

# Smart electric Actuators type dEA



## Product description

The smart electric actuator dEA is the first product that can be controlled fully by an app. Furthermore it is not only smart and excellently equipped, it also features very high peak torques ranging from 25 Nm to 250 Nm. Therefore, it is able to automate a wide range of valves.



### Function

Electric actuators are used to operate valves with a rotating angle from 90° to 180°. The smart actuators dEA can be installed on any common valves with interface according to ISO 5211. Thanks to the app you can access the actuator via Smartphone - to read data, for control or for system diagnosis. Operating data such as the number of cycles or current drawn is available directly in the app.



### Applications

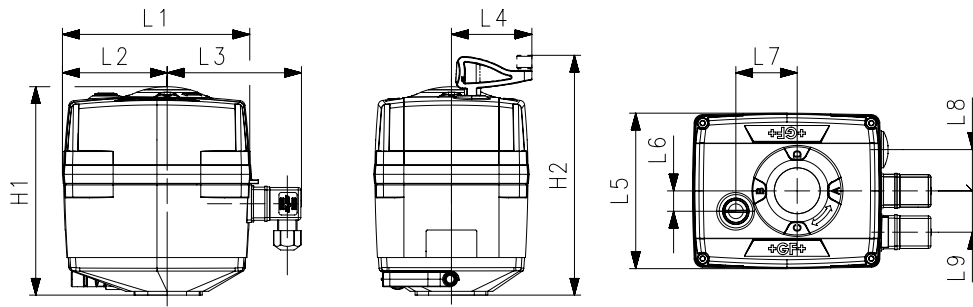
- Chemical process industry
- Water treatment
- Refrigeration

### Benefits/features

- Connectivity via NFC and Wi-Fi Direct ensuring control, identification and visibility without opening the case
- Most relevant asset data visualized in the app
- Connection and control via app possible
- LED stripe for visual open/close 360° feedback
- Heating element
- Position feedback (Open/Close/ Middle)
- Optical position indicator with
- LED status monitoring
- Third position between „OPEN“ and „CLOSE“ optional
- Relay output „ready to operate“
- Integrated emergency manual override with magnetic lock
- Robust PP-GF housing with very good chemical resistance
- Flexible configuration thanks to modular concept

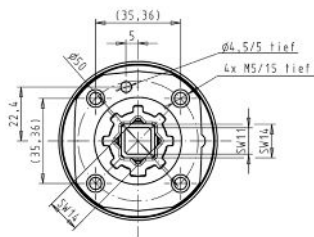
## Dimensions

## Actuator dimensions

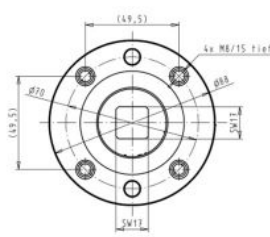


EA	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	L9 (mm)	H1 (mm)	H2 (mm)
dEA25	150	82.5	107	64.3	122	16	49	33	33	167	188
dEA45	150	82.5	107	64.3	122	16	49	33	33	167	188
dEA120	150	82.5	107	64.3	122	16	49	33	33	190	212
dEA250	150	82.5	107	64.3	122	16	49	33	33	200	221

