











**Proven reliability
in protecting
tangible assets.**

Fail-safe actuators for ventilation applications

Edition 2022

Rotary actuators fail-safe












Actuator type		Nominal torque ¹⁾	Shaft diameter	Damper size up to approx. ¹⁾	Page
Rotary actuators					9
TF..		2.5 Nm	6...12.7 mm	■ 0.5 m ²	
LF..		4 Nm	8...16 mm	■ 0.8 m ²	
NF..A..		10 Nm	10...25.4 mm	■ 2 m ²	
SF..A.+ VSF..LP1		20 Nm	10...25.4 mm	■ 4 m ²	
EF..A..		30 Nm	12...26.7 mm	■ 6 m ²	
GK..A..		40 Nm	12...26.7 mm	■ 8 m ²	
SKM230.. + CM24K..		2 Nm	6...12.7 mm	■ 0.4 m ²	
Very fast running rotary actuators					12
NKQ..A..		6 Nm	8...26.7 mm	■ 1.2 m ²	

Use of damper actuators from BELIMO: the actuators listed in this documentation are designed for adjusting dampers in technical building installations.

¹⁾ When calculating the torque or actuating force required to operate air dampers, it is essential to take into account all the data supplied by the damper manufacturer concerning cross sectional area, design, place of installation and air flow conditions. The recommended damper sizes are guidelines.

Special actuators fail-safe



Actuator type		Nominal torque ¹⁾	Shaft Diameter	Form fit	Damper size up to approx. ¹⁾	Page
RobustLine rotary actuators for extreme conditions						13
NKQ..P.		6 Nm	10...20 mm		 1.2 m ²	
IP66/67 NEMA 4X rotary actuators for outdoor applications						14
NF..G..		10 Nm	12...26.7 mm		 2 m ²	
SF..G..		20 Nm	12...26.7 mm		 4 m ²	
GK..G..		40 Nm	14...26.7 mm		 8 m ²	
Rotary actuators with high torque						15
PKCA..		160 Nm		17x17 mm	Special	
Configuration options						16-17

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Bus solutions from Belimo, save costs and energy!



Bus systems can be used to exchange any volume of data from various bus participants over the same physical lines. The user has unrestricted access to control, feedback and parameters on the individual devices. Cabling expenditures are reduced by up to 90% compared with actuators with conventional wiring.

Thanks to time and material savings (cables, connecting terminals, connectors, etc.), installation work is simpler and cheaper. Further positive selling points for bus solutions include their lower fire load and the fact that they take up less space in cable trays and switch cabinets. Depending on the application and requirements, different bus systems are used.

One or two sensors can also be connected to most communicative actuators. This may be a passive resistance sensor (Pt1000, Ni1000, NTC etc.), an active sensor (e.g. with a 0...10 V output) or a switching contact. Its signals are digitised in the Belimo actuator and transferred to the higher-level bus system.



The Belimo MP-Bus was specially developed as a master-slave system for HVAC actuators and sensors. It allows up to eight different HVAC performance devices to be grouped together and connected to any higher-level system. It is very resistant to external interferences and does not need bus terminals.



Modbus is a communication protocol, which has become the de-facto standard. It is used commonly all around the globe and in a huge range of applications. Its simple implementation makes Modbus very popular with many manufacturers.



BACnet is a proven, widely used communication protocol for building automation. The standard is open, requires no licence and is used by a large number of international providers, universities and associations. Implementing the BACnet Standard Device Profiles and the associated BACnet Interoperability Building Blocks guarantees genuine compatibility between various BACnet devices.



KNX is a well-engineered building automation system used around the world to control systems spanning several maintenance groups, for example heaters, blinds and security technology in buildings. The KNX-certified actuators enable direct connection to the KNX network. Communication takes place via the integrated KNX interface (TP, S-Mode).



IoT actuators with Ethernet interface can exchange operating and setting data with Belimo Cloud. It is controlled locally via an analogue signal or BACnet/Modbus. Thanks to the open client API of the Belimo Cloud, a connection to a specific cloud solution can be implemented.

Fail-safe actuators



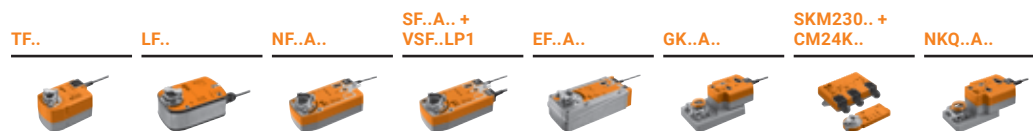
TF..	LF..	NF..A..	SF..A.. + VSF..LP1	EF..A..	GK..A..	SKM230.. + CM24K..	NKQ..A..

