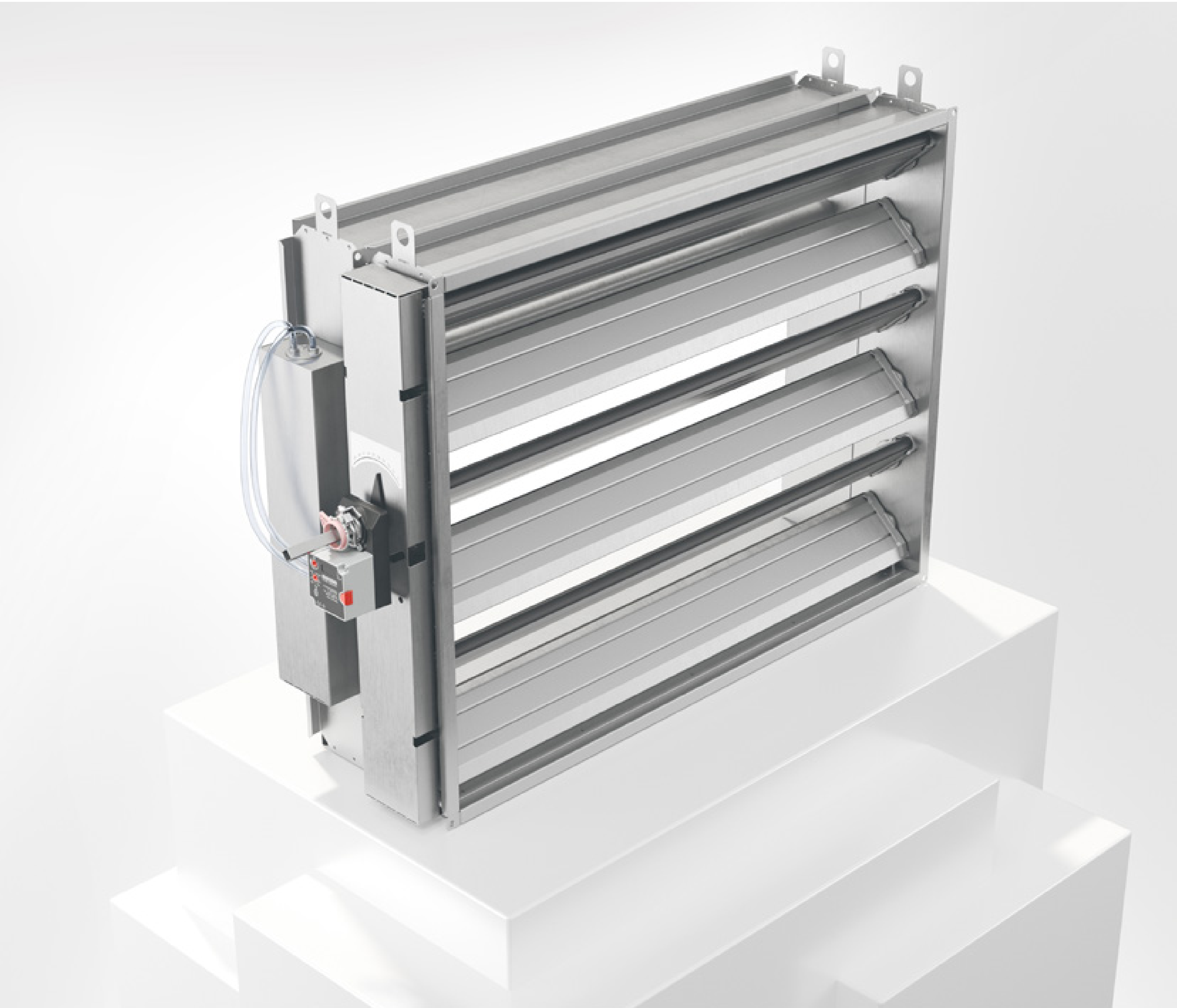
BVAVd-3

Rectangular variable/constant flow device with display

VAV, CAV & FLOW MEASURING DAMPERS



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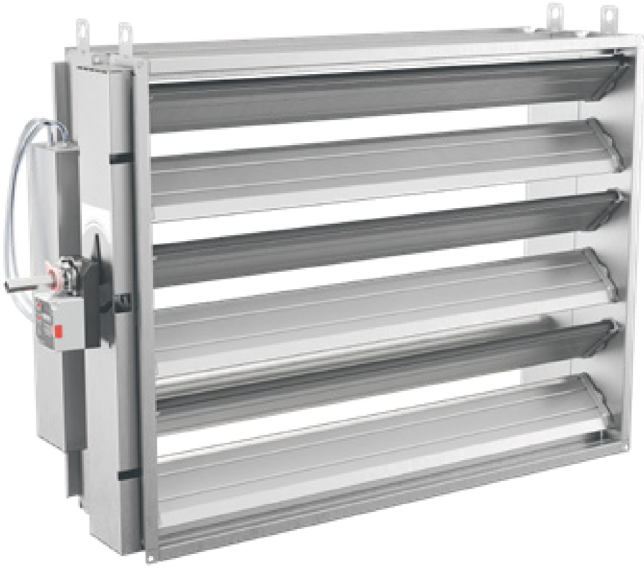


Quick facts

- Sizes from 200-200 mm.
  Max. width 1600 mm, max. height 1300 mm.
- Low min. air flow
- Display showing current air flow
- Max. and min. air flow can be set on site
- Calibrated before delivery

Use

BVAVd-3 is based on our well-tried air flow device with actuator eFLOW, with regulator, pressure sensor and display. The regulator has a wider working range that allows you to choose a low min. air flow. The display shows current air flow, but also max. and min. air flow settings, actual value output etc. Max. and min. settings can be made directly on the actuator with built-in potentiometers. BVAVd-3 can be used for variable air flow with 2-10V alt. 0-10V control signal or for constant air flow. BVAVd-3 is available with Modbus-communication as option.

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 with display BVAVd - 3 - 400 - 200 - 100/30**

