Ever Reliable

enertork

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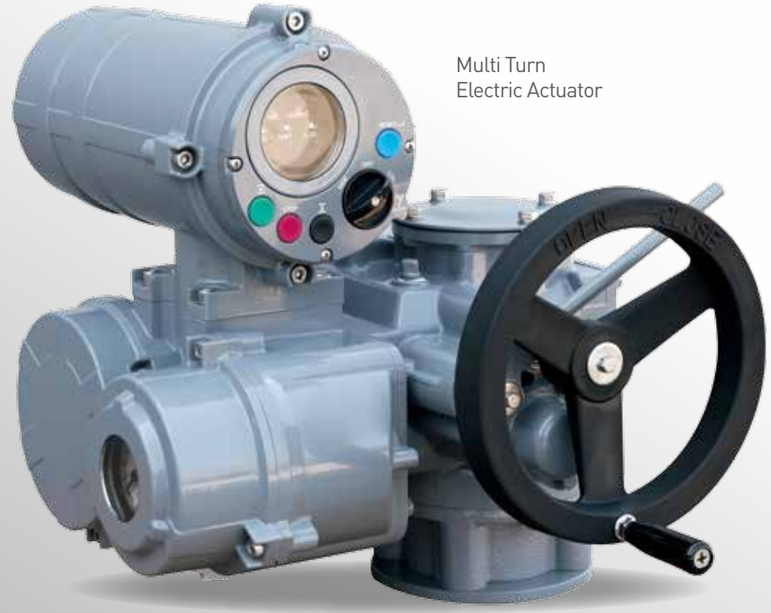
www.enertork.com

Electric valve actuator recognized worldwide for accumulated technological capability of Enertork and its reliability and technological capacity in various industrial environments

TM, TMi SERIES ACTUATOR



Multi Turn
Electric Actuator

Ever Reliable

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Reliable Enertork

Enertork is a specialized company that has been producing electric actuators and related products that drive industrial valves since 1987.
Enertork produces product lines that can be applied in various fields, ranging from water treatment such as water supply and sewage to power generation and petrochemical fields, and sells them to customers all over the world.

Enertork has a 3Q philosophy to fulfill customer needs.

Quick Delivery
Enertork honors delivery dates and proposes the fastest delivery time possible.

Quick Service
Enertork operates service organizations and systems to take action as quickly as possible if a problem occurs related to our product.

Quick Response
Enertork works to give our customers a sense of trust by responding to customer requests as soon as they are received.

CONTENTS

HISTORY

Acquired ISO 9001, 14001 quality and environment certification / Listed on KOSDAQ / Acquired certification for occupational health and safety management system

1987

Established

- '87 Established Morgan Korea

1991

Secured product technological capability

- '91 Registered as company for localization by KEPCO
- '91 Entered into technical partnership with Seibu in Japan
- '97 Acquired ISO 9001 quality certification (certification agency DNV)
- '98 Announced new actuator (jointly developed by Western Electric)

2006

Established base

- '02 Registered as qualified supplier for power generation facilities by 5 power generation companies in Korea
- '03 Acquired actuator class 1E (Q class) for nuclear power plants (Certification agency: NTS of U.S.)
- '06 Listed on KOSDAQ
- '08 Acquired CE certification

2010

Established base for overseas entry

- '10 Acquired certification for occupational health and safety management system (OSHAS/KOSHA 18001)
- '11 Changed company name to "Enertork"
- '13 Acquired FM/ATEX/CSA explosion-proof certification
- '19 Acquired NEP certification
- '20 Certified for outstanding products by Public Procurement Service

LINE UP

TX Series

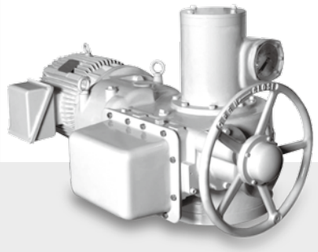
A next-generation intelligent product that can be actively applied to evolving control systems.

TM Smart Series

The non-intrusive method can be set by applying electronic control components to the mechanical TMi Series.

LTMD-Q Series

A product that can be applied in nuclear power plants and harsh environments.



TQ Series

A quarter-turn actuator that can be applied to various control solutions required in the fields of power generation, steelworks, steel, and water and sewage.

TQ Smart Series

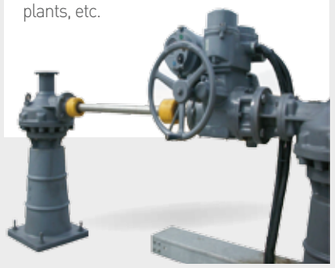
The non-intrusive method can be set by applying electronic control parts to the mechanical TQ Series.

WT Series

A quarter-turn actuator with simple specifications. This product can be applied to processes that require high operation speeds.

Water hoist

This product specializes the TM Series for spindle-type floodgate operation, and is supplied to water management facilities such as reservoirs, waterways, water purification plants, sewage treatment plants, etc.



LEC Series

This product is specialized for urgent closing of a floodgate. Fast operation is possible when operated manually.

TMA Series

A multi-turn actuator that can be applied to an area where electricity supply is difficult, such as power generation, petrochemicals, steel, and water and sewage facilities, and areas where electricity cannot be supplied in the event of an accident.

MW Series

This product is used to apply a multi-turn actuator to large-size BFV, ball valves, dampers, etc. A product exclusively for manual operation can also be provided.

EPD Series

A quarter-turn actuator used to drive industrial dampers.

EA / ER Series

A quarter-turn pneumatic actuator that is used for small and medium sized BFV, balls, dampers, etc.

TM SERIES
TMi SERIES

Multi-turn electric valve actuator

The TM series is a multi-turn type actuator that can be used for gates, globe valves, floodgate, etc. The TM Smart series can be applied to butterfly, ball valve, etc., by combination with a reducer.