Mechanical accessories






Shaft extension		AV6-20	AV6-20	AV8-25	AV8-25			AV6-20	AV8-25
Adapter for auxiliary switches and feedback potentiometer							Z-SPA		Z-SPA
Baseplate extension				Z-SF	Z-SF		Z-GMA		
Angle of rotation limiter		ZDB-TF	ZDB-TF						
End stop clips								Z-ESCM	
Form fit inserts ¹⁾		ZF8-TF	ZF8-TF	ZF..-NSA-F	ZF..-NSA-F				
Gear disengagement magnet								Z-MA	
Lever for actuator drive shafts		AH-TF	KH-LF	KH-AFB	KH-AFB		AH-GMA		AH-25
Lever for damper shafts		KH8	KH8	KH8	KH8	KH10 KH-EFB	KH10		KH8
Shaft clamp, reversible			K6-1	K7-2 K7-3	K7-2 K7-3	K9-2			K-SA
Ball joints		KG8 KG10A	KG8 KG10A	KG8 KG10A	KG8 KG10A		KG10A		KG8 KG10A
Mounting sets for linkage actuation		ZG-TF1	ZG-LF1 ZG-LF3	ZG-AFB	ZG-AFB	ZG-EFB	ZG-GMA		ZG-SMA
Screw fastening kit		SB-TF							
Position indicator				IND-AFB	IND-AFB	IND-EFB	Z-PI	Z-PICM	Z-PI
Twist safety clamp								Z-ARCM	

¹⁾ Form fit inserts: TF../LF..: 8x8 mm; NF../SF..: 10x10 mm, 12x12 mm, 15x15 mm, 16x16 mm.

Fail-safe actuators



Electrical accessories

Auxiliary switches			S2A-F ¹⁾	S2A-F ¹⁾	S2A-F ¹⁾		S1A ³⁾ S2A ³⁾		S1A ²⁾ S2A ²⁾
Room temperature controller for modulating actuators		CR24..	CR24..	CR24..	CR24..	CR24..	CR24..		CR24
Feedback potentiometer			P200A-F ¹⁾ P1000A-F	P200A-F ¹⁾ P1000A-F	P200A-F ¹⁾ P1000A-F		P..A ^{3) 4)}		P..A ^{2) 4)}
Signal converter Voltage/current for modulating actuators		Z-UIC	Z-UIC	Z-UIC	Z-UIC	Z-UIC	Z-UIC		Z-UIC
Positioner/ Range controller For modulating actuators		CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24		CRP24-B1 SBG24 SGA24 SGE24 SGF24

Tools

Service Tool				ZTH EU ⁵⁾	ZTH EU ⁵⁾	ZTH EU ⁵⁾	ZTH EU ⁵⁾		
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¹⁾ For more versions for LF.., NF..A and SF..A actuators please get in touch with your local Belimo contact person.

²⁾ Auxiliary switch and feedback potentiometer on NKQ..A actuators can only be used together with adapter Z-SPA.

³⁾ Auxiliary switch and feedback potentiometer on GK..A actuators in combination with a reversible clamp (mounted underneath for short shaft installation) can only be used together with adapter Z-SPA.

⁴⁾ Resistance values 140 Ω, 200 Ω, 500 Ω, 1 kΩ, 2.8 kΩ, 5 kΩ, 10 kΩ available.

⁵⁾ For all ..MP.. actuators in the contracting and retrofit business.

Special actuators fail-safe



RobustLine rotary actuators for extreme conditions

NKQ..P..



IP66/67 NEMA 4X rotary actuators for outdoor applications

NF..G...



SF..G..



GK..G..



Actuators with high torque

PKCA..



Mechanical accessories













Lever for actuator drive shafts			AH-GMA	AH-GMA	AH-GMA	
Lever for damper shafts			KH10	KH10	KH10	
Ball joints			KG10A	KG10A	KG10A	
Mounting kit for linkage operation			ZG-GMA	ZG-GMA	ZG-GMA	
Adapter kit						ZPR..

Electrical accessories

Heating with humidistat AC 230 V (only available fitted ex factory)			HH230-FG	HH230-FG	HH230-MG	
Heating with humidistat AC/DC 24 V (only available fitted ex factory)			HH24-FG	HH24-FG	HH24-MG	
Heating with thermostat AC 230 V (only available fitted ex factory)			HT230-FG	HT230-FG	HT230-MG	
Heating with thermostat AC/DC 24 V (only available fitted ex factory)			HT24-FG	HT24-FG	HT24-MG	

Special actuators fail-safe






		RobustLine rotary actuators for extreme conditions	IP66/67 NEMA 4X rotary actuators for outdoor applications			Actuators with high torque
		NKQ..P..	NF..G...	SF..G..	GK..G..	PKCA..
						
