



EKA2-EU smoke control dampers with ventilation function for heat and smoke extraction



EK-JZ smoke control dampers with ventilation function for heat and smoke extraction



EK-JS for mechanical smoke extract systems, smoke control damper for single compartments



BVDAX for smoke extract operation with frequency inverter, CE-certified according to DIN EN 12101-1, temperature category F400



Conforms to VDI 6022

# Smoke control dampers

## EKA2-EU



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

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

- Complies with product standard DIN EN 12101-8 and is classified in accordance with DIN EN 13501-4
- Classified EI 90/120 ( $v_{ew}, h_{ow} i \leq -> o$ ) S 1500 C<sub>mod</sub> AA multi
- Pressure level 3 (-1500 Pa ..... 500 Pa)
- Can be used in smoke extract systems or in heating and ventilation systems or in a combination of these
- For systems that require automatic activation (AA)
- Wide range of application options for fire compartment separation
- Single-blade room partitioning with mechanical resistance
- Sheet steel construction in lightweight design
- Silicone free
- No stop bars, therefore large free area
- Leakage tightness class at least 3C for casing and damper tightness, in accordance with DIN EN 1751
- Thermal insulation with insulating wool (optionally, as it depends on the airflow direction)
- Connection to air ducts in accordance with DIN EN 1366-1 and DIN EN 1366-8 (self-contained duct system or thermally insulated) or tested in accordance with DIN EN 1366-9
- For smoke extract ducts made of sheet steel, or self-contained duct system with a wall thickness of 35 mm or more
- Integration into the management and control equipment with TROXNETCOM or with various control bus systems possible

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## General information

### Application

- TROX smoke control dampers of Type EKA2-EU, with CE marking and Declaration of Performance, for smoke extraction via mechanical smoke extract systems
- Provision of outdoor air supply for mechanical smoke extract systems
- Can be used with ventilation function if the mechanical smoke extract system is approved for ventilation by the building authorities
- Integration into the management and control equipment with TROXNETCOM

### Special characteristics

- Declaration of Performance according to Construction Products Regulation
- Complies with the European product standard DIN EN 12101-8
- Tested for fire resistance properties according to DIN 1366-10 and DIN EN 1366-2
- Hygiene requirements conform to VDI 6022 part 1, VDI 3803, DIN 1946 part 4 and DIN EN 13779
- Corrosion protection according to DIN EN 15650 in connection with DIN EN 60068-2-52
- Closed blade air leakage to DIN EN 1751, class 3
- Casing air leakage according to DIN EN 1751, class C
- Low differential pressure and sound power level
- Any airflow direction
- Integration into the management and control equipment with TROXNETCOM

### Classification

EI 90/120 ( $v_{ew}, h_{ow}$  i<->o) S 1500 C<sub>mod</sub> AA multi

### Nominal sizes

- B × H: 200 × 200 – 1500 × 800 mm (in increments of 1 mm)
- L: 305 mm or 500 mm

### Parts and characteristics

- The damper casing, including all mechanical components, is made of lightweight steel or sheet steel.
- The damper blade is made of a special insulating material, optionally also available in an impregnated version.
- Depending on the ambient temperature, the closed damper blade is sealed with a hot seal or a cold seal to prevent the spread of heat and smoke.
- The design variants with powder-coated casings meet increased requirements for corrosion protection.

### Attachments 1

- Cover grille
- Cover grille without minimisation of free area
- Extension piece

### Anbauteile 2

- OPEN/CLOSE actuator, with 24 V AC/DC or 230 V AC supply voltage

### Optional products

- Circular spigots

### Technical data

- Nominal sizes: 200 × 200 – 1500 × 800 mm
- Casing lengths: 305 and 500 mm
- Volume flow rate range: up to 12000 l/s or up to 43200 m³/h at 10 m/s
- Differential pressure range: pressure level 3: -1500 to 500 Pa
- Temperature range: at least -30 to 50 °C
- Upstream velocity: ≤ 15 m/s

### Useful additions

- Duct smoke detector RM-O-3-D
  - Duct smoke detector with airflow monitor RM-O-VS-D
  - Smoke control damper EK-JZ
  - Smoke control damper EK-EU
- TROX-TLT 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.

### Standards and guidelines

- Complies with the European product standard DIN EN 12101-8 Smoke and heat control - Smoke control dampers
- Is classified according to DIN EN 13501-4 Fire classification of construction products and building elements
- Fire protection tested in accordance with DIN EN 1366-2 and DIN 1366-10 Fire resistance tests for installations - smoke control dampers
- DIN EN 1751 Ventilation for buildings – Air terminal devices
- Hygienic requirements in accordance with VDI 6022 Sheet 1, VDI 3803, DIN 1946 Part 4 and DIN EN 13779
- Corrosion protection in accordance with DIN EN 15650 in conjunction with DIN EN 60068-2-52

### Maintenance

- Smoke control dampers must be operational at all times and must be maintained regularly so that they meet the performance requirements.
- Maintenance at least once every six months; maintenance must be recorded; documents must be kept for reference.
- The owner of the smoke extract system must arrange for a functional check of the smoke control damper every six months. For this purposes, follow the basic maintenance specifications according to DIN EN 13306 in conjunction with DIN 31051. If two consecutive tests at intervals of 6 months do not reveal any functional defects, the smoke control damper only needs to be checked once a year.
- Depending on the installation location, country-specific regulations may apply.
- For details on maintenance and inspection, please refer to the installation and operating manual.