The TM i series is an actuator developed using the technological capability and diverse field experience of Enertork. The TM 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 TM Smart series

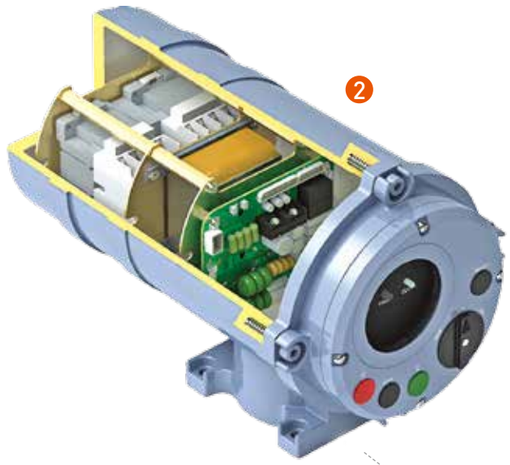
- Potentiometer slip device (for easy calibration)
- Completely eliminates possibility of rainwater penetration by adopting a non-penetration type switch
- Self-holding function when torque switch is operating
- Waterproof function satisfying IP68 (8m, 72 hours)
- Explosion-proof function satisfying 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)

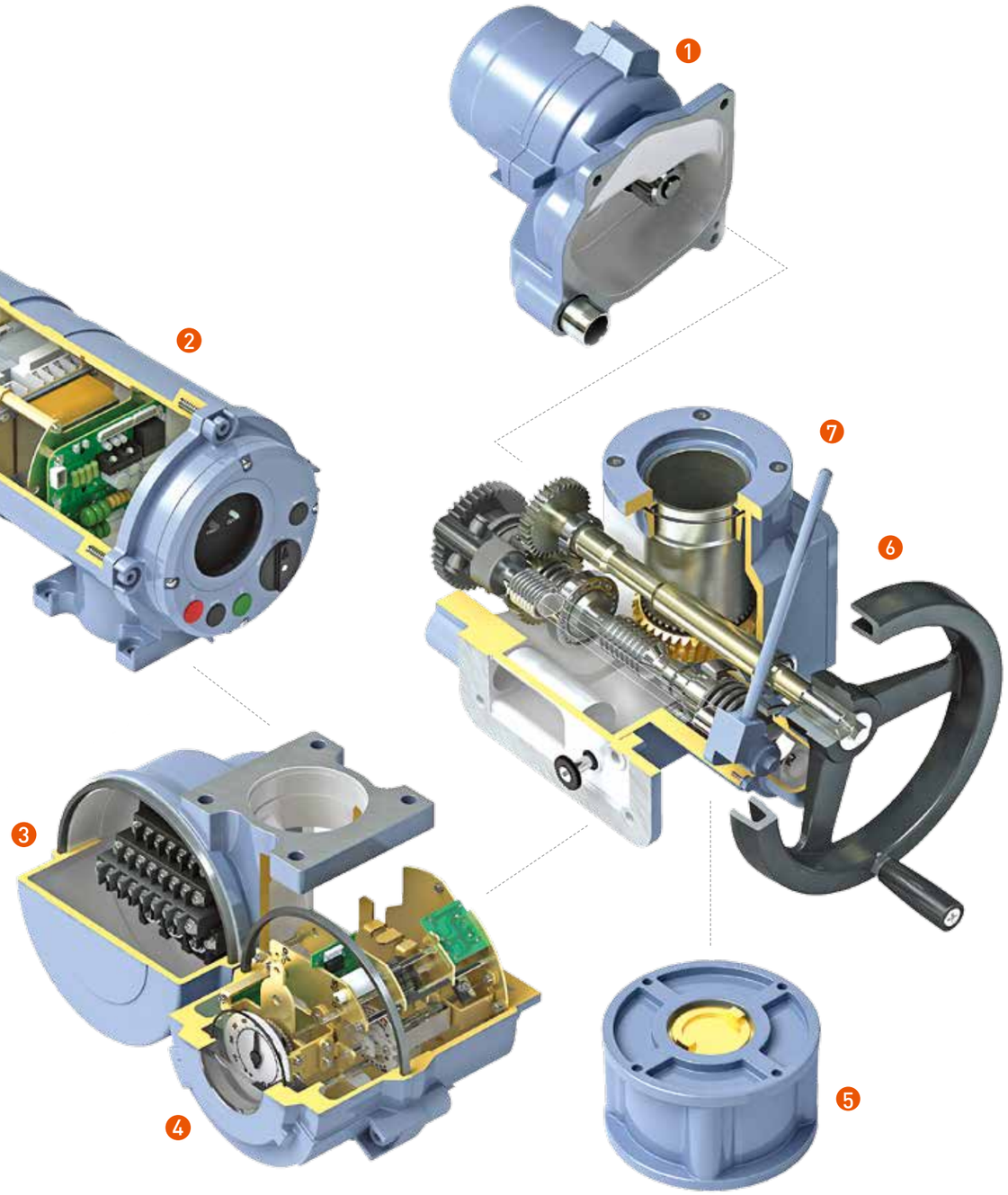
Advantages and differentiated features of TM series

- Product lineup with wide torque range available (15~15,696 Nm)
- Customized functions can be implemented

TM SERIES
TMi SERIES

Multi Turn Electric Actuator





❶ Motor

The torque/low inertia motor reaches its maximum torque as soon as it is started, and there is almost no excessive rotation when the power is turned off. The built-in thermostat detects temperature accurately and prevents motor burnout.

❷ All-in-one operation panel

The integrated operation panel has built-in open/stop/close press buttons, open/breakdown/close LED lamps, site/off/remote selection switches, monitor relay, and negative/open phase protection device as the standard. Perfect waterproofing is supported by a non-penetrating structure. It is also equipped with "torque self-maintenance", enabling prevention of motor burnout due to chattering or damage to valves or water gates. The remote circuit and the insulating parts completely separate from the internal control circuit to protect the product from external shock currents. It is possible to be provided by the front control panel, LCD window.

❸ Terminal block

The terminal unit is independent so that internal parts can be protected when the cover is opened for wiring on site. The terminal unit is completely sealed using V rings and O rings.

❹ Switch unit

The switch unit consists of position limit switch, torque switch and gate positioner. The position limit switch ensures accuracy and reliability at any setting position using a counter gear and can be operated with a simple screwdriver. The torque switch automatically stops the motor when a bigger force is applied to the actuator axis than the set point. The set point is set by measuring the accurate value upon shipment, which can be simply readjusted with a dial in the field. The wide-angled gate positioner indicates the accurate opening degree of valve in percentage.

❺ Thrust unit

The thrust unit is composed of thrust bearings and two types of driving bushings (thread processing bushing for multi-turn valves and key processing bore for 90 degree open/close valves), and is of a detachable type for easy installation.

❻ Handwheel

The hand wheel is installed on the side for convenience of operation.

❼ Manual switch lever

The motor can be conveniently switched from electric to manual while it is rotating using the switch lever. The automatic return type is the standard for returning from manual to electric.

