Smart Electric actuators type dEA25-250

Product description

The smart electric actuator 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 actuators can be installed on any common valves with interface according to ISO 5211.

Accessories allow using them not only as an on/off actuator but also in continuous operation.

Applications

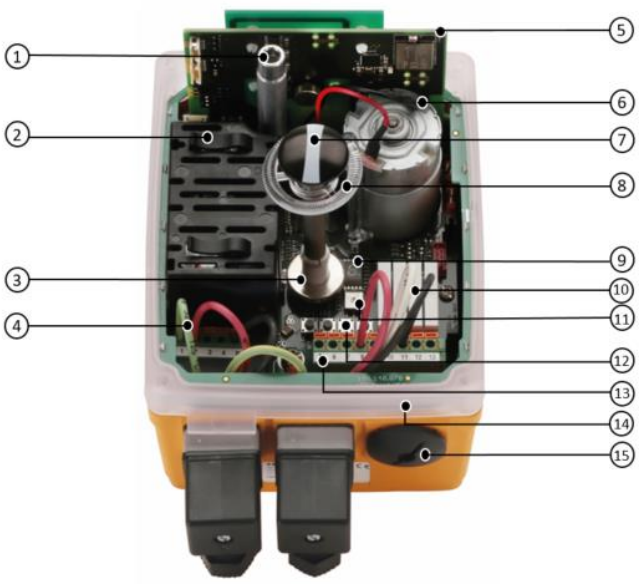
- Chemical Process Industry
- Water Treatment
- Refrigeration

Benefits/Features

- Connectivity via NFC and Wi-Fi Direct ensuring control, naming and visibility without unscrewing the case
- Most relevant asset data visualized in the app
- Connection and control via app possible
- LED stripe for visual open/close 360° feedback
- Position feedback via relais (OPEN/CLOSE/MIDDLE)
- Heating element to prevent condensation
- 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

Technical data

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



Nr.	Description
1	Shaft for emergency manual override hand crank
2	Power supply with cover at 230V version
3	Digital position detection
4	Control for OPEN/CLOSE/MIDDLE
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 relays for OPEN/CLOSE/MIDDLE
11	Heating element (temperature threshold regulator)
12	Buttons for end position adjustment
13	Signal output "ready-to-operate"
14	LED light bar for visual position indication OPEN / CLOSE/CENTER /ready for operation
15	Connection options for DIN plugs or cable glands

Specification

Combinations	dEA25	2-way ball valve type 546 to DN50
		3-way ball valve type 543 up to DN50
	dEA45	2-way ball valve type 546 DN65
		Butterfly valve types 567 and 578, types 038 and 039 up to DN65
	dEA120	2-way ball valve type 546 DN80/DN100
		Butterfly valve types 567 and 578, types 038 and 039 DN80-DN200
	dEA250	Butterfly valve types 567 and 578, types 038 and 039 DN250/300
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)[1)] per EN 60529	
Contamination level	2 according to EN 61010-1	
Overload protection	Current/time-dependent (resetting)	
Overvoltage category	II	
Ambient temperature	-10 °C to +50 °C	
Allowable humidity	Max. 90 % relative humidity, non-condensing	
Housing material	PP-GF for very good chemical resistance	

