



BA4022.80.01

F20230116001

**Thermic actuators, series BA4022\_ and BA2022\_**

- Power supply Uv: AC/DC 24 Volt or AC 230 Volt
- Control signal: On/Off or PWM
- Stroke: 4,5mm
- Force: 110N
- Normally closed version (NC)
- Mounting: with universal valve adapter system
- Electrical connection via 2-wire connection cable: 1m (optional: 2m or 5m)
- Quiet operation (0dbA) and no maintenance required
- Position indicator
- OEM-versions on request

24V / 230V



On/Off or PWM



**Advantages**

- ✓ Extremely easy mounting
- ✓ Universal valve adapter system
- ✓ First-open & re-open function
- ✓ Very low power consumption
- ✓ Very low inrush current
- ✓ Normally closed (NC) <sup>1)</sup>
- ✓ Clear position indication
- ✓ IP54
- ✓ Long life span
- ✓ Absolutely quiet operation (0dBA)

**Description**

The Belparts® thermic actuators, series BA4022\_ and BA2022\_, are designed for energy efficient valve control in various HVAC heating and cooling applications, radiator valves, manifolds, terminal control valves IRC individual room control, zone control, etc.

The actuator converts the electrical signal received from a room thermostat or a BMS-system into a valve stroke to control the set temperature via the water flow. These actuators use a PTC-resistor heated wax element and a spring-loaded piston. The wax element is heated when the power supply is turned on, and then moves the internal piston. The force generated by this motion is transmitted to the stem of the valve, causing the valve to open or close.

The actuator comes in a First-Open (FO) position, which ensures that the valve is open during initial commissioning, even without applying the power supply.

The snap-on mechanism allows you to snap the actuators onto the valve adapter screwed to the valve. This reduces the mounting time on the construction site.

The BA4022\_ and BA2022\_ thermic actuators (NC) with valve adapter system and First-Open function offer a positioning force of 110N for a traveling stroke of 4,5mm. The actuator closes the valve when de-energized. The mechanical position indication offers a clear view on the open or closed position of the valve. The actuator operates silently and is maintenance-free.

**Content**

1.	Nomenclature .....	2
2.	Technical data .....	3
3.	Operation.....	5
4.	Valve adapter .....	6
5.	Position indication.....	6
6.	Electrical connection.....	7
7.	Dimensions.....	9
8.	Mounting.....	9
9.	Intellectual property .....	9
10.	Overview .....	10
11.	Ordering example .....	12

1. Nomenclature

BA	4	0	22	80	021		
actuator series		version					
BA							<b>Product</b>
							BA Belparts® thermic actuators for terminal controls
							<b>Power supply U<sub>v</sub></b> <b>Control signal</b>
	6						6 U <sub>v</sub> : AC/DC 24 Volt      modulating 0..10Vdc
	4						4 U <sub>v</sub> : AC/DC 24 Volt      On/Off or PWM
	2						2 U <sub>v</sub> : AC 230 Volt      On/Off or PWM
							<b>Position when de-energized</b>
		0					0 normally closed (NC)      ▲
		1					1 normally open (NO) (22F series only)      △
							<b>Valve adaption</b>
			22				22 with snap-on valve adapter system      ▲
			22F				22F with fixed swivel nut M30x1,5      △
							<b>Valve adaption</b>
				10			10 combined with valve adapter AF10      △
				80			80 combined with valve adapter AF80      ▲
							<b>Standard cable 2x 0,75mm<sup>2</sup>, H05</b>
					01		01 1m, grey      ▲
					02		02 2m, white      △
					05		05 5m, white      △
							<b>Special options</b>
					-		- H05 PVC-cable      ▲
					H		H halogen-free cable      △
					S		S integrated end-switch      △

