave this must be specified.

Accessories:

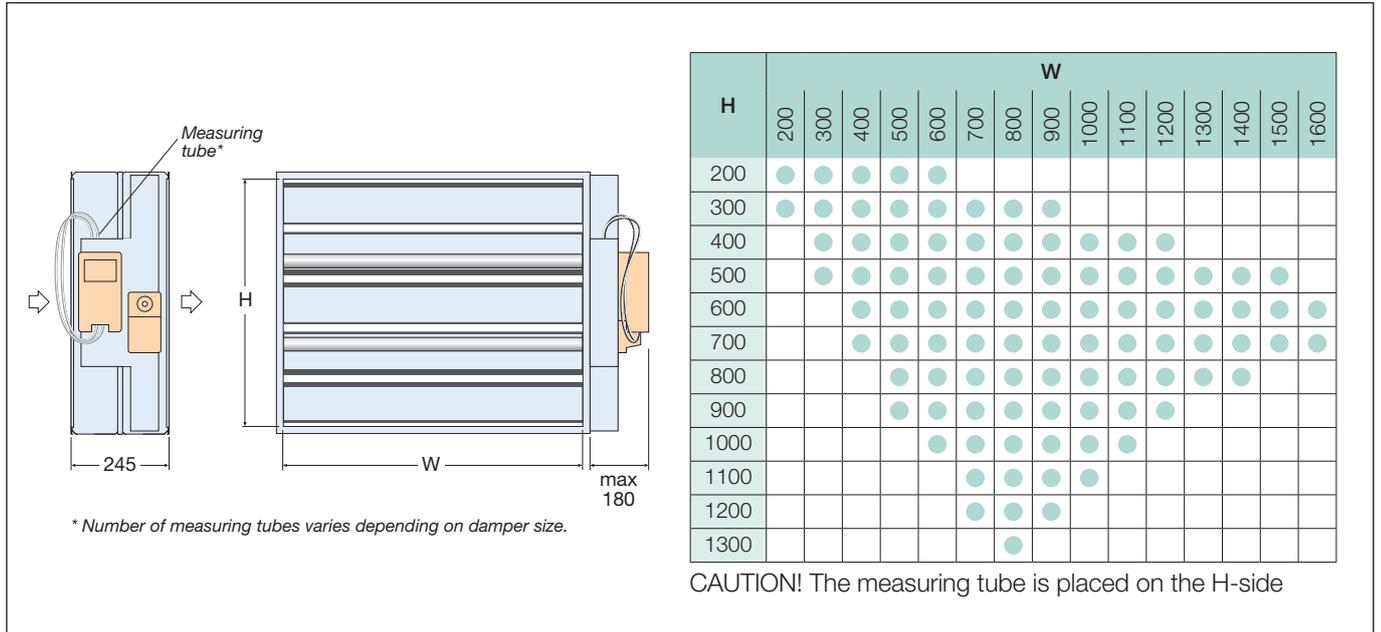
Air quality sensor T-SENSE VAV

Timer TEL

Silencers



Dimensions



Air flow areas

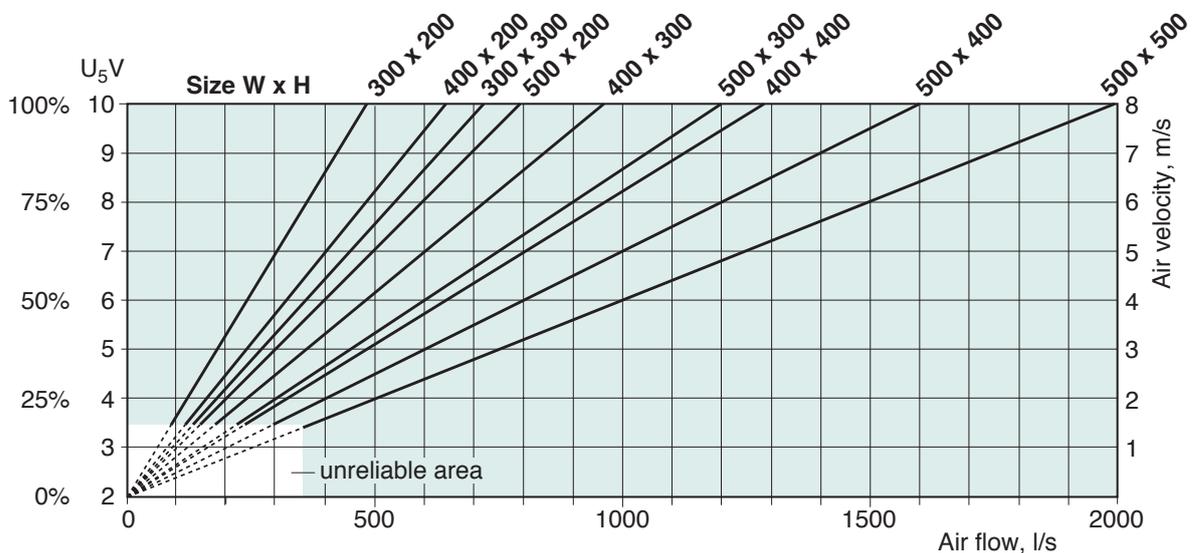
The nominal flow generally corresponds to 8 m/s in the duct. Max. adjustable air flow is 30-100% of nom. air flow. Min. flow can be regulated between 0-100% of max. flow. At air speeds below 1.5 m/s the measuring uncertainty increases.

The diagram below reports only a selection of sizes. The diagrams show the relationship between nominal flow and the output signal (U_5) for each size.

Adjustment of the air flow is conducted in principle according to the example in BVAV-1, see separate product sheet.

