







## ΕN

# FOR THE PRECISE CONTROL OF NORMAL AND HIGH CONSTANT VOLUME FLOWS

Rectangular self-powered volume flow controllers for the control of supply air or extract air in constant air volume systems

- Suitable for volume flow rates up to 12,096 m<sup>3</sup>/h or 3,360 l/s
- Volume flow rate can be set using an external scale, no tools required
- High control accuracy
- No on-site test measurements required for commissioning
- Suitable for airflow velocities of up to 8 m/s
- Casing air leakage to EN 1751, class C

Optional equipment and accessories

- Acoustic cladding for the reduction of case-radiated noise
  Secondary silencer Type TX for the reduction of air-regenerated
- noise
- Hot water heat exchanger Type WT for reheating the airflow
  Actuator for switching between setpoint values

## Application

### Application

- Rectangular CONSTANTFLOW CAV controllers of Type EN for the precise supply air or extract air flow control in constant air volume systems
- Mechanical self-powered volume flow control without external power supply
- Simplified project handling with orders based on nominal size

Special features

- Volume flow rate can be set using an external scale; no tools required
- High volume flow rate control accuracy
- Any installation orientation
- Correct operation even under unfavourable upstream or downstream conditions (1.5 B straight section required upstream and 0.5 B required downstream)

### Description

#### Variants

- EN: Volume flow controller
- EN-D: Volume flow controller with acoustic cladding
- Units with acoustic cladding and/or secondary silencer Type TX for demanding acoustic requirements
- Acoustic cladding cannot be retrofitted

#### Construction

- Galvanised sheet steel
- P1: Powder-coated, silver grey (RAL 7001)

#### Parts and characteristics

- Ready-to-commission controller
- Damper blade with low-friction bearingsBellows that acts as an oscillation damper
- Cam plate with leaf spring
- Scale with pointer to set the volume flow rate setpoint
- Aerodynamic function testing of each unit on a special test rig prior to shipping

#### Attachments

- · Min/Max actuators: Actuators for switching between minimum and maximum volume flow rate setpoint values
- Modulating actuators: Actuators for the stepless adjustment of volume flow rates or to switch between minimum and maximum volume flow rate setpoint values
- Retrofit kits: Actuators and installation accessories

#### Useful additions

- Secondary silencer Type TX
- Heat exchanger Type WT

#### Construction features

- Rectangular casing
- Flanges on both sides, suitable for duct connection

#### Materials and surfaces

- Casing and damper blade made of galvanised sheet steel
- Leaf spring made of stainless steel
- Polyurethane bellows
- Plain bearings with PTFE coating

#### EN-D

- Acoustic cladding made of galvanised sheet steel
- Rubber profile for the insulation of structure-borne noise
- Lining is mineral wool

#### Mineral wool

- To EN 13501, fire rating class A2, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EG

## INFORMACIÓN TÉCNICA

#### Functional description

The volume flow controller is a mechanical self-powered unit and works without external power supply. A damper blade with low-friction bearings is adjusted by aerodynamic forces such that the set volume flow rate is maintained within the differential pressure range.

The aerodynamic forces of the airflow create a closing torque on the damper blade. The bellows extends and increases this force while at the same time acting as an oscillation damper. The closing force is countered by a leaf spring that unrolls over a cam plate. The shape of the cam plate is such that a change in the differential pressure leads to an adjustment of the damper blade in a way that the volume flow rate is maintained almost exactly.

#### Efficient commissioning

The volume flow rate setpoint value can be set quickly and easily using the pointer on the external scale; no measurements are required.

The advantage over flow adjustment dampers is that there is no need for repeat measurements or adjustments by an air conditioning engineer. Should the system pressure change, e.g. by opening or closing of duct sections, the flow rates in the entire system will also change if flow adjustment dampers are used; however, this is not the case with mechanical self-powered volume flow controllers. A mechanical self-powered controller reacts immediately and adjusts the damper blade such that the set constant volume flow rate is maintained.

#### Schematic illustration of the EN



Nominal sizes	200 × 100 to 600 × 600 mm
Volume flow rate range	40 - 3360 1/s
Volume flow rate range	144 – 12096 m³/ł
Volume flow rate setting range	approx. 25 – 100 % of the nominal volume flow rate
Scale accuracy	±4%
Differential pressure	50 – 1000 Pa
Operating temperature	10 – 50 °C