TM SERIES, TMi SERIES

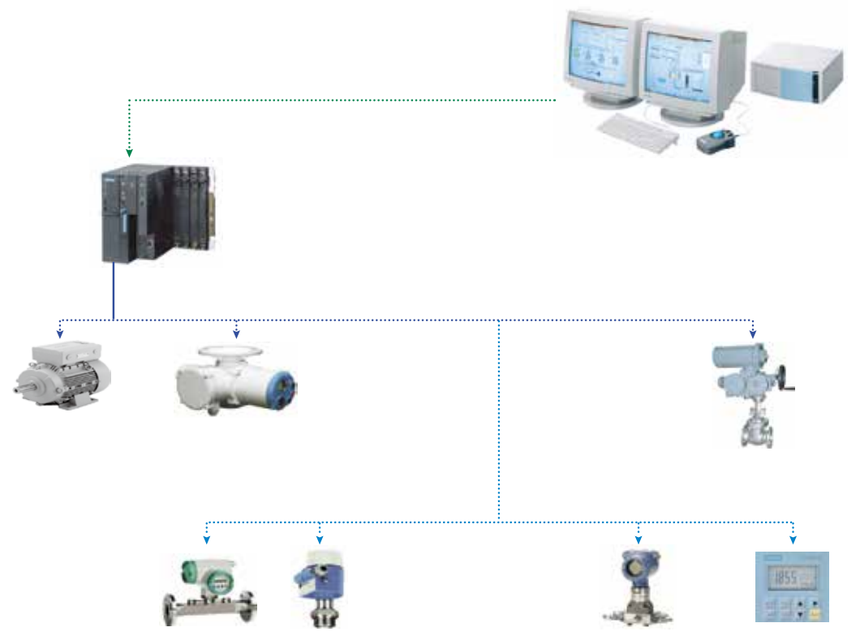
Standard specifications

Main power	1PH, 200/220V, 50/60Hz 3PH, 200/220/230/380/400/415/440/460/480V,50Hz 3PH, 220/380/440/460/480V, 60Hz
Motor	Insulation class F. No brake. Built-in thermostat. Operable within ±10% voltage fluctuation Standard rating: S2, 15 minutes
Output contact (position limit/torque switch)	**Position limit switch:** Open: 1a1b x 1, Close: 1a1b x 1 250VAC, 10A **Torque switch:** Open: 1a1b x 1, Close: 1a1b x 1 250VAC, 10A
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 1-1/2" (#42) x 1ea, PF 1" (#28) x 2ea
Operating ambient temperature	Basic/LED Type : -25℃~+80℃, LCD Type : -25℃~+70℃
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 type control panel	**LED** Non-penetrating push switch (Open/Close/Stop/Reset) / non-penetrating selector switch (Remote/Off/Local) / Motor forward/reverse actuator (magnetic contactor) / Status LED / Reverse-phase protection function / Monitor relay **LCD** Non-penetrating push switch (Open/Close/Stop/Reset) / non-penetrating selector 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.
Motor	Insulation class H
Temperature range	Low temperature -40°C - +50°C, -50℃~+50℃ (BASIC / LED Type)
Adding output contacts (position limit/torque switch)	Position limit switch - Up to 16 contacts (4 rows), 250VAC, 10A
Wiring service entrance	Adjust size of wiring service entrance; one entrance can be added
Potentiometer	1kΩ
Position transmitter	DC 4-20mA
Proportional control (Modulating)	Input : DC 4-20mA / Output : DC 4-20mA
Explosion-proof grade	Ex d IIB T4
Fire retarding	Operation test for 30 minutes based on time-temperature curve according to UL1709 standard
Fieldbus control	Profibus-DP(Single/Redundancy) / Modbus-RTU / Foundation Fieldbus-H1 / HART / Wireless
Motor forward and reverse actuator	SSR (Solid State Relay) ※Recommended when performing proportional control
Disconnect Switch	Main power disconnect switch (used for product maintenance) ※Enclosure protection class IP-65
Others	Surge protector, electronic overcurrent relay/electronic motor protection relay, arrester

Fieldbus Communication



PROFIBUS	PROFIBUS	- Fieldbus is a communication protocol that is the most reliable and commonly used in industrial sites that process discrete data such as water treatment for power generation at home and abroad. This product was certified by Profibus International according to EN 50170. - Supports Profibus DP V0, Profibus DP V1, and Profibus REDCOM redundancy.
MODBUS	Modbus	- This product faithfully complies with the Modbus communication protocol of Modicon, as the communication protocol that can be most universally and easily applicable to industrial sites. This product can be applied on site more cheaply and quickly than other communication protocols. - Modbus-RTU products are currently supplied, and customers can select other options such as Modbus-ASCII and Modbus-TCP.
F/F	Fieldbus	- A communication protocol used in the field of process control such as oil and gas; This product was certified by the Fieldbus Foundation in compliance with IEC-61158.
HART	HART COMMUNICATION FOUNDATION	- The HART (Highway Address Remote Transducer) communication protocol performs control by adding digital data on 4-20mA transmission signals. As it is designed to use OSI Layer 1, 2, and 7, the user's communication efficiency can be increased. - This product has been registered in the HCF (HART Communication Foundation).

TM SERIES, TMi SERIES

Rotation speed - torque data

Maximum torque of motor (kW) : Nm lb-ft

Model	rpm	60Hz	14.0	18.2	24.0	31.5	42.0	54.6	72.0	94.5	144.0	189.0
		50Hz	11.7	15.2	20.0	26.2	35.1	45.6	60.0	78.6	120.0	157.2
	Motor \ Pole		4	4	4	4	4	4	4	4	2	2
TM-01m	0.18		98	93	69	54	59	49	39	29	20	15
			72	69	51	40	43	36	29	22	14	11
TM-01	0.2		133	103	78	59	64	49	37			
			98	76	57	44	47	36	27			
	0.4		147	147	147	115	124	95	72	55		
			108	108	108	85	91	70	53	41		
	0.75			147	147	147		147	115	88	59	45
				108	108	108		108	85	65	43	33
	1.5										11	9
											8	6
TM-04	0.75		474	364	277	211	217	167	127	97		
			350	269	204	156	160	123	94	71		
	1.5			549	549	422		334	254	193		
				405	405	311		246	187	143		
	2.2			549	549	549		473	359	274	177	135
				405	405	405		349	265	202	130	99
	3.7										35	26
											26	19
TM-07	1.5		843	729	554	422	435	334	254	193		
			622	538	408	311	321	246	187	143		
	2.2		843	843	783	597	616	473	359	274		
			622	622	578	440	454	349	265	202		
	3.7			843	843	843		810	615	469		
				622	622	622		597	454	346		
	5.5			843	843	843		843	843	709	503	383
				622	622	622		622	622	523	371	283
	7.5										62	47
											46	35

※ The above data is based on AC 380V 3PH 60Hz. For other power specifications, please contact the company.
※ The modulating type applies 50% of the maximum torque.