Installation

The static pressure sensor VFP must be fitted in horizontal position because it is set horizontally at the factory. However, on site readjustment is possible.



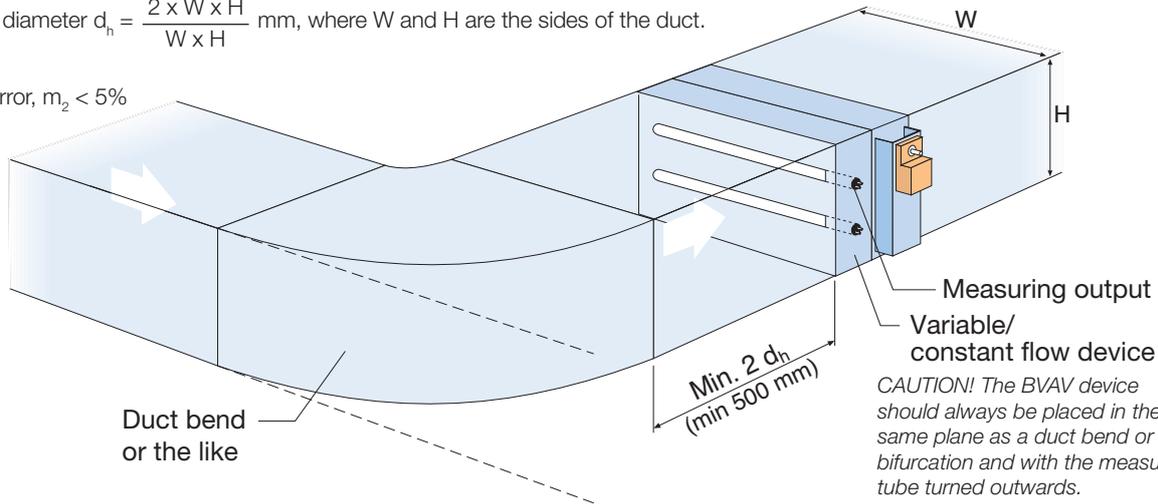


Installation

When installing the measuring unit a linear distance corresponding to minimum 2 hydraulic diameters (d_h), is required after a source of turbulence (min. 500 mm), see below. At other sources of turbulence, for example T-piece, minimum $5 \times d_h$ is recommended.

$$\text{Hydraulic diameter } d_h = \frac{2 \times W \times H}{W + H} \text{ mm, where } W \text{ and } H \text{ are the sides of the duct.}$$

