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# Air Product Catalogue

Asia Pacific 2016

Belimo Asia Pacific

**BELIMO**<sup>®</sup>

# Air Solution Product Range

Belimo provides the world's most comprehensive range of servomotors for air dampers which includes rotary, linear and full-rotation actuators with a wide range of motorisation levels and actuating times. The actuators cover almost all power requirements for the control of air flows in air-conditioning plants, from treatment and distribution to feedback and retreatment.

This year, we are making further advancement on our latest Fire and Smoke Product lines – BFL and BFN series (CE Certification) and FSAF..A and FSTF series (UL requirements). BFL and BFN (CE Certification) are particularly patent-designed with integrated Position Safety Lock™ and optimised for maximum life safety; while FS series are designed to cover a wide range of torque requirement. In other words, it just makes life easier!

Belimo proudly introduces the new range of Fire Damper actuators to the market. It sums up years of experience in developing and producing HVAC actuators for global markets and establishes a higher standard of performance with state-of-the-art technology.





BELIMO New Range of Fire Damper Actuators  
BFL and BFN Series


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## Air Solutions - Air treatment, distribution, control and feedback


### Rotary Damper Actuators

Product range	Types/performance classes	Specifications	Applications
	Standard actuators: <ul style="list-style-type: none"> <li>LM (5Nm)</li> <li>NM (10Nm)</li> <li>SM (20Nm)</li> <li>GM (40Nm)</li> </ul>	<ul style="list-style-type: none"> <li>With integrated auxiliary switch or potentiometer</li> <li>Identical accessories for all types</li> <li>Connection: Cable (IP54) or terminals (IP20 or IP54)</li> </ul>	Motorisation of air dampers without emergency control function.
	Compact actuators: <ul style="list-style-type: none"> <li>CM (2Nm)</li> </ul>	<ul style="list-style-type: none"> <li>Mechanical angle of rotation limitation 0...287.5°</li> <li>Rotation without limits</li> <li>Magnetic gearing latch</li> </ul>	Motorisation of air dampers without emergency control function in residential ventilation systems, under-floor air handling units, decentralised sill ventilation units, etc.


### RobustLine Rotary Actuators

Product range	Types/performance classes	Specifications	Applications
	<ul style="list-style-type: none"> <li>NM..P (10Nm)</li> <li>SM..P (20Nm)</li> </ul>	<ul style="list-style-type: none"> <li>IP66/67, UV protection, corrosion-resistant</li> <li>Integrated auxiliary switch or potentiometer</li> </ul> <p>Optional for ambient temperatures down to -40°C:</p> <ul style="list-style-type: none"> <li>Heating with humidistat</li> <li>Heating with thermostat</li> </ul>	<p>Motorisation of air dampers without emergency control function in particularly exposed positions:</p> <ul style="list-style-type: none"> <li>Protection against aggressive gases, moisture, humidity, high dust and contamination levels</li> <li>General outdoor applications, kiln drying plants, agriculture, swimming pool installations, greenhouses, etc.</li> </ul>


### Fast-Running Damper Actuators

Product range	Types/performance classes	Specifications	Applications
	Rotary actuators: <ul style="list-style-type: none"> <li>LMQ (4Nm, 24V)</li> <li>NMQ (8Nm, 24V)</li> <li>SMQ (16Nm, 24V)</li> <li>NMD (8Nm, 220V)</li> <li>SMD (16Nm, 220V)</li> </ul>	<ul style="list-style-type: none"> <li>Identical accessories for all types</li> <li>Very fast running times starting from 2.5s / 90°</li> </ul>	Motorisation of air dampers without emergency control function for industrial suction plants, laboratories, painting and welding plants, etc.


### Electronic Fail-Safe Damper Actuators

Product range	Types/performance classes	Specifications	Applications
	<ul style="list-style-type: none"> <li>GK (40Nm)</li> </ul>	<ul style="list-style-type: none"> <li>Bridging of electricity interruptions of up to 10s</li> <li>Emergency setting position adjustable between 0...100%</li> </ul>	Motorisation of air dampers with emergency control function.


### Mechanical Fail-Safe Damper Actuators

Product range	Types/performance classes	Specifications	Applications
	<ul style="list-style-type: none"> <li>TF (2.5 Nm)</li> <li>LF (4 Nm)</li> <li>NFA (10 Nm)*</li> <li>SFA (20 Nm)*</li> <li>EF (30 Nm)*</li> </ul> <p>* Optional for 2 integrated auxiliary switches</p>	<ul style="list-style-type: none"> <li>Automatic closing function in &lt; 20s in the event of electricity interruption</li> <li>Manual override</li> </ul>	Motorisation of air dampers with emergency control function.

### Linear Actuators


Product range	Types/performance classes	Specifications	Applications
	Standard actuators: <ul style="list-style-type: none"> <li>LH (150N)</li> <li>SH (450N)</li> </ul>	<ul style="list-style-type: none"> <li>Gear rod lengths 60, 100, 200 and 300mm</li> <li>Mechanical stroke limitation every 20mm</li> </ul>	Motorisation of final controlling elements with linear movements up to 300mm for swirl outlets, long-range nozzles, mixing units, cabin units, VAV units, etc.

## Full-rotation Actuators


Product range	Types/performance classes	Specifications	Applications
	Standard actuators: • LU (3Nm)	<ul style="list-style-type: none"> <li>• Mechanical angle of rotation limitation up to 330°</li> <li>• Electronic angle of rotation limitation up to 1800°</li> <li>• Rotation without limits</li> </ul>	Motorisation of final controlling elements with rotary movement > 90° and VAV units, replacement for KMU.

