



Bus solutions from Belimo.
The best connection.

**BELIMO**[®]



Integrating, communicating, controlling. Bus solutions for building technology.

The networking of building technology systems enhances comfort, safety and transparency in air-conditioned buildings. Thanks to this transparency, operation can be optimised and overall energy consumption reduced – just as readily in new systems as in retrofitting or renovation projects. This networking of the individual components can be easily undertaken with bus systems, extending throughout the entire building.

Bus solutions from Belimo.

Tapping into advantages.

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. The installation work is simpler and, thanks to time and material savings (cables, terminals, connectors, etc.), cheaper too. 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.

MP actuators and sensors from Belimo – Save money and energy



Directed to all higher-level systems

The MP-Bus® from Belimo was specially developed as a master-slave system for HVAC actuators and sensors. It allows up to eight different final controlling elements to be grouped together and connected to any higher-level system. Gateways and DDC controllers with an integrated MP interface serve as the MP master.

Easy wiring

The MP-Bus® combines supply and communication in just three wires and uses just one simple installation cable. It is very resistant to external interferences and does not need bus terminations.

The right actuators for every application

Multifunctional MP and communicative MPL actuators from Belimo are suitable for the integration of the final controlling elements in the MP-Bus®. These are available as rotary, full-rotation and linear actuators for a very wide variety of damper types and volumetric flow units. Also available is the wide array of MP-Bus®-capable motorised valves – ranging from characterised control valves through butterfly valves and globe valves all the way to the intelligent Belimo Energy Valve™ with built-in web server for energy monitoring.

Modbus actuators and sensors from Belimo – The simple approach to Modbus



Used all over the world

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

Direct connection to Modbus RTU & TCP

The RS-485 interface installed in the Modbus devices enables the direct connection of the HVAC final controlling elements to Modbus RTU. Up to 32 actuators can be connected to a Modbus line. Modbus TCP is very similar to RTU, but TCP/IP packets are used to transmit the data. Communication takes place on the IP network.

Ready-to-connect for equipment manufacturing

The Modbus actuator can be provided with an RJ12 socket for the cabling of devices with a compact structure (e.g. central ventilation device). This actuator version permits rapid, error-free wiring.

Fast addressing

In order to simplify commissioning in equipment manufacturing even further, the Modbus address for many actuators can be set in a configurable range using a pin (e.g. 131...146).

Bus solutions from Belimo. Tapping into advantages.

BACnet actuators and sensors from Belimo – Interoperability with B-ASC and B-SS



Interoperability with BACnet

BACnet is a proven, commonly 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 B-ASC and B-SS as well as the associated BACnet Interoperability Building Blocks guarantees genuine compatibility between various BACnet devices.

BACnet IP and MS/TP

BACnet distinguishes between MS/TP and IP. BACnet MS/TP can be realised with a serial interface in the actuator. An Ethernet interface is used to connect to BACnet IP. The Belimo Energy Valve™, for example, can be integrated directly in the BACnet IP network.

