Compact part-turn actuator for final elements with 90° part-turn movements such as butterfly and ball valves.

The modern concept with BLDC motors enables easy and safe operation and additionally low energy consumption at very compact dimensions. The part-turn actuator is available in two housing materials: stainless steel and plastics. The stainless steel version is designed for demanding ambient conditions: The stainless steel housing offers high mechanical protection as well as high corrosion resistance.
Uniform modules for feedback/control can easily be retrofitted. A reduced number of models in small designs can thus be extended to a multitude of variants.

Product features overview:

- Open-close duty as well as positioning
- Torque range: 32 – 100 Nm
- Torque measurement and torque seating for all sizes
- Swing range 90°
- Mechanical position indicator
- Manual operation via detachable crank handle
- Easy commissioning with software support
- Maintenance-free actuator across the indicated lifetime
- Low energy consumption both during operation and in standby
- Precise electronic and wear-free position sensing
- Soft start/soft stop for valve protection and precise positioning
- Options for feedback signals via 24 V and analogue signals, furthermore for positioning via 4 – 20 mA or 0 – 10 V.

Data according to size							
Type	Torques		Operating time for 90°[1)2)] [Seconds]	Valve attachment	Valve stem Double square	Crank handle	Weight
	Open-close duty Max. [Nm]	Modulating duty[3)] Max. [Nm]				Ø [mm]	Stainless steel/ plastics approx. [kg]
RP32	32	20	16	F03/F04/F05	WAF14	10	2.6/1.5
RP64	64	20	16	F03/F04/F05	WAF14	10	2.6/1.5
RP100	100	20	20	F03/F04/F05	WAF14	10	2.6/1.5

Features and functions		
Housing material	Plastics or stainless steel	
Type of duty	Open-close duty	Short-time duty S2 - 15 min, class A
	Modulating duty	Intermittent duty S3 - 25 %, class B
	250 starts per hour	
Motor	BLDC motor	
Power supply	Standard	1-phase AC current: 100 – 240 V/ 50 – 60 Hz Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 %
	Option	DC current: 24 V DC ±10 %
Overvoltage category	Category II according to IEC 60364-4-44	
Insulation class	B (motor windings)	
Overcurrent protection	Safe fuses within the power supply unit, thermal monitoring within the motor	
Heater	Via standby consumer	
Current consumption	In standby mode with permanent mains connection: < 2 W During operation low current values due to high efficiency, refer to electrical data	
Self-locking	The self-locking from standstill remains present up to a torque impact of 20 Nm.	
Swing angle	Standard	Adjustable range: 45° – 350°, without mechanical end stops, factory setting: 90°
Mechanical position indicator	Continuous indication for 90°	
Manual operation	Supplied crank handle must be fitted for manual operation and removed for motor operation A fixture is provided at the outside of the actuator for safe stowage.	
Limit switching	Via Hall sensors	

1) The values for operating times refer to an operation across 90° of travel with the load profile: 10 % travel at 100 % load, 90 % travel at 40 % load
2) Derating at ambient temperatures above 50 °C: The speed will be reduced.
3) Maximum permissible torque for modulating duty: S3 - 25 %

