



Spring return actuator
BLF230-T TR/
BLF24-T-ST TR



Spring return actuator
BFL230-T TR/BFL24-T-ST TR/
BFN230-T TR/BFN24-T-ST TR



Spring return actuator
BF230-T TR/BF24-T-ST TR



Explosion-proof actuator
ExMax-15-BF TR/
RedMax-15-BF TR



Limit switch/Limit switch
(explosion-proof)

Attachments for fire dampers

Limit switches/ spring return actuators



Attachments for fire dampers

- Limit switch
- Explosion-proof limit switch
- Spring return actuator B(L)F230-T(-2) TR / BFL230-T TR / BFN230-T TR:
optional duct smoke detector
- Spring return actuator B(L)F24-T-ST(-2) TR / BFL24-T-ST TR / BFN24-T-ST TR:
with optional duct smoke detector, with optional power supply unit
BKN230-24-C-MP, or with power supply unit BKN230-24-C-MP
and control module BKS24-1B TR
- Explosion-proof spring return actuator ExMax-15-BF TR / RedMax-15-BF TR
- Spring return actuator Joventa SFR1.90 T / SFR2.90 T / SFR1.90 T SLC

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Description

General information

Any attachments are to be defined with the order code of the fire damper.

Attachments for fire dampers

Order code detail	Attachments	Type	Type of fire damper
Z01	Limit switch	Limit switch for damper blade position CLOSED	① ② ③ ④ ⑤
Z02	Limit switch	Limit switch for damper blade position OPEN	① ② ③ ④ ⑤
Z03	Limit switch	Limit switches for damper blade positions CLOSED and OPEN	① ② ③ ④ ⑤
Z01EX	Limit switch (explosion-proof)	Limit switch (explosion-proof) for damper blade position CLOSED	① ③
Z02EX	Limit switch (explosion-proof)	Limit switch (explosion-proof) for damper blade position OPEN	① ③
Z03EX	Limit switch (explosion-proof)	Limit switches (explosion-proof) for damper blade positions CLOSED and OPEN	① ③
Z08	Spring return actuator	BLF230-T TR	⑤
Z09	Spring return actuator	BLF24-T-ST TR	⑤
Z43	Spring return actuator	BF230-T TR, BF230-T-2 TR ¹ , BLF230-T TR ² , BFN230-T TR, BFL230-T TR	① ② ③ ④
Z45	Spring return actuator	BF24-T-ST TR, BF24-T-ST-2 TR ¹ , BLF24-T-ST TR ² , BFN24-T-ST TR, BFL24-T-ST TR	① ② ③ ④
ZEX1	Spring return actuator (explosion-proof)	ExMax-15-BF TR	① ③ ④
ZEX3	Spring return actuator (explosion-proof)	RedMax-15-BF TR	① ③ ④
Z43RM	Spring return actuator	BF230-T TR, BLF230-T TR ² , BFN230-T TR, BFL230-T TR with factory mounted and pre-wired duct smoke detector RM-O-3-D	① ②
Z45RM	Spring return actuator	BF24-T-ST TR, BLF24-T-ST TR ² , BFN24-T-ST TR, BFL24-T-ST TR with factory mounted and pre-wired duct smoke detector RM-O-3-D	① ②
Z60	Spring return actuator	BF24-T-ST TR, BFN24-T-ST TR, BFL24-T-ST TR with power supply unit BKN230-24-C-MP	①
Z61	Spring return actuator	BF24-T-ST TR, BFN24-T-ST TR, BFL24-T-ST TR with power supply unit BKN230-24-C-MP and control module BKS24-1B TR	①
Z64	Spring return actuator	Joventa SFR1.90 T	①
Z65	Spring return actuator	Joventa SFR2.90 T	①
Z66	Spring return actuator	Joventa SFR1.90 T SLC	①

① FK-EU

② FKS-EU

③ FKR-EU

④ FKRS-EU

⑤ KU-K30

¹Only with FKR-EU

²Only with FKS-EU

Description



Limit switch

Application

- Limit switches with volt-free contacts can indicate the damper blade position.
- Up to the maximum switch rating, relays or indicator lights for fire alarm systems can be used
- One limit switch each is required for damper blade positions OPEN and CLOSED
- Fire dampers with a fusible link can be supplied with one or two limit switches; the switches can also be fitted later

