

MP BUS
TECHNOLOGY BY BELIMO



LONMARK

KNX

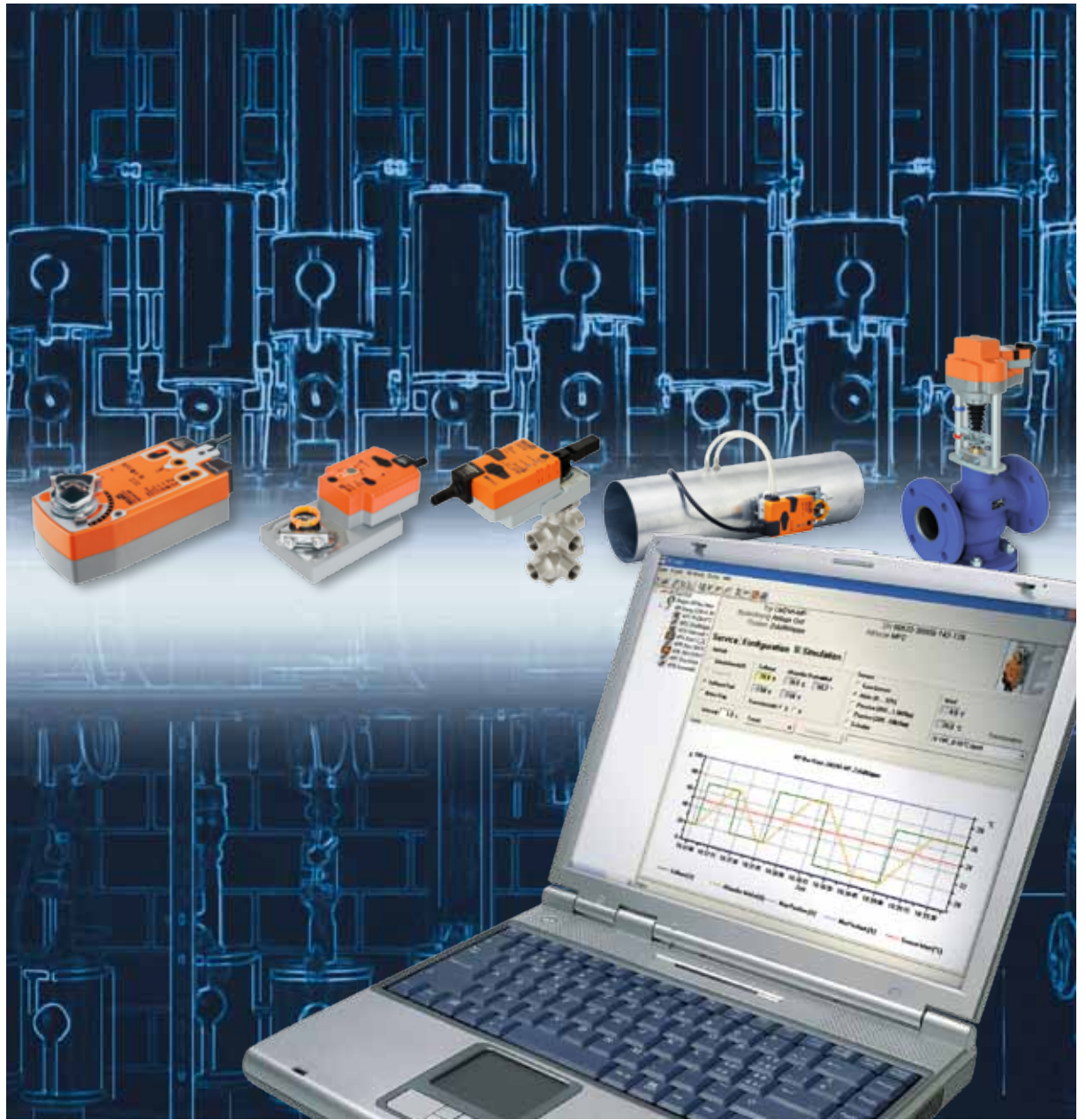
Modbus



BACnet

Bus solutions from Belimo.
The best connection.

BELIMO



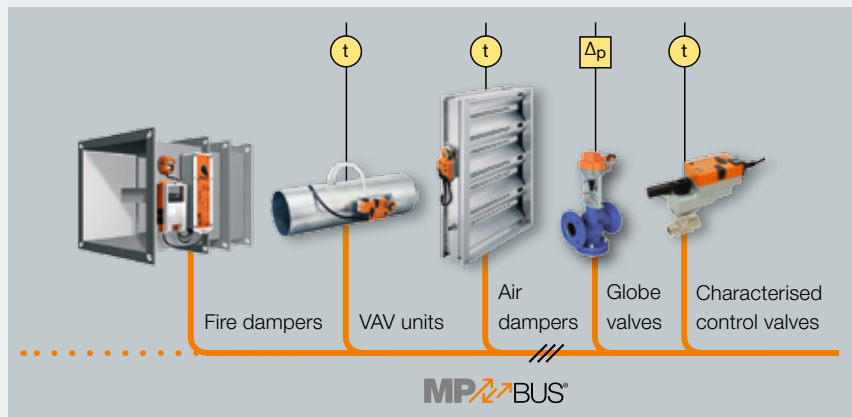
Integrating, communicating, controlling. Bus solutions for building technology.