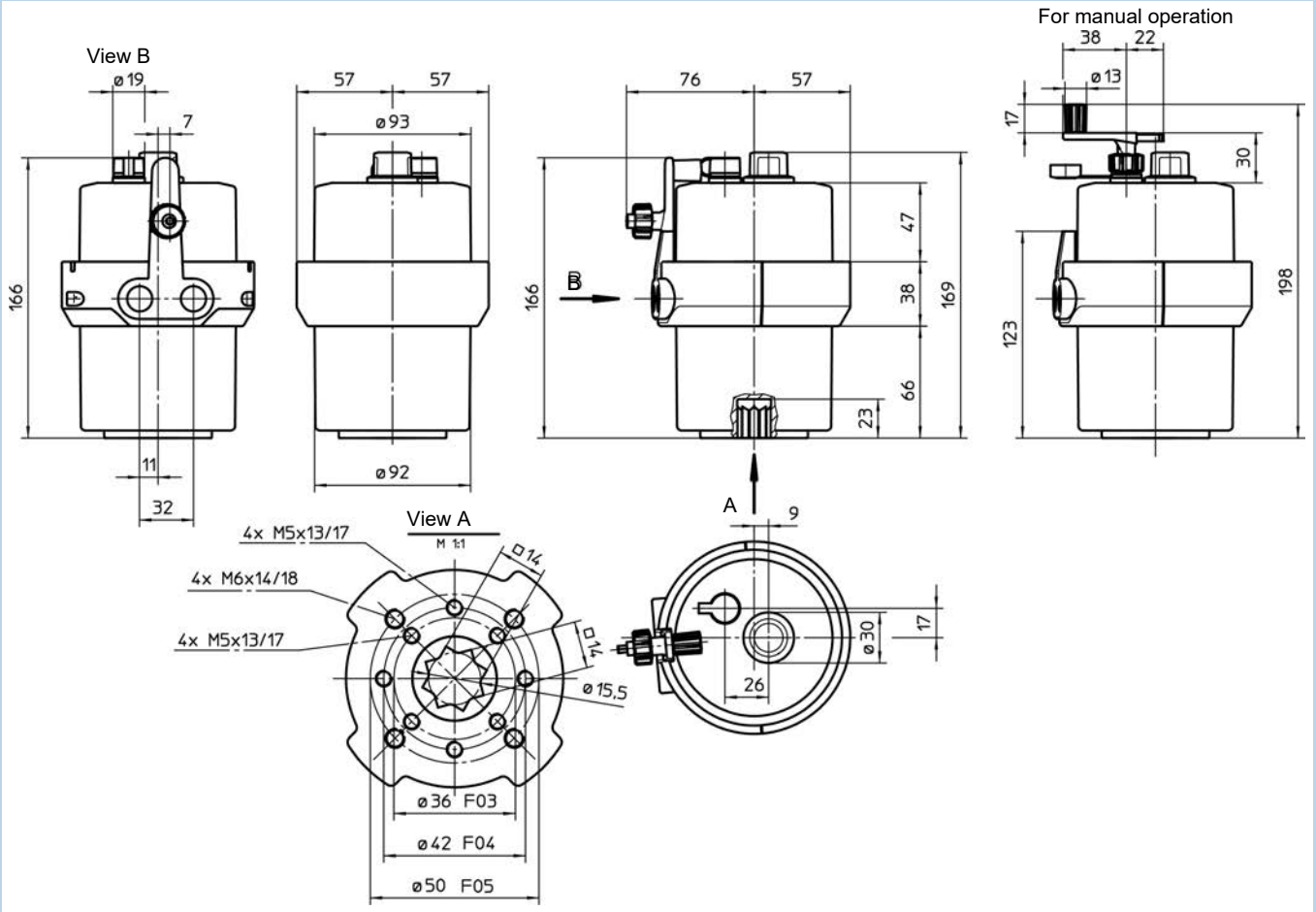
Features and functions		
Torque switching	• Seating in end position OPEN via travel • Seating in end position CLOSED either via travel or via torque	
Torque measurement	Electronic torque control via motor current and tripping at max. value.	
Control	Standard	3-point step control via mains supply. Polarity reversal must be made by the customer.
Output signals, status signals (option)	2 x bistable relays for end positions OPEN and CLOSED, max. 230 V AC 100 mA or 30 V DC 100 mA	
Multi I/O module (option)	4 x I/O signals which can be defined by the user as required. They also include: • Inputs for control: Max. 2 x 24 V DC signals for operation commands in directions OPEN and CLOSE. An analogue signal for positioning (4 – 20 mA or 0 – 10 V) as an alternative. • Outputs for feedback signals: Max. 4 x semiconductor relays for two end positions and/or (failure and torque fault) or failure, max. 30 V AC/DC and altogether 1A. An analogue signal for position feedback (4 – 20 mA or 0 – 10 V) as an alternative.	
Operation and display	The following operating elements and LEDs are located below the cover: • 1 DIP switch for selecting the type of seating • 1 DIP switch for the type of adjustment for end position CLOSED • LED for feedback during end position setting and for fault signalling • Two push buttons for operation in directions OPEN and CLOSE	
Functions	End position setting via internal push buttons: • End position CLOSED always via the push button • End position OPEN via push buttons or automatically	
	Type of seating for end position CLOSED can be set to limit or torque seating via internal DIP switch	
	Torque monitoring across the whole travel.	
	Soft start/soft stop from and into any position	
Electrical connection	Cable entries: 2 x M16 x 1.5 thread for cable glands. Inside rail with spring clamp terminals for wire connection.	
Wiring diagram	TPC RA010000 (basic version)	
Valve attachment	Dimensions according to EN ISO 5211, refer to table “Data according to size”.	

Service conditions	
Mounting position	Any position, but not suspended downward
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request
Humidity	15 % to 95 % relative humidity across the entire permissible temperature range
Ambient temperature	In plastic version: –10 °C to +60 °C, also with options (a. o. electronic sub-assembly) In stainless steel version: –20 °C to +60 °C, also with options (a. o. electronic sub-assembly)
Enclosure protection in accordance with IEC 60529	IP67
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)
Vibration resistance according to IEC 60068-2-6	2 g, for 10 to 200 Hz Resistant to vibration during start-up or for plant failures. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.
Corrosion protection	In plastic version: KK, housing made of PA66 In stainless steel version: KE, materials 1.4301 and 1.4308
Colour	In plastic version: Black In stainless steel version: Uncoated stainless steel surface
Driving load	During operation, no accelerating loads may occur.
Lifetime	The life time requirements of EN ISO 22153 are fulfilled or exceeded.
Sound pressure level	< 70 dB (A)

