

Picture may differ from product

### Type Overview

Type	DN	ANSI Class
EP250+AKRX-E	2 1/2unit_inches [65]	125

### Technical data

<b>Electrical data</b>	Nominal voltage	AC/DC 24 unit_Volt	
	Nominal voltage frequency	50/60 unit_Hertz	
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V	
	Power consumption in operation	6 W	
	Power consumption in rest position	5 W	
	Power consumption for wire sizing	12 VA	
	Connection supply / control	Cable 1 m [3 ft.], 6 x 0.75 unit_mm2	
	Conductors, cables	Power supply AC/DC 24 V: cable length <100 m	
	Electrical Connection	18 AWG plenum cable	
<b>Data bus communication</b>	Communicative control	BACnet MS/TP Modbus RTU MP-Bus	
	<b>Functional data</b>	Operating range Y	2...10 V
		Operating range Y variable	0.5... 10 V
Operating range Y note		4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)	
Input impedance		100 kΩ (0.1 mA), 500 Ω	
Operating modes optional		VDC variable	
Position feedback U		2...10 V	
Position feedback U note		Max. 1 mA	
Position feedback U variable		VDC variable	
Setting fail-safe position		FC/FO or adjustable 0...100% (POP rotary knob)	
Bridging time (PF) variable		0...10 s	
Running time motor		90 s	
Running time fail-safe		<35 s	
Sound power level motor		45 dB(A)	
Sound power level, fail-safe		61 dB(A)	
V'max adjustable		25...100% of V'nom	
Control accuracy	±5% (of 25...100% V'nom)		
Control accuracy note	±10% (of 25...100% V'nom) @ Glycol 0...60% vol.		
Min. controllable flow	1% of Vnom		
Configuration	via Belimo Assistant 2		
Fluid temperature	-10...120°C [14...250°F]		

**Technical data**

<b>Functional data</b>	Close-off pressure $\Delta p_s$	200 unit_psi
	Differential Pressure Range	5...50 psi or 1...50 psi see flow reductions chart in tech doc
	Flow characteristic	equal percentage or linear
	Body Pressure Rating	ANSI Class 125, standard class B, flat-face
	Leakage rate	0% leakage
	GPM	6.6
	Pipe connection	Flange
	Installation orientation	upright to horizontal (in relation to the spindle)
	Servicing	maintenance-free
	Manual override	external push button
	Inlet Length to Meet Specified Measurement Accuracy	$\geq$ to 0 x DN (according to EN1434-4:2022)
<b>Measuring data</b>	Measured values	Flow Fluid temperature in valve unit
	Temperature sensor	Pt1000 - EN 60751, 2-wire technology, inseparably connected integrated in flow sensor
<b>Temperature measurement</b>	Measuring accuracy absolute temperature	$\pm 0.35^\circ\text{C}$ @ $10^\circ\text{C}$ (Pt1000 EN60751 Class B) $\pm 0.6^\circ\text{C}$ @ $60^\circ\text{C}$ (Pt1000 EN60751 Class B)
<b>Flow measurement</b>	Measuring principle	Ultrasonic flow measurement
	Measuring accuracy flow	$\pm 2\%$
	Min. flow measurement	0.5% of Vnom
	Measurement repeatability	$\pm 0.5\%$ (Flow)
	Sensor technology	Ultrasonic with glycol and temperature compensation
<b>Safety data</b>	Degree of protection NEMA/UL	NEMA 2
	Housing	UL Enclosure Type 2
	Pressure equipment directive	CE according to 2014/68/EU
	Quality Standard	ISO 9001
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Rated impulse voltage supply	0.8 unit_Kilovolt
	Ambient humidity	max. 95% r.H., non-condensing
	Ambient temperature	$-30...50^\circ\text{C}$ [ $-22...122^\circ\text{F}$ ]
Storage temperature	$-40...80^\circ\text{C}$ [ $-40...176^\circ\text{F}$ ]	
<b>Materials</b>	Valve body	Forged brass, nickel-plated
	Body finish	nickel-plated
	Flow measuring pipe	Forged brass, nickel-plated
	Closing element	Stainless steel
	Spindle	stainless steel
	Spindle seal	EPDM (lubricated)
	Seat	PTFE
	Characterised disc	TEFZEL®
	O-ring	EPDM
	Ball	Stainless steel
Abbreviations	POP = Power off position / fail-safe position PF = Power fail delay time / bridging time	