KNX actuators from Belimo – Direct integration in KNX networks



KNX-certified actuators

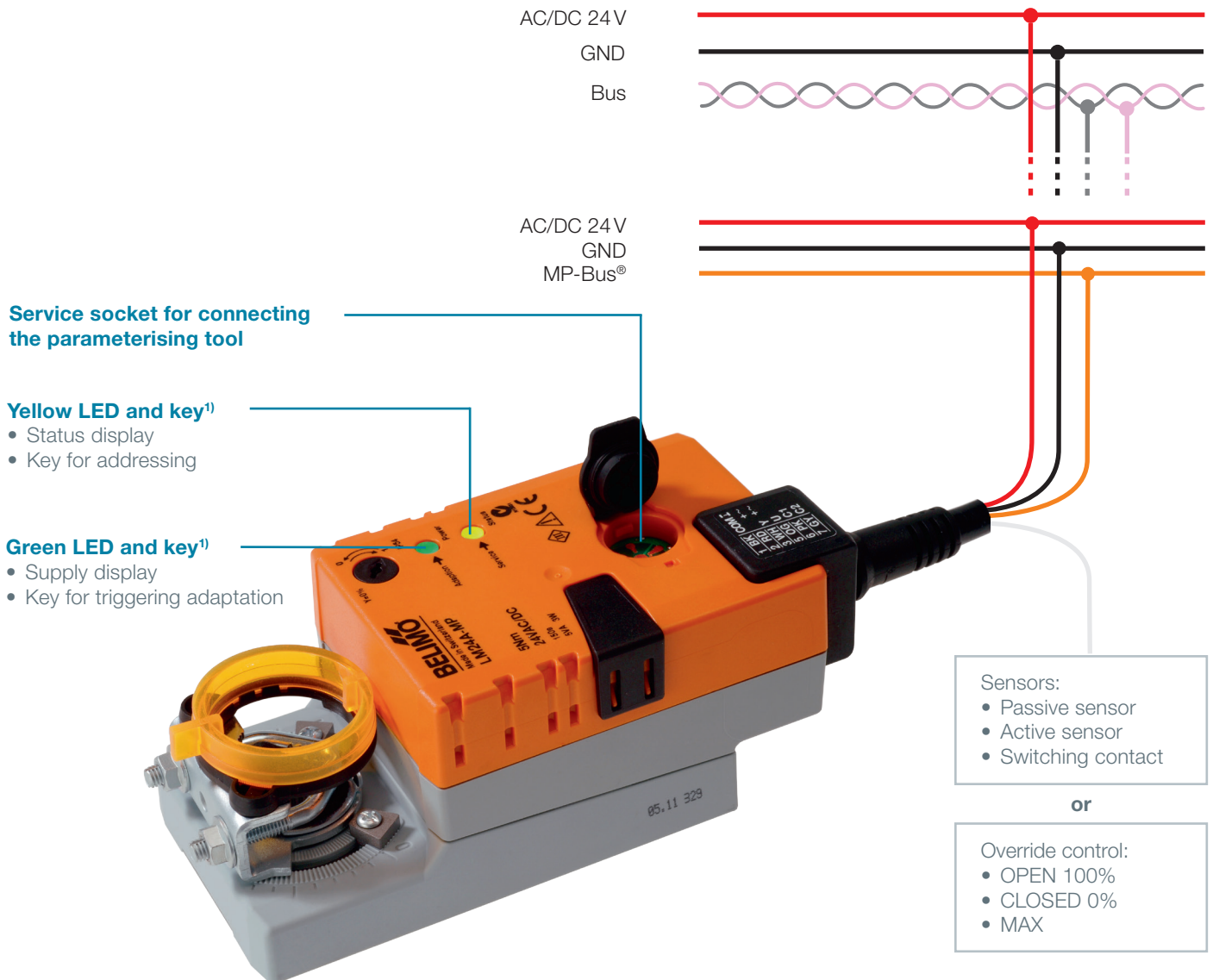
KNX is a well-engineered building automation system used around the world to control systems spanning several maintenance groups, such as heaters, blinds and security technology in buildings. The KNX-certified actuators enable a direct connection to the KNX network with a maximum of 64 nodes per line. Communication takes place via the integrated KNX interface (S-Mode).

Product database for ETS

KNX systems are always commissioned using the project planning and commissioning tool ETS. The actuators from Belimo, including the sensor, can be easily configured in the ETS using the available product database, allowing integration errors to be minimised.

Good to know.

Override control and sensor integration included



Simple and low-cost

Sensors can be connected directly to actuators or override control can be realised locally. This allows the costs for planning, installation, operation and maintenance to be minimised.

- A sensor²⁾ can be connected to many actuators capable of communication. This may be a passive resistance sensor (Pt1000, Ni1000, NTC etc.), an active sensor (e.g. with a DC 0...10 V output) or a switching contact. Its signals are digitised in the Belimo actuator and transferred to the higher-level bus system.
- Using local override control, the actuator can be fully closed or opened and a preset maximum value also approached.

