BVAVd

Variable/constant flow device with display

VAV, CAV & FLOW
MEASURING DAMPERS

10/12/2019

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Variable/constant flow device with display BVAVd

Quick facts

- Sizes Ø100 mm to Ø630 mm
- Low min. air flow
- Display showing current air flow
- Max. and min. air flow can be set on site
- Calibrated before delivery
- Available in MagiCAD

Use

BVAVd 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 can be used for variable air flow with 2-10V alt. 0-10V control signal or for constant air flow. BVAVd 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 2. 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 - 160 - 100/30 - MB**

Size
Nom. diameter Ød, mm

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

Communication:
Modbus (optional,
must be stated when ordering)

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

Accessories
Union piece
Air quality sensor aSENSE VAV
Timer TEL
Silencers
Summing unit eSUM

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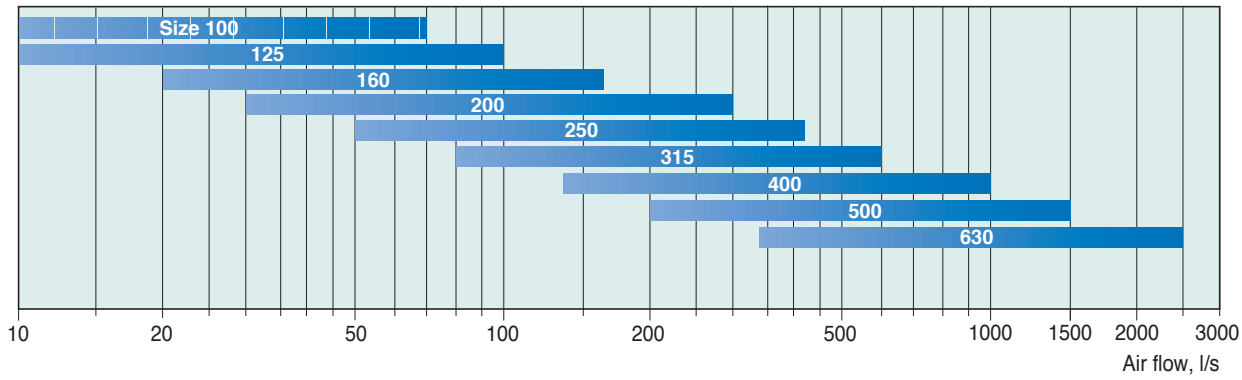
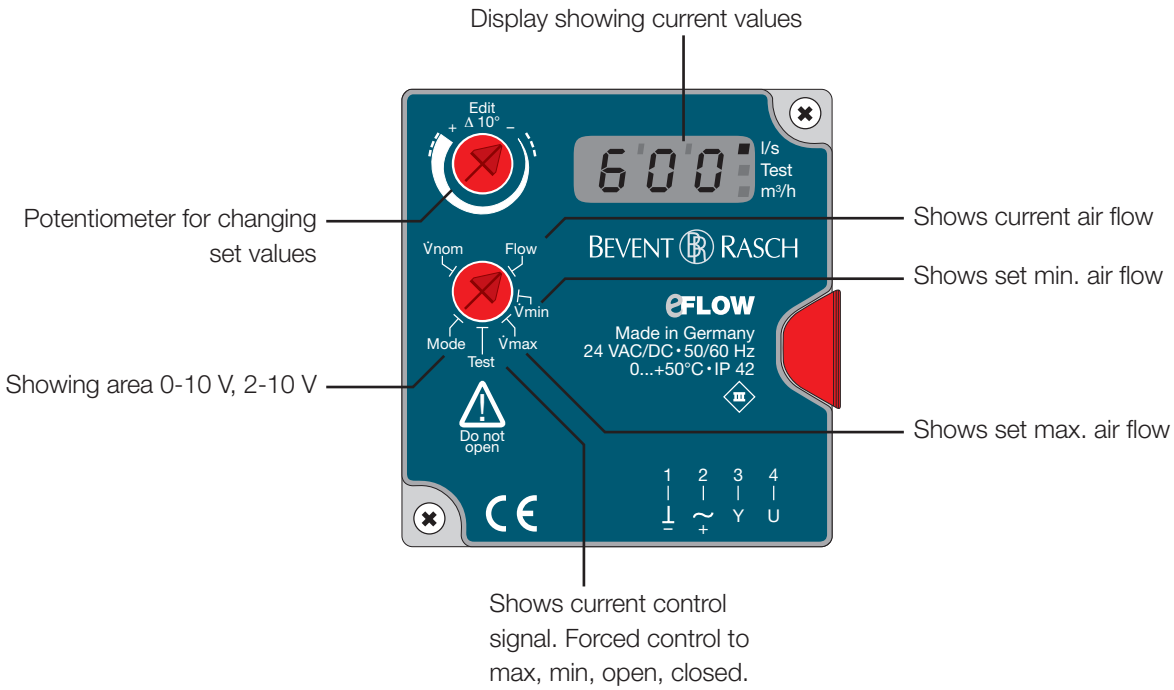
Flow range BVAVd

