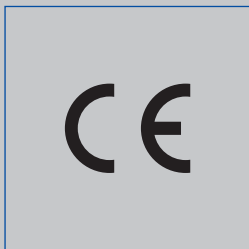




EK-EU damper blade



EK-EU
with open/close actuator



CE compliant according to
European regulations



With TROXNETCOM
as an option



Tested to VDI 6022

Smoke control dampers Type EK-EU



For mechanical smoke extract systems and as an additional supply air inlet

Rectangular smoke control dampers with extract ventilation function,
for smoke extract with mechanical smoke extract systems
or as an additional supply air inlet

- Nominal sizes 200 × 200 – 1500 × 800 mm, in increments of 1 mm
- Casing, damper blade and actuator encasing made of temperature-resistant calcium silicate
- Remote control with actuator
- Pressure level 3 (operating pressure –1500 to 500 Pa)
- Manual or automatic release
- For smoke extract ducts from 35 mm wall thickness
- C_{mod} = ventilation function and intermediate positions for flow rate balancing
- Casing air leakage to EN 1751, class C

Optional equipment and accessories

- Connecting subframe
- Cover grille
- Integration into the central BMS with TROXNETCOM

Type		Page
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Variants

Product examples

EK-EU with open/close actuator of Type BE



Screw-fixed connecting subframes on both sides (optional)

EK-EU with cover grille



Cover grille (optional)

Description

Application

- Smoke control dampers of Type EK-EU, with CE marking and declaration of performance, for smoke extract with mechanical smoke extract systems
- Provision of fresh air supply for mechanical smoke extract systems
- Extract ventilation function is possible if the mechanical smoke extract system has been approved (general building approval) for extract ventilation
- Integration into the central BMS with TROXNETCOM

Classification

- EI 90 ($v_{edw} - h_{odw}$, $i \leftrightarrow o$) S1500 C_{mod} MA multi to EN 13501-4

Nominal sizes

- Width/height 200/200 – 1500/800 mm (in increments of 1 mm)
- Casing length L = 600 mm or 800 mm, depending on casing height
- Other casing lengths upon request

Attachments

- Open/Close actuator, 24 V AC/DC or 230 V AC supply voltage
- Network module for the integration with AS-i networks

Accessories

- Connecting subframe
- Cover grille tested to EN 1366-10

Useful additions

- Duct smoke detector RM-O-3-D
- Duct smoke detector with airflow monitor RM-O-VS-D

X-FANS smoke exhaust fans

- Smoke exhaust fan for roof installation BVDAX/BVD
- Smoke exhaust fan for wall installation BVW/BVWAXN
- Smoke exhaust centrifugal fan BVREH/BVRA
- Smoke exhaust jet fans BVGAX/BVGAXN

All smoke exhaust fans are tested to EN 12101-3, for F200/F300/F400 and F600, depending on the type. With CE marking, declaration of performance and application approval for the German market.

Special characteristics

- Declaration of performance according to Construction Products Regulation
- Classification to EN 13501-4, EI 90 ($v_{edw} - h_{odw}$, $i \leftrightarrow o$) S1500 C_{mod} MA multi
- General building inspectorate licence Z-56.4212-990
- Complies with the requirements of EN 12101-8
- Tested for fire resistance properties to DIN 1366-10 and EN 1366-2
- Casing air leakage to EN 1751, class C
- Low sound power level and differential pressure
- Any airflow direction
- Integration into the central BMS with TROXNETCOM
- Tested to EN 1366-10 with a weight being attached to the blade, with 10,000 open/close cycles and 10,000 cycles in intermediate position (C_{mod})

Parts and characteristics

- Installation position is independent of the airflow direction or position of the damper blade shaft
- Pressure level 3 (operating pressure -1500 to 500 Pa)
- Manual or automatic release
- Smoke control damper with ventilation function and intermediate positions for flow rate balancing

Construction features

- Rectangular construction
- Reversible open/close actuator
- Remote control with actuator
- Suitable for the connection of cover grilles or connecting subframes

Materials and surfaces

- Casing, damper blade and actuator encasing made of temperature-resistant calcium silicate
- Brass bearings
- Shafts made of stainless steel

Installation and commissioning

- Installation in solid walls and ceilings slabs
- Installation in or on tested, fire-resistant vertical or horizontal smoke extract ducts to EN 1366-8 (multi)
- Installation in or on tested vertical or horizontal sheet steel smoke extract ducts to EN 1366-9 (single)
- For smoke extract ducts made of calcium silicate from 35 mm wall thickness
- After installation the damper must remain accessible for inspection, cleaning and repair
- Connected smoke extract ducts must have an inspection access
- Mechanical smoke extract systems require that the power supply is maintained even in the event of a fire

Smoke control dampers must be installed and attached according to the operating and installation manual.

Standards and guidelines

- Construction Products Regulation
- EN 12101-8:2011 Smoke and heat control systems – Smoke control dampers
- EN 1366-10:2011 Fire resistance tests for service installations – Smoke control dampers
- EN 1366-2:1999 Fire resistance tests for service installations – Fire dampers
- EN 13501-4:2009 Fire classification of construction products and building elements
- EN 1751:1999 Ventilation for buildings – Air terminal devices

Maintenance

- Mechanical smoke extract systems require that the power supply is maintained even in the event of a fire
- Smoke control dampers must be maintained regularly and must be operational at all times
- Maintenance is required at least every 6 months
- A maintenance report must be created; documents must be kept for reference
- The functional reliability of the smoke control damper must be tested at least every six months; this has to be arranged by the owner of the smoke extract system; functional tests must be carried out in compliance with the basic maintenance principles of EN 13306 and DIN 31051. If two consecutive tests, one 6 months after the other, are successful, the next test can be conducted one year later
- For details on maintenance and inspection, refer to the installation and operating manual

Technical data

Nominal sizes	200 × 200 mm – 1500 × 800 mm, in increments of 1 mm
Casing length	600 and 800 mm
Volume flow rate range	Up to 12000 l/s or up to 43200 m ³ /h
Differential pressure range	Pressure level 3: -1500 to 500 Pa
Operating temperature	-30 to 50 °C
Upstream velocity*	≤ 10 m/s