¹⁾The function of the key differs depending on the type of actuator.

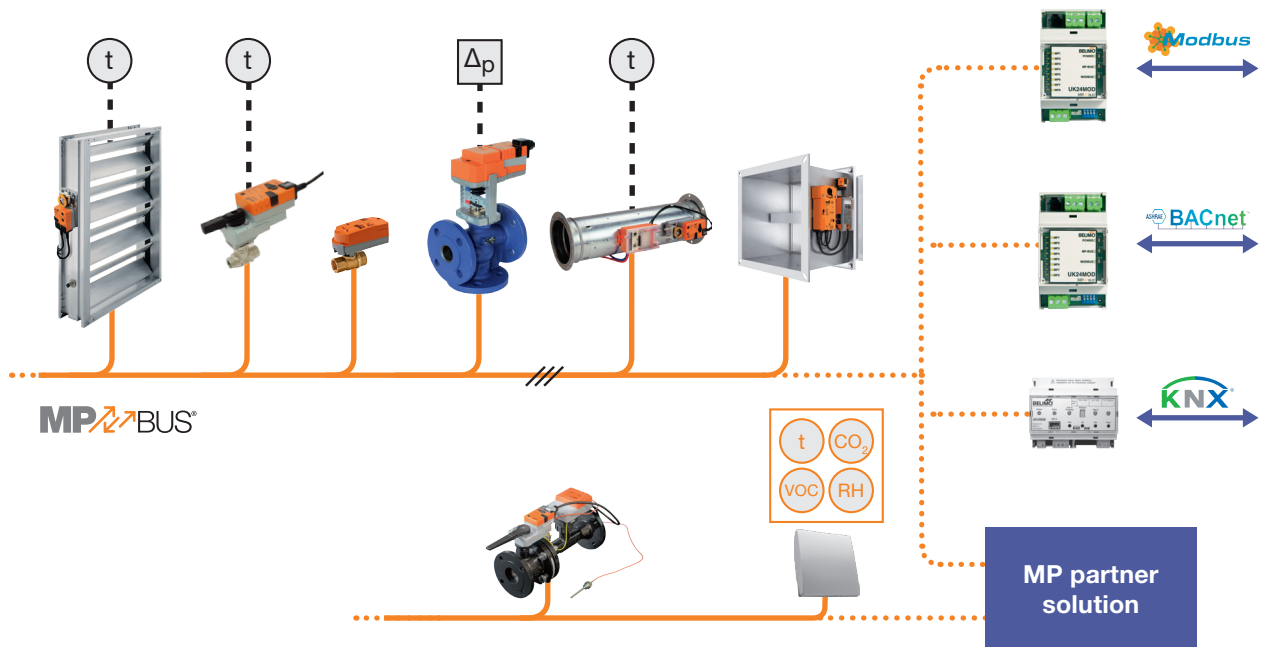
²⁾For sensor compatibility per actuator, see overview list.

MP gateway and partner solutions from Belimo. Structured system integration.

MP connections via Belimo gateways and solutions from third-party suppliers

The Belimo gateways and our MP partner solutions are used to convert the signals of the actuators which are grouped together in the MP-Bus® and those of the sensors for the relevant networks. This enables a structured integration of clearly arranged and manageable sub-systems.

Belimo provides the MP specification to interested manufacturers of DDC controllers. They can use these specifications to implement a corresponding hardware/software MP interface in their devices.



Tested MP partner linkages

The close cooperation between the manufacturers of the DDC controllers and Belimo results in solutions of the highest possible quality. The linkages for the MP-Bus® resulting from the joint development efforts are subjected to a conformity test and awarded the MP-BUS COMPATIBLE label when they pass it successfully.