## Safety Solutions - Protecting life and material assets from fire and smoke

### Motorisation solutions for fire and smoke protection - Spring Return Actuators


Product range	Types/performance classes	Specifications	Applications
	Actuators (CE Certification) <ul style="list-style-type: none"> <li>• BFL (4 / 3 Nm)</li> <li>• BLF (6 / 4 Nm)</li> <li>• BFN (9 / 7 Nm)</li> <li>• BFG (11 / 8.5 Nm)</li> <li>• BF (18 / 12 Nm)</li> </ul> Actuators (UL Certification) <ul style="list-style-type: none"> <li>• FSTF..US (2 Nm)</li> <li>• FSLF..US (3.5 Nm)</li> <li>• FSNF..US (7.9 Nm)</li> <li>• FSAF..US (15 Nm)</li> <li>• FSAF..A (20 Nm)</li> </ul>	<ul style="list-style-type: none"> <li>• Steel gearbox with Safety Position Lock™ function</li> <li>• Form fit</li> <li>• 2 auxiliary switches</li> <li>• Halogen-free cables</li> <li>• Low current consumption in stand-by</li> <li>• Thermoelectric tripping device (function-protected)</li> <li>• Fulfils specific requirements from EN 15650</li> </ul>	Motorisation of fire and smoke protection dampers

### Motorisation solutions for fire and smoke protection - Non-Spring Return Actuators



Product range	Types/performance classes	Specifications	Applications
	Actuators (CE Certification) <ul style="list-style-type: none"> <li>• BR (15 Nm)</li> <li>• BLE (15 Nm)</li> <li>• BE (40 Nm)</li> </ul>	<ul style="list-style-type: none"> <li>• Steel gearbox with Safety Position Lock™ function</li> <li>• Form-fit</li> <li>• 2 auxiliary switches</li> <li>• Halogen-free cables</li> <li>• Low current consumption in stand-by</li> <li>• Thermoelectric tripping device (function-protected)</li> <li>• Fulfils specific requirements from EN 15650</li> </ul>	Motorisation of fire and smoke protection dampers

## Room and System Solutions


### VAV Compact Controllers

Product range	Types/performance classes	Specifications	Applications
	MP-Bus: <ul style="list-style-type: none"> <li>• LMV-D3-MFT-RM / LMV-D3-MP (5 Nm)</li> <li>• NMV-D3-MP (10 Nm)</li> </ul> LonWork®: <ul style="list-style-type: none"> <li>• LMV-D3LON (5 Nm)</li> <li>• NMV-D3LON (10 Nm)</li> </ul>	<ul style="list-style-type: none"> <li>• Compact unit with sensor, controller and actuator</li> <li>• On-site operation with ZTH AP</li> <li>• Commissioning by means of PC-Tool, including trend function</li> <li>• Integration in MP-Bus®, Modbus or LonWorks® networks</li> <li>• Compact with NFC</li> </ul>	Control of VAV and CAV units for volumetric flow systems in buildings


## Room controller system solutions - BACnet® / LonWorks® VAV Set

Product range	Types/performance classes	Specifications	Applications
	LonWork®: • T24-V42LON • T24-V02LON  BACnet®: • T24-V42BAC • T24-V02BAC	<ul style="list-style-type: none"> <li>• With LED indicator</li> <li>• Pre-stored room control applications</li> <li>• Built-in LonWork® / BACnet® and Belimo MP-Bus</li> <li>• With analog and digital input/output</li> <li>• PI control algorithm</li> </ul>	Designed for VAV room control application, connect with open IP address directly.
	Room Unit: • T24-MP  Room temperature sensor • TG-R10000 (Optional)	<ul style="list-style-type: none"> <li>• LCD display: blue backlight and built-in diagnostic socket RJ12</li> <li>• Built-in NTC type sensor</li> <li>• BACnet® / LonWorks® VAV Set</li> </ul>	

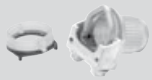



## Room controller solutions - Local VAV Set

Product range	Types/performance classes	Specifications/Applications
	Room Unit: • EXT-T24-D201 • CR24-B1/B2/B3/B2E • T24A1T  Room Sensor: • TG-K340B • TG-A130B	<ul style="list-style-type: none"> <li>• Local VAV Set</li> <li>• Single duct temperature control</li> </ul>

## Fan Optimiser

Product range	Types/performance classes	Specifications/Applications
	COU24-A-MP	<ul style="list-style-type: none"> <li>• Fan optimisation via MP-Bus</li> </ul>

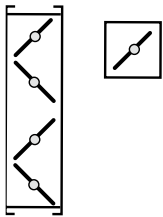
## Rotary Damper Actuators Accessories

Product range	Types/performance classes	Specifications	Applications
	<ul style="list-style-type: none"> <li>• K-NA</li> <li>• K-SA</li> </ul>	Reversible spindle clamp: • 8...20mm • 10...20mm	Suitable for NM/SM
	<ul style="list-style-type: none"> <li>• S..A..</li> <li>• P..A..</li> </ul>	<ul style="list-style-type: none"> <li>• Auxiliary switch, add-on</li> <li>• Feedback potentiometer, add-on</li> </ul>	Suitable for LM / NM/ SM / GM / GK LF / NFA / SFA
	<ul style="list-style-type: none"> <li>• ZTH AP</li> </ul>	<ul style="list-style-type: none"> <li>• Setting and diagnostic device</li> </ul>	Use ZK...-GEN cable
	<ul style="list-style-type: none"> <li>• ZF..-NSA-F</li> </ul>	<ul style="list-style-type: none"> <li>• Form-fit adaptor 10x10 / 12x12 / 16x16 mm</li> </ul>	Suitable for NFA / SFA

For more detail, please refer to the specific product technical databook or contact your nearest Sales Representative.

## Actuators for damper control

The wide range of Damper Actuators offered by Belimo covers all specific needs to motorise the operation of shut-off dampers and control dampers in HVAC systems. The actuators come in a wide range of voltages and torque outputs with either Open/Close, 3-point or modulating versions. The actuators can be supplied with or without auxiliary switches.



## Fail-Safe Actuators for dampers with a safety function

For air dampers with a safety function, Belimo offers a range of special Mechanical Fail-Safe Actuators which can ensure that, in the event of a power failure, the dampers close automatically and quickly and remain tightly sealed.

The Mechanical Fail-Safe Actuators come in three classes of output — the compact TF/LF.. series for small dampers, the NFA.. series for medium-sized dampers and the SF..A / EF..A series for large dampers.



