



CHUANYI ACCOMPIES CUSTOMERS AND KEEPS CUSTOMERS IN MIND

M SERIES INTELLIGENT (VARIABLE FREQUENCY) ELECTRIC ACTUATOR



INTRODUCTION

M Series Electric Actuator, as the terminal control unit instrument in the automatic control system, realizes the opening, closing and automatic regulating of valves by local or remote mode. The multi-turn type is applicable to gate valve, stop valve, and others; the part-turn type is applicable to butterfly valve, ball valve, damper, baffle and other invoked mechanisms; and the linear type is applicable to straight-through regulating valve. It is widely used in electric power, petrochemical, oil and gas, metallurgy, building materials, shipping, nuclear industry, municipal engineering and environmental protection and other fields. It has been successfully applied in 1,000MW ultra-supercritical thermal power unit, 3,200m3 blast furnace, 200,000 tons daily sewage treatment and other large domestic projects, and has been exported and sold to the United States, Germany, India, Indonesia, Thailand, Pakistan, Egypt, Vietnam, Japan and other countries.

M Series Electric Actuator is an intelligent variable frequency actuator with good quality, cutting-edge technology and powerful functions. M Series Electric Actuator has bus control, analog quantity continuous regulating control, and switching (pulse) value control. It is applicable to simple stepping control field and has flame-proof products. With complete series of specifications and wide suitability of control modes, it can better provide customers with complete sets of actuator products optimized for different requirements of control system.

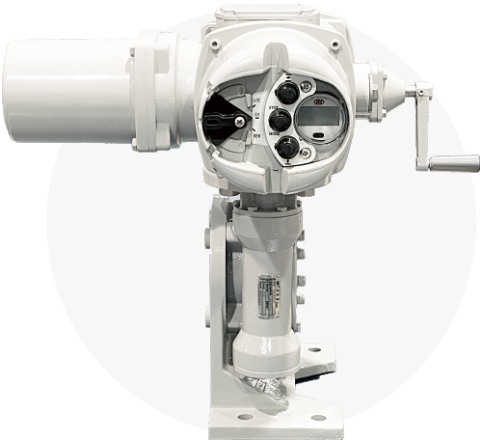


TABLE OF CONTENTS

PRODUCT INFORMATION

- P 01 Figure of structure and components
- P 03 Humanistic operation interface
- P 05 Variable frequency control
- P 07 Digital detection
- P 09 Setting mode
- P 10 Field bus
- P 12 Quality guide

SELECTION GUIDE

- P 15 M series multi-turn type
- P 17 M series part-turn type
- P 19 M series linear type
- P 26 Parameters of gearbox
- P 28 Connection dimension of base lever-type gearbox
- P 29 Multi-turn additional gearbox
- P 31 Linear gearbox
- P 33 M series low-torque part-turn type
- P 37 M series low-thrust type
- P 42 Table of A-type flange specifications

Figure of structure and components

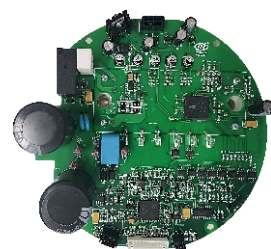
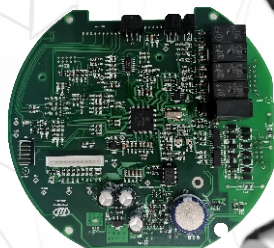


1 Signal board

Received input and output: 4mA~20mA d.c.
Analog signal (and optional switching value output signal)

2 CPU board

(CPU board) Variable frequency central control unit is responsible for processing all input and output signals, including control signal, feedback signal, fault signal, alarm signal, etc. It is responsible for generating the drive pulse of variable frequency control so that the drive unit can change the motor speed and the actuator can have a very high control precision and good control quality.



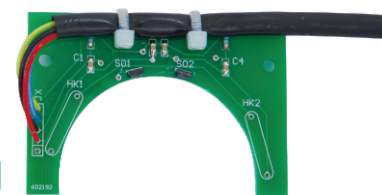
3 Variable frequency control board

The variable frequency control board adopts advanced IGBT power drive module and receives variable frequency control pulse so that the motor can start and brake flexibly; and its current is very low, avoiding the surge impact and the valve "water hammer" effect, and effectively protecting the actuator and valve from impact.



4 Worm and gear

Worm and gear transmission chain is simple, with compact structure, constant transmission efficiency, mechanical self-locking function without brake; and the transmission part is coated with long-term lubricating oil so that it can run for a long time without maintenance.

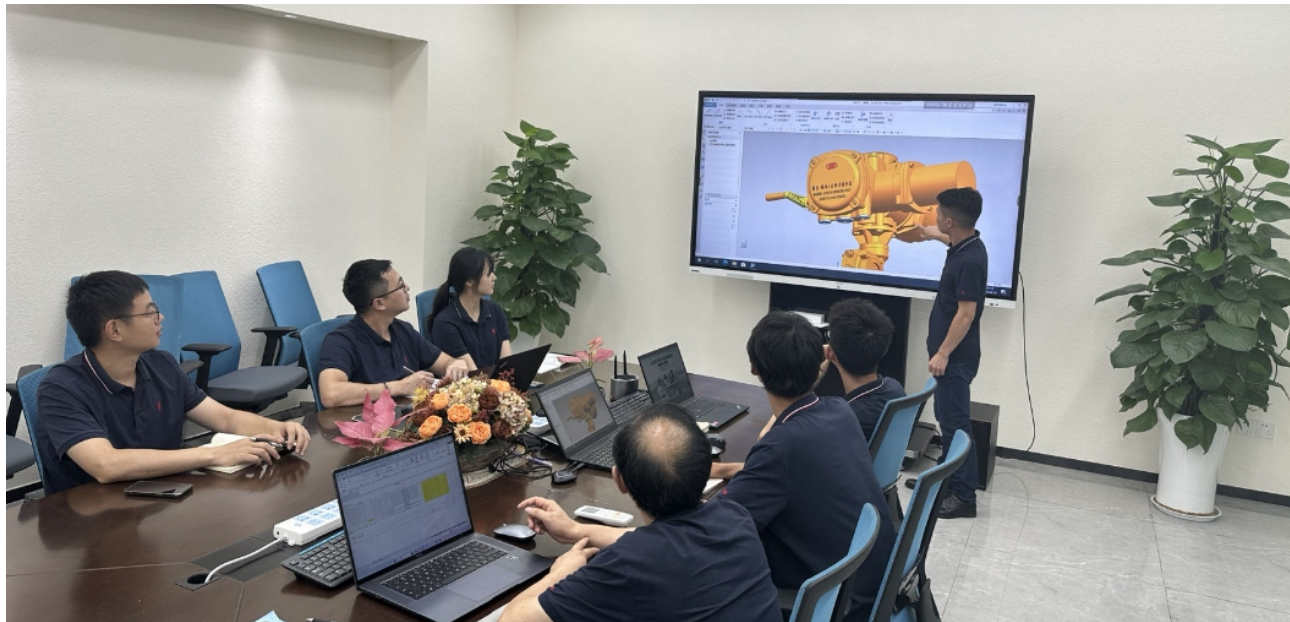


5 Sampling encoder

The non-contact sampling encoder is used as the feedback element of the device so that the electrical part of the position sensor does not have any mechanical friction, greatly improving the service life of the sensor.

HUMANSTIC OPERATION INTERFACE

All parameters of M Series can be set by the interactive menu through the local operation button and LCD screen. It is very easy to debug and set up. All settings need no mechanical adjustment and can be assigned directly by the button.



Description of mode selection switch functions

Mode	Function
Remote	For remote 4mA~20mAd.c control / remote switching value control
O/S	Position locking (remote and local operation invalid)
Local	Configuration adjustment (setting position, setting parameters, diagnosis, etc.) can be carried out through the local control panel.
LCD	Alphanumeric display of operation mode and parameters
LED	The green LED indicates “main power available” and the red LED indicates “failure”

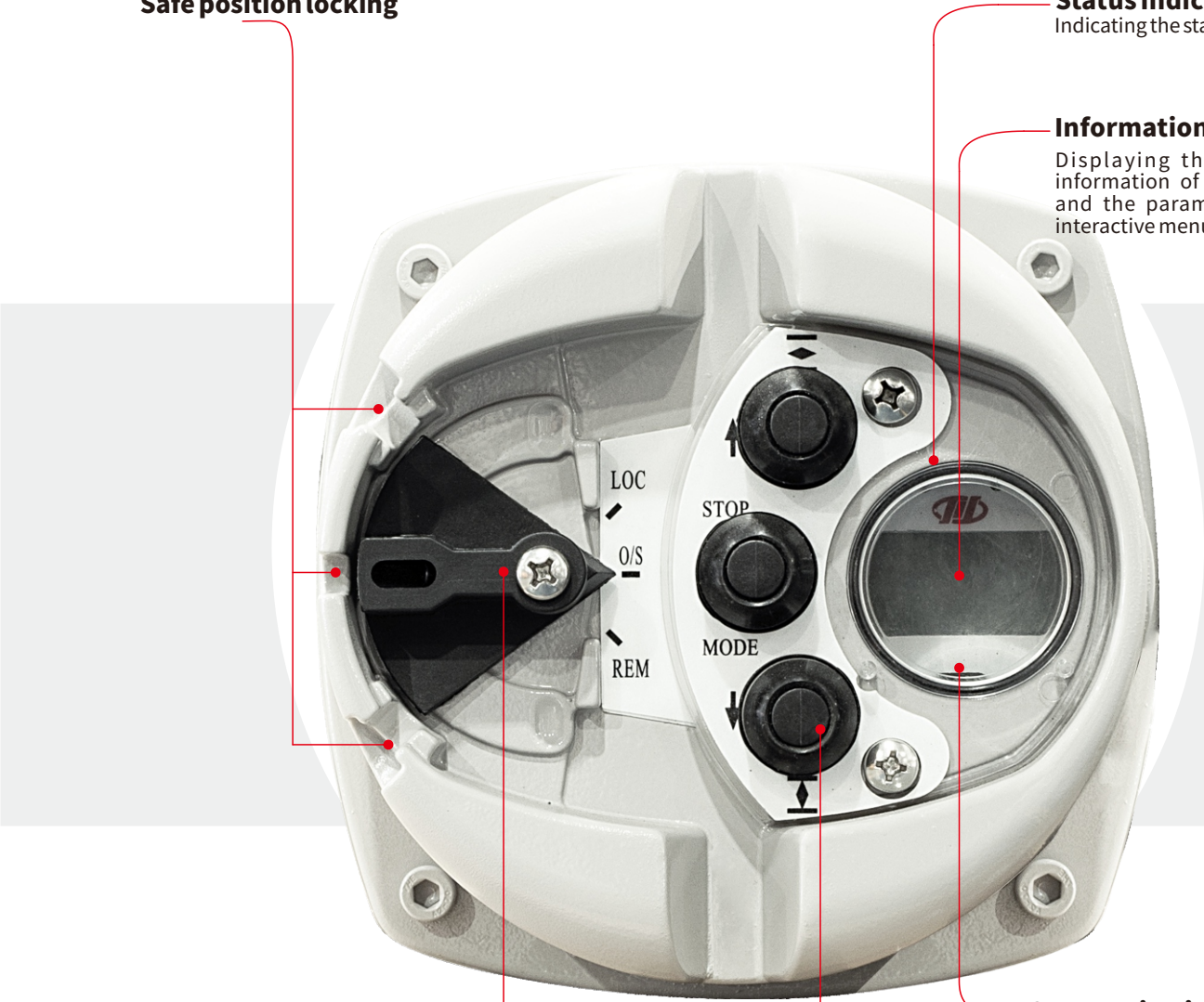
Built-in lithium battery can be activated to display its valve position during power failure

Sketch plan of operation interface

Safe position locking

Status indicator
Indicating the status of actuator

Information center
Displaying the operating information of the actuator and the parameters of the interactive menu



Communication window

Mode selection switch

Locking fastener, for preventing illegal operation

Operating button

For on, off, stop, and parameter setting operations

Configuration adjustment (setting position, setting parameters, diagnosis, etc.) can be carried out through the local control panel. The whole setting can be carried out through the local control panel in the “local operation” state.

VARIABLE FREQUENCY CONTROL

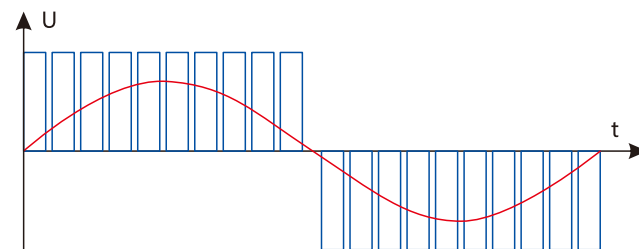
Inverter, as a mature product, has been widely used in various industrial production fields. Our company has successfully integrated variable frequency technology into the control of the actuator, realized the speed, steering and torque adjustment functions and

AC variable frequency speed regulation principle

According to the principle of motor, the speed of AC asynchronous motor can be expressed by the following formula: $n = 60f/p(1-s)$, where n - motor speed; p - motor's number of pole pairs; f - power frequency; s - slip. It can be known from the formula that the factors affecting the motor speed include: p - motor's number of pole pairs, s - slip and power supply frequency, which can realize the motor speed regulation, that is, variable frequency speed regulation. The variable frequency function is realized by using AC-DC-AC variable frequency mode, which is mainly composed of two parts including rectifier and inverter circuits.