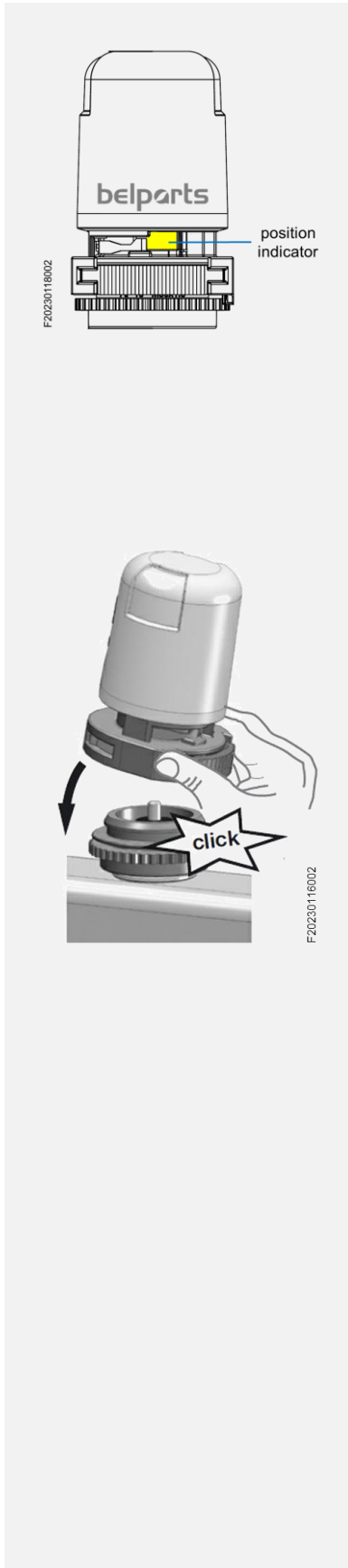
▲ standard  
△ on request

**2. Technical data** **BA4022\_**

<b>Power supply</b>	<b>U<sub>v</sub></b>	AC 24 Volt ± 20%, 50-60Hz DC 24 Volt ± 20%	
<b>Power consumption</b>		1,6W	
<b>Inrush power</b>		4,8W	
<b>Inrush current</b>		200mA	
<b>Control</b>		on/off or PWM-control	
<b>Position without power</b>		normally closed (NC)	
<b>Force</b>		110N	
<b>Running time</b>		4,5 minutes	
<b>Stroke</b>		4,5mm	
<b>Valve adapter</b>		<b>AF80</b>	<b>other valve adapters</b>
	scope of delivery	included	to be ordered separately
	valve connection	M30x1,5 female	
	closing dimension	10,2mm	
<b>First-open function</b>		yes, adjustable	
<b>Position upon delivery</b>		in first-open position	
<b>Re-open function</b>		yes	
<b>Electrical connection</b>		H05 PVC-cable, 1m, grey, 2x0,75mm <sup>2</sup>	
<b>Insulation class</b>		III (EN60730-1)	
<b>Degree of protection</b>		IP54 (EN60730-1)	
<b>CE conformity</b>			
	• Low Voltage Directive	2014/35/EU	EN 60730-1, EN 60730-2-14
	• EMC Directive	2014/30/EU	EN 60730-1
	• RoHS Directive	2011/65/EU	EN IEC 63000
<b>Temperature</b>	ambient	0°C .. +50°C	
	valve	max. +100°C	
	storage	-25°C .. +70°C	
<b>Humidity</b>		maximum 85% rH, non-condensing	
<b>Dimensions</b>	H X B	72mm x 42mm	
<b>Weight</b>		130g	