**Material and surfaces**

- electrogalvanised steel parts
- galvanised sheet steel
- Special insulating material (cement-bonded board material)
- intumescent strips and profiles
- EPDM profile seal
- PE foil tape

**Equivalence criteria**

- EI 90/120 (view, how  $i \leftrightarrow o$ ) S 1500 Cmod AA multi
- Fire resistance up to 120 minutes
- Thermal insulation with insulating wool (optionally, as it depends on the airflow direction)
- Connection to air ducts in accordance with DIN EN 1366-1 and DIN EN 1366-8 (autonomous air-ducting or thermally insulated) or tested in accordance with DIN EN 1366-9
- no stop bars, therefore large free area
- single-blade room partitioning with mechanical resistance
- For smoke extract ducts made of sheet steel, or autonomous smoke extract ducts with a wall thickness of 35 mm or more
- Pressure level 3 (-1500 Pa ..... 500 Pa)
- Smoke-tight with at least leakage class 3 according to DIN EN 1751
- Silicone free

## Function

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 galvanised sheet steel and are opened by an actuator (with 24V AC/DC or 230V AC supply voltage) in the area where smoke is to be extracted, either when smoke is detected by a duct smoke detector, or activation via a fire alarm system. Smoke control dampers have two safe positions: fully open and fully closed.

In the case of fire-resistant smoke control dampers for multiple compartments, the safe position is either 'open' or 'closed', depending on the fire site and the path of the smoke to be extracted. The EKA2-EU can be used in combined systems (combination damper) for ventilation and is suitable for restricting extract air volume flows, provided that the damper blade throttle position is not adjusted while the smoke extraction unit is running. In OPEN position, at least 75% of the free cross-sectional area must be maintained, even in the event of a fire. Regular maintenance of the smoke control damper is required to ensure its functional reliability.

### Schematic illustration of the EKA2-EU with OPEN/CLOSE actuator



- 1 Casing
- 2 Damper blade
- 3 Product label
- 4 Actuator

## Technical data

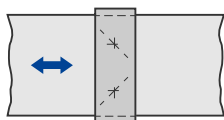
Nominal sizes	200 × 200 – 1500 × 800 mm
Casing lengths	305 and 500 mm
Volume flow rate range	up to 12000 l/s / up to 43200 m³/h at 10 m/s
Differential pressure range	+/- 1500 Pa
Temperature range	-20 to 50 °C
Upstream velocity	≤ 15 m/s

For sizes, see functional description

## Quick sizing

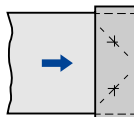
- The quick sizing in the Easy Product Finder gives a good overview of the possible volume flow rates at different flow velocities and the corresponding pressure losses
- Precise values based on project-specific data can be determined with our 'Easy Product Finder' design software
- You can find the Easy Product Finder on our website:  
<https://www.trox.de/en/mytrox/easy-product-finder-design-programme-ff6bb52b92a8aa3e>

### Installation type A, in a duct



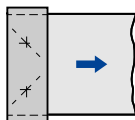
Ducted on both sides, any airflow direction

### Installation type B, additional supply air



Connection duct ending on one side with smoke control damper, outflow direction

### Installation type C, smoke extract



Connection duct beginning on one side with smoke control damper, inflow direction



Installation type D



Air transfer flow

## 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

Rectangular or square smoke control dampers in accordance with product standard DIN EN 12101-8, tested according to DIN EN 1366-10 and DIN EN 1366-2, for use in smoke extract systems. In addition to maintaining compartmentalisation and removing smoke, heat and combustion products from a fire compartment, smoke control dampers enable the controlled removal of released hazardous and toxic combustion and fire gases. The smoke control damper EKA2-EU can also be used in pressurised ventilation systems and venting systems for pressurised systems and as a pressure relief damper for gas extinguishing systems. Also for the extraction of smoke gases and for providing additional supply air for the mechanical smoke extraction of one or more fire compartments, and in all listed systems of the same type that must fulfil modulation applications. EKA2-EU can be used in combined smoke exhaust systems which have been approved for controlled ventilation. The fire-resistant smoke control damper for multiple compartments is suitable for installation in solid walls, lightweight partition walls and ceilings. The damper blade is moved via an OPEN/CLOSE actuator, optionally with a pre-assembled actuator bus control module.

