

## Butterfly Valve with Lug types

- Disc 304 stainless steel
- Bubble tight shut-off
- Resilient seat
- Valve face-to-face dimensions comply with API 609 & MSS-SP-67
- Completely assembled and tested, ready for installation



5-year warranty

## Type overview

|             |           |
|-------------|-----------|
| <b>Type</b> | <b>DN</b> |
| F650HD      | 50        |

## Technical data

|                           |                          |  |
|---------------------------|--------------------------|--|
| <b>Functional data</b>    | Valve size [mm]          | 2" [50]  |
|                           | Fluid                    | chilled or hot water, up to 60% glycol         |
|                           | Fluid Temp Range (water) | -22...250°F [-30...120°C]                      |
|                           | Body Pressure Rating     | ANSI Class Consistent with 125, 232 psi CWP    |
|                           | Close-off pressure Δps   | 200 psi  |
|                           | Flow characteristic      | modified equal percentage                      |
|                           | Leakage rate             | 0% leakage, leakage rateA                      |
|                           | Pipe connection          | Flange<br>for use with ASME/ANSI class 125/150 |
|                           | Servicing                | maintenance-free                               |
|                           | Flow Pattern             | 2-way  |
|                           | Controllable flow range  | 90° rotation                                   |
|                           | Cv                       | 115  |
|                           | Maximum Velocity         | 12 FPS   |
|                           | Lug threads              | 5/8-11 UNC                                     |
| <b>Materials</b>          | Valve body               | Ductile cast iron ASTM A536                    |
|                           | Body finish              | epoxy powder coating (blue RAL 5002)           |
|                           | Stem                     | 416 stainless steel                            |
|                           | Stem seal                | EPDM (lubricated)                              |
|                           | Seat                     | EPDM   |
|                           | Bearing                  | RPTFE  |
|                           | Disc                     | 304 stainless steel                            |
| <b>Suitable actuators</b> | Non Fail-Safe            | ARB(X)<br>GRB(X)                               |
|                           | Spring                   | AFRB(X)  |