2. Technical data		BA2022_	
<b>Power supply</b>	<b>U<sub>v</sub></b>	AC 230 Volt ± 15%, 50-60Hz	
<b>Power consumption</b>		1,7W	
<b>Inrush power</b>		34,5W	
<b>Inrush current</b>		150mA	
<b>Control</b>		on/off or PWM-control	
<b>Position without power</b>		normally closed (NC)	
<b>Force</b>		110N	
<b>Running time</b>		3,5 minutes	
<b>Stroke</b>		4,5mm	
<b>Valve adapter</b>		<b>AF80</b>	<b>other valve adapters</b>
	scope of delivery	included	to be ordered separately
	valve connection	M30x1,5 female	
	closing dimension	10,2mm	
<b>First-open function</b>		yes, adjustable	
<b>Position upon delivery</b>		in first-open position	
<b>Re-open function</b>		yes	
<b>Electrical connection</b>		H05 PVC-cable, 1m, grey, 2x0,75mm <sup>2</sup>	
<b>Insulation class</b>		II (EN60730-1)	
<b>Degree of protection</b>		IP54 (EN60730-1)	
<b>CE conformity</b>			
	• Low Voltage Directive	2014/35/EU	EN 60730-1, EN 60730-2-14
	• EMC Directive	2014/30/EU	EN 60730-1
	• RoHS Directive	2011/65/EU	EN IEC 63000
<b>Temperature</b>	ambient	0°C .. +50°C	
	valve	max. +100°C	
	storage	-25°C .. +70°C	
<b>Humidity</b>		maximum 85% rH, non-condensing	
<b>Dimensions</b>	H X B	72mm x 42mm	
<b>Weight</b>		130g	

### 3. Operation



The Belparts® thermic actuators BA4022\_ and BA2022\_ convert the electrical signal received from room or timer thermostats into a valve stroke to control the set temperature via the flow rate through the valve.

The actuator converts the electrical signal from the room or clock thermostat into a valve stroke and control the set temperature via the flow rate.

The actuator is delivered in opened position (First-Open function), which means that the valve remains open during initial start-up. This makes it easier to snap the actuators onto the valve and to fill the system since the BMS-system is usually not yet in operation at this time.

The First-Open function (FO) is automatically disengaged as soon as the actuator is electrically connected and is fully opened. Alternatively, the FO-function can be deactivated manually by lifting the stroke indicator with a screwdriver. When the stroke indicator is raised, the "Re-Open" spring clip is released, thus disabling the FO function.

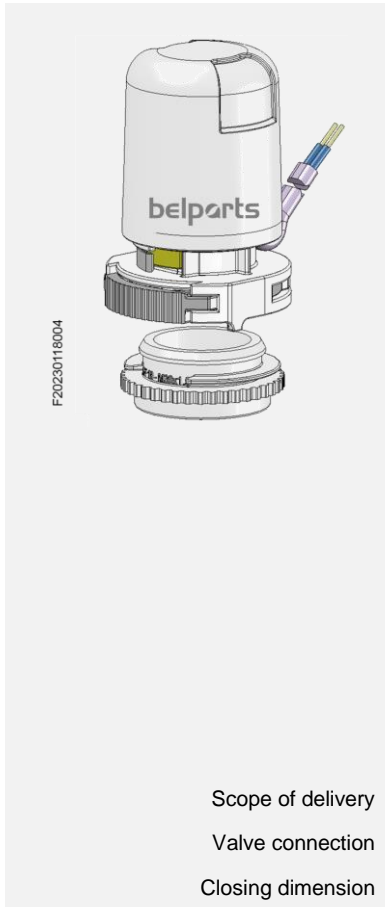
For service purposes, the actuator factory setting "open" can be restored at any time via the spring clip without electrical power. To do this, the stroke indicator is lifted with a screwdriver until the spring clip can be pushed under the stroke indicator. The compression of the stroke indicator holds the spring clip in position and the FO function is active again.

The snap-in mechanism allows the actuator to snap onto the valve adapter screwed onto the valve. This reduces assembly time on site. Valve adapter variants allow the actuator to be combined with a wide variety of valves. This ensures high flexibility with low storage costs.

The BA4022\_ and BA2022\_ actuators can be used with an on/off or a PWM control signal.