Machine data

Model	Motor capacity	Allowable torque		Allowable thrust		Allowable stem diameter (mm)		Flange diameter ISO No. Tab PCD/size Pilot dia. mm	Weight(kg)	
		Nm	lb-ft	ton	kN	key	threaded		Basic	Integral
TM-01m	0.18	100	73	4	40	24	30	90 F07 75/4xM8 55	22	26
TM-01	0.2	147	109	7	68.6	34	40	125 F10 102/4xM10 70	34	43
	0.4								36	44
	0.75								39	47
	1.5								44	51
TM-04	0.75	549	406	13	127.4	50	58	175 F14 140/4xM16 100	53	62
	1.5								59	68
	2.2								63	71
	3.7								73	80
TM-07	1.5	844	623	16	156.8	60	72	210 F16 165/4xM20 130	86	96
	2.2								89	99
	3.7								104	114
	5.5								110	120
	7.5								122	132

TM SERIES, TMi SERIES

Rotation speed - torque data

Maximum torque of motor (kW) : Nm lb-ft

Model	rpm	60Hz	14.0	18.2	24.0	31.5	42.0	54.6	72.0	94.5	144.0	189.0
		50Hz	11.7	15.2	20.0	26.2	35.1	45.6	60.0	78.6	120.0	157.2
	Motor \ Pole		4	4	4	4	4	4	4	4	2	2
TM-1	2.2		1,343	1,032	783	597	616	473	359	274		
			991	761	578	440	454	349	265	202		
	3.7		1,804	1,767	1,342	1,022	1,054	810	615	469		
			1,331	1,303	990	754	778	597	454	346		
	5.5			1,804	1,804	1,546		1,224	930	709		
				1,331	1,331	1,140		903	686	523		
	7.5			1,804	1,804	1,804		1,614	1,226	934	609	464
				1,331	1,331	1,331		1,190	904	689	449	342
	11			1,804	1,804	1,804		1,804	1,804	1,427	879	670
				1,331	1,331	1,331		1,331	1,331	1,053	648	494
TM-3	5.5		3,923	3,072	2,333	1,778	1,826	1,403	1,065	812		
			2,893	2,266	1,721	1,311	1,347	1,035	786	599		
	7.5		3,923	3,923	3,075	2,343	2,407	1,848	1,404	1,070		
			2,893	2,893	2,268	1,728	1,775	1,363	1,035	789		
	11			3,923	3,923	3,581		2,826	2,146	1,635		
				2,893	2,893	2,642		2,084	1,583	1,206		
	15			3,923	3,923	3,923		3,786	2,875	2,191	1,396	1,064
				2,893	2,893	2,893		2,792	2,121	1,616	1,030	784
	18.5			3,923	3,923	3,923		3,923	3,421	2,607	1,696	1,292
				2,893	2,893	2,893		2,893	2,523	1,923	1,251	953
TM-6	11		7,845	6,190	4,701	3,581	3,679	2,826	2,146	1,635		
			5,786	4,565	3,467	2,642	2,713	2,084	1,583	1,206		
	15		7,845	7,845	6,298	4,798	4,929	3,786	2,875	2,191		
			5,786	5,786	4,645	3,539	3,635	2,792	2,121	1,616		
	18.5			7,845	7,494	5,710		4,505	3,421	2,607	1,696	1,292
				5,786	5,527	4,211		3,323	2,523	1,923	1,251	953
	22			7,845	7,845	6,888		5,434	4,127	3,144	2,023	1,541
				5,786	5,786	5,080		4,008	3,044	2,319	1,492	1,137
TM-12	18.5		12,847	9,868	7,494	5,710	5,865	4,505	3,421	2,607		
			9,476	7,278	5,527	4,211	4,326	3,323	2,523	1,923		
	22		15,498	11,904	9,040	6,888	7,075	5,434	4,127	3,144		
			11,430	8,780	6,668	5,080	5,218	4,008	3,044	2,319		
	30		15,691	15,691	12,212	9,304	9,557	7,341	5,575	4,248	2,778	2,116
			11,573	11,573	9,007	6,863	7,049	5,414	4,112	3,133	2,049	1,561
	37			15,691	14,849	11,314		8,926	6,779	5,165	3,451	2,629
				11,573	10,952	8,345		6,584	5,000	3,809	2,545	1,939

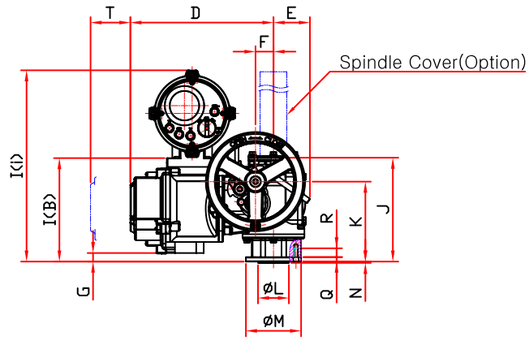
※ The above data is based on AC 380V 3PH 60Hz. For other power specifications, please contact the company.
※ The modulating type applies 50% of the maximum torque.

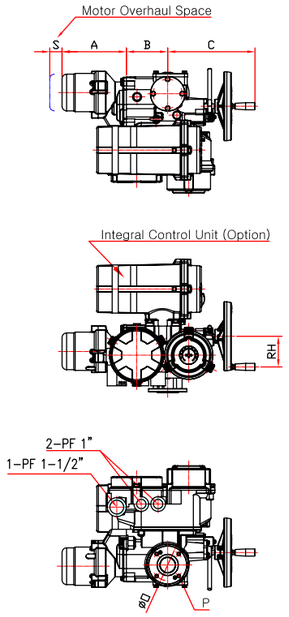
Machine data

Model	Motor capacity	Allowable torque		Allowable thrust		Allowable stem diameter (mm)		Flange diameter ISO No. Tab PCD/size Pilot dia. mm	Weight(kg)	
		Nm	lb-ft	ton	kN	key	threaded		Basic	Integral
TM-1	2.2	1,805	1,333	27	264.6	80	95	300 F25 254/8xM16 200	132	143
	3.7								151	162
	5.5								158	169
	7.5								165	175
	11								173	183
TM-3	5.5	3,924	2,899	40	392	100	115	350 F30 298/8xM20 230	290	355
	7.5								305	370
	11								320	385
	15								365	430
	18.5								365	430
TM-6	11	7,848	5,799	68	665	140	160	415 F35 368/8xM30 260	500	630
	15								510	640
	18.5								550	680
	22								550	680
TM-12	18.5	15,696	11,594	122	1,195	155	180	475 F40 406/8xM36 300	950	1,160
	22								950	1,160
	30								990	1,200
	37								990	1,200