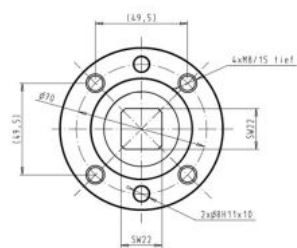
## dEA25-45



## dEA120



## dEA250

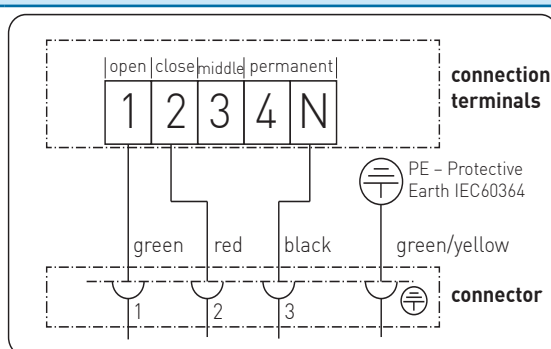


### Connection diagram for standard version

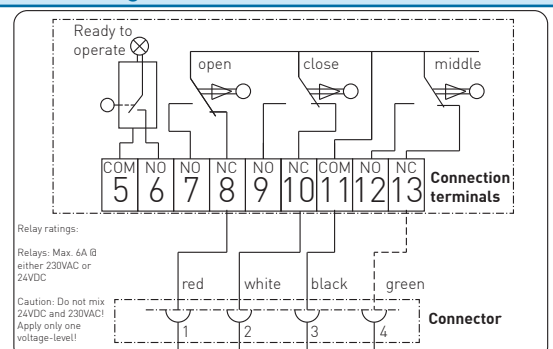
For a proper use of the Actuator with standard functions, you can use the following connection diagrams:

## Actuator activation

### Connection diagram



## Feedback signals

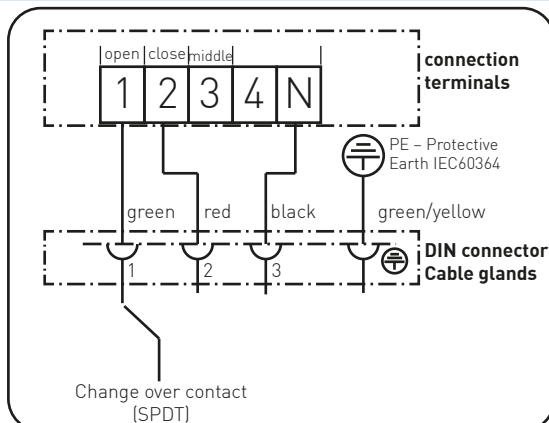


## Connection diagram for using the smart functions

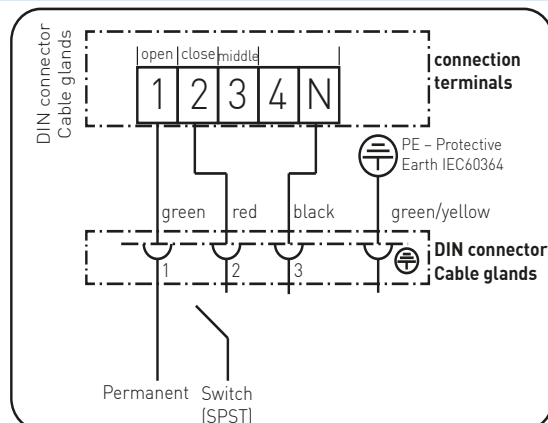
For a proper use of the Actuator with smart functions, you can use the following connection schemes:

### Possibility 1

Connection diagram

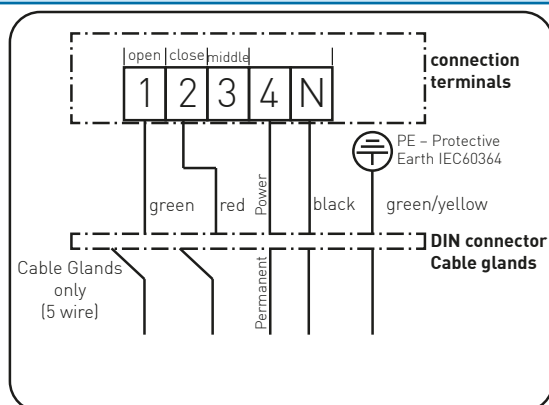


### Possibility 2



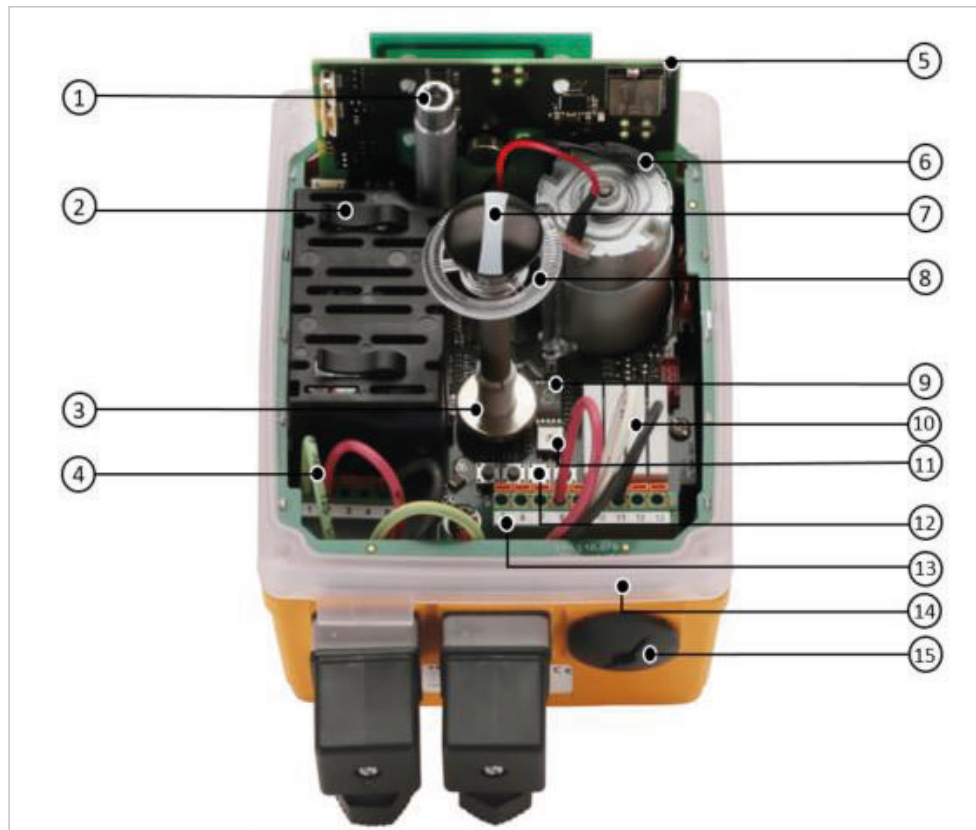
### Possibility 3

Connection diagram



## Technical data

The standard version of the dEA25/45/120/250 electric smart actuator consists of the following elements:



- ① Shaft for emergency manual override
- ② Power supply unit with contact-protection installed at 230 V version
- ③ Digital position detection
- ④ Control for OPEN/CLOSED/MIDDLE position
- ⑤ Smartboard with NFC and Wi-Fi direct interface
- ⑥ DC motor
- ⑦ Optical position indicator
- ⑧ Light tube for LED status feedback
- ⑨ 7-segment error display
- ⑩ Position feedback via relay for OPEN/CLOSED/MIDDLE
- ⑪ Heating element (temperature threshold regulator)
- ⑫ Button for end position adjustment
- ⑬ Terminal block to connect position feedback"
- ⑭ 360° visible LED
- ⑮ Connection options for DIN plugs or cable glands

### Specification

	dEA25	2-way ball valve type 546 Pro up to DN50 3-way ball valve type 543 up to DN50
	dEA45	2-way ball valve type 546 Pro up to DN65 Butterfly valve types 567 and 578, types 038 and 039 up to DN65
	dEA120	2-way ball valve type 546 Pro up to DN80/DN100 Butterfly valve types 567 and 578, types 038 and 039 up to DN80-DN200
	dEA250	Butterfly valve types 567 and 578, types 038 and 039 up to DN250-DN300
Rated voltage	AC	100 – 230 V, 50/60 Hz
	AC/DC	24 V, 50/60 Hz
Rated voltage tolerance	± 15%	
Protection class	IP 65 (IP67) <sup>1)</sup> per EN 60529 Designed for wet & dry locations (NEC), designed for indoor use (UV light may cause discoloration)	
Contamination level	2 according to EN 61010-1	
Overload protection	Current/time-dependent (resetting)	
Overvoltage category	II	
Ambient temperature	-10 °C to +50 °C (14°F to +122°F)	
Max. installation altitude	2000m above sea level (AMSL)	
Allowable humidity	Max. 90 % relative humidity, non-condensing	
Housing material	PP GF for very good chemical resistance	