/ Z01
/ Z02
/ Z03

Order code detail

Attachments	Order code
Limit switch for damper blade position CLOSED	Z01
Limit switch for damper blade position OPEN	Z02
Limit switches for damper blade positions CLOSED and OPEN	Z03

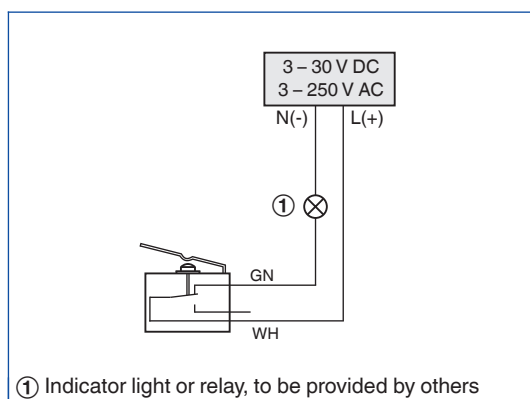
Technical data

Limit switch

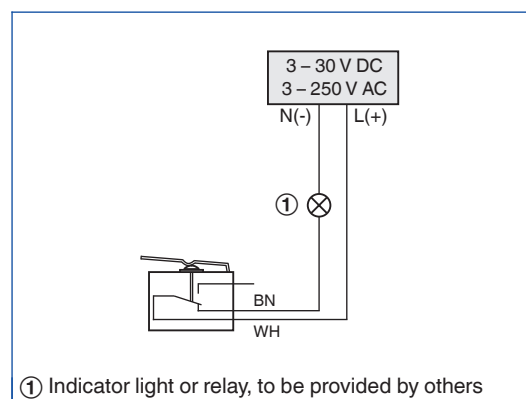
Connecting cable length/cross section	1 m/3 × 0.34 mm ²
Protection level	IP 66
Type of contact	1 changeover contact, gold-plated
Maximum switching current	0.5 A
Maximum switching voltage	30 V DC, 250 V AC
Minimum switch rating	5 mA, 3 V
Contact resistance	Approx. 30 mΩ

Wiring examples

Limit switch not actuated



Limit switch actuated



Description



Limit switch/Limit switch (explosion-proof)

Application

- According to declaration of conformity TÜV 11 ATEX 085420 X, explosion-proof limit switches with volt-free contacts can indicate the damper blade position
- Up to the maximum switch rating, relays or indicator lights for fire alarm systems can be used
- The limit switches must be connected in a separately approved casing with a type of protection according to EN 60079-0
- One limit switch each is required for damper blade positions OPEN and CLOSED
- Fire dampers with a fusible link can be supplied with one or two limit switches; the switches can also be fitted later
- For details on explosion-proof constructions see the operating manuals for explosion-proof fire dampers Type FK-EU and Type FKR-EU.

/ Z01EX
/ Z02EX
/ Z03EX
7

Order code detail

Attachments	Order code
Limit switch (explosion-proof) for damper blade position CLOSED	Z01EX
Limit switch (explosion-proof) for damper blade position OPEN	Z02EX
Limit switches (explosion-proof) for damper blade positions CLOSED and OPEN	Z03EX



ATEX certification

ATEX areas of application

Release mechanism	Marking	Ambient temperature	Maximum airflow velocity
Fusible link and limit switch	II 2D c T80 °C II 2G c IIC T6	-20 to 40 °C	8 m/s

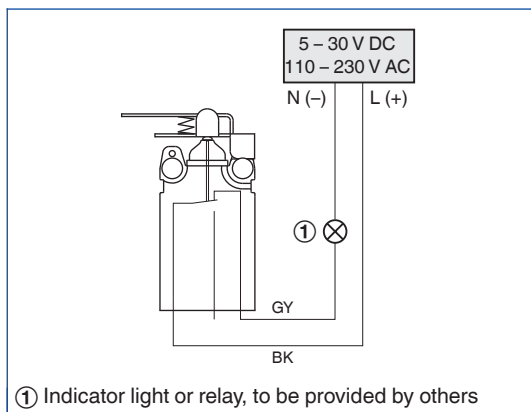
Technical data

Limit switch (explosion-proof)

