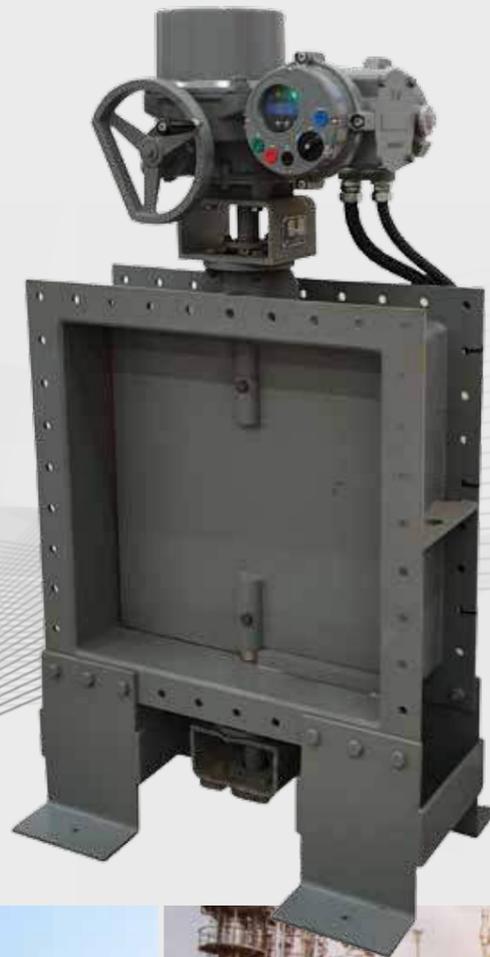


# TQ SMART SERIES

Intelligent quarter-turn electric valve actuator

*The TQ Smart series is a next-generation intelligent product that can actively respond to developing control systems. This quarter-turn actuator can be applied to butterflies, ball valves, dampers, etc.*



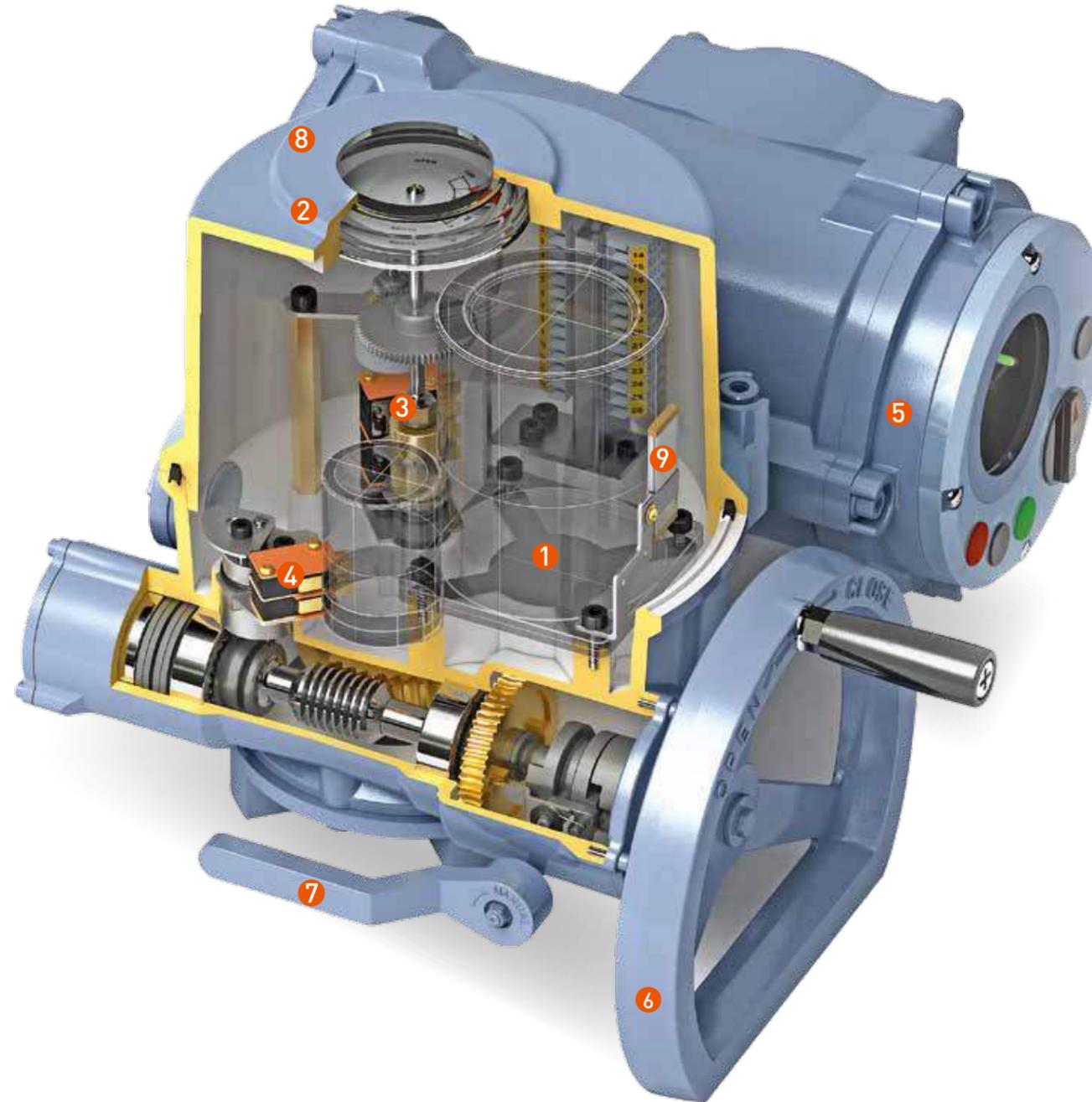
## Main specifications of TQ Smart series

