



## TYP EN-EX

### FOR THE PRECISE CONTROL OF NORMAL AND HIGH CONSTANT VOLUME FLOWS IN POTENTIALLY EXPLOSIVE ATMOSPHERES (ATEX)

Rectangular, mechanical self-powered volume flow controllers for the control of supply air or extract air in constant air volume systems, approved and certified for potentially explosive atmospheres (ATEX)

- ATEX-compliant construction
- Approved for gases, mists, vapours and dusts in zones 1, 2, 21 and 22
- 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 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

## Application



#### Application

- Rectangular EXCONTROL CAV controllers of Type EN-Ex for the precise supply air or extract air flow control in constant air volume systems
- For use in potentially explosive atmospheres (ATEX)

- Mechanical self-powered volume flow control without external power supply
- Simplified project handling with orders based on nominal size

#### Special features

- ATEX mark and certification
- ATEX equipment group II, approved for zones 1, 2, 21 and 22
- Volume flow rate can be set using an external scale; no tools required
- High volume flow rate control accuracy
- Any installation orientation

## Description

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#### Variants

- EN-Ex: Volume flow controller
- EN-Ex-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 bearings
- Bellows that acts as an oscillation damper
- Cam plate with leaf spring
- Scale with pointer to set the volume flow rate setpoint
- Connection for equipotential bonding
- Aerodynamic function testing of each unit on a special test rig prior to shipping
- Correct operation even under unfavourable upstream or downstream conditions (1.5 B straight section required upstream and 0.5 B required downstream)

#### Useful additions

- Secondary silencer Type TX

#### Construction features

- Rectangular casing
- Construction and materials comply with the EU directive for use in potentially explosive atmospheres (ATEX)
- 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-Ex-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

## INFORMACJE TECHNICZNE

### 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.

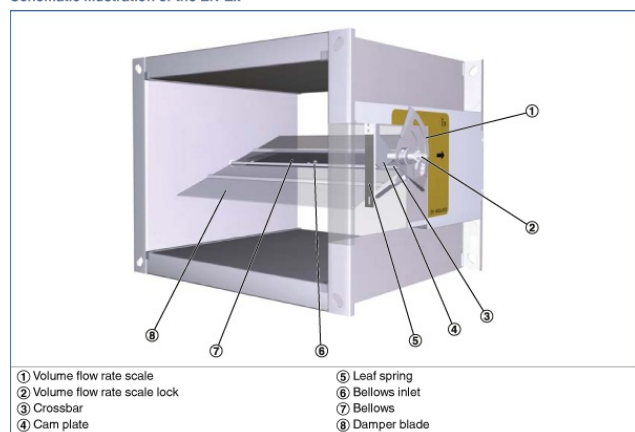
The aerodynamic forces of the airflow create a closing torque on the damper blade. The bellows extends and increases this force while at the same time acting as an oscillation damper. The closing force is countered by a leaf spring that unrolls over a cam plate. The shape of the cam plate is such that 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-Ex



<b>Nominal sizes</b>	200 x 100 to 600 x 600 mm
<b>Volume flow rate range</b>	40 – 3360 l/s
<b>Volume flow rate range</b>	144 – 12096 m <sup>3</sup> /h
<b>Volume flow rate setting range</b>	approx. 25 – 100 % of the nominal volume flow rate
<b>Scale accuracy</b>	± 4 %
<b>Differential pressure</b>	50 – 1000 Pa
<b>Operating temperature</b>	10 – 50 °C

Quick sizing: Sound pressure level at differential pressure 150 Pa

Nominal size	V̇		Air-regenerated noise		Case-radiated noise	
			①	②	①	③
	l/s	m³/h	L <sub>PA</sub>	L <sub>PA1</sub>	L <sub>PA2</sub>	L <sub>PA3</sub>
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
300 × 100	65	234	38	22	24	16
	130	468	44	30	32	24
	195	702	45	35	36	29
	260	936	47	38	39	32
300 × 150	105	378	41	24	28	19
	210	756	44	31	34	26
	315	1134	46	35	39	32
	420	1512	47	38	41	35
300 × 200	130	468	45	24	31	21
	260	936	46	29	35	26
	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
500 × 200	230	828	40	21	28	18
	460	1656	40	26	33	24
	690	2484	41	29	36	28
	920	3312	42	31	38	31
600 × 200	255	918	38	20	27	17
	510	1836	39	24	31	23
	765	2754	39	28	35	27
	1020	3672	40	31	37	31
400 × 250	220	792	44	23	32	22
	440	1584	45	28	37	27
	660	2376	45	31	39	30
	880	3168	45	34	41	33
500 × 250	300	1080	41	21	31	21
	600	2160	42	26	36	27
	900	3240	43	30	39	30
	1200	4320	43	33	41	33
600 × 250	320	1152	40	20	30	20
	640	2304	40	25	34	25
	960	3456	41	28	37	29
	1280	4608	42	31	39	32
400 × 300	315	1134	45	25	53	25
	630	2268	46	29	40	30
	945	3402	47	34	43	34
	1260	4536	47	36	45	36
500 × 300	375	1350	43	22	34	23
	750	2700	44	28	38	29
	1125	4050	44	31	41	32
	1500	5400	45	33	43	35

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

Rectangular volume flow controllers for constant air volume systems in potentially explosive atmospheres, 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 with leaf spring, and parts for equipotential bonding and for protection in potentially explosive atmospheres.

Volume flow controllers 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

- ATEX mark and certification
- ATEX equipment group II, approved for zones 1, 2, 21 and 22
- Volume flow rate can be set using an external scale; no tools required
- High volume flow rate control accuracy
- Any installation orientation

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-Ex-D

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

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Construction

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

Technical data

- Nominal sizes: 200 × 100 to 600 × 600
- 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-Ex



**1** Type

**EN-Ex** Volume flow controller for potentially explosive atmospheres

**2** Acoustic cladding

No entry: none  
**D** With acoustic cladding

**3** Material

No entry: galvanised sheet steel  
**P1** Powder-coated, silver grey (RAL 7001)

**4** Nominal size [mm]

B × H