

Technical data sheet

NF24G-MP-L



Communicative rotary actuator failsafe for adjusting dampers in technical building installations

- Air damper size up to approx. 2 m²
- Torque motor 10 Nm
- Nominal voltage AC/DC 24 V
- Control modulating, communicative 2...10 V variable
- Position feedback 2...10 V variable
- Conversion of sensor signals
- Communication via Belimo MP-Bus
 Ontimum weather protection for
- Optimum weather protection for use outdoors (for use in ambient temperatures up to -40°C, there is a separate actuator available with built-in heater ex works)

Technical data

Electrical data	Nominal voltage	AC/DC 24 V	
	Nominal voltage frequency	50/60 Hz	
	Nominal voltage range	AC 19.228.8 V / DC 21.628.8 V	
	Power consumption in operation	7 W	
	Power consumption in rest position	3.5 W	
	Power consumption for wire sizing	9.5 VA	
	Connection supply / control	Cable 1 m, 4 x 0.75 mm ² (halogen-free)	
	Parallel operation	Yes (note the performance data)	
Functional data	Torque motor	10 Nm	
	Torque fail-safe	10 Nm	
	Communicative control	MP-Bus	
	Operating range Y	210 V	
	Input Impedance	100 kΩ	
	Options positioning signal	Open/close	
	optionic poontorning eignat	3-point (AC only)	
		Modulating (DC 032 V)	
	Operating range Y variable	Start point 0.530 V	
		End point 2.532 V	
	Position feedback U	210 V	
	Position feedback U note	Max. 0.5 mA	
	Position feedback U variable	Start point 0.58 V	
		End point 2.510 V	
	Position accuracy	±5%	
	Direction of motion motor	selectable with switch L/R	
	Direction of motion note	Y = 0 V: At switch position 0 (ccw rotation) /	
	Diverties of metion verifield	1 (cw rotation)	
	Direction of motion variable	electronically reversible	
	Direction of motion fail-safe	L (ccw)	
	Manual override	by means of hand crank and locking switch	
	Angle of rotation	Max. 95°	
	Angle of rotation note	adjustable starting at 33% in 2.5% steps (with mechanical end stop)	
	Running time motor	150 s / 90°	
	Running time motor variable	40150 s	
	Running time fail-safe	<20 s / 90°	
	Running time fail-safe note	@ -2050°C / <60 s @ -30°C	
	Adaptation setting range	manual	
	Adaptation setting range variable	No action	
	· · · · · · · · · · · · · · · · · · ·	Adaptation when switched on	
		Adaptation after using the hand crank	
	Override control	MAX (maximum position) = 100%	
		MIN (minimum position) = 0%	
		ZS (intermediate position, AC only) = 50%	
	Override control variable	MAX = (MIN + 32%)100%	
		MIN = 0%(MAX - 32%)	
		ZS = MINMAX	
	Sound power level, motor	40 dB(A)	
	Mechanical interface	Universal shaft clamp 1226.7 mm	

Technical data

Rotary actuator fail-safe, IP66/67, modulating, communicative, AC/DC 24 V, 10 Nm, Communication via Belimo MP-Bus



Functional data	Position indication	Mechanically, pluggable
	Service life	Min. 60'000 fail-safe positions
Safety	Protection class IEC/EN	III Safety Extra-Low Voltage (SELV)
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP66/67
	Degree of protection NEMA/UL	NEMA 4X
	Enclosure	UL Enclosure Type 4X
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL60730-1A, UL60730-2- 14 and CAN/CSA E60730-1:02
	Certification UL note	The UL marking on the actuator depends on the production site, the device is UL-compliant in
		any case
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	4
	Ambient temperature	-3050°C
	Ambient temperature note	-4050°C for actuator with integrated heating
	Storage temperature	-4080°C
	Ambient humidity	Max. 100% r.H.
	Servicing	maintenance-free
Weight	Weight	4.9 kg

Safety notes



• The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.

- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- Junction boxes must at least correspond with enclosure IP degree of protection!
- The cover of the protective housing may be opened for adjustment and servicing. When it is closed afterwards, the housing must seal tight (see installation instructions).
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cables must not be removed from the device installed in the interior.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The actuator is not designed for applications where chemical influences (gases, fluids) are present or for utilisation in corrosive environments in general.
- The actuator may not be used in plenary applications (e.g. suspended ceilings or raised floors).
- The materials used may be subjected to external influences (temperature, pressure, construction fastening, effect of chemical substances, etc.), which cannot be simulated in laboratory tests or field trials. In case of doubt, we definitely recommend that you carry out a test. This information does not imply any legal entitlement. Belimo will not be held liable and will provide no warranty.
- Flexible metallic cable conduits or threaded cable conduits of equal value are to be used for UL (NEMA) Type 4X applications.
- When used under high UV loads, e.g. extreme sunlight, the use of flexible metallic or equivalent cable conduits is recommended.



	Dennio Mr-Dus
Product features	
Fields of application	The actuator is particularly suitable for utilisation in outdoor applications and is protected against the following weather conditions: - UV radiation - Rain / Snow - Dirt / Dust - Air humidity - Alternating climate / frequent and severe temperature fluctuations (Recommendation: use the actuator with integrated factory-installed heating which can be ordered separately to prevent internal condensation)
Mode of operation	Conventional operation: The actuator is connected with a standard modulating signal of 010 V and moves the damper to the operating position at the same time as tensioning the return spring. The damper is turned back to the fail-safe position by spring force when the supply voltage is interrupted. Operation on Bus: The actuator receives its digital positioning signal from the higher level controller via the MP-Bus and drives to the position defined. Connection U serves as communication interface and does not supply an analogue measuring voltage.
Converter for sensors	Connection option for a sensor (passive or active sensor or switching contact). The MP actuator serves as an analogue/digital converter for the transmission of the sensor signal via MP-Bus to the higher level system.
Parametrisable actuators	The factory settings cover the most common applications. Single parameters can be modified with the Belimo Service Tools MFT-P or ZTH EU.
Simple direct mounting	Simple direct mounting on the damper shaft with a universal shaft clamp, supplied with an anti-rotation device to prevent the actuator from rotating.
Manual override	By using the hand crank the damper can be actuated manually and engaged with the locking switch at any position. Unlocking is carried out manually or automatically by applying the operating voltage. The housing cover must be removed for manual override.
Adjustable angle of rotation	Adjustable angle of rotation with mechanical end stops.
High functional reliability	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
Home position	The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a synchronisation. The synchronisation is in the home position (0%). The actuator then moves into the position defined by the positioning signal.
Adaption and synchronisation	An adaption can be triggered manually by pressing the "Adaption" button or with the PC-Tool. Both mechanical end stops are detected during the adaption (entire setting range). Automatic synchronisation after actuating the hand crank is programmed. The synchronisation is in the home position (0%). The actuator then moves into the position defined by the positioning signal. A range of settings can be adapted using the PC-Tool (see MFT-P documentation)

Accessories

	Description	Туре
Gateways	Gateway MP to Modbus RTU	UK24MOD
	Gateway MP zu BACnet MS/TP	UK24BAC
	Gateway MP to LonWorks	UK24LON
	Gateway MP to KNX	UK24EIB
	Description	Туре
Electrical accessories	Auxiliary switch 2 x SPDT	S2A-F
	Feedback potentiometer 200 Ω	P200A-F
	Feedback potentiometer 1 kΩ	P1000A-F
	Signal converter voltage/current 100 k Ω Supply AC/DC 24 V	Z-UIC
	Range controller for wall mounting	SBG24
	Positioner for wall mounting	SGA24
	Positioner for built-in mounting	SGE24