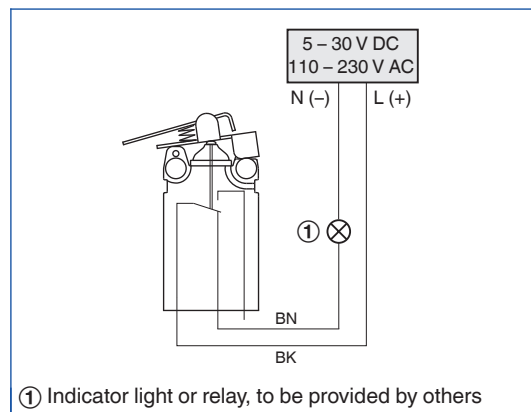
Connecting cable length/cross section	1 m/3 x 0.75 mm ²
Protection level	IP 66
Type of contact	1 changeover contacts
Switch rating, resistive load	250 V AC/5 A, 250 V DC/0,4 A, 30 V AC/DC/7 A
Switch rating, inductive load	250 V AC/3 A, 250 V DC/0,03 A, 30 V AC/DC/5 A

Wiring examples

Limit switch not actuated



Limit switch actuated



1 Description



Spring return actuator
BLF230-T TR



Spring return actuator
BFL230-T TR/BFL24-T-ST
TR/BFN230-T TR/
BFN24-T-ST TR



Spring return actuator
BF230-T TR

/ Z43
/ Z08

Order code detail

Application

- An open/close actuator allows for the remote control of the fire damper and/or release by a suitable duct smoke detector
- If the supply voltage fails, or with thermoelectric release, the damper closes (power off to close)
- Fire dampers with spring return actuators can be functionally checked OPEN/CLOSED/OPEN
- Ambient temperature, normal operation -30 to 50 °C
- The actuator includes two limit switches
- A conversion kit is available for adding an actuator to the standard construction (except for Type KU-K30)

Attachments	Order code
BLF230-T TR BFL230-T TR BFN230-T TR BF230-T TR BF230-T-2 TR ¹	Z43
BLF230-T TR ²	Z08

Spring return actuator BLF for FKS-EU.

Spring return actuator BFL for FKRS-EU and FK-EU in sizes B x H = 200 x 200 – 400 x 300 mm.

Spring return actuator BFN for FKR-EU of nominal width 315 – 400 mm, and for FK-EU in sizes B x H = 401 x 301 – 1200 x 600 mm.

Spring return actuator BF for FKR-EU from nominal width 450 mm, and for FK-EU in sizes B x H = 1201 x 601 – 1500 x 800 mm.

¹Only with FKR-EU

²For KU-K30

Technical data

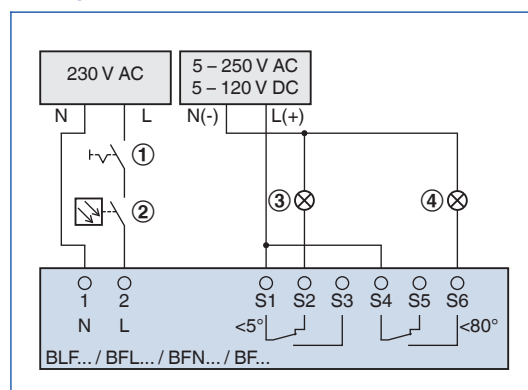
Spring return actuator

Type		BLF230-T TR	BFL230-T TR	BFN230-T TR	BF230-T TR BF230-T-2 TR ¹
Supply voltage		230 V AC, 50/60 Hz			
Functional range		198 – 264 V AC			
Power rating	Spring compression	6 W	3.5 W	5 W	8.5 W
	Hold position	3 W	1.2 W	2.1 W	3 W
	Rating	7 VA	6.5 VA	10 VA	11 VA
Running time	Actuator / spring return	40 – 75 s/20 s	<60 s/<20 s	<60 s/<20 s	<120 s approx. 16 s
Limit switch	Type of contact	2 changeover contacts			
	Switching voltage	5 – 120 V DC/5 – 250 V AC			
	Switching current	1 mA – 3 A	1 mA – 3 (0.5 inductive) A		1 mA – 6 A
	Contact resistance	<100 mΩ	<1 Ω (when new)		<100 mΩ
IEC protection class		II (protective insulation)			
Protection level		IP 54			
EC conformity		EMC to 2014/30/EU, low voltage to 2014/35/EU			
Connecting cable	Actuator	1 m/2 × 0.75 mm ² (free of halogens)			
	Limit switch	1 m/6 × 0.75 mm ² (free of halogens)			