* Data applies to uniform upstream and downstream conditions for the smoke control damper

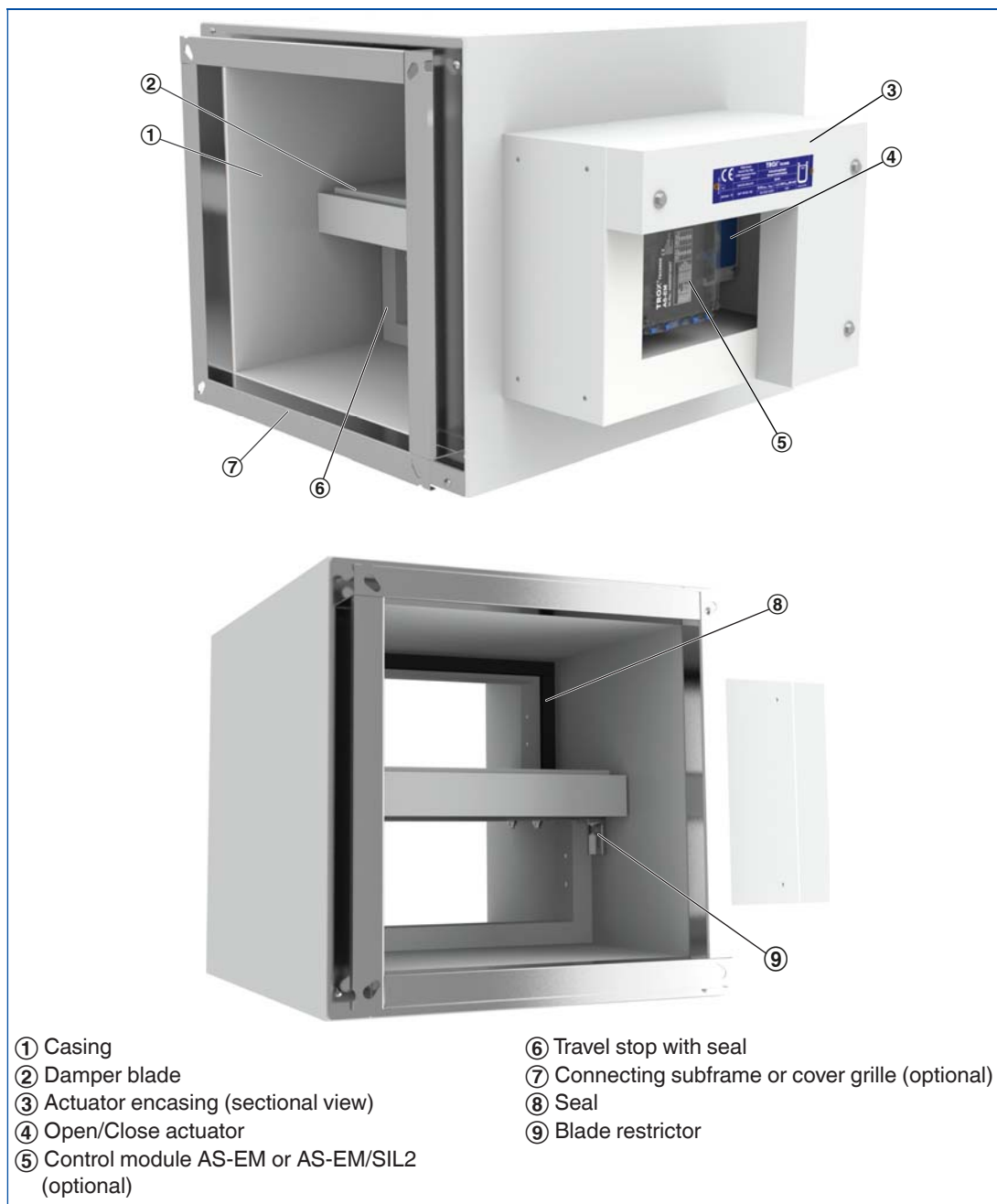
Function

Functional description

Smoke control dampers are used in mechanical smoke extract systems. They are used for extracting smoke gases and for providing additional supply air to one or more fire compartments. The dampers are made of calcium silicate panels and are opened by an encased actuator; when smoke is detected, the actuator is triggered by a signal either from a duct smoke detector or from a fire alarm system. Smoke control dampers have two safety positions: open and closed. In the case of fire-resistant smoke control dampers for multiple compartments, the safety position is either 'open' or 'closed', depending on the fire site and the path of the smoke to be extracted.

If the safety position is 'open', the free area must be maintained even in the event of a fire. According to the specified time-temperature curve, an EK-EU can still fully open or close after 25 minutes (MA, manual release). Regular maintenance of the smoke control damper is required to ensure its functional reliability.

Schematic illustration of the EK-EU with open/close actuator

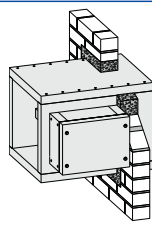
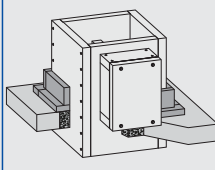
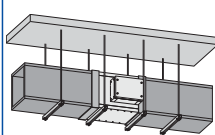
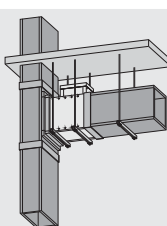
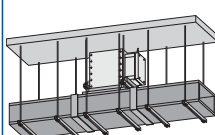


Design information

- Approved for use in mechanical smoke extract systems
- A cover grille may be attached directly to the damper
- If the damper is installed in a solid wall, in a solid ceiling slab, on a fire-resistant smoke extract duct or in a fire-resistant smoke extract duct with a lower fire resistance class than that of the smoke control damper, the fire resistance class of the wall or ceiling slab applies also to the EK-EU (details upon request)
- Fire-resistant smoke extract ducts must be installed in such a manner that they do not impose any significant loads on the smoke control damper in the event of a fire
- Sheet steel smoke extract ducts to EN 1366-9 must be connected with flexible connectors according to the manufacturer's instructions for the sheet steel ducts
- Smoke control dampers must be installed, connected and attached according to the operating and installation manual