#### 4. Valve adapter



The Belparts® thermic actuators BA4022\_ and BA2022\_ come standard with the **AF80** valve adapter, suitable for all Belparts® valves series, like:

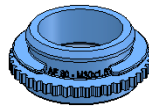
- 2-port valves NV2D\_A, NV2D\_AM, NDV2D, NG2P\_
- 3-port valves NG3P, NM3D\_ .
- 4-port valves NG4P

This **AF80** valve adapter also fits to most common third party valves on the market, with a closing dimension of 10,8mm..11,7mm.

As an alternative other valve adapters are available:

- **AF10** is for valves with a closing dimension of 11,4mm..12,3mm, like for example Overtrop QTZ, etc.
- **AF02** is for valves with a closing dimension of 8,8mm..9,7mm

For more information on specific valve types, please contact us.



**AF80**

standard  
M30 x 1,5 female  
10,2mm



**AF10**

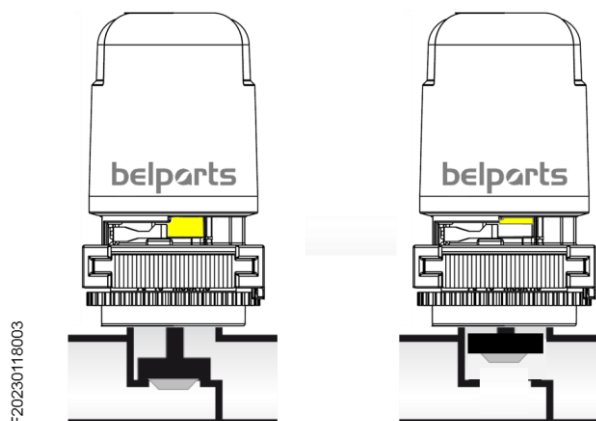
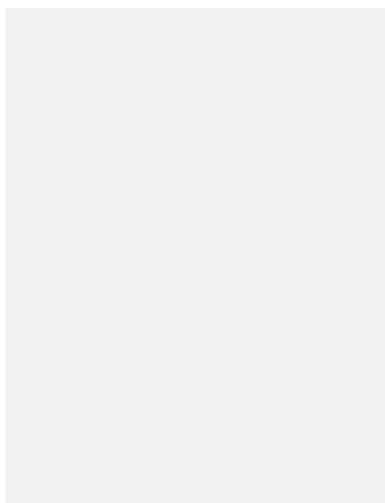
to be ordered separately  
M30 x 1,5 female  
10,8mm



