



Fire damper actuators –  
Selection and integration.



## Protecting people and tangible assets responsibly.

Fires represent the greatest potential threat to people and tangible assets in buildings. Efficient fire protection saves lives in case of emergency, helps minimise property damage and secures the continued operation of companies.

The best protection against the spread of fire and smoke through the air ducts is provided by the motorised fire dampers to form fire compartments.

In case of fire, Belimo safety actuators for fire dampers automatically move into their safety positions and keep the dampers closed during the fire.

# More performance – More value – more safety.

## Safety is the top priority

- Responsible fire protection requires practical solutions with suitable products
- As a rule, the owner and/or the operator are responsible for proper functioning of the fire protection systems during the entire building life cycle
- The prescribed inspections must be carried out and logged periodically

## Standards and state-of-the-art

- The “state-of-the-art technology”<sup>1)</sup> must be considered in addition to the technical regulations (e.g. standards).
- In Europe, fire dampers are manufactured according to the product standard EN 15650, checked with fire resistance testing pursuant to EN 1366-2 and classified according to EN 13501-3

## Motorised fire dampers

In case of fire, they are moved into the safety position (closed) by means of the spring energy of the fire damper actuator when

- the operating temperature is exceeded in the duct or in the environment
- triggered by a smoke detector
- the supply voltage fails
- the air conditioning plant is shutdown
- the fire alarm system triggers.

In case of fire, the Safety Position Lock™ function keeps the motorised fire dampers in the safety position.

## Reliability and profitability

Customers benefit from the following advantages:

- Maximum safety through reliable closing and holding of the damper in the safety position
- The possibility of scenario control by means of intelligent controls and the integration of sensors
- The protection of the infrastructure in the event of a power failure through automatic closing of the fire damper by means of the spring energy of the actuator
- Central monitoring and automated function tests
- Reduced maintenance and operating costs

### Belimo offers more!

As a reliable supplier of tested fire damper actuators, we provide you with safety through:

- Long years of experience
- Market-appropriate, proven solutions
- Tested Swiss quality
- Local, experienced contacts
- Fire protection solutions which are oriented to the building life cycle
- A complete product range
- The maximum in delivery reliability

1) Further literature on the subject:



– Expert report «Motorisierte Brandschutzklappen und die allgemein anerkannten Regeln der Technik» from the attorneys Heiermann Franke Knipp, Essen (DE), 2002

– Technical Paper «The role of motorised damper control in legislation» by Peter E. Jackman, International Fire Consultants Ltd., Great Britain, 2004

# Full product range, proven motorisation solutions.



Belimo supplies cost-effective and easy-to-integrate solutions for the motorisation of fire dampers.



Type	BFL	BFN
<b>Torque</b>	4 Nm 3 Nm	9 Nm 7 Nm
<b>Power consumption</b>		
<b>AC / DC 24 V</b>	In operation 2.5 W / at rest 0.8 W	In operation 4 W / at rest 1.4 W
<b>AC 230 V</b>	In operation 3.5 W / at rest 1.1 W	In operation 5 W / at rest 2.1 W
<b>Angle of rotation</b>	95°	95°
<b>Running time</b>	<60 s 20 s	<60 s 20 s
<b>Spindle driver</b>	Form fit 12x12 mm	Form fit 12x12 mm
<b>Thermoelectric tripping device (-T)</b>		
<b>Customer benefits</b>	<ul style="list-style-type: none"> <li>• Optimised actuator with slim design for small and medium fire dampers</li> <li>• Simple and fast installation</li> <li>• In case of fire, the patented Safety Position Lock™ solution reliably keeps the fire damper closed</li> </ul>	<ul style="list-style-type: none"> <li>• Powerful actuator for medium and large fire dampers in flat design</li> <li>• Simple and fast installation</li> <li>• In case of fire, the patented Safety Position Lock™ solution reliably keeps the fire damper closed</li> </ul>

Note: The fire damper actuators are only supplied to fire damper manufacturers.