Safety notes

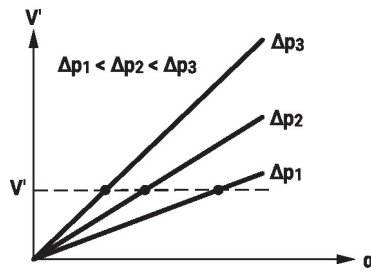


Product features

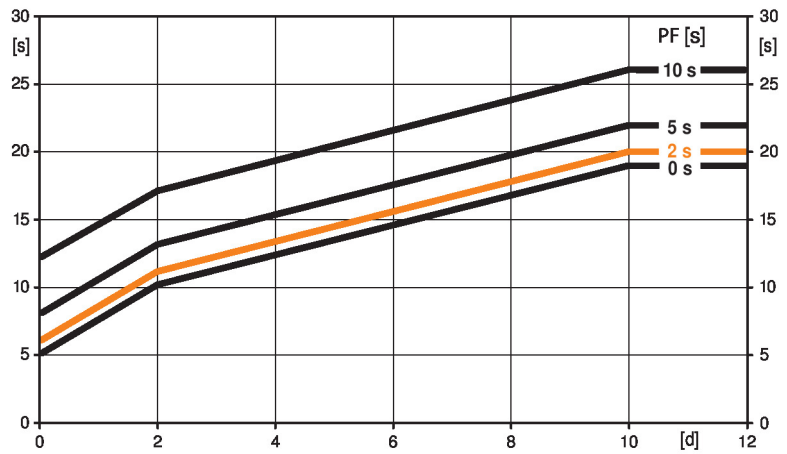
Mode of operation

**Calibration Certificate** The calibration certificate is available for download in PDF format through Belimo Assistant 2.

Flow characteristic



Pre-charging time (start up)



PF [s]	[d]				
	0	1	2	7	≥10
0	5	8	10	15	19
2	6	9	11	16	20
5	8	11	13	18	22
10	12	15	17	22	26

[s]

Product features

**Control characteristics** The fluid velocity is measured in the measuring component (sensor electronics) and converted to a flow rate signal.

The control signal Y corresponds to the power Q via the exchanger, the volumetric flow is regulated in the EPIV. The control signal Y is converted into a linear characteristic curve and provided with the V'max value as the new reference variable w. The momentary control deviation forms the control signal Y1 for the actuator.

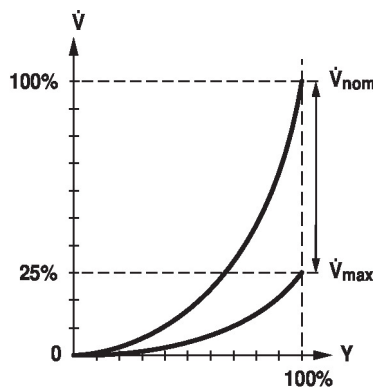
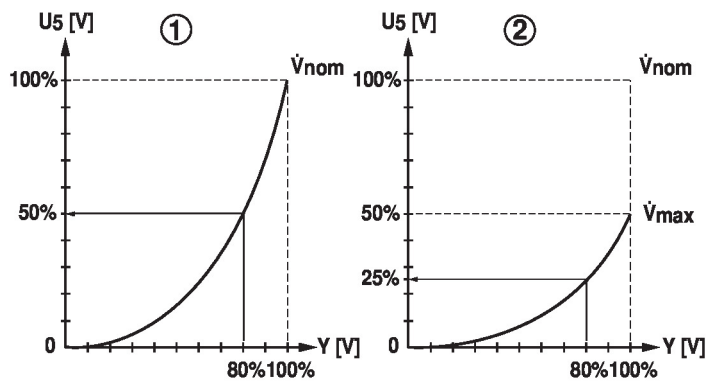
The specially configured control parameters in connection with the precise flow rate sensor ensure a stable quality of control. They are however not suitable for rapid control processes, i.e. for domestic water control. U5 displays the measured flow as voltage (factory setting).