¹Only with FKR-EU

Wiring example

Spring return actuator in CLOSED position



Colour codes of BFN and BFL actuators:

- S1 = violet
- S2 = red
- S3 = white
- S4 = orange
- S5 = pink
- S6 = grey

- ① Switch for opening and closing, to be provided by others
- ② Optional duct smoke detector, e.g. RM-O-3-D or RM-O-VS-D
- ③ Indicator light for CLOSED position, to be provided by others
- ④ Indicator light for OPEN position, to be provided by others

Description



Spring return actuator
BLF-24-T-ST TR



Spring return actuator
BFL230-T TR/
BFL24-T-ST TR/BFN230-T
TR/BFN24-T-ST TR



Spring return actuator
BF24-T-ST TR

/ Z45
/ Z09

Order code detail

Application

- An open/close actuator allows for the remote control of the fire damper and/or release by a suitable duct smoke detector
- If the supply voltage fails, or with thermoelectric release, the damper closes (power off to close)
- Fire dampers with spring return actuators can be functionally checked OPEN/CLOSED/OPEN
- Ambient temperature, normal operation -30 to 50 °C
- The actuator includes two limit switches
- The connecting cables of the 24 V spring return actuator are fitted with plugs. This ensures quick and easy connection to the TROX AS-i bus system
- A conversion kit is available for adding an actuator to the standard construction (except for Type KU-K30)
- Safety transformers must be used.

Attachments	Order code
BLF24-T-ST TR BFL24-T-ST TR BFN24-T-ST TR BF24-T-ST TR BF24-T-ST-2 TR ¹	Z45
BLF24-T-ST TR ²	Z09

Spring return actuator BLF for FKS-EU.

Spring return actuator BFL for FKRS-EU and FK-EU in sizes $B \times H = 200 \times 200 - 400 \times 300$ mm.

Spring return actuator BFN for FKR-EU of nominal width 315 – 400 mm, and for FK-EU in sizes $B \times H = 401 \times 301 - 1200 \times 600$ mm.

Spring return actuator BF for FKR-EU from nominal width 450 mm, and for FK-EU in sizes $B \times H = 1201 \times 601 - 1500 \times 800$ mm.

¹Only with FKR-EU

²For KU-K30

Technical data

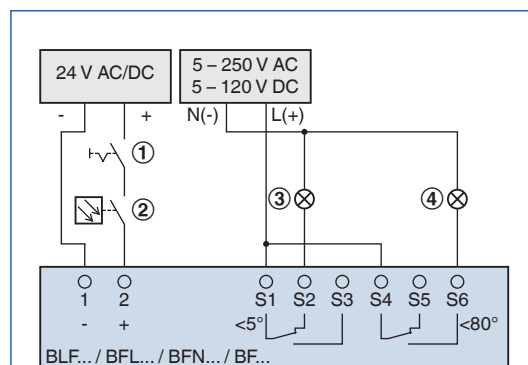
Spring return actuator

Type		BLF24-T-ST TR	BFL24-T-ST TR	BFN24-T-ST TR	BF24-T-ST TR BF24-T-ST-2 TR ¹
Supply voltage		24 V AC/DC, 50/60 Hz			
Functional range		19.2 – 28.8 V AC 21.6 – 28.8 V DC			
Power rating	Spring compression	5 W	2.5 W	4 W	7 W
	Hold position	2.5 W	0.8 W	1.4 W	2 W
	Rating	7 VA	4 VA	6 VA	10 VA
Running time	Actuator / spring return	40 – 75 s/20 s	<60 s/20 s	<60 s/20 s	<120 s/16 s
Limit switch	Type of contact	2 changeover contacts			
	Switching voltage	5 – 120 V DC/5 – 250 V AC			
	Switching current	1 mA – 3 A	1 mA – 3 (0.5 inductive) A		1 mA – 6 A
	Contact resistance	<100 mΩ	<1 Ω (when new)		<100 mΩ
IEC protection class		III (protective extra-low voltage)			
Protection level		IP 54			
EC conformity		EMC to 2014/30/EU, low voltage to 2014/35/EU			
Connecting cable	Actuator	1 m/2 × 0.75 mm ² (free of halogens)			
	Limit switch	1 m/6 × 0.75 mm ² (free of halogens)			

