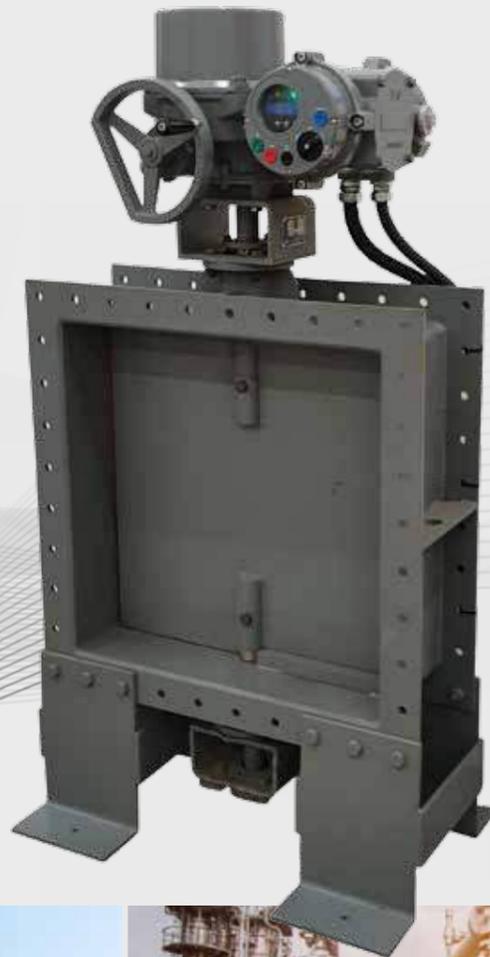


TQ SERIES TQi SERIES

Quarter-turn electric valve actuator

The TQ series is a quarter-turn actuator that can be applied to butterflies, ball valves, dampers, etc. The TQ i series is an actuator developed using the technological capability of Enertork and diverse field experience.

The TQ i series will satisfy all customer requirements with the addition of the latest features such as 2-wire communication and data logging to the reliability and durability of the TM series that has been widely used thus far.



Main specifications of TQ series

- Potentiometer slip device (for easy calibration)
- Completely eliminates possibility of rainwater penetration by adopting a 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 (optional)
- 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)

Advantages and differentiated features of TQ series

- Provide product lineup that can satisfy the needs of various customers, such as fail safe, solar power generation system, etc.
- Customized functions can be implemented