Version:
Rectangular = 3

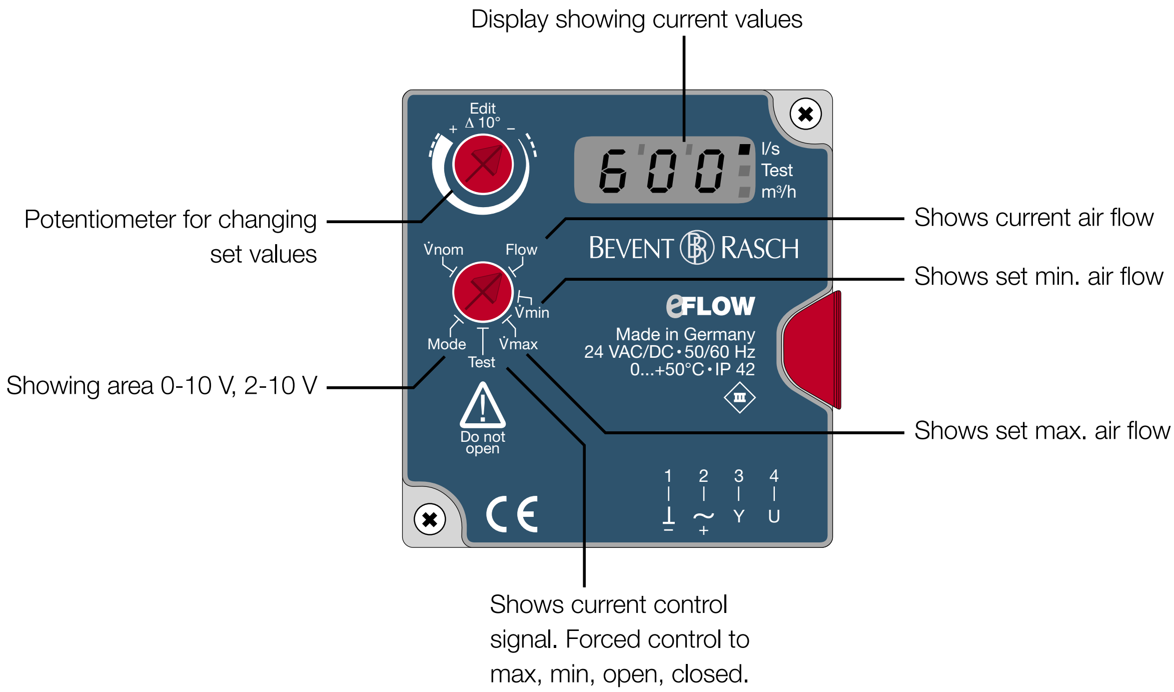
Size:
W x H mm, see Dimensions

Set air flow:
Max/Min air flow l/s

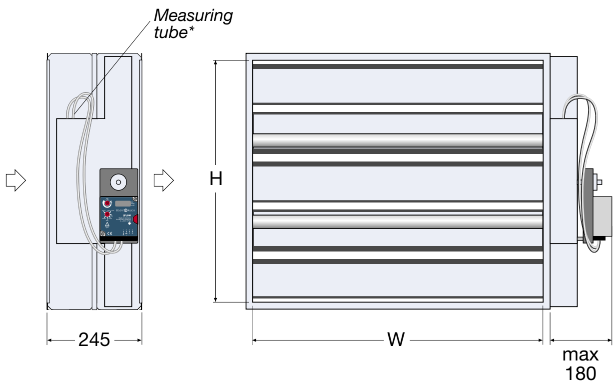
NOTE! If the devices are to be used as master/slave, this must be specified.

Accessories
Union piece
Air quality sensor T-SENSE VAV
Timer TEL
Silencers

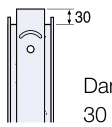
BVAVd-3 with useful functions



Dimensions



** Number of measuring tubes varies depending on damper size.*



Dampers with height 150 and 250 builds 30 mm above and below H dimensions.