Type	BF	BFG
Torque	18 Nm 12 Nm	11 Nm 8.5 Nm
Power consumption		
AC / DC 24 V	In operation 7 W / at rest 2 W	In operation 7.5 W / at rest 2 W
AC 230 V	In operation 8.5 W / at rest 3 W	In operation 9.5 W / at rest 3.5 W
Angle of rotation	95°	180°
Running time	<120 s ~16 s	<120 s ~20 s
Spindle driver	Form fit 12x12 mm	Form fit 10x10 mm
Thermoelectric tripping device (-T)		
Customer benefits	<ul style="list-style-type: none"> <li>Well established actuator for large fire dampers with high torque requirements</li> <li>In case of fire, the Safety Position Lock™ solution reliably keeps the fire damper closed</li> </ul>	Well established actuator for medium and large fire dampers with 180° (with linkage)



# Compact and powerful due to innovative technology.

## Good visible position indication

## Casing made from engineering premium polymer

- Fulfills the requirements of EN 15650
- Suitable for fire safety applications
- Halogen-free flame retardant
- High glow wire resistance

## Integrated auxiliary switches

- Potential-free
- Fixed switching points

## Form fit made of steel

- Safe connection to damper spindle

## Steel hollow pillars

- Simple and fast installation

## Safety Position Lock™

- Reliably holds the fire damper in the safety position in case of fire
- Patented technical solution
- Integrated as standard
- Not resettable



Normal operation



Fire condition

## Spring assembly made of steel

- Secure closing in case of fire

## Steel gear-box

- Robust
- Fire-resistant

### General Information:

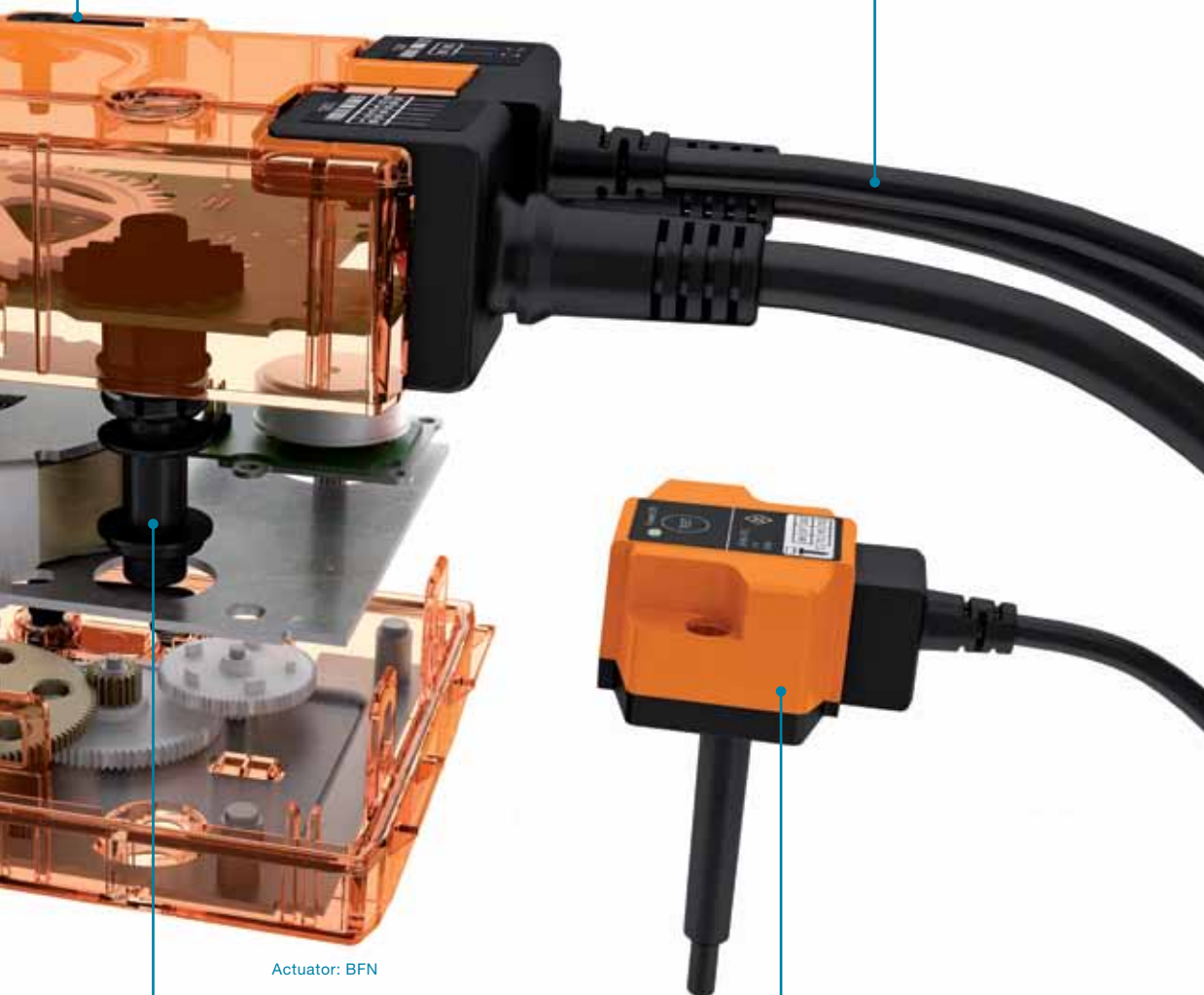
- 100% testing of the functions of all actuators prior to delivery
- 60,000 safety positions guaranteed under nominal load
- Controlled closing of the fire damper reduces loading of the ventilation duct
- Reduction of power consumption in the rest position (open)
- Maintenance-free