Rectifier

The three-phase AC power supply is rectified through a high-power rectifier bridge to convert AC voltage into DC voltage.

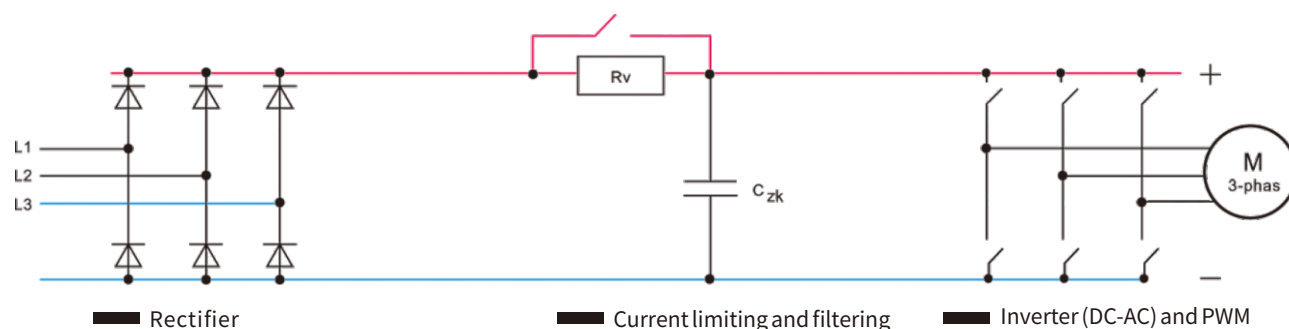


Current limiting and filtering

The filter capacitor C_{zk} filters out the voltage ripple after rectification and keeps the voltage stable when the load changes. When the main circuit is energizing, the instantaneous impulse current is large. In order to protect the circuit components, the current limiting resistor R_v is added; and after a period of delay, the switch is closed through the control circuit to short-circuit the current limiting resistor.

Inverter (DC - AC) and PWM

Through the three-phase inverter bridge composed of inverter switch tube (IGBT), it applies SPWM pulse width modulation technology, combining with special algorithms, adjusting the output frequency and output voltage, and controlling the motor speed, steering and torque.



Built-in integrated frequency converter

The actuator with built-in integrated frequency converter has more functions and advantages than traditional actuators, better protection of valves and optimized control.

Flexible control

When the valve starts, the actuator runs at a low speed and high torque; when the valve is nearly fully open or fully closed, the actuator will automatically decelerate, to position at a low speed, effectively avoiding the impact caused by inertia on the valve, and prolonging the service life of the valve.

Independently set speed and torque of opening direction / closing direction, optimizing valve control

According to the actual needs of field process control, the speed (step length 5%) and torque (step length 10%) of opening and closing direction can be set separately and independently to meet the needs of different processes or different running stages and realize the optimization of control process.

Multiple safety protection ensuring the safety of system and actuator and protecting the motor from overheating

Through the composite sensor, accurate detection of torque, current and temperature can be realized, and effective protection against overcurrent, overheating and over-torque can be achieved.

Proprietary and unique EMC filter circuit, effectively improving the anti-jamming capacity

Proprietary EMC filter circuit, on the one hand, can avoid the interference of the external environment to the product, and improve the reliability of the product; and on the other hand, it can avoid the pollution of product operation to power grid.

Automatic identification of power supply phase sequence

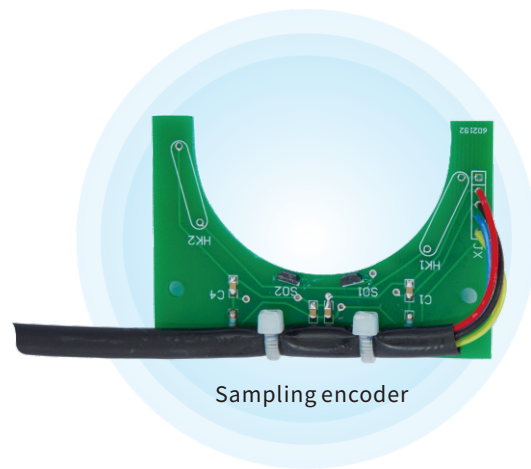
Because of the intelligent technology, the product can automatically identify the power phase sequence, therefore the power cord can be arbitrarily connected, and it is more convenient and fast for installing and debugging. Due to the use of variable frequency technology, the effect of power supply frequency and voltage fluctuation on the actuator can be effectively avoided.

Adjustable torque speed, reducing inventory and saving cost

Shut-off torque and output speed can be set in a large range. Therefore, only a small number of specifications and models of multi-turn actuators with the corresponding gearbox or linear propulsion device, form actuators of a variety of torques (thrusts), with a multi-turn stroke from 30N.m to 30,000N.m, an angular stroke from 30N.m to 400,000N.m, and a straight stroke from 3KN to 120KN so as to reduce the spare parts of finished unit and the inventory of spare parts.

DIGITAL DETECTION

Two Hall elements distributed at an electrical angle of 90° are mounted outside the motor shaft, and 20 magnetic poles are installed on the motor shaft. The motor generates 40 voltage pulses per round. The pulse signal is processed by a microprocessor to obtain precise parameters such as displacement, steering and velocity. The position measurement has been carried out all the time, and every change is detected and stored. The sampling encoder is not affected by the change of ambient temperature. It works stably and reliably, and it is not easy to wear. It has high a measuring accuracy, strong anti-interference ability, and long service life.



Midway limit protection function

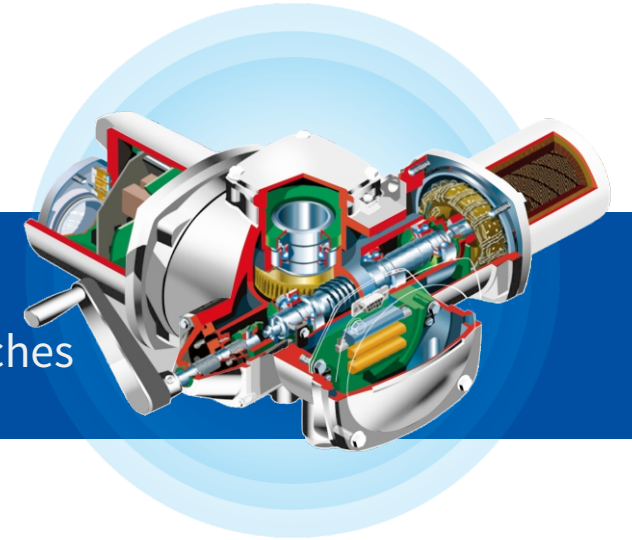
Sampling encoder can accurately detect the actual position of the actuator. Once you reach the set position, CPU outputs switch position signal through the relay on the control relay board. When the two limit positions are fully open or fully closed, the CPU control frequency converter will immediately cut off the power supply of motor, so as to realize limit protection.

Data does not depend on the battery and can be stored for a long time

Because of the special data processing and storage mode, the operation data can also be stored for a long time in case of power down, to achieve the permanent safety of data. Built-in lithium and ultra-capacitor energy storage only play a role in recording valve position changes when the handwheel is operated under power failure, and on the other hand it is used to view the current data of the actuator when power failure occurs.

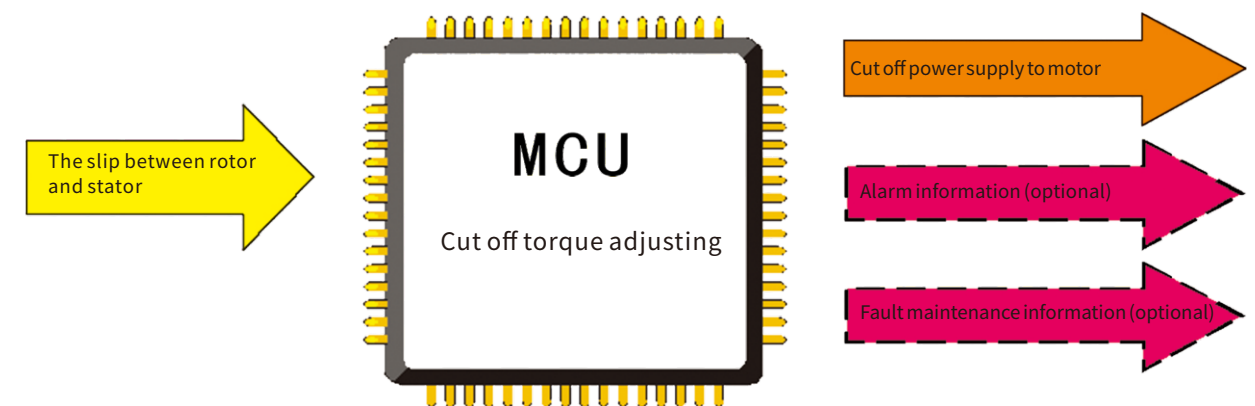


Electronic torque detection replacing mechanical torque switches



Over-torque protection

- Cutting torque can be set bi-directionally (forward/backward) independently by 10% of step length.
- During operation, microprocessor continues testing the slip between the stator and rotor and calculates the comparison between the actual torque and the presetting cut-off torque; once it overruns, CPU control frequency converter cuts off the motor power supply and outputs fault information, and realizes torque protection. The actuator motor will not be burned due to blockage, and the valve will not be damaged by the torque of the actuator.
- No mechanical torque switch, no mechanical wear, and no need for adjustment and maintenance.
- The output torque can be easily and quickly set without opening the cover.

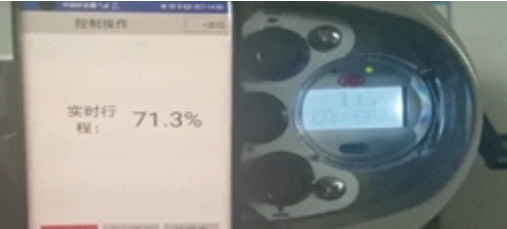


SETTING MODE

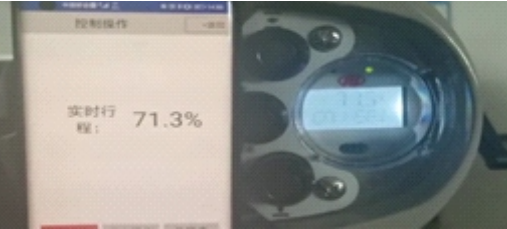
Convenient data setting mode



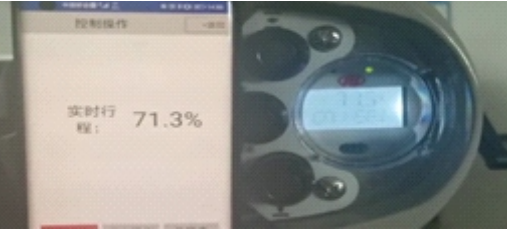
Infrared manual manipulator
Non-contact debugging, setting and operation of actuator via remote control (optional)



Bus setting
Remote setting, debugging and operation of actuator via computer (optional)



Wireless setting
IP address setting within 100m (optional)



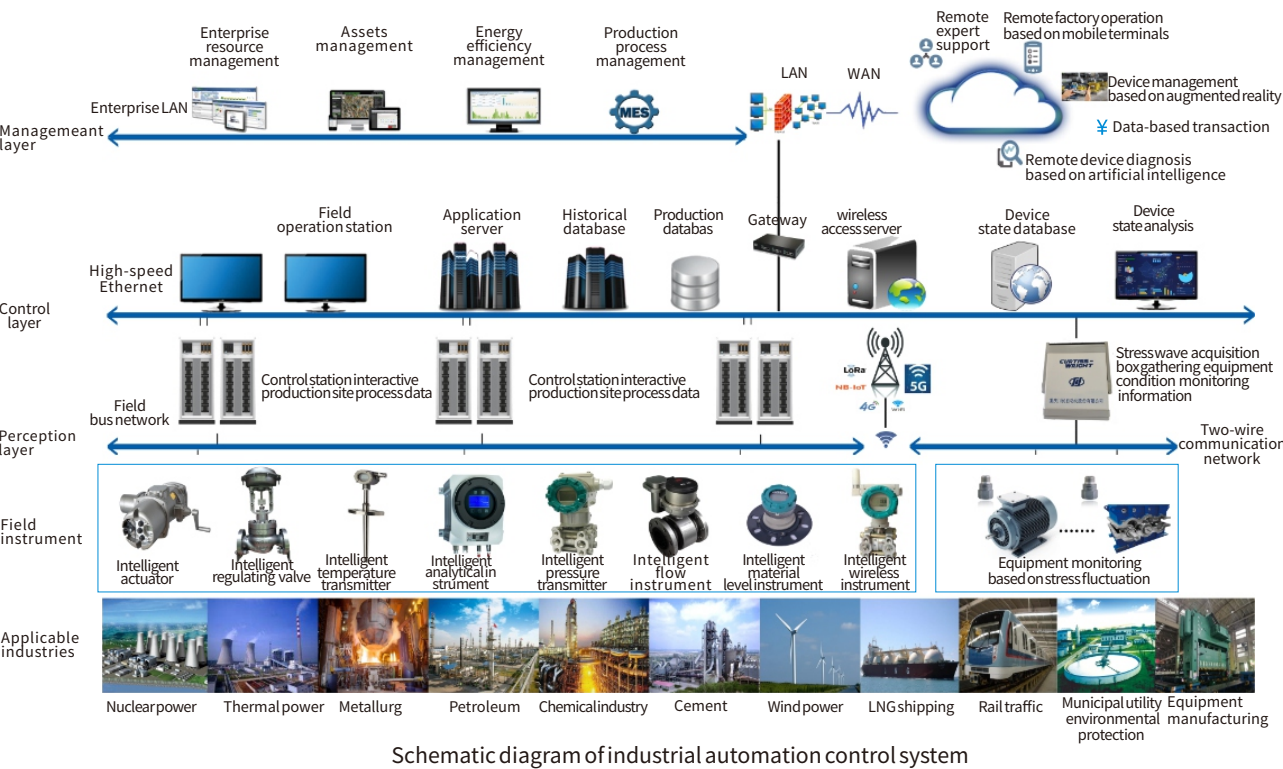
Panel operation
Standard configuration, available for setting, debugging and operating the actuator in place