### Materials and surfaces

Casing:

- Hot-dip galvanised sheet steel
- Hot-dip galvanised sheet steel with powder coating RAL 7001 and according to RAL card

Damper blade:

- Special insulating material
- Special insulating material with coating
- Plastic slide bearings
- EPDM and TPE seals

### Technical data

- Nominal sizes: 200 × 200 – 1500 × 800 mm
- Casing lengths: 305 and 500 mm
- Nominal sizes 200 × 200 – 1500 × 800 mm, for smoke gas flow rates up to 43,200 m³/h or 12,000 l/s at 10 m/s
- Differential pressure range: up to 1500 Pa
- Temperature range: -20 to 50 °C
- Upstream velocity: standard construction up to 15 m/s

Example of technical data for nominal size 600 × 300 × 500

- Volume flow rate  $q_v$ : 2,592 m³/h
- Airflow velocity  $v$ : 4.00 m/s
- Free area  $A_{fr}$ : 0.1569 m²
- Total differential pressure  $\Delta p_t$ : 4 Pa

### Standards and guidelines

- Classification according to DIN EN 13501-4
- Complies with the European product standard DIN EN 12101-8
- Tested according to DIN EN 1366-10
- Leakage test according to DIN EN 1751

### Classification

- EI 90/120 ( $v_{ew}$ ,  $h_{ow}$ ,  $i \rightarrow o$ ) S 1500 C<sub>mod</sub> AA multi
- Leakage air flow with closed damper blade according to DIN EN 1751, at least class 3
- Casing air leakage according to DIN EN 1751, class C

### Nominal size

B × H : 200 × 200 – 1500 × 800 [mm] (downstream cross sectional area)

Construction length: L = 305 or 500 [mm]

### Attachments

- OPEN-CLOSE actuators with 24 V AC/DC or 230 V AC supply voltage
- Interface Control Unit for integration in AS-i networks
- Interface Control Unit for other standard bus systems
- Cover grille
- Curved perforated plate
- Extension piece

### Equivalence criteria

- EI 90/120 ( $v_{ew}$ ,  $h_{ow}$ ,  $i \rightarrow o$ ) S 1500 C<sub>mod</sub> AA multi
- Fire resistance: 120 minutes
- Thermal insulation multi by means of insulating wool
- Connection to air ducts in accordance with DIN EN 1366-1 A, B and C
- Smoke extract ducts in accordance with DIN EN 1366-8 (self-contained duct system, or thermally insulated sheet steel duct)
- Smoke extract ducts according to DIN EN 1366-9
- For smoke extract ducts with 35 mm wall thickness or more
- Pressure level 3 (-1500 Pa to 500 Pa)
- Smoke-tight with at least leakage class 3 in accordance with DIN EN 1751
- No stop bars, therefore large free area
- Room partitioning via individual damper with mechanical resistance
- Meets the hygiene requirements according to VDI 6022 Sheet 1, VDI 3803, DIN 1946 Part 4 and DIN EN 13779 and according to Ö-Norm H 6020 and H 6021
- Silicone free





## Order code

EKA2-EU – 1 – 7 / BE / 1200 × 800 × 305 / A0 / B24A

1	2	3	4	5	6	7

**1 Type****EKA2-EU** Smoke control damper**2 Casing variant**

No entry: standard construction

**1** powder-coated casing, RAL 7001 (silver grey)**3 Damper blade variant**

No entry: standard variant

**7** coated damper blade**4 Country of destination**

Specify country code

**5 Nominal size [mm]**

Width x height x length

Width

**200 – 1500**

Height

**200 – 800**

Length

**305, 500****6 Attachment 1**

No entry: without attachment

**Order example: EKA2-1-7/BE/1200×800×305/A0/B24A****Type****Casing variant****Damper blade variant****Country of destination****Nominal size [mm]****Attachment 1****Attachment 2**

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

**0** Side without attachment**A** Crimped wire mesh (20 × 20 mm), galvanised steel**Q** curved perforated metal plate with round perforations (Ø 6 mm)**V** Extension piece**7 Attachments 2**TROX actuator without expansion**B24** Actuator 24 V AC/DC**B24SR**<sup>1</sup> 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

**B24A**<sup>2</sup> Actuator B24 with TROXNETCOM AS-EM/EK**B24AS**<sup>2</sup> Actuator B24 with TROXNETCOM AS-EM/SIL2**B24AM**<sup>1</sup> Actuator B24 + TROXNETCOM 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<sup>1</sup> Function C<sub>mod</sub>: damper blade in intermediate position<sup>2</sup> AS-i system is based on the standardised industrial standard technologies (AS-Interface)

EKA2-EU - Smoke control damper

powder-coated casing, RAL 7001 (silver grey)

coated damper blade

Belgium

Width 1200, height 800, length 305

Operating side: crimped wire mesh (20 × 20 mm), galvanised steel;  
installation side: no attachment