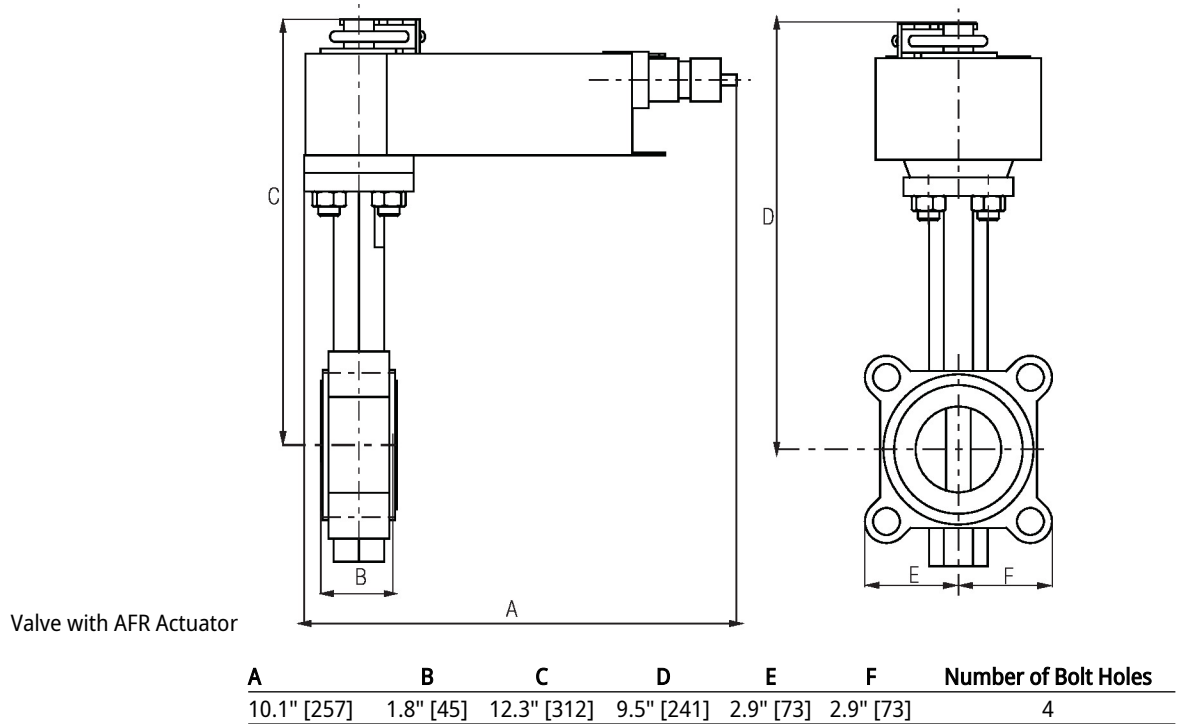
Product features

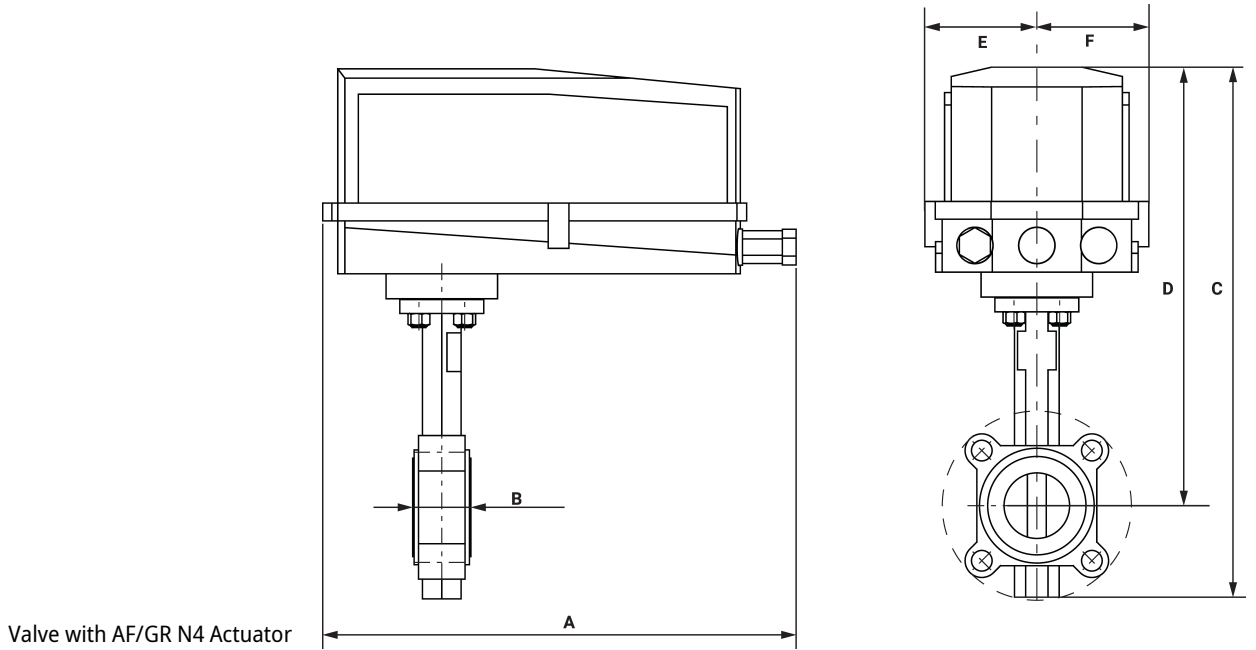
Flow/Mounting details



Dimensions

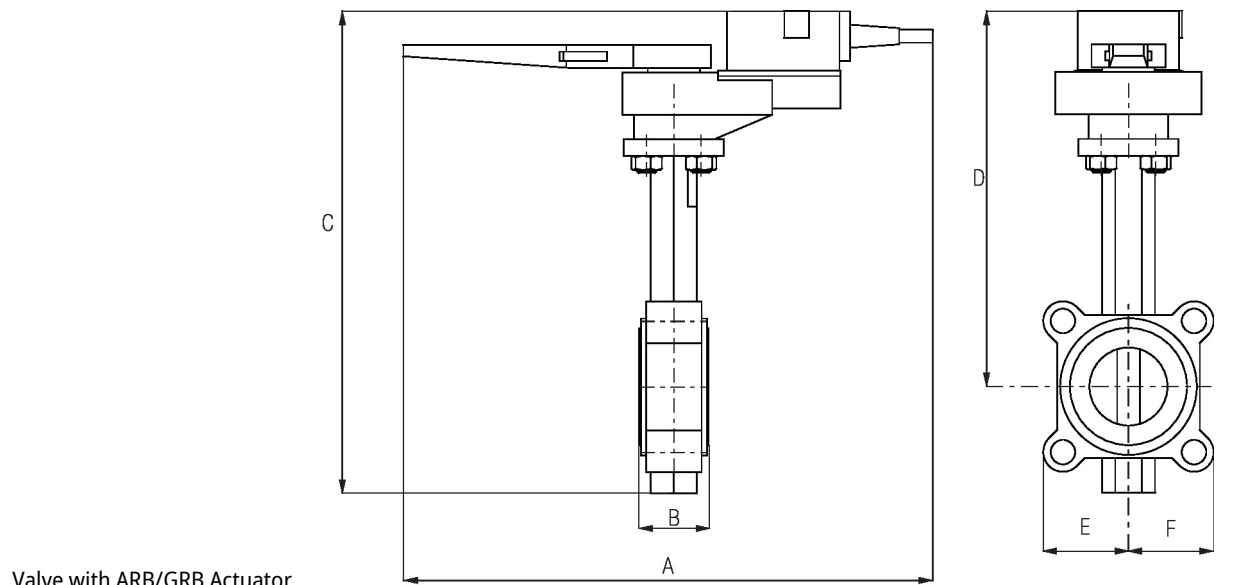
| Type   | DN | Weight         |
|--------|----|----------------|
| F650HD | 50 | 12 lb [5.3 kg] |





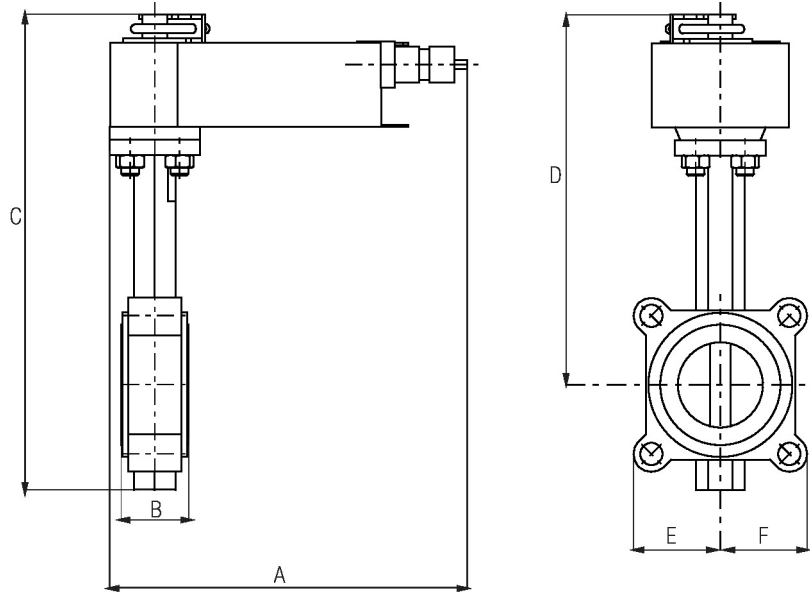
Valve with AF/GR N4 Actuator

| A           | B         | C           | D           | E         | F         | Number of Bolt Holes |
|-------------|-----------|-------------|-------------|-----------|-----------|----------------------|
| 14.5" [368] | 1.8" [45] | 16.1" [409] | 13.3" [338] | 3.4" [86] | 3.4" [86] | 4                    |