Actuator manual manipulator

Mobile phone Bluetooth control



Field bus

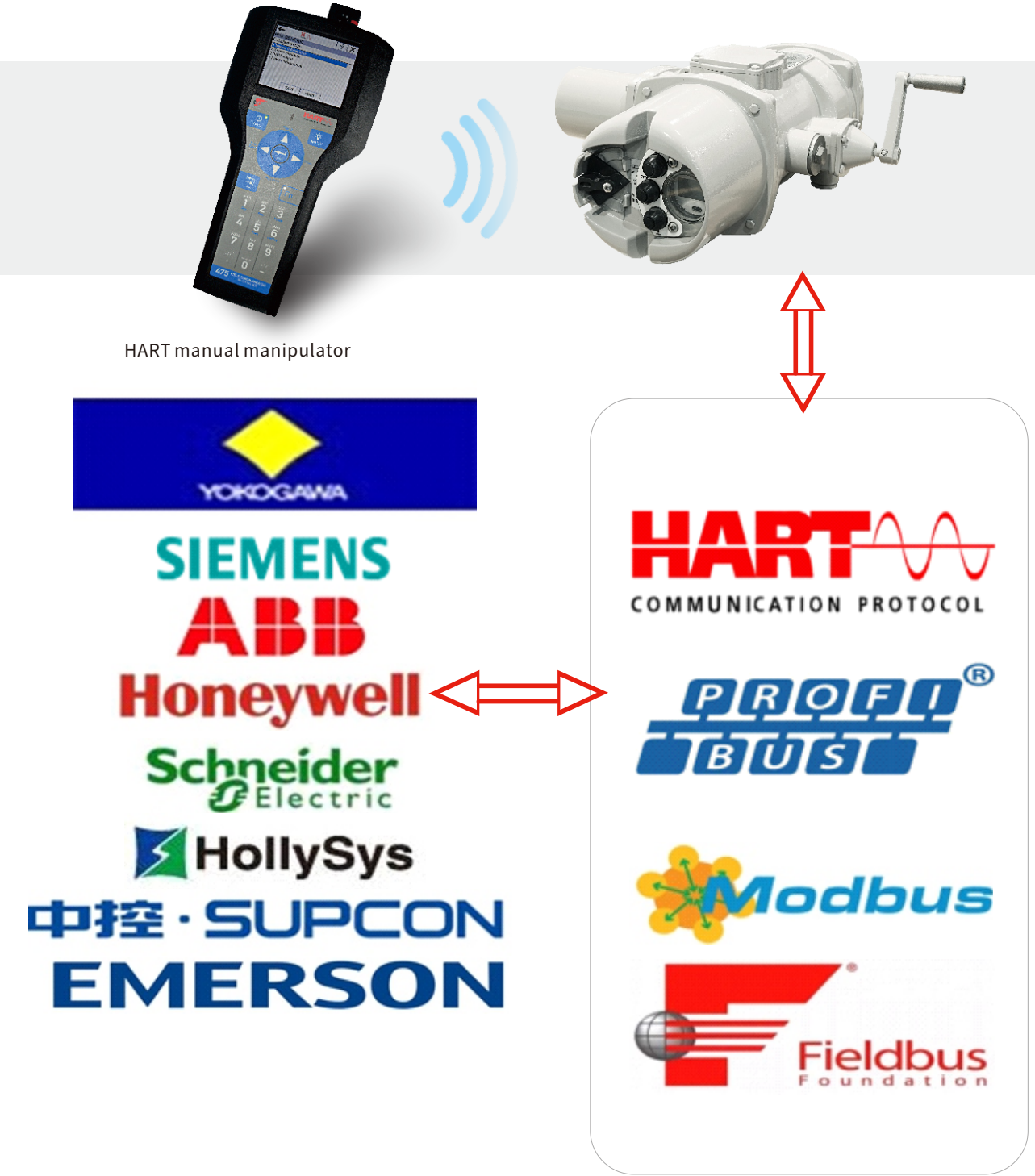


M Series Electric Actuator is available for a variety of field bus interface options, including PROFIBUS DP / HART / FF / MODBUS / Industrial Ethernet, etc. M Series Electric Actuator is one of the earliest electric actuators in China, which has the functions of PROFIBUS DP V0 and PROFIBUS DPV1 and the dual channel redundancy function. It can be integrated within the interactive configuration tool SIMAUC PDM or FDT framework application. Through the bus, such operations of actuator as controlling, parameter view, setting and diagnosis can be done remotely. It has such characteristics as follows:

- 1 Visualization of parameters**
The parameters of the actuator are intuitively displayed in each function screen, which greatly facilitates the browsing of PDM tool or FDT framework applications.
- 2 Convenience for debugging**
All setting data (such as turn-off torque and RPM) is displayed in the screen. It is simple for setting: click a shortcut to set parameters and upload to the actuator. For safety, setting the end position of the actuator must be done in the field.
- 3 Powerful diagnosis function**
The state information of the actuator is clear; and all fault information is displayed and recorded, making diagnosis and troubleshooting easy.

4 Field bus manual manipulator

M Series Electric Actuator can realize fast and convenient operating mode by the field bus manual manipulator.



QUALITY GUIDELINE

+ PRODUCT +

Product Strive For Excellence

+ QUALITY +

Quality Keep Improving

+ SERVICE +

Service Make Customer Satisfied



SELECTION GUIDE



Coastal environment with high salt fog



High-temperature environment in desert



Low-temperature environment in ice and snow



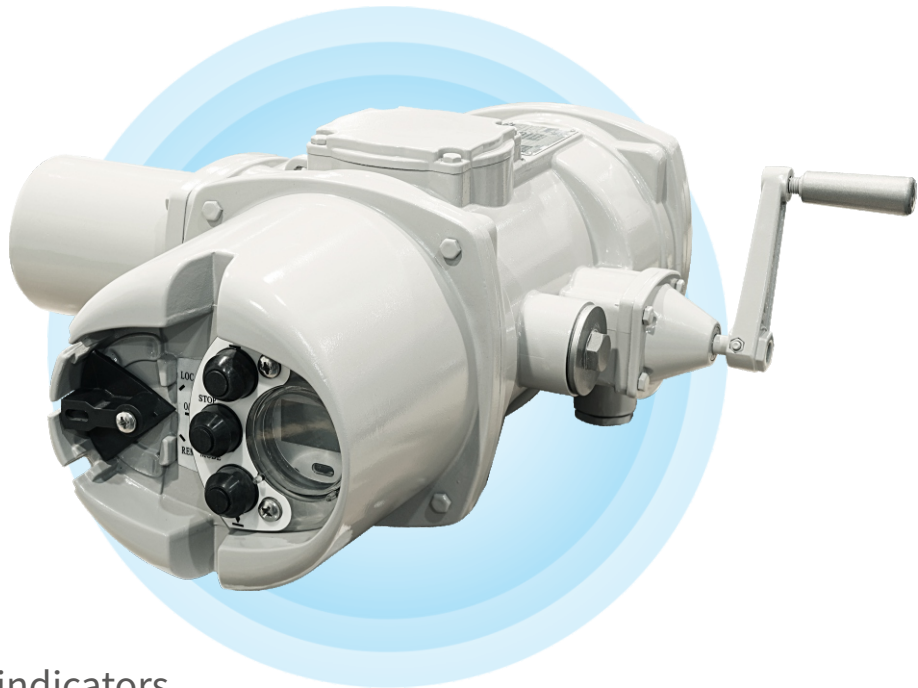
Product Qualification Certification

CE认证 CCC认证 防爆认证 SIL II认证 CCS认证 CU-TR认证 核电认证

Product inspection and certification

三体系认证 WF2认证 防雷认证 H级绝缘报告 高低温检测报告 IP68防护等级报告

M series multi-turn type



Main technical indicators

Input	4mA~20mAd.c current control / 24Vd.c passive (active) switching value control		
Optional	Infrared remote control / wireless remote control / PROFIBUS / FF / HART / MODBUS		
Output	Opening/closing over-torque alarm contact fully open fully closed position contact 4mA~20mAd.c valve position feedback signal		
Features	Displacement, velocity, torque electronic digital accurate measurement speed, and torque can be set in a wide range		
Control module	Intelligent variable frequency module / intelligent control module		
Explosion-proof grade	Domestic explosion-proof grades: Exdb II CT4 Gb Ex tb III CT130°C Db / Exdb II BT4 Gb Ex tb III CT130°C Db IEC explosion-proof grades: Ex db h IIB+H2 T4 Gb / Ex h tb IIIC T130°C Db EU explosion-proof grade:  Exdb h IIB+H2 T4 Gb Ex h tb IIIC T130°C Db		
Operating mode	S2-600/h、S4-1200/h		
Fundamental error	±1%	IP grade	IP66、IP67、IP68
Return difference	1%	Environment temperature	Normal temperature: -25°C~70°C Low-temperature: -40°C~70°C Ultralow temperature: -60°C~70°C
Dead zone	0.5%~5% adjustable		
Damping characteristics	No shock	Relative humidity	<95% (no condensation)
Power supply	Domestic common power supply types: 380Va.c. (340V~440V), 50Hz/60Hz 3PH / 220Va.c. (187V~242V), 50Hz 1PH Foreign common power supply types: 415V 60Hz / 440V 60Hz / 460V 60Hz DC power supply types: 24Vd.c / 12Vd.c		

Note: If the said technical specifications are not included, please contact our company for model selection.

M series multi-turn switching-type electric actuator

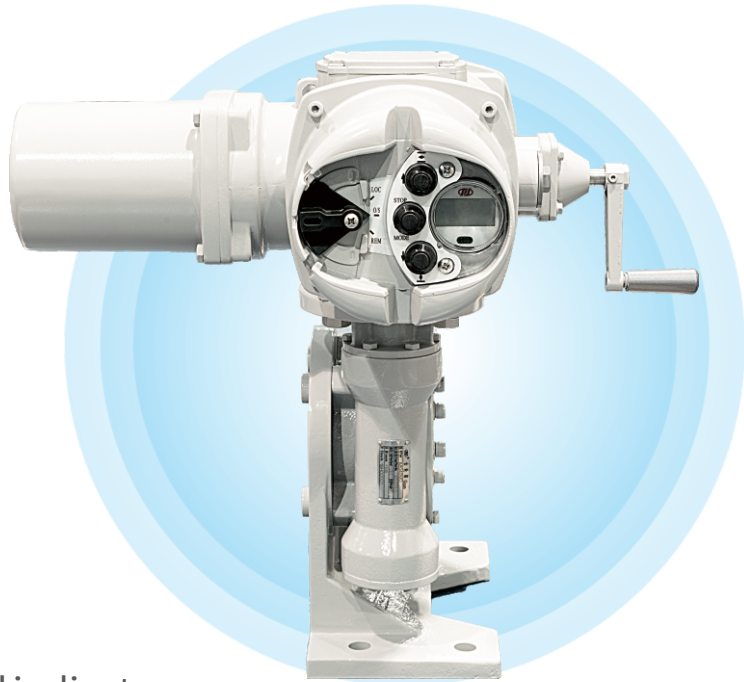
Actuator	Output		Flange ISO5210	Weight (Kg)
	Rated torque (Nm)	Speed (r/min)		
M8405	17~44	12~24	F10	22
M8410	30~80	24~96	F10	24
M8420	60~160	24~96	F10	25
M8430	100~330	24~96	F14	37
M8440	200~600	24~96	F16	68
M8450	300~900	24~96	F16	72
M8460	600~1200	24~72	F16	72
M8470	1200~2500	24~72	JB2920 7#	125
	600~800	24~144	F25	
M8480	3500	24	JB2920 8#	140
	1800~2500	36~72	JB2920 7#	130~135
	1350~1500	96~144	F25	135
M8610	20~50	7~36	F10	24
M8620	40~100	7~36	F10	25
M8630	80~200	7~36	F14	37
M8640	160~400	7~36	F16	68
M8650	240~600	7~36	F16	72