TQ SERIES

Part Turn 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 limit switch

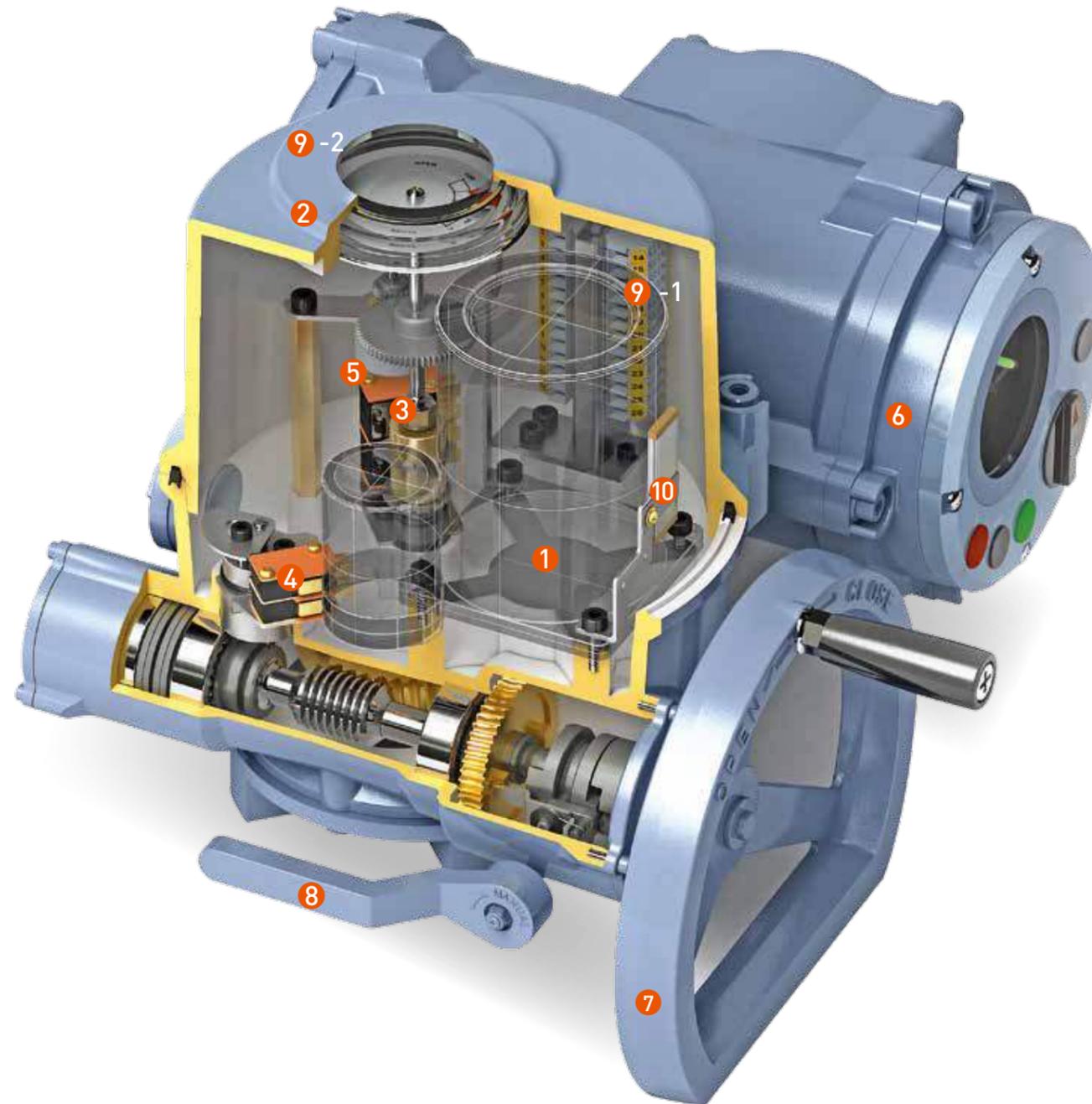
With a SLIP device adopted, the switch can be set conveniently by turning the cam with a flathead (⊖) screwdriver.

4 Torque switch

The correct setting values are set for outbound products. The motor stops automatically when a force greater than the set value is applied.

5 Potentiometer

With a SLIP device adopted, the zero point can be adjusted conveniently by turning the axis with a flathead (⊖) screwdriver.



6 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".

7 Manual handle

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

8 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.

9 Terminal block

9-1 The basic type is built into the main unit.

9-2 For the integrated operation panel, 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.

9-3 A separate external terminal box can be attached to the basic type if an additional contact point is needed or if there is concern for moisture penetration into the wiring service entrance.

10 Space heater

A thermostat is installed that automatically regulates the temperature.

TQ, TQi SERIES

Standard specifications

Main power	1PH, 110/220V, 50/60Hz 3PH, 220/380/440/460/480, 50/60Hz 24 VDC
AC motor	Insulation class F, built-in thermostat / Available within voltage variation of ±10% Standard rating: S2, 10MIN
DC motor	Insulation class B / Available within voltage variation of ±10% Standard rating: S2, 10MIN
Output contact (position limit/torque switch)	Position limit switch: 2 ea. for open/close, silver alloy contact: 250VAC, 10A Torque switch: 2 ea. for open/close, silver alloy contact: 250VAC, 10A (excluding TQ-010)
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/NPT 1" (#28) x 3ea (TQ-010, PF/NPT ¾" (#22) x 3ea)
Operating ambient temperature	BASIC/LED Type : -25°C~+80°C, LCD Type : -25°C~+70°C, Fail Safe : 0°C~+50°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

Integrated operation panel	LED Non-penetration push switch (Open/Close/Stop/Reset) Non-penetration selection switch (Remote/Off/Local) Motor forward/reverse actuator (Magnetic contactor) Status display LED Reverse-phase protection function Monitor relay	LCD Non-penetration push switch (Open /Close/Stop/Reset) Non-penetration selection switch (Remote/Off/Local) Motor forward/reverse actuator (Magnetic contactor) Character LCD and status display LED Reverse-phase protection function Monitor Relay Save history of operation incl. operating time, usage times, torque and limit, etc.
Temperature range	Low temperature : -40°C~+50°C, -50°C~+50°C (BASIC/LED TYPE)	
Adding output contacts (position limit/torque switch)	Position limit switch - 2 ea. for open/close, silver alloy contact 250VAC, 10A	
Wiring service entrance	NPT, G, etc.	
Potentiometer	1kΩ	
Transmitter (position value)	DC 4~20mA	
Proportional control	Input : DC 4~20mA, Output : DC 4~20mA (Excluding TQ-010)	
Rotation angle	120°, 180°, 270° (Excluding TQ-010)	
Explosion-proof	Exd IIB T4 (*Excluding DC motor type)	
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)	
FailSafe	Battery backup unit (voltage: 24VDC, capacity: 3.0Ah/6.0Ah/9.0Ah), operable when main power supply is interrupted (Open/Close/Stay-put can be selected)	
Others	Surge protector, arrester	