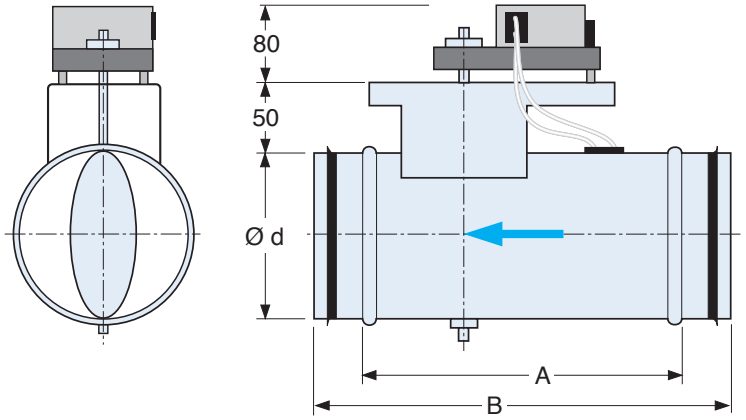


Air velocity below 1.5 m/s = unsafe area

BVAVd with useful functions



Size and weight

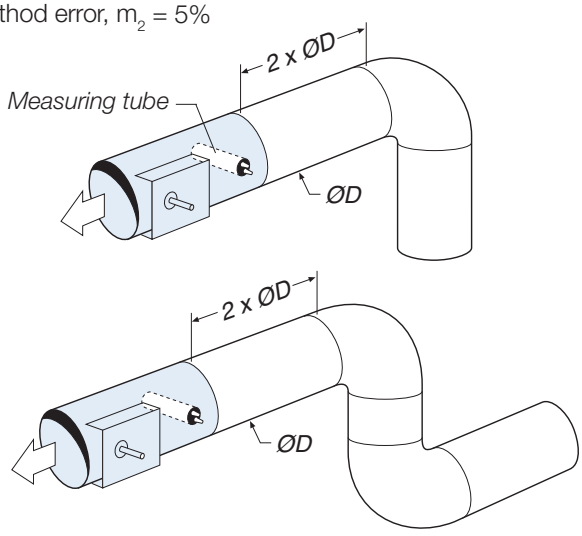


Size Ød	A	B	Weight, kg
100	215	295	1,3
125	215	295	1,4
160	215	295	1,7
200	215	295	2
250	285	365	2,7
315	285	365	3,4
400	435	515	5,6
500	435	515	8,7
630	500	580	12,9