Configuring V'max with Belimo Assistant 2:

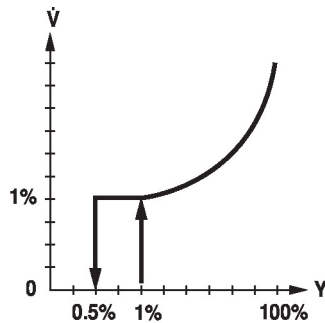
U5 refers to the respective V'nom, i.e. if V'max is e.g. 50% of V'nom, then Y = 10 V, U5 = 5 V.

As an alternative, U5 can be used for displaying the valve opening angle (position) or the fluid temperature.

1. Standard equal percentage V'max = V'nom / 2. effect V'max < V'nom



Creep flow suppression



Product features

**Patented Glycol Compensation** Glycol alters the viscosity of the heat transfer fluid, which in turn impacts the accuracy of volumetric flow measurement. Without compensation, errors of up to 30% can occur. Belimo's patented automatic glycol compensation technology greatly reduces these measurement errors.

Selectable fluid types:

- Water
- Propylene glycol
- Ethylene glycol
- Antifrogen L
- Antifrogen N
- DowCal 200
- DowCal 100

Accessories

Tools	Description	Type
	Service-Tool for wired and wireless setup, on-site operation and troubleshooting.	Belimo Assistant 2
	Belimo Assistant Link Bluetooth and USB to NFC and MP-Bus converter for configurable and communicative devices	LINK.10
Mechanical accessories	Description	Type
	Valve neck extension for ball valve DN 65...150, for butterfly valves up to DN 80	ZR-EXT-F05

Electrical installation

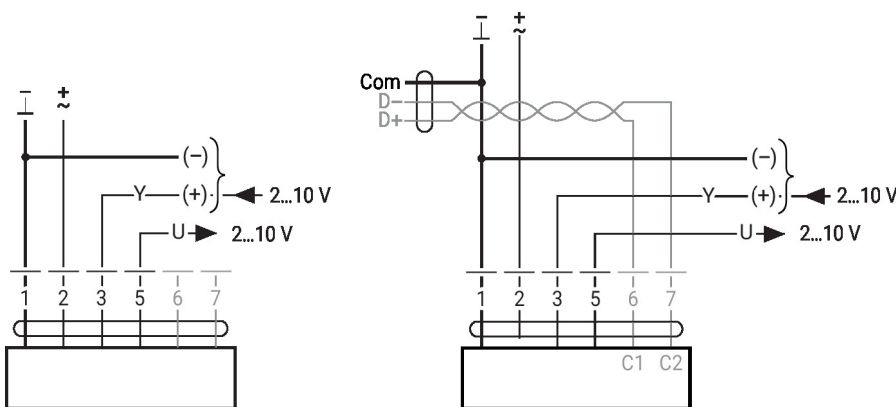


Wire colours:

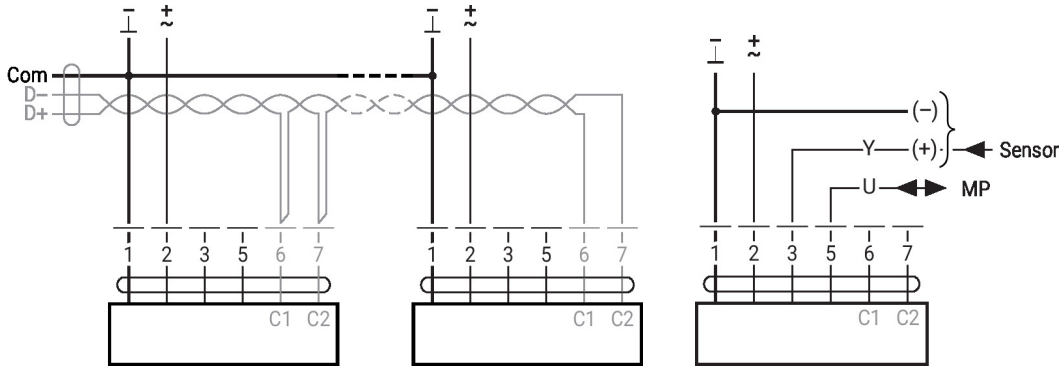
- 1 = black
- 2 = red
- 3 = white
- 5 = orange
- 6 = pink
- 7 = grey

Functions:

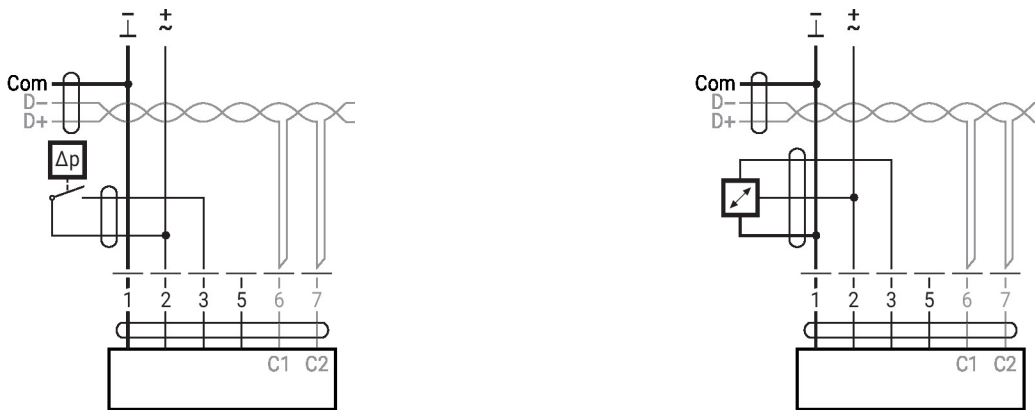
- C1 = D- (wire 6)
- C2 = D+ (wire 7)



