



EK-JZ smoke control damper



Smoke control damper EK2-EU



BVDAX for smoke extract, CE-certified according to EN12101-3 temperature category F400



With TROXNETCOM as an option



CE compliant according to European regulations

Smoke control dampers

EK-JS



For mechanical smoke extract systems, smoke control damper for individual sections

Rectangular sheet steel smoke control damper including ventilation function for the removal of smoke and heat in smoke extract systems, as well as for the controlled inflow of the necessary supply air. Suitable as a support for keeping safety rooms and their anterooms smoke-free in pressure differential systems (PDS), e.g. in fire brigade lift shafts or for smoke removal in escape tunnels.

- Can be used in discharge environments with elevated temperatures of up to 600 °C at tested smoke extract ducts and sheet steel ducts
- Meets pressure level 3 with any airflow direction and automatic release (AA) or manual release (MA)
- Nominal sizes 100 × 100 – 1250 × 2560 mm
- Volume flow rate of 360 m³/h or 100 l/s – 115110 m³/h or 31975 l/s at 10 m/s
- Design in sheet steel (also powder-coated according to RAL-CLASSIC chart) or stainless steel sheet in A4 quality
- According to DIN EN 1751: Leakage airflow with closed damper at least class 2 and casing air leakage class B. From nominal sizes 840 × 480 leakage airflow with closed damper 3 and casing air leakage class C
- Integration into the management and control equipment (MCE) with TROXNETCOM or with interface modules like in SLC[®] technology
- C_{mod} for smoke extraction with ventilation function and control characteristics in combined systems (combination damper) and therefore pneumatic flow rate balancing possible via travel to intermediate positions

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General information

Application

- Smoke control damper with CE marking and Declaration of Performance for the dissipation of smoke and heat in smoke ventilation systems with mechanical smoke extract devices
- Use in pressure differential system (PDS) with ventilation function, but also for additional outdoor air supply
- Integration into the MCE with TROXNETCOM or other standard bus systems possible

Classification

- For systems with automatic release mechanism (AA)
- $E_{600} 120 (v_{ed} h_{od} i \rightarrow o) S 1500 C_{mod} AA$ Single
- For systems with manual release mechanism or manual override (MA)
- $E_{600} 120 (v_{ed} h_{od} i \rightarrow o) S 1500 C_{mod} MA$ Single

Nominal sizes

- 100 × 100 to 1250 × 2560 mm
- Casing length L = 200 mm

Parts and characteristics

- For increased temperatures up to 600 °C
- Permitted for automatic release (AA) and manual release (MA).
- Smoke control damper with ventilation function
- Adjustable discharge and supply air volumes
- Complies with pressure level 3 (operating pressure -1500/+500 Pa)

Attachments

- Cover grille: Expanded metal mesh
- OPEN-CLOSE actuators with 24 V AC/DC or 1~ 230 V AC, 50 Hz, supply voltage
- Modulating actuators with supply voltage 24 V AC/DC and input signal Y: 0(2 - 10 V DC)
- Network modules for the integration with AS-i networks
- Network modules for other standard bus systems, such as the required SLC® technology

Optional products

TROXNETCOM

- X-FANS control unit for extract air and smoke extract control

TROX X-FANS smoke exhaust fans from the X-FANS subassembly

- 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 in accordance with DIN 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. Speed adjustment for smoke exhaust fans

- X-FANS Control, certified frequency inverter unit
- Safe and precise speed adjustment of smoke exhaust fans both in one-zone and in multi-zone systems is possible

Construction features

- Rectangular construction
- Opposite opening and closing of the damper blade field
- The smoke control damper is operated via a reversible OPEN/CLOSE actuator or a modulating actuator with 24 V AC/DC supply voltage and input signal Y: 0(2 - 10 V DC)
- Suitable for the connection of cover grilles
- Suitable for front and rear mounting of sheet steel ducts
- Encasing for thermal insulation of the actuator and the optional network module

Material and surfaces

- Casing, damper blade, mechanics: optionally galvanised steel or stainless steel in A4 quality
- Surfaces can be finished in colours according to RAL chart
- Bearings are DU-coated
- Seals made of glass fabric and high-temperature sealing tape (HT sealing tape)
- Encasing for thermal insulation made of calcium silicate

Standards and guidelines

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

Maintenance

Smoke control dampers must be operational at all times and must be maintained regularly so that they meet the performance requirements.

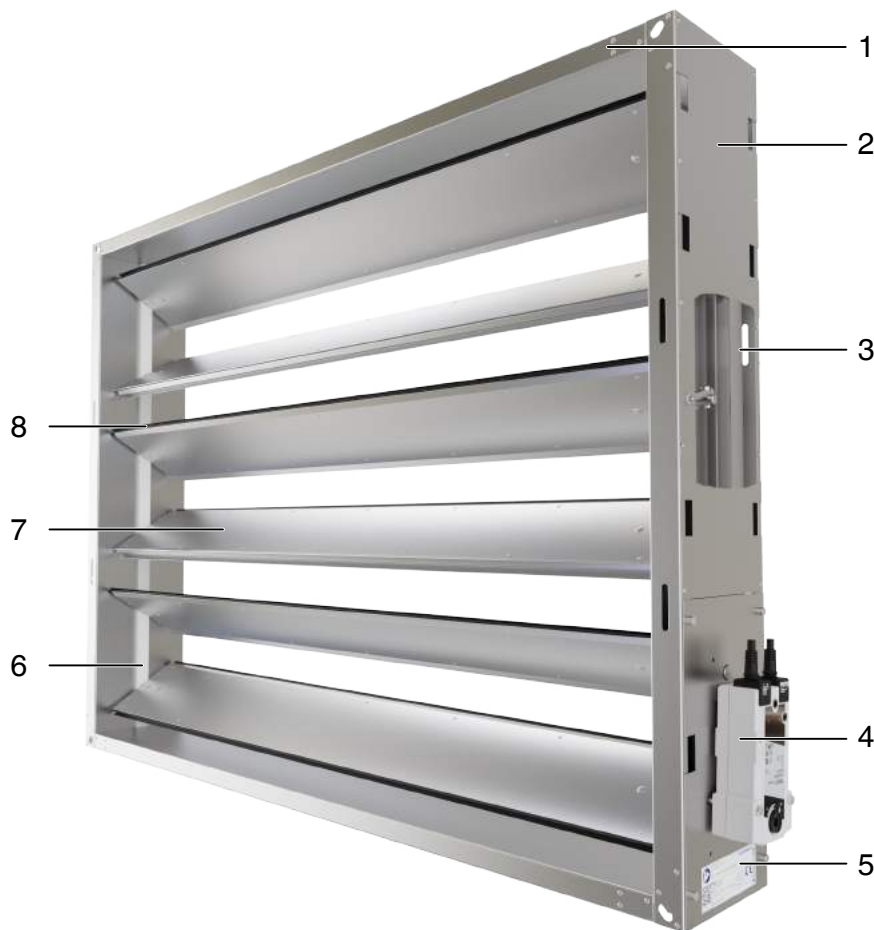
- Maintenance is required at least every 6 months
- A maintenance report must be created; documents must be kept for reference
- The functional reliability of the smoke control damper must be tested at least every six months; this has to be arranged by the owner of the smoke extract system; functional tests must be carried out in compliance with the basic maintenance principles stated in EN 13306 and DIN 31051. If two consecutive tests, one 6 months after the other, are successful, the next test of the smoke control damper can be conducted one year later.
- Depending on where dampers are installed, country-specific regulations may apply.
- For details on maintenance and inspection, refer to the installation and operating manual.