Label:

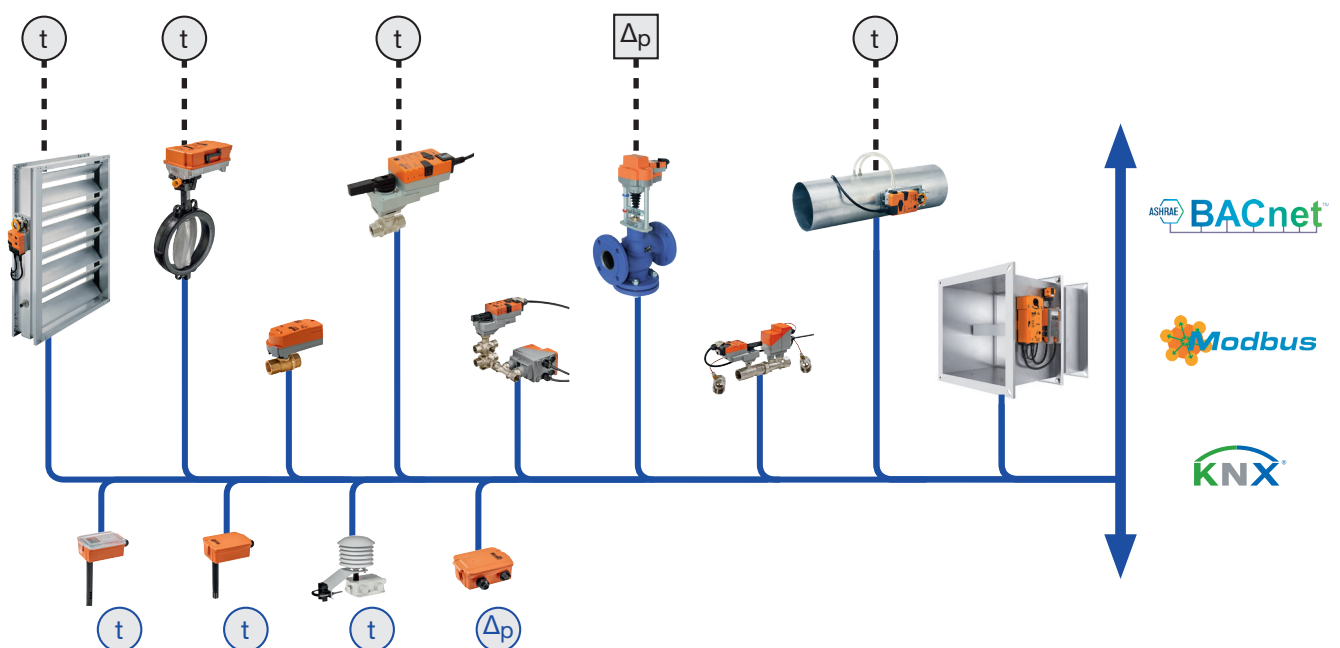


A current overview of recognised MP partners of Belimo can be found at www.belimo.eu.

Bus devices from Belimo. Direct connection for dampers, valves and sensors.

Simple integration in various bus systems

In cases where the customer wishes to connect a device directly to a higher level network, Belimo provides various actuators with an integrated interface. This enables a direct connection to field buses commonly used for HVAC without additional hardware, which eliminates additional sources of error. The system integrators can integrate the bus devices easily and using a software environment with which they are familiar.



Comprehensive product range

Our range includes actuators and sensors for Modbus, BACnet, LON and KNX. This range is continuously being expanded. You will find a complete product overview at www.belimo.eu/busdevice or by scanning the QR code below.



Practical tools from Belimo. Simple handling.

Simple parameterisation, commissioning and monitoring

As a rule, MP, Modbus, BACnet, KNX and LON actuators and sensors are shipped from the factory with typical basic settings. Parameters such as running time, angle of rotation, stroke limitations, etc. can also be individually adjusted and customised precisely to the requirements of the respective system.

The Belimo PC-Tool MFT-P and the practical ZTH EU adjustment tool are available as aids for this purpose. Depending on the place of utilisation and the task, they facilitate on-site parameterisation, commissioning, diagnostics and evaluation. Actuators with the NFC function can be parameterised using the Belimo Assistant App via an NFC enabled smartphone or with the assistance of the Bluetooth to NFC converter.