Electrical installation

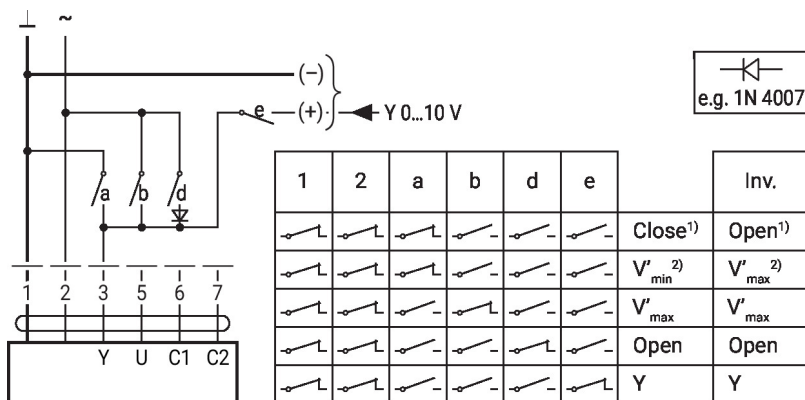


Wiring diagrams



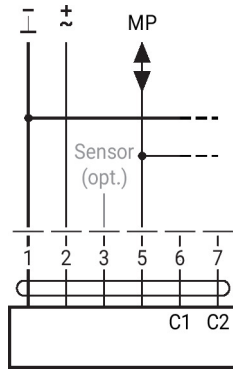
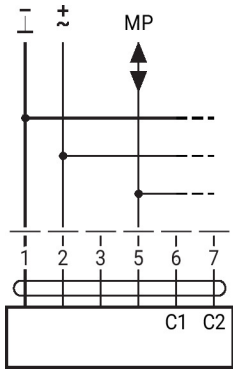
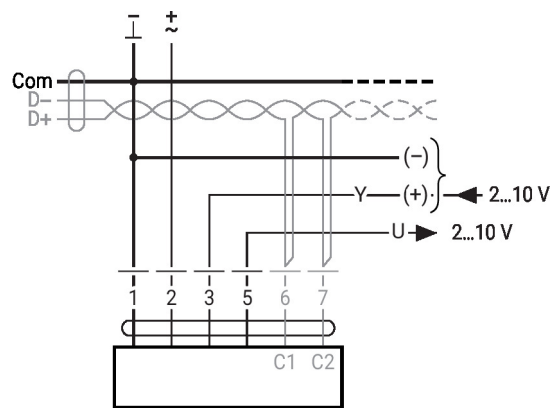
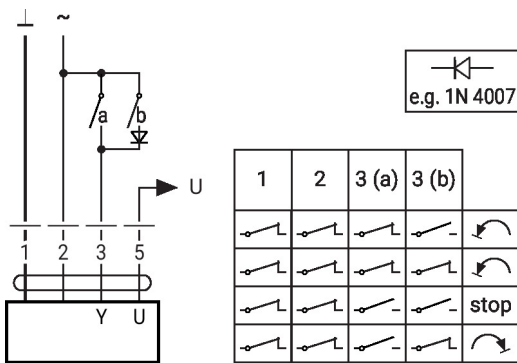
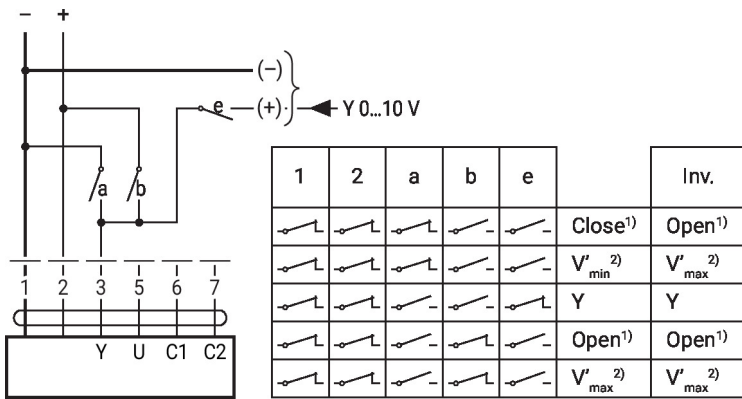
Further electrical installations

Functions for actuators with specific parameters (Parametrisation necessary)