- Equipment can be set and operated using a remote control or wireless device without opening the cover
- Completely eliminates possibility of rainwater penetration by adopting non-penetration type switch
- Self-holding function when torque switch is operating
- Waterproof function satisfying IP68 (8m, 72 hours)
- Explosion-proof function satisfying Exd IIB T4 (optional)
- Large LCD display, data logging function
- Supports 2-wire fieldbus communication (Profibus-DP, FF, HART, Modbus etc./optional)
- Fire retarding (optional)
  - FR coating
  - Tested using UL 1709:2005 (certification agency: Lloyd's Register of Shipping)



# TQ SMART SERIES

Part Turn Electric Actuator



## 1 Motor

The built-in thermostat protects the motor from damage by fire by accurately detecting rising temperatures.

## 2 Gate positioner

The exact location is displayed as a percentage. The percentage can be displayed on the LCD (digital) if the operation panel is the integrated type.

## 3 Position sensor

The position is sensed using a potentiometer. Setting range: 40-100%

## 4 Torque sensor

Torque is sensed using a potentiometer. Setting range: 40-100%

## 5 Integral unit

A non-penetrating structure where the front control unit is completely separated from the inside, with no need for a separate on-site control panel. The internal circuit is protected from external shock current because it is completely separated by the remote circuit and the insulation element. When the torque switch is operated, motor damage by fire and valve damage due to repeated operation are prevented using a "self-holding function".

## 6 Manual handle

The handle is installed at the site for convenience of operation.

## 7 Manual switch lever

The motor can be conveniently switched from electric to manual, and the automatic return type is the standard for returning from manual to electric.

## 8 Terminal block

A circular terminal block is installed at the rear end of the integral unit. The terminal block is separated using a double-sealing structure using a V ring and O ring to protect the interior from moisture.

## 9 Space heater

A thermostat is installed that automatically regulates the temperature.

# TQ SMART SERIES

## Standard specifications

Output contact (position limit/torque switch)	Power Fail Relay (1 point, Rating : 5A 250VAC / A 30VDC), Configurable latch relay (5 points, Rating : 5A 250VAC/5A 30VDC)
Rotation angle	90°±10°
Gate positioner	Mechanical type continuous percentage indication type
Enclosure (waterproof grade)	IP-68 (72 hours duration at depth of 8 meters)
Space heater	Thermostat type (PTC-5) / 5W / 100-240VAC
Manual/electric switch	Automatic return; manually switch from electrical to manual using manual lever
Wiring service entrance	PF 1*(#28) x 3ea
Operating ambient temperature	-25°C~+70°C
Vibration/Shock	Vibration: 1g rms in frequency range of 10-55Hz (0.5g rms for integrated control panel) Shock: Maximum acceleration 5G
Coating	Aluminum: Anodizing + polyester (powder) / Carbon steel: Double-coated epoxy paint Finish color: Munsell No. 2.5PB 5/2

## Optional specifications

Temperature range	Low temperature -40°C - +50°C
Adding output contacts (position limit/torque switch)	Configurable latch relay (4 points, Rating : 5A 250VAC/5A 30VDC)
Wiring service entrance	NPT, G, etc.
Transmitter (position value)	DC 4-20mA
Transmitter (torque value)	DC 4-20mA
Proportional control	Input : DC 4-20mA / Output : DC 4-20mA
Wide rotation angle	120°, 180°, 270°
Fieldbus control [2-wire control]	Profibus-DP(Single/Redundancy) / Modbus-RTU / Foundation Fieldbus-H1 / HART / Wireless
Motor forward and reverse actuator	SSR (Solid State Relay)
Others	Surge protector, arrester