Function

Type EK-JS smoke control dampers are tested according to EN12101-8 and EN 1366-10. In rectangular steel and stainless steel construction. Intended for the discharge of smoke and heat in smoke extract systems and for the flow of necessary supply air into the area from which smoke is to be extracted. EK-JS are intended for use in pressure differential system (PDS), for keeping safety stairwells and their anterooms as well as fire brigade lift shafts or escape tunnels smoke-free. They thus enable the controlled discharge of released smoke. EK-JS are

intended for use in single sections and may be used at elevated operating temperatures of up to 600 °C on and in horizontally and vertically aligned smoke extract ducts according to EN 12101-7, tested according to EN 1366-9. EK-JS can be used in combined systems (combination damper) for ventilation and is suitable for restricting extract air volume flows. The OPEN-CLOSE actuators can be controlled either with ready-wired actuator control modules or with bus modules.

Schematic illustration



- 1 Casing
- 2 Linkage cover (cut open)
- 3 Drive linkage
- 4 Actuator
- 5 Rating plate
- 6 Side seal
- 7 Damper blades
- 8 Damper blade profiled seal

EK-JS: MA construction



	Auftrag/order DX1234567 - 10 / 1 - 1		
	EK-JS/DE/1250x960/B24		
	TROX[®] TECHNIK Entrauchungsklappe EK-JS	http://www.trox-docs.com TROX GmbH Heinrich-Trox-Platz 47504 Neukirchen-Vluyn http://www.trox.de	22
	DoP / EK-JS / 00x E600 120 (W, h _{red} , i<->o) S1500 C _{mod} MA single EN 12101-8:2011	0761	
S/N 1234567890123			

1

1 Manual override (thermally encased actuator)

EK-JS: AA construction



	Auftrag/order DX1234567 - 10 / 1 - 1		
EK-JS/DE/1250x960/B24			
	TROX[®] TECHNIK Entrauchungsklappe EK-JS DoP / EK-JS / 00x E600 120 (v,h_{red}, i<->o) S1500 C_{red} AA single EN 12101-8:2011	http://www.trox-docs.com TROX GmbH Heinrich-Trox-Platz 47504 Neukirchen-Vluyn http://www.trox.de	
S/N 1234567890123	0761	Jahr/year-2x	22

1 Automatic release (actuator not encased)

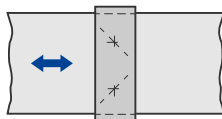
Technical data

Nominal sizes B × H	100 × 100 – 1250 × 2560 mm
Casing length	200 mm
Volume flow rate range at 10 m/s	From 360 m³/h to 115110 m³/h or from 100 l/s to 31975 l/s
Differential pressure range	Pressure level 3: -1500 to 500 Pa
Operating temperature	30 °C – 50 °C without temperatures below the dew point
Upstream velocity with same upstream and downstream flow	<ul style="list-style-type: none"> ▪ ≤ 12 m/s ▪ ≤ 20 m/s For dimensions, see motor allocation matrix (technical clarification with TROX required for some sizes)
Closed damper blade air leakage	EN 1751, at least class 2, from nominal width 840 × 480 class 3
Casing leakage	EN 1751, class B, from nominal width 840 × 480 class C
EC conformity	<ul style="list-style-type: none"> ▪ EU Construction Products Regulation No. 305/2011 ▪ EN 12101-8: Smoke and heat control systems – Part 8: Smoke control dampers ▪ EN 1366-10: Fire resistance tests for service installations – Part 10: Smoke control dampers ▪ EN 13501-4: Fire classification of construction products and building elements – Part 4: Fire resistance tests on components of smoke control ▪ EN 1751: Ventilation for buildings – Air terminal devices
Declaration of performance	DoP/EK-JS/002

Quick sizing

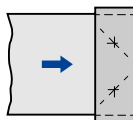
- Quick sizing tables in the Easy Product Finder provide a good overview of the volume flow rates for different airflow velocities and the corresponding differential pressures
- Exact values can be determined with the help of our design program EPF
- You will find the Easy Product Finder on our website:
www.trox.de/mytrox/auslegungsprogramm-easy-product-finder-182e16348fac3d33

Installation type A, in a duct



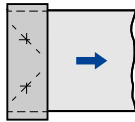
Ducted on both sides, any airflow direction

Installation type B, additional supply air



Ducted on one side, no duct on the downstream side

Installation type C, smoke extract



Ducted on one side, no duct on the upstream side

Correction for different throttle positions

The adjustment of the damper blade angle enables the setting of different throttle positions. The adjustment of the damper blade angle enables the setting of different throttle positions.

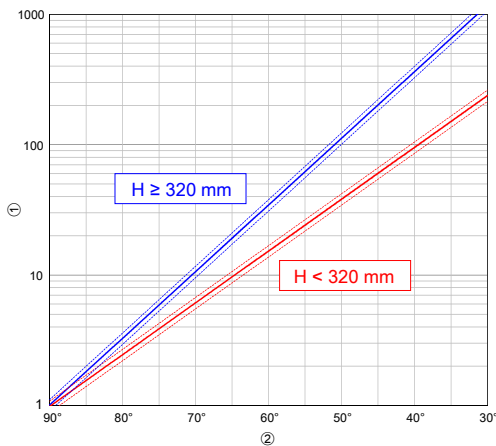
Based on the determined data for the open position, both the resistance coefficient and the sound power level can be corrected to determine the operating conditions with angled blades.

For this purpose, the resistance coefficient is multiplied by the correction factor C, which is taken from the diagram correction factor "Resistance coefficient".

For the correction of the sound power level, this is added to the correction value K, which is taken from the diagram correction value "Sound power level".

A distinction is made between smoke control dampers with a height of less than or greater than 320 mm.

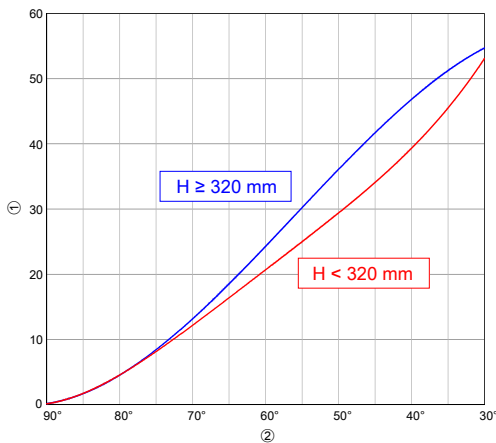
Correction factor: Resistance factor



Blade angle 90° = open

- ① Correction factor C
- ② Blade angle

Correction value: Sound power level



Blade angle 90° = open

- ① Correction value K [dB]
- ② Blade angle

Example:

EK-JS / installation case A
H × B: 960 mm × 1000 mm
Upstream velocity: 5 m/s

EPF (data for OPEN position)

- Resistance factor = 0.23
- Sound power level = 40 dB(A)

Correction for a blade angle of 65

(read from diagram correction factor "resistance coefficient" and correction value "sound power level")

Resistance factor:

Correction value C = 20

$$0.23 \times 20 = 4.6$$

Sound power level:

Correction value K = 8

$$40 \text{ dB(A)} + 8 \text{ dB(A)} = 48 \text{ dB(A)}$$

Specification text

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

Specification text

Type EK-JS smoke control dampers are tested according to EN12101-8 and EN 1366-10. In rectangular steel and stainless steel construction. Intended for the discharge of smoke and heat in smoke extract systems and for the flow of necessary supply air into the area from which smoke is to be extracted. EK-JS are intended for use in pressure differential system (PDS), for keeping safety stairwells and their anterooms as well as fire brigade lift shafts or escape tunnels smoke-free. They thus enable the controlled discharge of released smoke. EK-JS are intended for use in single sections and may be used at elevated operating temperatures of up to 600 °C on and in horizontally and vertically aligned smoke extract ducts according to EN 12101-7, tested according to EN 1366-9. EK-JS can be used in combined systems (combination damper) for ventilation and is suitable for restricting extract air volume flows. The OPEN-CLOSE actuators can be controlled either with ready-wired actuator control modules or with bus modules.