Installation

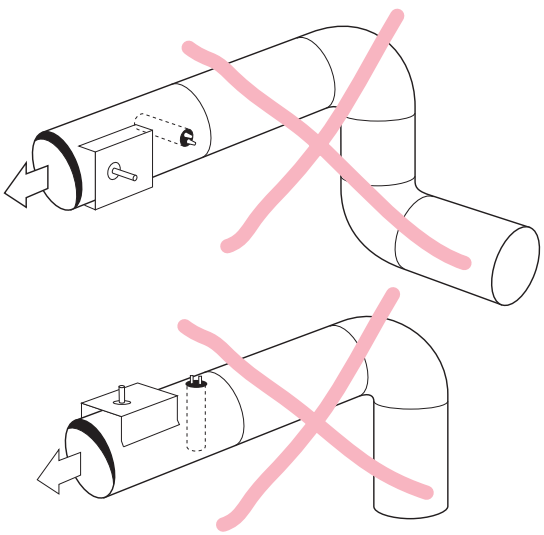
An adequately sized straight duct and correct installation are essential for low measuring uncertainty when measuring the flow in a duct. The required straight duct following a bend is shown in the figures below. For other sources of interference such as union pieces, a straight duct of at least 5 x ØD is necessary before the device.

The duct's nom. diameter = ØD
Method error, m_2 = 5%



NOTE!

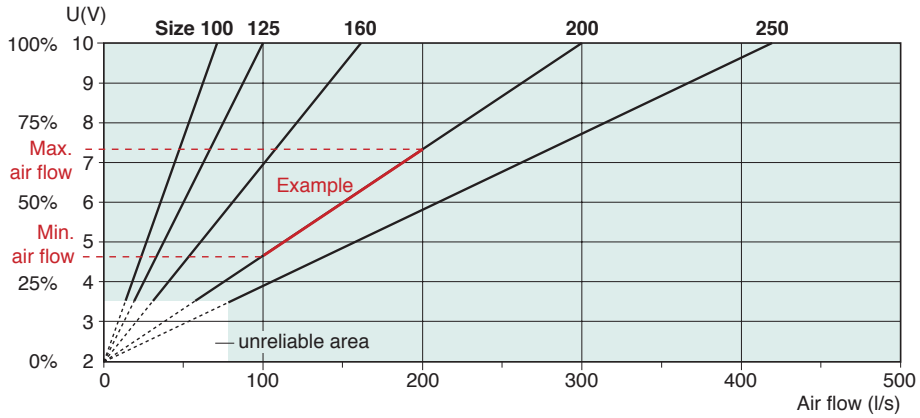
- *The measuring tube shall be fitted at 90° to the plane of the bends.*
- *Measuring tubes shall not be placed after two 90° bends in perpendicular alignment.*
- *For cleanable versions the device is fitted with two union pieces.*



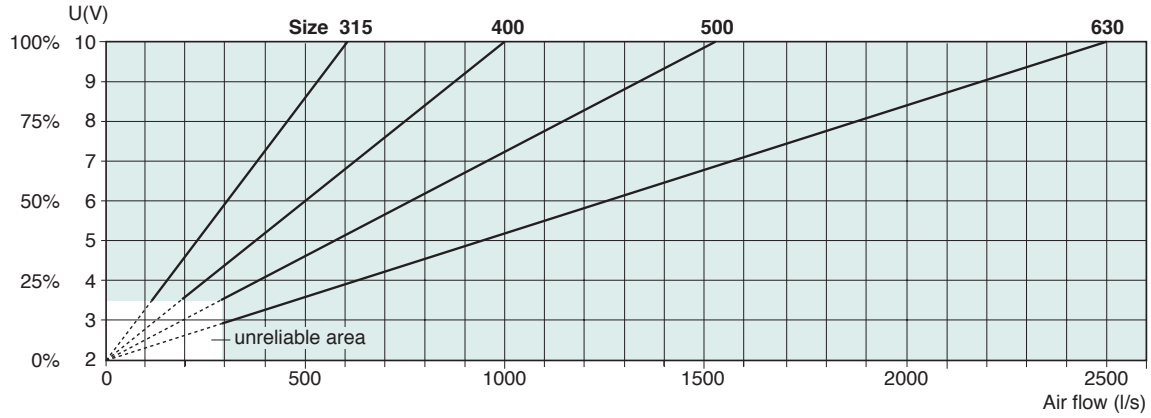
Air flow areas

The diagrams show the relationship between nominal flow and the output signal (U_5) for each size.