EXPERIENCE EFFICIENCY

The networking of building technology systems enhances comfort and safety in air-conditioned buildings. Furthermore, energy consumption can be reduced and operation can be optimised – just as readily in new systems as in retrofitting or renovation projects. The bus product range from Belimo supports various possible solutions in order to meet the complex requirements of system integration. The final controlling elements are connected individually to the actuators for LONWORKS® or Modbus RTU networks. Alternatively, MP and MFT(2) devices allow up to eight different final control elements to be grouped together in one MP-Bus® line and to be integrated in any popular fieldbus system by means of an MP Gateway. Cabling expenditures are reduced by up to 90%.

Networking via the Belimo MP-Bus® – sensor integration included

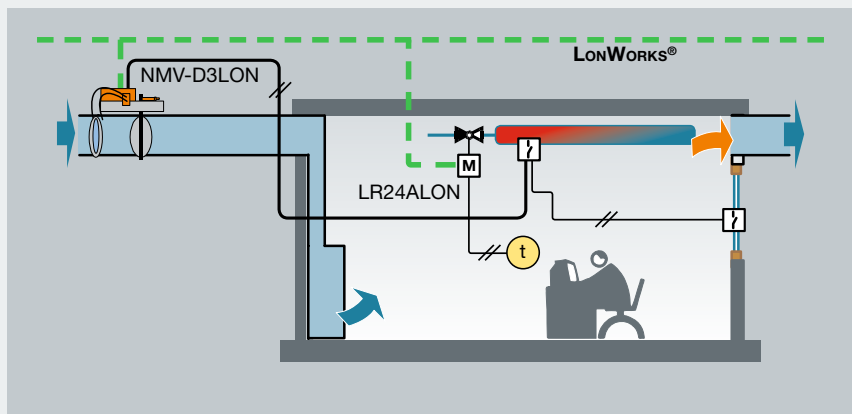
A sensor can also be connected to any MP, MOD or LON actuator. This can be a passive resistance sensor (Pt1000, Ni1000 or NTC, etc.), an active sensor (e.g. with a DC 0...10V output) or a switching contact. The signals are digitised in the Belimo actuator and transferred to the higher-level bus system. This reduces the number of physical data points and cuts the costs for planning, installation, operation and maintenance.



One sensor can be integrated together with each bus-capable actuator.

LON actuators with integrated temperature controller

The LON actuators from Belimo are equipped with an integrated temperature controller (Functional Profile LONMARK® #8060). This makes it possible to implement individual room control solutions more easily and at lower cost. In addition to the two normal outputs (heating/cooling) an additional output variable is available, with which motorised 6-way characterised control valves from Belimo can be connected directly.



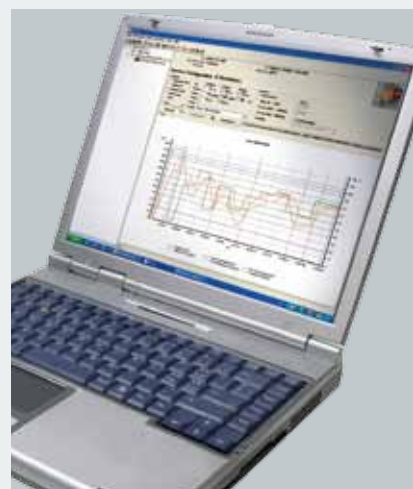
Typical example of an application for LON actuators with integrated temperature controller: system with supply air volumetric flow controller and motorised 6-way characterised control valve in the heating/cooling ceiling.

Simple adjustment, commissioning and monitoring

As a rule, MP, MOD and LON actuators are shipped from the factory with typical basic settings. Parameters such as running time, angle of rotation, stroke limitations, etc. can however also be individually modified and tailored precisely to the requirements of the respective system. The Belimo PC-Tool MFT-P and the practical ZTH-GEN adjustment tool are available as aids for this purpose. Depending on the place of utilisation and the task to be accomplished, they facilitate onsite parameterisation, commissioning, diagnostics and evaluation.