Belimo's innovation and advancement in SuperCap technology has enabled the release of a new actuator with electronic fail-safe functionality.

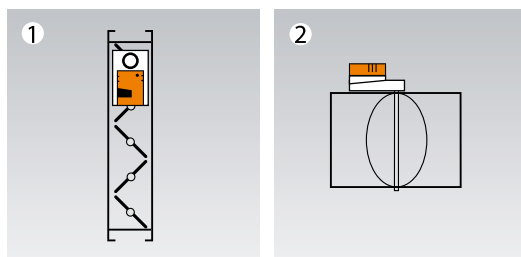
The New Electronic Fail-Safe Actuators feature high torque (GK../40Nm), Fail-Safe position that can be set 0...100% in 10% increments, LED status and lower power consumption offering you new solutions for HVAC controlling.

## Damper Actuators with Multi-Function Technology [MF, MP, MFT(2)]

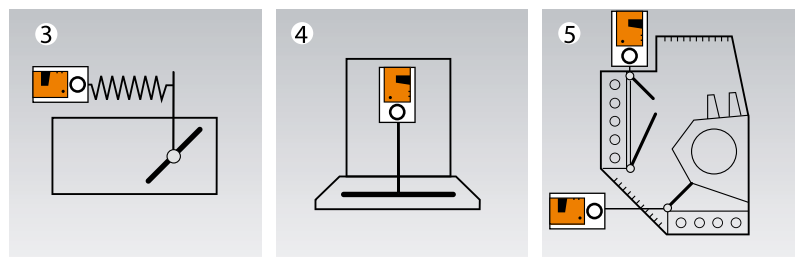
There are many projects and applications which could benefit considerably from the use of actuators equipped with Belimo's intelligent MFT electronics. MF, MP, MFT(2) allows Damper Actuators to be adapted to meet the requirements for installation so that the damper functions can be optimised precisely. Its ability to transmit operating signals and status signals to the plant control system also helps to reduce operating and maintenance costs. Moreover MP actuators are easy to incorporate into field bus systems, either with or without auxiliary switches.

## Typical applications

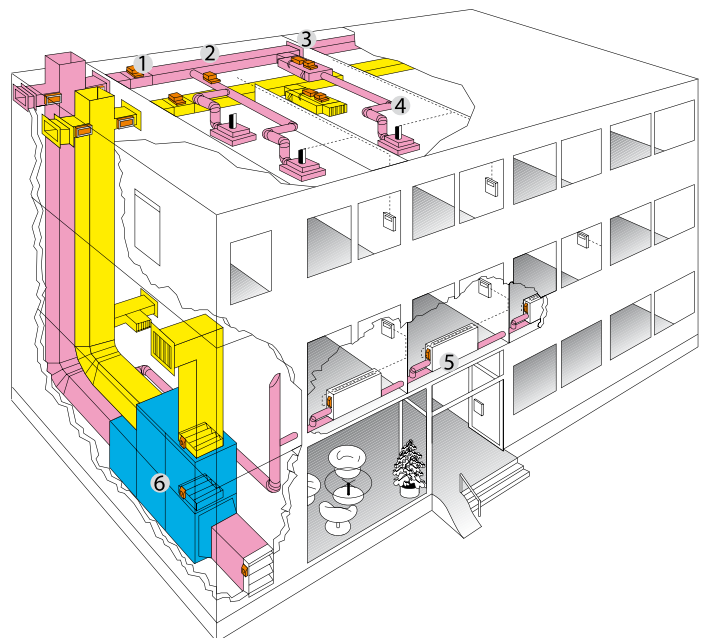
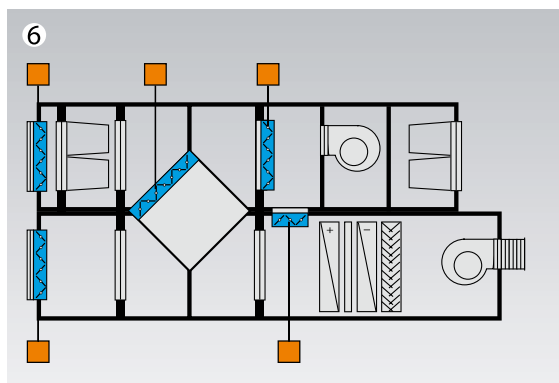
### Air duct system



### Terminal control



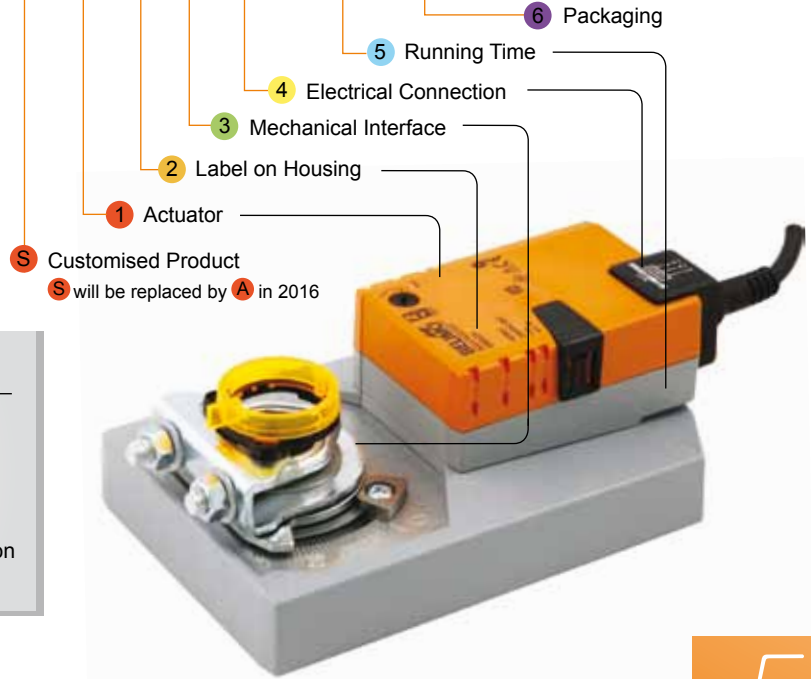
### Central air-conditioning unit



**Our flexibility is beyond your expectations**

**Market description: LMS230-SR**

**Type code: LMS 45 0 1 01 000 2**



- Types/Voltage/Function**
- Standard Damper Actuator
  - CM/LM/NM/SM/GM
  - Actuator for valve LR/NR/SR/GR
  - Linear Actuator LH/SH
  - 360° rotating actuator LU
  - Open/Close, 3-point, modulating, MF, MP-Bus, Lon