Materials and surfaces

- Casing, damper blades and mechanics: optionally galvanised steel or stainless steel
- Optional powder-coated casing and damper blades in standard RAL colour 7030 or according to RAL chart
- Plain bearing: coated steel
- Grille attachment: galvanised sheet steel, optionally powder-coated
- Seals made of glass fabric and high-temperature sealing tape
- Encasing for thermal insulation of the actuator and the optional network module

Technical data

Exemplary for a nominal smoke control damper width of 1250 × 960, in relation to the mean airflow velocities $v = 5$ m/s

$$\Delta P_t = 3.5 \text{ Pa}$$

$$\text{LWA} = 40 \text{ dB(A)}$$

$$A_{\text{free}} = 1.095 \text{ m}^2$$

$$A_{\text{geo}} = 1.2 \text{ m}^2$$

$$q_v = 21600 \text{ m}^3/\text{h}$$

Standards and guidelines

- Product standard EN 12101-8
- Classification according to EN 13501-4
- Tested according to EN 1366-10 (for pressure level 3: up to 1500 Pa negative pressure)

- Determination of air leakage with closed damper field according to EN 1751, at least class 2, from nominal width 840 × 480 class 3
- Casing leakage to EN 1751, class B, from nominal width 840 × 480 class C

Classification

For systems with automatic release mechanism (AA)

$$E_{600} 120 (v_{\text{ed}} h_{\text{od}} i \leftrightarrow o) S 1500 C_{\text{mod}} \text{ AA Single}$$

For systems with manual release mechanism or manual override (MA)

$$E_{600} 120 (v_{\text{ed}} h_{\text{od}} i \leftrightarrow o) S 1500 C_{\text{mod}} \text{ MA Single}$$

Nominal sizes

Dimensions B × H: 100 × 100 – 1250 × 2560 [mm]

Casing length L = 200 mm

Accessories

- HT sealing tape
- Suspension bracket for horizontal damper alignment

Attachments

- Cover grille: Expanded metal mesh
- OPEN-CLOSE actuators with 24 V AC/DC or 1~ 230 V AC, 50 Hz, supply voltage
- Modulating actuators with supply voltage 24 V AC/DC and input signal Y: 0(2 - 10 V DC)
- Network modules for the integration with AS-i networks
- Network modules for other standard bus systems, such as the required SLC® technology
- Encasing for thermal insulation of the actuator and network module

Equivalence criteria

- Large discharge openings up to 3.2 m² with only one actuator
- For increased temperatures up to 600 °C
- Operating pressure -1500/+500 Pa (pressure level 3)
- C_{mod} for the smoke extract and ventilation function with control characteristics across all nominal sizes, control range 30 – 90° damper blade position
- Automatic release (AA) or manual release (MA) also with TROXNETCOM or network modules for other standard bus systems, e.g. for required SLC® technology
- Any upstream airflow direction
- In galvanised construction with or without powder coating and in stainless steel construction

Order code

EK-JS - 2 - MA - C1 / DE / 600 × 800 / K0 / B24A / WS / 17 / P1 - RAL 9010 / P2 - RAL 9010

1	2	3	4	5	6	7	8	9	10	11	12

1 Type**EK-JS** Smoke control damper**2 Casing variant**

No entry: standard construction

2 Stainless steel casing**3 Construction****MA** manual override (thermally encased actuator)**AA** automatic release (actuator not encased)**4 Coating**

No entry: without coating (standard)

C1 Promat impregnation (for all calcium silicate surfaces)**5 Country of destination**

Specify country code

6 Nominal size [mm]

Width × height

Width

100 – 1250 (in increments of 5 mm)

Height

100, 125, 150, 165**320 – 2560** (in 160 mm increments and only from width 180)**7 Attachments 1**

No entry: without attachment

2 entries required: attachment for operating side and for installation side

0 Side without attachment**K** Expanded metal mesh (14 × 16 mm), galvanised steel**8 Attachments 2**TROX actuator without expansion**B24** Actuator 24 V AC/DC**B24SR**¹ Actuator B24 with control voltage Y = DC 2 - 10 V**B230** Actuator 230 V ACTROX actuator with control module

TROX module for control with AS-i technology

B24A² Actuator B24 with TROXNETCOM module AS-EM/EK**B24AS**² Actuator B24 with TROXNETCOM module AS-EM/SIL2**B24AM**¹ Actuator B24 with TROXNETCOM control module AS-EM/M

Communication and power supply unit

B24BKNE Actuator B24 with Belimo BKNE230-24

Smoke control damper module with Modbus/RTU protocol

B24D Actuator B24 with Agnosys BRM-10-F-ST**B230D** Actuator B230 with Agnosys BRM-10-F**9 Accessories**

No entry: no accessories (standard)

WS Weather protection for damper and actuator**10 Installation accessories**

No entry: no accessories (standard)

17 HT sealing tape (15 mm)**18** Suspension brackets for horizontal damper alignment**19** Suspension brackets for horizontal damper alignment and HT sealing tape (15 mm)**11 Surface (standard construction)**

No entry: without surface coating (standard)

P1 powder-coated, RAL 7030 (technical lacquer finish), industrial polyester

80% ±5 gloss levels; texture grade: textured

or any other RAL colour, gloss level

80% ± 5 gloss levels; texture: smooth

12 Surface (attachment part 1)

No entry: without surface coating (standard)

P2 powder-coated, RAL 7030 (technical lacquer finish), industrial polyester

80% ±5 gloss levels; texture grade: textured

or any other RAL colour, gloss level

80% ± 5 gloss levels; texture: smooth

¹ Function C_{mod}: damper blade in intermediate position² AS-i system based on the standardised industrial technologies (AS-Interface)