Belimo tools

Belimo PC-Tool

- Diagrams of actual and nominal values and displacements
- Create and print trend evaluations
- Useful tool for troubleshooting on the MP-Bus®
- Access levels can be defined and managed via release code
- Specialised software for OEMs to make efficient use of the tool in the production process
- Runs reliably in the Microsoft Windows® environment (Windows 7 / 8 / 10)



ZTH EU adjustment tool

- The handy ZTH EU adjustment tool is connected directly to the actuator for parameterisation
- Reliable and proven connection via the tool socket
- Supply via actuator – always ready
- MP-Bus® tester integrated (packet counter, signal level)
- ZIP level converter to USB for connecting the actuator with the PC-Tool

You can find further information about the possible connections of the ZTH EU adjustment tool at www.belimo.eu/pdf/d/Tool-Anschluesse.pdf or by scanning the QR code below.



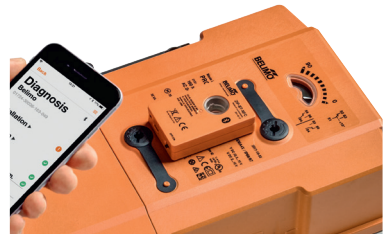
Belimo Assistant App

- Belimo devices marked with the NFC logo can be parameterised using the Assistant App
- Can be installed on all Android mobile phones and iPhones
- Can be operated with ease using the smartphone's touch display
- The actuator can be parameterised while de-energised
- Updates are undertaken automatically via the Google Play or Apple App store



ZIP-BT-NFC Bluetooth to NFC converter

- Allows for simple use of the Belimo Assistant App via Bluetooth with Android mobile phones and iPhones in order to parameterise NFC enabled actuators
- Safe to attach to the actuator thanks to countless micro suction cups attached to the bottom



Parameterise with which tool?

Which tool is suitable for which actuator can be simplified as follows:

- | | | | |
|--|---------------|-------------------------|-----------|
| • All actuators with the endings "-MOD" and "-MP": | ZTH EU | • Belimo Energy Valve™: | Webserver |
| • All actuators with the ending "-BAC": | Assistant App | • BKN230-24-MOD: | Manual |

Actuator solutions for MP-Bus®.



Types ¹⁾	Rating	Passive sensor	Active sensor	Switching contact	Parameterisable	UK24BAC	UK24MOD	UK24LON	UK24EIB
General air solutions									
Rotary actuators									
CM24-MPL-L	2 Nm					•	•	•	
CM24-MPL-R	2 Nm					•	•	•	
LM24A-MP	5 Nm	•	•	•	•	•	•	•	•
NM24A-MP	10 Nm	•	•	•	•	•	•	•	•
SM24A-MP	20 Nm	•	•	•	•	•	•	•	•
GM24A-MP	40 Nm	•	•	•	•	•	•	•	•
Rotary actuators with emergency control function									
TF24-MFT	2 Nm		•	•	•	•	•	•	•
LF24-MFT2	4 Nm	•	•	•	•	•	•	•	•
NF24A-MP	10 Nm	•	•	•	•	•	•	•	•
SF24A-MP	20 Nm	•	•	•	•	•	•	•	•
EF24A-MP	30 Nm	•	•	•	•	•	•	•	•
GK24A-MP	40 Nm	•	•	•	•	•	•	•	•
Linear actuators									
LH24A-MP... 60/100/200/300	150 N	•	•	•	•	•	•	•	•
SH24A-MP... 100/200/300	450 N	•	•	•	•	•	•	•	•
Linear actuators with emergency control function									
LHK24A-MP100	150 N	•	•	•	•	•	•	•	•
SHK24A-MP100	450 N	•	•	•	•	•	•	•	•
Full-rotation actuator									
LU24A-MP	3 Nm	•	•	•	•	•	•	•	•
Fast running rotary actuators									
NMC24A-MP	10 Nm	•	•	•	•	•	•	•	•
SMC24A-MP	20 Nm	•	•	•	•	•	•	•	•
Rotary actuators for special applications									
NM24P-MP	10 Nm	•	•	•	•	•	•	•	•
SM24P-MP	20 Nm	•	•	•	•	•	•	•	•
GM24G-MP-T	40 Nm	•	•	•	•	•	•	•	•
Rotary actuators with emergency control function for special applications									
NF24G-MP-L	10 Nm	•	•	•	•	•	•	•	•
SF24G-MP-L	20 Nm	•	•	•	•	•	•	•	•
GK24G-MP	40 Nm	•	•	•	•	•	•	•	•