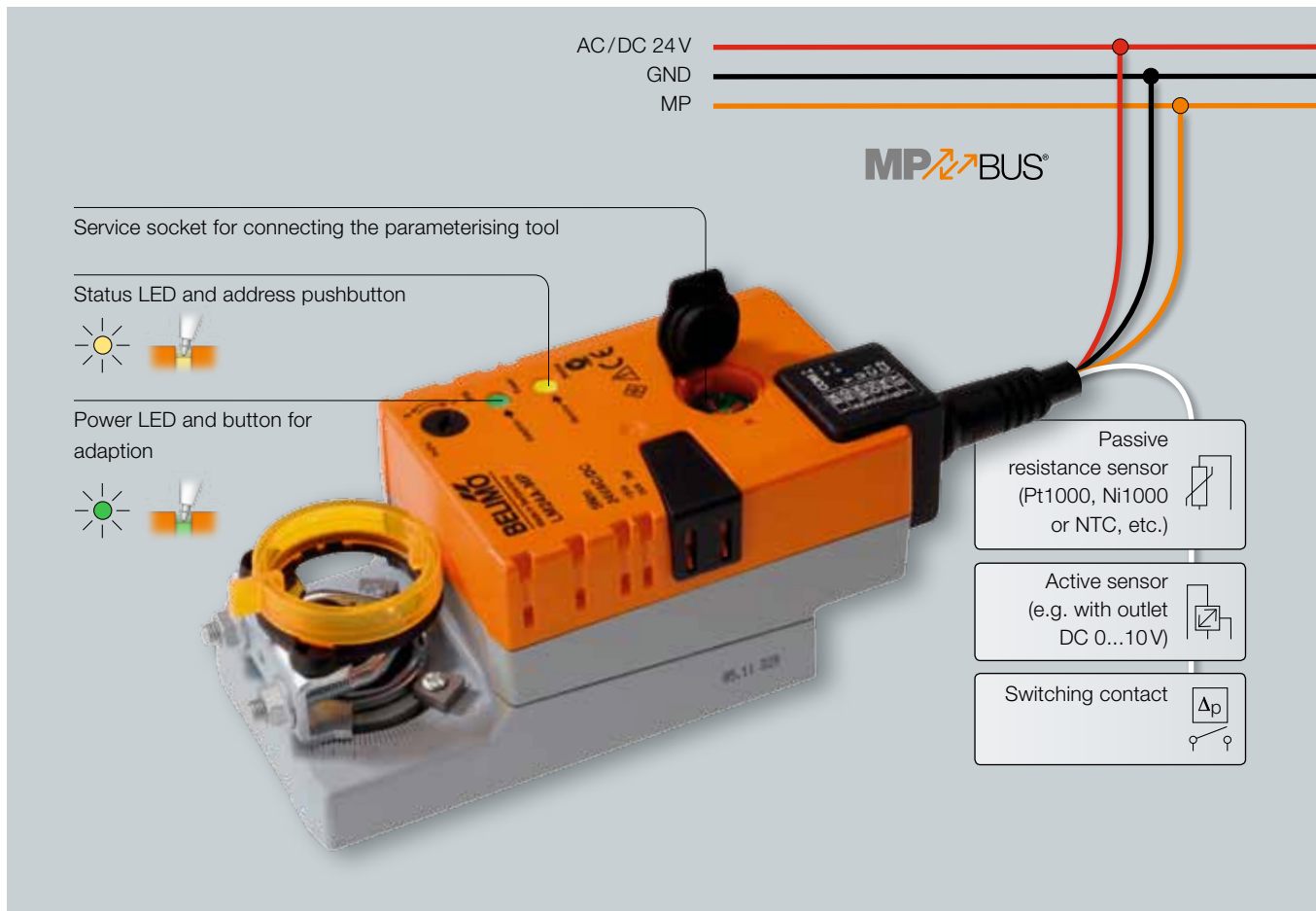


The handy ZTH-GEN adjustment tool is connected directly to the actuator. It enables the efficient setting of actuator parameters in addition to diagnostics and function tests.



The Belimo PC-Tool MFT-P can do everything that the ZTH-GEN offers. In addition, it can be used to compile and print out diagrams of actual and nominal values, displacements and trend evaluations.

MP actuators from Belimo. Energy and cost savings.



Directed to all higher-level systems

The Belimo MP-Bus® was specially developed as a master-slave system for HVAC actuators and sensors. It allows up to eight different final control elements to be grouped together and connected to any higher-level system (BACnet®, LonWorks®, Modbus RTU, EIB/KNX, Profibus DP, Ethernet TCP/IP, etc.). Either the Belimo Gateways UK24BAC, UK24LON, UK24MOD and UK24EIB or Gateways and/or DDC controllers with integrated MP interfaces from other manufacturers can be used as the MP master.

The right actuators for every application

Multifunctional MP-/MFT2- and communicative MPL actuators from Belimo are all suitable for the integration of the final control elements in the MP-Bus®. These are available as rotary and linear actuators for a wide variety damper types and volumetric flow units. Equally wide is the available array of MP-Bus®-capable motorised valves – ranging from characterised control valves through butterfly valves and globe valves all the way to the intelligent Energy Valve™ with built-in web server for energy monitoring.

Enormous savings on fan electricity with the MP-Bus®

The MP-Bus® opens up new opportunities for energy optimisation in systems with constant or variable volumetric flow control (CAV/VAV). The MP technology makes it possible to control the fans in the central air conditioning on the basis of the actual damper position of the volumetric flow units. This makes it possible not only to reduce the electricity consumption of the fans by up to 50%, but also – and even more importantly – to noticeably reduce the airflow noise.

MP-Bus devices from Belimo.