### Position lock

- Position lock of manual override control
- Position lock releases when supply voltage is applied

### Connecting cable

- Halogen-free
- Optional with plug
- With colour coding



Actuator: BFN

### Manual override control

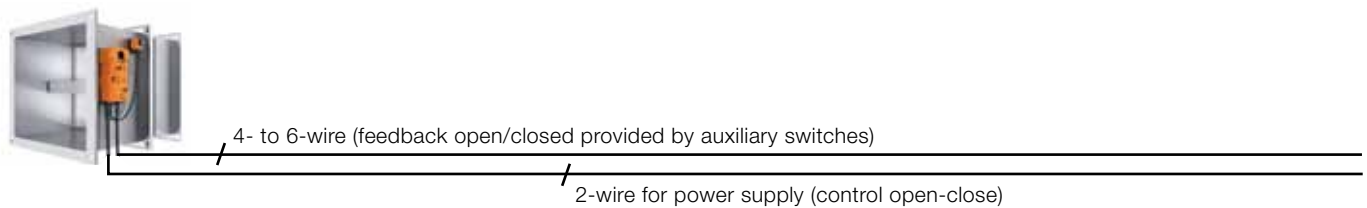
- Integrated overload protection
- Freewheel function prevents blocking by hand crank

### Thermoelectric tripping device

- Protected function of supply line
- LED status indicator
- Local testing
- Tested according to ISO 10294-4

# Conventional and digital control and monitoring.

## Conventional control with position feedback



### Actuator types

BFL, BFN,  
BF, BFG:  
24, 24-T, 230,  
230-T

-T: Thermoelectric  
tripping device

### Connection to control cabinet

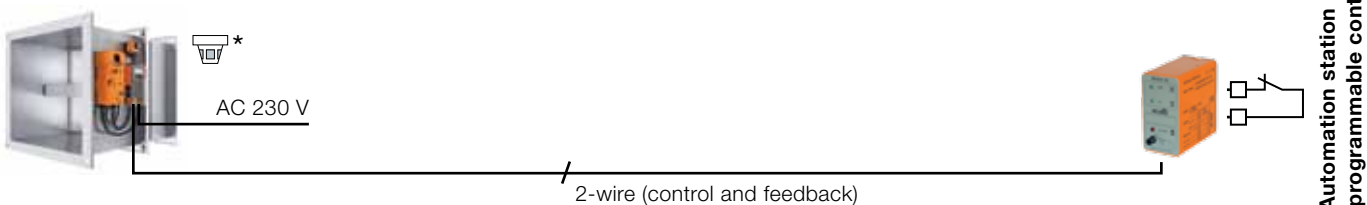
- Cables for motors and auxiliary switches wired directly to control cabinet
- Feedback of damper position by means of auxiliary switches

Note:

For 24 V actuators, the voltage drop over long lines should be noted.

The voltage at the actuator must be within the tolerance stated in the data sheet.