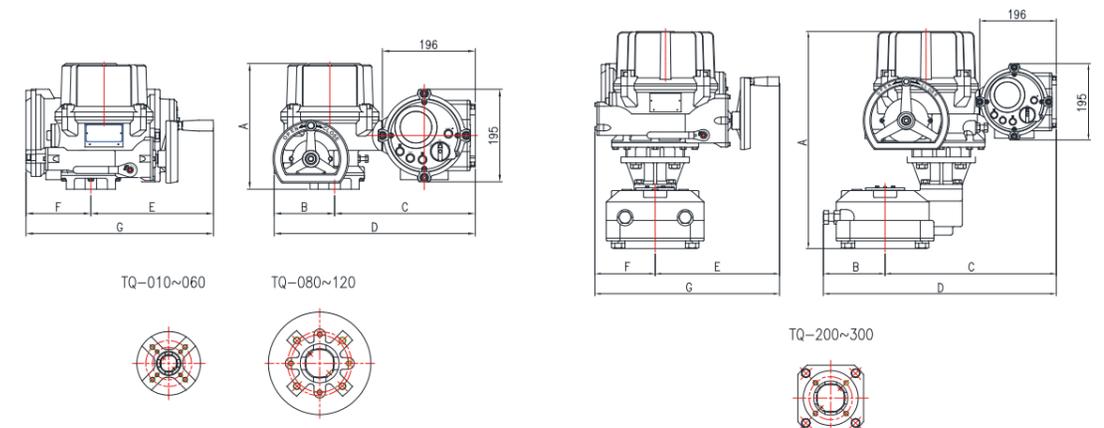
Specifications

Model	Number of sets*	Frequency	Maximum torque	Operating time	Allowable stem diameter		Motor		Rated current					Handle operating RPM	Weight	
					Key type	Square type	Capacity	Flange	Single phase		Three phase				Basic	Integral
									Φmm	□mm	W	F	110V			
TQ-010	Set 1	60	10	17	18	13	15	70	1.03	0.65	N/A	N/A	N/A	10	6.5	N/A
	Set 2	50	10	20					0.92	0.56	N/A	N/A	N/A	10		
TQ-020	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							
	Set 1	50	20	20					1.71	0.82	0.52	0.27	0.43	10		
	Set 2		12	10					5							
TQ-040	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							
	Set 1	50	40	30					2.24	1.00	0.45	0.25	0.32	12.5		
	Set 2		24	15					6.3							
TQ-060	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							
	Set 1	50	60	30					3.16	1.42	0.77	0.4	0.56	12.5		
	Set 2		36	15					6.3							
TQ-080	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							
	Set 1	50	80	40					3.16	1.42	0.77	0.4	0.56	14.5		
	Set 2		48	20					7.3							
TQ-120	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							
	Set 1	50	120	40					3.53	1.76	1.42	0.53	0.77	14.5		
	Set 2		72	20					7.3							
TQ-200	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							
	Set 1	50	200	115					3.16	1.42	0.77	0.4	0.56	43.5		
	Set 2		120	60					21.8							
TQ-300	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							
	Set 1	50	300	115					3.53	1.76	1.42	0.53	0.77	43.5		
	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-010	F05/F07	Ø50/Ø70	M6/M8	10/15	217	117	-	-	236	-	-
TQ-020	F07/F10	Ø70/Ø102	M8/M10	15/18	265	130	296	426	258	137	395
TQ-040	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-060	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-080	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-120	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-200	F16	Ø165	M20	30	556	159	439	319	319	155	474
TQ-300	F16	Ø165	M20	30	556	159	439	319	319	155	474