Perfect connections guaranteed.

| Types/rating class ¹⁾ | Sensors | |
|---|---|---|
| General Air Solutions | | |
| <p>Damper actuators LM24A-MP (5 Nm), NM24A-MP (10 Nm) SM24A-MP (20 Nm), GM24A-MP (40 Nm)</p> <p>Damper actuators with emergency control function TF24-MFT²⁾ (2 Nm), LF24-MFT2 (4 Nm) SF24A-MP (20 Nm), EF24A-MP (30 Nm) GK24A-MP (40 Nm)</p> <p>Linear damper actuators LH24A-MP... (150 N), SH24A-MP... (450 N)</p> <p>Linear damper actuators with emergency control function LHK24A-MP... (150 N), SHK24A-MP... (450 N)</p> <p>Damper actuators rotating LU24A-MP (3 Nm)</p> |  |  |
| Safety Solutions | | |
| <p>BF-TopLine actuators for fire dampers BF24TL-T-ST (18 Nm) + BKN230-24MP</p> <p>Standard actuators for fire dampers BLF24-T-ST (6 Nm), BF24-T-ST (18 Nm) + BKN230-24-C-MP</p> |  |  |
| Room and System Solutions | | |
| <p>VAV-Compact controllers LMV-D3-MP (5 Nm), NMV-D3-MP (10 Nm) SMV-D3-MP (20 Nm)</p> <p>Linear VAV-Compact controller LHV-D3-MP (150 N)</p> |  |  |
| <p>VAV-Universal controller VRP-M</p> |  |  |
| Water Solutions | | |
| <p>Actuators for zone valves CQ24A-MPL (2 Nm)</p> |  |  |
| <p>Actuators for characterised control valve (2-/3-/6-way) LR24A-MP (5 Nm), NR24A-MP (10 Nm) SR24A-MP (20 Nm)</p> |  |  |
| <p>Actuators for characterised control valve with emergency control function TRF24-MFT²⁾ (2 Nm), LRF24-MP (4 Nm) NRF24A-MP(-O) (10 Nm)</p> |  |  |
| <p>Actuators for butterfly valves SR24A-MP-5 (20 Nm), GR24A-MP-5/7 (40 Nm)</p> |  |  |
| <p>Globe valve actuators LV24A-MP-TPC (500 N), NV24A-MP-TPC (1000 N) SV24A-MP-TPC (1500 N), EV24A-MP-TPC (2500 N)</p> |  |  |
| <p>Globe valve actuators with emergency control function NVK24A-MP-TPC (1000 N), AVK24A-MP-TPC (2000 N)</p> |  |  |
| <p>¹⁾ The currently available product range can be found on the Internet at www.belimo.ch ²⁾ Only active sensors and switches can be linked.</p> | | |

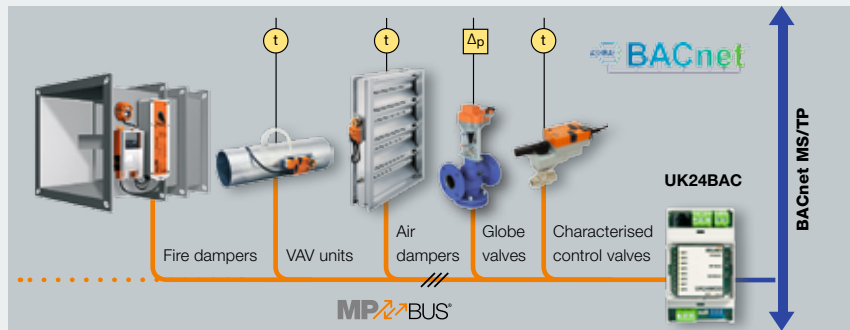
MP Gateways from Belimo.

Structured system integration.

MP linkage via Belimo Gateways

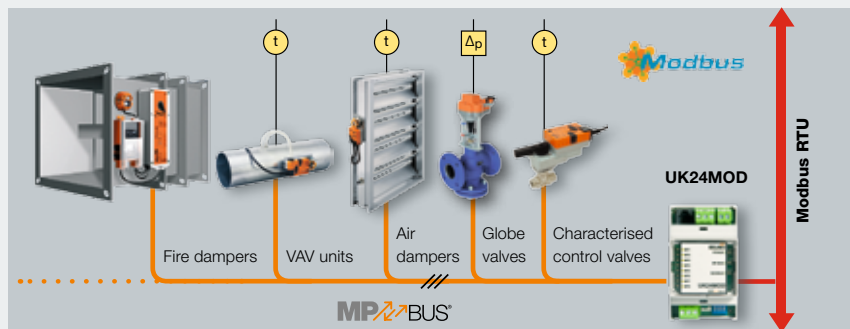
Linkage with BACnet MS/TP via Gateway UK24BAC

The Belimo Gateway UK24BAC converts the signals of the MP actuators that are grouped together in the MP-Bus[®] and the signals of the sensors to BACnet MS/TP (RS-485).



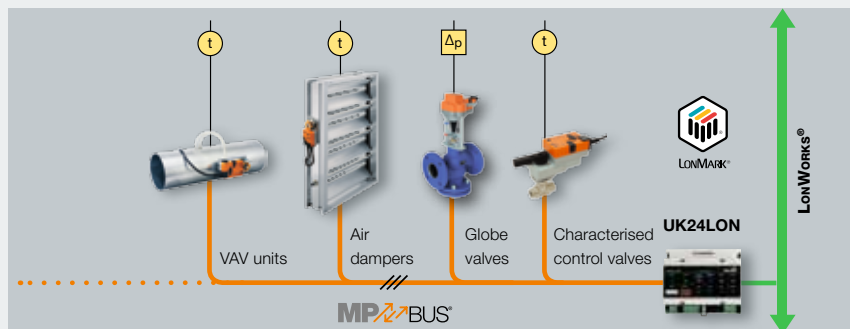
Linkage with Modbus RTU via Gateway UK24MOD

The Belimo Gateway UK24MOD converts the signals of the MP actuators that are grouped together in the MP-Bus[®] and the signals of the sensors on Modbus RTU (RS-485).