Electrical accessories						
Auxiliary switches			(S2A-F GR) ¹⁾	(S2A-F GR) ¹⁾	(S2A) ¹⁾	
Room temperature controller for modulating actuators		CR24..	CR24..	CR24..	CR24..	
Feedback potentiometers			P..A GR ^{1) 2)}	P..A GR ^{1) 2)}	P..A GR ^{1) 2)}	
Signal converter Voltage/current For modulating actuators		Z-UIC	Z-UIC	Z-UIC	Z-UIC	
Positioner/ Range controller For modulating actuators		CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24	CRP24-B1 SBG24 SGA24 SGE24 SGF24	
Tools						
Service Tool			ZTH EU ³⁾	ZTH EU ³⁾	ZTH EU ³⁾	ZTH EU ³⁾
Belimo Assistant App						■

¹⁾ Combination only on request. Please get in touch with your local Belimo contact person.

²⁾ Resistance values 140 Ω, 200 Ω, 500 Ω, 1 kΩ, 2.8 kΩ, 5 kΩ, 10 kΩ available.

³⁾ For all ..24A-MP(..)-, ..24P-MP(..)- and ..24G-MP(..) actuators in the contracting and retrofit business.
For form fit inserts, please get in touch with your local Belimo contact person.

Rotary actuators

Nominal torque		2.5 Nm		4 Nm		10 Nm	
Damper size up to approx.		0.5 m²		0.8 m²		2 m²	
Nominal voltage	Running time motor 90°						
		TF..		LF..		NF..A..	
		Without auxiliary switch	With 1 SPDT auxiliary switch	Without auxiliary switch	With 1 SPDT auxiliary switch	Without auxiliary switch	With 2 SPDT auxiliary switches
Open/close							
AC/DC 24 V	40...75 s			LF24	LF24-S		
	75 s	TF24	TF24-S			NF24A	NF24A-S2
AC 230 V	40...75 s			LF230	LF230-S		
	75 s	TF230	TF230-S				
AC 24...240 V DC 24...125 V	75 s					NFA	NFA-S2
Modulating (2...10 V) ¹⁾							
AC/DC 24 V	150 s	TF24-SR		LF24-SR		NF24-SR	NF24-SR-S2
AC 230 V	150 s	TF230-SR					
Communicative ²⁾ , parametrisable ³⁾							
AC/DC 24 V	40...75 s			LF24-MFT2			
	75 s	TF24-MFT					
	150 s					NF24-MP NF24A-MOD ⁴⁾	
Technical data							
Shaft diameter	6...12.7 mm		8...16 mm		10...25.4 mm		
Motor sound power level	≤50 dB(A) @ 75 s		≤50 dB(A) @ 75 s		≤45 dB(A) @ 75 s		
Sound power level fail-safe position	≤62 dB(A) @ 25 s		≤62 dB(A) @ 20 s		≤62 dB(A) @ 20 s		
Running time fail-safe position 90°	<25 s		20 s		<20 s		
Manual override	–		–		Hand crank		
Degree of protection	IP42		IP54		IP54		
Position indication	Mechanical, add-on						
Connection	Connecting cable 1 m, PVC						
Direction of rotation	Selectable by mounting left/right						
Angle of rotation	Max. 95°, can be limited on one side by adjustable mechanical end stops						
Position indication	Mechanical (integrated)						
Ambient temperature	–30...50°C ⁵⁾						
Storage temperature	–40...80°C						
Ambient humidity	95% RH, non-condensing						
EMC	CE according to 2014/30/EU						

¹⁾ Modulating actuators: Positioning signal Y = 0...10 V, 100 kΩ; operating range 2...10 V/position feedback U = 2...10 V, max. 1 mA.

²⁾ You can find suitable system diagrams at www.belimo.com.

³⁾ Control, operating range, feedback, running time and other functions adjustable with PC-Tool or Service Tool ZTH EU.

⁴⁾ All MOD versions work with Modbus and BACnet.

⁵⁾ Heating for ambient temperatures to –40°C on request.

Other versions on request.



Rotary actuators

Nominal torque **20 Nm**

Damper size up to approx. 4 m²

30 Nm

Damper size up to approx. 6 m²

Nominal voltage	Running time motor 90°				
		SF..A..	EF..A..		
		Without auxiliary switch	With 2 SPDT auxiliary switches	Without auxiliary switch	With 2 SPDT auxiliary switches
Open/close					
AC/DC 24 V	75 s	SF24A	SF24A-S2	EF24A	EF24A-S2
AC 230 V	75 s			EF230A	EF230A-S2
AC 24...240 V DC 24...125 V	75 s	SFA	SFA-S2		
Modulating (2...10 V) ¹⁾					
AC/DC 24 V	150 s	SF24A-SR	SF24A-SR-S2	EF24A-SR	EF24A-SR-S2
Communicative ²⁾ , parametrisable ³⁾					
AC/DC 24 V	150 s	SF24A-MP SF24A-MOD ⁴⁾ VSF24A-LP1 ⁵⁾		EF24A-MP	
Technical data					
Shaft diameter	10...25.4 mm			12...26.7 mm	
Motor sound power level	≤45 dB(A) @ 75 s			≤50 dB(A) @ 75 s	
Sound power level fail-safe position	≤62 dB(A) @ 20 s			≤62 dB(A) @ 20 s	
Running time fail-safe position 90°	<20 s			<20 s	
Manual override	Hand crank			Hand crank	
Degree of protection	IP54			IP54/IP66 ⁶⁾	
Position indication	Mechanical, add-on				
Connection	Connecting cable 1 m, PVC				
Direction of rotation	Selectable by mounting left/right				
Angle of rotation	Max. 95°, can be limited on one side by adjustable mechanical end stops				
Position indication	Mechanical (integrated)				
Ambient temperature	-30...50°C ⁷⁾				
Storage temperature	-40...80°C				
Ambient humidity	95% RH, non-condensing				
EMC	CE according to 2014/30/EU				