¹Only with FKR-EU

Wiring example

Spring return actuator in CLOSED position



Colour codes of BFN and BFL actuators:

- 1 = black
- 2 = red (BFN / BFL) or white (BF / BLF)
- S1 = violet
- S2 = red
- S3 = white
- S4 = orange
- S5 = pink
- S6 = grey

- ① Switch for opening and closing, to be provided by others
- ② Optional duct smoke detector, e.g. RM-O-3-D or RM-O-VS-D
- ③ Indicator light for CLOSED position, to be provided by others
- ④ Indicator light for OPEN position, to be provided by others

1 Description



Duct smoke detector
RM-O-3-D

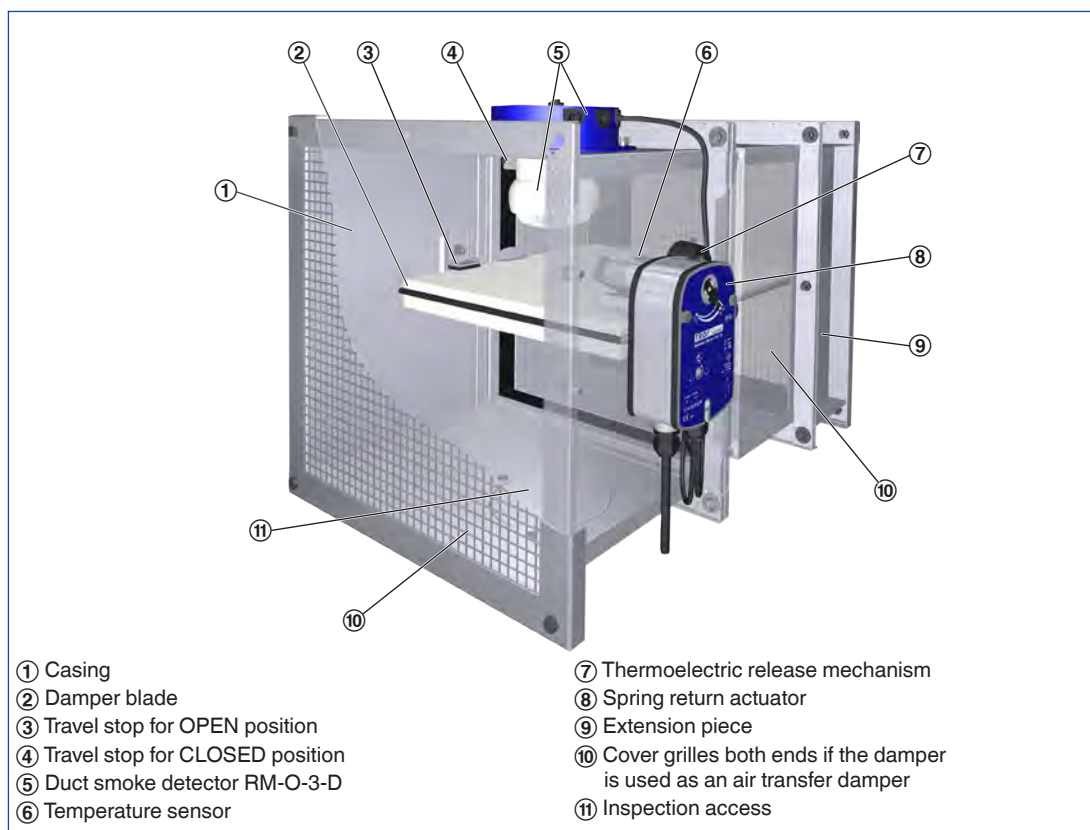
Application

- An open/close actuator allows for remote control of the fire damper and/or release by a suitable duct smoke detector
- When combined with a spring return actuator, a duct smoke detector RM-O-3-D and cover grilles on both ends, this is an air transfer damper with general building inspectorate licence Z-6.50-2031 (FK-EU) or Z-6.50-2231 (FKS-EU)
- The duct smoke detector RM-O-3-D is fitted in the upper inspection access opening of the FK-EU, or in the lower inspection access opening of the FKS-EU, and hence, just as the spring return actuator, an integral part of the fire damper.