Accessories

	Description	Туре
	Positioner for front-panel mounting	SGF24
	Positioner for wall mounting	CRP24-B1
	Connection cable 5 m, A: RJ11 6/4 ZTH EU, B: 6-pin service socket for Belimo device	ZK1-GEN
	Connection cable 5 m, A: RJ11 6/4 ZTH EU, B: free wire end for connection to MP/PP terminal	ZK2-GEN
	Connecting board MP-Bus for wiring boxes EXT-WR-FPMP	ZFP2-MP
	MP-Bus power supply for MP actuators	ZN230-24MP
	Description	Туре
lechanical accessories	Cable gland for cable diameter Ø 410 mm	Z-KB-PG11
	Description	Туре
Service Tools	Service Tool, with ZIP-USB function	ZTH EU
	Belimo PC-Tool, Software for adjustments and diagnostics	MFT-P
	Adapter for Service-Tool ZTH	MFT-C

Combination with auxiliary switch only on request. Please contact your Belimo representative!
 Combination with feedback potentiometer only on request. Please contact your Belimo representative!

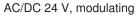
Electrical installation		
$\underline{\wedge}$	Notes	 Connection via safety isolating transformer. Parallel connection of other actuators possible. Observe the performance data.

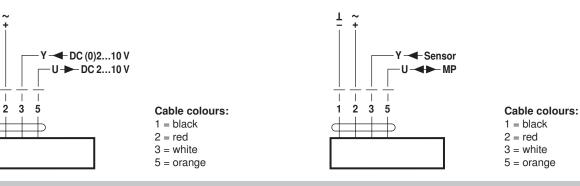
Wiring diagrams

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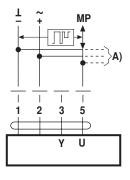




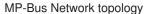
Functions

Functions when operated on MP-Bus

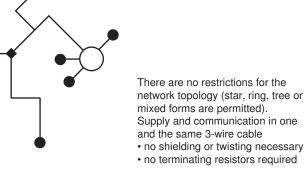
Connection on the MP-Bus



A) more actuators and sensors (max.8)



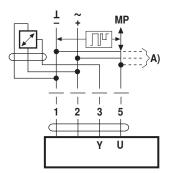
Operation on the MP-Bus



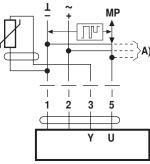


Functions

Connection of active sensors



Connection of passive sensors



Ni1000	–28+98°C	8501600 Ω ²⁾
PT1000	–35+155°C	8501600 Ω ²⁾
NTC	-10+160°C ¹⁾	200 Ω60 kΩ ²⁾

A) more actuators and sensors

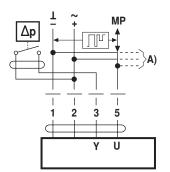
Supply AC/DC 24 V

(max. DC 0...32 V)

Resolution 30 mV

Output signal DC 0...10 V

(max.8)



Connection of external switching contact

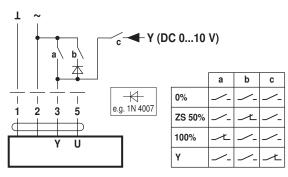
A) more actuators and sensors (max.8)

 Switching current 16 mA @ 24 V Start point of the operating range must be parameterised on the MP actuator as $\geq 0.5 \text{ V}$

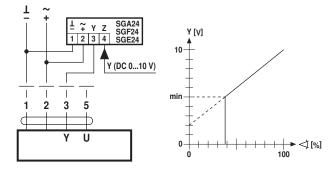
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Functions with basic values (conventional mode)

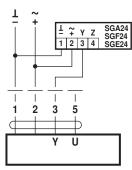
Override control with AC 24 V with relay contacts



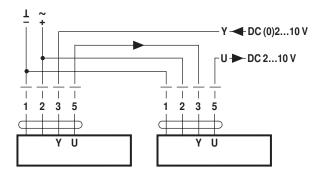
Minimum limit with positioner SG..



Control remotely 0...100% with positioner SG..