Sizes 100-250



Sizes 315-630



Operation range

Size	Nom. air flow l/s	Settable air flow range l/s
100	70	10-70
125	100	10-100
160	160	20-160
200	300	30-300
250	420	50-420
315	600	80-600
400	1000	140-1000
500	1530	200-1530
630	2500	325-2500

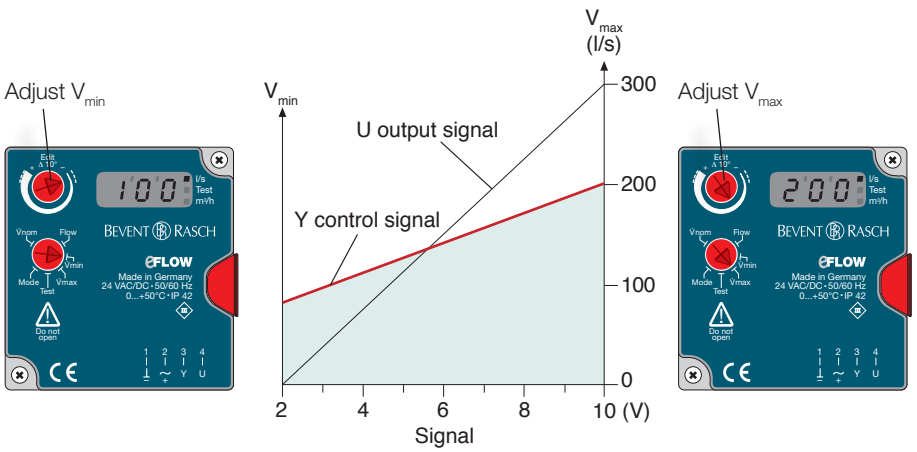
With min. air flow below the recommended min. air flow, the measuring uncertainty increases.

Example:

Prerequisites:

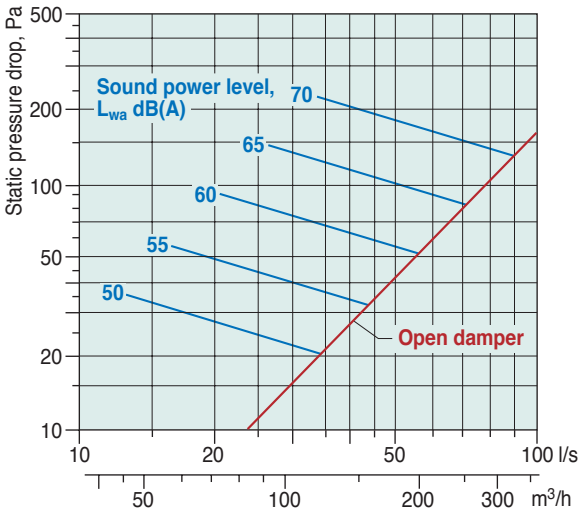
– Air flow, max. 200 l/s, min. 100 l/s
  Size 200

Nom. air flow = 300 l/s
(calibrated before delivery)
Max. air flow = 200 l/s
Min. air flow = 100 l/s
The output signal U is not affected by V_{max} and V_{min} settings.