¹⁾ Modulating actuators: Positioning signal Y = 0...10 V, 100 kΩ; operating range 2...10 V/position feedback U = 2...10 V, max. 1 mA.

²⁾ You can find suitable system diagrams at www.belimo.com.

³⁾ Control, operating range, feedback, running time and other functions with MP types adjustable with PC-Tool or Service Tool ZTH EU.

⁴⁾ All MOD versions work with Modbus and BACnet.

⁵⁾ All V.-LP1 versions are IoT-compatible and can exchange data with the Belimo Cloud.

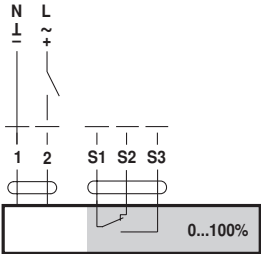
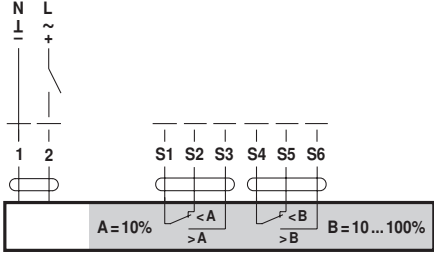
⁶⁾ IP66 version on request.

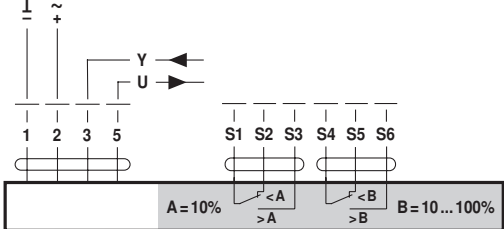
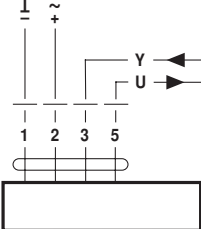
⁷⁾ Heating for ambient temperatures to -40°C on request.

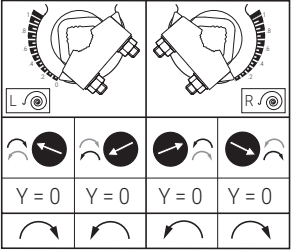
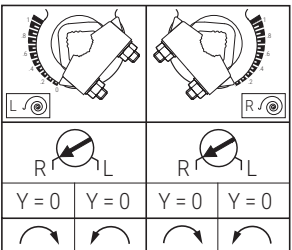
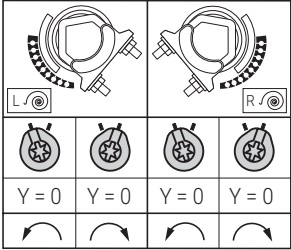
Other versions on request.

Rotary actuators

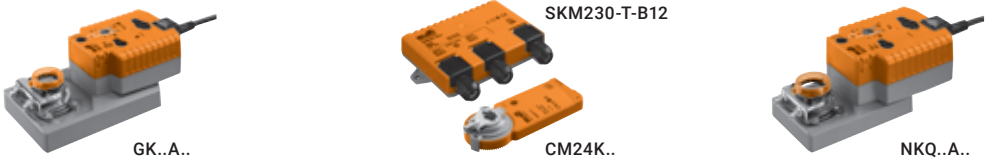
Electrical installation Electrical and mechanical accessories **Page 5-6**

Open/close	
..F24, ..F24-S, ..F230, ..F230-S	..F24, ..F24-S2, ..F230A, ..F230A-S2, ..FA, ..FA-S2
	

Modulating	Parametrisable
TF24-SR, TF230-SR, ..F24A-SR, ..F24A-SR-S2	..F24-MFT..., ..F24A-MP
Y = 0...10 V U = 2...10 V	Y = positioning signal U = position feedback
	

Direction of rotation		
Modulating		
TF24-SR, TF230-SR	LF24-SR	..F24A-SR, ..F24A-SR-S2
		