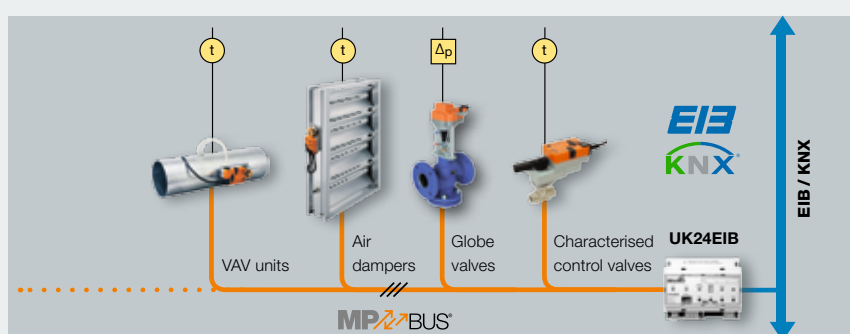
Linkage with LonWorks[®] via Gateway UK24LON

The LonWorks[®]-certified Belimo Gateway UK24LON converts the MP protocol of the MP actuators and sensors to LonWorks[®] networks.



Linkage with EIB/Konnex via Gateway UK24EIB

The Belimo Gateway UK24EIB converts the signals of the actuators which are grouped together in the MP-Bus and those of the sensors for EIB/Konnex systems.



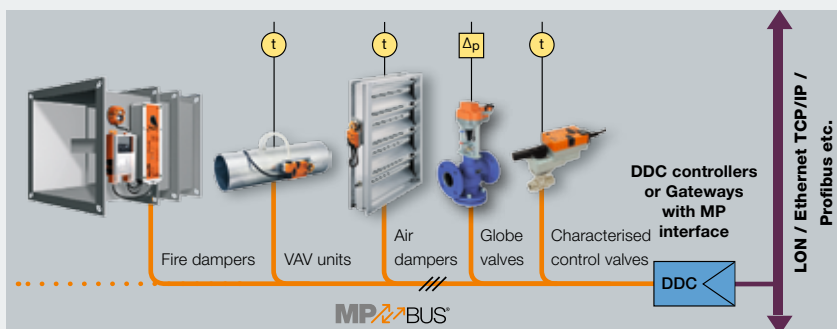
MP partner solutions from Belimo.

Flexibility with tested quality.

MP linkage via Gateway or DDC with MP interface

System linkage via MP-Bus® with DDC controller

Belimo provides the MP specifications to all manufacturers of DDC controllers. They can use these specifications to implement a corresponding hardware/software MP interface in their devices¹⁾.



One sensor can be integrated together with each bus-capable actuator.

Tested MP partner linkages

Quality tests

The close cooperation between the manufacturers of the DDC controllers and Belimo lead to 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.

Flexibility

Belimo MP partner solutions exhibit great flexibility with respect to application and, in addition to the MP actuators, can also integrate additional MP-capable field devices. Numbered among these are HVAC components such as the Belimo Energy Valve™, sensors and I/O modules.

The current list of the MP partners, together with the tested linkages, can be found at www.belimo.ch



MP nodes for connection to MP partner solutions¹⁾

HVAC final controlling elements²⁾

EnergyValve™ – Electronic pressure-independent characterised control valve with energy monitoring:

- Final control element with sensor, valve and actuator
- Integrated Web server



Sensors²⁾

Room sensors in the comfort zone:

- MS24A-R02-MPX (Temperature, CO₂)
- MS24A-R08-MPX (Temperature, humidity, VOC, CO₂)