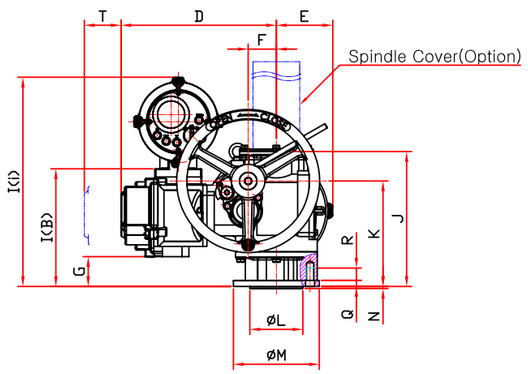
TM SERIES, TMi SERIES

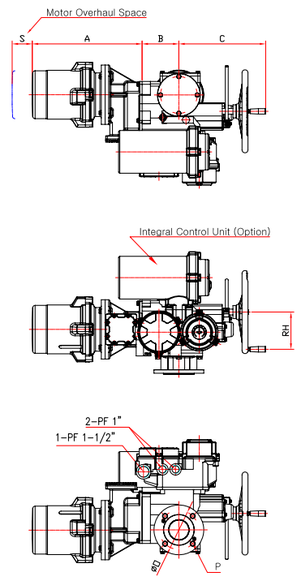
External view of TM-01 and TM-04



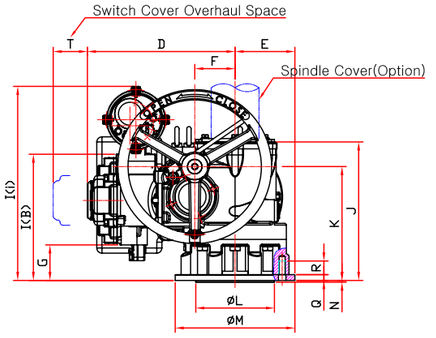


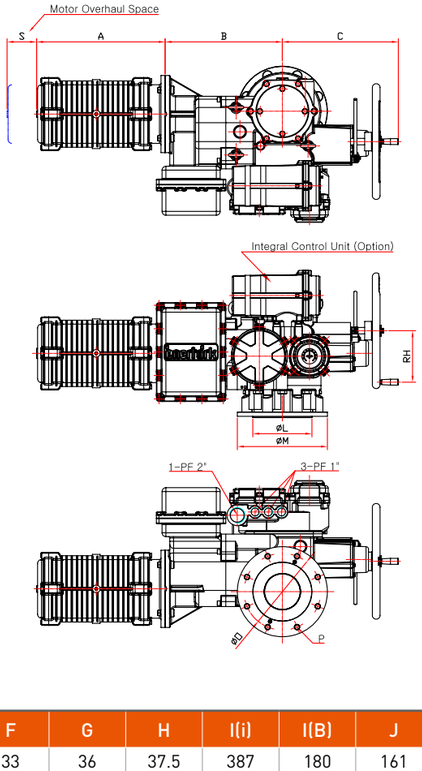
External view of TM-07 and TM-1





External view of TM-3, TM-6 and TM-12





Model	A	B	C	D	E	F	G	H	I(i)	I(B)	J	K
TM-01m	194	118	201	305	64	33	36	37.5	387	180	161	117
TM-01	210~297	135	285	324	83	41	19	100	433	234	235	181
TM-04	232~355	140	343	352	104	58	45	110	459	260	282	219
TM-07	307(Up to 3.7kW)	155	366	380	138	69	73	157	512	288	330	258
	443~503											
TM-1	341(Up to 3.7kW)	185	406	400	150	100	98	200	537	313	345	285
	470~588											
TM-3	365~500	456	451	432	175	118	104	200	568	369	405	333
TM-6	436~502	530	550	519	208	178	182	258	730	447	542	455
TM-12	493~502	645	595	611	238	228	260	308	902	525	722	577

※I(B) and I(i) mean Basic and Integral type.

Model	L	M	N	O	P	Q	R	ISO NO.	S	T
TM-01m	55	90	3	70	4-M8	8	20	F07	387	90
TM-01	70	125	3	102	4-M10	10	20	F10	40	90
TM-04	100	175	4	140	4-M16	10	28	F14	75	90
TM-07	130	210	5	165	4-M20	15	30	F16	85	90
TM-1	200	300	5	254	8-M16	15	28	F25	85	90
TM-3	230	350	5	298	8-M20	17	40	F30	115	100
TM-6	260	415	5	356	8-M30	20	55	F35	115	100
TM-12	300	475	8	406	8-M36	24	70	F40	115	100

TM SERIES, TMi SERIES

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.

▼Wall Bracket Type

▼Stand Type

Special Option

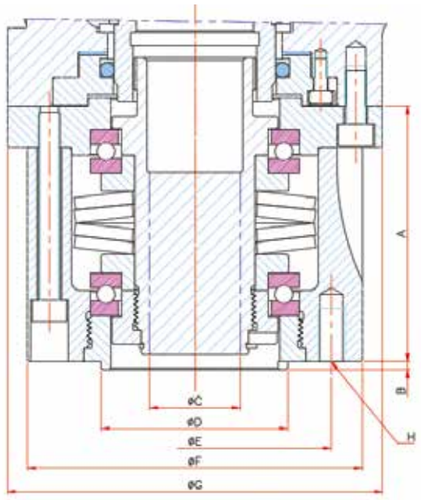
■ SLT TYPE (Spring Loaded Thrust Unit)

With a spring additionally installed, the SLT (Spring Loaded Thrust) unit protects valves and actuators from damage by offsetting the dynamic axial load when rotating at a high speed and the load caused by thermal expansion of the valve stem.

It is recommended to apply the SLT unit for the following conditions.