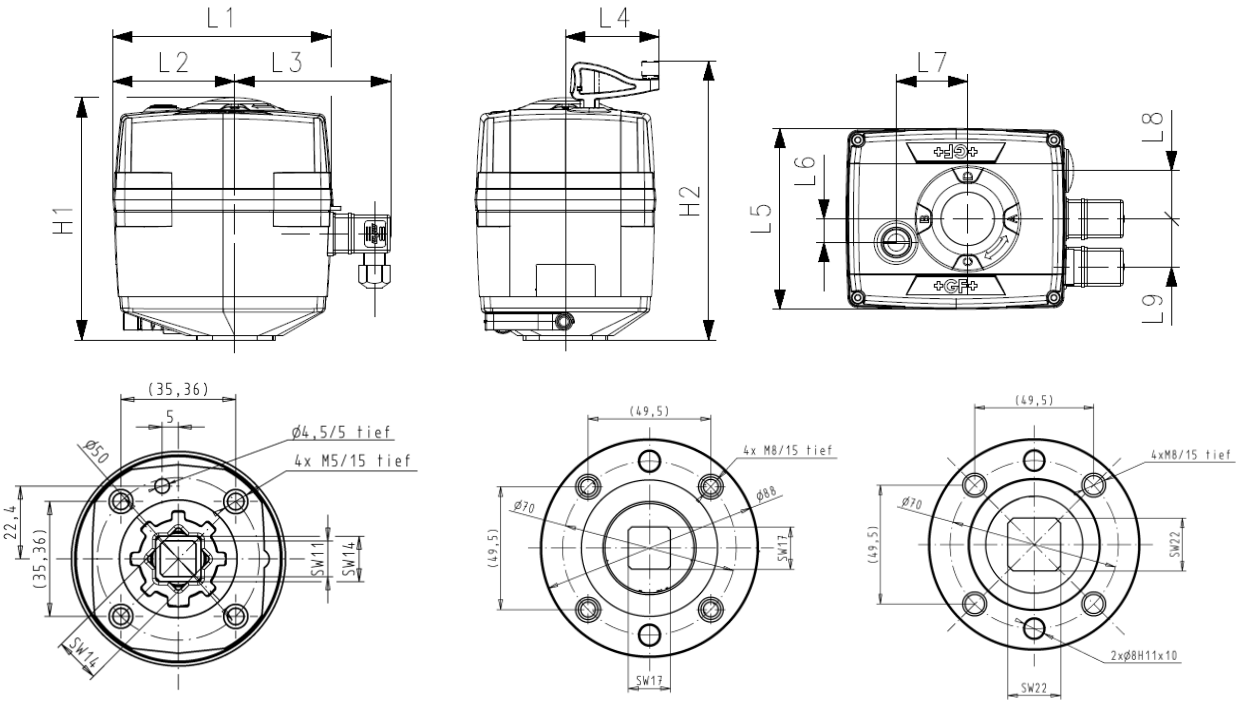
[1)] When used with cable glands and vertical installation.

	dEA25	dEA45	dEA120	dEA250
Rated output	AC: 35 VA at 100 – 230 V	AC: 55 VA at 100 – 230 V	AC: 50 VA at 100 – 230 V	AC: 60 VA at 100 – 230 V
	AC/DC: 40 VA at 24 V	AC/DC: 60 VA at 24 V	AC/DC: 55 VA at 24 V	AC/DC: 65 VA at 24 V
Rated torque Mdn. (peak)	10 (25) Nm	20 (45) Nm	60 (120) Nm	100 (250) Nm
Duty cycle	100%	50 %	50 %	35 %
Cycle time s/90° at Mdn.	5 s	6s	15 s	20 s
Connection	F05	F05	F07	F07
Tested cycles (at 20 °C and Mdn.)	250 000	100 000	100 000	75 000
Weight	2.1 kg	2.2 kg	3.6 kg	5.0 kg
Actuating angle	Max. 355°, set to 90°			