M series multi-turn switching-type electric actuator

Actuator	Output		Flange ISO5210	Weight (Kg)
	Rated torque (Nm)	Speed (r/min)		
M8305	25~45	12~24	F10	22
M8310	30~100	24~96	F10	24
M8320	70~250	24~144	F10	25
M8330	120~450	24~144	F14	37
M8340	250~600	24~96	F16	68
M8350	300~900	24~96	F16	72
M8360	400~1200	24~96	F16	72
M8370	1200~2500	24~72	JB2920 7#	125
	600~800	96~144	F25	
M8380	3500	24	JB2920 8#	140
	1800~2500	36~72	JB2920 7#	130~135
	1350~1500	96~144	F25	135
M8510	20~50	7~36	F10	24
M8520	40~100	7~36	F10	25
M8530	80~200	7~36	F14	37
M8540	160~400	7~36	F16	68
M8550	240~600	7~36	F16	72

Note: M series 220Va.c output torque decreases by 10% compared with the same period during power supply;

M series part-turn type



Main technical indicators

Input	4mA~20mAd.c current control / 24Vd.c passive (active) switching value control		
Optional	Infrared remote control / wireless remote control / PROFIBUS / FF / HART / MODBUS		
Output	Opening/closing over-torque alarm contact fully open fully closed position contact 4mA~20mAd.c valve position feedback signal		
Features	Displacement, velocity, torque electronic digital accurate measurement speed, and torque can be set in a wide range		
Control module	Intelligent variable frequency module / intelligent control module		
Explosion-proof grade	Domestic explosion-proof grades: Exdb II CT4 Gb Ex tb III CT130°C Db / Exdb II BT4 Gb Ex tb III CT130°C Db IEC explosion-proof grades: Ex db h IIB+H2 T4 Gb / Ex h tb IIIC T130°C Db EU explosion-proof grade:  Ex db h IIB+H2 T4 Gb Ex h tb IIIC T130°C Db		
Operating mode	S2-600/h、S4-1200/h		
Fundamental error	±1%	IP grade	IP66、IP67、IP68
Return difference	1%	Environment temperature	Normal temperature: -25°C~70°C Low-temperature: -40°C~70°C Ultralow temperature: -60°C~70°C
Dead zone	0.5%~10%adjustable		
Dampingcharacteristics	No shock	Relative humidity	<95% (no condensation)
Power supply	Domestic common power supply types:380Va.c. (340V~440V),50Hz/60Hz 3PH /220Va.c. (187V~242V),50Hz 1PH Foreign common power supply types:415V 60Hz/ 440V 60Hz/ 460V 60Hz DC power supply types:24Vd.c/12Vd.c		

Note: If the said technical specifications are not included, please contact our company for model selection.

M series part-turn type

Actuator model	Gearbox model	Recommended torque (Nm)*	Stroke time (S/90°)
M8□10	A8005	450	21
	A8010	900	30
	A8020	1200	30
M8□20	A8020	1800	30
	A8040	2800	30
M8□30	A8040	3600	30
	A8090	6000	32
	A8090+G6502	8000	60
	A8161	10000	68
	A8162	15000	88
M8□40	A8090	8000	32
	A8160	15000	42
	A8250	22000	68
M8□50	A8250	25000	68
	A8400	35000 / 45000 / 65000	85 / 115 / 144
M8□60	A8510 / A8520	150000	115 / 133
	A8600	175000 / 245000	90 / 210
	A8700	300000	210

For instance: M8310C+A8010KL stands for intelligent switch signal control, with 4mA~20mAd.c feedback signal output, and seven sets of switching value output.
The output torque of the actuator is 900Nm, and the base is with lever-type connection.

Note: M series 220Va.c output torque decreases by 10% compared with the same period during power supply; “*” means the torque when the power supply voltage is 380Va.c; and “□” means one of 3, 4, 5 and 6;
The above torque values are for reference only, and the selection of other torques is subject to the manufacturer's confirmation.
For selecting the actuator with a torque > 150,000Nm, please contact the Sales Dept.



M series linear type



Main technical indicators

Input	4mA~20mAd.c current control / 24Vd.c passive (active) switching value control		
Optional	Infrared remote control / wireless remote control / PROFIBUS / FF / HART / MODBUS		
Output	Opening/closing over-torque alarm contact fully open fully closed position contact 4mA~20mAd.c valve position feedback signal		
Features	Displacement, velocity, torque electronic digital accurate measurement speed, and torque can be set in a wide range		
Control module	Intelligent variable frequency module / intelligent control module		
Explosion-proof grade	Domestic explosion-proof grades: Exdb II CT4 Gb Ex tb III CT130°C Db / Exdb II BT4 Gb Ex tb III CT130°C Db IEC explosion-proof grades: Ex db h IIB+H2 T4 Gb / Ex h tb IIIC T130°C Db EU explosion-proof grade:  Exdb h IIB+H2 T4 Gb Ex h tb IIIC T130°C Db		
Operating mode	S2-600/h、S4-1200/h		
Fundamental error	±1%	IP grade	IP66、IP67、IP68
Return difference	1%	Environment temperature	Normal temperature: -25°C~70°C Low-temperature: -40°C~70°C Ultralow temperature: -60°C~70°C
Dead zone	0.5%~5% adjustable		
Dampingcharacteristics	No shock	Relative humidity	<95% (no condensation)
Power supply	Domestic common power supply types:380Va.c. (340V~440V),50Hz/60Hz 3PH /220Va.c. (187V~242V),50Hz 1PH Foreign common power supply types:415V 60Hz/ 440V 60Hz/ 460V 60Hz DC power supply types:24Vd.c/ 12Vd.c		

Note: If the said technical specifications are not included, please contact our company for model selection.

M series linear type

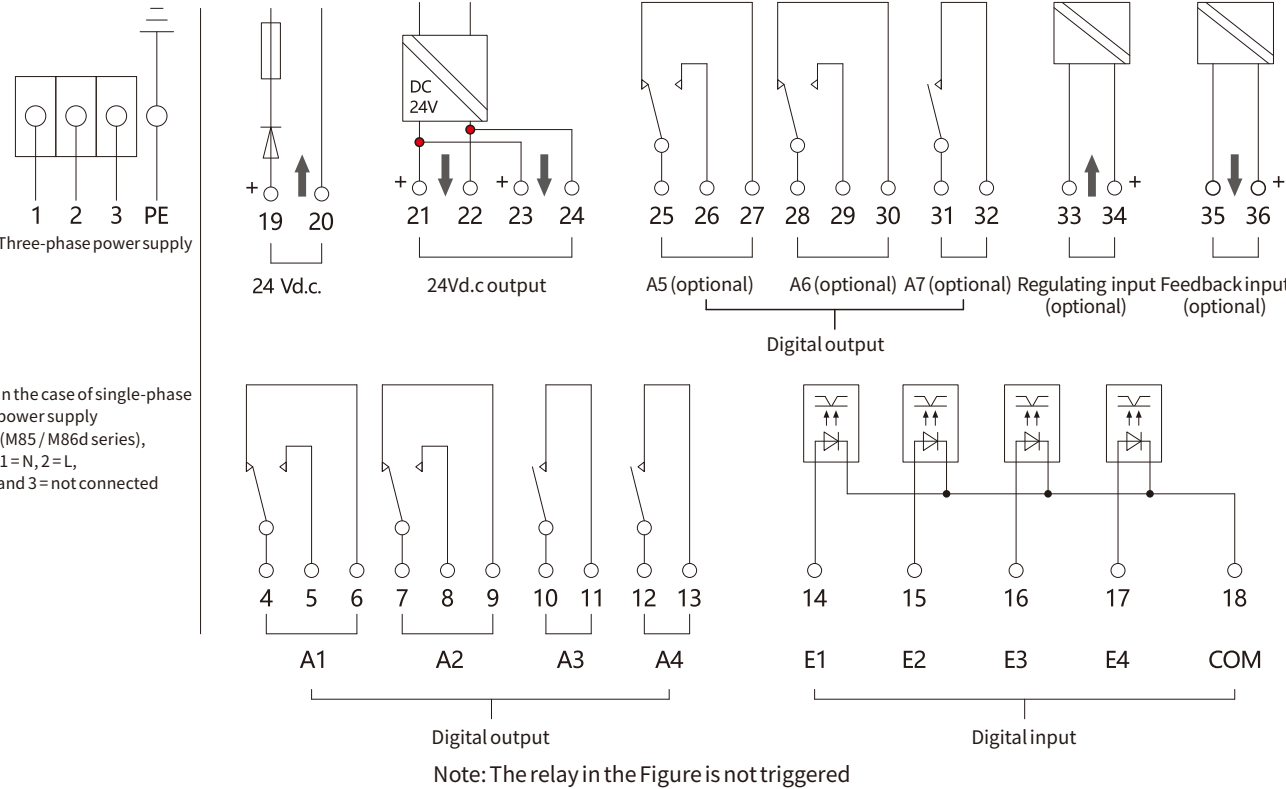
Actuator model	Linearswitching mechanism model	Output thrust * (KN)	Speed (mm/s)	Stroke Max. (mm)
M8□10	L8210	8	2.9	50 / 100
M8□20	L8220	16	2.9	50 / 100
M8□20	L8230	25	3.5	63 / 125
M8□30	L8240	40	4.1	60 / 100 / 160
M8□40	L8250	100	4.7	80 / 120 / 200
M8□50	L8250	120	4.7	80 / 120 / 200

For instance: M8610+L8210 stands for intelligent regulating signal control, with 4mA~20mAd.c feedback signal output, 50Nm torque of the electric actuator and 8kN output thrust of the actuator.

Note: “*” M series 220Va.c output torque decreases by 10% compared with the same period during power supply; and “□” means one of 3, 5 and 6;
The above thrust values are for reference only, and the selection of other thrusts is subject to the manufacturer's confirmation.
For selecting the actuator with a thrust > 40KN, please contact the Sales Dept.
The above is a typical configuration; and the local adjustment can be made according to the actual situation of the valve. Please be subject to the actual selection.