## Control and monitoring via SBS-Control



\*Optional: smoke detector with potential-free contact

### Actuator types

BFL, BFN,  
BF, BFG:  
24-T-ST, 24-ST

-T: Thermoelectric  
tripping device  
-ST: With plug

### Connection to automation station

#### Communication and power supply unit BKN230-24



- Decentralised power supply unit for 24 V fire damper actuators
- Local power supply AC 230 V
- Integrated LED status indicator
- Connection for a smoke detector contact and/or a thermoelectric tripping device

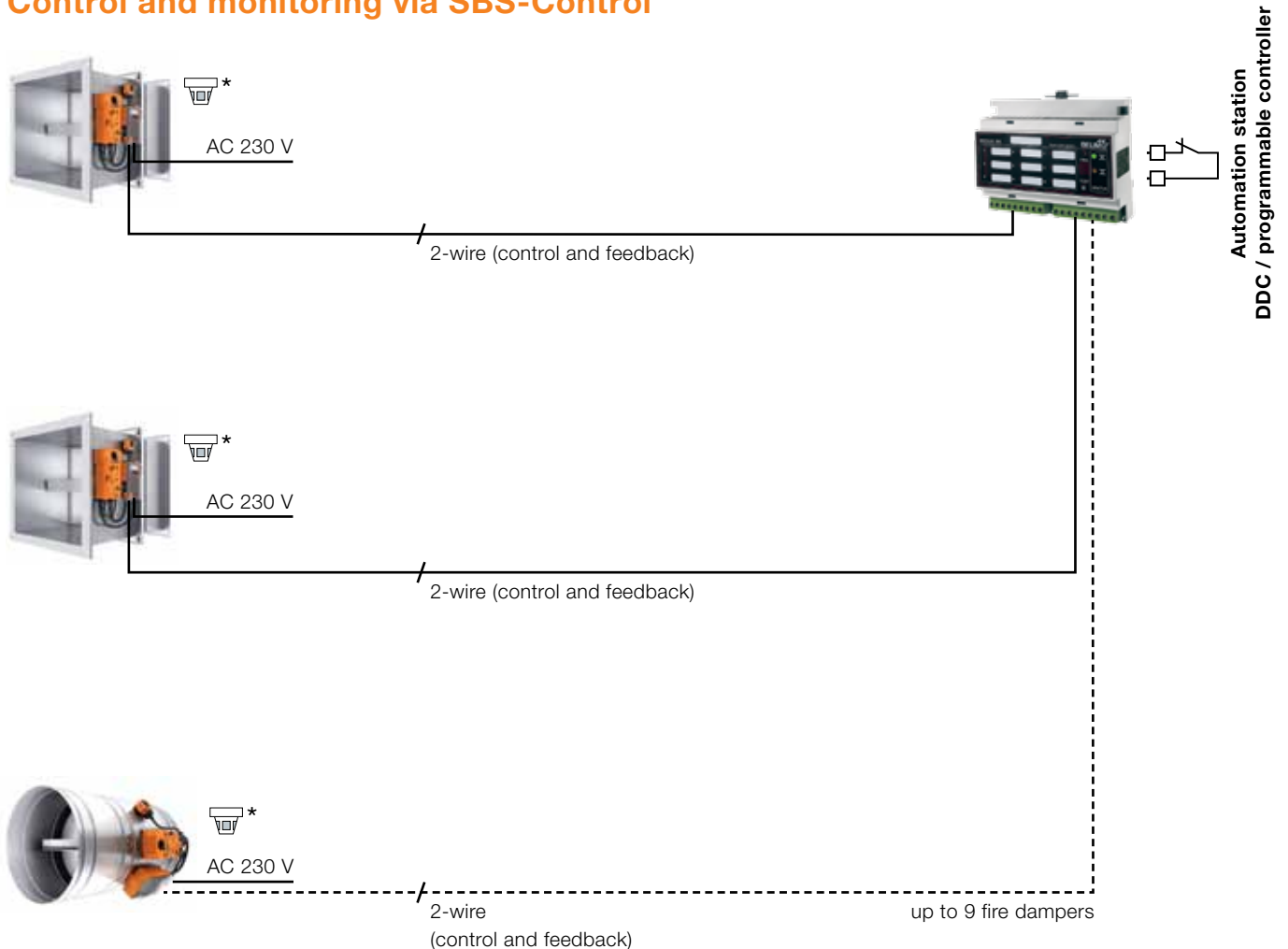
#### Communication and control unit BKS24-1B and plug socket ZSO-11