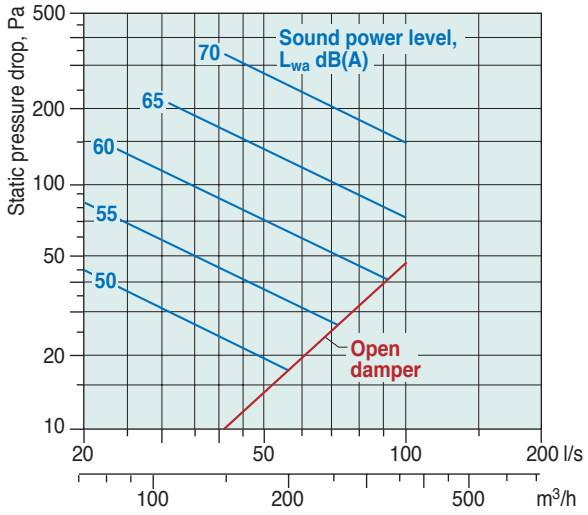


Size chart

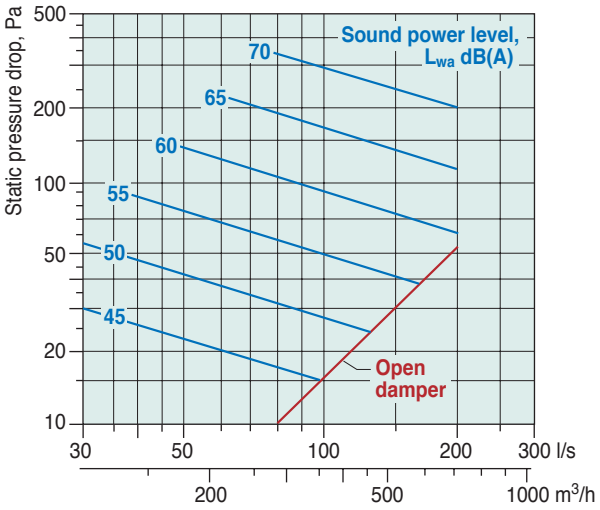
Size 100



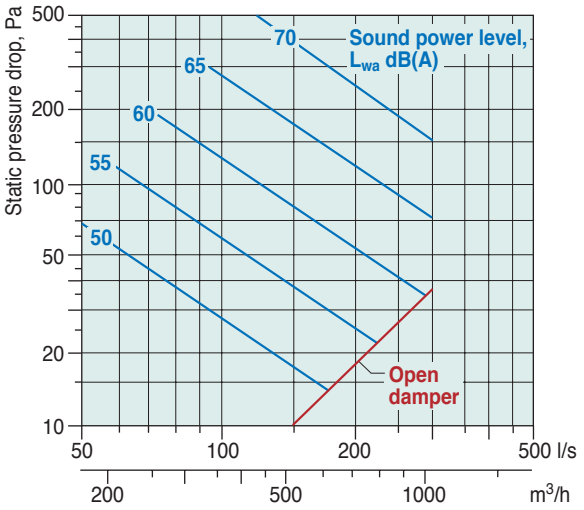
Size 125



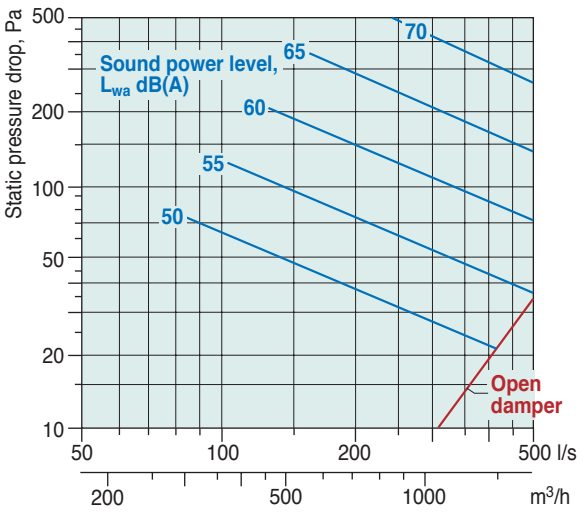
Size 160



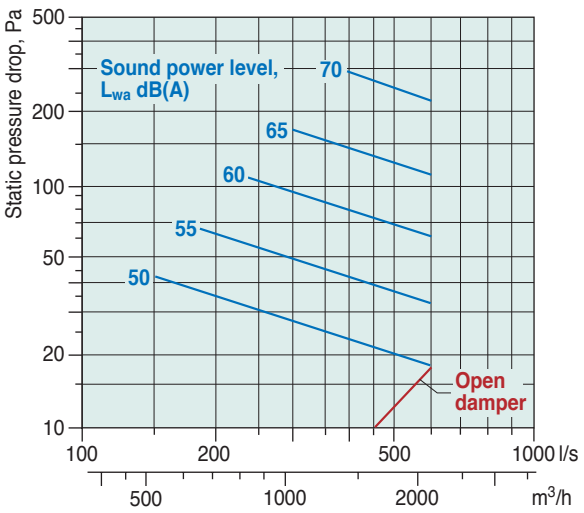
Size 200



Size 250



Size 315