Wiring diagram of M series explosion-proof type



Wiring diagram of M series non-explosion-proof type

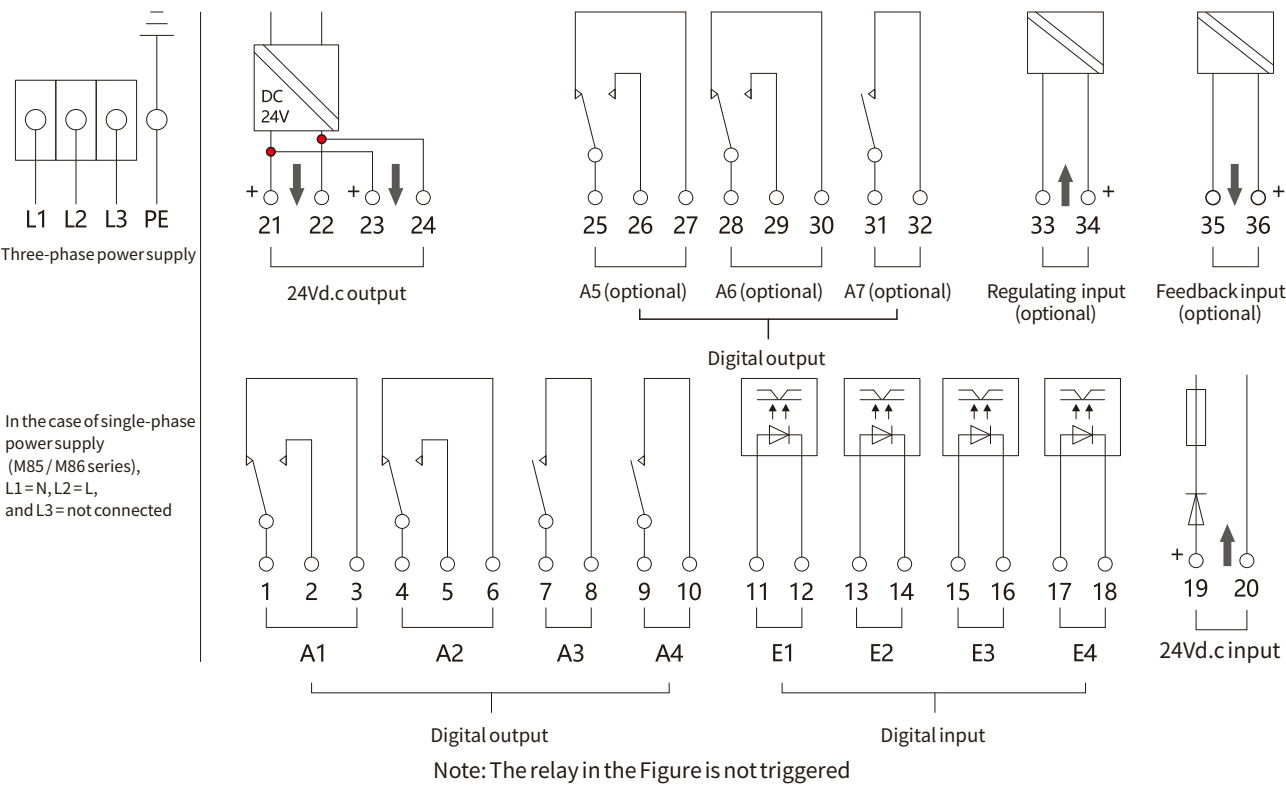
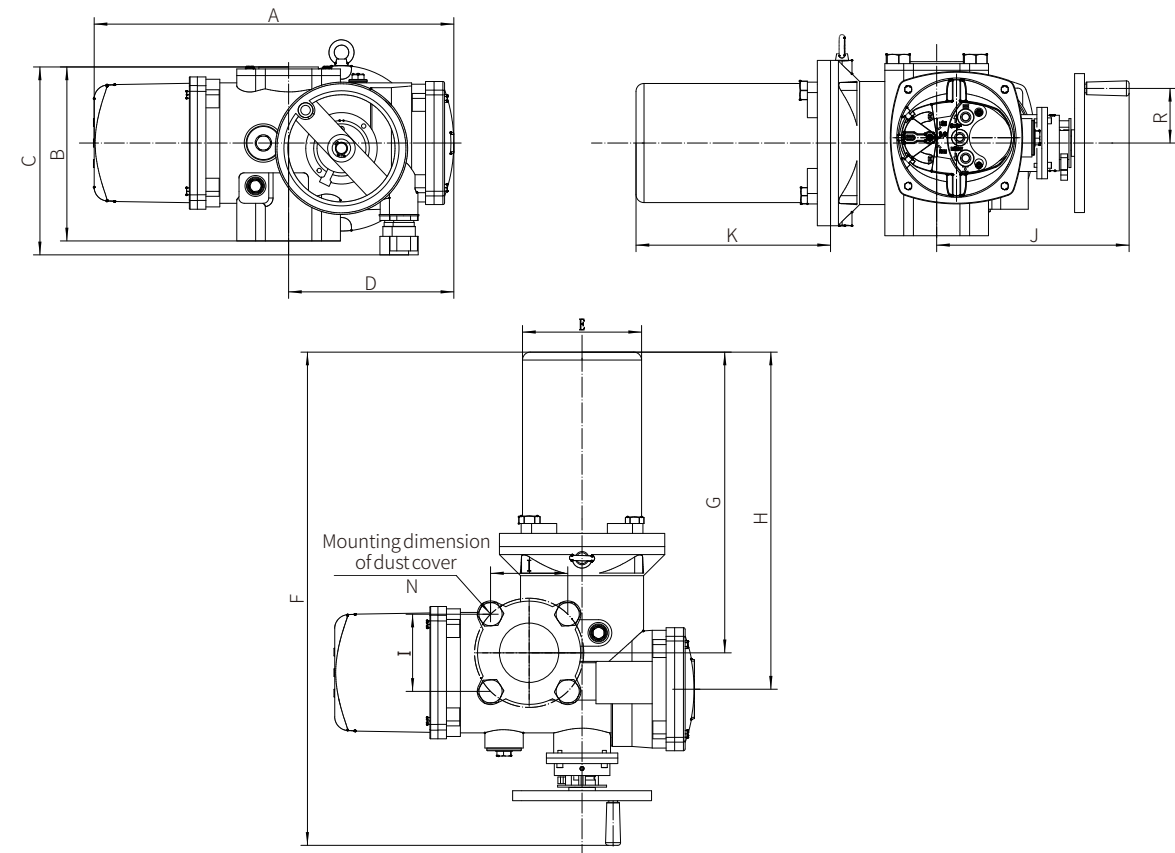


Table of functions description

Function name	Function description	
Digital input E1-E4	Actuator on, off or stop commands; remote regulating enabled / ESD	
Digital output A1-A7	Comprehensive fault	A1-A4 (standard configuration) A5-A7 (optional) Users can select configuration according to their needs
	Regulating signal disconnected	
	Open running state	
	Close running state	
	Running state	
	Local / remote state	
	Opening in place state	
	Closing in place state	
	Opening over-torque alarm	
	Closing over-torque alarm	
	Comprehensive alarm	
	Valve position over-limit	
	Valve position lost	
	Valve position higher than high-end setting value	
	Valve position lower than low-end setting value	
	Temperature over-limit alarm	
	Battery voltage low / no-load alarm	
Analog input	4mA~20mAd.c. input	M-series adjustable configuration M series switch type without configuration
Feedback output	4mA~20mAd.c output	M84/M86(d), M83/M85(d) Cseries configuration
24Vd.c. input	After cutting off the external power supply, if the output feedback current is needed, connect the external 24Vd.c power supply	
24Vd.c output	The external output of the actuator is 24Vd.c to power supply interface, and the output current is ≤ 30mA.	

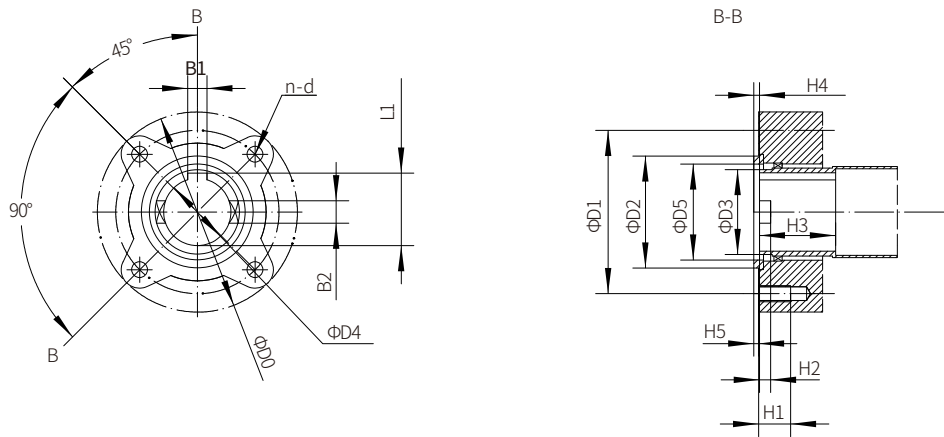
M series multi-turn type

a) Boundary dimension

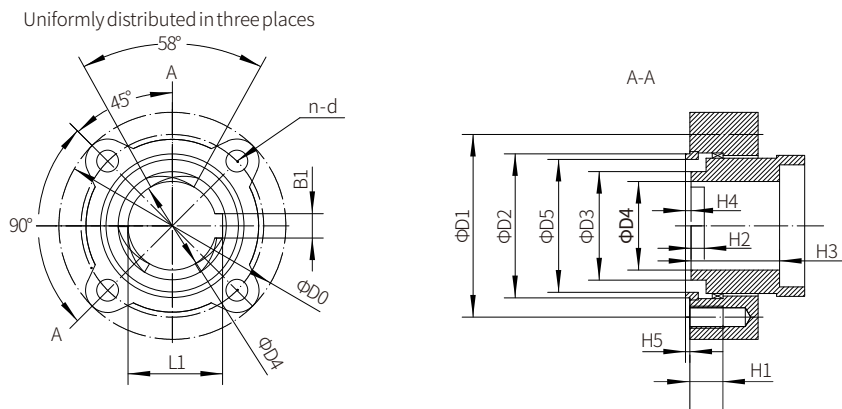


Product model	M8□10(d)	M8□20(d)	M8□30(d)	M8□40(d)	M8□50(d)	M8□60(d)
ISO5210	F10	F10	F14	F16	F16	F16
A	459	459	492	544	544	544
B	213	213	213	263	263	263
C	248	248	259	284	284	284
D	206	206	226	250	250	250
E	106	106	142	180	180	180
F	585 / 612	585 / 612	637	746	746	746
G	285	285	354	455	455	455
H	311	311	394	510	510	510
I	83	83	97	117	117	117
J	300	300	283	291	291	291
K	147 / 161	147 / 161	195	294	294	294
N	4-M6	4-M6	4-M6	-	-	-
R	99	99	99	83	83	83

b) Interface dimension



M8□10/M□20/M□30 connecting type (II-groove) and dimension

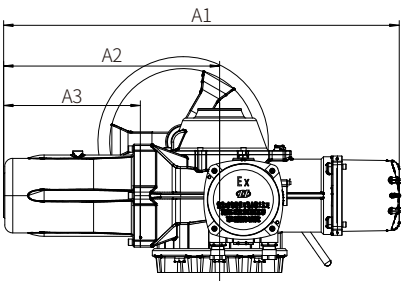


M8□40/M8□50/M8360 connecting type (three-jaw) and dimension

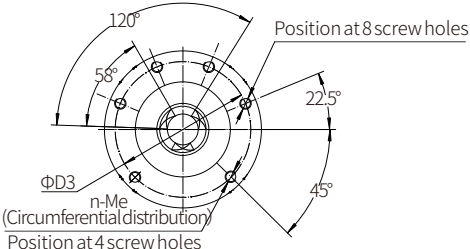
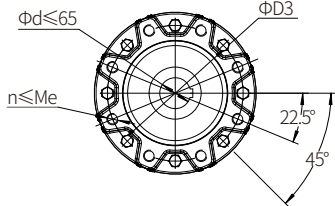
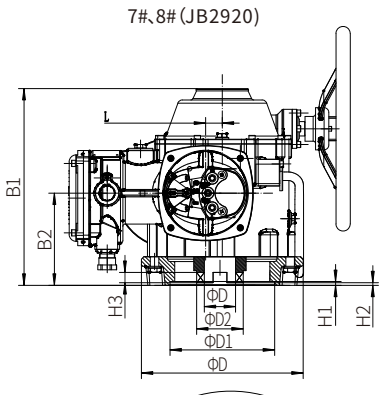
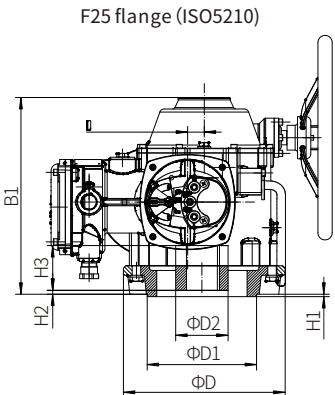
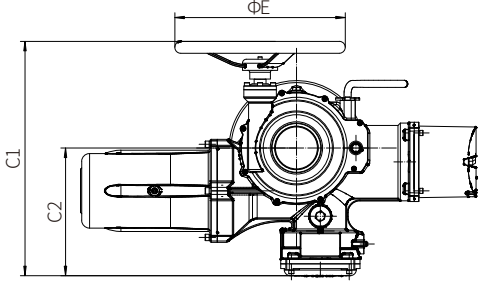
Product model	Connecting flange code ISO5210	D0	D1	D2		D3	D4		D5	H1	H2	H3	H4	H5	L1	B1	B2		n-d
M8□10(d)	F10	125	102	70	-0.076	53	42	+0.062	60	18	7	47.6	3.5	3	45.3	12	14	0.14	4-M10
M8□20(d)					-0.03			0.0											
M8□30(d)	F14	175	140	100	-0.05	74	60	+0.052	88	22	8	53	4.1	3.6	64.4	18	20	0.0	4-M16
					-0.10			0.0										-0.2	
M8□40(d)	F16	205	165	130	-0.043	98	80	+0.074	120	30	12	80	5	4	85.4	22	—		4-M20
M8□50(d)																			
M8□60(d)								-0.106											