- For controlling and monitoring of a fire damper
- 3 LEDs for indicating operating statuses and faults
- Function test of fire damper actuator
- Potential-free auxiliary contacts for integration into system



## Control and monitoring via SBS-Control



\*Optional: smoke detector with potential-free contact

### Actuator types

BFL, BFN,  
BF, BFG:  
24-T-ST, 24-ST

-T: Thermoelectric  
tripping device  
-ST: With plug

### Connection to automation station

#### Communication and power supply unit BKN230-24



- Decentralised power supply unit for 24 V fire damper actuators
- Local power supply AC 230 V
- Integrated LED status indicator
- Connection for a smoke detector contact and/or a thermoelectric tripping device

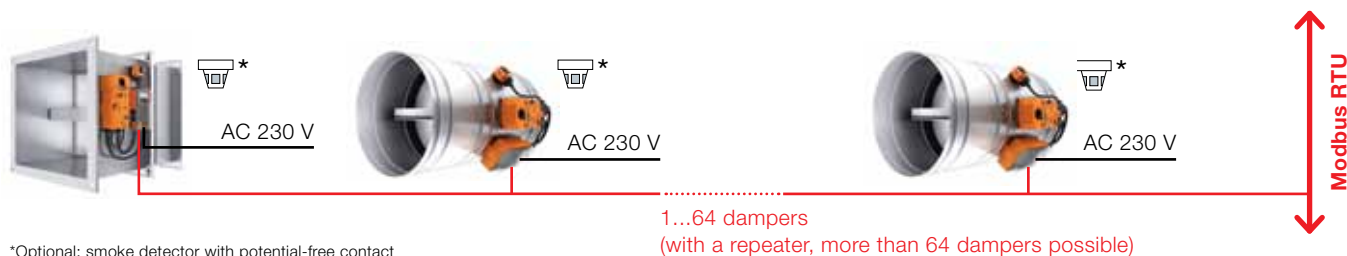
#### Communication and control unit BKS24-9A



- Controls and monitors up to 9 fire dampers
- LED status display indicating operating statuses and fault messages
- Function test of fire damper actuators
- Potential-free auxiliary contacts for integration into system
- Zone control, summarised alarms

# Control and monitoring via communicative bus solutions.

## Connection to Modbus RTU via Belimo field units BKN230-24-MOD / BKN230-MOD



\*Optional: smoke detector with potential-free contact

### Actuator types Connection modules

BFL, BFN,  
BF, BFG:  
24-T-ST, 24-ST  
for BKN230-24-MOD



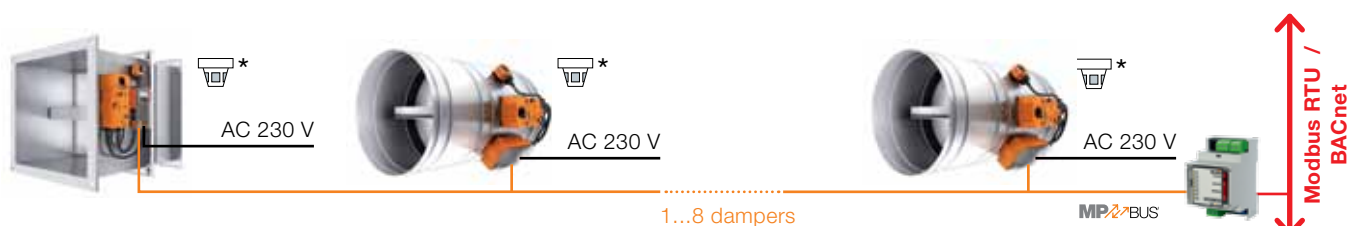
### Communication and power supply units BKN230-24-MOD / BKN230-MOD

- Interface to Modbus RTU
- Baud rate up to 76'800 Bd
- Termination can be switched
- Parameterisation adjustable via DIL switch

BFL, BFN,  
BF, BFG:  
230, 230-T  
for BKN230-MOD

-T: Thermoelectric tripping device  
-ST: With plug

## Connection to Modbus RTU or BACnet MS/TP via MP-Bus® und Belimo gateways



\*Optional: smoke detector with potential-free contact

### Actuator types Connection modules

BFL, BFN,  
BF, BFG:  
24-T-ST, 24-ST



### Communication and power supply unit BKN230-24-C-MP

- Interface to MP-Bus®
- Decentralised power supply unit for 24 V fire damper actuators
- Local power supply AC 230 V
- Integrated LED status indicator
- Connection for a smoke detector contact and/or a thermoelectric tripping device