H	W 200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
200	●	●	●	●	●										
300	●	●	●	●	●	●	●	●							
400		●	●	●	●	●	●	●	●	●	●				
500		●	●	●	●	●	●	●	●	●	●	●	●	●	
600			●	●	●	●	●	●	●	●	●	●	●	●	●
700			●	●	●	●	●	●	●	●	●	●	●	●	●
800				●	●	●	●	●	●	●	●	●	●		
900				●	●	●	●	●	●	●	●				
1000					●	●	●	●	●	●					
1100						●	●	●	●						
1200						●	●	●							
1300							●								

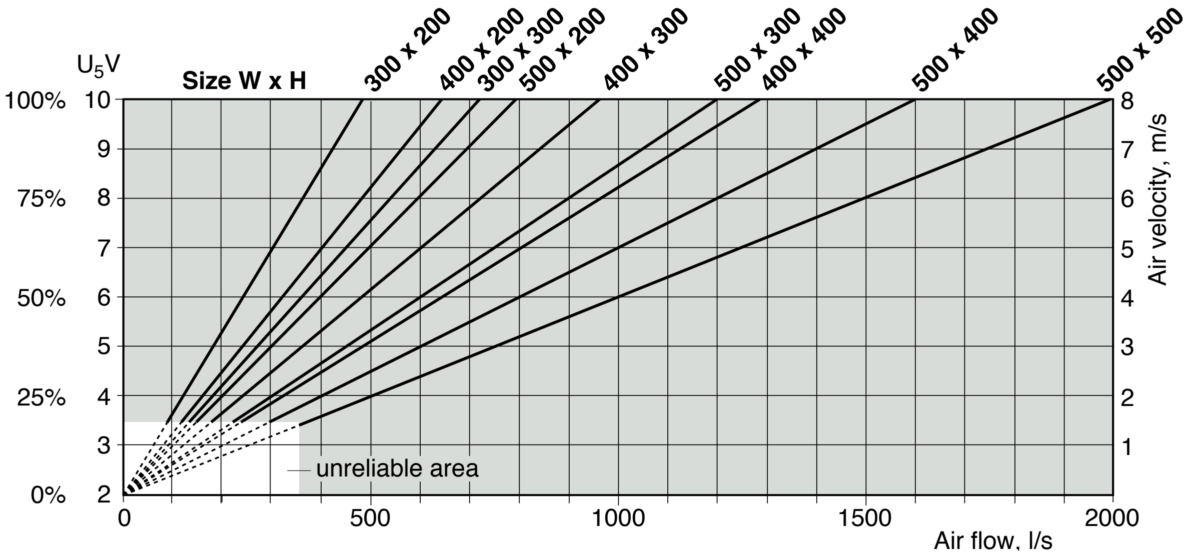
Note! The measuring tube is placed on the H-side

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 BVAVd, see separate product sheet.