**AF02**

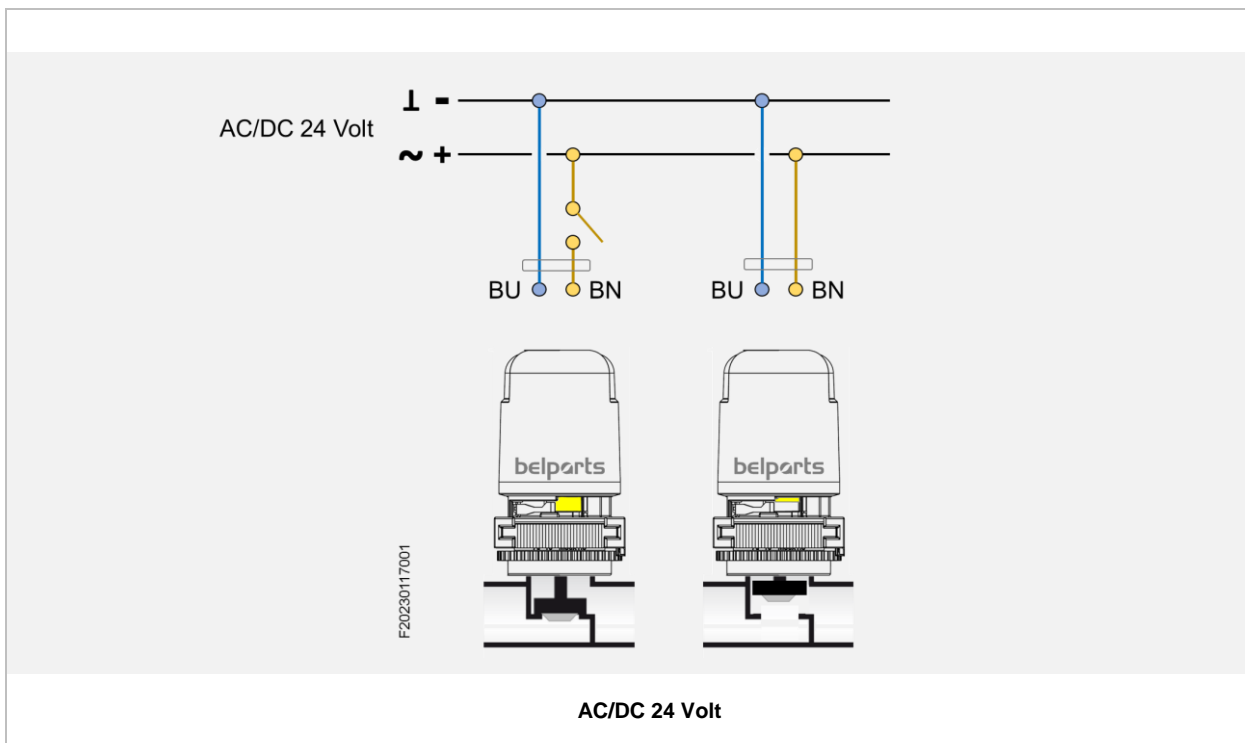
to be ordered separately  
M30 x 1,5 male  
8,2mm

#### 5. Position indication



6. Electrical connection

BA4022\_



**NC – Normally closed**

After mounting the actuator on the control valve, the control valve will be closed when in 'idle state'. When the power of the actuator is switched on, the actuator shaft moves inwards and the valve shaft extends outwards while the control valve opens. Valve position in combination with actuator with power off: CLOSED.

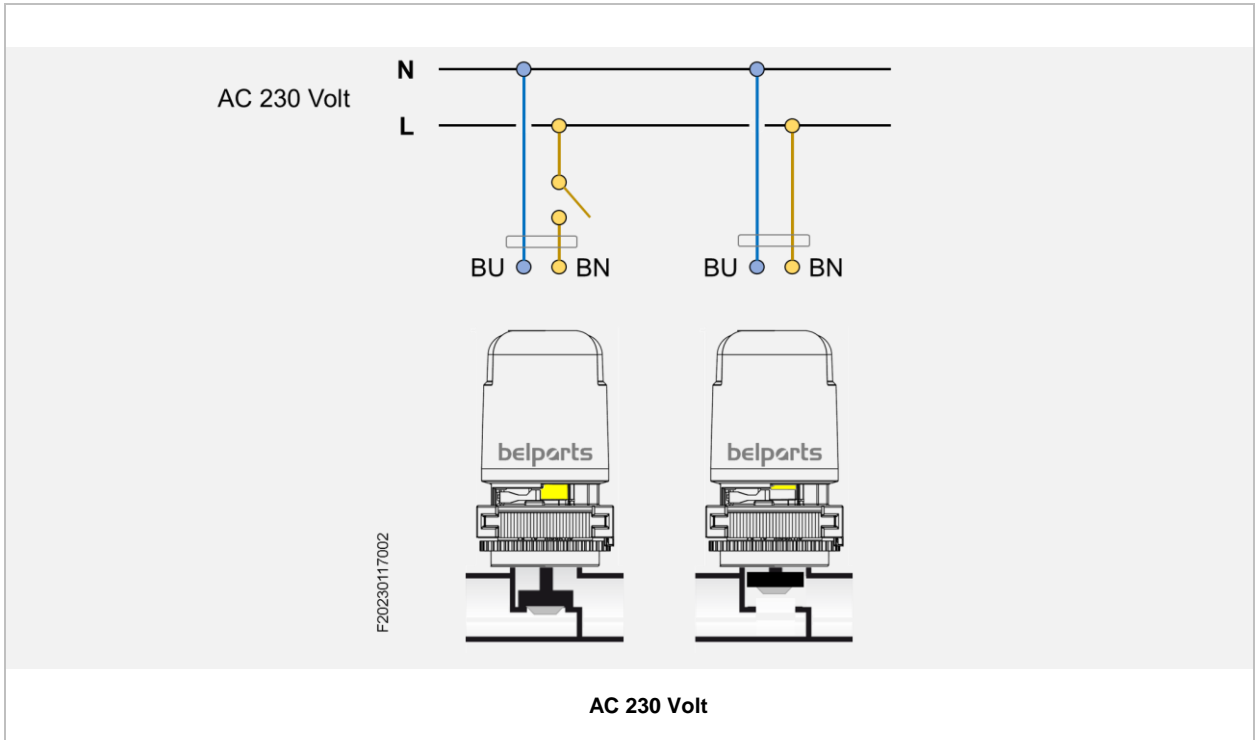
WH	BN	GN	YE	BU	PK	GY
white	brown	green	yellow	blue	pink	grey
wit	bruin	groen	geel	blauw	roos	grijs
blanc	brun	vert	jaune	bleu	rose	gris
weiß	braun	grün	gelb	blau	pink	grau