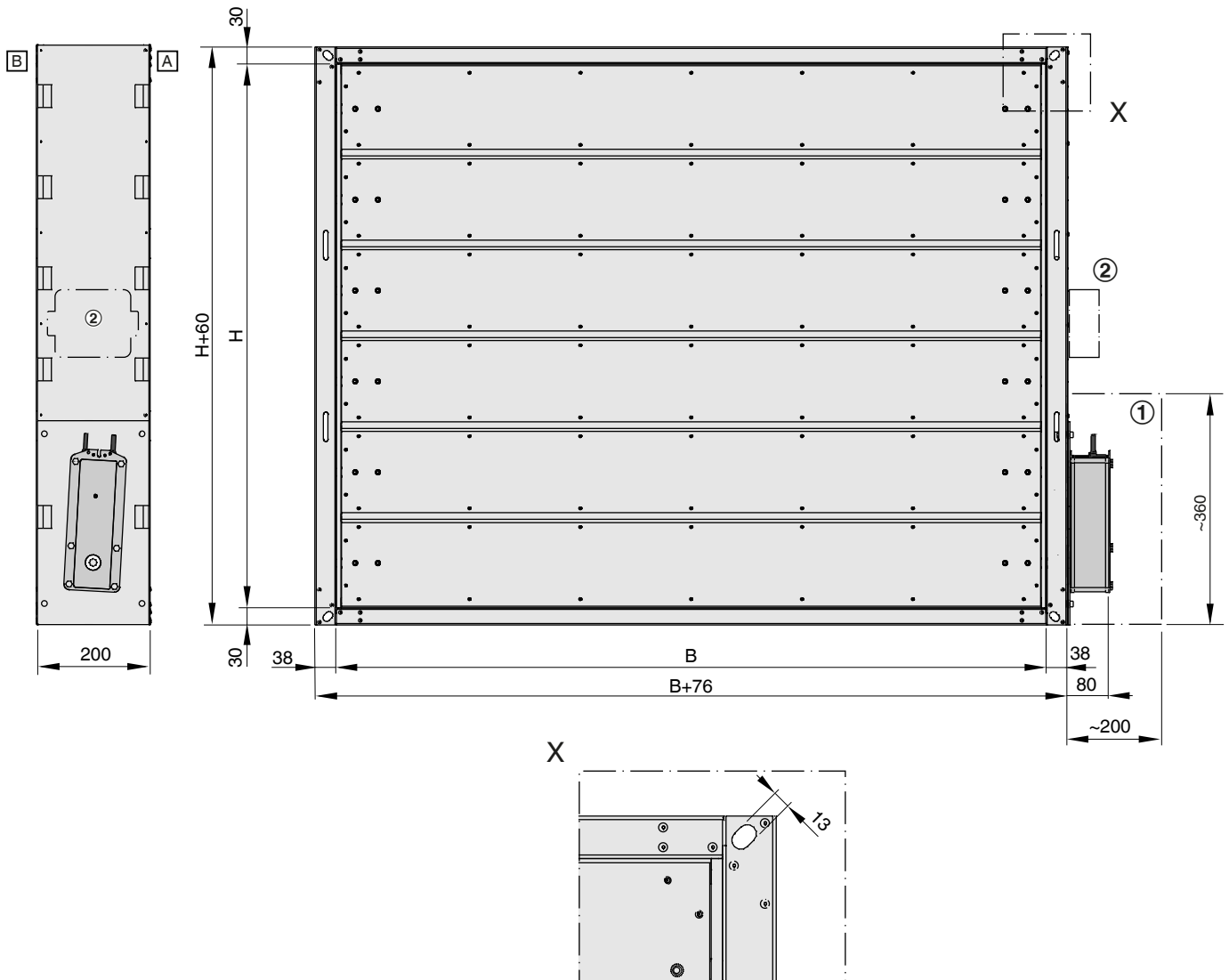


Order example: EK-JS-2-MA-C1/DE/600×800/K0/B24A/WS/17/P1-RAL9010/P2-RAL9010

Type	EK-JS – smoke control damper
Casing variant	Stainless steel casing
Construction	manual override (thermally encased actuator)
Coating	Promat impregnation (for all calcium silicate surfaces)
Country of destination	Germany
Nominal size [mm]	Width 600, height 800
Attachment 1	Operating side: expanded metal mesh (14 × 16 mm), galvanised steel; Installation side: no attachment
Attachment 2	Actuator 24 V AC/DC with TROXNETCOM module AS-EM/EK
Accessories	Weather protection for damper and actuator
Installation accessories	HT sealing tape (15 mm)
Surface (standard construction)	powder-coated, RAL 9010 (pure white)
Surface (attachment 1)	powder-coated, RAL 9010 (pure white)

Dimensions

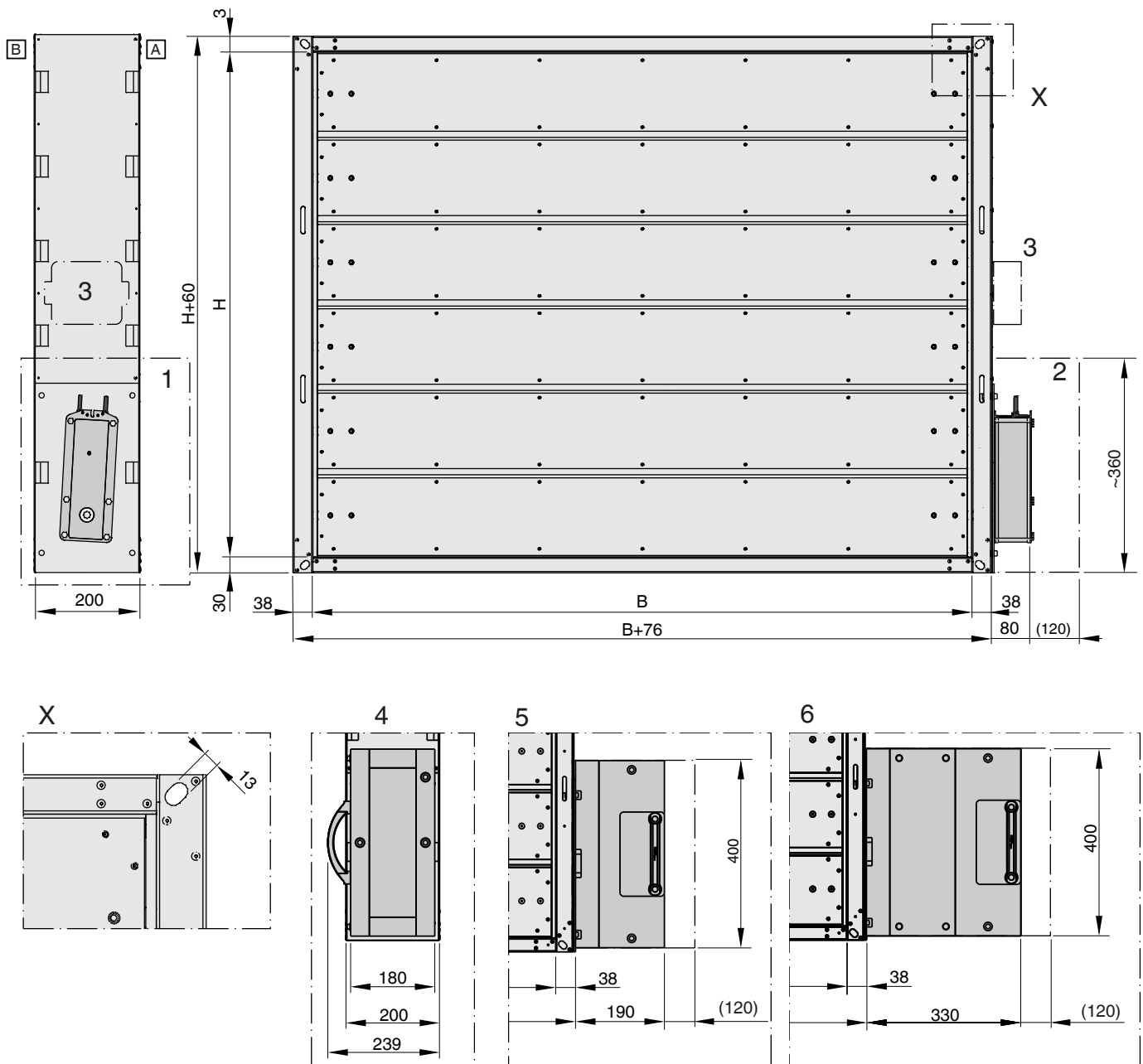
Dimensional drawing EK-JS with actuator



① Keep clear to provide access to the actuator

② Fixing option for control module

Dimensional drawing EK-JS with actuator and actuator encasing



- 1 Side view of damper without encasing
- 2 Front view of damper without encasing
- 3 Fixing option for control module
- 4 Side view of damper with encasing
- 5 Front view of damper with encasing
- 6 Front view of damper with encasing extension