Electrical data eFLOW actuator

Supply voltage:	24V AC/DC ±20% 50/60Hz
Effect:	3 W (5 VA)
Sound level:	35 dB(a)
Ambient temperature:	0°C - 50°C
Running time:	120 sec.

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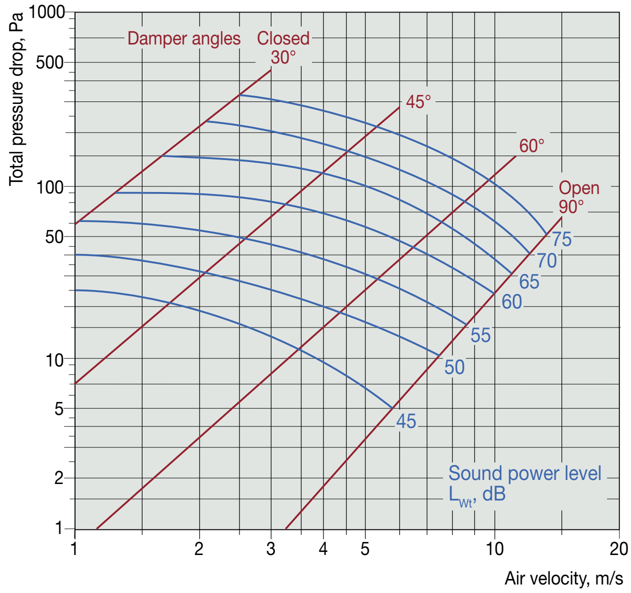
Sound data



Correction of sound power level, L_W, for different sizes

$$L_W = L_{Wt} + K_1$$

Damper area, m²	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}

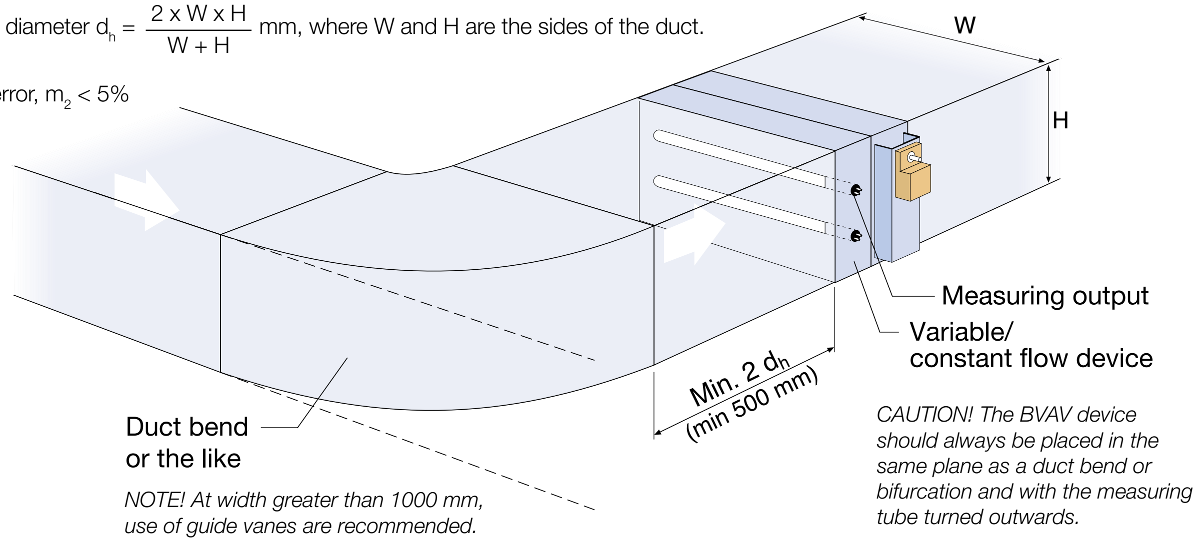
Opening angle	Centre frequency Hz							
	63	125	250	500	1000	2000	4000	8000
90°	-2	-7	-15	-18	-18	-23	-29	-33
60°	-2	-8	-14	-18	-19	-22	-28	-34
45°	-4	-8	-10	-13	-18	-22	-26	-32
30°	-5	-7	-9	-11	-14	-19	-22	-29
Tol. ± dB	3	2	3	4	5	5	6	4