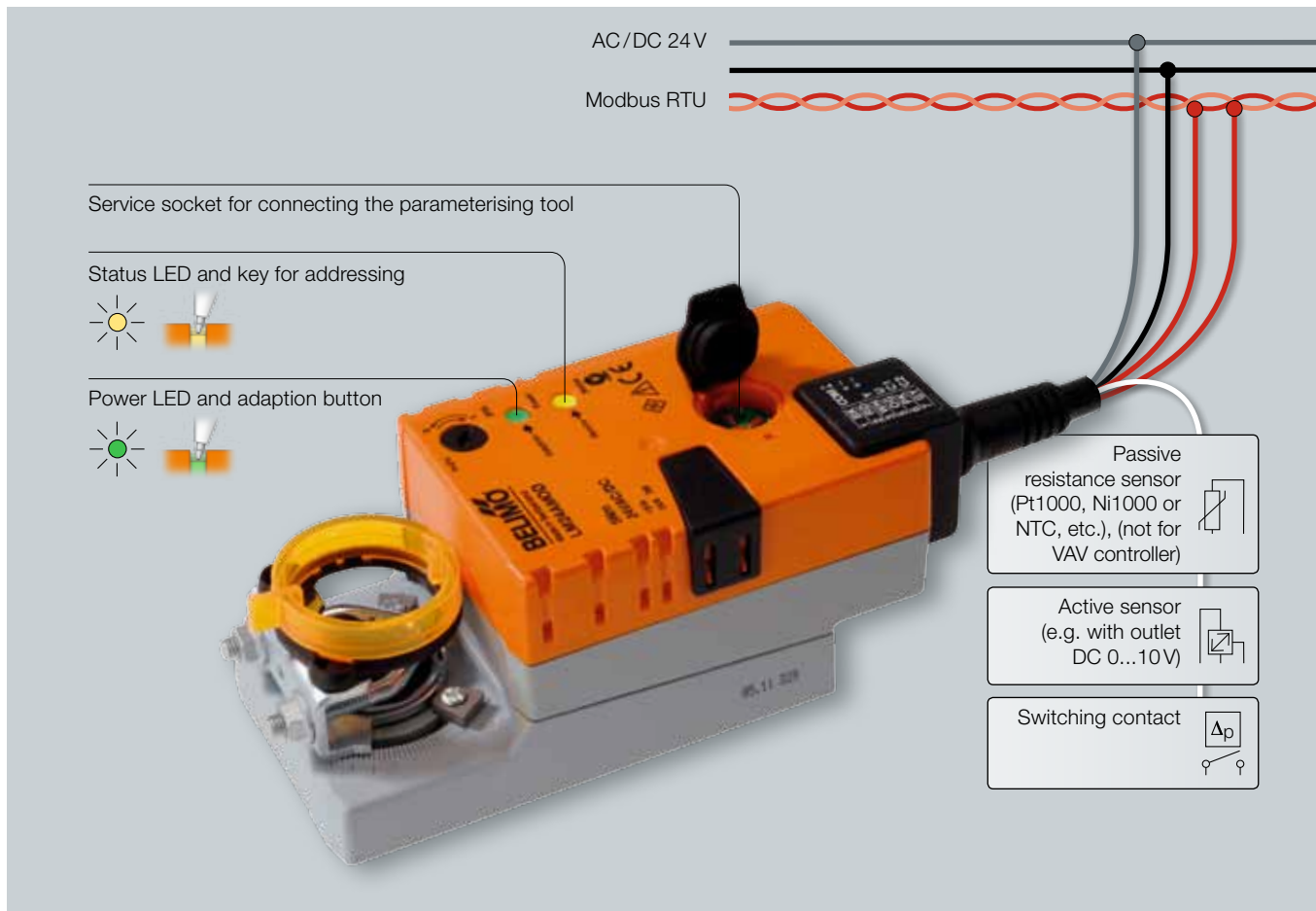


¹⁾ MP-capable field devices cannot be connected to Belimo MP Gateways UK24...

²⁾ The currently available product range can be found on the Internet at www.belimo.ch

MOD actuators from Belimo.

With interface to Modbus RTU.



Direct connection to Modbus RTU

The RS-485 interface installed in the MOD actuators enables the direct connection of the final control elements for heating, ventilation and air conditioning to Modbus RTU. Up to 32 actuators can be connected to a Modbus line. Together with each MOD actuator, one passive or active sensor or one switching contact can also be integrated to the network. This makes conventional sensors communications-capable in a very simple fashion.

Simple parameterisation

In addition to communication parameters such as address, baud rate and transmission format, additional actuator parameters such as running time or scaling can be set with the ZTH-GEN service tool.

Ready-to-connect for device construction

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.

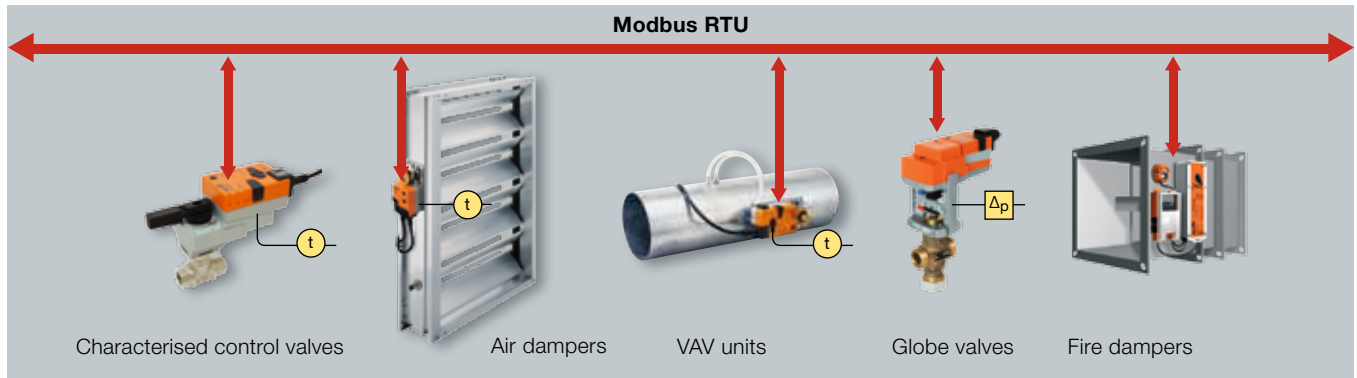
Fast addressing

In order to simplify the commissioning in the device structure even further, a pin can be used to set the Modbus address in a configurable range (e.g. 131...146).



MOD devices from Belimo.

Direct connection for dampers and valves.