Actuator 24 V AC/DC with TROXNETCOM AS-EM/EK



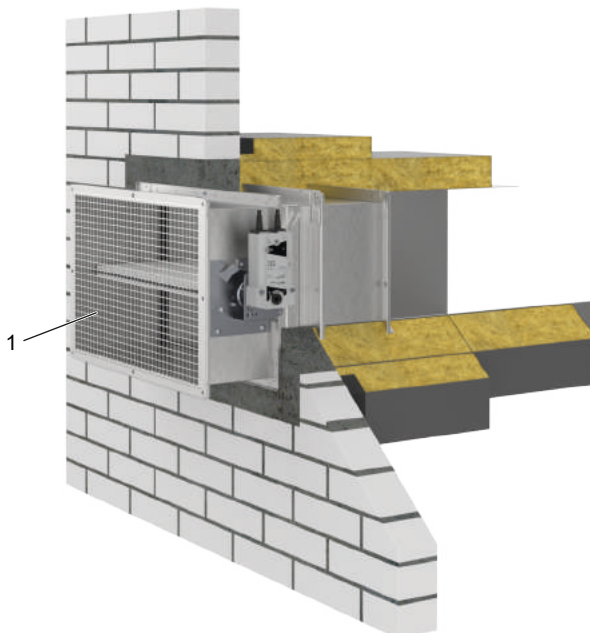


Dimensions

H [mm]	B [mm]													
	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
200	5/7	6/8	7/10	9/12	10/13	11/15	12/16	15/20	16/21	21/27	23/29	24/31	26/32	27/34
250	7/9	8/10	10/12	11/14	12/16	14/18	15/19	16/21	18/23	24/29	25/31	27/33	29/35	30/38
300	8/10	9/12	11/14	12/15	13/17	15/19	16/21	18/23	19/25	26/32	28/34	30/36	32/39	33/41
350	8/11	10/13	11/15	13/17	15/18	16/20	18/22	24/29	26/32	28/34	30/37	32/39	34/42	36/44
400	9/11	11/13	12/16	14/18	16/20	17/22	19/24	26/31	28/34	31/37	33/39	35/42	37/45	39/47
450	10/12	11/14	13/17	15/19	17/21	23/28	26/31	28/34	30/36	33/39	35/42	38/45	40/48	43/50
500	10/13	12/15	14/18	16/20	18/22	25/30	27/33	30/36	33/39	35/42	36/45	40/48	43/51	46/54
550	–	15/19	18/22	21/26	24/28	26/32	29/35	32/38	35/41	37/44	40/47	43/51	46/54	49/57
600	–	16/20	19/23	22/27	25/30	28/33	31/37	34/40	37/43	40/47	43/50	46/53	49/57	52/60
650	–	17/21	20/25	23/28	27/32	30/35	33/39	36/42	39/46	42/49	45/53	48/56	51/60	55/63
700	–	18/22	21/26	25/30	28/33	31/37	35/41	38/44	41/48	44/52	48/55	51/59	54/63	58/67
750	–	19/23	22/27	26/31	29/35	33/39	36/43	40/47	43/50	47/54	50/58	54/62	57/66	61/70
800	–	20/24	24/28	27/33	31/36	34/40	38/44	42/49	45/53	49/57	53/61	56/65	60/69	64/73