	dEA25	dEA45	dEA120	dEA250
<b>Rated output</b>	AC: 35 VA at 100 – 230 V AC/DC: 40 VA at 24 V	AC: 55 VA at 100 – 230 V AC/DC: 60 VA at 24 V	AC: 50 VA at 100 – 230 V AC/DC: 55 VA at 24 V	AC: 60 VA at 100 – 230 V AC/DC: 65 VA at 24 V
<b>Rated torque Mdn. (peak)</b>	10 (25)	20 (45)	60 (120)	100 (250)
<b>Duty cycle at 25 °C / 15 min</b>	100 %	50 %	50 %	35 %
<b>Cycle time s/90° at Mdn.</b>	5 s	6 s	15 s	20 s
<b>Mechanical connection</b>	F05	F05	F07	F07
<b>Tested cycles (at 20 °C and Mdn.)</b>	250 000	100 000	100 000	75 000
<b>Weight</b>	2,1 kg	2,2 kg	3,6 kg	5 kg
<b>Actuating angle</b>	Max. 355°, set to 90°			

### Position indicator

The position indicator shows the valve position. The valve positions can be read on the fitted cover. When the cover is fitted, the following image can be seen (Example ball valve):

	2-way	3-way horizontal (L)	3-way vertical (L)
<b>Image of position indicator in valve position 1</b>			
<b>Valve function</b>			
<b>Actuating angle</b>	0° - 90°	0° - 90°	0° - 180°
<b>Valve position 1</b>	A – B (OPEN) See image	A – C (Flow right side, outlet to the front) See image	B – C (Flow left side, bottom outlet) See image
<b>Valve position 2</b>	C – D (CLOSE)	B – C (Flow left side, outlet to the front)	A – C (Flow right side, bottom outlet)

By teaching in a „Middle position“ different possibilities can be achieved depending on the valve and the application. For example:

- 2-way ball valve: Middle position describes a position, permitting no 100% flow but for instance only half as strong.
- 3-way ball valve: Middle position describes a position of the ball in which both passages are slightly opened.
- 3-way ball valve: Middle position describes a position of the ball which closes both passages.

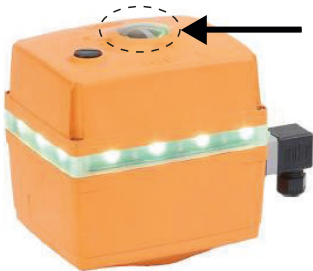
Ball valve and ball-type	3-way horizontal (L-ball)	3-way horizontal (L-ball)	3-way vertikil (L-ball)
Function of the middle position	CLOSE (on both sides no flow)	„Mixing“ (both passages slightly opened)	CLOSE (on both sides no flow)
Actuating angle	0° – 180°	0° - 90°	0° - 180°
Position 1	A – C (OPEN right)	A – C (OPEN right)	B (-C) (OPEN left)
Position 2	B – C (OPEN left) 90°	A/C – B/C (partly opened) 45°	(C-) D (CLOSE) 90°
Position 3	B – D (CLOSE) 180°	B – C (OPEN left) 90°	A (-C) (OPEN right) 180°

(Function of the middle position as „Mixing“ with the 3-way ball valve vertical is only possible with the T-ball)

### LED status feedback

The LED status feedback shows the valve positions and the current status of the actuator.

The following table shows the colour assignment of the LED:

	Color	Meaning
	Red	Open
	Green	Closed
	White	Middle
	Flashes white	Actuator moves
	Flashes yellow	Error
	Flashes blue	Adjustment mode
	Green/yellow	Setpoint value reached (at positioner)
	Turquoise	Adjustment run / operation of color inversion

If the plant standard requires an inversion of the colour assignment, the customer can adjust this afterwards.

### Accessories

- Failsafe return unit  
Battery incorporated into the housing for moving to a safe position in case of power outage (open or closed).



For further information on accessories, refer to Planning Fundamentals, chapter on "Accessories for Electrical Actuators", and the online product catalog at [www.gfps.com](http://www.gfps.com)

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10/2021-A  
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