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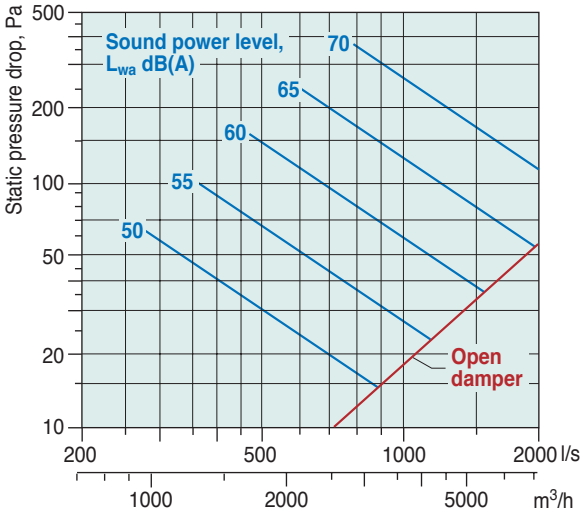
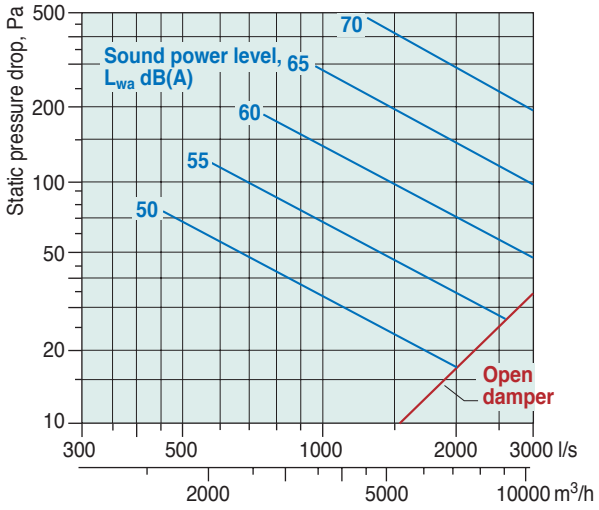
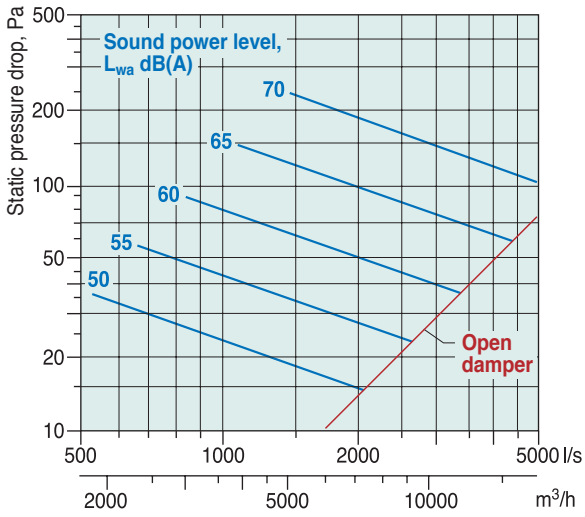
Size 400



Size 500



Size 630



Sound data

Correction of sound power level, L_{Wok}, in octave band
$L_{wok} = L_{wa} + K_{ok}$