**1 Actuator/Housing Color**

- Orange: Belimo products for all customers
- Grey: Specific customer products with Belimo logo or customer logo and type code

- Maximised flexibility
- All the features you want
- Immediate availability of samples
- Availability no longer related to quantity
- Any products with your own brand or identity at any time

Refer to technical datasheets for details.  
New options for customisation are continuously added.  
Please get updates from a Belimo sales representative.

**2 Label on Housing**

- Transparent label
- Blue label
- Black label

**4 Electrical Connection**

- Terminals IP20/IP54
- 1/3/5m PVC cables
- 1/3/5m Halogen free cables
- J6 connector
- 4...20mA PVC cables

**6 Packaging**

- Single packing
- Bulk packing

**3 Mechanical Interface**

- Single side clamp
- Reversible clamp
- 6×6/8×8/10×10/12×12/16×16mm Form-fit (with rotation limits)\*

**5 Running Time**

- 150s/90° LM/NM/SM/GM
- 90s/90° LM/NM/SM
- 75s/90° CM
- 45s/90° CM/LM/NM
- 35s/90° CM/LM

\* 6x6mm Form-fit just for CM... series.

# General Damper Actuators Product Overview



	2Nm	5Nm	10Nm	20Nm	40Nm
	CM..	LM..	NM..	SM..	GM..
Open/Close, 3-point					
AC/DC 24V 50/60Hz	CM24- CM24-T..	LM24A(-F / -TP)	NM24A(-TP)	SM24A	GM24A*
Auxiliary switch built-in 1 SPDT		LM24A-S	NM24A-S	SM24A-S	
AC 100...240V 50/60Hz	CM230-..	LM230A(-F / -TP)	NM230A	SM230A	GM230A*
Auxiliary switch built-in 1 SPDT			NM230A-S	SM230A-S	
Modulating Control signal DC (0)2...10V, feedback DC 2...10V					
AC/DC 24V 50/60Hz	CM24-SR-R**	LM24A-SR	NM24A-SR	SM24A-SR	GM24A-SR
AC 100...240V 50/60Hz		LM230ASR	NM230ASR	SM230ASR	
Running time	75s	150s			
Shaft diameter	6...12.7mm	6...20mm	8...26.7mm	10...20mm	12...25.2mm
Sound power level	Max. 35dB(A)			Max. 45dB(A)	
Manual override	Gear disengaging by magnet	Gear disengaging by push button			
Electrical connection	Cable 1m (-T: Terminal)				
Direction of rotation	Selected by switch				
Angle of rotation	Max. 95°, can be limited at both ends with mechanical adjustable end stops				
Position indicator	Mechanical, plug-on				
Degree of protection	IP54 (-T: IP20)				
EMC	CE according to 2004/108/EC				
LVD***	CE according to 2006/95/EC				
Ambient temperature	-30...+50°C				
Non-operation temperature	-40...+80°C				
Humidity	5...95% RH, non-condensing				

\* Only Open/Close, no 3-point.

\*\*CM24-SR-R: Control Signal 0(2)V at right end stop position; CM24-SR-L: Control Signal 0(2)V at left end stop position is available upon request.


\*\*\* For 230V models.



	RobustLine IP66+IP67 Actuators	
	10Nm NM..P..	20Nm SM..P..
Open/Close, 3-point		
Control signal Y DC (0)2...10V Feedback signal U DC 2...10V, max. 1mA	NM24P.. NM230P..	SM24P.. SM230P..
AC/DC 24V	NM24P..	SM24P..
AC 100...240V	NM230P..	SM230P..
Degree of protection	IP66+IP67	
Running time	150s	
Sound power level	35dB(A)	45dB(A)
Manual override	with push button	
Halogen-free	Cable 1m, 0.75m <sup>2</sup>	
Direction of rotation	Reversible (Right/Left)	
Angle of rotation	95°	
Position indicator	Mechanical, remote visible	
Universal V-clamp Form-fit	Yes	
Ambient temperature	-30...+50°C	
Humidity	100% RH	

## Fast Running Damper Actuators Product Overview




	4Nm		8Nm		16Nm	
	LMQ..	NMQ..	NMD..	SMQ..	SMD..	
Open/Close						
AC 24V 50/60Hz, DC 24V	LMQ24A	NMQ24A		SMQ24A		
AC 100...240V 50/60Hz			NMD230A			SMD230A
Modulating Control signal DC (0)2...10V, feedback DC 2...10V						
AC 24V 50/60Hz, DC 24V	LMQ24A-SR	NMQ24A-SR		SMQ24A-SR		
Running time	2.5s	4s	20s	7s		20s
Shaft diameter 	8...26.7mm			12...25.2mm		10...20mm
Sound power level	Max. 52dB(A)		Max. 55dB(A)	Max. 63dB(A)		Max. 55dB(A)
Manual override	Disengaging the gearing latch by means of a push button, self-resetting					
Electrical connection	Cable 1m					
Direction of rotation	Selected by switch					
Angle of rotation	Max. 95°, can be limited at both ends with mechanical adjustable end stops					
Position indicator	Mechanical, plug-on					
Degree of protection	IP54					
EMC	CE according to 2004/108/EC					
LVD*	CE according to 2006/95/EC					
Ambient temperature	-30...+40°C (without restrictions); +40...+50°C (with restrictions)					
Non-operation temperature	-40...+80°C					
Humidity	5...95% RH, non-condensing					

\* For 230V models.