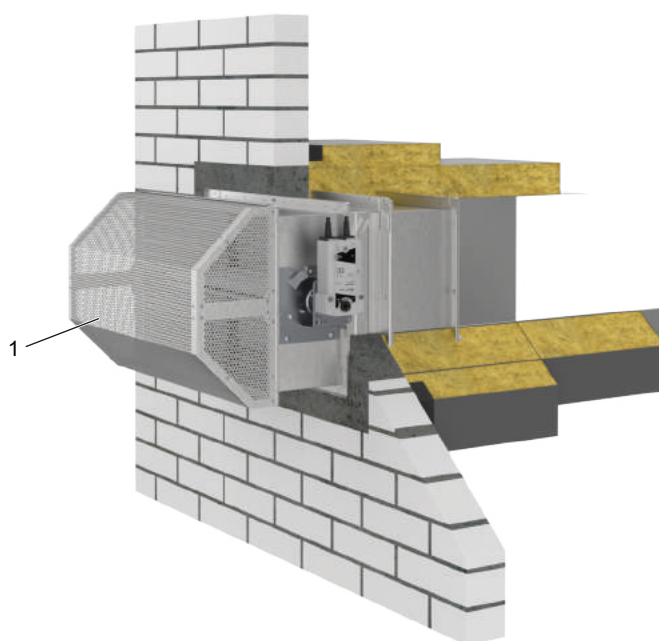
## Attachments 1

### Cover grille (A)



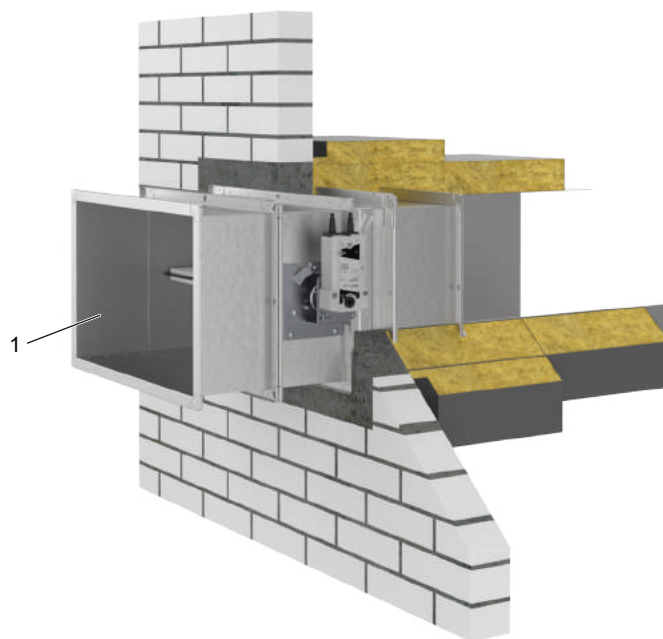
The cover grille works as a safety guard and also as a protection against small animals. An extension piece is required for dampers with heights >401 mm and is automatically included in the configurator.

### Cover grille (Q)



The cover grille, which is geometrically adapted to the damper movement radius, maintains the geometrically free cross-section at 100%. For damper heights from 401 mm, no extension piece is required. The damper with this type of grille therefore fits perfectly into rooms.

## Extension piece



The extension piece is used to extend the damper for damper heights from 401 mm. It may also be necessary for wall thicknesses from 302 mm to simplify duct connection.

## Attachments 2

### Application

- Open/close actuators for the opening and closure of smoke control dampers, with automatic activation (AA) or manual activation (MA).
- With integral 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 (retrofittable)
- The connecting cable of the 230 V AC actuator is 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 230 V AC
- 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.

### Installation information

- Feeding the electric connecting cable through the actuator encasing requires a drilled hole of the exact size (Ø max. + 1 mm)
- A wire clamping bracket is required
- For details on maintenance and inspection, please refer to the installation and operating manual



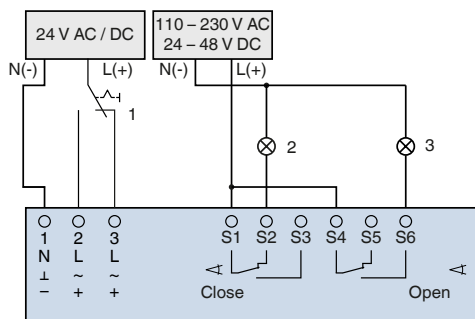
H	B [mm]																	
[mm]	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500				
200	<div>25 Nm</div> <div>A00000082634 BEE24-ST TR</div> <div>A00000082596 BEE230 TR</div>																	
250																		
300																		
350																		
400																		
450																		
500	<div>40 Nm</div> <div>M466DZ6 BE24-12-ST TR</div> <div>M466DZ7 BE230-12 TR</div>																	
550																		
600																		
650																		
700																		
750																		
800																		
800																		

1 BEE24-ST TR / BEE230 TR

2 BE24-12-ST TR / BE230-12 TR

## Wiring examples, technical data

### Wiring example 24 V AC / DC

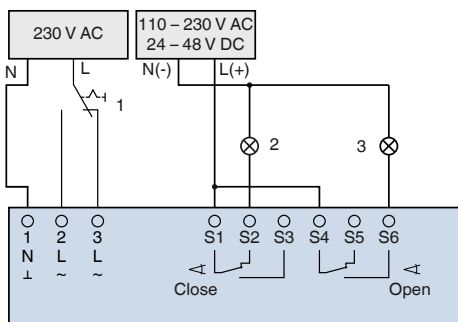


- 1 Switch for opening and closing, to be provided by others  
2 Control lamp CLOSED, to be provided by others  
3 Control lamp OPEN, to be provided by others

## 24 V AC/DC open/close actuators

Actuator	BEE24-ST	BE24-ST
Supply voltage (AC voltage)	AC 19.2 – 28.8 V, 50/60 Hz	
Supply voltage (DC voltage)	DC 21.6 – 28.8 V, 50/60 Hz	
Power consumption operation	2.5 W	12 W
Power consumption idle position	0.1 W	0.5 W
Connected load for line dimensioning	I <sub>max.</sub> 8.2 A @ 5 ms	
Torque	25 Nm	40 Nm
Runtime for 90°	< 60 s	
Type of contact limit switches	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 <sup>2</sup> , halogen-free	
Connecting cable (limit switches)	Cable 1 m, 6 × 0.75 mm <sup>2</sup> , 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	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