Installation

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

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

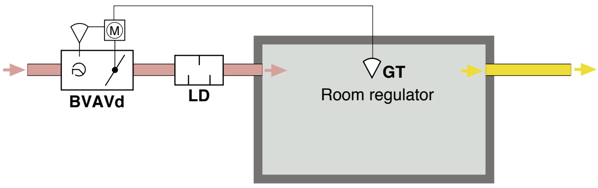
Method error, $m_2 < 5\%$



Installation examples

Alt. 1. Installation of separate VAV devices

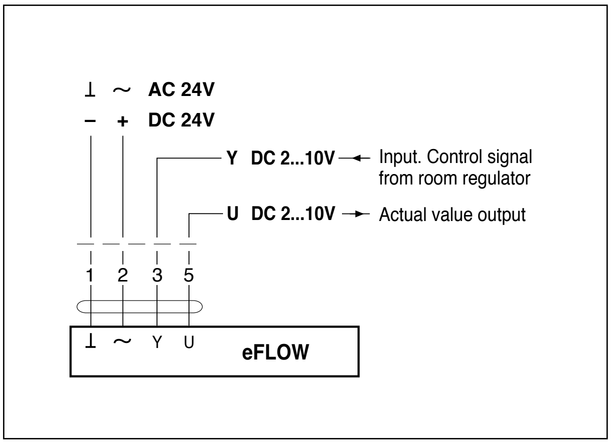
The control signal from the room regulator or DUC, controls the VAV-device. The actual value signal can be forwarded for external monitoring of the actual flow.



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

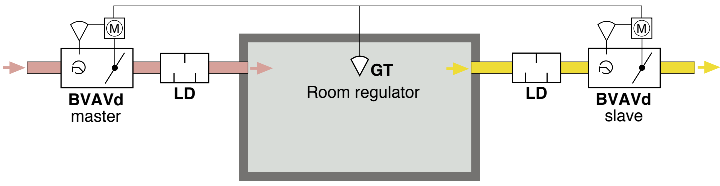
Wiring diagram

eFLOW



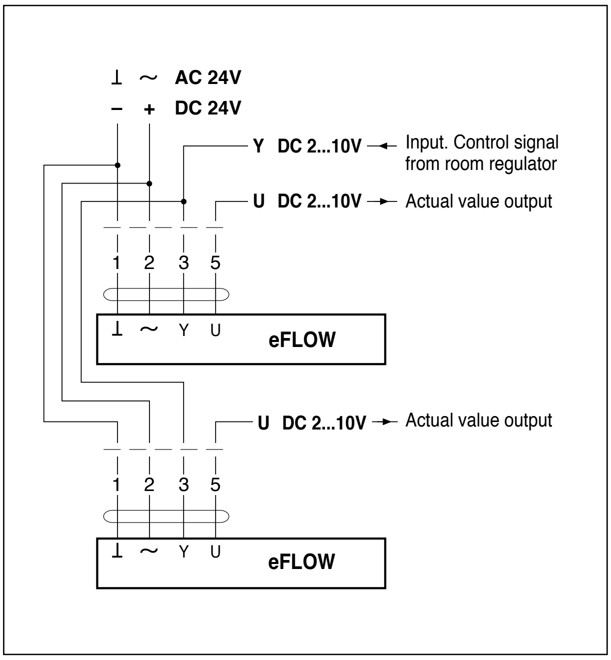
Alt. 2. Supply and exhaust air are controlled in parallel

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.