## Electronic Fail-Safe Damper Actuators Product Overview



	40Nm	
	GK..	
Open/Close		
AC/DC 24V 50/60Hz	GK24A-1	-
Modulating / 3-point		
Control signal DC (0)2...10V, feedback DC 2...10V AC/DC 24V 50/60Hz	-	GK24A-MF
Running time -Standard -Power off position	150s 35s @0...50°C	90...150s 35s @0...50°C
Shaft diameter 	12...26.7mm / 12...25.2mm	
Sound power level -Standard -Power off position	Max. 53dB(A) Max. 61dB(A)	
Electrical connection	Cable 1m	
Direction of rotation	Selected by mounting L/R	
Angle of rotation	Max. 95°	
Mechanical end stops	Yes	
Position indicator	Yes	
Degree of protection	IP54	
EMC	CE according to 2004/108/EC	
Ambient temperature	-30...+50°C	
Non-operation temperature	-40...+80°C	
Humidity	5...95% RH, non-condensing	

# Mechanical Fail-Safe Damper Actuators Product Overview




	2.5Nm		4Nm	
	TF..		LF..	
Open/Close				
AC/DC 24V 50/60Hz	TF24		LF24	
Auxiliary switch built-in 1 SPDT	TF24-S		LF24-S	
AC 230V 50/60Hz	TF230**		LF230	
Auxiliary switch built-in 1 SPDT	TF230-S		LF230-S	
3-point				
AC/DC 24V 50/60Hz	TF24-3**		LF24-3	
Modulating				
Control signal DC (0)2...10V, feedback DC 2...10V AC/DC 24V 50/60Hz	TF24-SR		LF24-SR	
Running time	-Motor	<75s*		40-75s*
	-Spring return	<25s @-20...+50°C / max. 60s @-30°C		<20s @-20...+50°C / max. 60s @-30°C
Shaft diameter 	6...12mm		8...16mm	
Sound power level	-Motor	Open/Close max. 50dB(A) Modulating and 3-point max. 35dB(A)		Open/Close max. 50dB(A) Modulating and 3-point max. 30dB(A)
	-Spring return	62dB(A)		62dB(A)
Electrical connection	Cable 1m			
Direction of rotation	Selected by mounting L/R			
Angle of rotation	Max. 95°			
Mechanical end stops	Yes			
Position indicator	Yes			
Degree of protection	IP42		IP54	
EMC	CE according to 2004/108/EC			
LVD***	CE according to 2006/95/EC			
Ambient temperature	-30...+50°C			
Non-operation temperature	-40...+80°C			
Humidity	5...95% RH, non-condensing			

\* LF24-3 and all -SR types are 150s.

\*\* TF24-3 nominal voltage is AC 24V, TF230 nominal voltage is AC 100...240V.

\*\*\* For 230V models.



	10Nm	20Nm	30Nm
	NFA..	SFA..	EF..
<b>Open/Close</b>			
AC 24...240V / DC 24...125V	NFA	SFA	-
Auxiliary switch built-in 2 SPDT	NFA-S2	SFA-S2	-
AC/DC 24V 50/60Hz			
Auxiliary switch built-in 2 SPDT	-	-	EF24A-S2
AC 230V 50/60Hz			
Auxiliary switch built-in 2 SPDT	-	-	EF230A-S2
<b>Modulating</b>			
Control signal DC (0)2...10V, feedback DC 2...10V AC/DC 24V 50/60Hz	NF24A-SR	SF24A-SR	EF24A-SR
Running time -Motor -Spring return	Open/Close 75s; modulating 150s 20s @ -20 ...+50°C / max. 60s @ -30°C		Open/Close 75s; modulating 150s 20s @ -20 ...+50°C / max. 60s @ -30°C
Shaft diameter 	10...25.4mm / 14...25.4mm		12...26.7mm / 12...25.2mm
Sound power level -Motor -Spring return	Open/Close max. 45dB(A) Modulating max. 40dB(A) max. 62dB(A)		Open/Close max. 55dB(A) Modulating max. 45dB(A) max. 71dB(A)
Electrical connection	Cable 1m		
Direction of rotation	Selected by mounting L/R		
Angle of rotation	Max. 95°		
Mechanical end stops	Yes		
Position indicator	Yes		
Degree of protection	IP54		
EMC	CE according to 2004/108/EC		
LVD*	CE according to 2006/95/EC		
Ambient temperature	-30...+50°C		
Non-operation temperature	-40...+80°C		
Humidity	5...95% RH, non-condensing		

\* For 230V only.

# Linear and Full-rotation Actuators Product Overview



	LH../SH.. Linear Actuators 150N, 450N							
	AC/DC 24V						AC 100...240V	
	Open/Close or 3-point			Modulating			Open/Close or 3-point	
LH..series, 150N	LHU24-60 <sup>2)</sup>	LHS24		LHU24-MF60 <sup>3)</sup>	LHS24-SR		LHS230	
SH..series, 450N		SHS24			SHS24-SR		SHS230	
Stroke (mm) <sup>1)</sup>	60	100	200	60	100	200	100	200
Stroke fixed				•	•	•		
Stroke adjustable (steps 20mm)	•	•	•				•	•
Running time: 90s/60mm	•			•				
150s/100mm		•	•		•	•	•	•
120s, 90s or 75s/100mm for LHS..		•	•		•	•	•	•
Cable 0.75mm <sup>2</sup>	•	•	•	•	•	•	•	•
Sound power level <35dB(A) / SHS... <50dB(A)	•	•	•	•	•	•	•	•
Control signal Y DC (0)2...10V				•	•	•		•
Feedback signal U DC 2...10V				•	•	•		•
Manual override with push button	•	•	•	•	•	•	•	•
Reversible direction of stroke	•	•	•	•	•	•	•	•
Ambient temperature -30...+50°C	•	•	•	•	•	•	•	•
Degree of protection class: IP54	•	•	•	•	•	•	•	•

- 1) 300mm stroke Linear Actuator is available on request.  
 2) ..HU for standard product, ..HS for customised product.  
 3) This product is available on request.