Weights [kg], width 100 – 650 mm

H	B											
	100	150	200	250	300	350	400	450	500	550	600	650
100	7.33	7.65	8.02	8.33	8.65	8.97	9.28	9.6	9.92	10.23	10.55	10.87
125	7.58	7.9	8.27	8.59	8.9	9.22	9.54	9.86	10.18	10.5	10.82	11.14
150	7.82	8.15	8.52	8.84	9.16	9.48	9.8	10.13	10.45	10.77	11.09	11.41
165	8.07	8.39	8.77	9.09	9.42	9.74	10.06	10.39	10.71	11.04	11.36	11.69
320			11.29	11.95	12.62	13.29	13.95	14.62	15.28	15.95	16.62	17.29
480			13.41	14.17	14.92	15.68	16.44	17.2	17.95	18.71	19.47	20.22
640			15.54	16.38	17.23	18.08	18.92	19.77	20.62	21.47	22.31	23.16
800			17.66	18.6	19.53	20.47	21.41	22.35	23.28	24.22	25.16	26.1
960			19.78	20.81	21.84	22.87	23.9	24.92	25.95	26.98	28.01	29.04
1120			21.96	23.1	24.23	25.37	26.51	27.64	28.78	29.92	31.05	32.19
1280			24.14	25.38	26.63	27.87	29.12	30.36	31.61	32.85	34.1	35.35
1440			26.31	27.67	29.02	30.37	31.73	33.08	34.43	35.79	37.15	38.52
1600			28.49	29.95	31.41	32.88	34.34	35.8	37.48	38.95	40.41	41.88
1760			30.66	32.24	33.81	35.38	37.17	38.74	40.31	41.88	43.46	45.03
1920			32.84	34.52	36.42	38.1	39.78	41.46	43.14	44.82	46.5	48.19
2080			35.02	37.03	38.81	40.6	42.39	44.18	45.97	47.76	49.55	51.34
2240			37.41	39.31	41.21	43.1	45	46.9	48.8	50.7	52.6	54.5
2400			39.59	41.6	43.6	45.61	47.62	49.62	51.63	53.63	55.64	59.25
2560			41.76	43.88	45.99	48.11	50.23	52.34	54.45	56.57	60.29	62.41

Weights [kg], width 700 – 1250 mm

H	B											
	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
100	11.18	11.5	11.82	12.13	12.45	12.77	13.08	13.4	13.72	14.03	14.35	14.67
125	11.46	11.78	12.1	12.42	12.73	13.05	13.37	13.69	14.01	14.33	14.65	14.97
150	11.73	12.06	12.38	12.7	13.02	13.34	13.66	13.99	14.31	14.63	14.95	15.27
165	12.01	12.33	12.66	12.98	13.31	13.63	13.95	14.28	14.6	14.93	15.25	15.58
320	17.95	18.62	19.28	19.95	20.62	21.28	21.95	22.62	23.28	23.95	24.62	25.29
480	20.98	21.74	22.49	23.25	24.01	24.76	25.52	26.28	27.03	27.79	28.55	29.31
640	24.01	24.85	25.7	26.55	27.39	28.24	29.09	29.94	30.78	31.63	32.48	33.33
800	27.03	27.97	28.91	29.85	30.78	31.72	32.66	33.6	34.53	35.47	36.41	37.35
960	30.06	31.09	32.12	33.15	34.17	35.2	36.23	37.26	38.28	39.31	40.34	41.59
1120	33.32	34.46	35.6	36.74	37.87	39.01	40.37	41.5	42.64	43.77	44.91	46.11
1280	36.59	37.83	39.3	40.55	41.79	43.04	44.28	45.53	46.77	48.02	49.26	50.51
1440	40.07	41.43	42.78	44.14	45.49	46.84	48.2	49.55	50.9	52.26	53.62	55.03
1600	43.34	44.8	46.26	47.73	49.19	50.65	52.12	53.58	55.04	56.5	57.97	59.43
1760	46.6	48.17	49.74	51.32	52.89	54.46	56.03	57.61	59.17	62.35	63.92	65.55
1920	49.86	51.55	53.23	54.91	56.58	58.27	61.55	63.23	64.91	66.59	68.27	69.95
2080	53.13	54.92	56.71	58.5	61.88	63.68	65.47	67.26	69.04	70.83	72.62	74.47
2240	56.39	59.89	61.79	63.69	65.58	67.48	69.38	71.28	73.18	75.08	76.98	78.88
2400	61.25	63.26	65.27	67.28	69.28	71.29	73.3	75.31	77.31	79.32	81.33	83.4
2560	64.52	66.64	68.75	70.87	72.98	75.1	77.22	79.33	81.44	83.56	85.68	87.8

Attachments 2

Application

- Open/close actuators for the opening and closure of smoke control dampers, with automatic release (AA) or manual release (MA).
- With integrated limit switches for capturing the end positions
- Override control for up to 25 minutes
- Ambient temperature for normal operation: -30 to 50 °C, up to 95%, without temperatures below the dew point, no condensation (EN 60730-1)
- 2 integrated limit switches with potential-free contacts enable damper position indication OPEN and CLOSED
- Connecting cables of the 24 V actuator are equipped with plugs, which ensure quick and easy connection to the TROX AS-i bus system (retrofitable)
- Cable ends of the 1~ 230 V AC, 50 Hz actuator are fitted with wire end ferrules

Variants

B24

- 24 V AC/DC supply voltage
- BEN24-ST TR: Torque 15 Nm
- BEE24-ST TR: Torque 25 Nm
- BE24-12-ST TR: Torque 40 Nm

B230

- Supply voltage: 1~ 230 V AC, 50 Hz
- BEN230 TR: Torque 15 Nm
- BEE230 TR: Torque 25 Nm
- BE230-12 TR: Torque 40 Nm

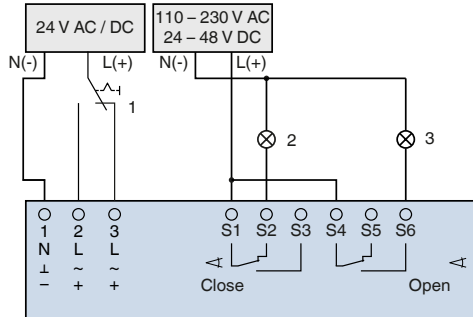
B24-SR

- BEN24-SR: Torque 15 Nm
- BEE24-SR: Torque 25 Nm

The torque required to operate the smoke control damper depends on the size of the actuator.