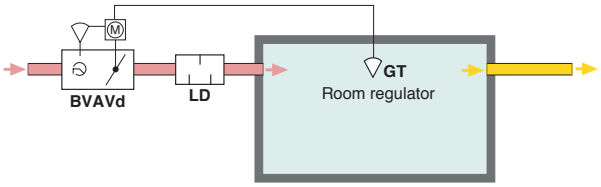
Correction, K_{ok}

Size Ød	Centre frequency Hz						
	125	250	500	1K	2K	4K	8K
100	11	-1	-4	-12	-13	-22	-29
125	10	-3	-5	-11	-14	-20	-29
160	9	1	-2	-10	-13	-18	-28
200	8	0	-2	-10	-13	-17	-28
250	6	0	-2	-6	-11	-13	-27
315	5	0	-3	-7	-10	-12	-24
400	4	1	-4	-8	-10	-12	-22
500	4	2	-5	-9	-11	-12	-21
630	3	3	-6	-10	-11	-12	-20

Installation examples

Alt. 1. Installation of separate VAV devices

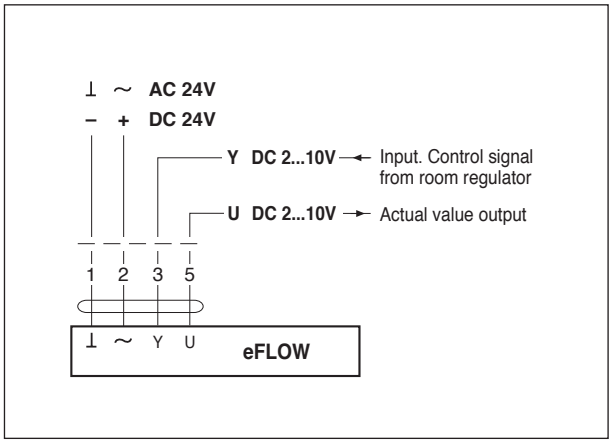
The control signal from the room regulator or DUC, controls the VAV-device. The actual value signal can be forwarded for external monitoring of the actual flow.



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 (⊥).

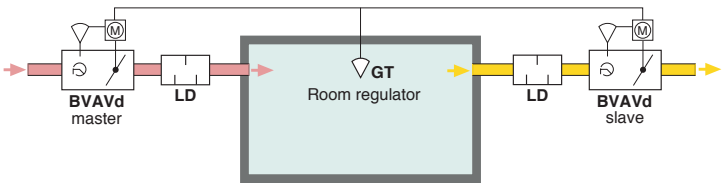
Wiring diagram

eFLOW



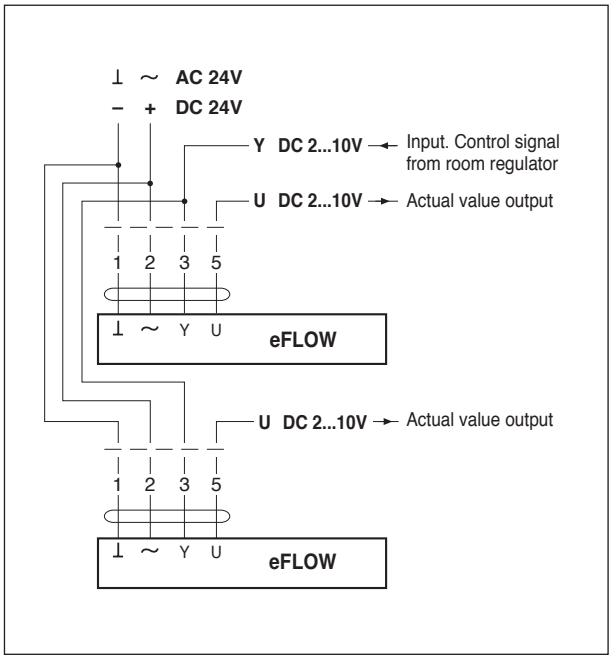
Alt. 2. Supply and exhaust air are controlled in parallel

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

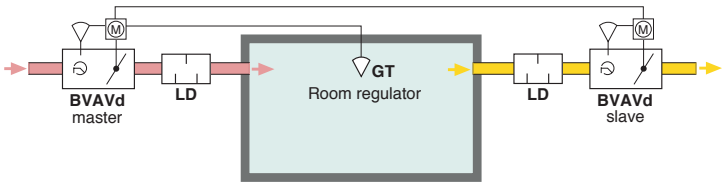


Electrical data eFLOW actuator

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.