Method error, $m_2 < 5\%$



Electrical data

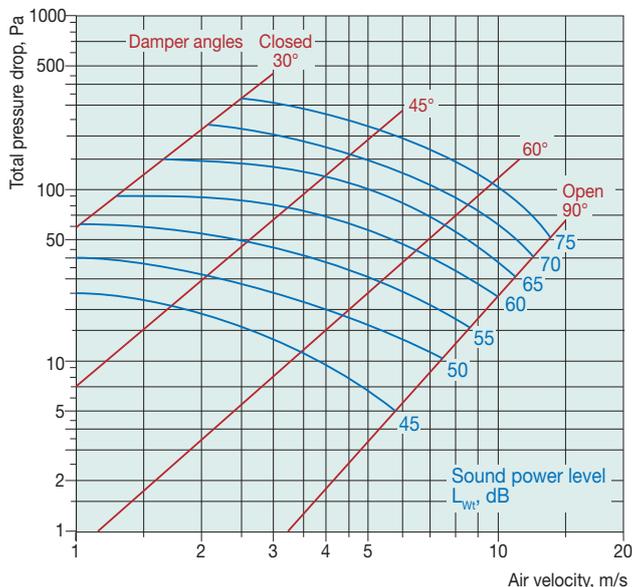
BVAV-3, non spring-return

AC 24V, 50/60Hz, DC 24V
 AC 19,2...28,8V, DC 21,6...28,8V
 Effect: 2 W (3,5 VA)
 + Actuator BVAV-3-xxx-xxx-2-x 2-3,5 W (3,5-5,5 VA)
 Sound level: 35 dB(A)
 Pressure range: 2-300 Pa
 Ambient temperature: 0°C - 50°C

BVAV-3, spring-return

AC 24V, 50/60Hz, DC 24V
 AC 19,2...28,8V, DC 21,6...28,8V
 Effect: 2 W (3,5 VA)
 + Actuator BVAV-3-xxx-xxx-3-x 7,5 W (10 VA)
 Sound level: 40 dB(A) (spring 62 dB(A))
 Pressure range: 2-300 Pa
 Ambient temperature: 0°C - 50°C

Sound data



Correction of sound power level, L_w , for different sizes

$$L_w = L_{wt} + K_1$$

Damper area, m ²	0,04	0,2	0,36	0,64	1
K_1	-2	-1	0	2,5	5

Correction of sound power level, L_{Wok} , in octave band

$$L_{Wok} = L_w + K_{ok}$$

Correction, K_{ok}

Opening angle	Centre frequency Hz							
	63	125	250	500	1000	2000	4000	8000
90°	-2	-7	-15	-18	-18	-23	-29	-33
60°	-2	-8	-14	-18	-19	-22	-28	-34
45°	-4	-8	-10	-13	-18	-22	-26	-32
30°	-5	-7	-9	-11	-14	-19	-22	-29
Tol. ± dB	3	2	3	4	5	5	6	4

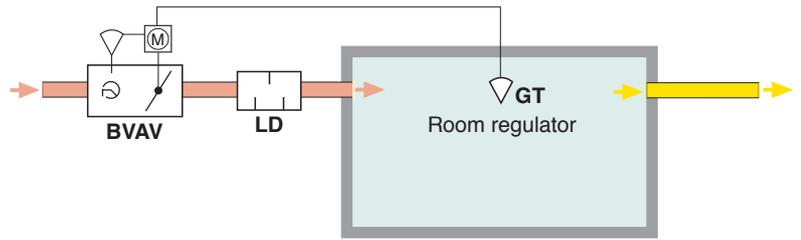


Installation examples

Alt. 1. Installation of separate VAV devices

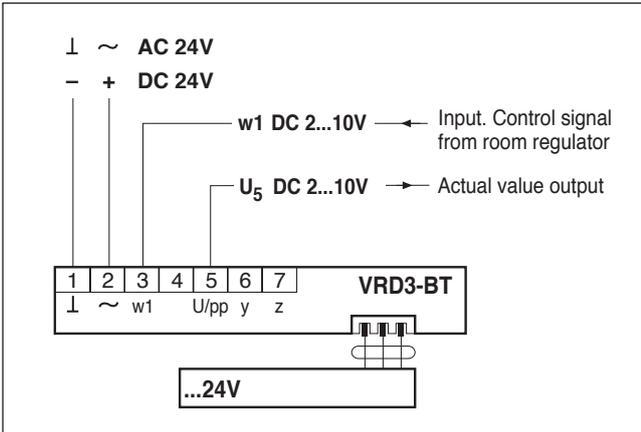
The control signal from the room regulator or DUC, controls the VAV-device.