Options

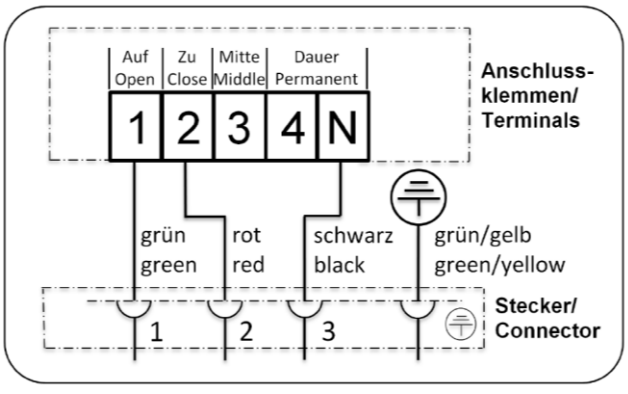
Type of Actuator	Voltage	Torque nominal	Torque maximal	Interfaces	Code
dEA25	100-230V AC	10 Nm	25 Nm	F05* (WS 11/14)	198153192
dEA25	24V AC/DC	10 Nm	25 Nm	F05* (WS 11/14)	198153193
dEA45	100-230V AC	20 Nm	45 Nm	F05* (WS 11/14)	198153194
dEA45	24V AC/DC	20 Nm	45 Nm	F05* (WS 11/14)	198153195
dEA120	100-230V AC	60 Nm	120 Nm	F07 (WS17)	198153196
dEA120	24V AC/DC	60 Nm	120 Nm	F07 (WS17)	198153197
dEA250	100-230V AC	100 Nm	250 Nm	F07 (WS17)	198153198
dEA250	24V AC/DC	100 Nm	250 Nm	F07 (WS17)	198153199

Dimensions

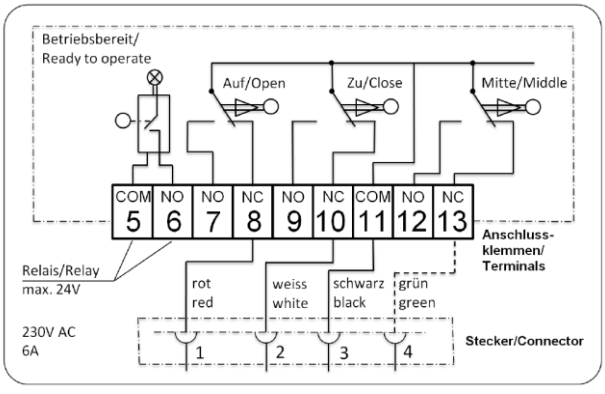


dEA	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	L9 (mm)	H1 (mm)	H2 (mm)
dEA25	150	83	108	64	122	16	49	33	33	167	189
dEA45	150	83	108	64	122	16	49	33	33	167	189
dEA120	150	83	108	64	122	16	49	33	33	190	212
dEA250	150	83	108	64	122	16	49	33	33	200	221