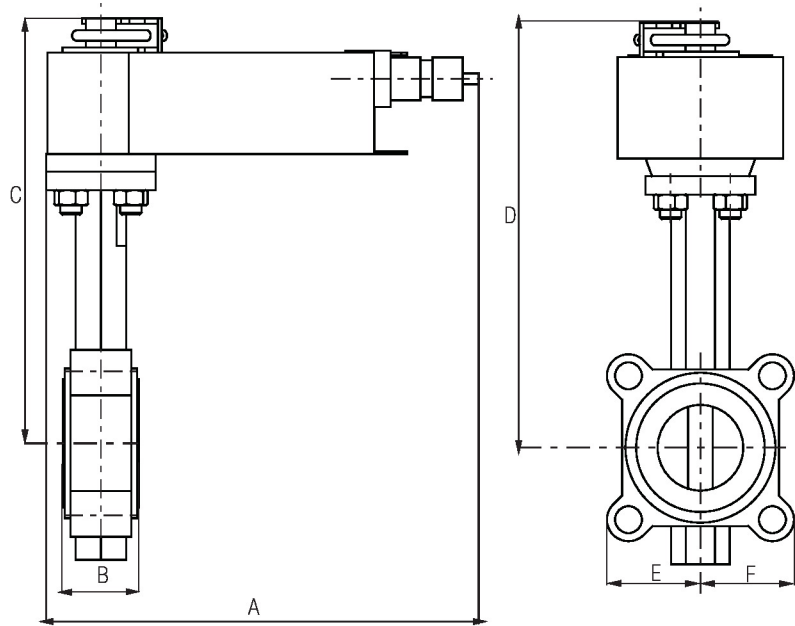
Valve with ARB/GRB Actuator

| A           | B         | C           | D          | E         | F         | Number of Bolt Holes |
|-------------|-----------|-------------|------------|-----------|-----------|----------------------|
| 14.6" [370] | 1.8" [45] | 12.4" [314] | 9.7" [246] | 2.9" [73] | 2.9" [73] | 4                    |