Rotary actuators and very fast running rotary actuators

Nominal torque	40 Nm	2 Nm	6 Nm																																																												
Damper size up to approx.	8 m ²	0.4 m ²	1.2 m ²																																																												
Nominal voltage																																																															
Open/close	AC/DC 24 V GK24A-1 CM24K-T-L.2 CM24K-T-R.2 NKQ24A-1																																																														
External supply module	AC 230 V SKM230-T-B12.1																																																														
Modulating (2...10 V) ¹⁾	AC/DC 24 V GK24A-SR NKQ24A-SR																																																														
Communicative ²⁾ , parametrisable ³⁾	AC/DC 24 V GK24A-MP GK24A-MOD ⁴⁾																																																														
Technical data	<table border="1"> <tr> <td>Shaft diameter</td><td>12...26.7 mm</td><td>6...12.7 mm</td><td>8...26.7 mm</td></tr> <tr> <td>Sound power level Motor</td><td>≤52 dB(A) @ 150 s</td><td>≤35 dB(A) @ 75 s</td><td>≤60 dB(A) @ 4 s</td></tr> <tr> <td>Sound power level Fail-safe position</td><td>≤61 dB(A) @ 35 s</td><td>≤55 dB(A) @ 15 s</td><td>≤60 dB(A) @ 4 s</td></tr> <tr> <td>Running time motor 90°</td><td>150 s</td><td>75 s</td><td>4 s</td></tr> <tr> <td>Running time fail-safe 90°</td><td>35 s</td><td>15 s</td><td>4 s</td></tr> <tr> <td>Degree of protection</td><td>IP54</td><td>IP20 (CM24..) / IP40 (SKM..)</td><td>IP54</td></tr> <tr> <td>Manual override</td><td>Gear disengagement with push button</td><td>Gear disengagement with magnet</td><td>Gear disengagement with push button</td></tr> <tr> <td>Connection</td><td>Connecting cable 1 m</td><td>Connecting terminals</td><td>Connecting cable 1 m</td></tr> <tr> <td>Direction of rotation</td><td>Selectable with switch</td><td>Selectable via actuator</td><td>Selectable with switch</td></tr> <tr> <td>Angle of rotation</td><td colspan="3">Max. 95°, can be limited on both sides by adjustable mechanical end stops</td></tr> <tr> <td>Position indication</td><td colspan="3">Mechanical, add-on</td></tr> <tr> <td>Ambient temperature</td><td colspan="3">-30...50°C</td></tr> <tr> <td>Storage temperature</td><td colspan="3">-40...80°C</td></tr> <tr> <td>Ambient humidity</td><td colspan="3">95% RH, non-condensing</td></tr> <tr> <td>EMC</td><td colspan="3">CE according to 2014/30/EU</td></tr> </table>			Shaft diameter	12...26.7 mm	6...12.7 mm	8...26.7 mm	Sound power level Motor	≤52 dB(A) @ 150 s	≤35 dB(A) @ 75 s	≤60 dB(A) @ 4 s	Sound power level Fail-safe position	≤61 dB(A) @ 35 s	≤55 dB(A) @ 15 s	≤60 dB(A) @ 4 s	Running time motor 90°	150 s	75 s	4 s	Running time fail-safe 90°	35 s	15 s	4 s	Degree of protection	IP54	IP20 (CM24..) / IP40 (SKM..)	IP54	Manual override	Gear disengagement with push button	Gear disengagement with magnet	Gear disengagement with push button	Connection	Connecting cable 1 m	Connecting terminals	Connecting cable 1 m	Direction of rotation	Selectable with switch	Selectable via actuator	Selectable with switch	Angle of rotation	Max. 95°, can be limited on both sides by adjustable mechanical end stops			Position indication	Mechanical, add-on			Ambient temperature	-30...50°C			Storage temperature	-40...80°C			Ambient humidity	95% RH, non-condensing			EMC	CE according to 2014/30/EU		
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¹⁾ Modulating actuators: Positioning signal Y = 0...10 V, 100 kΩ; operating range 2...10 V/position feedback U = 2...10 V, max. 0.5 mA.

²⁾ You can find suitable system diagrams at www.belimo.com.

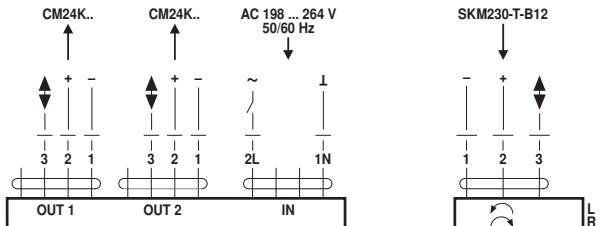
³⁾ Control, operating range, feedback, running time and other functions with MP types adjustable with PC-Tool or Service Tool ZTH EU.

⁴⁾ All MOD versions work with Modbus and BACnet.

Other versions on request.