TQ, TQi SERIES

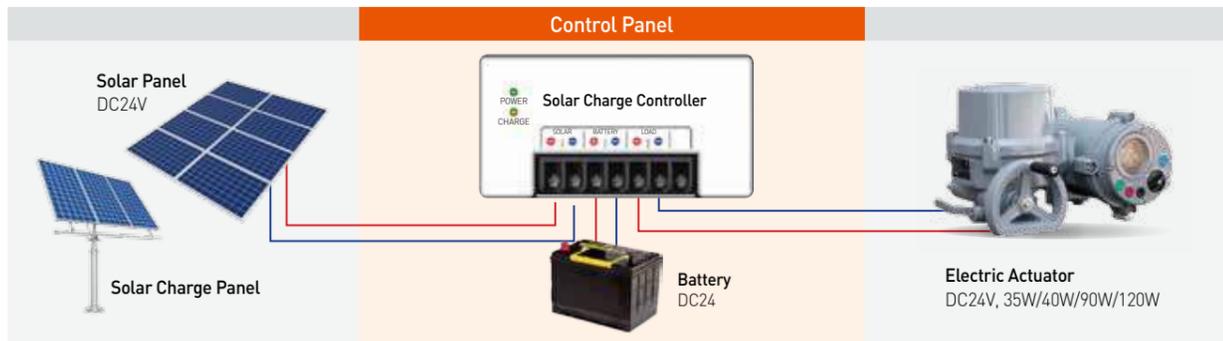
DC Motor

Model	Maximum output torque kg.m	Operating time(90°) sec	Allowable stem diameter mm	Motor		Rated current A	Handle operation ROM rev	Weight kg	Battery capacity* Ah
				Capacity W	Flange F				
TQ-010D	10	15 ± 3	18	15	70	6	10	6.5	-
TQ-020D	20	15 ± 3	30	35	80	10	10	19	3
TQ-040D	40	23 ± 5	40	40	90	12	12.5	25	3
TQ-060D	60	23 ± 5	40	90	90	15	12.5	25	6
TQ-080D	80	30 ± 6	47	90	90	16	14.5	35	6
TQ-120D	120	30 ± 6	47	120	90	22	14.5	36	9
TQ-200D	200	90 ± 10	78	90	90	16	43.5	75	9
TQ-300D	300	90 ± 10	78	120	90	22	43.5	76	9

* Battery: Applicable when fail safe is supported

※ Specifications for TQ-Series with DC MOTOR is slightly different. Please consult with our sales staff for more information.

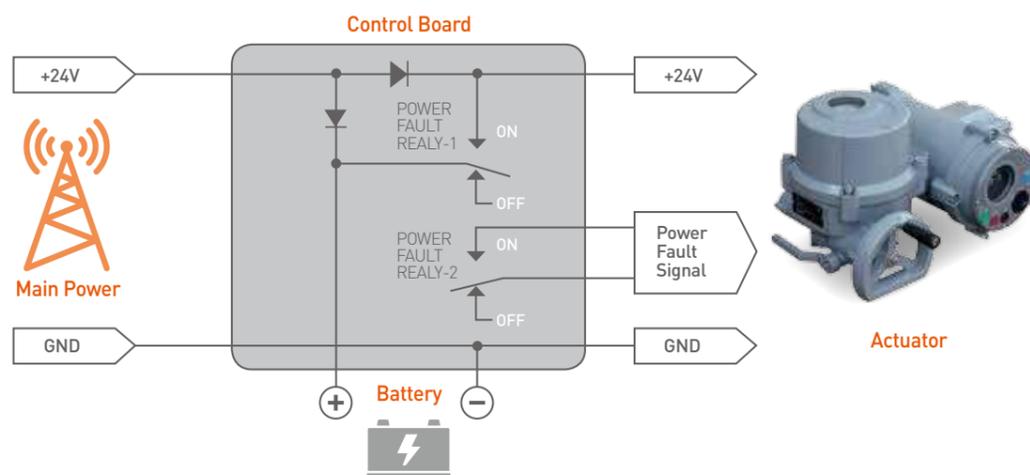
■ Solar Panel System



* The solar panel and battery capacity are selected according to the operating conditions of the actuator.

■ Fail Safe

Operation method	Battery backup unit (voltage: 24V, capacity: 3.0Ah / 6.0Ah / 9.0Ah, life: 2 years) Emergency safety control should be completed within 30 minutes if the main power is cut off. Rated torque can be operated 5 times
Function	Open, close, and hold can be selected (controllable by local and remote commands)
Trigger	When main power is cut off



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.