For details on the RM-O-3-D duct smoke detector see:

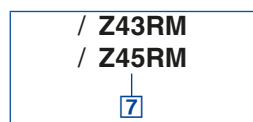
- Operating and installation manual M375DD8
- General building inspectorate licence Z-78.6-125

Schematic illustration of FK-EU with Z43RM / Z45RM



- | | |
|-----------------------------------|---|
| ① Casing | ⑦ Thermolectric release mechanism |
| ② Damper blade | ⑧ Spring return actuator |
| ③ Travel stop for OPEN position | ⑨ Extension piece |
| ④ Travel stop for CLOSED position | ⑩ Cover grilles both ends if the damper is used as an air transfer damper |
| ⑤ Duct smoke detector RM-O-3-D | ⑪ Inspection access |
| ⑥ Temperature sensor | |

Technical data



Order code detail

Attachments	Order code
BLF230-T TR, BFN230-T TR, BFL230-T TR, BF230-T TR with factory mounted duct smoke detector RM-O-3-D	Z43RM
BF24-T-ST TR, BFN24-T-ST TR, BFL24-T-ST TR, BLF24-T-ST TR with factory mounted duct smoke detector RM-O-3-D	Z45RM

Spring return actuator BLF for FKS-EU.

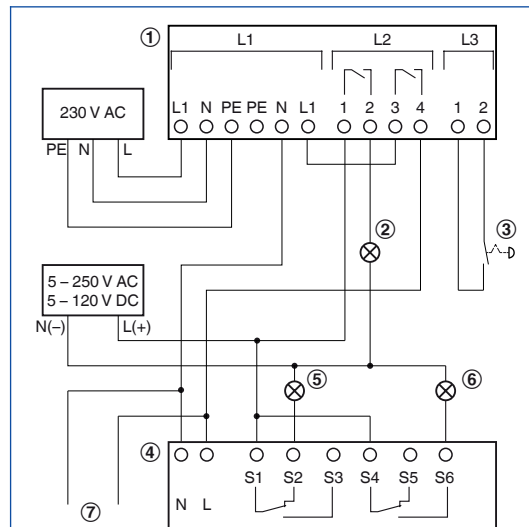
Spring return actuator BFL for FK-EU in sizes B × H = 200 × 200 – 400 × 300 mm.

Spring return actuator BFN for FK-EU in sizes B × H = 401 × 301 – 1200 × 600 mm.

Spring return actuator BF for FK-EU in sizes B × H = 1201 × 601 – 1500 × 800 mm.

Wiring examples

Z43RM

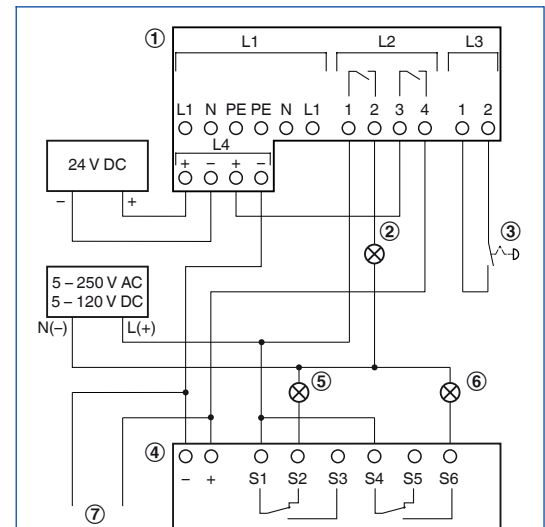


Colour codes of BFN and BFL actuators:

- L = brown
- N = blue
- S1 = violet
- S2 = red
- S3 = white
- S4 = orange
- S5 = pink
- S6 = grey