The actual value signal can be forwarded for external monitoring of the actual flow.



Wiring diagram

BVAV-Universal, VRD3-BT

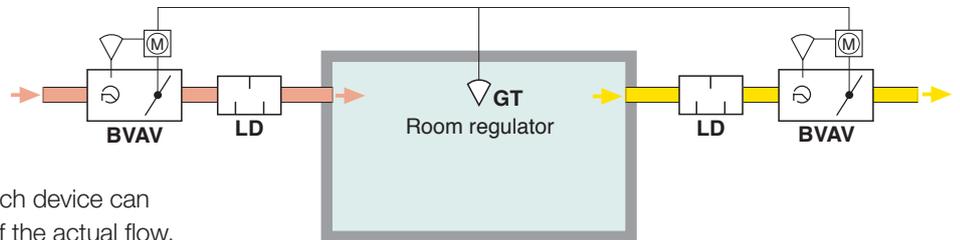


CAUTION! When connecting several VAV devices to the same transformer, it is important that all system phases are connected to (2) and all system neutrals are connected to (1).

Alt. 2. Supply and exhaust air are controlled in parallel

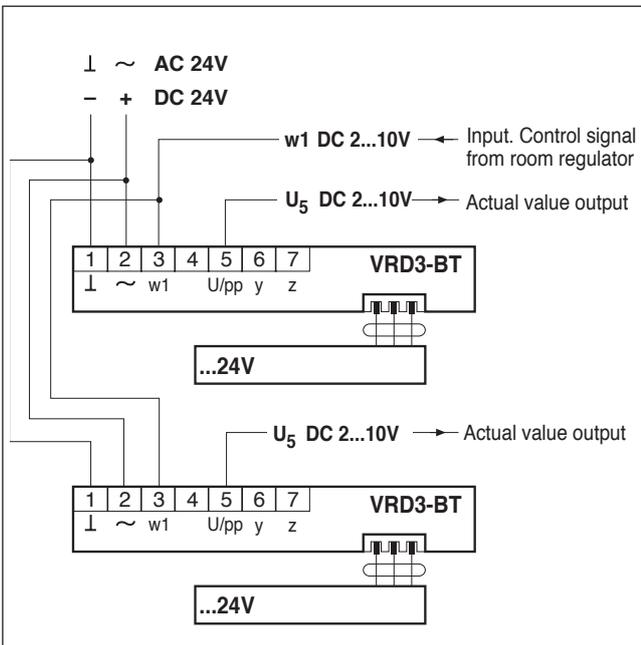
The control signal from the room regulator or DUC, controls the supply air and exhaust air devices in parallel.

The air flow for the devices can be set individually. The output signals from each device can be forwarded for external monitoring of the actual flow.



Wiring diagram

BVAV-Universal, VRD3-BT



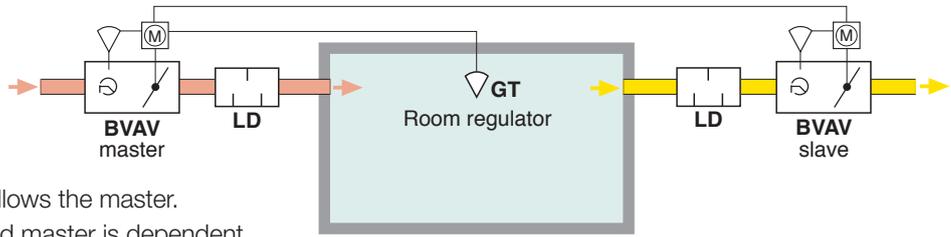


Alt. 3. The exhaust air is slave controlled by the supply air

The control signal from the room regulator or DUC, controls the supply air device (BVAV master).