*Individual wires are color coded, no numbering. Color coding according DIN 47100.*

- i** Make sure that the power supply is turned off while the connections are being made.
- i** Make and verify electrical connections before powering the system. Short circuits or improperly connected cables can cause damage.

6. Electrical connection

BA2022\_



**NC – Normally closed**

After mounting the actuator on the control valve, the control valve will be closed when in 'idle state'. When the power of the actuator is switched on, the actuator shaft moves inwards and the valve shaft extends outwards while the control valve opens. Valve position in combination with actuator with power off: CLOSED.

WH	BN	GN	YE	BU	PK	GY
white	brown	green	yellow	blue	pink	grey
wit	bruin	groen	geel	blauw	roos	grijs
blanc	brun	vert	jaune	bleu	rose	gris
weiß	braun	grün	gelb	blau	pink	grau

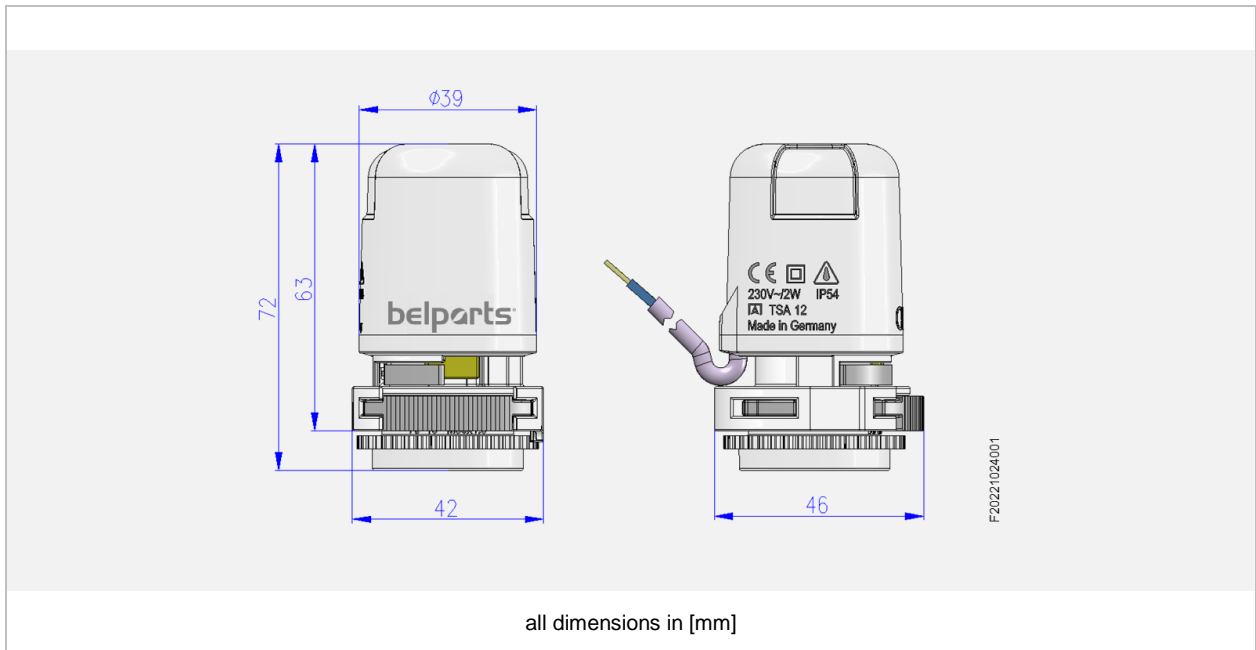
*Individual wires are color coded, no numbering. Color coding according DIN 47100.*