¹⁾ The currently available product range can be found online at www.belimo.eu.

Actuator solutions for MP-Bus®.



Types ¹⁾	Rating	Passive sensor	Active sensor	Switching contact	Parameterisable	UK24BAC	UK24MOD	UK24LON	UK24EIB
Water solutions									
Actuators for characterised control valves / open-close ball valves									
CQ24A-MPL	1 Nm					•	•	•	
LR24A-MP	5 Nm	•	•	•	•	•	•	•	•
NR24A-MP	10 Nm	•	•	•	•	•	•	•	•
SR24A-MP	20 Nm	•	•	•	•	•	•	•	•
Actuators with emergency control function for characterised control valves / open-close ball valves									
TRF24-MFT	2 Nm	•		•	•	•	•	•	•
LRF24-MP	4 Nm	•	•	•	•	•	•	•	•
NRF24A-MP	10 Nm	•	•	•	•	•	•	•	•
Actuators for globe valves									
LV24A-MP-TPC	500 N	•	•	•	•	•	•	•	•
NV24A-MP-TPC	1000 N	•	•	•	•	•	•	•	•
SV24A-MP-TPC	1500 N	•	•	•	•	•	•	•	•
EV24A-MP-TPC	2500 N	•	•	•	•	•	•	•	•
Actuators with emergency control function for globe valves									
NVK24A-MP-TPC	1000 N	•	•	•	•	•	•	•	•
AVK24A-MP-TPC	2000 N	•	•	•	•	•	•	•	•
Fast running actuators for globe valves									
LVC24A-MP-TPC	500 N	•	•	•	•	•	•	•	•
NVC24A-MP-TPC	1000 N	•	•	•	•	•	•	•	•
SVC24A-MP-TPC	1500 N	•	•	•	•	•	•	•	•
Fast running actuator with emergency control function for globe valves									
NVKC24A-MP-TPC	1000 N	•	•	•	•	•	•	•	•
Actuators for butterfly valves									
SR24A-MP-5	20 Nm	•	•	•	•	•	•	•	•
GR24A-MP-5/7	40 Nm	•	•	•	•	•	•	•	•
DR24A-MP-...5/7	90 Nm	•	•	•	•	•	•	•	•
PRCA-BAC-S2-T	160 Nm	•			•	•	•	•	•
PRKCA-BAC-S2-T	160 Nm	•			•	•	•	•	•
SY2-24-MP-T	90 Nm	•	•	•	•	•	•	•	•
SY2-230-MP-T	90 Nm				•	•	•	•	•
SY3-24-MP-T	150 Nm	•	•	•	•	•	•	•	•
SY3-230-MP-T	150 Nm				•	•	•	•	•
SY4-24-MP-T	400 Nm	•	•	•	•	•	•	•	•
SY4-230-MP-T	400 Nm				•	•	•	•	•
SY5-24-MP-T	500 Nm	•	•	•	•	•	•	•	•

¹⁾ The currently available product range can be found online at www.belimo.eu.

Actuator solutions for MP-Bus®.