Electrical installation

Electrical and mechanical accessories **Page 5-6**

Open/close	Open/close	Modulating	Parametrisable
SKM230-T-B12.1	CM24K-T..	..24A-SR	GK24A-MP
		Y = 0...10 V U = 2...10 V	Y = positioning signal U = position feedback

RobustLine rotary actuators for extreme conditions

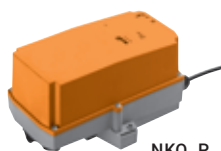
Nominal torque

6 Nm

Damper size up to approx.

1.2 m²

Nominal voltage



NKQ..P

Without auxiliary switch

Open/close

AC/DC 24 V

NKQ24P-1

Modulating (2...10 V)¹⁾

AC/DC 24 V

NKQ24P-SR

Technical data

Shaft diameter	10...20 mm
Running time motor 90°	4 s
Running time fail-safe 90°	4 s
Manual override	Gear disengagement with push button
Motor sound power level	≤60 dB(A) @ 4 s
Sound power level fail-safe position	≤60 dB(A) @ 4 s
Ambient temperature	-30...50°C
Connection	Connecting cable 1 m, FRNC
Direction of rotation	Selectable with switch
Angle of rotation	Max. 95°, can be limited on both sides by adjustable mechanical end stops
Position indication	Mechanical, add-on
Degree of protection	IP66/67 / NEMA 4X
Storage temperature	-40...80°C
Ambient humidity	100% RH
EMC	CE according to 2014/30/EU

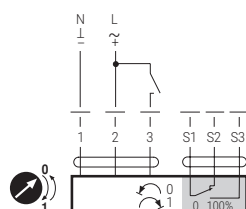
¹⁾ Modulating actuators: Positioning signal Y = 0...10 V, 100 kΩ;
operating range 2...10 V / position feedback U = 2...10 V, max. 0.5 mA for NKQ..P.
Other versions on request.

Electrical installation

Electrical and mechanical accessories **Page 7-8**

Open/close

NKQ24P-1

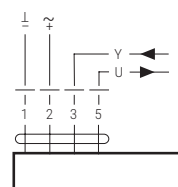


Modulating

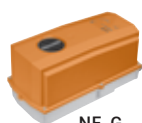

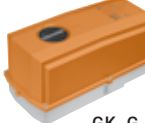
NKQ24P-SR

Y = 0...10 V

U = 2...10 V



IP66/67 / NEMA 4X rotary actuators for outdoor applications

Nominal torque		10 Nm		20 Nm		40 Nm				
Damper size up to approx.		2 m ²		4 m ²		8 m ²				
Nominal voltage	Running time motor 90°									
		NF..G		SF..G		GK..G				
Without auxiliary switch		With 2 SPDT auxiliary switches		Without auxiliary switch		With 2 SPDT auxiliary switches		Without auxiliary switch		
Open/close										
AC/DC 24 V	150 s							GK24G-1		
AC 24...240 V	<75 s	NFG-L	NFG-S2-L	SFG-L	SFG-S2-L					
DC 24...125 V										
Modulating (2...10 V) ¹⁾										
AC/DC 24 V	150 s	NF24G-SR-L	NF24G-SR-S2-L	SF24G-SR-L	SF24G-SR-S2-L	GK24G-SR				
Communicative ²⁾ , parametrisable ³⁾										
AC/DC 24 V	<75 s	NF24G-MP-L		SF24G-MP-L						
	150 s					GK24G-MP				
Technical data										
Shaft diameter		12...26.7 mm		12...26.7 mm		14...26.7 mm				
Running time fail-safe 90°		<20 s		<20 s		35 s				
Manual override		Hand crank		Hand crank		Gear disengagement with push button				
Sound power level		≤45 dB(A) @ 150 s		≤45 dB(A) @ 150 s		≤52 dB(A) @ 150 s				
Sound power level		≤62 dB(A) @ 20 s		≤62 dB(A) @ 20 s		≤61 dB(A) @ 35 s				
Fail-safe position										
Ambient temperature		-30...50°C (with heating to -40°C) ⁴⁾		-30...50°C (with heating to -40°C) ⁴⁾		-30...50°C				
Connection		Connecting cable 1 m, FRNC		Connecting cable 1 m, FRNC		Connecting cable 1 m, FRNC				
Direction of rotation		↺ counterclockwise rotation		↺ counterclockwise rotation		Selectable with switch				
Angle of rotation		Max. 95°, can be limited on one side by adjustable mechanical end stops								
Position indication		Mechanical, add-on								
Degree of protection		IP66/67 / NEMA 4X								
Storage temperature		-40...80°C								
Ambient humidity		100% RH								
EMC		CE according to 2014/30/EU								

¹⁾ Modulating actuators: Positioning signal Y = 0...10 V, 100 kΩ; operating range 2...10 V / position feedback U = 2...10 V, max. 1 mA for GM..G, NF..G and SF..G, max. 0.5 mA for SMQ..G and GK..G.

²⁾ You can find suitable system diagrams at www.belimo.com.