Connection diagram for standard version

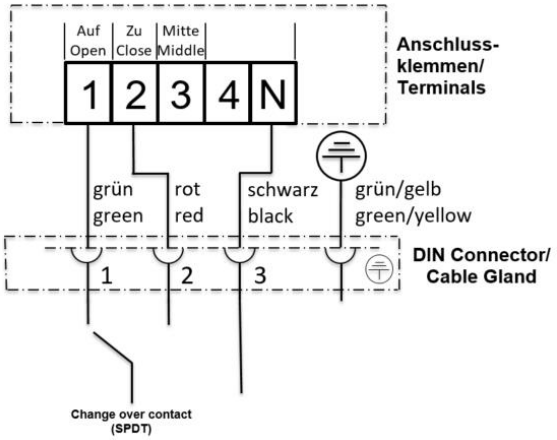


Actuator activation

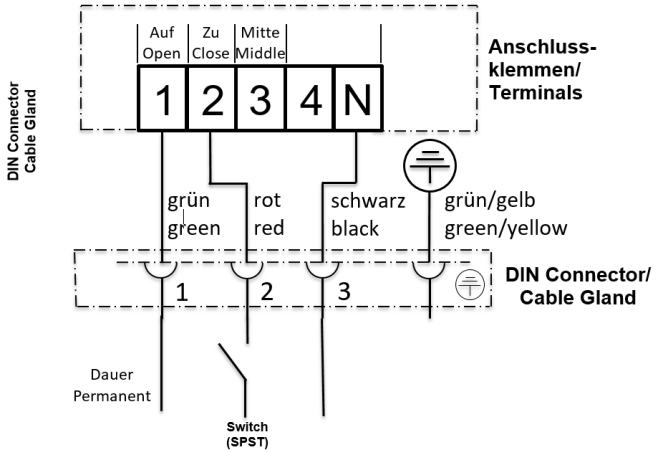


Feedback signals

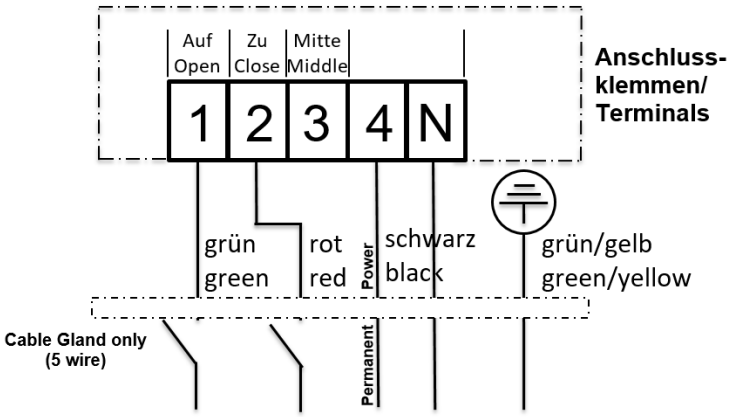
For a proper use of your Smart Actuator, you can use the following connection schemes:



Possibility 1



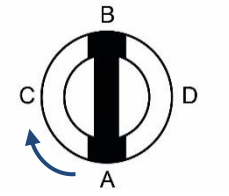
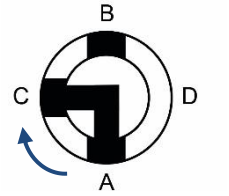
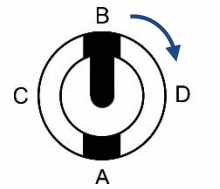
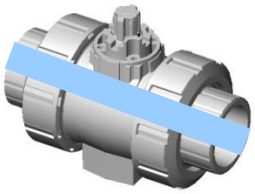
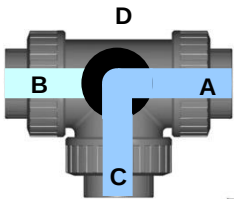
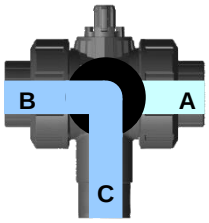
Possibility 2



Possibility 3

Optical 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)
Image of position indicator in valve position 1			
Valve function			
Actuating angle	0° - 90°	0° - 90°	0° - 180°
Valve position 1	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
Valve position 2	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:

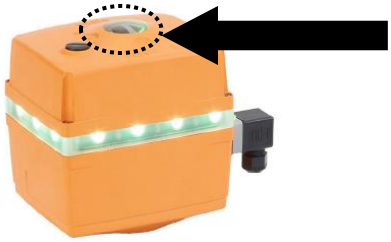
- 2-way ball valve: Middle position describes a position, limiting the 100% flow for instance only half.
- 3-way ball valve: Middle position describes a position of the ball in which both passages are slightly opened.
- 3-way ball valve: Middle position describes a position of the ball which closes both passages.

Ball valve and ball-type	3-way horizontal (L-ball)	3-way horizontal (L-ball)	3-way vertikal (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 Position 2 Position 3	A – C (OPEN right) B – C (OPEN left) 90° B – D (CLOSE) 180°	A – C (OPEN right) A/C – B/C (partly opened) 45° B – C (OPEN left) 90°	B (-C) (OPEN left) (C-) D (CLOSE) 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 colour 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). Option available, PCB for use with external 24V DC Power supply.

For further information on accessories, refer to Planning Fundamentals, chapter on "Accessories for Electrical Actuators", and the online product catalog at www.gfps.com

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