M8370 / M8380 multi-turn type

a) Boundary dimension



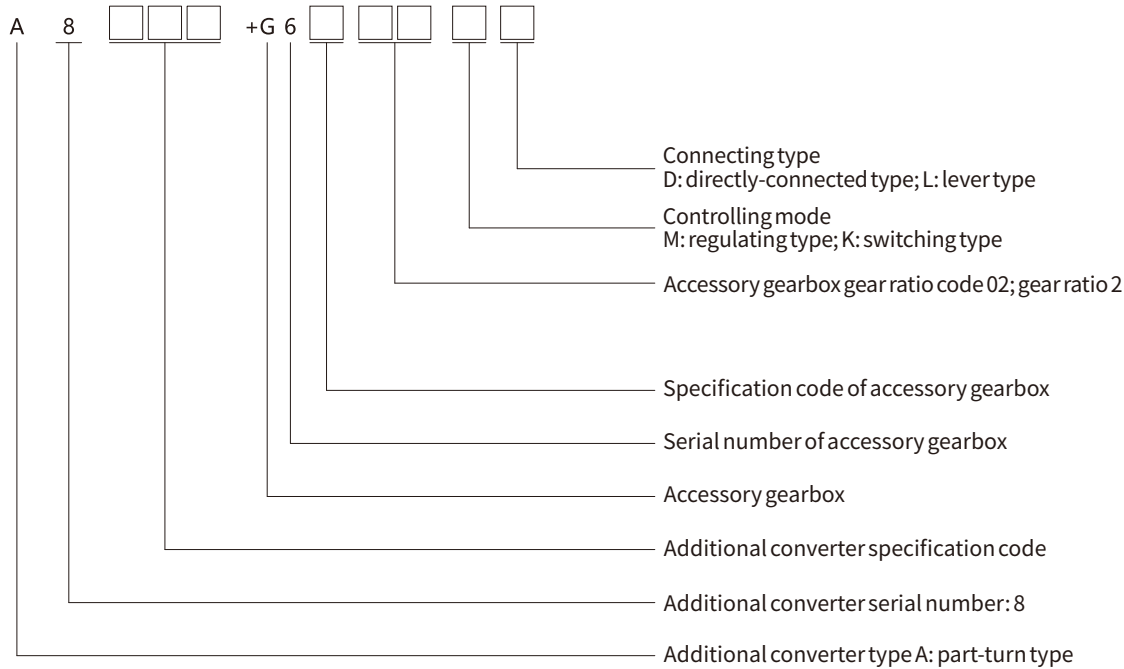
b) Interface dimension



Product model	Torque (N.m)	Speed (rpm)	A1	A2	A3	B1	B2	C1	C2	E	L	D	D1	D2	D3	H1	H2	H3	d	n-Me	Output flange
M8□70	2500	24										340									
	1800	36											220	98	285	8		19		4-M24 depth30	7#(JB920)
	1500	48	963	510	310	415	194	591	322	400	35	330					3		65		
	800	96										300	200	110	254	5		110		8-M16 depth25	F25 (ISO5210)
	600	144																			
M8□80	3500	24								500		380	280	118	340	10		21		8-M20 depth35	8#(JB920)
	2500	36																			
	2000	48	998	545	345	415	194	591	322	400	35	330	220	98	285	8	3	19	65	4-M24 depth30	7#(JB920)
	1800	72																			
	1500	96										300	200	110	254	5		110		8-M16 depth25	F25 (ISO5210)
	1350	144																			

Parameters of gearbox

a) Description of part-turn type gearbox model

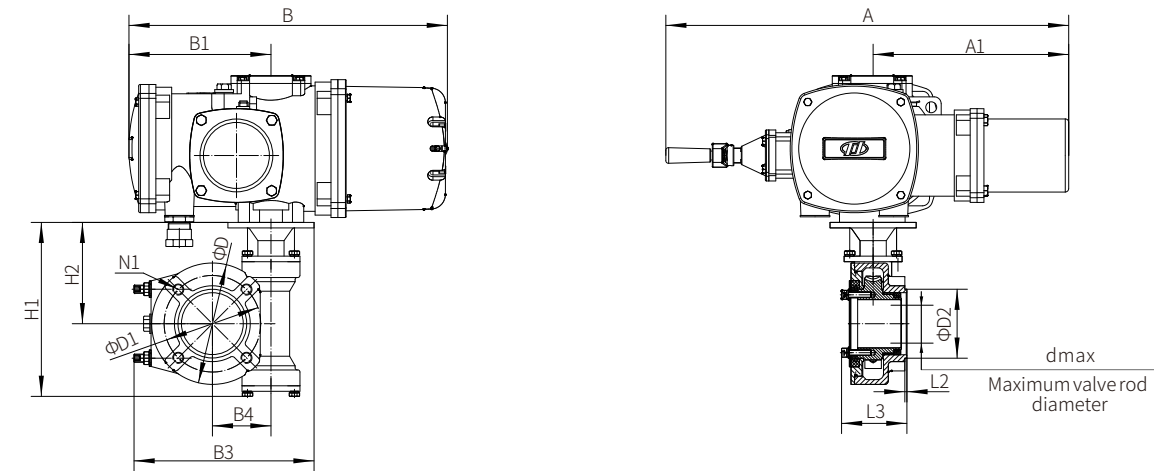


b) Technical parameters of part-turn type gearbox

Product model	Valve connecting flange (ISO5211)	Valve rod diameter MAX (mm)	Gear ratio	Weight of directly-connected type (Kg)	Weight of lever type (Kg)
A8005	F10	30	50 : 1	7	12
A8010	F10	35	70 : 1 (40:1)	12	19
A8020	F14	55	70 : 1 (40:1)	15	32
A8040	F16	65	70 : 1 (40:1)	25	51
A8090	F25	95	75 : 1 (40:1)	64	108
A8160	F30 (F25)	105	100 : 1	180	220
A8161	F30 (F25)	105	160 : 1	180	220
A8162	F30 (F25)	105	208 : 1	180	220
A8090+G6502	F25	95	150 : 1	78	121
A8250	F35	115	160 : 1 (285:1)	280	330
A8400	F40	160	202:1 (275:1/345:1)	365	487
A8510	F40 (F48)	150 / 190	276 : 1	560	/
A8520	F40 (F48)	150 / 190	318 : 1	560	/

Note: 2. Valve body connection flange; and the size in brackets is optional

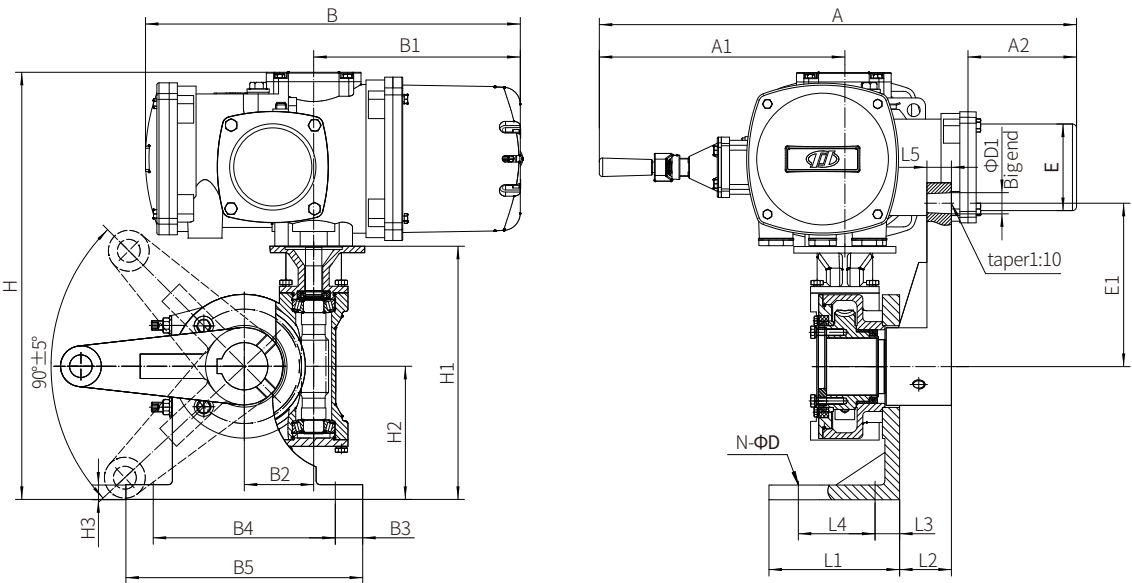
c) Connecting dimension of directly-connected gearbox



Product model	A8005	A8010	A8020	A8040	A8090 (+G6502)	A8160 A8163	A8161 A8162	A8251 A8252	A8400
Flange standard ISO5211	F10	F10	F14	F16	F25	F30	F30	F35	F40
A	M8□10=585		M8□20=612		M8□30=637		M8□40 /50/60=746		
A1	M8□10=285		M8□20=285		M8□30=354		M8□40 /50/60=455		
B	M8□10=462		M8□20=462		M8□30=495		M8□40 /50/60=545		
B1	M8□10=206		M8□20=206		M8□30=226		M8□40 /50/60=250		
B3	202	227	261	295	F14:425 F16:440	577 533	533	625	703
H1	169	246	253	292	394	599 581	563	630 612	773
H2	68	/	147	167	227	418 400	382	423 405	500
L	81	72	77.5	88	128	/	/	/	/
L2	3	3	3	3	4	4	4	4	5
L3	107	94	104	110	166	189 200	189	226 232	297
D1	102	102	140	165	254	298	298	356	406
D2	70	70	100	130	200	230	230	260	300
D3	44	48	70	84	120	/	/	/	/
N1	4-M10 depth15	4-M10 depth15	4-M16 depth22	4-M20 depth25	4-M16 depth22	4-M20 depth32	4-M20 depth32	4-M30 depth45	8-M36 depth55

Notes: “□” means one of 3, 4, 5 and 6.

d) Connection dimension of base lever-type gearbox



Product model	A8005	A8010	A8020	A8040	A8090 (+G6502)	A8160 A8163	A8161 A8162	A8251 A8252	A8400
A	M8□10=585		M8□20=612		M8□30=637		M8□40 /50/60=746		
A1	M8□10=300		M8□20=300		M8□30=285		M8□40 /50/60=291		
B	M8□10=459		M8□20=459		M8□30=492		M8□40 /50/60=544		
B1	M8□10=253		M8□20=253		M8□30=269		M8□40 /50/60=295		
B2	52	68	85	101	150	160	200	200	250
B4	140	200	223	270	338	448	448	580	580
B5	180	240	290	330	400	520	520	630	630
H	420	491	523	578	675	954	882	1010 927	1155
H1	207	278	310	365	462	650	668	734 714	851
H2	107	134	163	200	235	250	250	310	350
H3	15	16	18	20	24	30	30	30	30
N-ΦD	4-Φ14	4-Φ14	4-Φ18	4-Φ22	6-Φ22	6-Φ22	6-Φ22	8-Φ22	8-Φ22
D1 (1:10)	Φ18	Φ22	Φ26	Φ30	Φ38	Φ38	Φ38	Φ38	Φ38
E1	160	150	200	250	250	250	250	500	500
L1	132	132	160	185	256	272	272	320	320
L2	76	51	83.5	85	77	145	145	151	155
L3	36	20	30	50	56	62	62	70	70
L4	70	94	94	102	80-80	80-80	80-80	70-70-70	70-70-70
L5	20	20	30	30	30	42	40	42	42

Notes: “□” means one of 3, 4, 5 and 6.

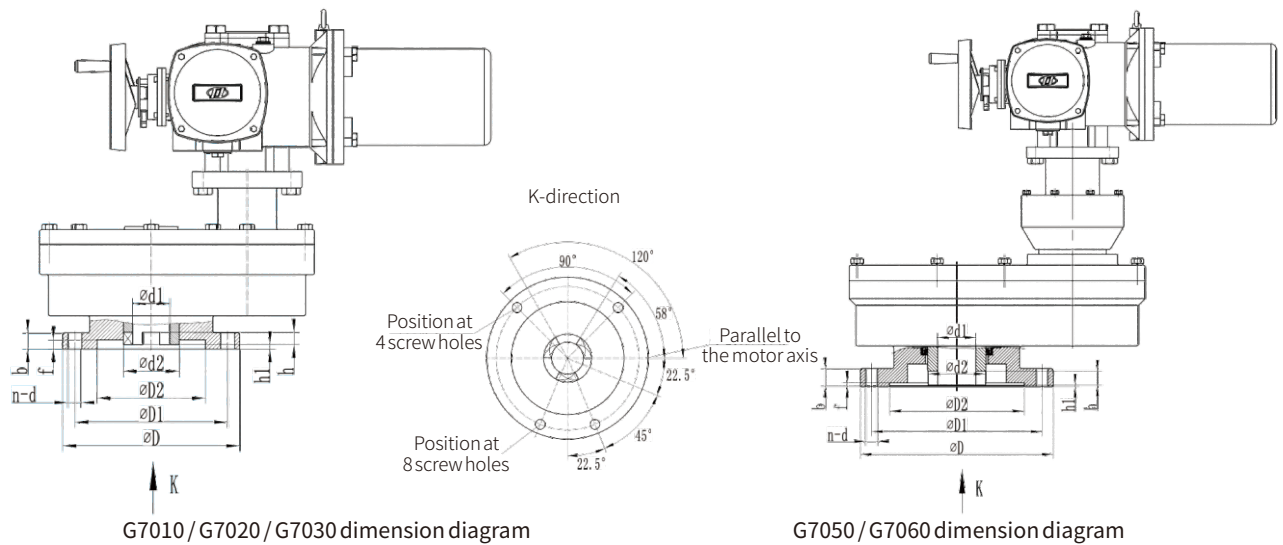
Multi-turn additional gearbox

a) Technical data

Product model	Gearbox	Reduction gear ratio	Output		Flange JB2920	Gearbox weight (Kg)
			Recommended torque (Nm)	Speed (r/min)		
M8□50	G7010	2	1200	18	5	61
M8□50	G7020	3	1800	12	7	143
M8360	G7010	1.5	1200	24	5	61
	G7020	2	1800	18	7	143
	G7030	4 / 6	3000	9 / 6	8	220
	G7050	6	5000	12	8	270
	G7060	6 / 10	8000	12 / 7	9	270