	LU.. Full-rotation Actuators 3Nm		
	AC/DC 24V		AC 100...240V
	Open/Close or 3-point	Modulating	Open/Close or 3-point
LU..series	LUS24	LUS24-SR	LUS230
Torque 3Nm	•	•	•
Angle of rotation: 330°		•	
endless	•		•
Running time: 150s/360°	•	•	•
120s, 90s or 75s/360° (customised)	•	•	•
Cable 0.75mm <sup>2</sup>	•	•	•
Sound power level max. 35dB(A)	•	•	•
Form-fit 8x8mm / 10x10mm / 12x12mm	•	•	•
Control signal Y DC (0)2...10V		•	
Feedback signal U DC 2...10V		•	
Manual override with push button	•	•	•
Reversible direction	•	•	•
Ambient temperature -30...+50°C	•	•	•
Degree of protection class: IP54	•	•	•

Please contact your nearest Belimo sales representative for detailed information.

## Special Smoke Extraction systems save lives

Past catastrophes involving fire have shown that it is the smoke and fumes given off by the fire that are the greatest danger to people trapped in buildings. Therefore, more and more large and complex buildings such as shopping centres, hospitals, airports, etc. are being equipped with special Smoke Extraction systems. Such systems are able to remove very large quantities of smoke and poisonous fumes so that escape routes for occupants and access paths for Fire and Rescue Service remain clear.

## Fast and powerful: Actuators for Smoke Extraction Dampers

The damper is the key element of any Smoke Extraction system since its primary task is to move to a position that ensures safety — either open or closed depending on the type of system. When an emergency occurs, the dampers should be brought to their safe position by means of a control signal and kept there. It is also important to be able to operate the dampers even when the smoke extraction system is already working. In close co-operation with damper manufacturers, Belimo has developed special Smoke Extraction Actuators.

The BE..series actuators with their high operating torque, holding torque and fast running time ensure safe and reliable operation of motorised Smoke Extraction dampers while also satisfying the relevant European product and testing regulations.

## A typical Smoke Extraction system

### A typical installation:

A ventilation system with fire dampers and a separate Smoke Extraction system for efficient removal of smoke.

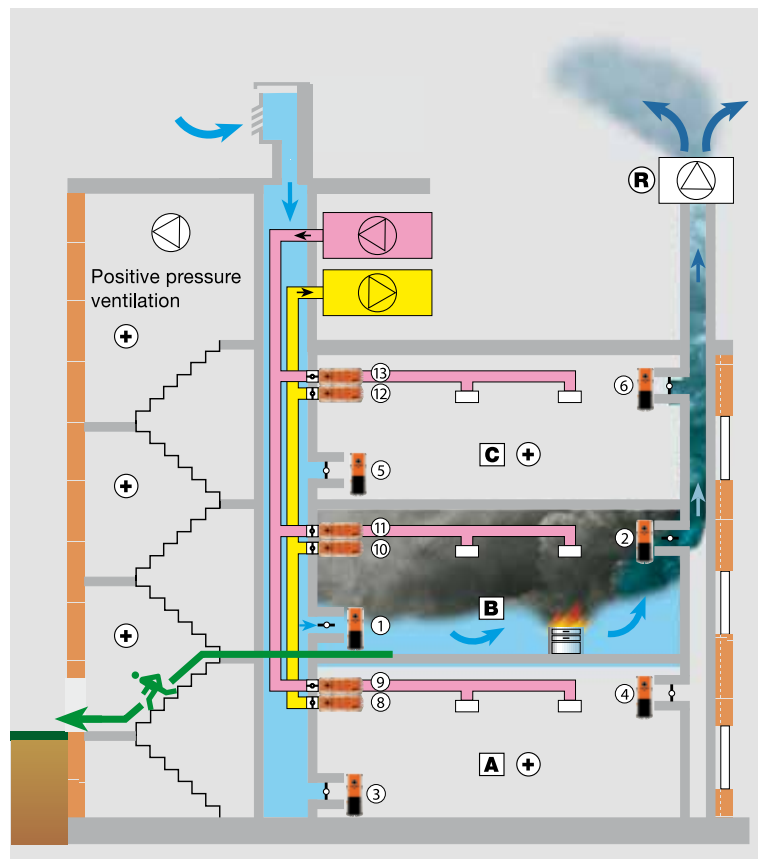
The procedure in an emergency involving the presence of smoke on Floor B (e.g. tripping by fire detector):

#### a) Smoke Extraction system

- Smoke damper 2 is opened and the poisonous fumes are extracted by fan R. Smoke damper 1 is opened at the same time, to replace with fresh air from outside.
- Smoke dampers 3, 4, 5 and 6 remain closed.
- The trapped occupants can escape safely via the staircase.

#### b) Ventilation system

- Fire dampers 10 and 11 are closed in order to seal off the fire and smoke on Floor B from the remainder of the ventilation system .
- Fire dampers 9 and 13 are open. The supply air fan produces a positive pressure on Floors A and C to prevent the penetration of smoke. (+)
- Fire dampers 8 and 12 are closed.



# Fire and Smoke Damper Actuator Product Overview - EU Series



	Fire and Smoke Spring Return Actuator				
	BFL	BLF	BFN	BFG	BF
Agency listing	CE Certification				
Torque - Motor	4Nm	6Nm	9Nm	11Nm	18Nm
- Spring return	3Nm	4Nm	7Nm	8.5Nm	12Nm
Open/Close					
AC 24V 50/60Hz, DC 24V	BFL24	BLF24	BFN24	BFG24	BF24
AC 24V 50/60Hz, DC 24V with thermal trip (72°C)	BFL24-T	BLF24-T	BFN24-T		BF24-T
AC/DC 24V with plug connect to BKN230-24	BFL24-ST	BLF24-ST	BFN24-ST	BFG24-ST	BF24-ST
AC 24V 50/60Hz, DC 24V with thermal trip and plug connect to BKN230-24	BFL24-T-ST	BLF24-T-ST	BFN24-T-ST	BFG24-T-ST	BF24-T-ST
AC 230V 50/60Hz	BFL230	BLF230	BFN230	BFG230	BF230
AC 230V 50/60Hz with thermal trip	BFL230-T	BLF230-T	BFN230-T	BFG230-T	BF230-T
Modulating (AC 24V 50/60Hz, DC 24V)					
Control signal Y DC (0)2...10V		BLF24-SR*			BF24-SR(-T)
Feedback signal U DC 2...10V		BLF24-SR*			
Running time -Motor	<60s	40...75s/0...6Nm	<60s	120s	120s
-Spring return	20s	20s	20s	20s	16s
Built-in 2 SPDT auxiliary switch	Built-in	Built-in**		Built-in	
Form-fit	12 x 12mm (with 10 x 10mm adaptor)			10 x 10mm	12 x 12mm (with 10 x 10mm adaptor)
Manual override function	Yes	Yes***		Yes	
Angle of rotation	Max.95°	Max.95°	Max.95°	Max.180°	Max.95°
Direction of rotation selectable by L/R mounting	Yes				