Use in solid walls or ceiling slabs, in or on fire-resistant smoke extract ducts

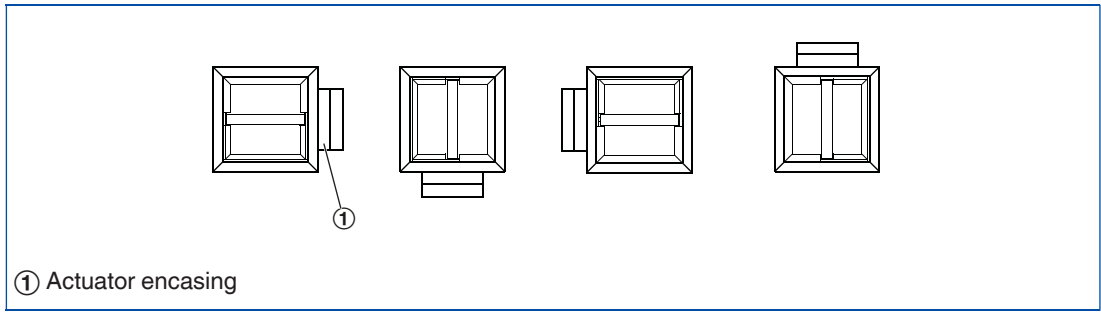
Classification to EN 13501-4: EI 90 ($v_{edw} - h_{odw}$, $i \rightarrow o$) S1500 C_{mod} MA multi

Installation location	Construction and building material	Minimum thickness	Mortar-based installation	Dry mortarless installation
		mm		
In solid walls	 Solid walls of concrete, aerated concrete or bricks	100	Perimeter mortar infill	-
In solid ceiling slabs	 Solid ceiling slabs of concrete or aerated concrete	150	Perimeter mortar infill	-
Fire-resistant smoke extract ducts	 In horizontal or vertical smoke extract ducts, gross density $\geq 520 \text{ kg/m}^3$, calcium silicate	≥ 35	-	* With angle sections and straight sections made of calcium silicate
	 In horizontal and on vertical smoke extract ducts, gross density $\geq 520 \text{ kg/m}^3$, calcium silicate	≥ 35	-	* With angle sections and straight sections made of calcium silicate
	 On top of horizontal smoke extract ducts, gross density $\geq 520 \text{ kg/m}^3$, calcium silicate	≥ 35	-	* With angle sections and straight sections made of calcium silicate

* Details according to installation and operating manual

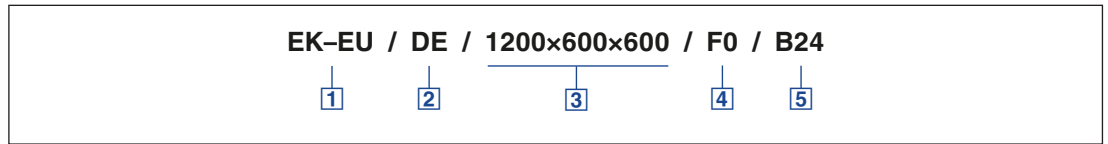
Installation orientation

Installation orientation of actuator encasing and damper blade



Order code

EK-EU



1 Type

EK-EU Smoke control damper

2 Country of destination

DE Germany
Other destination countries upon request

3 Nominal size [mm]

B × H × L

4 Accessories

- No entry: none
- F0** Connecting subframe on the operating side
- 0F** Connecting subframe on the installation side
- FF** Connecting subframes on both sides
- A0** Cover grille on the operating side
- 0A** Cover grille on the installation side
- AA** Cover grilles on both sides
- FA** Connecting subframe on the operating side and cover grille on the installation side
- AF** Connecting subframe on the installation side and cover grille on the operating side

5 Attachments

Belimo

- B24** BE 24-12, 24 V AC/DC
- B230** BE 230-12, 230 V AC/DC
- B24A** BE 24-12, with AS-EM, 24 V AC/DC
- B24AS** BE 24-12, with AS-EM/SIL2, 24 V AC/DC

Order examples

EK-EU/1200x600x600/F0/B24

Nominal size	1200 × 600 × 600 mm
Accessories	Connecting subframe on the operating side
Attachment	Open/Close actuator, Belimo, 24 V AC/DC

EK-EU/400x400x600/A0/B24A

Nominal size	400 × 400 × 600 mm
Accessories	Cover grille on the operating side
Attachment	Open/Close actuator, Belimo, 24 V AC/DC with TROXNETCOM control module AS-EM

Description



EK-EU
with connecting subframe



EK-EU
with cover grille

Application

- The cover grille may be attached directly to the damper; this application has been approved based on a fire test to EN 1366-10
- A connecting subframe is required for sheet steel smoke extract ducts
- Connecting subframe and cover grille may be ordered separately
- Connecting subframe and cover grille are factory mounted to the damper
- The free area of the cover grille is approx. 70%
- Short smoke control dampers (dimension L < dimension H) cannot have a cover grille because the damper blade protrudes from the casing

Materials and surfaces

- Connecting subframe and cover grille made of galvanised sheet steel

Maintenance

- For details on maintenance and inspection, refer to the installation and operating manual

/ F0 /
/ 0F /
/ FF /
/ A0 /
/ 0A /
/ AA /
/ FA /
/ AF /
4

Order code detail

Operating side	Installation side	Order code
Connecting subframe	-	F0
-	Connecting subframe	0F
Connecting subframe	Connecting subframe	FF
Cover grille	-	A0
-	Cover grille	0A
Cover grille	Cover grille	AA
Connecting subframe	Cover grille	FA
Cover grille	Connecting subframe	AF

Description



EK-EU with open/close actuator of Type BE

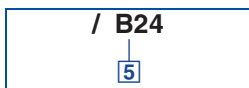
EK-EU with open/close actuator

- Open/Close actuator BE24-12-ST TR
- Opening and closing of Type EK-EU smoke control dampers
- With integral limit switches for capturing the end positions
- An open/close actuator allows for remote control of the smoke control damper and/or release by a suitable duct smoke detector
- Ambient temperature, normal operation -30 to 50 °C
- Two integral limit switches with volt-free contacts enable the damper blade position indication (OPEN and CLOSED)
- The connecting cables of the actuator are fitted with plugs, which ensure quick and easy connection to the TROX AS-i bus system