- ① Duct smoke detector RM-O-3-D
- ② External contamination indicator (by others)
- ③ External test/reset push button
- ④ Fire damper/smoke protection damper release mechanism
- ⑤ Indicator for CLOSED damper blade
- ⑥ Indicator for OPEN damper blade
- ⑦ Additional release mechanism or fan

Z45RM



Colour codes of BFN and BFL actuators:

- 1 = black
- 2 = red (BFN / BFL) or white (BF / BLF)
- S1 = violet
- S2 = red
- S3 = white
- S4 = orange
- S5 = pink
- S6 = grey

- ① Duct smoke detector RM-O-3-D
- ② External contamination indicator (by others)
- ③ External test/reset push button
- ④ Fire damper/smoke protection damper release mechanism
- ⑤ Indicator for CLOSED damper blade
- ⑥ Indicator for OPEN damper blade
- ⑦ Additional release mechanism or fan

Note

For more details and technical data see 'Special information – Spring return actuator' and the operating manual for the RM-O-3-D duct smoke detector.

1 Description

Application

- BKN230-24-C-MP can be used as a local power supply unit for the 24 V spring return actuator
- Signalling of the OPERATION and SAFETY blade positions (switches on the spring return actuator) via a 2-wire connection to the central system
- The same connection is used to send ON-OFF commands via BKN230-24-C-MP to the actuator
- BKS24-1B TR receives, via the BKN230-24-C-MP communication and power supply unit, information on the condition of FK-EU and sends commands to FK-EU
- LEDs on the device indicate the damper blade positions as well as any malfunctions
- Volt-free contacts enable integration into higher-level systems (indication of damper blade end positions, alarms, fan release, etc.)
- The test/reset push button is used to start a functional test of fire dampers

/ Z60
 / Z61

Order code detail

Attachments	Order code
24 V spring return actuator with factory mounted communication and power supply unit BKN230-24-C-MP	Z60
24 V spring return actuator with factory mounted communication and power supply unit BKN230-24-C-MP and control module BKS24-1B TR*	Z61

Spring return actuator BFL for FK-EU in sizes B × H = 200 × 200 – 400 × 300 mm.
 Spring return actuator BFN for FK-EU in sizes B × H = 401 × 301 – 1200 × 600 mm.
 Spring return actuator BF for FK-EU in sizes B × H = 1201 × 601 – 1500 × 800 mm.
 *BKS24-1B TR is supplied separately
 More technical data upon request

Description

Application

- An open/close actuator allows for the remote control of the fire damper and/or release by a suitable duct smoke detector
- If the supply voltage fails, or with thermoelectric release, the damper closes (power off to close)
- Fire dampers with spring return actuators can be functionally checked OPEN/CLOSED/OPEN
- Ambient temperature, normal operation -20 to 50 °C
- The actuator includes two limit switches
- Attachment SFR 1.90 T SLC allows for signalling using an SLC bus (with control module by others)

/ Z64
/ Z65
/ Z66

Order code detail

Attachments	Order code
Joventa SFR1.90 T (24 V)	Z64
Joventa SFR2.90 T (230 V)	Z65
Joventa SFR1.90 T SLC (24 V)	Z66

Technical data

Actuator	SFR 1.90	SFR 2.90	SFR 1.90 SLC*
Torque	16 Nm		
Actuator running time to OPEN	90 – 120 s		90 s
Spring return time to CLOSE	10 s		
Nominal voltage	24 V AC/DC	230 V AC	24 V from control module BSLC 24..
Frequency	50 – 60 Hz		50 Hz
Power consumption when running	10 W	8 W	5.6 W
Power consumption when idle	4 W	4.5 W	1.3 W
Rating	18 VA / 4 A @ 2 ms	13 VA / 0.3 A @ 2 ms	8.5 VA / 1.3 A @ 2 ms
Weight	2.7 kg	2.9 kg	2.7 kg
Auxiliary switch	3 (1.5) A, 230 V		From control module BSLC 24..
IEC protection class	II (protective insulation)		
Protection level	IP 54		
Cable glands	PG11		
Operating temperature	-20 to 50 °C		
Humidity	5 – 95% rh		

*Only when combined with JSJC-B control and monitoring module (by others)