\* For BLF24-SR, the motor torque is 4Nm and the spring return torque is 4Nm, motor running time is 150s.

\*\* BLF24-SR has 1 SPDT auxiliary switch built-in.

\*\*\* BLF24-SR has no manual override function.



	Smoke Control Non-Spring Return Actuator		
	BLE..	BE..	BR..
Agency listing	CE Certification		
Torque	15Nm	40Nm	15Nm
Open/Close			
AC 24V 50/60Hz, DC 24V	BLE24	BE24	
AC/DC 24V with plug connect to BKN230-24	BLE24-ST	BE24-ST	
AC 24..48V compatible with control unit for pulse triggering BSIA24-48(-R)			BR24-48-F-ST
AC 230V 50/60Hz	BLE230	BE230	
Running time - Motor	30s	60s	30s
Built-in 2 SPDT auxiliary switch	Yes		
Form-fit 12 x 12mm	Yes	BE24-12 BE24-12-ST BE230-12	Yes
Form-fit 14 x 14mm		Yes	
Manual override function	Yes		
Angle of rotation	Max.95°		Max.105°
Direction of rotation selectable by L/R mounting	Yes		



Fire and Smoke Spring Return Actuator							
		FSTF..US	FSLF..US	FSNF..US	FSAF..US	FSAF..A	FSAFB24-SR*
Agency listing		UL555 and UL555S					
Torque	- Motor	2Nm	3.5Nm	7.9Nm	15Nm	20Nm	20Nm
	- Spring return	2Nm	3.5Nm	7.9Nm	15Nm	20Nm	20Nm
Accessories							
BAE72-S Thermoelectrical tripping device 72°C		Optional / Order Separately					
BAE165 US Thermoelectrical RE tripping device							
Modulating							
AC 24V 50/60Hz							FSAFB24-SR
Open/Close							
AC 24V 50/60Hz, DC 24V		FSTF24 US	FSLF24 US	FSNF24 US**	FSAF24 US	FSAF24A	FSAFB24-SR
AC120V 50/60Hz		FSTF120 US				FSAF120A	
AC 230V 50/60Hz		FSTF230 US	FSLF230 US	FSNF230 US	FSAF230 US	FSAF230A	
Built-in 2 SPDT auxiliary switch				FSNF24-S US FSNF230-S US		FSAF24A-S FSAF120A-S FSAF230A-S	FSAFB24-SR
Built-in 2 SPST auxiliary switch		FSTF24-S US FSTF120-S US FSTF230-S US	FSLF24-S US FSLF230-S US		FSAF24-S US FSAF230-S US		
Running time	- Motor	75s	15s	15s	75s	25s	75s
	- Spring return	25s	15s	15s	20s	15s	20s
Clamp		6...12mm	12.7...20mm	12.7...26mm	12.7...26mm	12.7...20mm (10...20mm optional)	12.7mm (19.05mm, 26.67mm field selectable)
Manual override function		No			Yes	No	Yes
Angle of rotation		Max.95°					
Direction of rotation selectable by L/R mounting		Yes					

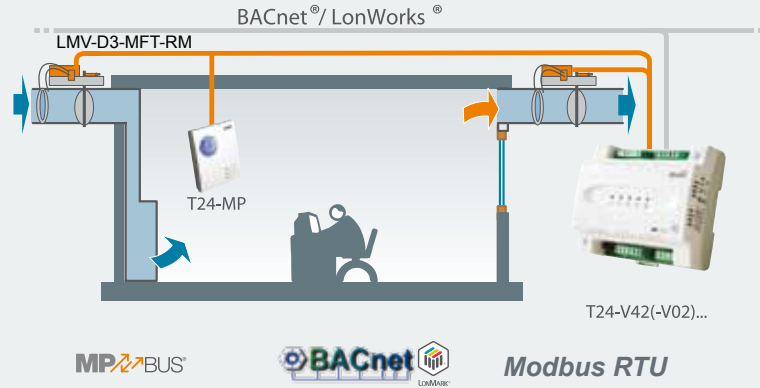
\* FSAFB24-SR could be control with open/close or modulating operations.

\*\* DC 24V is not UL listed for FSNF24(-S) US.

## BACnet® / LonWorks® VAV Set

### Intelligent simplicity

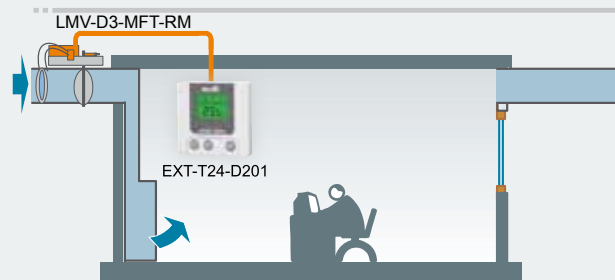
- System connection to DDC controller with MP interface via MP-Bus®
- Integration in higher-level systems such as LonWorks®, Konnex, Ethernet TCP/IP, Profibus DP, Modbus RTU etc. via MP gateway
- Convenient, cost-efficient wiring
- Maximum flexibility in new, retrofitted, converted or renovated buildings
- Temperature controller