Valve with AFB/AFX Actuator

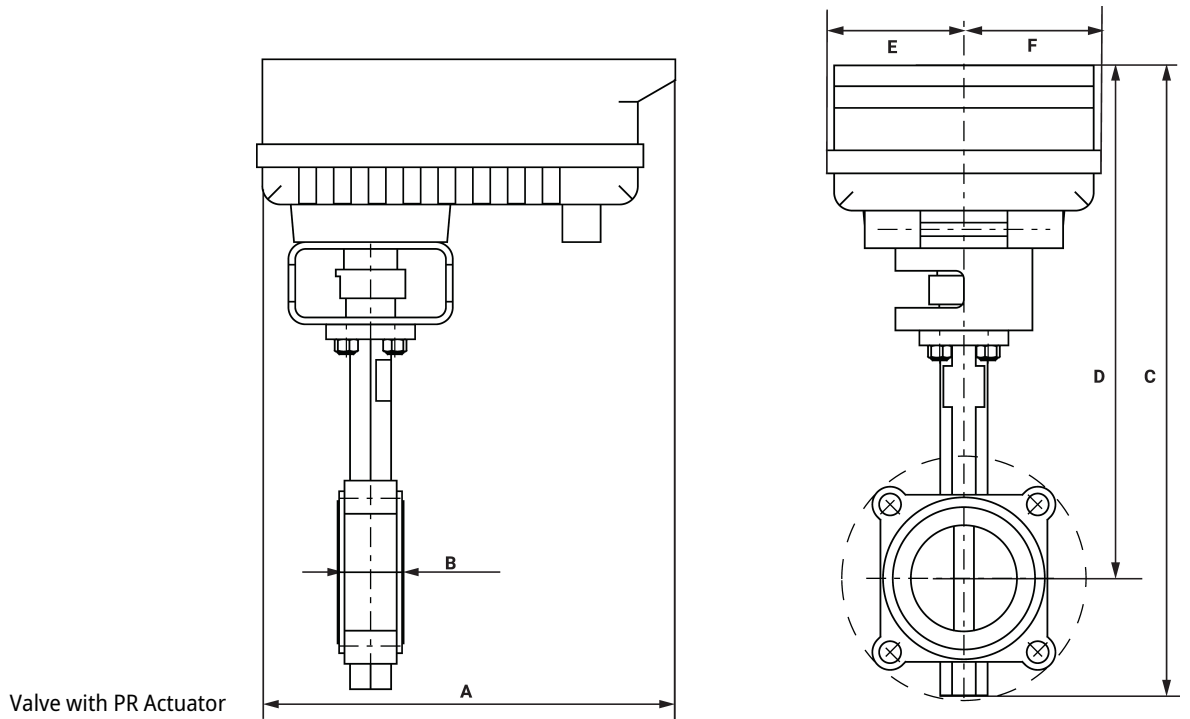
| A           | B         | C           | D           | E         | F         | Number of Bolt Holes |
|-------------|-----------|-------------|-------------|-----------|-----------|----------------------|
| 10.1" [257] | 1.8" [45] | 15.1" [384] | 12.4" [315] | 2.9" [73] | 2.9" [73] | 4                    |



Valve with AMB/AMX Actuator

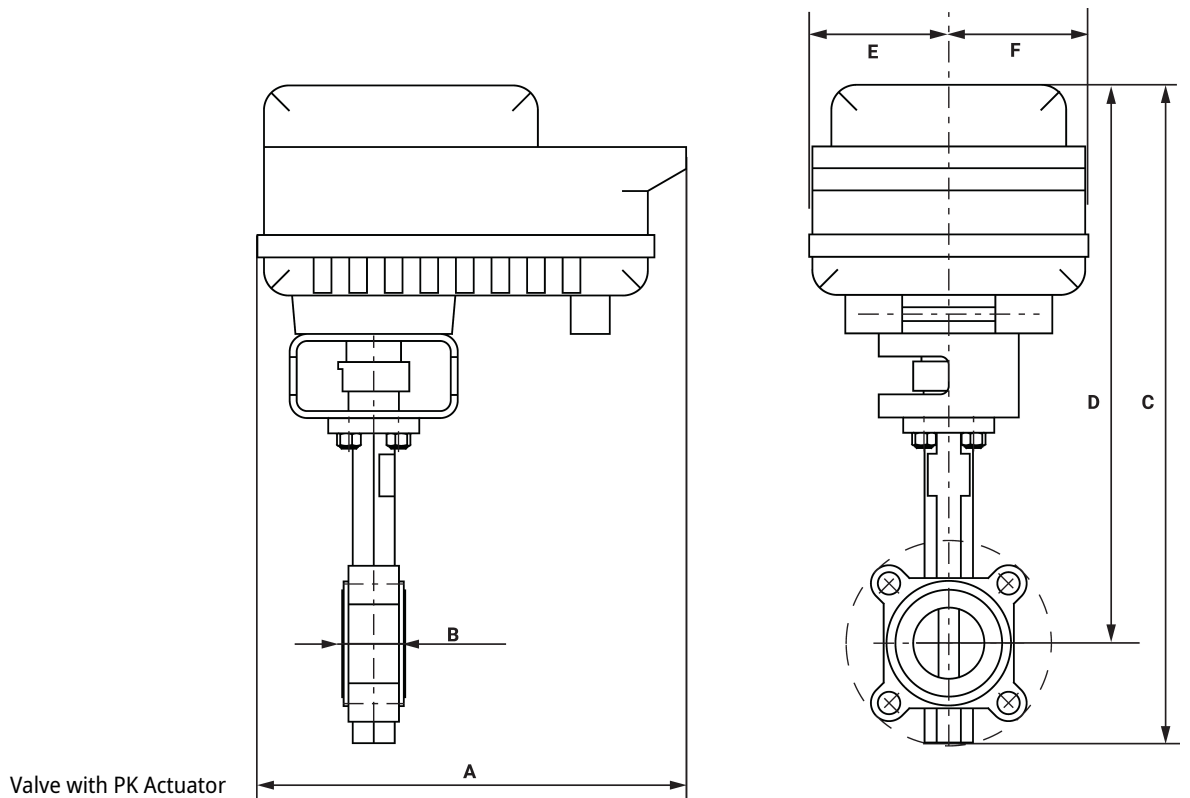
| A          | B         | C           | D           | E         | F         | Number of Bolt Holes |
|------------|-----------|-------------|-------------|-----------|-----------|----------------------|
| 8.3" [211] | 1.8" [45] | 15.1" [384] | 12.4" [315] | 2.9" [73] | 2.9" [73] | 4                    |