-T: Thermoelectric tripping device  
-ST: With plug

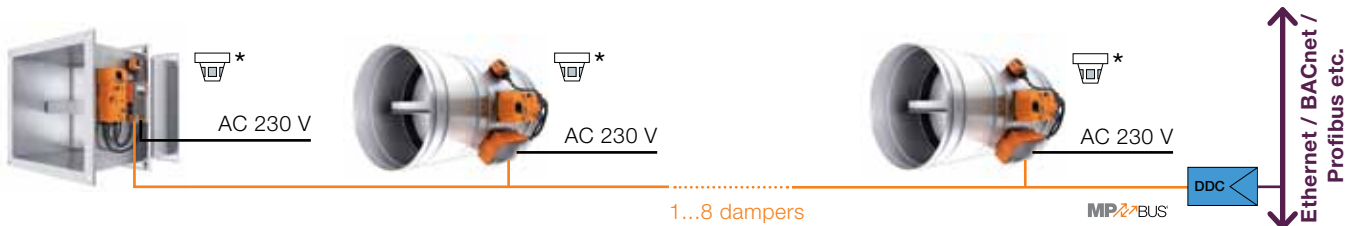
### Gateways

#### Belimo UK24BAC / UK24MOD



- Interface to BACnet MS/TP or to Modbus RTU
- Connection of up to 8 fire damper actuators
- Summary or detailed fault message for each fire damper

## Connection to various protocols via MP-Bus® and DDC controller



\*Optional: smoke detector with potential-free contact

### Actuator types Connection modules

BFL, BFN,  
BF, BFG:  
24-T-ST, 24-ST

-T: Thermoelectric  
tripping device  
-ST: With plug

### Communication and power supply unit BKN230-24-C-MP



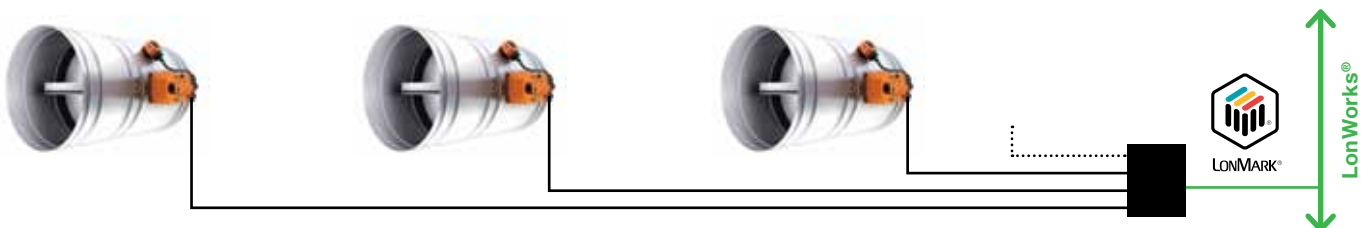
- Interface to MP-Bus®
- Decentralised power supply unit for 24 V fire damper actuators
- Local power supply AC 230 V
- Integrated LED status indicator
- Connection for a smoke detector contact and/or a thermoelectric tripping device

### Gateways

#### DDC controller with MP interface

- Belimo provides the MP specifications to all manufacturers of DDC controllers. They can use these specifications to implement own hardware/software design into their devices.

## Connection to LonWorks® via gateway from third-party manufacturer\*\*



\*\* Support for gateway is provided by third-party manufacturer

### Actuator types Gateways

BFL, BFN,  
BF, BFG:  
24-T\*\*\*, 230-T

-T: Thermoelectric  
tripping device

\*\*\*Depending on the  
gateway, actuators with  
plug can also be used  
(-ST)

#### Direct connection to gateway

- e.g. LonWorks® gateway
- Star wiring of fire damper actuators



-  5-year warranty
-  On site around the globe
-  Complete product range from a single source
-  Tested quality
-  Short delivery times
-  Comprehensive support

ENG - 01.2015 - Subject to technical modifications

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**BELIMO**<sup>®</sup>