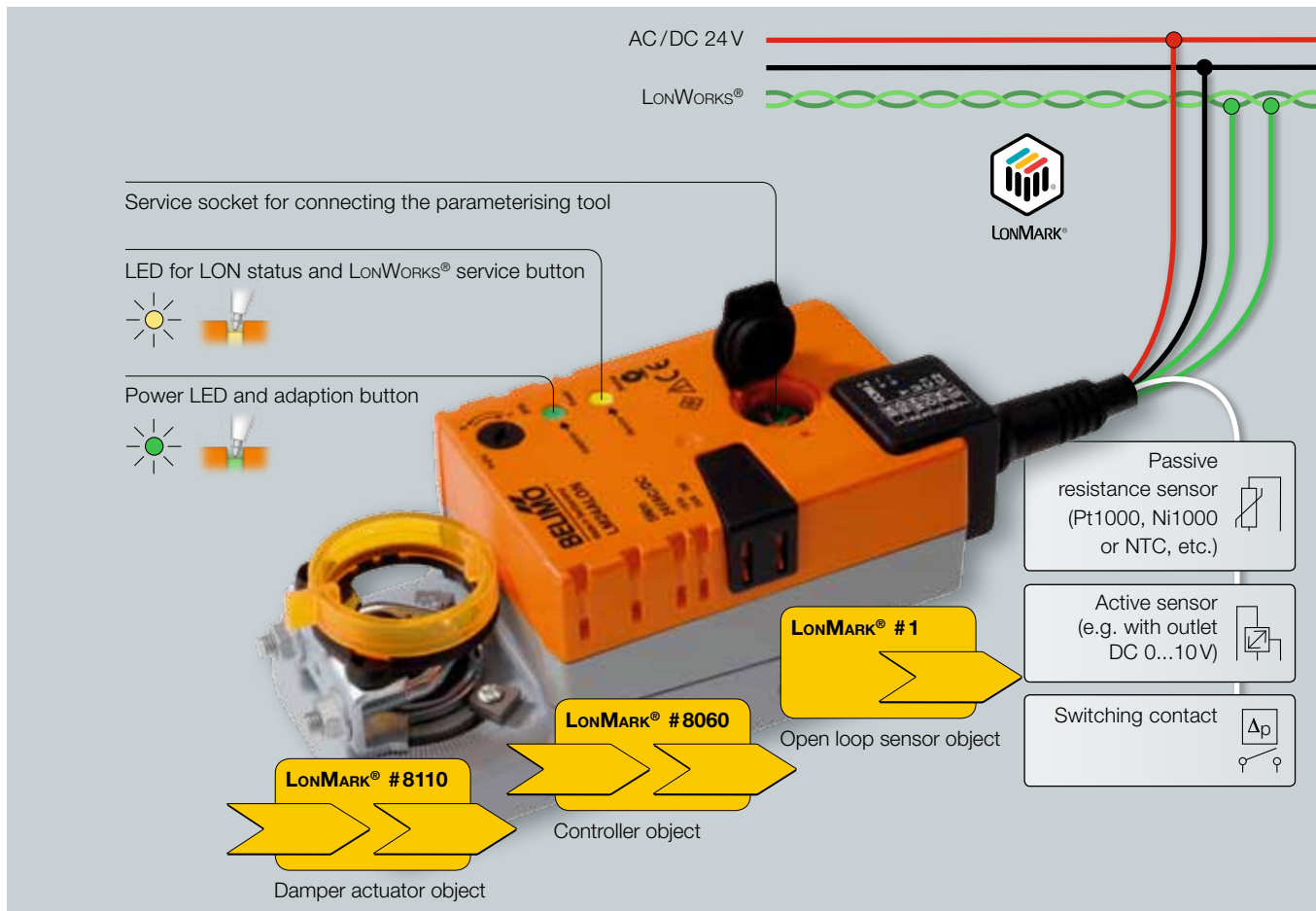
| Types/rating class ¹⁾ | Sensors ²⁾ | |
|---|-----------------------|--|
| General Air Solutions | | |
| <p>Damper actuators LM24A-MOD (5 Nm) NM24A-MOD (10 Nm) SM24A-MOD (20 Nm)</p> <p>Damper actuators with emergency control function SF24A-MOD (20 Nm)</p> | | |
| Safety Solutions | | |
| <p>Standard actuators for fire dampers BLF24-T-ST (6 Nm), BF24-T-ST (18 Nm) BKN230-24-MOD</p> | | |
| Room and System Solutions | | |
| <p>VAV-Compact controllers LMV-D3-MOD (5 Nm) NMV-D3-MOD (10 Nm)</p> | | |
| Water Solutions | | |
| <p>Actuators for characterised control valve (2-/3-/6-way) LR24A-MOD (5 Nm) NR24A-MOD (10 Nm) SR24A-MOD (20 Nm)</p> <p>Globe valve actuators NV24A-MOD (1000 N)</p> | | |

¹⁾ The currently available product range can be found on the Internet at www.belimo.ch

²⁾ Versions with RJ12 socket (e.g. LM24A-MOD-J6) do not permit any conversion of sensor signals.

LON actuators from Belimo.

With installed temperature controller.



Direct connection and integrated controller

The FTT-10A transceiver installed in the LONMARK®-certified actuators enable their direct connection with LONWORKS® – in each case together with an active or passive sensor or switching contact, respectively.