The exhaust air device (BVAV slave) is controlled by the supply air device's control signal (U5 output). The slave follows the master.

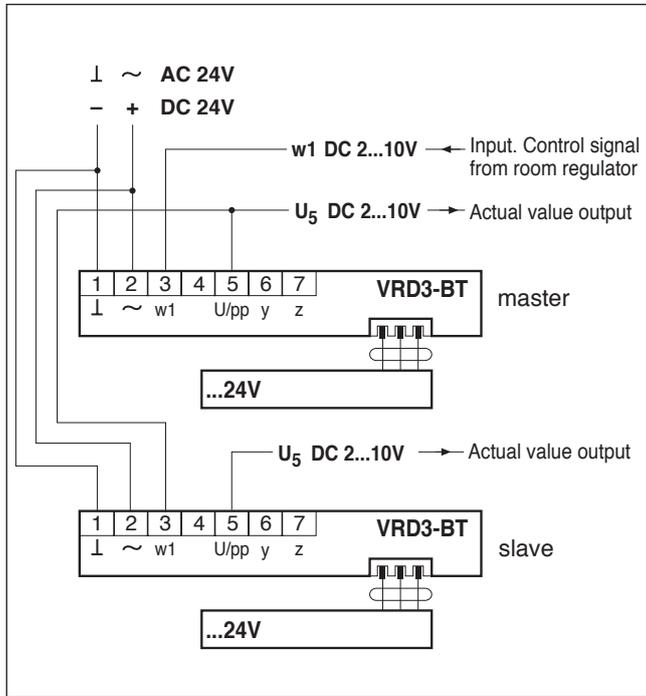
The flow relationship between slave and master is dependent on the set maximum flow of the slave (normally 100%). The output signal from each device can be forwarded for external monitoring of the actual flow.



This setting option must be made known before delivery of the VAV devices.

Wiring diagram

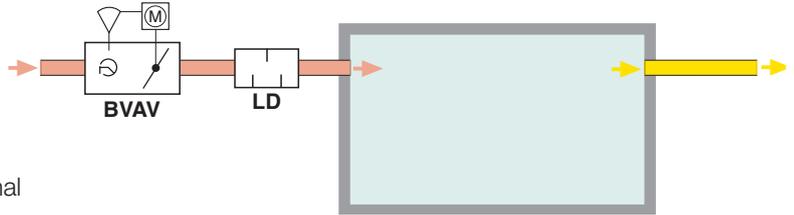
BVAV-Universal, VRD3-BT





Alt. 4. Constant supply air flow

The VAV device maintains a constant flow that is preset at the factory, which is why the device is not normally controlled by any external control signal. The output signal can be forwarded for external monitoring of the actual flow. The VAV device can be mechanically operated for a range of operational alternatives

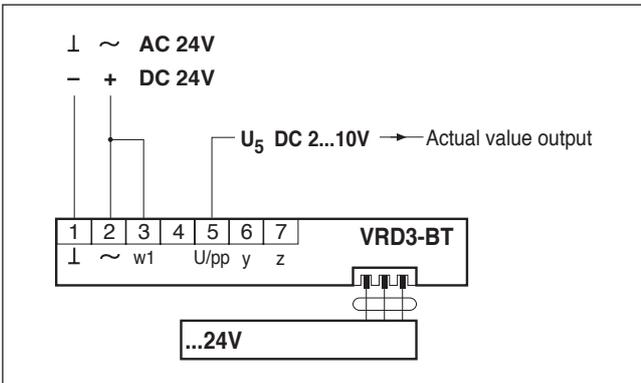


Constant supply air flow, basic or forced flow

A timer or monitor controls the supply air device (BVAV) to force the supply air to a constant set max. flow when the room is used. When the room is not in use the BVAV device works with the basic flow.

Wiring diagram

BVAV-Universal, VRD3-BT



Wiring diagram

BVAV-Universal, VRD3-BT