Wiring examples, technical data

Wiring example 24 V AC / DC



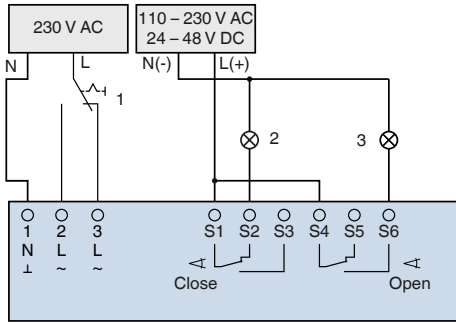
1 switch for opening and closing, to be provided by others

2 Control lamp CLOSED, to be provided by others

3 Control lamp OPEN, to be provided by others

Actuator	BEN24-ST	BEE24-ST	BE24-ST
Supply voltage (AC)	AC 19.2 – 28.8 V, 50/60 Hz		
Supply voltage (DC)	DC 21.6 – 28.8 V, 50/60 Hz		
Power consumption – when running	3 W	2.5 W	12 W
Power consumption – when idle	0.1 W		0.5 W
Power rating for cable sizing	I_{max} 8,2 A @ 5 ms		
Torque	15 Nm	25 Nm	40 Nm
Run time for 90°	< 60 s	< 60 s	
Limit switch contacts	2 × EPU		
Switching current	1 mA – 3 A (0.5 A inductive), AC 250 V		1 mA – 6 A (0.5 A inductive), AC 250 V
Limit switch – open	5°		3°
Limit switch – close	80°		87°
Connecting cable (actuator)	Cable 1 m, 3 × 0.75 mm ² , halogen-free		
Connecting cable – limit switches	Cable 1 m, 6 × 0.75 mm ² , halogen-free		
IEC protection class	III safety extra low voltage (SELV)		
Protection level	IP 54		
EC conformity	CE according to 2014/30/EU Low Voltage Directive CE according to 2014/35/EU		
Operating temperature	-30 to 55 °C		
Weight	0.9 kg	1.1 kg	2.7 kg

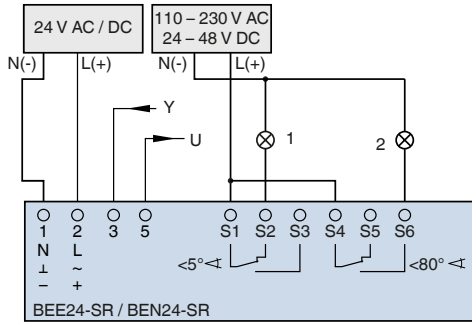
Wiring Example 1~ 230 V AC, 50 Hz



- 1 switch for opening and closing, to be provided by others
- 2 Control lamp CLOSED, to be provided by others
- 3 Control lamp OPEN, to be provided by others

Actuator	BEN230 TR	BEE230 TR	BE230 TR
Supply voltage (AC)	AC 198 – 264 V, 50/60 Hz		
Power consumption – when running	4 W	3.5 W	8 W
Power consumption – when idle	0.4 W		0.5 W
Power rating for cable sizing	I_{max} 4 A @ 5 ms		I_{max} 7,9 A @ 5 ms
Torque	15 Nm	25 Nm	40 Nm
Run time for 90°	< 60 s	< 60 s	
Limit switch contacts	2 × EPU		
Switching current	1 mA – 3 A (0.5 A inductive), AC 250 V		1 mA – 6 A (0.5 A inductive), AC 250 V
Limit switch – open	5°		3°
Limit switch – close	80°		87°
Connecting cable (actuator)	Cable 1 m, 3 × 0.75 mm ² , halogen-free		
Connecting cable – limit switches	Cable 1 m, 6 × 0.75 mm ² , halogen-free		
IEC protection class	II reinforced insulation		
Protection level	IP 54		
EC conformity	CE according to 2014/30/EU Low Voltage Directive CE according to 2014/35/EU		
Operating temperature	-30 to 55 °C		-30 to 50 °C
Weight	0.9 kg	1.1 kg	2.7 kg

Wiring example 24 V AC/DC variable

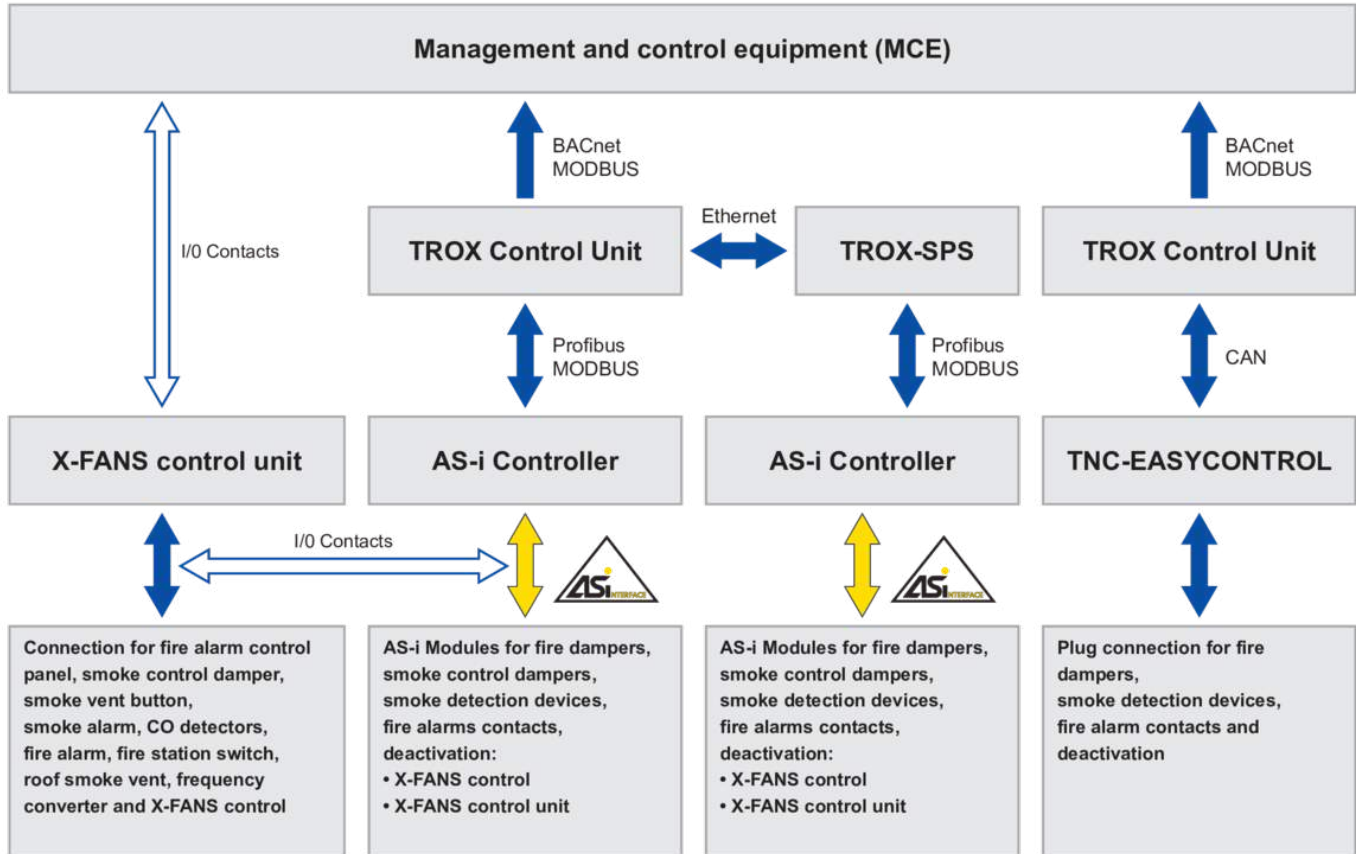


- 1 Control lamp CLOSED, to be provided by others
- 2 Control lamp OPEN, to be provided by others
- Input signal Y: 0(2) - 10 V DC Operating range (setpoint)
- U: 2 - 10 V DC Position feedback (actual value)