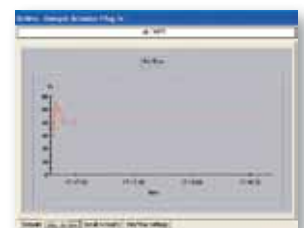
A temperature controller (Functional Profile LONMARK® #8060) is integrated in the actuator in order to reduce the costs of implementation of individual room controls. An additional output variable makes it possible to connect the 6-way characterised control valves from Belimo directly in the heating/cooling ceilings. Furthermore, additional controller versions (e.g. CO₂) can be implemented on request.

Free-of-charge LNS plug-ins per Internet

Free-of-charge LNS plug-ins can be downloaded from the Internet for the integration of both the LON actuators and the Gateway UK24LON in LONWORKS® systems. These can be run with the popular LNS-based Binding Tools (e.g. LONMAKER®, NL220, Alex). Downloads: www.belimo.ch

Integration of fire dampers via BKN23-24LON

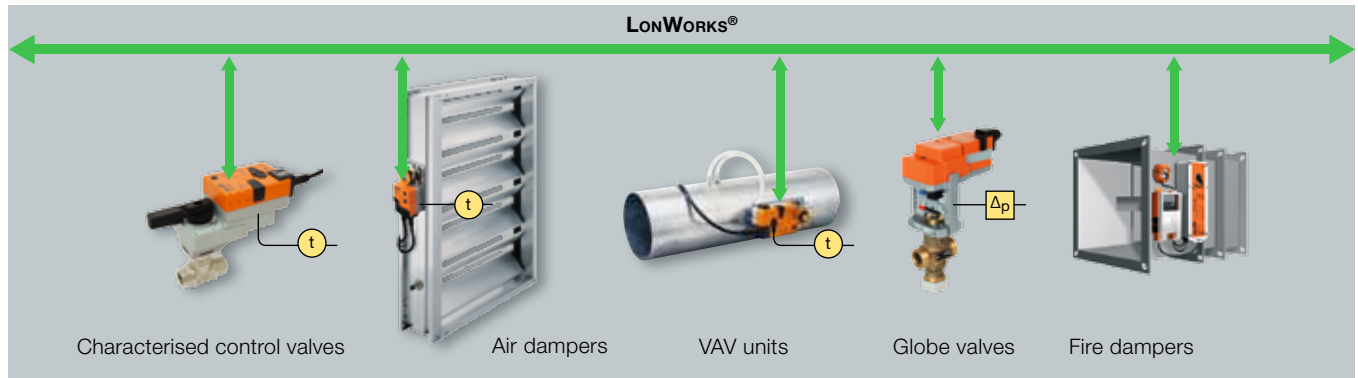
The LONMARK®-certified communication and power supply unit BKN230-24LON is available for integrating motorised fire dampers in LONWORKS® systems.



| Setting | Value | Setting | Value |
|-------------|---------|-------------|---------|
| Control | 22.0 °C | Control | 22.0 °C |
| Heating | 19.0 °C | Heating | 19.0 °C |
| Preheating | 16.0 °C | Preheating | 16.0 °C |
| Preheat | 13.0 °C | Preheat | 13.0 °C |
| Preheat (2) | 10.0 °C | Preheat (2) | 10.0 °C |

| Set | Value | Set | Value |
|-------|---------|--------|---------|
| Set 1 | 22.0 °C | Set 2 | 22.0 °C |
| Set 3 | 19.0 °C | Set 4 | 19.0 °C |
| Set 5 | 16.0 °C | Set 6 | 16.0 °C |
| Set 7 | 13.0 °C | Set 8 | 13.0 °C |
| Set 9 | 10.0 °C | Set 10 | 10.0 °C |

LON devices from Belimo. Straight to LONWORKS.



| Types/rating class ¹⁾ | Integrated controller | Sensors |
|---|---------------------------|---------|
| General Air Solutions | | |
| Damper actuators LM24ALON (5 Nm) NM24ALON (10 Nm) SM24ALON (20 Nm) | Temperature ²⁾ | |
| Damper actuators with emergency control function SF24ALON (20 Nm) | | |
| Safety Solutions | | |
| BF-TopLine actuators for fire dampers BF24TL-T-ST (18 Nm) + BKN230-24LON ²⁾ | | |
| Room and System Solutions | | |
| VAV-Compact controllers LMV-D3LON (5 Nm) NMV-D3LON (10 Nm) | Temperature ²⁾ | |
| Water Solutions | | |
| Actuators for characterised control valve (2-/3-/6-way) LR24ALON (5 Nm) NR24ALON (10 Nm) SR24ALON (20 Nm) | Temperature ²⁾ | |
| Actuators for butterfly valves SR24ALON-5 (20 Nm), GR24ALON-5/7 (40 Nm) | | |
| Globe valve actuators NV24ALON (1000 N) | | |
| Globe valve actuators with emergency control function NVK24ALON (1000 N), AVK24ALON (2000 N) | | |

¹⁾ The currently available product range can be found on the Internet at www.belimo.ch

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



5-year
warranty



On site around
the globe



A complete
range of products
from one source



Tested quality



Short delivery
times



Comprehensive
support

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