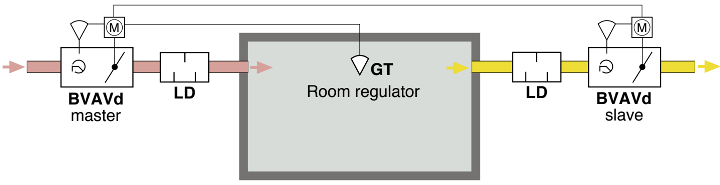
Wiring diagram

eFLOW



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

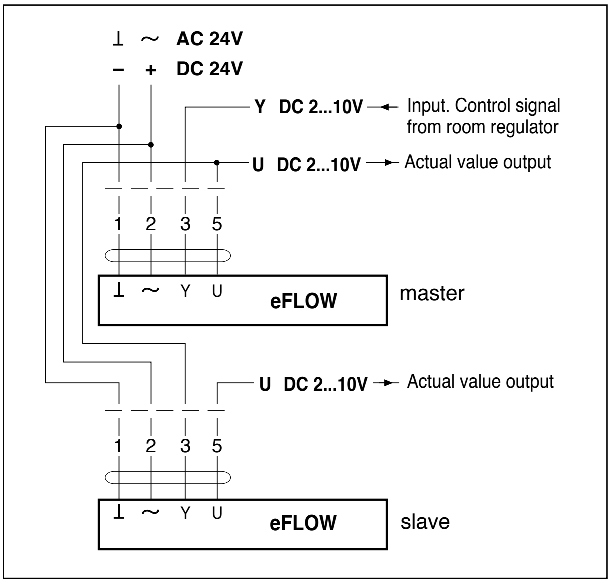
The control signal from the room regulator or DUC, controls the supply air device (BVAV master). The exhaust air device (BVAV slave) is controlled by the supply air device's control signal (U5 output). The slave follows the master. The flow relationship between slave and master is dependent on the set 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

eFLOW



Alt. 4. Constant supply air flow

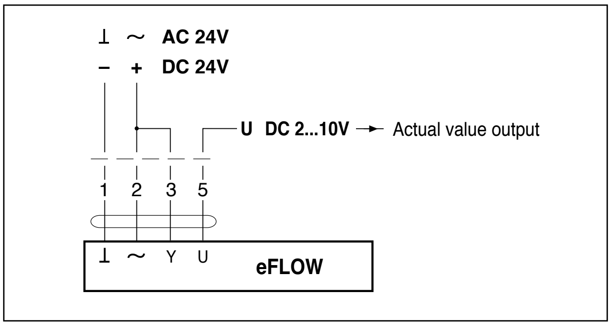
The VAV device maintains a constant flow that is preset at the factory, which is why the device is not normally controlled by any external control signal. The output signal can be forwarded for external monitoring of the actual flow. The VAV device can be mechanically operated for a range of operational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

eFLOW

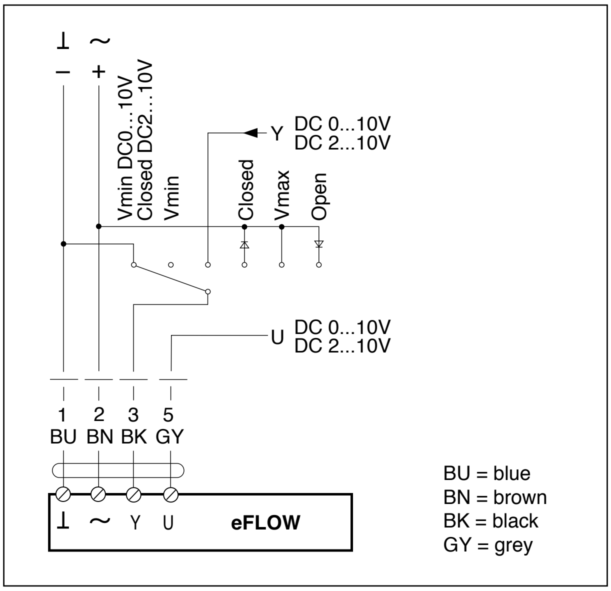


Control functions for eFLOW-actuator

By using contact functions the supply air device (BVAVd) can be controlled to closed, min. flow, variable flow, intermediate position, and max. flow and fully open.

Wiring diagram

eFLOW



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