Installation information

- Leading the electric connecting cable through the actuator encasing requires a drilled hole of the exact size
- A wire clamping bracket is required
- For details on maintenance and inspection, refer to the installation and operating manual

Technical data



Order code detail

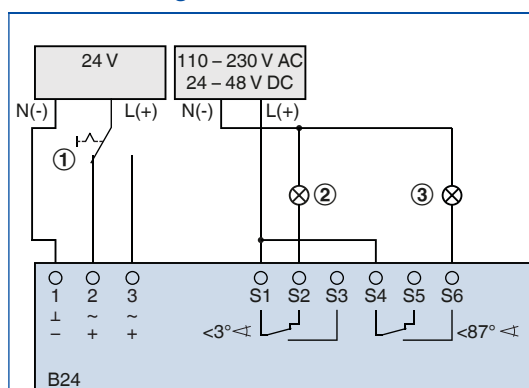
Open/Close actuator BE24-12-ST TR

Supply voltage		24 V AC ± 20 %, 50/60 Hz or 24 V DC -10 %/+20 %
Power rating	Operation	12 W
	End position	0.5 W
	Rating	18 VA
Torque		40 Nm
Running time for 90°		< 60 s
Limit switch	Type of contact	2 changeover contacts
	Switching voltage	250 V AC/5 V DC
	Switching current	1 mA...6 A
IEC protection class		III (protective extra-low voltage)
Protection level		IP 54
EC conformity		EMC to 89/336/EU, 92/31/EU, 93/68/EU
Connecting cable	Length / cross section	1 m, 3 (6*) × 0.75 mm ² (free of halogens)

* Limit switch

Wiring

B24 connecting cable core identification



- 1: Ground, neutral
- 2: Control voltage for direction OPEN
- 3: Control voltage for direction CLOSE
- ① Switch for opening and closing, to be provided by others
- ② Indicator light for CLOSED position, to be provided by others
- ③ Indicator light for OPEN position, to be provided by others

Description



EK-EU
with open/close actuator
of Type BE

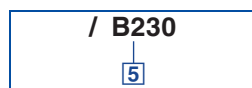
EK-EU with open/close actuator

- Open/Close actuator BE230-12 TR
- Opening and closing of Type EK-EU smoke control dampers
- With integral limit switches for capturing the end positions
- An open/close actuator allows for remote control of the smoke control damper and/or release by a suitable duct smoke detector
- Ambient temperature, normal operation -30 to 50 °C
- Two integral limit switches with volt-free contacts enable the damper blade position indication (OPEN and CLOSED)

Installation information

- Leading the electric connecting cable through the actuator encasing requires a drilled hole of the exact size
- A wire clamping bracket is required
- For details on maintenance and inspection, refer to the installation and operating manual

Technical data



Order code detail

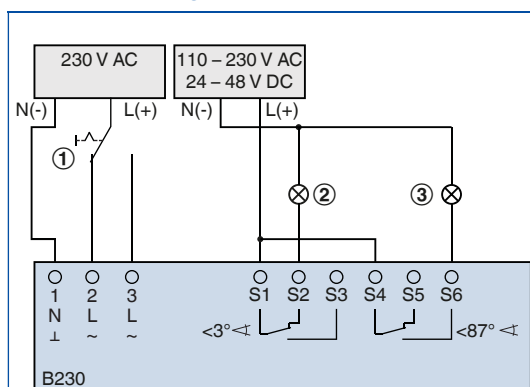
Open/Close actuator BE230-12 TR

Supply voltage		230 V AC ± 14 %, 50/60 Hz
Power rating	Operation	8 W
	End position	1.5 W
	Rating	15 VA
Torque		40 Nm
Running time for 90°		< 60 s
Limit switch	Type of contact	2 changeover contacts
	Switching voltage	250 V AC/5 V DC
	Switching current	1 mA...6 A
IEC protection class		II (protective insulation)
Protection level		IP 54
EC conformity		EMC to 2004/108/EU, low voltage to 2006/95/EU
Connecting cable	Length / cross section	1 m, 3 (6*) × 0.75 mm ² (free of halogens)

* Limit switch

Wiring

B230 connecting cable core identification



- 1 ⊥: Ground, neutral
 2 ~: Control voltage for direction OPEN
 3 ~: Control voltage for direction CLOSE
 ① Switch for opening and closing, to be provided by others
 ② Indicator light for CLOSED position, to be provided by others
 ③ Indicator light for OPEN position, to be provided by others

Description



EK-EU
with open/close actuator
and control module

**EK-EU with open/close actuator
and TROXNETCOM**

- Smoke control dampers with open/close actuator BE24-12-ST TR and the modules shown here as attachments form a functional unit ready for the automatic control of a smoke control damper
- The function of the control modules in the event of a fire has been verified in fire tests to EN 1366-2 and EN 1366-10
- The components are factory assembled and wired
- Allows for the integration of different components (modules) into a network independent of manufacturer or building service
- The modules control actuators and/or receive signals from sensors

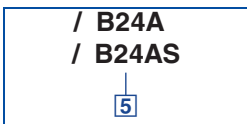
Application

AS-i

- The AS interface is a global standard bus system according to EN 50295 and IEC 62026-2
- The module transmits the control signals between the open/close actuator and the controller and power unit
- This allows for controlling the actuator and monitoring of its running time during functional testing
- The supply voltage (24 V DC) for the module and the actuator is transmitted using the AS-i flat cable
- Function display: operation, 4 inputs, 2 outputs

Maintenance

- For details on maintenance and inspection, refer to the installation and operating manual



Order code detail

Attachments	Order code
AS-EM and BE24-12-ST TR	B24A
AS-EM/SIL2 and BE24-12-ST TR	B24AS

Description



AS-EM/EK

Application

- Module for the control of smoke extract dampers
- Capturing damper blade positions OPEN and CLOSED
- Actuators can be started even without controller communication
- LEDs for OPEN and CLOSED positions; monitoring of running time errors
- Integral AS-Interface slave
- Monitoring of signal receipt
- Master can be used to monitor the running time of the damper blade actuator
- Supply voltage of the module and 24 V DC actuator using AS-Interface (2-wire control)
- Plug-in connection for Belimo actuators