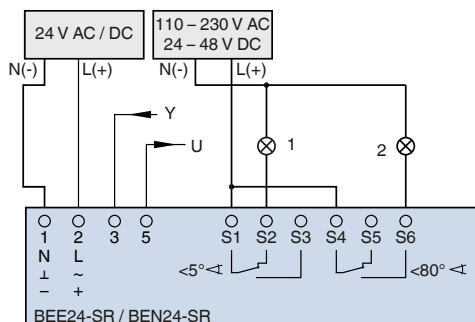
3 Control lamp OPEN, to be provided by others

## 230 V AC open/close actuators

Actuator	BEE230 TR	BE230 TR
Supply voltage (AC voltage)	AC 198 – 264 V, 50/60 Hz	
Power consumption operation	3.5 W	8 W
Power consumption idle position	0.4 W	0.5 W
Connected load for line dimensioning	$I_{max}$ 4 A at 5 ms	$I_{max}$ 7.9 A at 5 ms
Torque	25 Nm	40 Nm
Runtime for 90°	< 60 s	
Type of contact limit switches	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 <sup>2</sup> , halogen-free	
Connecting cable (limit switches)	Cable 1 m, 6 × 0.75 mm <sup>2</sup> , 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	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)

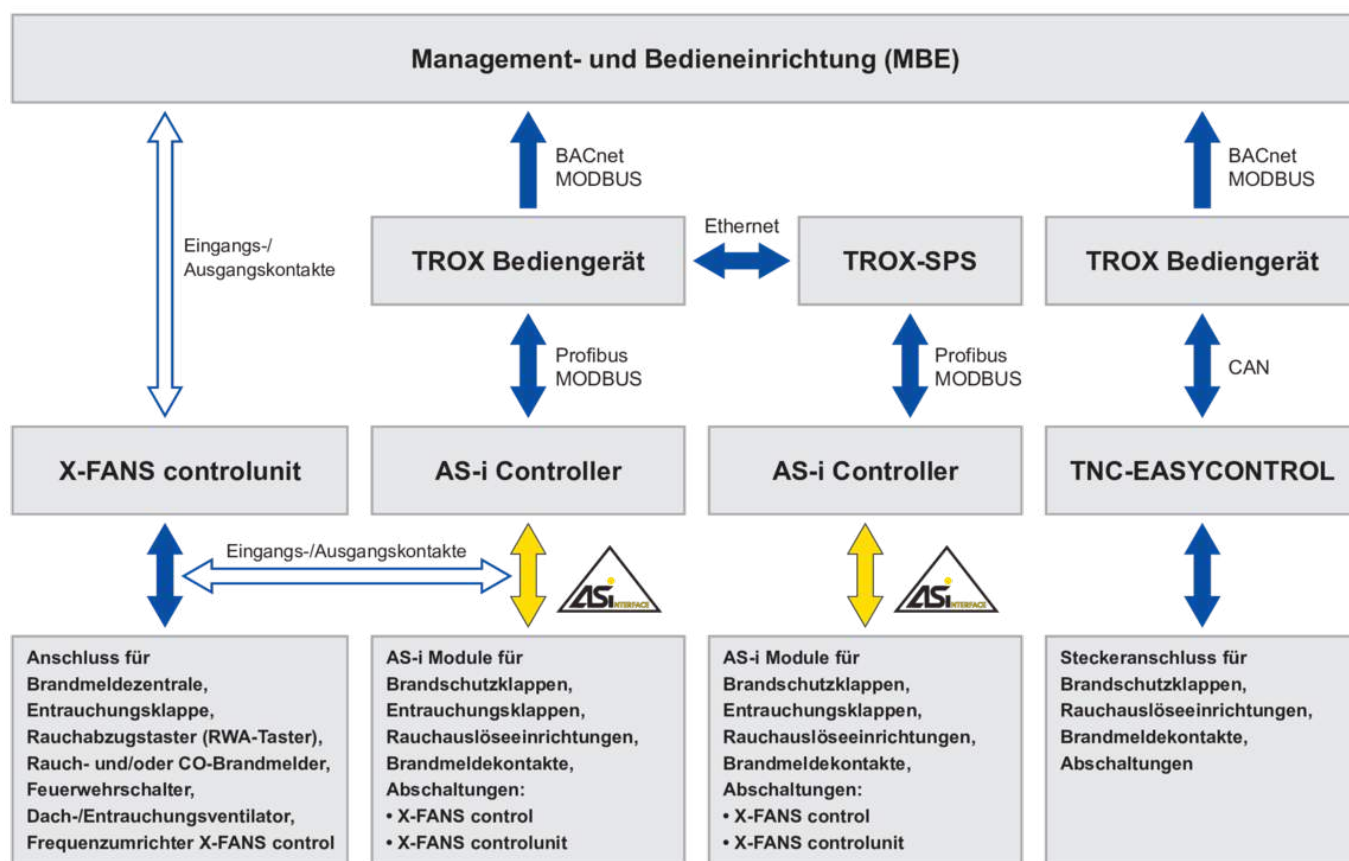
U: 2 - 10 V DC Position feedback (actual value)