## Local VAV Set

### Convenient, cost-efficient wiring

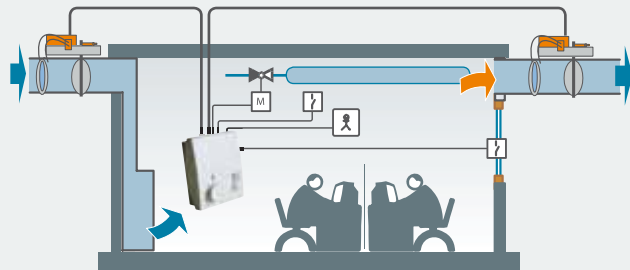
- single duct temperature control



## VAV-Compact for convenient solutions

### Individual room comfort

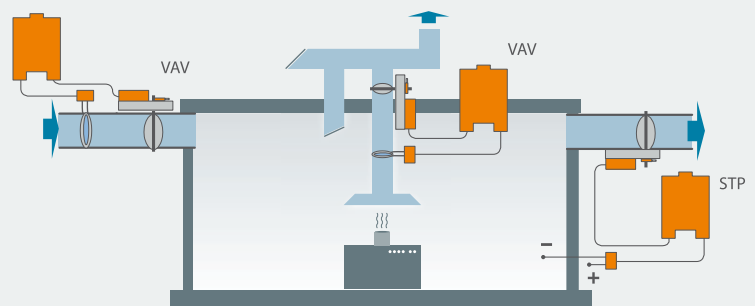
- Wide range of potential applications
- Adjustable to each application
- Demand-based single-room application
- Operation with Fan Optimiser system



## VAV-Universal with VRP-M controller and fast-running actuators for sensitive working areas

### Instant pure air

- Extraction of polluted air
- Ready-to-connect control system for maximum safety
- Integration in MP-Bus® network
- Volumetric flow or pressure control





	Compact Actuators				
	5Nm			10Nm	
	LMV-D3...			NMV-D3...	
	LMV-D3-MFT-RM	LMV-D3-MP	LMV-D3LON	NMV-D3-MP	NMV-D3LON
AC/DC 24V 50/60Hz					
Differential pressure sensor	0...600Pa				
Vnom specific nominal volumetric flow setting, matches VAV box	Yes				
Vmax	20...100% of Vnom				
Vmin	0...100% of Vnom				
Communication system	PP/MP-Bus, max. DC 15V, 1200 baud		LonWorks®	PP/MP-Bus, max. DC 15V, 1200 baud	LonWorks®
Sensor integration	No	Yes	Yes	No	No
Button, adaption/addressing/service function	Yes				
LED indicator, 24V feed status/service/bus function	Yes				
Direction of rotation	CCW/CW				
Adaptation, setting range recording and resolution to control range	Yes				
Manual disengagement, push button, self-resetting without affecting functions	Yes				
Angle of rotation	95° ↺, with adjustable mechanical or electronic limiting				
Position indication	-	Mechanical with pointer			
Connection cable, terminals 6x0.75mm <sup>2</sup>	4x0.75mm <sup>2</sup>		6x0.75mm <sup>2</sup>	4x0.75mm <sup>2</sup>	6x0.75mm <sup>2</sup>
Protection class III	Safety extra-low voltage				
Degree of protection	IP54				

## VAV and Room Control Module



	Room Control Module			
	T24-V42LON	T24-V02LON	T24-V42BAC	T24-V02BAC
Nominal voltage	AC 24V 50/60Hz			
Input / output control	Analog input x 1 and Digital input x 1			
	Analog output x 1 (DC 2...10V)	-	Analog output x 1 (DC 2...10V)	-
	Digital output x 3 (AC 24V)	-	Digital output x 3 (AC 24V)	-
Pre-stored room control applications	17	2	17	2
Series or parallel fan	Yes	-	Yes	-
Communication system	Built-in LonWorks® and Belimo MP-Bus		Built-in BACnet® and Belimo MP-Bus	
Algorithm	PI control algorithm			
Mode selections	Normal / economy / standby			
LED indications	Power, communication status			
	Digital outputs	-	Digital outputs	-
Degree of protection	IP20			



	Room Unit <sup>1)</sup>	Room Sensor <sup>2)</sup>
	T24-MP	TG-R10000
Nominal voltage	AC 24V 50/60Hz	-
Sensing element	Built-in NTC type sensor	
LCD display	Blue backlight Built-in diagnostic socket RJ12	-
Temperature display	Room temperature/setpoint selection	-
Degree of protection	IP30	

Function	VAV-Compact			VAV-Universal	
	LON types	MOD types	MP types	VRP-M system solutions	Universal range
<b>Sensors</b>	 LONMARK®   LMV-D3LON NMV-D3LON	<i>Modbus RTU</i>   LMV-D3MOD NMV-D3MOD	 MP BUS®  LMV-D3-MFT-RM (LMV-D3-MP) NMV-D3-MP	 VFP...	 VFP...
<b>Controllers</b>				 VRP-M	 VRD3   VRP VRP-STP
<b>Actuators</b>				 LM24A-V NM24A-V SM24A-V   LF24-V AF24-V emergency control function	
<b>Bus integration</b>	 			VAV and room control module: T24-V42(-V02)...+T24-MP	
	 			In fieldbus systems via MP gateway. BACnet: UK24BAC gateway LonWorks®: UK24LON gateway	
<b>Fan optimisation via MP-Bus</b>	 			Fan Optimiser: COU24-A-MP	
<b>Service tool</b>	 ZTH AP				
<b>Parameterisation and service software</b>	 PC-Tool: VAV-Compact VRP-M				
<b>Room controller</b>	 T24A1T CR24... EXT-T24-D201				
<b>Positioner</b>	   SG(A/F/E)24				

Note: Separate documentation for the VAV-Compact LON version, MOD version, VRP-M system solution, VAV-Universal, CR24, CRA24, CRP24 single-room controllers, COU24-A-MP Fan Optimiser, tools and interfaces can be found on the Internet at [www.belimo.com](http://www.belimo.com)

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