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

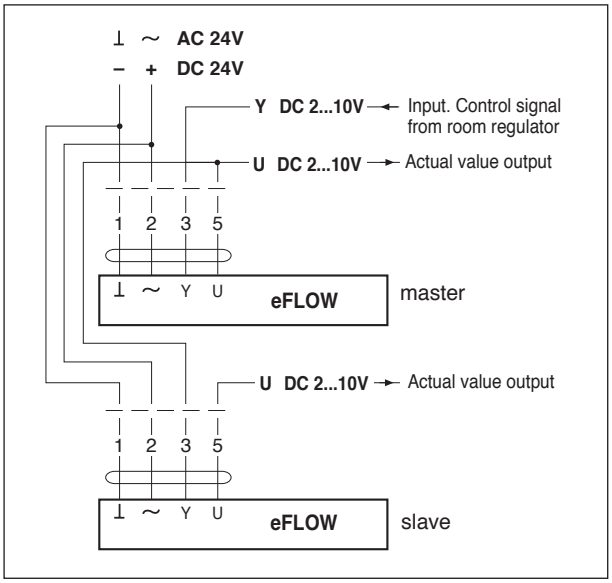
The control signal from the room regulator or DUC, controls the supply air device (BVAV master). The exhaust air device (BVAV slave) is controlled by the supply air device's control signal (U5 output). The slave follows the master. The flow relationship between slave and master is dependent on the set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

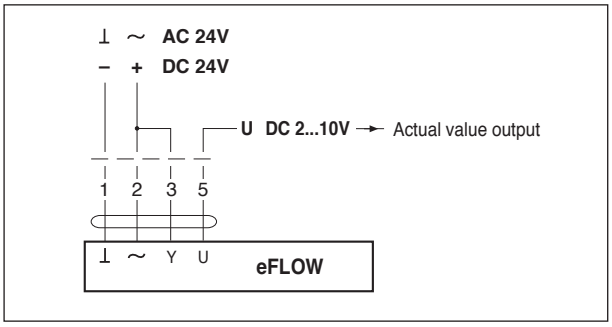
The VAV device maintains a constant flow that is preset at the factory, which is why the device is not normally controlled by any external control signal. The output signal can be forwarded for external monitoring of the actual flow. The VAV device can be mechanically operated for a range of operational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

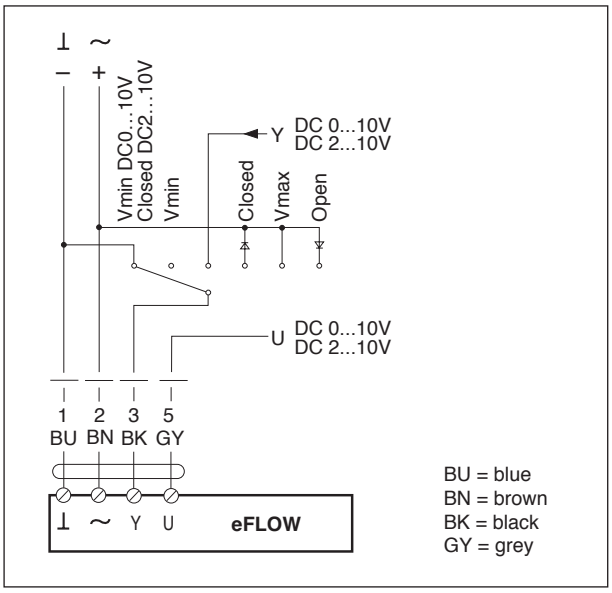


Control functions for eFLOW-actuator

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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