³⁾ Control, operating range, feedback, running time and other functions with MP types adjustable with PC-Tool or Service Tool ZTH EU.

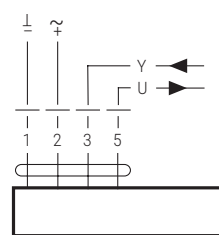
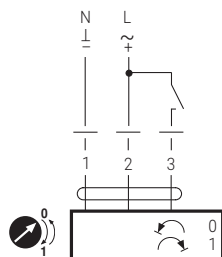
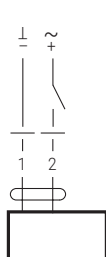
⁴⁾ Available with heating and thermostat/humidistat for ambient temperatures down to -40°C (see overview of accessories, **Pages 5-8**).

Other versions on request.

Electrical installation

Electrical and mechanical accessories **Page 7-8**

Open/close	Modulating	Parametrisable
..FG..-L	..24G-SR..	..24G-MP..
	Y = 0...10 V U = 2...10 V	Y = positioning signal U = position feedback



Actuators with high torque

Nominal torque

160 Nm

Damper size up to approx.

Special

Nominal voltage



PKCA..

Communicative, parametrisable

AC 24...240 V

PKCA-BAC-S2-T

DC 24...125 V

Control

Modulating (2...10 V)

Modulating (4...20 mA)

BACnet MS/TP

Modbus RTU

MP-Bus

Open/close

3-point

Technical data

Form fit	17x17 mm
Running time motor 90°	35 s (30...120 s variable)
Running time fail-safe 90°	30 s
Motor sound power level	68 dB(A)
Sound power level fail-safe position	68 dB(A)
Parametrisation, commissioning, maintenance	Belimo Assistant App, ZTH EU
Manual override	Hand crank
Auxiliary switches	2 x SPDT
Connection	Connecting terminals
Direction of rotation	Selectable with Tool
Position indication	Mechanical (integrated)
Degree of protection	IP66/67 / NEMA 4X
EMC	CE according to 2014/30/EU
Ambient temperature	-30...40°C
Storage temperature	-40...80°C
Ambient humidity	100% RH
EMC	CE according to 2014/30/EU

Electrical installation

Electrical and mechanical accessories Page 7-8

Open/close

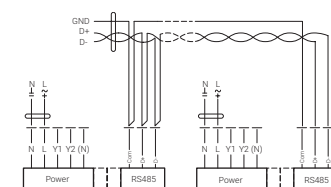
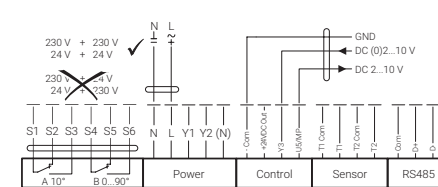
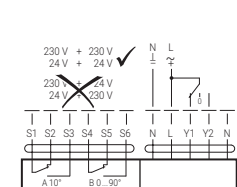
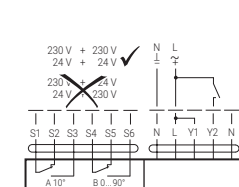
3-point

Modulating

Communicative (BACnet, Modbus)

PKCA-BAC-S2-T

PKCA-BAC-S2-T

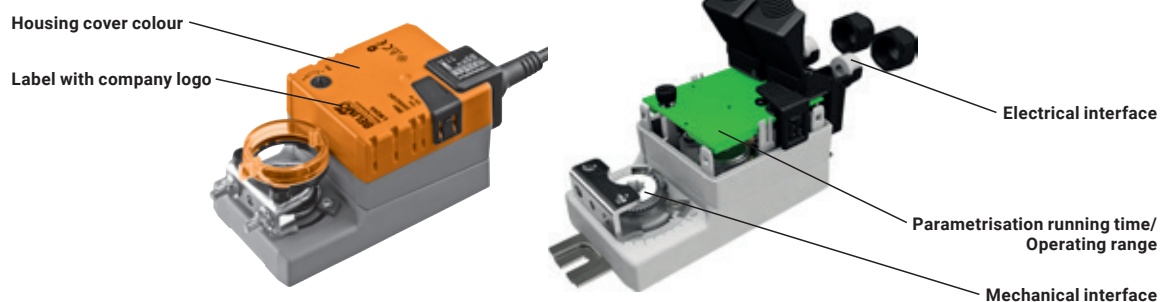


Configuration options

Some actuator product ranges permit adaptation to special customer preferences. These allow - on the basis of existing components - a selection of different cable lengths, mechanical interfaces, running times and operating ranges. Please get in touch with your local Belimo contact person.






Example

LM..A..



Numeration is not exhaustive.