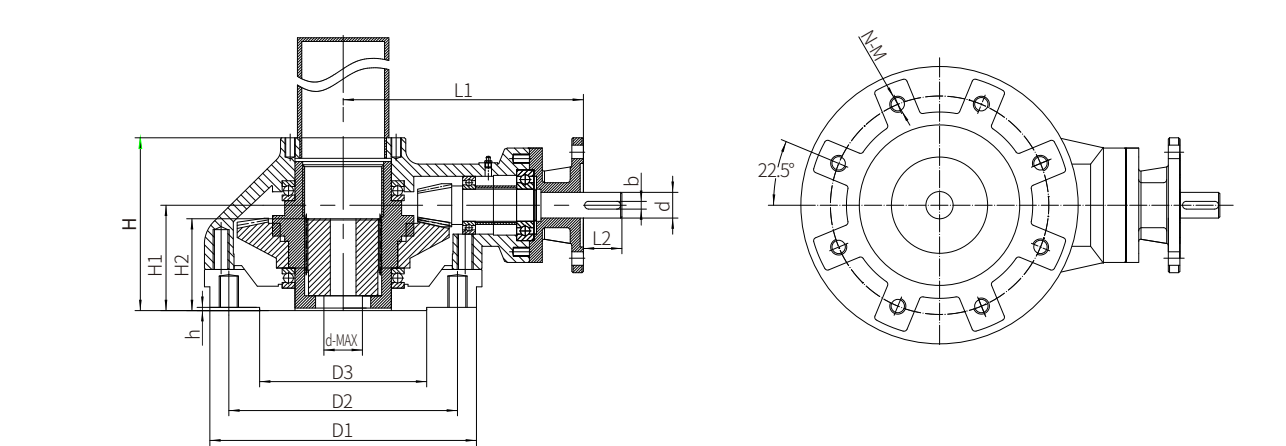
Notes: “□” means one of 3, 4, 5 and 6. The above torque and RMP values are for reference only, and the selection of other torque and RMP values is subject to the manufacturer's confirmation.

b) Boundary and mounting dimensions



Product model		D	D1	D2	h1	f	h	b	d1	d2	n-d	Gear ratio
M8□50+G7010 M8□60+G7010	With port 4	225	195	150	2	5	12	22	50	72	4- φ 18	1.5 : 1 2 : 1
	With port 5	275	235	180	2	5	14	25	62	82	4- φ 22	2.65 : 1
M8□50+G7020 M8□60+G7020	With port 7	330	285	220	3	6	16	30	74	98	8- φ 26	2 : 1 / 3 : 1 4.5 : 1
M8□50+G7030 M8□60+G7030	With port 8	380	340	280	3	6	20	35	80	118	8- φ 22	4 : 1 / 6 : 1
M8□60+G7050	With port 8	380	340	280	3	8	20	35	80	118	8- φ 22	6 : 1
M8□60+G7060	With port 9	430	380	300	3	8	20	35	85	125	8- φ 26	10 : 1

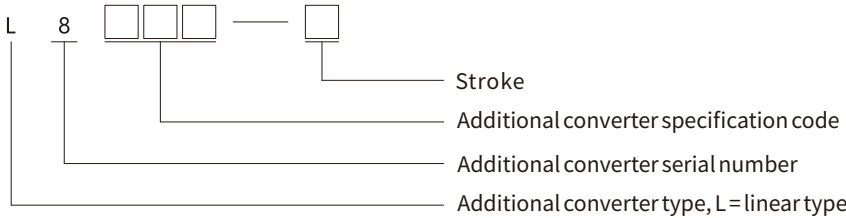
c) Boundary and mounting dimensions



Product model	B7030	B7035	B7040	B7050	B7060
Technical parameters					
Reduction gear ratio	4.1:1	4:1	5:1	5:1	5:1
Max. torque (N.m)	1600	4000	6000	8000	10000
Allowable maximum valve rod diameter	60	70	90	100	120
Reference weight (Kg)	50	95.5	160	190	288
Connecting dimensions					
Valve connecting flange No. Jb2920	5#	7#	8#	8#	9#
Valve connecting flange No. ISO5210	F25	F30	F35	F35	F40
Flange outer circle (D1)	300	350	415	415	475
Connecting hole center (D2)	254	298	356	356	406
Connecting hole (N-M)	8-M16-24	8-M20-30	8-M30-45	8-M30-45	8-M36-54
Male half coupling (D3)	200×5	230×5	260×5	260×5	300×8
Electric fitting connecting (d-b-L2)	40-12-60	40-12-65	45-14-65	45-14-65	50-14-70
Electric fitting connecting flange No. Jb2920	F14/F16	F16/F25	F16/F25	F25/F30	F25/F30
Dimension					
H2	85	105	120	145	165
H1	100	140	160	155	210
H	170	225	280	280	335
L	265	320	325	395	405

M series linear type

a) Description of model

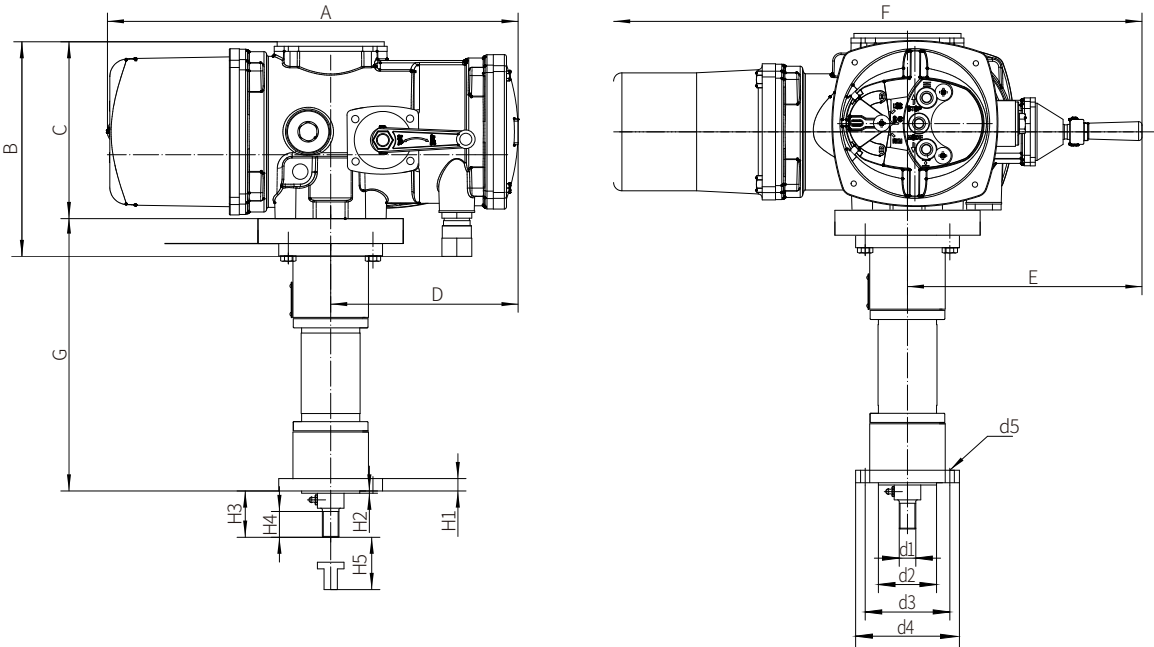


b) Linear electric actuator data

Actuator	Model	Output thrust (KN)	Speed (mm/s)	Stroke max (mm)	Valve flange
M8□10	L8210	8	2.9	50,100	F10
M8□20	L8220	16	2.9	50,100	F10
M8□20	L8230	25	3.5	63,125	F10
M8□30	L8240	40	4.1	60,100,160	F14
M8□40	L8250	100	4.7	80,120,200	F16
M8□50	L8250	120	4.7	80,120,200	F16



c) Linear electric actuator connecting dimension



Product model	L8210	L8220	L8230	L8240	L8250
Valve flange	F10	F10	F10	F14	F16
Actuator	M8□10	M8□20	M8□20	M8□30	M8□40
Actuator flange ISO5210	F10	F10	F10	F14	F16
Stroke H5	50/100	50/100	63/125	60/100/160	80/120/200
d1	M12x1.25	M16x1.5	M20x1.5	M36x3	M42x3
d2	70	70	70	100	130
d3	102	102	102	140	165
d4	125	125	125	175	205
d5	4xφ11	4xφ11	4xφ11	4xφ18	4xφ22
G	191/241	191/241	236/298	293/373/433	700/800
H1	16	16	15	18	25
H2	3	3	3	4	4
H3	44	49	58	78	79
H4	20	25	31	55	55
A	459	459	459	494	550
B	248	248	248	259	284
C	213	213	213	213	263
D	206	206	206	226	250
E	300	300	300	283	291
F	585	612	612	637	746

Mseries low-torque part-turn type



Main technical indicators

Input	4mA~20mAd.c current control / 24Vd.c passive (active) switching value control		
Optional	Infrared remote control / wireless remote control / PROFIBUS / FF / HART / MODBUS		
Output	Opening/closing over-torque alarm contact fully open fully closed position contact 4mA~20mAd.c valve position feedback signal		
Features	Displacement, velocity, torque electronic,digital accurate measurement speed		
Control module	Intelligent module		
Explosion-proof grade	Exdb II CT4 Gb 、 ExdII BT4 Gb		
Operating mode	S2-600/h、 S4-1200/h		
Return difference	±1%	IP grade	IP66、 IP67
Fundamental error	1%	Environment temperature	Normal temperature: -25℃~70℃ Low-temperature: -40℃~70℃ Ultralow temperature: -60℃~70℃
Dead zone	0.5%~5% adjustable		
Dampingcharacteristics	No shock	Relative humidity	< 95% (无冷凝)
Power supply	Domestic common power supply types:380Va.c. (340V~440V),50Hz/60Hz 3PH /220Va.c. (187V~242V),50Hz 1PH Foreign common power supply types:415V 60Hz/ 440V 60Hz/ 460V 60Hz DC power supply types:24Vd.c/12Vd.c		

Note: If the said technical specifications are not included, please contact our company for model selection.

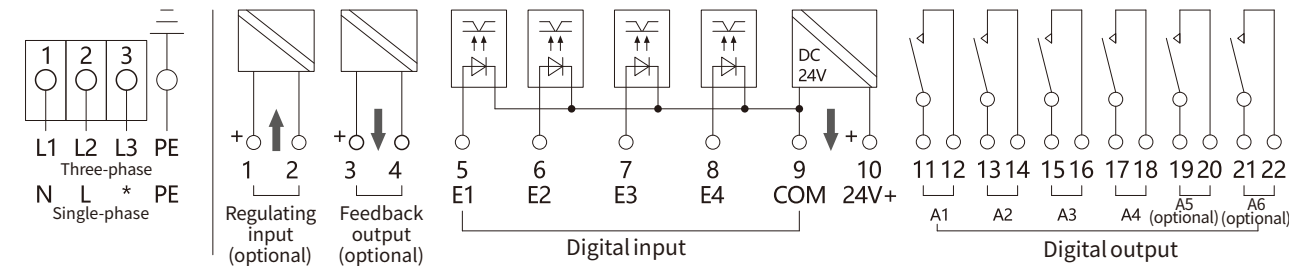
M series low-torque part-turn explosion-proof type

Product model	Supply voltage	Rated torque (N.m)	Stroke time (S/90°)	Connecting flange ISO5211	Maximum diameter of axle (mm)	Revolution of handwheel (N)	weight (Kg)
M0□11(d)	380V	100	28	F07/F10	φ22	11	22.5
M0□21(d)		200	28	F07/F10	φ22	11	22.5
M0□30(d)		300	34	F10/F12	φ35	14	32
M0□60(d)		600	34	F10/F12	φ35	14	33
M0□11(d)S	220V	85	28	F07/F10	φ22	11	22.5
M0□21(d)S		170	28	F07/F10	φ22	11	22.5
M0□30(d)S		255	34	F10/F12	φ35	14	32
M0□60(d)S		510	34	F10/F12	φ35	14	33

Notes: 1. “□” means one of 3 and 4; the above torque values are for reference only, and the selection of other torques is subject to the manufacturer's confirmation;
2. Two sizes of connection flanges are met at the same time.
3. The output torque decreased by 15% year-on-year when powered by 220Va. c.