Types ¹⁾	Rating	Passive sensor	Active sensor	Switching contact	Parameterisable	UK24BAC	UK24MOD	UK24LON	UK24EIB
Safety solutions									
"BF-TopLine" actuator for fire dampers									
BKN230-24MP for connecting BF(G)24TL-T-ST	11 / 18 Nm				•	•	•		
Standard actuator for fire dampers									
BKN230-24-C-MP for connecting BF..24-...ST	4 / 9 / 11 / 18 Nm				•	•	•		
Room and system solutions									
VAV compact rotary actuators									
LMV-D3-MP	5 Nm	•	•	•	•	•	•	•	•
NMV-D3-MP	10 Nm	•	•	•	•	•	•	•	•
SMV-D3-MP	20 Nm	•	•	•	•	•	•	•	•
VAV compact linear actuator									
LHV-D3-MP	150 N	•	•	•	•	•	•	•	•
VAV Universal									
VRP-M			•		•	•	•	•	•
VAV control system for controlled living area ventilation systems									
CMV-100-MP	DN 100		•	•	•	•	•	•	•
CMV-125-MP	DN 125		•	•	•	•	•	•	•
CMV-150-MP	DN 150		•	•	•	•	•	•	•
CMV-160-MP	DN 160		•	•	•	•	•	•	•
HVAC performance devices									
EPIV									
EP..R-R6+BAC	DN 15-20				•				
EP..R+MP	DN 15-50		•	•	•	•	•	•	•
P..W..E-MP	DN 65-150		•	•	•	•	•	•	•
Belimo Energy Valve™									
EV..R+BAC	DN 15-50				•				
P..W..EV-BAC	DN 65-150				•				

¹⁾ The currently available product range can be found online at www.belimo.eu.

Sensor solutions for MP-Bus®.



Types¹⁾

	Temperature	CO ₂	VOC	Passive sensor	Active sensor	Switching contact
Room / air						
Room sensors temperature / humidity / air quality						
MS24A-R02-MPX	•	•			•	•
MS24A-R08-MPX	•	•	•		•	•

¹⁾The currently available product range can be found online at www.belimo.eu.

Actuator solutions for Modbus and BACnet®. Combined in one device.



Types ¹⁾	Rating	Passive sensor	Active sensor	Switching contact	Parameterisable
General air solutions					
Rotary actuators					
LM24A-MOD	5 Nm	•	•	•	•
NM24A-MOD	10 Nm	•	•	•	•
SM24A-MOD	20 Nm	•	•	•	•
GM24A-MOD	40 Nm	•	•	•	•
PMCA-BAC-S2-T	160 Nm	•	•	•	•
Rotary actuator with emergency control function					
NF24A-MOD	10 Nm	•	•	•	•
SF24A-MOD	20 Nm	•	•	•	•
PKCA-BAC-S2-T	160 Nm	•	•	•	•
Linear actuator					
LH24A-MOD200	150 N	•	•	•	•
Fast running rotary actuator					
SMC24A-MOD	20 Nm	•	•	•	•
Water solutions					
Actuators for characterised control valves / open-close ball valves					
CQ24A-BAC	1 Nm				•
LR24A-MOD	5 Nm	•	•	•	•
NR24A-MOD	10 Nm	•	•	•	•
SR24A-MOD	20 Nm	•	•	•	•
GR24A-MOD-5	40 Nm	•	•	•	•
Actuator with emergency control function for characterised control valves / open-close ball valves					
SRF24A-MOD	20 Nm	•	•	•	•
Fast running actuator for characterised control valves / open-close ball valves					
SRC24A-MOD	20 Nm	•	•	•	•
Actuators for globe valves					
NV24A-MOD	1000 N	•	•	•	•
NVK24A-MOD	1000 N	•	•	•	•
AVK24A-MOD	2000 N	•	•	•	•
Actuators without/with emergency control function for butterfly valves					
PRCA-BAC-S2-T	160 Nm	•	•	•	•
PRKCA-BAC-S2-T	160 Nm	•	•	•	•

¹⁾ The currently available product range can be found online at www.belimo.eu.

Actuator solutions for Modbus and BACnet®. Combined in one device.