Description



AS-EM/SIL2

Application

- Module for the control of smoke extract dampers
- Capturing damper blade positions OPEN and CLOSED
- Approved up to SIL2 to IEC/EN 61508
- Integral AS-Interface slave
- Monitoring of signal receipt
- Master can be used to monitor the running time of the damper blade actuator
- Connection with terminals
- Supply voltage of the module and 24 V DC actuator using AS-Interface (2-wire control)
- Plug-in connection for Belimo actuators

Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 10 m/s upstream velocity

H	10 m/s	B									
		200	250	300	350	400	450	500	550	600	650
200	m ³ /h	1440	1800	2160	2520	2880	3240	3600	3960	4320	4680
	Pa	683	388	282	226	191	167	149	135	124	115
	dB(A)	79	76	75	74	74	74	74	73	73	73
250	m ³ /h	1800	2250	2700	3150	3600	4050	4500	4950	5400	5850
	Pa	304	213	168	141	123	110	100	91	85	79
	dB(A)	72	70	69	68	68	68	68	68	68	68
300	m ³ /h	2160	2700	3240	3780	4320	4860	5400	5940	6480	7020
	Pa	209	155	126	108	95	85	78	72	67	63
	dB(A)	68	67	66	65	65	65	65	65	65	65
350	m ³ /h	2520	3150	3780	4410	5040	5670	6300	6930	7560	8190
	Pa	164	125	103	89	79	71	65	60	56	53
	dB(A)	66	65	64	64	63	63	63	63	63	64
400	m ³ /h	2880	3600	4320	5040	5760	6480	7200	7920	8640	9360
	Pa	137	106	88	77	68	62	57	53	49	46
	dB(A)	65	64	63	63	62	62	62	62	62	63
450	m ³ /h	3240	4050	4860	5670	6480	7290	8100	8910	9720	10530
	Pa	119	93	78	68	61	55	51	47	44	41
	dB(A)	64	63	62	62	62	62	62	62	62	62
500	m ³ /h	3600	4500	5400	6300	7200	8100	9000	9900	10800	11700
	Pa	106	83	70	61	55	50	46	43	40	38
	dB(A)	63	62	62	61	61	61	61	61	61	61
550	m ³ /h	3960	4950	5940	6930	7920	8910	9900	10890	11880	12870
	Pa	96	76	64	56	50	46	42	39	37	35
	dB(A)	63	62	61	61	61	61	61	61	61	61
600	m ³ /h	4320	5400	6480	7560	8640	9720	10800	11880	12960	14040
	Pa	88	70	59	52	47	43	39	37	34	32
	dB(A)	63	62	61	61	61	61	61	61	61	61
650	m ³ /h	4680	5850	7020	8190	9360	10530	11700	12870	14040	15210
	Pa	81	65	55	49	44	40	37	34	32	30
	dB(A)	63	61	61	61	60	60	60	61	61	61
700	m ³ /h	5040	6300	7560	8820	10080	11340	12600	13860	15120	16380
	Pa	76	61	52	46	41	38	35	32	30	29
	dB(A)	62	61	61	60	60	60	60	60	60	61
750	m ³ /h	5400	6750	8100	9450	10800	12150	13500	14850	16200	17550
	Pa	72	58	49	43	39	36	33	31	29	27
	dB(A)	62	61	61	60	60	60	60	60	60	61
800	m ³ /h	5760	7200	8640	10080	11520	12960	14400	15840	17280	18720
	Pa	68	55	47	41	37	34	31	29	27	26
	dB(A)	62	61	61	60	60	60	60	60	60	60

The Easy Product Finder allows you to size products using your project-specific data. You will find the Easy Product Finder on our website.

Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 10 m/s upstream velocity

H	10 m/s	B									
		700	750	800	900	1000	1100	1200	1300	1400	1500
200	m ³ /h	5040	5400	5760	6480	7200	7920	8640	9360	10080	10800
	Pa	108	101	96	87	80	74	69	65	61	58
	dB(A)	73	73	73	74	74	74	74	74	74	74
250	m ³ /h	6300	6750	7200	8100	9000	9900	10800	11700	12600	13500
	Pa	75	71	67	61	57	53	49	47	44	42
	dB(A)	68	68	68	68	68	69	69	69	69	69
300	m ³ /h	7560	8100	8640	9720	10800	11880	12960	14040	15120	16200
	Pa	59	56	53	49	45	42	40	38	36	34
	dB(A)	65	65	65	66	66	66	66	66	67	67
350	m ³ /h	8820	9450	10080	11340	12600	13860	15120	16380	17640	18900
	Pa	50	48	45	42	39	36	34	32	31	29
	dB(A)	64	64	64	64	64	64	65	65	65	65
400	m ³ /h	10080	10800	11520	12960	14400	15840	17280	18720	20160	21600
	Pa	44	42	40	37	34	32	30	28	27	26
	dB(A)	63	63	63	63	63	63	64	64	64	64
450	m ³ /h	11340	12150	12960	14580	16200	17820	19440	21060	22680	24300
	Pa	39	37	36	33	30	29	27	25	24	23
	dB(A)	62	62	62	62	63	63	63	63	63	64
500	m ³ /h	12600	13500	14400	16200	18000	19800	21600	23400	25200	27000
	Pa	36	34	33	30	28	26	25	23	22	21
	dB(A)	61	62	62	62	62	62	63	63	63	63
550	m ³ /h	13860	14850	15840	17820	19800	21780	23760	25740	27720	29700
	Pa	33	31	30	28	26	24	23	22	21	20
	dB(A)	61	61	61	62	62	62	62	62	63	63
600	m ³ /h	15120	16200	17280	19440	21600	23760	25920	28080	30240	32400
	Pa	31	29	28	26	24	22	21	20	19	18
	dB(A)	61	61	61	61	62	62	62	62	62	63
650	m ³ /h	16380	17550	18720	21060	23400	25740	28080	30420	32760	35100
	Pa	29	27	26	24	23	21	20	19	18	17
	dB(A)	61	61	61	61	61	62	62	62	62	62
700	m ³ /h	17640	18900	20160	22680	25200	27720	30240	32760	35280	37800
	Pa	27	26	25	23	21	20	19	18	17	16
	dB(A)	61	61	61	61	61	62	62	62	62	62
750	m ³ /h	18900	20250	21600	24300	27000	29700	32400	35100	37800	40500
	Pa	26	25	24	22	20	19	18	17	16	15
	dB(A)	61	61	61	61	61	62	62	62	62	62
800	m ³ /h	20160	21600	23040	25920	28800	31680	34560	37440	40320	43200
	Pa	25	23	22	21	19	18	17	16	15	15
	dB(A)	61	61	61	61	61	61	62	62	62	62

The Easy Product Finder allows you to size products using your project-specific data. You will find the Easy Product Finder on our website.

Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 5 m/s upstream velocity

H	5 m/s	B									
		200	250	300	350	400	450	500	550	600	650
200	m ³ /h	720	900	1080	1260	1440	1620	1800	1980	2160	2340
	Pa	171	97	70	56	48	42	37	34	31	29
	dB(A)	57	55	55	54	54	54	54	54	54	54
250	m ³ /h	900	1125	1350	1575	1800	2025	2250	2475	2700	2925
	Pa	76	53	42	35	31	27	25	23	21	20
	dB(A)	52	50	50	49	49	49	49	49	49	49
300	m ³ /h	1080	1350	1620	1890	2160	2430	2700	2970	3240	3510
	Pa	52	39	31	27	24	21	19	18	17	16
	dB(A)	49	47	47	46	46	46	46	46	46	46
350	m ³ /h	1260	1575	1890	2205	2520	2835	3150	3465	3780	4095
	Pa	41	31	26	22	20	18	16	15	14	13
	dB(A)	47	45	45	44	44	44	44	44	44	44
400	m ³ /h	1440	1800	2160	2520	2880	3240	3600	3960	4320	4680
	Pa	34	27	22	19	17	15	14	13	12	12
	dB(A)	46	44	44	43	43	43	43	43	43	43
450	m ³ /h	1620	2025	2430	2835	3240	3645	4050	4455	4860	5265
	Pa	30	23	19	17	15	14	13	12	11	10
	dB(A)	45	43	43	42	42	42	42	42	42	42
500	m ³ /h	1800	2250	2700	3150	3600	4050	4500	4950	5400	5850
	Pa	26	21	18	15	14	12	11	11	10	9
	dB(A)	45	43	43	42	42	42	42	42	42	42
550	m ³ /h	1980	2475	2970	3465	3960	4455	4950	5445	5940	6435
	Pa	24	19	16	14	13	11	11	10	9	9
	dB(A)	45	43	43	42	42	42	42	42	42	42
600	m ³ /h	2160	2700	3240	3780	4320	4860	5400	5940	6480	7020
	Pa	22	18	15	13	12	11	10	9	9	8
	dB(A)	44	42	42	41	41	41	41	41	41	41
650	m ³ /h	2340	2925	3510	4095	4680	5265	5850	6435	7020	7605
	Pa	20	16	14	12	11	10	9	9	8	8
	dB(A)	44	42	42	41	41	41	41	41	41	41
700	m ³ /h	2520	3150	3780	4410	5040	5670	6300	6930	7560	8190
	Pa	19	15	13	11	10	9	9	8	8	7
	dB(A)	44	42	42	41	41	41	41	41	41	41
750	m ³ /h	2700	3375	4050	4725	5400	6075	6750	7425	8100	8775
	Pa	18	14	12	11	10	9	8	8	7	7
	dB(A)	44	42	42	41	41	41	41	41	41	41
800	m ³ /h	2880	3600	4320	5040	5760	6480	7200	7920	8640	9360
	Pa	17	14	12	10	9	8	8	7	7	6
	dB(A)	44	42	42	41	41	41	41	41	41	41

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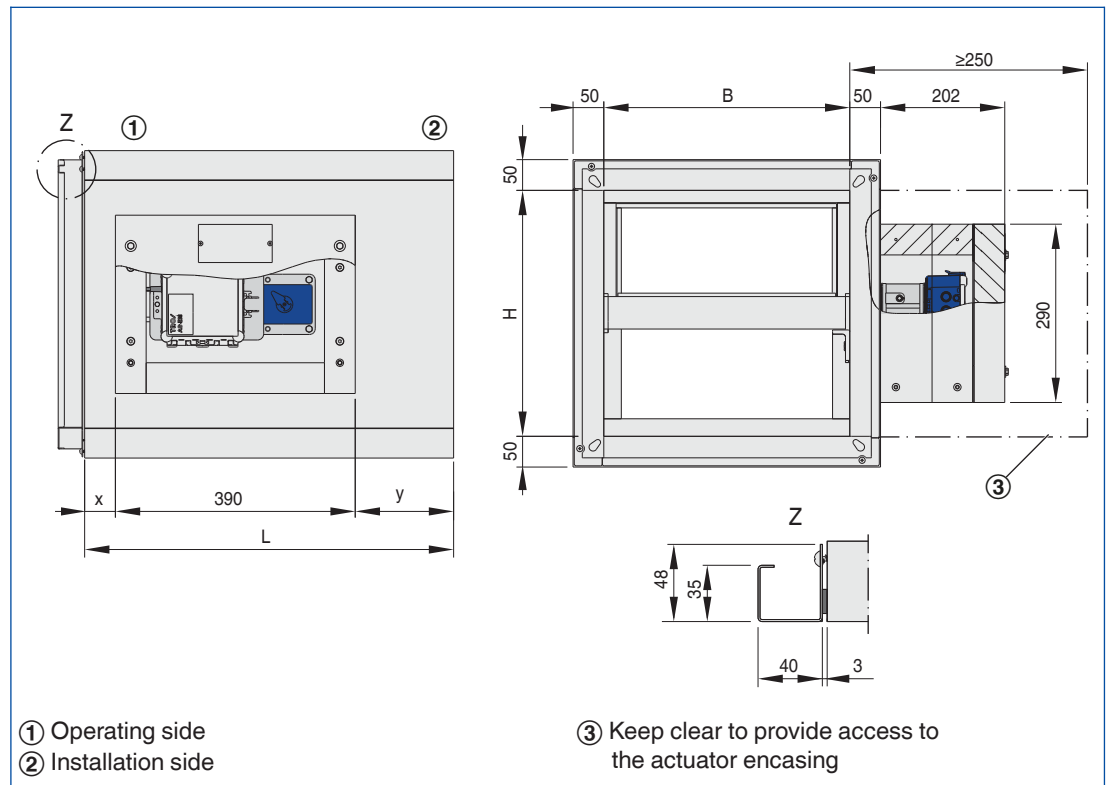
Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 5 m/s upstream velocity