## Control and communication modules for smoke control dampers

Actuator	BEE24-SR
Supply voltage (AC voltage)	AC 19.2 – 28.8 V, 50/60 Hz
Supply voltage (DC voltage)	DC 21.6 – 28.8 V, 50/60 Hz
Power consumption operation	3 W
Power consumption idle position	0.3 W
Connected load for line dimensioning	$I_{max}$ 8.2 A @ 5 ms
Torque	25 Nm
Runtime for 90°	< 60 s
Type of contact limit switches	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 <sup>2</sup> , halogen-free
Connecting cable (limit switches)	Cable 1 m, 6 × 0.75 mm <sup>2</sup> , 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

## 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 AS-EM/EK	B24AS AS-EM/SIL2	B24BKNE BKNE230-24	B24C BC24-G2	B230D BRM-10-F	B24D BRM-10-F-ST	B24AM 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
EKA2-EU	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

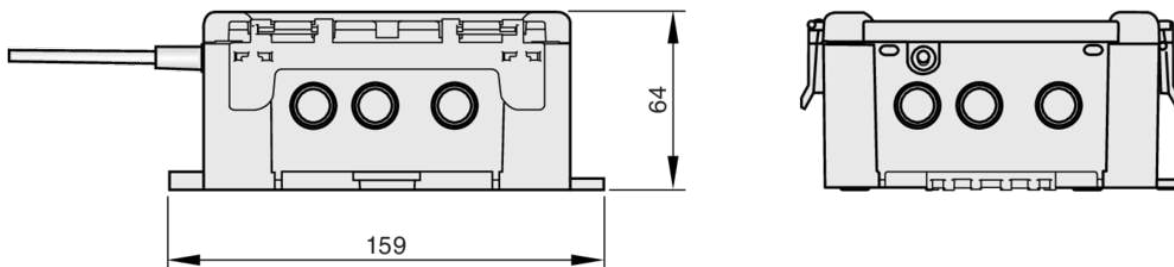
- Module for the control of smoke control dampers
- Detection of the damper position "CLOSED" and "OPEN"
- Opening the smoke control damper even without controller communication
- LEDs for OPEN and CLOSED positions; monitoring of run time errors
- Integrated AS-Interface slave
- Monitoring of signal 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**

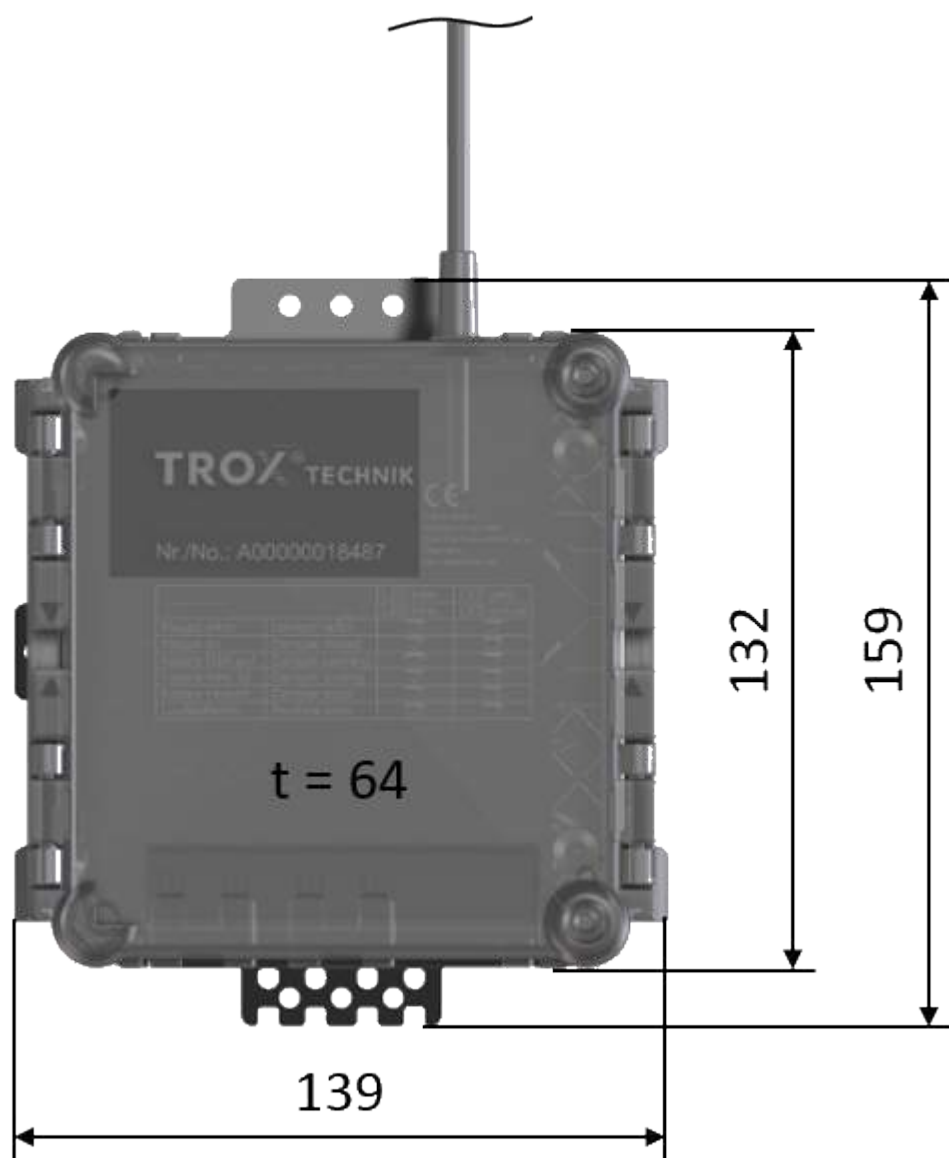
- Module for the control of smoke control dampers
- Detection of the damper position "CLOSED" and "OPEN"
- Approved up to SIL2 to IEC/EN 61508
- Integrated AS-Interface
- Monitoring of signal reception
- Master can be used to monitor the run time of the damper blade actuator
- Connection with terminals
- 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<sub>mod</sub> 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
<b>Inputs</b>	
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
<b>Outputs, PNP</b>	
Galvanically isolated	–
Max. current load per output	400 mA per output/400 in total (from AS-i)
<b>Outputs, relay</b>	
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 <sup>2</sup> (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