Actuator	BEN24-SR	BEE24-SR
Supply voltage (AC)	AC 19.2 – 28.8 V, 50/60 Hz	
Supply voltage (DC)	DC 21.6 – 28.8 V, 50/60 Hz	
Power consumption – when running	3 W	
Power consumption – when idle	0.3 W	
Power rating for cable sizing	I_{max} 8,2 A @ 5 ms	
Torque	15 Nm	25 Nm
Run time for 90°	< 60 s	< 60 s
Limit switch contacts	2 × EPU	
Switching current	1 mA – 3 A (0.5 A inductive), AC 250 V	
Limit switch – open	5°	
Limit switch – close	80°	
Connecting cable (actuator)	Cable 1 m, 4 × 0.75 mm ² , halogen-free	
Connecting cable – limit switches	Cable 1 m, 6 × 0.75 mm ² , halogen-free	
IEC protection class	III safety extra low voltage (SELV)	
Protection level	IP 54	
EC conformity	CE according to 2014/30/EU Low Voltage Directive CE according to 2014/35/EU	
Operating temperature	-30 to 55 °C	
Weight	1.1 kg	0.9 kg

Interfaces to higher level systems

The TROX fire protection and smoke extract systems have standardised interfaces to the MCE. In the simplest case, the interface consists of discrete signalling contacts that connect the mutual inputs and outputs of TROX systems and other building components.



Control and communication modules for smoke control dampers

Type	B24A	B24AS	B24BKNE	B24C	B230D	B24D	B24AM
	AS-EM/EK	AS-EM/SIL2	BKNE230-24	BC24-G2	BRM-10-F	BRM-10-F-ST	AS-EM/M
EK-EU	x	x	x	x	x	x	x
EK-JZ	x	x	x	x	x	x	x
EK-JS	x	x	x	x	x	x	x

Note:

Actuators and communication modules are tested together by the manufacturer; therefore only tested combinations may be used.

B24A – AS-EM/EK

Application

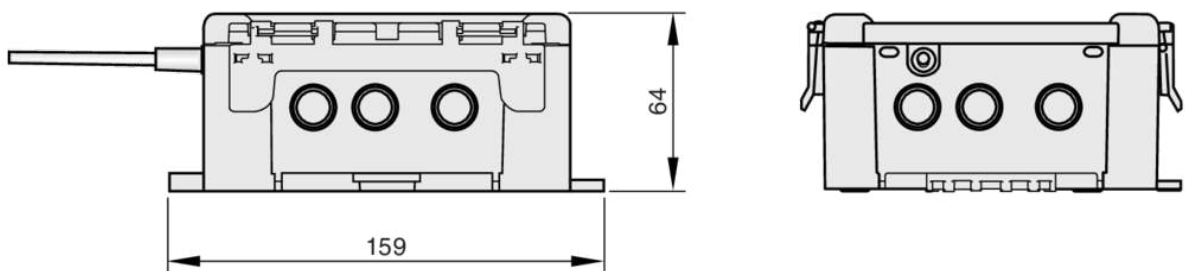
- Module for the control of smoke control dampers
- Detection of the damper position "CLOSED" and "OPEN"
- Opening the smoke control damper even without controller communication
- LEDs for OPEN and CLOSED positions; monitoring of run time errors
- Integrated AS-Interface slave
- Monitoring of signal reception
- Master can be used to monitor the run time of the damper blade actuator
- Supply voltage of the module and the 24 V DC actuator using AS-Interface (2-wire control)
- Ready to plug in for Belimo actuators (factory mounted and wired)

Use

B24A - mounted on smoke control damper

Description	AS-EM/EK
Electrical design	4 inputs/3 outputs
Output function	PNP transistor
Supply voltage	26.5 – 31.6 V DC
Current consumption, including actuator	450 mA
Inputs:	
Switching	DC PNP
Sensor voltage supply	AS-i
Voltage range	18 – 30 V AC
With short circuit protection	yes
Switching level – high signal 1	10
Input current high/low	> 7 mA/< 2 mA
Input characteristic	IEC 61131-2 Type 2
Outputs, PNP:	
Galvanically isolated	–
Max. current load per output	400 mA per output/400 in total (from AS-i)
Outputs, relay:	
Galvanically isolated	yes
Maximum voltage	32 V
Max. current load	500 mA
Ambient temperature	-5 to 75 °C
Protection level, IEC protection class	IP 42
AS-i profile	S-7.A.E
I/O configuration	7 Hex
ID code	7 Hex
EMC	EN 61000-6-2; EN 61000-6-3