1) Globe valves
   - Operation speed ≥ 250mm/min
   - Multi-turn output speed ≥ 45rpm
2) Gate valves
   - Operation speed ≥ 500mm/min

Model	Allowable thrust (Kn)	Approximate movement (mm)	Allowable stem diameter threaded (mm)	Flange ISO No.	Tap PCD/size (mm)	Pilot dia. (mm)
TM-01	68.6	3.3	34	F10	102 / 4xM10	70
TM-04	127.4	5.5	52	F14	140 / 4xM16	100
TM-07	156.8	4.4	56	F16	165 / 4xM20	130
TM-1	264.6	5.9	75	F25	254 / 8xM16	200
TM-3	392	7.4	90	F30	298 / 8xM20	230
TM-6	665	11.4	125	F35	356 / 8xM30	260
TM-12	1,195	13.1	145	F40	406 / 8xM36	300



Model	A	B	C	D	E	F	G	H
TM-01	95.5	3	34	70	102	125	140	4-M10 (DP20)
TM-04	107.5	4	52	100	140	175	175	4-M16 (DP25)
TM-07	135	5	56	130	165	210	200	4-M20 (DP30)
TM-1	162.5	5	75	200	254	300	250	8-M16 (DP28)
TM-3	182.5	5	90	230	298	350	300	8-M20 (DP40)
TM-6	248	5	125	260	356	415	380	8-M30 (DP55)
TM-12	346	8	145	300	406	475	450	8-M36 (DP70)

TM SERIES, TMi SERIES

Special Option

■ ML TYPE (Linear Thrust Unit)

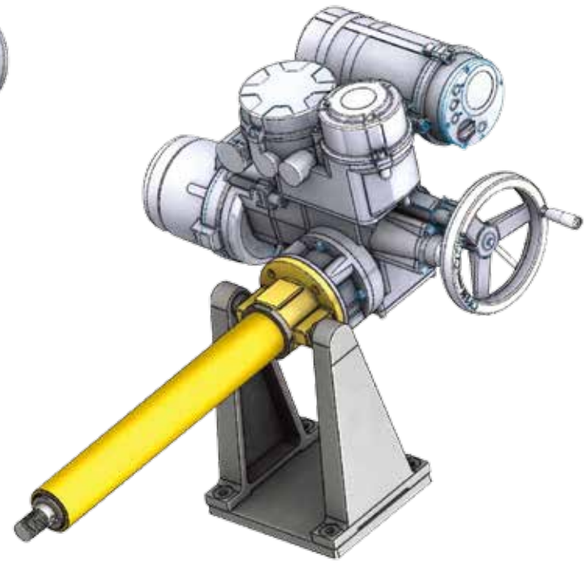
The ML series is a device that performs linear motion in combination with the TM series.

A-type is directly connected to TM series, and B-type operates lever arrangement by mounting of the hinge bracket.

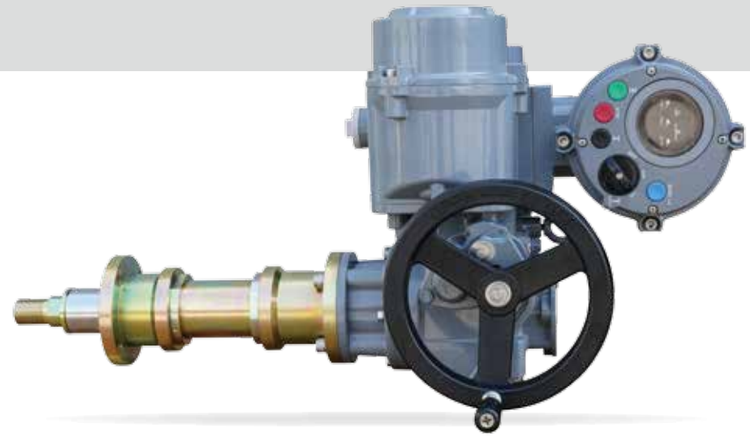
FEATURES

1. Adopted the international flange standard of EN ISO 5211
2. Self-locking
3. Allowable temperature from -25℃ to +80℃
4. Short -time duty S2 -15 min, max. 3 cycles (OPEN-CLOSE-OPEN) based on mean thrust and standard ambient temperature

▲A-TYPE



▲B-TYPE



ML TYPE (Linear thrust unit)

Model	Output specification			Allowable valve stem diameter (mm)	Input specification				Weight (kg)
	Max. stroke (mm)	Max. thrust			Shaft diameter (mm)	Flat key (mm)	Input flange	Actuator	
		ON-OFF (kN)	Modulating (kN)						
ML01-63	20 ~ 63	40	20	M30×2P	25	8 × 7	F10	TM-01	11
ML01-125	64 ~ 125								13
ML01-250	126 ~ 250								16
ML01-400	251 ~ 400								19
ML04-63	20 ~ 63	70	35	M36×3P	35	10 × 8	F14	TM-04	24
ML04-125	64 ~ 125								26
ML04-250	126 ~ 250								32
ML04-400	251 ~ 400								35

ACTUATOR

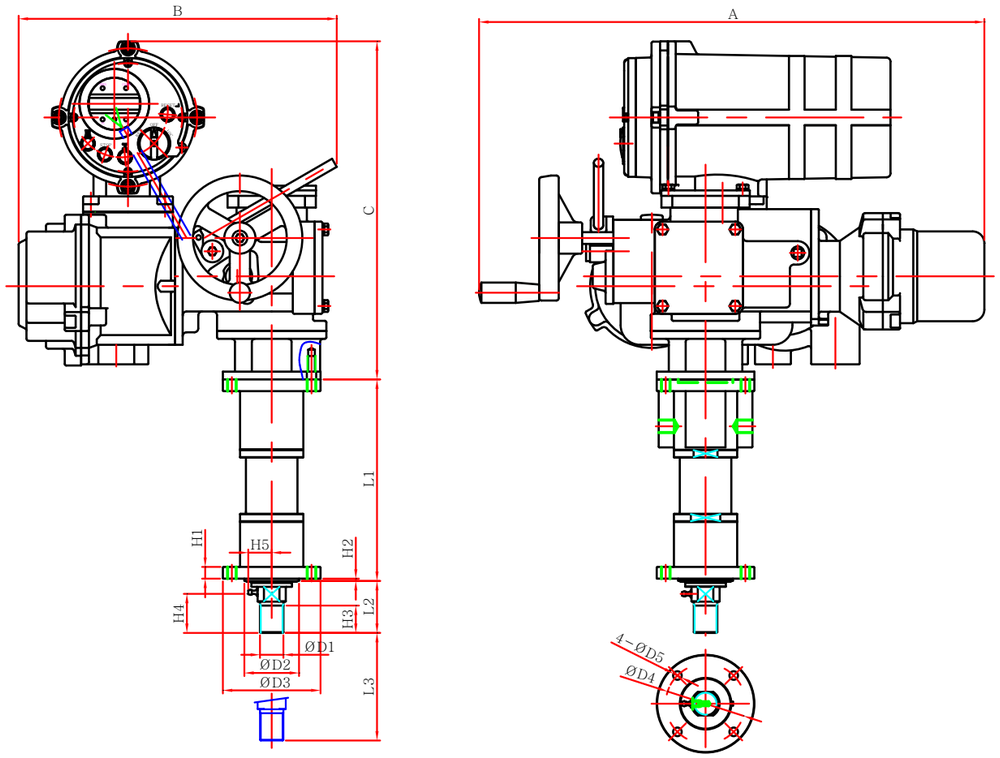
Model	rpm										
		60Hz (mm/min)	14	18.2	24	31.5	42	54.6	72	94.5	(144)	(189)
			84	109.2	144	189	252	327.6	432	567	(864)	(1,134)
		50Hz (mm/min)	11.7	15.2	20	26.2	35.1	45.6	60	78.6	(120)	(157.2)
			70.2	91.2	120	157.2	210.6	273.6	360	471.6	(720)	(943)
Motor(kW) , Max. Thrust (kN)												
TM-01 (ML01)	0.2kW		40kN	32.2kN	24.4kN	18.4kN	20kN	15.3kN	11.6kN			
	0.4kW		40kN	40kN	40kN	35kN	37.5kN	28.8kN	21.9kN	16.6kN		
	0.75kW			40kN	40kN	40kN		40N	36.6kN	27.8kN	(19.1kN)	(14.4kN)
	1.5kW										(37.2kN)	(28.4kN)
TM-04 (ML04)	0.4kW		70kN	58.2kN	44.2kN	33.7kN	34.7kN	26.6kN	20.3kN	15.5kN		
	0.75kW		70kN	70kN	70kN	56.6kN	58.2kN	44.7kN	33.9kN	25.8kN		
	1.5kW			70kN	70kN	70kN		70kN	70kN	61.6kN		
	2.2kW			70kN	70kN	70kN		70kN	70kN	70kN	(45.3kN)	(34.5kN)
	3.7kW										(70kN)	(62.1kN)