H	5 m/s	B									
		700	750	800	900	1000	1100	1200	1300	1400	1500
200	m ³ /h	2520	2700	2880	3240	3600	3960	4320	4680	5040	5400
	Pa	27	25	24	22	20	18	17	16	15	15
	dB(A)	54	54	54	55	55	55	55	55	56	56
250	m ³ /h	3150	3375	3600	4050	4500	4950	5400	5850	6300	6750
	Pa	19	18	17	15	14	13	12	12	11	11
	dB(A)	49	49	49	50	50	50	50	50	51	51
300	m ³ /h	3780	4050	4320	4860	5400	5940	6480	7020	7560	8100
	Pa	15	14	13	12	11	11	10	9	9	9
	dB(A)	46	46	46	47	47	47	47	47	48	48
350	m ³ /h	4410	4725	5040	5670	6300	6930	7560	8190	8820	9450
	Pa	13	12	11	10	10	9	8	8	8	7
	dB(A)	44	44	44	45	45	45	45	45	46	46
400	m ³ /h	5040	5400	5760	6480	7200	7920	8640	9360	10080	10800
	Pa	11	10	10	9	8	8	7	7	7	6
	dB(A)	43	43	43	44	44	44	44	44	45	45
450	m ³ /h	5670	6075	6480	7290	8100	8910	9720	10530	11340	12150
	Pa	10	9	9	8	8	7	7	6	6	6
	dB(A)	42	42	42	43	43	43	43	43	44	44
500	m ³ /h	6300	6750	7200	8100	9000	9900	10800	11700	12600	13500
	Pa	9	9	8	7	7	7	6	6	6	5
	dB(A)	42	42	42	43	43	43	43	43	44	44
550	m ³ /h	6930	7425	7920	8910	9900	10890	11880	12870	13860	14850
	Pa	8	8	8	7	6	6	6	5	5	5
	dB(A)	42	42	42	43	43	43	43	43	44	44
600	m ³ /h	7560	8100	8640	9720	10800	11880	12960	14040	15120	16200
	Pa	8	7	7	6	6	6	5	5	5	5
	dB(A)	41	41	41	42	42	42	42	42	43	43
650	m ³ /h	8190	8775	9360	10530	11700	12870	14040	15210	16380	17550
	Pa	7	7	7	6	6	5	5	5	5	4
	dB(A)	41	41	41	42	42	42	42	42	43	43
700	m ³ /h	8820	9450	10080	11340	12600	13860	15120	16380	17640	18900
	Pa	7	6	6	6	5	5	5	4	4	4
	dB(A)	41	41	41	42	42	42	42	42	43	43
750	m ³ /h	9450	10125	10800	12150	13500	14850	16200	17550	18900	20250
	Pa	6	6	6	5	5	5	4	4	4	4
	dB(A)	41	41	41	42	42	42	42	42	43	43
800	m ³ /h	10080	10800	11520	12960	14400	15840	17280	18720	20160	21600
	Pa	6	6	6	5	5	5	4	4	4	4
	dB(A)	41	41	41	42	42	42	42	42	43	43

The Easy Product Finder allows you to size products using your project-specific data. You will find the Easy Product Finder on our website.

Dimensions

EK-EU with open/close actuator of Type BE



Connecting subframe (optional, also for both sides)

L [mm]	x [mm]	y [mm]
600	50	160
800	125	285

Weight [kg]

L [mm]	H [mm]	B [mm]									
		200	250	300	350	400	450	500	550	600	650
600	200	39	42	45	48	50	53	56	59	62	65
	250	42	45	48	51	54	57	60	63	66	68
	300	45	48	51	54	57	60	63	66	69	72
	350	48	51	54	57	60	63	67	70	73	76
	400	50	54	57	60	64	67	70	73	77	80
	450	53	57	60	63	67	70	74	77	80	84
	500	56	60	63	67	70	74	77	81	84	88
	550	59	63	66	70	73	77	81	84	88	92
800	600	62	66	69	73	77	80	84	88	92	95
	650	79	84	88	93	97	102	107	111	116	120
	700	83	87	92	97	102	106	111	116	120	125
	750	86	91	96	101	106	110	115	120	125	130
	800	90	95	100	105	110	115	119	124	129	134

Weight [kg]

L [mm]	H [mm]	B [mm]									
		700	750	800	900	1000	1100	1200	1300	1400	1500
600	200	67	70	73	79	84	90	96	101	107	113
	250	71	74	77	83	89	95	101	107	113	118
	300	75	78	81	88	94	100	106	112	118	124
	350	79	82	86	92	98	105	111	117	124	130
	400	83	87	90	96	103	110	116	123	129	136
	450	87	91	94	101	108	114	121	128	135	141
	500	91	95	98	105	112	119	126	133	140	147
	550	95	99	102	110	117	124	131	139	146	153
800	650	125	130	134	143	153	162	171	180	189	199
	700	130	135	139	149	158	168	177	186	196	205
	750	135	139	144	154	163	173	183	192	202	212
	800	139	144	149	159	169	179	189	198	208	218

Description

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

Rectangular or square smoke control dampers to product standard EN 12101-8, tested to EN 1366-10 and EN 1366-2, for use in smoke extract systems. Smoke control dampers not only prevent the spreading of smoke and combustion products between fire compartments, they also prevent the leakage of emitted, dangerous and poisonous fire suppression gases from the affected area, and they maintain positive pressure in pressurisation systems. The EK-EU is suitable as a pressure relief damper for gas fire extinguishing systems. For extracting smoke gases and for providing additional supply air to one or more fire compartments. The EK-EU can be used in smoke extract systems which have been approved for extract ventilation. The fire-resistant smoke control damper for multiple compartments is suitable for installation in solid walls and ceiling slabs as well as in and on fire-resistant smoke extract ducts. Open/Close actuator, with fully wired and ready-to-operate control module AS-EM or AS-EM/SIL2 in a temperature resistant encasing (optional).