AS-EM/EK



B24AS – AS-EM/SIL2**Application**

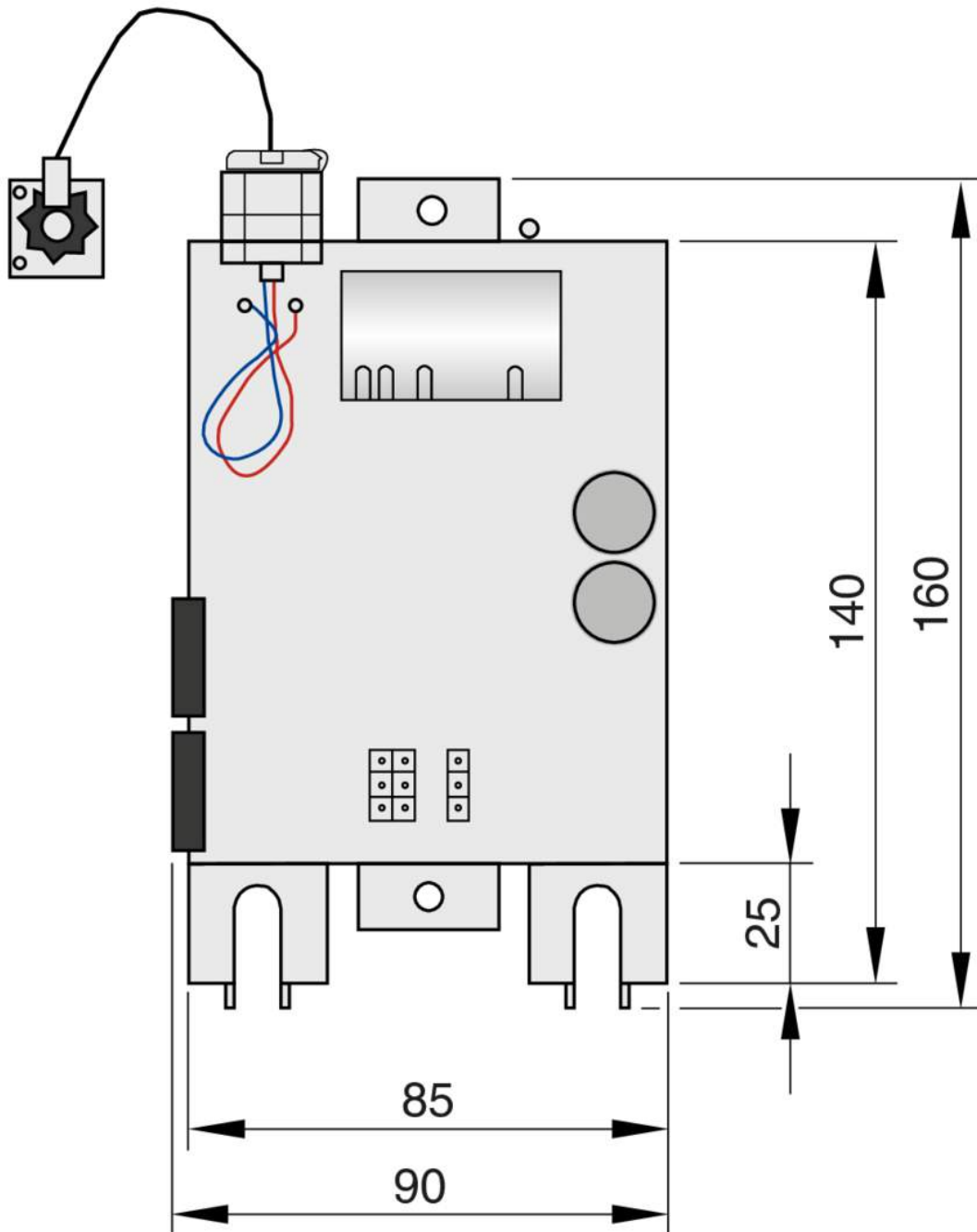
- Module for the control of smoke control dampers
- Detection of the damper position "CLOSED" and "OPEN"
- Approved up to SIL2 to IEC/EN 61508
- Integrated AS-Interface
- Monitoring of signal reception
- Master can be used to monitor the run time of the damper blade actuator
- Connection with terminals
- Supply voltage of the module and the 24 V DC actuator using AS-Interface (2-wire control)
- Ready to plug in for Belimo actuators (factory mounted and wired)

Use

B24AS - mounted on smoke control damper

Order designation	AS-EM/SIL2
Supply voltage	26.5 – 31.6 V DC
Current consumption	< 400 mA from AS-i
Current carrying capacity per output	340 mA
Current carrying capacity per module	340 mA
AS-i power	1 × green
Peripheral error	1 × red, blinking
ComError	1 × red, static
Output Q0	1 × yellow (DO0)
Output Q1	1 × yellow (DO1)
Input status LED SI-1	1 × yellow
Input status LED SI-2	1 × yellow
Input status LED DI0	1 × yellow (DI0)
Input status LED DI1	1 × yellow (DI1)
Input status LED DI2	1 × yellow (DI2)
binary inputs	2 safe digital inputs
binary outputs	2 transistor outputs (typically 24 V DC from AS-i, voltage range 18 – 30 V)
Ambient temperature	-20 – 50 °C
Protection level, IEC protection class	IP 42
Casing material	Plastic
AS-i profile	S-7.B.E (Safety at Work) and S7.A.E (motor module)
EMC	EN 61000-6-2; EN 61000-6-3
Casing dimensions (B × H × T)	139 × 159 × 64 mm

AS-i module AS-EM/SIL2



B24AM – AS-EM/M

Application

- Module for the control of smoke control dampers with C_{mod} Function:
- Capturing the damper blade positions CLOSED and OPEN
- Time-controlled selection of 13 intermediate positions of the damper blade (opening angle between 0° and 90°)
- Opening the fire damper even without controller communication
- Emergency position can be set (OPEN or CLOSED)
- LEDs for OPEN and CLOSED positions; monitoring of run time errors
- Integrated AS-Interface slave
- Monitoring of signal reception
- Master can be used to monitor the run time of the damper blade actuator
- Supply voltage of the module and 24 V DC actuator using AS-Interface (2-wire control)
- Ready to plug in for Belimo actuators

Use

B24AM - mounted on smoke control damper

Description	AS-EM/M
Electrical design	4 inputs/3 outputs
Output function	PNP transistor
Supply voltage	26.5 – 31.6 V DC
Current consumption, including actuator	450 mA
Inputs	
Switching	DC PNP
Sensor voltage supply	AS-i
Voltage range	18 – 30 V AC
With short circuit protection	yes
Switching level – high signal 1	10
Input current high/low	> 7 mA/< 2 mA
Input characteristic	IEC 61131-2 Type 2
Outputs, PNP	
Galvanically isolated	–
Max. current load per output	400 mA per output/400 in total (from AS-i)
Outputs, relay	
Galvanically isolated	yes
Maximum voltage	32 V
Max. current load	500 mA
Ambient temperature	-5 to 75 °C
Protection level, IEC protection class	IP 42
AS-i profile	S-7.A.E
I/O configuration	7 Hex
ID code	7 Hex
EMC	EN 61000-6-2; EN 61000-6-3

B24BKNE – Communication module**Application**

- Communication and power supply unit for smoke extract actuators 24 V , status LEDs, memory for actuating command, connection 1~ 230 V AC, 50 Hz, 1 m cable, halogen-free

Use

B24BKNE – BKNE230-24 communication module

Description	BKNE230-24
Nominal voltage	230 V AC 50/60 Hz
Functional range	198 – 264 V AC
Rating	19 VA (including actuator)
Power consumption	10 W (including actuator)
Length / cross section	On the actuator = 1 m, 3 (6*) × 0.75 mm ² (free of halogens)
IEC protection class	II (protective insulation)
Ambient temperature	-30 to 50 °C
Storage temperature	-40 to 80 °C
Protection level	IP 54
EC conformity	EMC to 89/336/EEC, 73/23/EEC
Mode of action	Type 1 (EN60730-1)
Software class	A (EN60730-1)
Maintenance	Maintenance-free
Weight	680 g

B24D, B230D – Communication module**Application**

- AGNOSYS system
- BRM-F-ST module is used for the monitoring and control of smoke control dampers
- Up to 126 modules can be connected in a ring bus system

Use

B24D – AGNOSYS BRM10FST communication module

B230D – AGNOSYS BRM10F communication module

Description	B24D/B230D
Nominal voltage	18 – 32 V DC (typically 24 V)
Connections	Plug connections, screw terminals
Damper power supply	24/230 V AC 24 V DC
Ambient temperature	0 to 45 °C
Humidity	90 % rh, no condensation
Weight	510 g
B × H × T	158 × 180 × 65 mm

Explanation

L [mm]

Length of the smoke control damper

B [mm]

Width of the smoke control damper

H [mm]

Height of the smoke control damper

q_v [m³/h]; [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 cross section

A_{free} [m²]

Geometric free area (B × H)

A_{geo} [m²]

Free area minus the components standing in the airflow

Δp_t [Pa]

Total differential pressure

v [kg]

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

MBE

Management and control equipment

Lengths [mm]; [in]

All lengths are given in millimetres [mm] unless stated otherwise.