



2-year warranty



## Technical data

|                        |                                     |                                                                        |
|------------------------|-------------------------------------|------------------------------------------------------------------------|
| <b>Electrical data</b> | Nominal voltage                     | AC 120 V                                                               |
|                        | Nominal voltage frequency           | 50/60 Hz                                                               |
|                        | Transformer sizing                  | 240 VA                                                                 |
|                        | Current consumption                 | 2 A                                                                    |
|                        | Auxiliary switch                    | 2 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, 1 x 3° / 1 x 87° |
|                        | Switching capacity auxiliary switch | 3 A resistive (0.5 A inductive) @ AC 250 V                             |
|                        | Electrical Connection               | Terminal blocks                                                        |
|                        | Overload Protection                 | thermally protected 135°C cut-out                                      |
|                        | Internal Humidity Control           | resistive heating element                                              |
| <b>Functional data</b> | Operating range Y                   | 2...10 V                                                               |
|                        | Input Impedance                     | 100 kΩ                                                                 |
|                        | Position feedback U                 | 2...10 V                                                               |
|                        | Position feedback U note            | Max. 0.5 mA                                                            |
|                        | Position feedback U variable        | VDC variable                                                           |
|                        | Direction of motion motor           | selectable with switch 0/1                                             |
|                        | Manual override                     | hand wheel                                                             |
|                        | Angle of rotation                   | 90°                                                                    |
|                        | Running Time (Motor)                | 59 s                                                                   |
|                        | Duty cycle value                    | 75%                                                                    |
|                        | Noise level, motor                  | 45 dB(A)                                                               |
|                        | Position indication                 | top mounted domed indicator                                            |
|                        |                                     |                                                                        |
| <b>Safety data</b>     | Degree of protection IEC/EN         | IP66/67                                                                |
|                        | Degree of protection NEMA/UL        | NEMA 4X                                                                |
|                        | Enclosure                           | UL Enclosure Type 4X                                                   |
|                        | Agency Listing                      | ISO, CE, cCSAus                                                        |
|                        | Quality Standard                    | ISO 9001                                                               |
|                        | Ambient temperature                 | -22...149°F [-30...65°C]                                               |
|                        | Storage temperature                 | -40...176°F [-40...80°C]                                               |
|                        | Ambient humidity                    | Max. 100% RH                                                           |
| <b>Materials</b>       | Servicing                           | maintenance-free                                                       |
|                        | Housing material                    | die cast aluminium                                                     |
|                        | Gear train                          | high alloy steel gear sets, self locking                               |

## Product features

**Application** SY Series actuators are fractional horsepower devices, and utilize full-wave power supplies. Observe wire sizing and transformer sizing requirements. Proportional models CANNOT be connected to Belimo direct coupled (AF, AM, GM...etc) actuator power supplies or any type of half-wave device. You MUST use a separate, dedicated transformer or power supply to power the SY actuator. Please do not connect other automation equipment to the dedicated SY supply source. You MUST use four wires (plus a ground) to control a proportional control SY actuator (See SY Wiring Section).

## Accessories

| Gateways               | Description                                                                                                                           | Type        |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------|
|                        | Gateway MP to BACnet MS/TP                                                                                                            | UK24BAC     |
|                        | Gateway MP to Modbus RTU                                                                                                              | UK24MOD     |
|                        | Gateway MP to LonWorks                                                                                                                | UK24LON     |
| Electrical accessories | Description                                                                                                                           | Type        |
|                        | Local electric disconnect for SY4...12 series actuator, AC 120 V, MFT                                                                 | HOA-120VMFT |
|                        | Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US      |
| Service tools          | Description                                                                                                                           | Type        |
|                        | Connection cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection                                           | ZK4-GEN     |
|                        | Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US      |

## Electrical installation

 **INSTALLATION NOTES**

-  Do not change sensitivity or dip switch setting with power applied.
-  Power supply Common/Neutral and Control Signal "-" wiring to a common is prohibited. Terminals 4 and 6 need to be wired separately.
-  Isolation relays must be used in parallel connection of multiple actuators using a common control signal inputs. The relays should be DPDT.
-  Isolation relays are required in parallel applications. The reason parallel applications need isolation relays is that the motor uses two sets of windings, one for each direction. When one is energized to turn the actuator in a specific direction a voltage is generated in the other due to the magnetic field created from the first. It's called back EMF. This is not an issue with one actuator because the voltage generated in the second winding isn't connected to anything so there is no flow. On parallel applications without isolation, this EMF voltage energizes the winding it is connected to on the other actuators in the system, the actuators are trying to turn in both directions at once. The EMF voltage is always less than the supply voltage due to the resistance of the windings, so while the actuator still turns in the commanded direction, the drag from the other reduces the torque output and causes overheating.
-  **Warning! Live electrical components!**  
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

## Wiring diagrams