※ Data in ( ) is the specification of 2-pole motors.

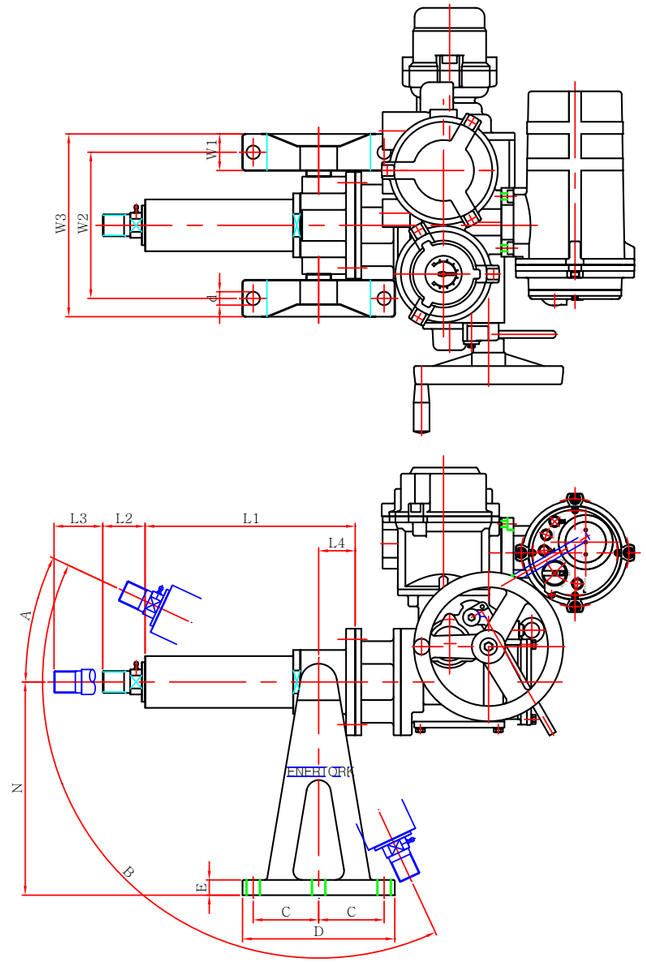
TM SERIES, TMi SERIES

ML TYPE (Linear thrust unit)

External view
A - TYPE



External view
B - TYPE



Model	A (Max.)	B	C	L1	L2	L3	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5
ML01-63-A	647	396.5	433	268	69.5	63	M30	70	125	102	11	15	3	35	52	30
ML01-125-A	647	396.5	433	330	69.5	125	M30	70	125	102	11	15	3	35	52	30
ML01-250-A	647	396.5	433	455	69.5	250	M30	70	125	102	11	15	3	35	52	30
ML01-400-A	647	396.5	433	605	69.5	400	M30	70	125	102	11	15	3	35	52	30
ML04-63-A	785	440	459	322	75.5	63	M36	100	175	140	18	15	4	35	57	32.5
ML04-125-A	785	440	459	384	75.5	125	M36	100	175	140	18	15	4	35	57	32.5
ML04-250-A	785	440	459	509	75.5	250	M36	100	175	140	18	15	4	35	57	32.5
ML04-400-A	785	440	459	659	75.5	400	M36	100	175	140	18	15	4	35	57	32.5

Model	L1	L2	L3	L4	A (Max.)	B (Max.)	C	D	E	N	W1	W2	W3	d
ML01-63-B	272	65.5	63	60	25°	140°	107.5	250	25	350	60	200	260	22
ML01-125-B	324	65.5	125	60	25°	140°	107.5	250	25	350	60	200	260	22
ML01-250-B	459	65.5	250	60	25°	140°	107.5	250	25	350	60	200	260	22
ML01-400-B	609	65.5	400	60	25°	140°	107.5	250	25	350	60	200	260	22
ML04-63-B	328	69.5	63	60	25°	140°	107.5	250	25	350	60	240	260	22
ML04-125-B	390	69.5	125	60	25°	140°	107.5	250	25	350	60	240	260	22
ML04-250-B	515	69.5	250	60	25°	140°	107.5	250	25	350	60	240	260	22
ML04-400-B	665	69.5	400	60	25°	140°	107.5	250	25	350	60	240	260	22

Ever Reliable
enertork

Customer service

Model selection : The performance of electric valves, electric flooding gates, and electric dampers depends on the correct selection of the actuator from the aspect of rotation speed and torque. Cost effectiveness is also an important factor when selecting an actuator. Enertork is prepared to assist customers in all processes necessary for actuator selection, such as torque/thrust calculation, installation method, and selection of options.

Spare parts supply : Both individual parts and component assembly parts will be delivered in a timely manner.

Electric valve supply : Enertork supplies actuators. If desired by the customer, Enertork can also supply electric valves, electric flooding gates, and electric dampers with full quality assurance.

Manual valve motorization/related installation parts supply : When a customer motorizes manual valves or installs an actuator on site, the customer needs various installation parts such as mounting flanges, stands, levers, fittings, etc. Enertork is prepared to assist customers to acquire the proper related installation parts from the design phase to the delivery phase.