## B24C – Communication module

### Application

- SLC technology
- The BC 24 module is used for the control of damper actuators
- Power supply and communication via an interchangeable two core cable of a SLC24-16B system.
- A thermoelectric release mechanism and a duct smoke detector can be connected without the need for additional devices

### Use

B24C - BC24-E communication module BV-Control AG

Description	B24C
Nominal voltage	via SLC control unit
Power consumption	1 W
Connections	Plug connections, screw terminals
Damper power supply	24 V
Ambient temperature	-20 to 50 °C
Storage temperature	-20 to 80 °C
Humidity	95 % rh, no condensation
Weight	255 g
B × H × T	114 × 153 × 54 mm
Max. impulse voltage	2.5 kV (EN60730-1)





**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**

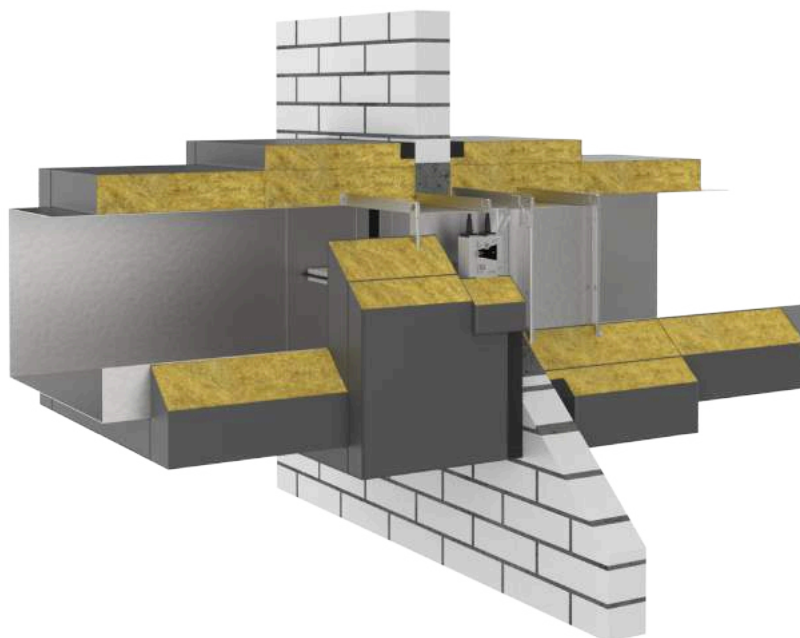
B24D – AGNOSYS BRM10FST communication module

B230D – AGNOSYS BRM10F communication module

Description	B24D/B230D
Nominal voltage	18 – 32 V DC Typ 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

## Special design and planning features

### Damper with the required insulation



To achieve the performance of a multi-leaf damper, thermal insulation must be provided all around the damper. The execution is described in general terms in the installation and operating instructions in chapter 5.12.



## Nomenclature

**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<sub>v</sub>** [m<sup>3</sup>/h]; [l/s]

Volume flow rate

**L<sub>wa</sub>** [dB(A)]

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

**A** [m<sup>2</sup>]

Free cross section

**Δp<sub>t</sub>** [Pa]

Total differential pressure

**v** [kg]

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