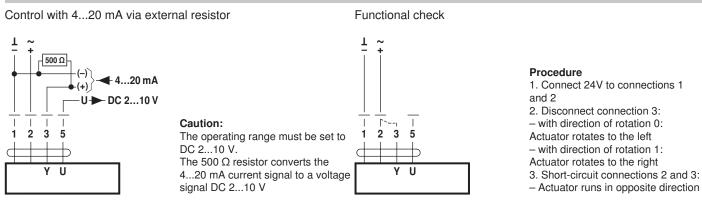


Follow-up control (position-dependent)



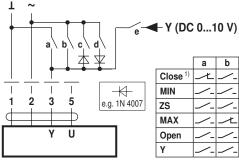


Functions



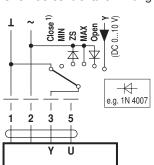
Functions for devices with specific parameters (Parametrisation necessary)

Override control and limiting with AC 24 V with relay contacts



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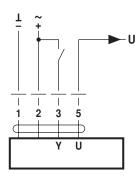
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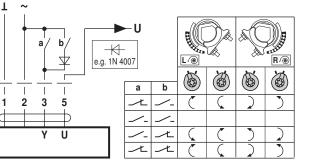
Override control and limiting with AC 24 V with rotary switch

1) Caution: This function is only guaranteed if the start point of the operating range is defined as min. 0.5 V.

Control open/close



Control 3-point

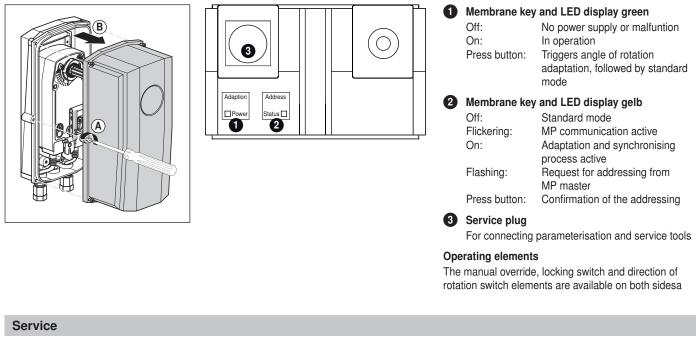


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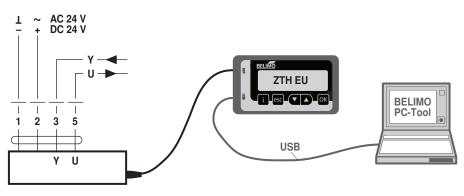
Operating controls and indicators



Service Tools connection

The actuator can be parametrised by ZTH EU via the service socket. For an extended parametrisation the PC tool can be connected.

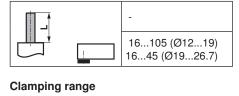
Connection ZTH EU / PC-Tool

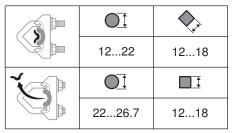


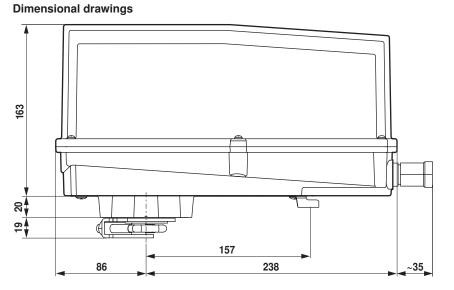


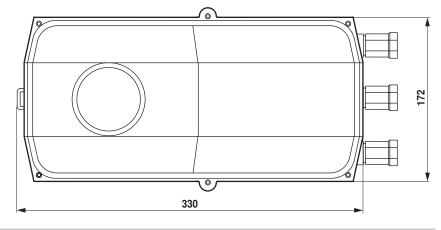
Dimensions [mm]

Spindle length









Further documentation

- Overview MP Cooperation Partners
- Tool connections
- Introduction to MP-Bus Technology