Standard materials table

Part		Material	KS/JIS NO.	ASTM NO.
Enclosure	TM-01,04,07,1	Alloy die casting(ALDC)	D6006/H5302	B85
	TM-3,6,12	Gear case : Cast iron(FC) Intgral case : Alloy die casting(ALDC) etc : Ductile cast iron(FCD)	D4301/G5501 D6006/H5302 D4302/G5502	A126 B85 A536
Thrust unit		Ductile cast iron(FCD)	D4302/G5502	A536
Worm		Chromium molybdenum(SCM)	D3711/G4105	A322
Worm heel	TM-01,04,07	High strength brass casting(HBsC)	D6007/H5102	B584
	TM-1,3,6,12	Nickel aluminum bronze(ALBC3)	D6025/H5114	B148
Stem bush	Key	Carbon steel(SM45C)	D3752/G4051	1050
	Screw	TM-01, 04, 07, 1 : Copper alloy(C6782BE)	D5101/H3250	B16
		TM-3,6,12 : Nickel aluminum bronze(ALBC3)	D6025/H5114	B148
Grease		Lithium grease(EP 0)	M2130/K2220	-

Warranty

All processes, ranging from design to delivery, including the parts and component assembly parts inspection, are thoroughly controlled in accordance with ISO9001 and our own quality assurance procedures. The torque values, sleeve RPM, current value, voltage, limit switch and torque switch performance, and manual/electric switching performance of each actuator are inspected before delivery, and a test result report is issued for each actuator.

Reliable Enertork

1 Showroom 2 Training room 3 Product design 4 Quality assurance
5 6 Processing 7 Assembly 8 Testing and inspection

Ever Reliable e2021 nertork

▪ Status of major certification acquisition


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

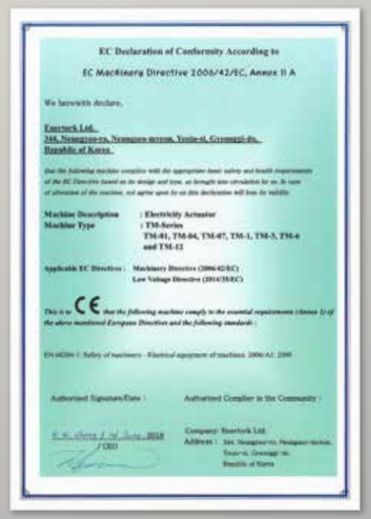
This is to certify that the management system of

Enertork Ltd.
344 Neungsan-ro, Neungsan-myeon, Yeoju-si, Gyeonggi-do, Korea

has been found to conform to the Quality Management System standard:
ISO 9001:2015, KS Q ISO 9001:2015

This certificate is valid for the following scope:
DESIGN AND MANUFACTURE OF ELECTRIC ACTUATOR

ISO9001 Certified by DNV


EC Declaration of Conformity According to
EC Machinery Directive 2006/42/EC, Annex II A

We herewith declare,

Enertork Ltd.
344, Neungsan-ro, Neungsan-myeon, Yeoju-si, Gyeonggi-do,
Republic of Korea

that the following machine complies with the appropriate basic safety and health requirements of the EC Directive based on its design and type, as brought into circulation by us. In case of alteration of the machine, not agree upon by us this declaration will lose its validity.

Machine Description : Electricity Actuator
Machine Type : TM-Series
TM-01, TM-04, TM-07, TM-1, TM-3, TM-4 and TM-12

Applicable EC Directive : Machinery Directive (2006/42/EC)
Low Voltage Directive (2014/35/EC)

This is to CE that the following machine comply to the essential requirements (Annex I) of the above mentioned European Directive and the following standards :

EN 60204-1 Safety of machinery - Electrical equipment of machines: 2006/A1: 2009

Authorised Signature/Date : Authorised Compiler in the Community :

Company: Enertork Ltd.
Address : 344, Neungsan-ro, Neungsan-myeon, Yeoju-si, Gyeonggi-do, Republic of Korea

CE Certification


EU-TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU
3 EU-Type Examination Certificate No: FM15ATEX0005X
4 Equipment or protective system: TM-01 and TM-04 Electric Actuator
(Type Reference and Name):
5 Name of Applicant: Enertork Ltd
6 Address of Applicant: 65-6 Oppo-Ri, Neungsan-Myeon, Yeoju-Gun, Gyeonggi-Do, 469-810 Republic of Korea
7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.
8 FM Approvals Ltd, notified body number 0725 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in confidential report number:
dated dated 16th February 2015
9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 18 of the schedule to this certificate, has been assessed for compliance with the following documents:
EN 60079-0: 2012+A11: 2013, EN 60079-1: 2014, and EN 60529: 1991 +A1:2000
10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.
12 The marking of the equipment or protective system shall include:
II 2 G Ex ib IIB T4 Gb Ta = -20°C to +40°C IP66
Nick Grange
Certification Manager, FM Approvals Ltd.
Issue date: 19th January 2017
THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE
Page 1 of 3

FM/ATEX Certificate


FM Approvals

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

Equipment Ratings:

FM Approved for:

Enertork Ltd.
Yeoju-Gun, Gyeonggi-Do, Republic of Korea

FM Approvals

FM Certificate


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

Enertork Ltd.
344 Neungsan-ro, Neungsan-myeon, Yeoju-si, Gyeonggi-do, Korea

has been found to conform to the Environmental Management System standard:
ISO 14001:2015, KS I ISO 14001:2015

This certificate is valid for the following scope:
DESIGN AND MANUFACTURE OF ELECTRIC ACTUATOR

ISO14001 Certified by DNV


안 전 인 증 서

ELECTRIC ACTUATOR

형식·모델명·등급 / 인증번호

한국산업기술시험원장

KCs explosion-proof certification


SGS

CERTIFICATE NO FS/71/220/16/0159 PAGE 1/1

LICENCE HOLDER
ENERTORK LTD. HEADQUARTER
#344, NEUNGSAN-RO, NEUNGSAN-MYEON, YEOJU-SI, KYEUNGGI-DO
KOREA

MANUFACTURING PLANT
ENERTORK LTD. FACTORY
#344, NEUNGSAN-RO, NEUNGSAN-MYEON, YEOJU-SI, KYEUNGGI-DO
KOREA

PROJECT NO / ID
KOFS

LICENSED TEST MARK

CERT. REPORT NO.

Tested according to
Standard:
Certified product(s):
Model(s):

Technical Data and Parameter

Specific Requirements

Certification Body for Functional Safety
SGS-TÜV Saar GmbH

Munich, 2016-12-09

CERTIFICATE

SIL certification


ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ

ЕАС

СЕРТИФИКАТ СООТВЕТСТВИЯ

TRCU Certification