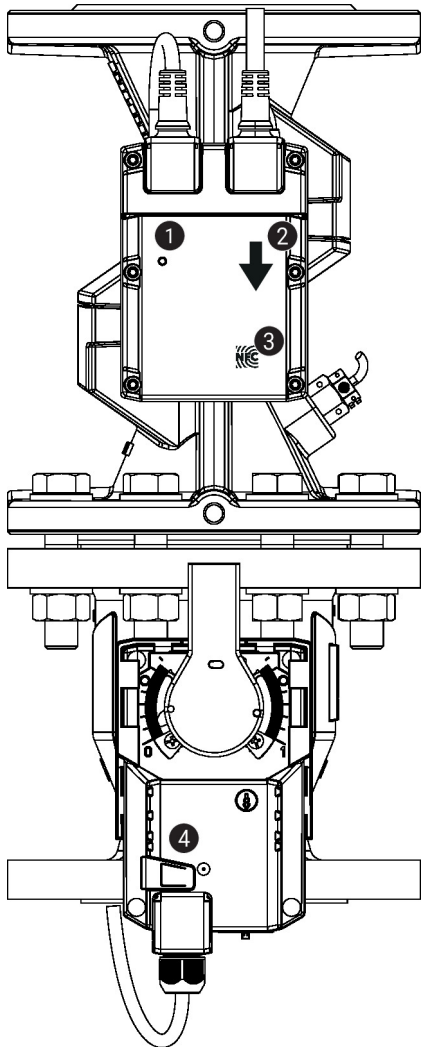


Further electrical installations

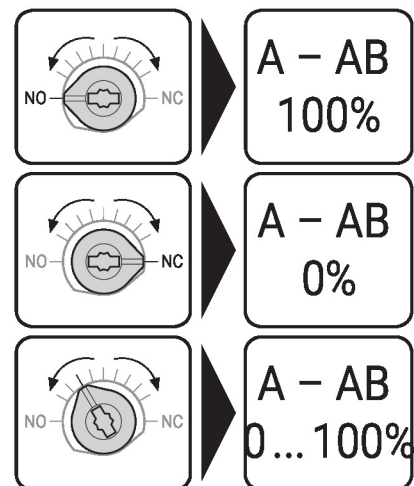
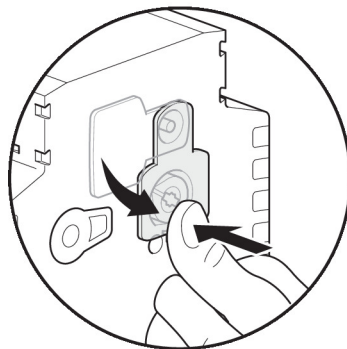
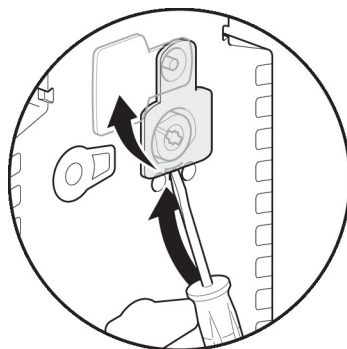
Functions for actuators with specific parameters (Parametrisation necessary)