Dimensions



Valve with PR Actuator

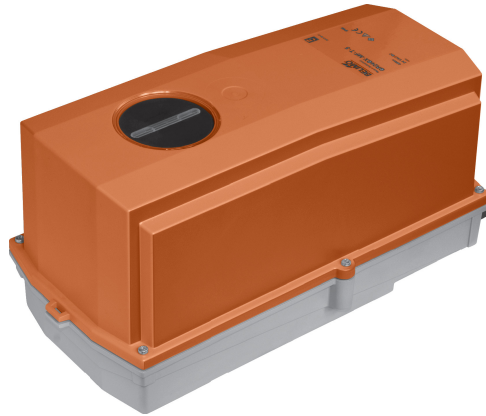
| A           | B         | C           | D           | E          | F          | Number of Bolt Holes |
|-------------|-----------|-------------|-------------|------------|------------|----------------------|
| 12.0" [304] | 1.8" [45] | 16.7" [425] | 13.9" [354] | 3.9" [100] | 3.9" [100] | 4                    |



Valve with PK Actuator

| A           | B         | C           | D           | E          | F          | Number of Bolt Holes |
|-------------|-----------|-------------|-------------|------------|------------|----------------------|
| 12.0" [304] | 1.8" [45] | 18.5" [470] | 15.7" [399] | 3.9" [100] | 3.9" [100] | 4                    |
| A           | B         | C           | D           | E          | F          | Number of Bolt Holes |
| 10.8" [275] | 1.8" [45] | 13.0" [330] | 10.2" [260] | 2.9" [73]  | 2.9" [73]  | 4                    |