Rotary actuators

	CM..	LM..A..	NM..A..	SM..A..	GM..A..
Configuration					
Housing cover colour	orange grey	orange grey	orange grey	orange grey	orange grey
Label with company logo, colour	Label: transparent Font: black	Label: transparent Font: black white	Label: transparent Font: black white	Label: transparent Font: black white	Label: transparent Font: black white
Mechanical interface	Shaft clamp, one-sided 6...12.7 mm Form fit 6x6 mm Form fit 8x8 mm Form fit 10x10 mm	Shaft clamp, one-sided 6...20 mm Form fit 8x8 mm Form fit 10x10 mm Form fit 12x12 mm	Shaft clamp, one-sided 8...26.7 mm Shaft clamp, reversible 8...20 mm Form fit 8x8 mm Form fit 10x10 mm Form fit 12x12 mm Form fit 16x16 mm	Shaft clamp, one-sided 8...26.7 mm Shaft clamp, reversible 10...20 mm Form fit 10x10 mm Form fit 12x12 mm Form fit 16x16 mm	Shaft clamp, reversible 12...26.7 mm
Electrical interface	Terminal connection IP20 Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC	Terminal connection IP20 Terminal connection IP54 Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC	Terminal connection IP20 Terminal connection IP54 Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC	Terminal connection IP20 Terminal connection IP54 Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC	Terminal connection IP20 Terminal connection IP54 Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC
Parametrisation running time	35 s 45 s 75 s	35 s 45 s 90 s 150 s	45 s 90 s 150 s	90 s 150 s	90 s 150 s
Parametrisation operating range	2...10 V 0.5...10 V Adaption option	2...10 V 0.5...10 V Adaption option	2...10 V 0.5...10 V Adaption option	2...10 V 0.5...10 V Adaption option	2...10 V 0.5...10 V Adaption option
Packaging	Single pack Multipack 20 pieces	Single pack Multipack 20 pieces	Single pack Multipack 20 pieces	Single pack Multipack 20 pieces	Single pack Multipack 20 pieces
General	Feasibility of the combinations on request Minimum order quantity with coloured label or customer logo: 20 pieces.				

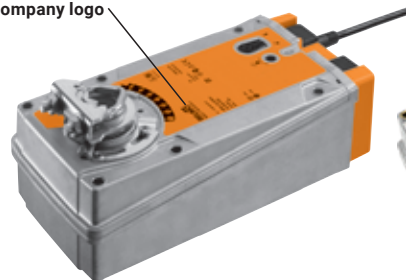
Configuration options

Some actuator product ranges permit adaptation to special customer preferences. These allow - on the basis of existing components - a selection of different cable lengths, mechanical interfaces, running times and operating ranges. Please get in touch with your local Belimo contact person.

Example

EF..A

Label with company logo







Parametrisation running time / Operating range

Electrical interface

Heating

Mechanical interface

Numeration is not exhaustive.

	Rotary actuators, fail-safe		Very fast running rotary actuators		Linear actuators			
	NF..A../SF..A..		EF..A..		LMQ..A..		LH..A..	
Configuration								
Housing cover colour	orange grey				orange grey		orange grey	
Label with company logo, colour	Label: orange blue grey	Font: black white black	Label: orange grey	Font: black	Label: transparent blue black	Font: black white white	Label: transparent blue black	Font: black white white
Mechanical interface	Shaft clamp, reversible 10...25.4 mm Form fit 10x10 mm Form fit 12x12 mm Form fit 16x16 mm		Shaft clamp, reversible 12...26.7 mm		Shaft clamp, one-sided 8...26.7 mm Shaft clamp, reversible Form fit 8x8 mm Form fit 10x10 mm Form fit 12x12 mm Form fit 16x16 mm		Without stroke limitation With stroke limitation	
Electrical interface	Terminal connection IP20 Terminal connection IP54 Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC		Terminal connection IP66 Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC		Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC		Terminal connection IP20 Terminal connection IP54 Cable 1 m, PVC Cable 1 m, FRNC Cable 3 m, FRNC Cable 5 m, FRNC	
Parametrisation running time	45 s 75 s 90 s 150 s		75 s 90 s 150 s		2.5 s 4 s 5 s 7 s 10 s		75 s/100 mm 90 s/100 mm 120 s/100 mm 150 s/100 mm	
Parametrisation operating range	2...10 V 0.5...10 V Adaption option		2...10 V 0.5...10 V Adaption option		2...10 V 0.5...10 V Adaption option		2...10 V 0.5...10 V Adaption option	
Packaging	Single pack Multipack 20 pieces		Single pack Multipack 20 pieces		Single pack Multipack 20 pieces		Single pack Multipack 20 pieces	
Special			Heating					
General	Feasibility of the combinations on request Minimum order quantity with coloured label or customer logo: 20 pieces.							

Subject to technical modifications





All inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air-conditioning systems. Actuators, valves and sensors represent our core business.

Always focusing on customer added value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our world-wide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.



5-year warranty



On site around the globe



Complete product range



Tested quality



Short delivery times



Comprehensive support



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