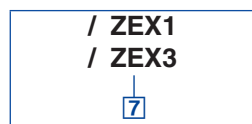
1 Description



Explosion-proof actuator
ExMax-15-BF TR/
RedMax-15-BF TR

Application

- In supply air and extract air systems of areas with potentially explosive atmospheres an open/close actuator allows for the remote control of the fire damper and/or release by a suitable duct smoke detector
- If the supply voltage fails, or with thermoelectric release, the damper closes (power off to close)
- Fire dampers with spring return actuators can be functionally checked
OPEN/CLOSED/OPEN
- The actuator includes two limit switches
- For details on explosion-proof constructions see the operating manuals for explosion-proof fire dampers Type FK-EU, Type FKR-EU and Type FKRS-EU.
- The electrical connection is made in the explosion-proof terminal box
- Release temperature of the spring return actuator is 72 °C



Order code detail

Attachments	Order code
ExMax-15-BF TR	ZEX1
RedMax-15-BF TR	ZEX3



ATEX certification

ATEX areas of application

Attachments	Release mechanism	Marking	Ambient temperature	Maximum airflow velocity
ExMax-15-BF TR	ExPro-TT	II 2D c T80 °C II 2G c IIC T6	-40 to 40 °C	10 m/s
RedMax-15-BF TR		II 3D c T80 °C II 3G c IIC T6		

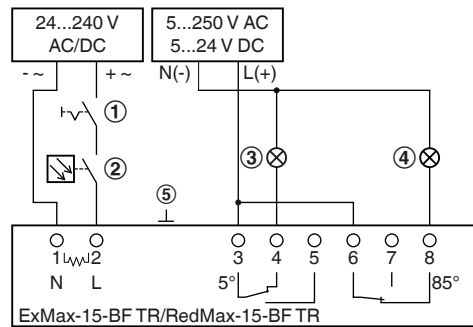
Technical data

Spring return actuator ExMax-15-BF TR/RedMax-15-BF TR

Supply voltage	24 – 240 V AC/DC, ±10 %, self-adjusting 50 – 60 Hz ±20 %	
Power rating	Max. 20 W blocking, approx. 16 W heating operation	
Switch-on current (< 1 s)	2 A	
Running time	Actuator / spring return	Approx. 30 s/approx. 10 s
Limit switch	Type of contact	2 changeover contacts
	Switching voltage	230 V AC/24 V DC
	Switching current	0.25 A/3 A
IEC protection class	I (protective earth)	
Protection level	IP 66	
EC conformity	EMC to 2014/30/EU, low voltage to 2014/35/EU, ATEX to 2014/34/EU	

Wiring example

ExMax/RedMax actuator, CLOSED



- ① Switch for opening and closing, to be provided by others
- ② Optional duct smoke detector, e.g. RM-O-3-D or RM-O-VS-D (installation in a safe area)
- ③ Indicator light for CLOSED position, to be provided by others

- ④ Indicator light for OPEN position, to be provided by others
- ⑤ Terminal for equipotential bonding, 4 mm²
The voltage for the auxiliary switches must be the same as the supply voltage, and it must be secured with the same fuse.

Fire dampers

Basic information and nomenclature



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

Fire dampers

Basic information and nomenclature

Principal dimensions

Rectangular fire dampers

Circular fire dampers

B [mm]
Width of the fire damper

Nominal size [mm]
Diameter of the fire damper

H [mm]
Height of the fire damper

L [mm]
Length of the fire damper

Nomenclature

L [mm]
Length of the fire damper

Δp_{st} [Pa]
Static differential pressure

\dot{V} [m³/h] and [l/s]
Volume flow rate

v [m/s]
Airflow velocity based on the upstream cross section (B × H or diameter)

L_{WA} [dB(A)]
A-weighted sound power level of air-regenerated noise for the fire damper

A [m²]
Free area

ζ
Resistance coefficient (fully ducted)

Wiring

Colour codes according to IEC 60757

Code	Colour
BK	black
BN	brown
RD	red
Upper floor	orange
YE	yellow
GN	green
BU	blau

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 fire dampers. The volume flow rates for all available dimensions and nominal sizes are provided based on a particular differential pressure and a given sound power level (35 or 45 dB(A)). 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.