MFT/programmable, Non fail-safe, 24 V



5-year warranty


**Technical data**

|                        |                                    |   |
|------------------------|------------------------------------|---|
| <b>Electrical data</b> | Nominal voltage                    | AC/DC 24 V  |
|                        | Nominal voltage frequency          | 50/60 Hz  |
|                        | Nominal voltage range              | AC 19.2...28.8 V / DC 21.6...28.8 V   |
|                        | Power consumption in operation     | 8 W   |
|                        | Power consumption in rest position | 2.5 W   |
|                        | Transformer sizing                 | 11 VA   |
|                        | Electrical Connection              | Terminal blocks   |
|                        | Overload Protection                | electronic throughout 0...90° rotation  |
| <b>Functional data</b> | Operating range Y                  | 2...10 V  |
|                        | Operating range Y note             | 4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)   |
|                        | Input impedance                    | 600 Ω   |
|                        | Operating range Y variable         | Start point 0.5...30 V<br>End point 2.5...32 V  |
|                        | Operating modes optional           | variable (VDC, on/off, floating point)  |
|                        | 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                    | under cover   |
|                        | Angle of rotation                  | 90°   |
|                        | Angle of rotation note             | adjustable with mechanical stop   |
|                        | Running Time (Motor)               | 35 s / 90°  |
|                        | Running time motor variable        | 35...150 s  |
|                        | Noise level, motor                 | 45 dB(A)  |
| Position indication    | Mechanical, 5...20 mm stroke       |   |
| <b>Safety data</b>     | Power source UL                    | Class 2 Supply  |
|                        | Degree of protection IEC/EN        | IP66/67   |
|                        | Degree of protection NEMA/UL       | NEMA 4X   |
|                        | Enclosure                          | UL Enclosure Type 4X  |
|                        | Agency Listing                     | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU |
|                        | Quality Standard                   | ISO 9001  |
|                        | Ambient humidity                   | Max. 100% RH  |
|                        | Ambient temperature                | -22...122°F [-30...50°C]  |
|                        | Ambient temperature note           | -40...50°C for actuator with integrated heating   |

**Technical data**

|                    |  |                                       |
|--------------------|--|---------------------------------------|
| <b>Safety data</b> | Storage temperature  | -40...176°F [-40...80°C]              |
|                    | Servicing  | maintenance-free                      |
| <b>Weight</b>      | Weight   | 4.6 lb [2.1 kg]                       |
| <b>Materials</b>   | Housing material   | Die cast aluminium and plastic casing |
| <b>Footnotes</b>   | †Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3 |                                       |

**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       |
|                            | Battery backup system, for non-spring return models   | NSV24 US   |
|                            | Battery, 12 V, 1.2 Ah (two required)  | NSV-BAT    |
|                            | Auxiliary switch 1x SPDT add-on   | S1A        |
|                            | Auxiliary switch 2x SPDT add-on   | S2A        |
|                            | Feedback potentiometer 140 Ω add-on, grey   | P140A GR   |
|                            | Feedback potentiometer 1 kΩ add-on, grey  | P1000A GR  |
|                            | Feedback potentiometer 10 kΩ add-on, grey   | P10000A GR |
|                            | Feedback potentiometer 2.8 kΩ add-on, grey  | P2800A GR  |
|                            | Feedback potentiometer 500 Ω add-on, grey   | P500A GR   |
|                            | Feedback potentiometer 5 kΩ add-on, grey  | P5000A GR  |
| Tools                      | Description   | Type       |
|                            | Connecting 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     |
| Factory add-on option only | Description   | Type       |
|                            | Heater, with adjustable thermostat  | ACT_PACK_H |

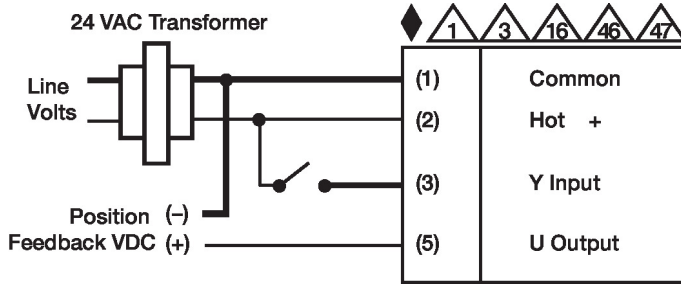
**Electrical installation**
**INSTALLATION NOTES**

- Provide overload protection and disconnect as required.
- Actuators may also be powered by DC 24 V.
- Only connect common to negative (-) leg of control circuits.
- A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- Actuators are provided with a numbered screw terminal strip instead of a cable.
- Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- Master-Slave wiring required for piggy-back applications. Feedback from Master to control input(s) of Slave(s).
- Meets cULus requirements without the need of an electrical ground connection.
- 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.

Electrical installation

Wiring diagrams

On/Off



VDC/mA Control