Special characteristics

- Declaration of performance according to Construction Products Regulation
- Classification to EN 13501-4, EI 90 ($v_{edw} - h_{odw}, i \leftrightarrow o$) S1500 C_{mod} MA multi
- General building inspectorate licence Z-56.4212-990
- Complies with the requirements of EN 12101-8
- Tested for fire resistance properties to DIN 1366-10 and EN 1366-2
- Casing air leakage to EN 1751, class C
- Low sound power level and differential pressure
- Any airflow direction
- Integration into the central BMS with TROXNETCOM
- Tested to EN 1366-10 with a weight being attached to the blade, with 10,000 open/close cycles and 10,000 cycles in intermediate position (C_{mod})

Materials and surfaces

- Casing, damper blade and actuator encasing made of temperature-resistant calcium silicate
- Brass bearings
- Shafts made of stainless steel

Technical data

- Nominal sizes: 200 × 200 mm – 1500 × 800 mm, in increments of 1 mm
 - Casing length: 600 and 800 mm
 - Volume flow rate range:
Up to 12000 l/s or 43200 m³/h
 - Differential pressure range, pressure level 3:
-1500 to 500 Pa
 - Operating temperature: -30 to 50 °C
 - Upstream velocity*: ≤ 10 m/s
- * Data applies to uniform upstream and downstream conditions for the smoke control damper

Sizing data

- \dot{V} _____ [m³/h]
- Δp_{st} _____ [Pa]
- L_{WA} Air-regenerated noise _____ [dB(A)]

Order options

1 Type

EK-EU Smoke control damper

2 Country of destination

- DE** Germany
- Other destination countries upon request

3 Nominal size [mm]

- B × H × L

4 Accessories

- No entry: none
- F0** Connecting subframe on the operating side
- 0F** Connecting subframe on the installation side
- FF** Connecting subframes on both sides
- A0** Cover grille on the operating side
- 0A** Cover grille on the installation side
- AA** Cover grilles on both sides
- FA** Connecting subframe on the operating side and cover grille on the installation side
- AF** Connecting subframe on the installation side and cover grille on the operating side

5 Attachments

Belimo

- B24** BE 24-12, 24 V AC/DC
- B230** BE 230-12, 230 V AC/DC
- B24A** BE 24-12, with AS-EM, 24 V AC/DC
- B24AS** BE 24-12, with AS-EM/SIL2, 24 V AC/DC

Smoke control dampers

Basic information and nomenclature



- Product selection
- Principal dimensions
- Nomenclature
- Colour codes according to IEC 60757
- Sizing

Smoke control dampers

Basic information and nomenclature

Product selection

Smoke control dampers

Application			Type	
Installation location	Construction/building material	Minimum thickness	EK-EU	
			Mortar-based installation	Dry mortarless installation
			Fire resistance class	
In solid walls	Walls/gross density $\geq 500 \text{ kg/m}^3$	100	EI 90 S	-
In solid ceiling slabs	Ceiling slabs/gross density $\geq 600 \text{ kg/m}^3$	150	EI 90 S	
In fire-resistant horizontal or vertical smoke extract ducts	Smoke extract ducts tested to EN 1366-8, gross density $\geq 520 \text{ kg/m}^3$	35	-	EI 90 S multi
On fire-resistant vertical or horizontal smoke extract ducts	Smoke extract ducts tested to EN 1366-8, gross density $\geq 520 \text{ kg/m}^3$	35	-	EI 90 S multi
On top of fire-resistant horizontal smoke extract ducts	Smoke extract ducts tested to EN 1366-8, gross density $\geq 520 \text{ kg/m}^3$	35	-	EI 90 S multi
In or on vertical or horizontal sheet steel smoke extract ducts	Sheet steel smoke extract ducts tested to EN 1366-9	-	-	E 90 S single

4

Smoke control dampers

Basic information and nomenclature

Product selection

Smoke control dampers

	Smoke control dampers
	EK-EU
Casing and blades	
Calcium silicate	●
Rotation	
Anti-clockwise to OPEN, clockwise to CLOSE	●
Duct connection	
As specified for the duct	●
Open/Close actuators	
Belimo 24 V AC/DC, with limit switches	●
Belimo 230 V AC, with limit switches	●
Belimo 24 V AC/DC, with limit switches and with AS-EM module	●
Belimo 24 V AC/DC, with limit switches and with AS-EM/SIL2 module	●
Nominal sizes	
Width	200 – 1500 mm
Increments	1 mm
Height	200 – 800 mm
Increments	1 mm
Casing	
Length depends on height	600/800 mm
Casing air leakage to EN 1751	Class C
Equipment and accessories	
Connecting subframe	●
Cover grille	●
Integration into the central BMS with TROXNETCOM	●
●	Possible
	Not possible

Smoke control dampers

Basic information and nomenclature

Principal dimensions

Rectangular smoke control dampers

B [mm]

Width of the smoke control damper

H [mm]

Height of the smoke control damper

L [mm]

Length of the smoke control damper

Nomenclature

\dot{V} [m³/h] and [l/s]

Volume flow rate

L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise for the smoke control damper

A [m²]

Free area

Δp_{st} [Pa]

Static differential pressure

v [m/s]

Airflow velocity based on the upstream cross section (B × H)

Wiring

Colour codes according to IEC 60757

Code	Colour
BK	black
BN	brown
RD	red
OG	orange
YE	yellow
GN	green
BU	blue

Colour codes according to IEC 60757

Code	Colour
VT	violet
GY	grey
WH	white
PK	pink
TQ	turquoise
GNYE	green-yellow

Sizing with the help of this catalogue

This catalogue provides convenient quick sizing tables for smoke control dampers. The volume flow rates for all available dimensions and nominal sizes are provided based on a particular differential pressure. Sizing data for other volume flow rates and differential pressures can be determined quickly and precisely using the Easy Product Finder design programme.

Easy Product Finder



The Easy Product Finder allows you to size products using your project-specific data.

You will find the Easy Product Finder on our website.