Types ¹⁾	Rating	Passive sensor	Active sensor	Switching contact	Parameterisable
Safety solutions					
Standard actuator for fire dampers					
BKN230-24-MOD for connecting BF..(T)24(-T)-ST	4 / 9 / 11 / 18 Nm				•
Room and system solutions					
VAV compact rotary actuators					
LMV-D3-MOD	5 Nm		•	•	•
NMV-D3-MOD	10 Nm		•	•	•
VAV compact linear actuator					
LHV-D3-MOD	150 N		•	•	•
HVAC performance devices					
EPIV					
EP..R-R6+BAC	DN 15-20				•
EP..R+MOD	DN 15-50		•	•	•
P..W..E-MOD	DN 65-150		•	•	•
Belimo Energy Valve™					
EV..R+BAC	DN 15-50				•
P..W..EV-BAC	DN 65-150				•

¹⁾ The currently available product range can be found online at www.belimo.eu.

Sensor solutions for Modbus.



Types ¹⁾	Measuring range ²⁾	Multirange	Temperature	Humidity	CO ₂	Differential pressure	Display (LCD)	Auto-Zero
Duct / air								
Duct sensors pressure								
22ADP-15Q	0...250 Pa	•				•		
22ADP-15QL	0...250 Pa	•				•	•	
22ADP-15QA	0...250 Pa	•				•		•
22ADP-15QB	0...250 Pa	•				•	•	•
22ADP-154	0...2500 Pa	•				•		
22ADP-154L	0...2500 Pa	•				•	•	
22ADP-156	0...7000 Pa	•				•		
22ADP-156L	0...7000 Pa	•				•	•	
Duct sensors temperature / humidity / air quality								
22DTH-15M			•	•				
22DTM-15			•	•	•			
Outdoor / air								
Outdoor sensors humidity / temperature								
22UTH-150X			•	•				

¹⁾ The currently available product range can be found online at www.belimo.eu.

²⁾ Factory setting – ranges are configurable on the sensor

Sensor solutions for BACnet®.



Types ¹⁾	Multirange	Temperature	Humidity	CO ₂	Differential pressure	Display (LCD)	Auto-Zero
Duct / air							
Duct sensors temperature / humidity / air quality							
22DTH-16M		•	•				
22DTM-16		•	•	•			
Outdoor / air							
Outdoor sensors humidity / temperature							
22UTH-160X		•	•				

¹⁾ The currently available product range can be found online at www.belimo.eu.

Actuator solutions for LonWorks®.



LONMARK®

Types ¹⁾	Rating	Integrated controller	Passive sensor	Active sensor	Switching contact	Parameterisable
Room and system solutions						
VAV compact rotary actuators						
LMV-D3LON	5 Nm	Temperature ²⁾		•	•	•
NMV-D3LON	10 Nm	Temperature ²⁾		•	•	•
VAV compact linear actuator						
LHV-D3LON	150 N	Temperature ²⁾		•	•	•

¹⁾ The currently available product range can be found online at www.belimo.eu.

²⁾ Additional controller versions (e.g. CO₂) on request

Actuator solutions for KNX®.



Types ¹⁾	Rating	Passive sensor	Active sensor	Switching contact	Parameterisable
General air solutions					
Rotary actuator					
LM24A-KNX	5 Nm	•	•	•	•
Water solutions					
Actuator for characterised control valves / open-close ball valves					
LR24A-KNX	5 Nm	•	•	•	•
Room and system solutions					
VAV compact rotary actuators					
LMV-D3-KNX	5 Nm		•	•	•
NMV-D3-KNX	10 Nm		•	•	•
VAV compact linear actuator					
LHV-D3-KNX	150 N		•	•	•

¹⁾ The currently available product range can be found online at www.belimo.eu.

All-inclusive.



A world map with orange dots indicating global presence. Below the map are six icons representing company benefits:

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

BELIMO Automation AG

Brunnenbachstrasse 1
CH-8340 Hinwil, Switzerland
Tel. +41 43 843 61 11
Fax +41 43 843 62 68
info@belimo.ch
www.belimo.eu

Belimo worldwide: www.belimo.com

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