Electrical data 1-phase AC current								
Type	Torque		Operating time for 90°[4)5)]	Power[6)]	Nominal current [A][7)]		Max. current [A][8)]	
	Open-close duty	Modulating duty[9)]						
	Max. [Nm]	Max. [Nm]	[Seconds]	[W]	100 V AC	240 V AC	100 V AC	240 V AC
RP32	32	20	16	9	0.2	0.1	0.3	0.2
RP64	64	20	16	12	0.2	0.1	0.4	0.2
RP100	100	20	20	15	0.3	0.2	0.5	0.3

Electrical data DC current								
Type	Torque		Operating time for 90°[4)5)]	Power[6)]	Nominal current [A][7)]		Max. current [A][8)]	
	Open-close duty	Modulating duty[9)]						
	Max. [Nm]	Max. [Nm]	[Seconds]	[W]	24 V DC		24 V DC	
RP32	32	20	16	9	0.41		0.6	
RP64	64	20	16	12	0.55		0.8	
RP100	100	20	20	15	0.69		1.0	

Dimensions

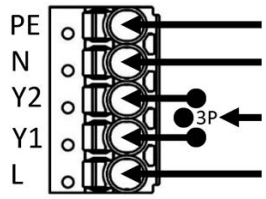


4) The values for operating times refer to an operation across 90° of travel with the load profile: 10 % travel at 100 % load, 90 % travel at 40 % load
5) Derating at ambient temperatures above 50 °C: The speed will be reduced.
6) Effective power consumed by the actuator at 35 % of maximum torque
7) Nominal current at 35 % of maximum torque
8) Current at maximum torque
9) Maximum permissible torque for modulating duty: S3 - 25 %

Electrical connection

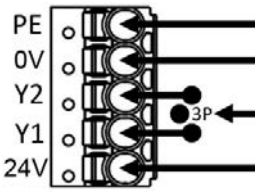
Basic version, power terminals

100 – 240 V AC 50/60 Hz



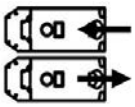
PE	PE conductor
N	N
Y2	L CCW
Y1	L CW
L	(continuously supplied with current, if option 1 or 2 is used)

24 V DC

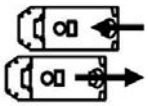


PE	PE conductor
N	0V
Y2	24V CCW
Y1	24V CW
24V	(continuously supplied with current, if option 1 or 2 is used)

Option 1: Output signals end positions OPEN and CLOSED (extension module)

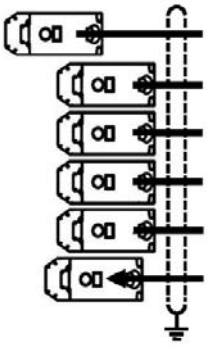


COM 2	max. 230 V AC 100 mA
DOUT 2	end position CCW



COM 1	max. 230 V AC 100 mA
DOUT 1	end position CW

Option 2: Multi I/O module (extension module)



	1	2	3	4	5	6	7
	* 1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
COM	COM	COM	COM	COM	COM	COM	COM
I/O 4	DOUT end position CCW	DOUT Actuator ready for operation	DOUT Actuator ready for operation	DOUT Actuator ready for operation	DOUT Actuator ready for operation	DOUT Actuator ready for operation	DOUT end position CCW
I/O 3	DOUT end position CW	DOUT Torque fault	DOUT Torque fault	DOUT Torque fault	AOUT Feedback position 4 – 20 mA	AOUT Feedback position 0 – 10 V	DOUT end position CW
I/O 2	DIN CCW operation command	DOUT end position CCW	AOUT Feedback position 4 – 20 mA	AOUT Feedback position 0 – 10 V	DIN CCW operation command	DIN CCW operation command	DIN Operation command CW/CCW **
I/O 1	DIN CW operation command	DOUT end position CW	AIN Control position 4 – 20 mA	AIN Control position 0 – 10 V	DIN CW operation command	DIN CW operation command	
24V DC	24V DC external	24V DC external	24V DC external	24V DC external	24V DC external	24V DC external	24V DC external

	8	9	10	11	12	13	14
	1 2 3 4	1 2 3 4					
COM	COM	COM					
I/O 4	DOUT end position CCW	DOUT end position CCW					
I/O 3	DOUT end position CW	DOUT end position CW					
I/O 2	AOUT Feedback position 4 – 20 mA	AOUT Feedback position 0 – 10 V					
I/O 1	AIN Control position 4 – 20 mA	AIN Control position 0 – 10 V					
24V DC	24V DC external	24V DC external					

* Factory setting

CW: clockwise
CCW: counterclockwise
DOUT max. 30 V AC/DC 1 A
DIN/AOUT/AIN PLC standard type 2

** 0 V = CW
24 V = CCW