- i** Make sure that the power supply is turned off while the connections are being made.
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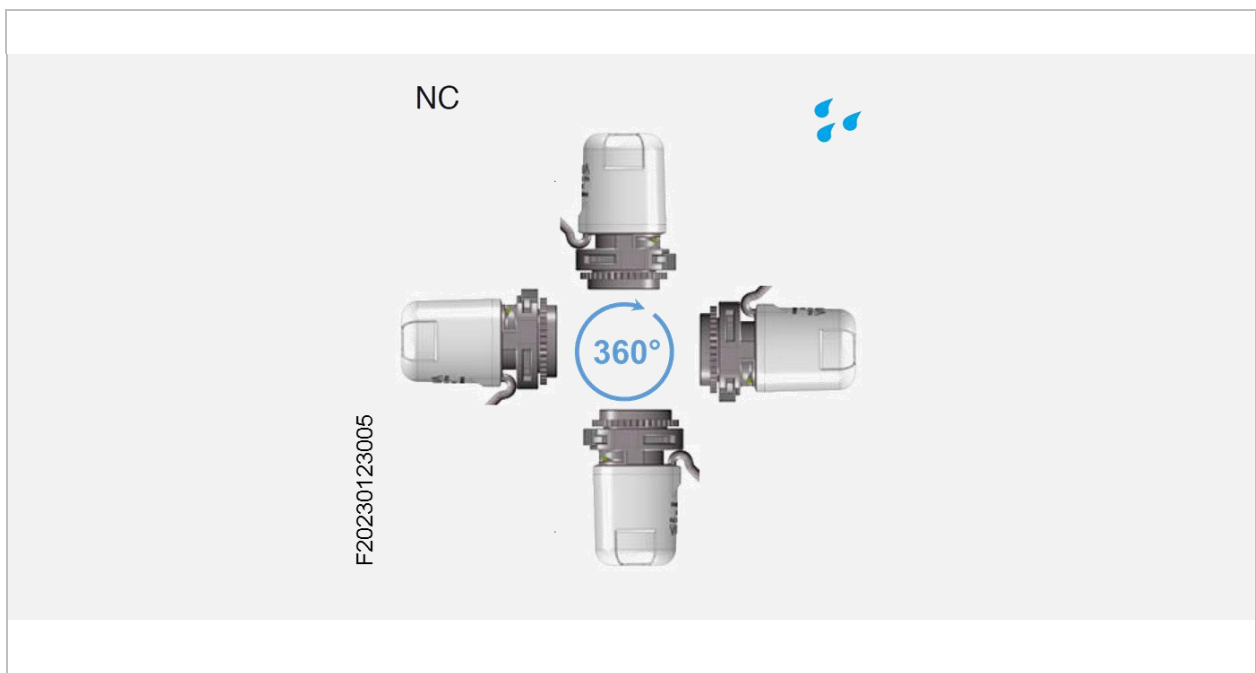