	Ý		Air-regenerated noise		Case-radiated noise		
Nominal			1	2	1	3	
size			L <sub>PA</sub>	L <sub>PA1</sub>	L <sub>PA2</sub>	L <sub>PA3</sub>	
	l/s	m³/h		dB	(A)		
200 × 100	40	144	35	19	21	<15	
	80	288	41	28	28	21	
	120	432	44	34	33	26	
	160	576	46	38	35	30	
	65	234	38	22	24	16	
	130	468	44	30	32	24	
300 × 100	195	702	45	35	36	29	
	260	936	47	38	39	32	
	105	378	41	24	28	19	
	210	756	44	31	34	26	
300 × 150	315	1134	46	35	39	32	
	420	1512	47	38	41	35	
	130	468	45	24	31	21	
	260	936	46	29	35	26	
300 × 200	390	1404	46	33	38	29	
	520	1872	47	35	40	32	
400 × 200	210	756	42	23	30	20	
	420	1512	43	27	35	26	
	630	2268	44	31	38	30	
	840	3024	44	33	40	33	
	230	828	40	21	28	18	
500 × 200	460	1656	40	26	33	24	
	690	2484	41	29	36	28	
	920	3312	42	31	38	31	
	255	918	38	20	27	17	
600 × 200	510	1836	39	24	31	23	
	765	2754	39	28	35	27	
	1020	3672	40	31	37	31	
	220	792	44	23	32	22	
	440	1584	45	28	37	27	
400 × 250	660	2376	45	31	39	30	
	880	3168	45	34	41	33	
	300	1080	41	21	31	21	
	600	2160	42	26	36	27	
500 × 250	900	3240	43	30	39	30	
	1200	4320	43	33	41	33	
	320	1152	40	20	30	20	
	640	2304	40	25	34	25	
600 × 250	960	3456	41	28	37	29	
	1280	4608	42	31	39	32	
	315	1134	45	25	53	25	
	630	2268	45	29	40	30	
400 × 300	945	3402	40	34	40	34	
	1260	4536	47	36	45	36	
	375	1350	47	22	34	23	
	750	2700	43	22	34	20	
500 × 300	1125	4050	44	28	38	29	
	1125	4050	44	31	41	32	

1 EN 2 EN with secondary silencer TX 3 EN-D

Rectangular volume flow controllers for constant air volume systems, mechanical self-powered, without external power supply, suitable for supply or extract air, available in 19 nominal sizes.

Ready-to-commission unit consists of the casing containing a damper blade with low-friction bearings, bellows, external cam plate and leaf spring.

Volume flow controllers without actuators are factory set to a reference volume flow rate (customers can set the required volume flow rate on site).

Both ends suitable for the connection of air duct profiles.

Casing air leakage to EN 1751, class C (B + H  $\leq$ 400, class B)

Special features

- Volume flow rate can be set using an external scale; no tools required
- High volume flow rate control accuracy
- Any installation orientation
- . Correct operation even under unfavourable upstream or downstream conditions (1.5 B straight section required upstream and 0.5 B required downstream)

#### Materials and surfaces

- Casing and damper blade made of galvanised sheet steel
- Leaf spring made of stainless steel •
- Polyurethane bellows .
- Plain bearings with PTFE coating

#### FN-D

- Acoustic cladding made of galvanised sheet steel
- Rubber profile for the insulation of structure-borne noise
- Lining is mineral wool

#### Mineral wool

- To EN 13501, fire rating class A2, non-combustible
  RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and . EU directive 97/69/EG

#### Construction

- Galvanised sheet steel
- P1: Powder-coated, silver grey (RAL 7001)

#### Technical data

- Nominal sizes: 200 × 100 to 600 × 600 mm
- Volume flow rate range: 40 to 3360 l/s or 144 to 12096 m<sup>3</sup>/h .
- Volume flow rate control range: approx. 25 100 % of the nominal volume flow rate
- Differential pressure: 50 1000 Pa

#### EN

EN -	- D –	P1 /	400×200	/ B5	0 /	800 - 3000
	2	3	4	5		6

# 1 Type EN Volume flow controller

- Acoustic cladding
   No entry: none
   With acoustic cladding

- Image: Second strength
   Monometry:
   Galvanised sheet steel
   Monometry:<

# 4 Nominal size [mm] B × H

- B× IT
  Actuator
  No entry: none
  B50 Min/Max switching, 24 V AC/DC supply voltage
  B52 Min/Max switching, 24 V AC/DC supply voltage, with auxiliary switch
  B60 Min/Max switching, 230 V AC supply voltage
  B62 Min/Max switching, 230 V AC supply voltage, with auxiliary switch
  B70 Variable adjustment, 24 V AC/DC supply voltage
  B72 Variable adjustment, 24 V AC/DC supply voltage
  B73 Variable adjustment, 24 V AC/DC supply voltage
  B74 Variable adjustment, 24 V AC/DC supply voltage
  B75 Variable adjustment, 24 V AC/DC supply voltage