Operating controls and indicators

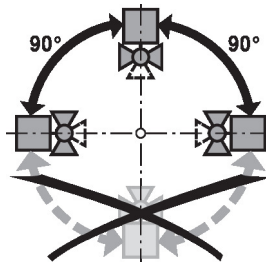


Setting fail-safe position



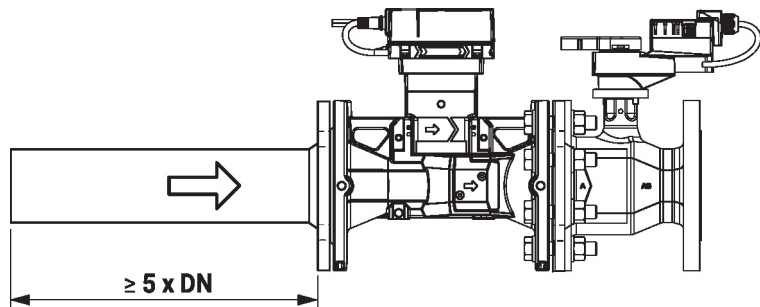
Installation notes

Recommended installation positions



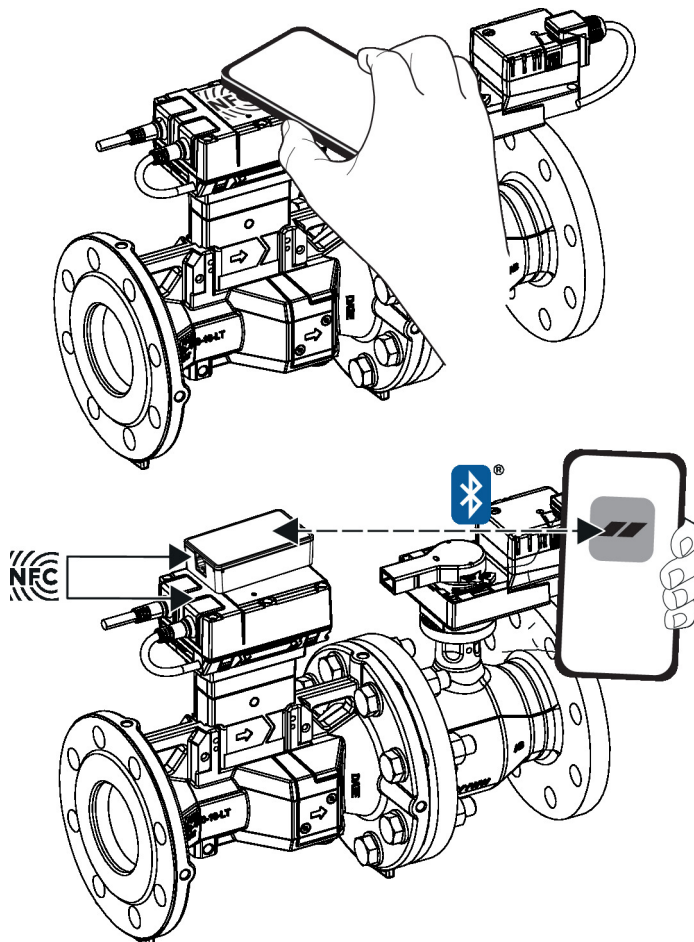
Servicing

**Inlet section** A flow calming section or inlet section in the direction of flow must be maintained in front of the flow sensor to achieve the specified measuring accuracy. Its dimensions should be at least 5x DN.



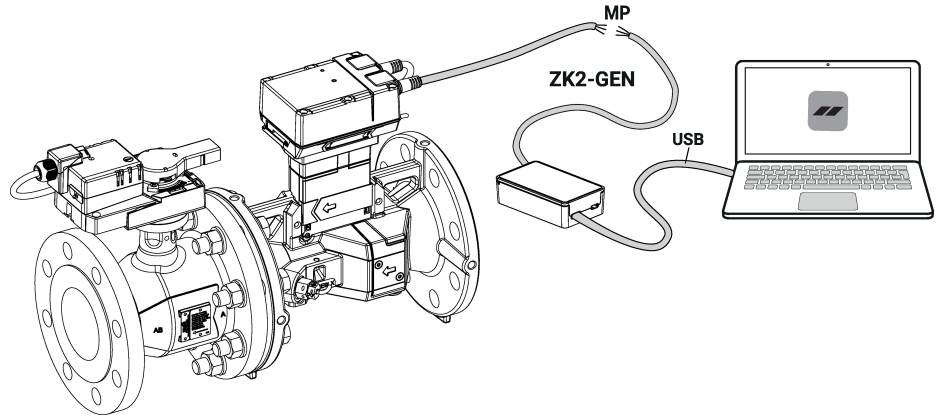
Service

Wireless connection

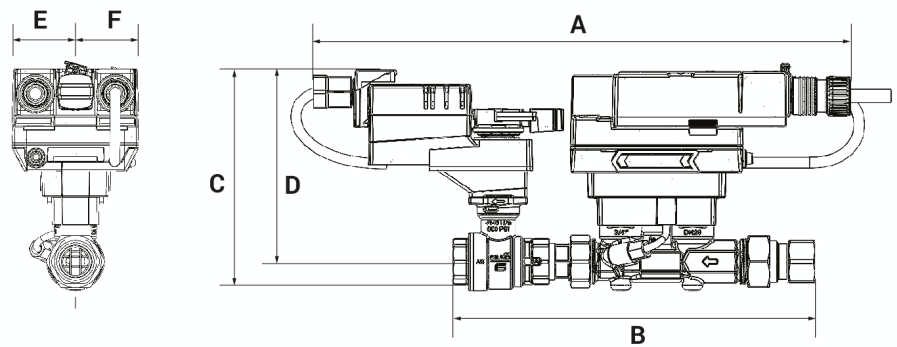


Service

Wired connection



Dimensions



Type

EP250+AKRX-E

DN

2 1/2unit\_inches [65]

A	B	C	D	E	F	Number of Bolt Holes
16.7" [425]	8.8" [224]	6.8" [172]	6.1" [155]	1.9" [48]	48 [1.9"]	4