7. Dimensions

BA4022\_ | BA2022\_



8. Mounting



9. Intellectual property

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10. Overview

BA4022\_



Standard actuators AC/DC 24 Volt with AF80 valve adapter | 110N | 4,5mm | On/Off or PWM | NC-version

Type	Uv AC/DC	NC	NO	stroke [mm]	running time [min]	valve adapter		cable length [m]	PU [pcs]
						AF80	AF10		
	[Volt]								
BA4022.80.01	▲ 24V ±20%	●	-	4,5	4,5	●	-	1	8
BA4022.80.02	△ 24V ±20%	●	-	4,5	4,5	●	-	2	1.200
BA4022.80.05	△ 24V ±20%	●	-	4,5	4,5	●	-	5	900



Valve adapters as accessories / spare parts <sup>1)</sup>

Type	Description	Interface	Closing dimension [mm]	Color
AF80	▲ valve adapter, type AF80	M30 x 1,5 female	10,2	blue
AF10	▲ valve adapter, type AF10	M30 x 1,5 female	10,8	white-grey
AF02	▲ valve adapter, type AF02	M30 x 1,5 male	8,2	orange

Note: the “closing dimension” refers to the closing dimension of the actuator. This dimension is important to match the correct valve adapter to the closing dimension of the valve used.

- ▲ standard ( stock item )
- △ on request (minimum quantities apply)

- Uv power supply
- NC normally closed
- NO normally open
- PU packaging unit
- req on request

9. Overview

BA2022\_ 1)



Standard actuators AC 230 Volt with AF80 valve adapter | 110N | 4,5mm | On/Off or PWM | NC-version

Type	U <sub>v</sub> AC	NC	NO	stroke [mm]	running time [min]	valve adapter		cable length [m]	PU [pcs]
						AF80	AF10		
	[Volt]								
BA2022.80.01	▲ 230V ±15%	●	-	4,5	3,5	●	-	1	8
BA2022.80.02	△ 230V ±15%	●	-	4,5	3,5	●	-	2	1.200
BA2022.80.05	△ 230V ±15%	●	-	4,5	3,5	●	-	5	900

1) 230 Volt versions : available as from Q3/2023



Valve adapters as accessories / spare parts 1)

Type	Description	Interface	Closing dimension [mm]	Color
AF80	▲ valve adapter, type AF80	M30 x 1,5 female	10,2	blue
AF10	▲ valve adapter, type AF10	M30 x 1,5 female	10,8	white-grey
AF02	▲ valve adapter, type AF02	M30 x 1,5 male	8,2	orange

Note: the “closing dimension” refers to the closing dimension of the actuator. This dimension is important to match the correct valve adapter to the closing dimension of the valve used.


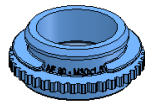
- ▲ standard ( stock item )
- △ on request (minimum quantities apply)

- U<sub>v</sub> power supply
- NC normally closed
- NO normally open
- PU packaging unit
- req on request



11. Ordering example

Qty	Type	Description
1x	<b>BA4022.80.01</b>	Thermoelectric actuator BA4022_ , 4.5mm NC, AC/DC 24 Volt, 110N, On/Off or PWM control, with connection cable 1m and valve adapter type AF80.

Scope of delivery

Qty	Type	Description
1x	<b>BA4022.00.01</b>	Thermoelectric actuator BA4022_ 4.5mm NC AC/DC 24 Volt 110N control: On/Off or PWM 1m cable length
		
		+
1x	<b>AF80</b>	Valve adapter, type AF80
		

Packaging

Type	minimum packaging unit	maximum number of actuators per pallet
<b>BA4022.80.01</b>	 8 pcs	 1.200 pcs <sup>1)</sup>

<sup>1)</sup> cable length 5m : max. 900 pcs per pallet