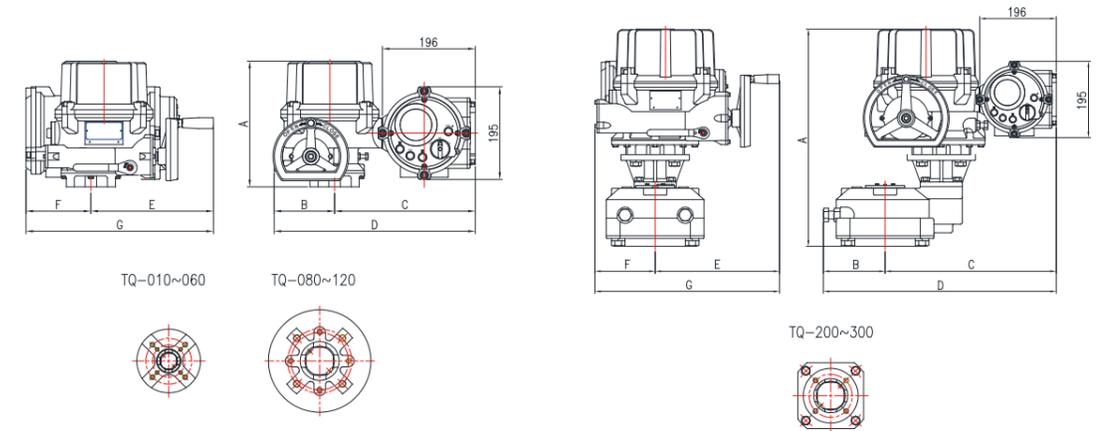
## Specifications

Model	Number of sets*	Frequency Hz	Maximum torque kg.m	Operating time SEC.	Allowable stem diameter		Motor		Rated current					Handle operating RPM rev.	Weight	
					Key type Φmm	Square type □ mm	Capacity W	Flange F	Single phase		Three phase				Basic kg	Integral kg
									110V	220V	220V	380V	440V			
TQ-020SM	Set 1	60	20	17	30	22	40	80	1.97	0.95	0.38	0.21	0.28	10	10	19
	Set 2		12	8					5							
TQ-020SM	Set 1	50	20	20	30	22	40	80	1.71	0.82	0.52	0.27	0.43	10	10	19
	Set 2		12	10					5							
TQ-040SM	Set 1	60	40	25	40	29	40	90	2.86	1.36	0.35	0.23	0.27	12.5	16	25
	Set 2		24	13					6.3							
TQ-040SM	Set 1	50	40	30	40	29	90	90	2.24	1.00	0.45	0.25	0.32	12.5	16	25
	Set 2		24	15					6.3							
TQ-060SM	Set 1	60	60	25	40	29	90	90	3.89	1.82	0.56	0.35	0.41	12.5	16	25
	Set 2		36	13					6.3							
TQ-060SM	Set 1	50	60	30	40	29	90	90	3.16	1.42	0.77	0.4	0.56	12.5	16	25
	Set 2		36	15					6.3							
TQ-080SM	Set 1	60	80	34	47	35	90	90	3.89	1.82	0.56	0.35	0.41	14.5	26	35
	Set 2		48	17					7.3							
TQ-080SM	Set 1	50	80	40	47	35	90	90	3.16	1.42	0.77	0.4	0.56	14.5	26	35
	Set 2		48	20					7.3							
TQ-120SM	Set 1	60	120	34	47	35	180	90	7.1	3.7	3.5	1.7	1.9	14.5	27	36
	Set 2		72	17					7.3							
TQ-120SM	Set 1	50	120	40	47	35	180	90	3.53	1.76	1.42	0.53	0.77	14.5	27	36
	Set 2		72	20					7.3							
TQ-200SM	Set 1	60	200	100	78	58	90	90	3.89	1.82	0.56	0.35	0.41	43.5	66	75
	Set 2		120	51					21.8							
TQ-200SM	Set 1	50	200	115	78	58	90	90	3.16	1.42	0.77	0.4	0.56	43.5	66	75
	Set 2		120	60					21.8							
TQ-300SM	Set 1	60	300	100	78	58	180	90	7.1	3.7	3.5	1.7	1.9	43.5	67	76
	Set 2		180	51					21.8							
TQ-300SM	Set 1	50	300	115	78	58	180	90	3.53	1.76	1.42	0.53	0.77	43.5	67	76
	Set 2		180	60					21.8							

\* Set 1 : Standard operating time & standard max. torque output  
Set 2 : Faster operating time, but max. torque output is lower than Set 1.

## Dimensions

Model	Base ISO 5211	ØP	Thread specification	Tap depth	A	B	C	D	E	F	G
TQ-020SM	F07/F10	Ø70/Ø102	M8/M10	15/18	265	130	296	426	258	137	395
TQ-040SM	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-060SM	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-080SM	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-120SM	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-200SM	F16	Ø165	M20	30	556	159	439	319	319	155	474
TQ-300SM	F16	Ø165	M20	30	556	159	439	319	319	155	474



## Special Option

### Separated Integral Type

- If it is dangerous or uncomfortable for the operator to use the integrated type operation panel, it can be relocated.

- If piping vibrates severely, the integrated operation panel can be relocated to protect electronic devices.

There are two types of the integrated operation panel - the standing type that is secured to the floor, and the wall bracket type that can be attached to the wall.