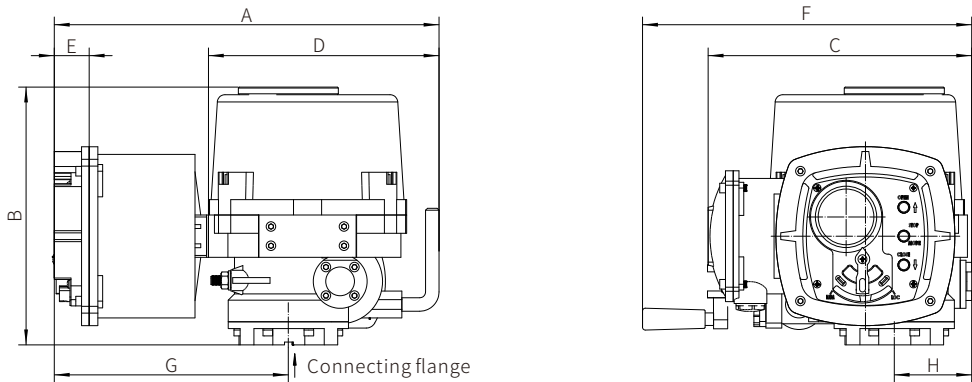
Wiring diagram of m series low-torque part-turn type



Wiring terminal No.	Purpose	Wiring terminal No.	Purpose
L1	Power supply A-phase (power supply zero line at 220V)	9	External +24Vd.c switching input public negative terminal
L2	Power supply B-phase (power supply live line at 220V)	10	+24Vd.c output
L3	Power supply C-phase	11	Comprehensive alarm output terminal 1
PE	Ground	12	Comprehensive alarm output terminal 2
1	Regulating signal input positive terminal	13	Remote/local instruction terminal 1
2	Regulating signal input negative terminal	14	Remote/local instruction terminal 2
3	Feedback signal output positive terminal	15	Valve fully-open output terminal 1
4	Feedback signal output negative terminal	16	Valve fully-open output terminal 2
5	Regulating signal/switch signal switching cooperating with terminal 10	17	Valve fully-close output terminal 1
6	Opening instruction cooperating with terminal 10	18	Valve fully-close output terminal 2
7	Closing instruction cooperating with terminal 10	19-20	It is optional according to user's needs
8	Stop	21-22	It is optional according to user's needs

M series low-torque part-turn explosion-proof type

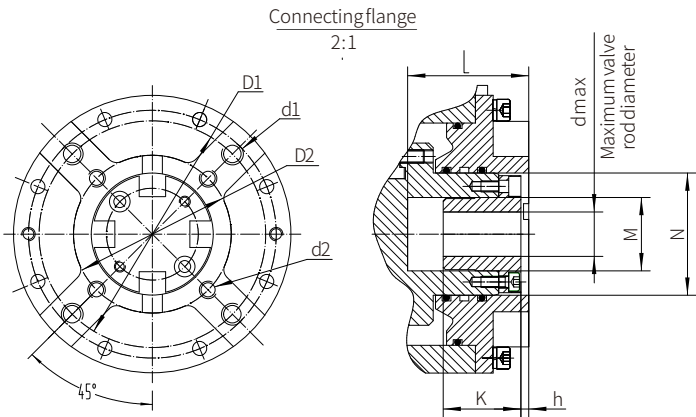
a) Boundary dimension



Product model	A	B	C	D	E	F	G	H
M0□11/ 21-d	400	269	320	235	36	365	255	82
M0□30/ 60-d	430	309	335	265	36	410	260	93

Note: "□" means one of 3 and 4.

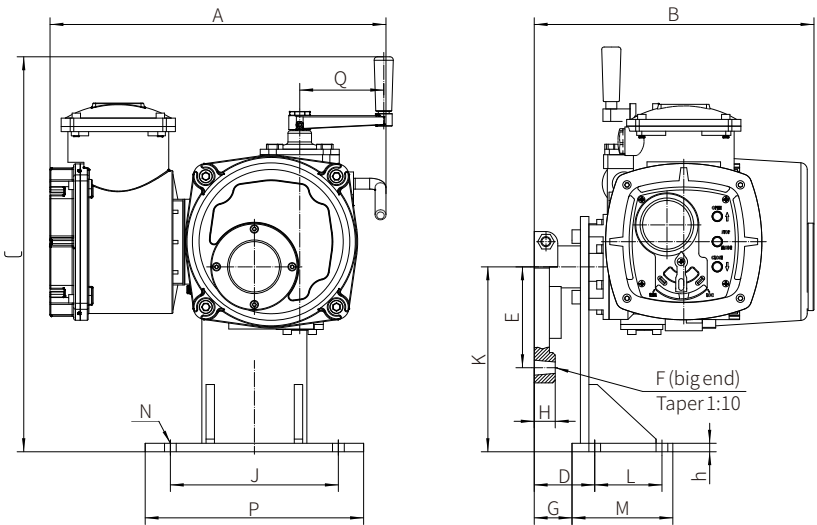
b) Dimension figure of connecting flange



Product model	D1	d1	D2	d2	K	L	M	N	h	dmax
M0□11(-d) M0□21(-d)	Φ102 (F10)	4XM10	Φ70 (F07)	4xM8	35	65	Φ33	Φ55	3.5	Φ22
M0□30(-d) M0□60(-d)	Φ125 (F12)	4XM12	Φ102 (F10)	4xM10	41	52	Φ48	Φ75	3.5	Φ36

Note: "□" means one of 3 and 4.

c) Base lever-type boundary and mounting dimensions



Product model	A	B	C	D	E	F	G	H	J	K	L	M	N	h	P	Q
M0□11(-d) M0□21(-d)	400	335	488	72	120	Φ18H7	45	20	200	220	80	120	4XΦ14	10	260	100
M0□30(-d) M0□60(-d)	430	375	505	82	150	Φ22H7	55	22	200	220	80	120	4XΦ14	10	260	100

Note: "□" means one of 3 and 4.

M series low-thrust type



Main technical indicators

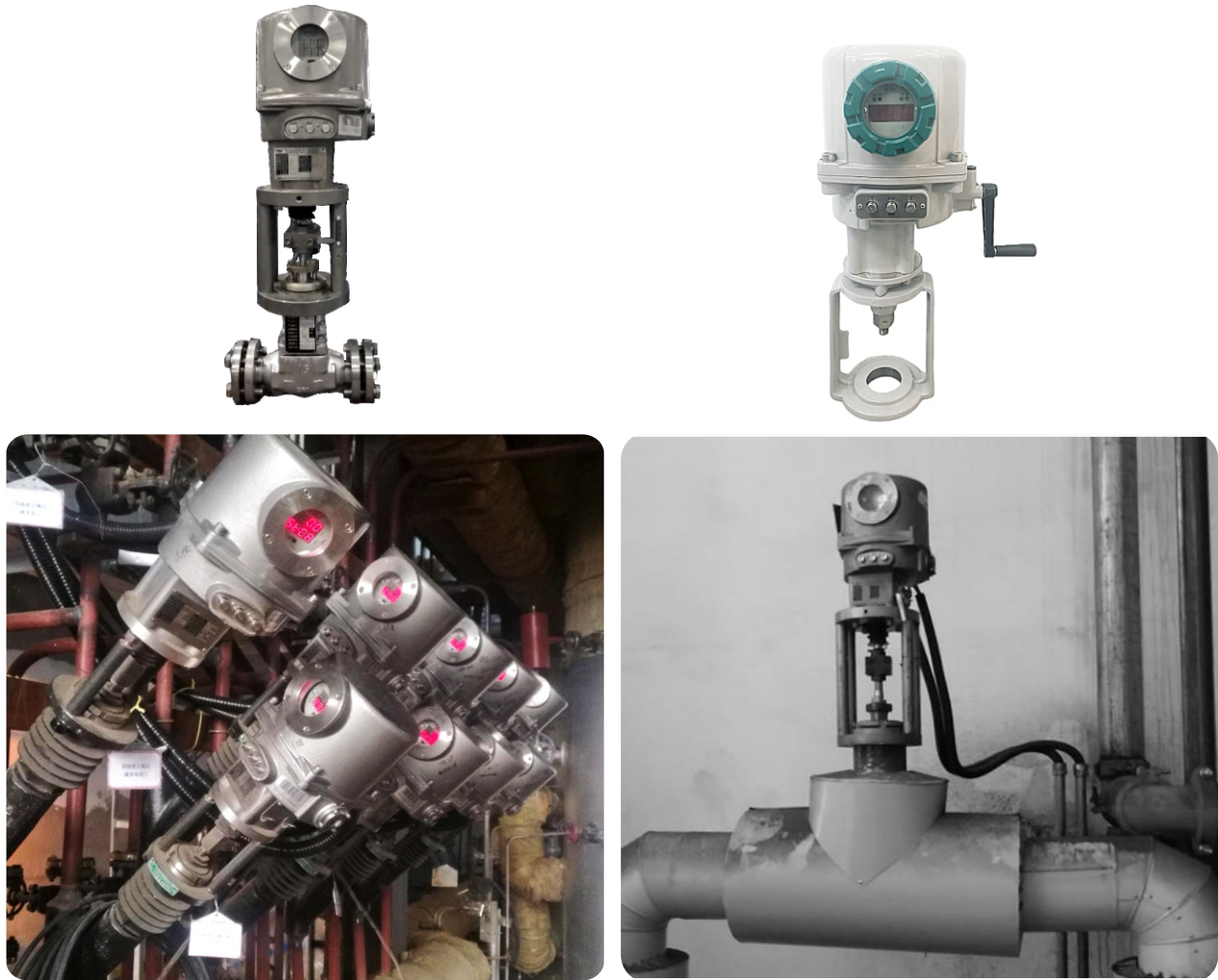
Input	4mA~20mAd.c current control / 24Vd.c passive (active) switching value control		
Optional	Infrared remote control / wireless remote control / PROFIBUS / FF / HART / MODBUS		
Output	Opening/closing over-torque alarm contact fully open fully closed position contact 4mA~20mAd.c valve position feedback signal		
Features	Displacement, velocity, digital accurate measurement speed		
Control module	Intelligent module		
Explosion-proof grade	ExdII BT4 Gb		
Operating mode	S2-600/h、S4-1200/h		
Return difference	±1%	IP grade	IP66、IP67
Fundamental error	1%	Environment temperature	Normal temperature: -25℃~70℃ Low-temperature: -40℃~70℃ Ultralow temperature: -60℃~70℃
Dead zone	0.5%~5% adjustable		
Dampingcharacteristics	No shock	Relative humidity	< 95% (无冷凝)
Power supply	Domestic common power supply types:380Va.c.(340V~440V),50Hz/60Hz 3PH /220Va.c.(187V~242V),50Hz 1PH Foreign common power supply types:415V 60Hz/ 440V 60Hz/ 460V 60Hz DC power supply types:24Vd.c/12Vd.c		

Note: If the said technical specifications are not included, please contact our company for model selection.

M series low-thrust linear type

Product model	Output thrust (KN)	Rated stroke (mm)	Output speed (mm/s)	Weight (Kg)
M1□03	3	10~60	0.5	13
M1□07	7	10~60	0.6	14
M1□10	10	10~60	0.6	15
M1□10	10	60~100	1.2	25
M1□20	20	10~100	0.6	25
M1□03d	3	10~60	0.5	17
M1□07d	7	10~60	0.6	18
M1□10d	10	10~60	0.6	18
M1□20d	20	10~100	0.6	25

Note: “□” means one of 3 and 4. The actuator mounting bracket is customized according to the actual size of the valve. The models not mentioned in the table are subject to the manufacturer's confirmation.



Wiring diagram of Mseries low-thrust type

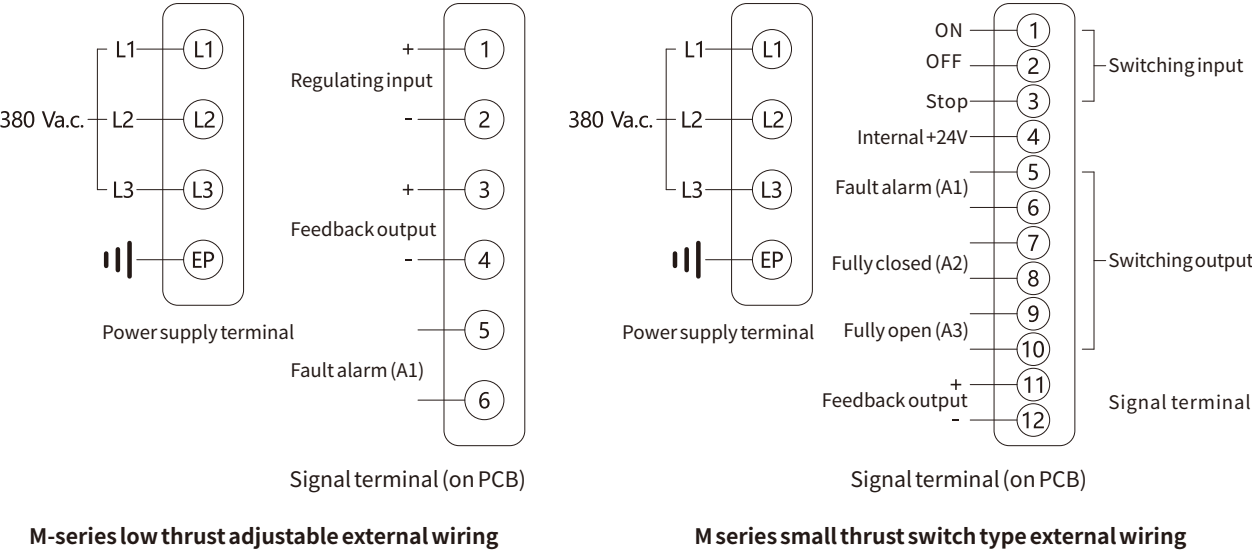
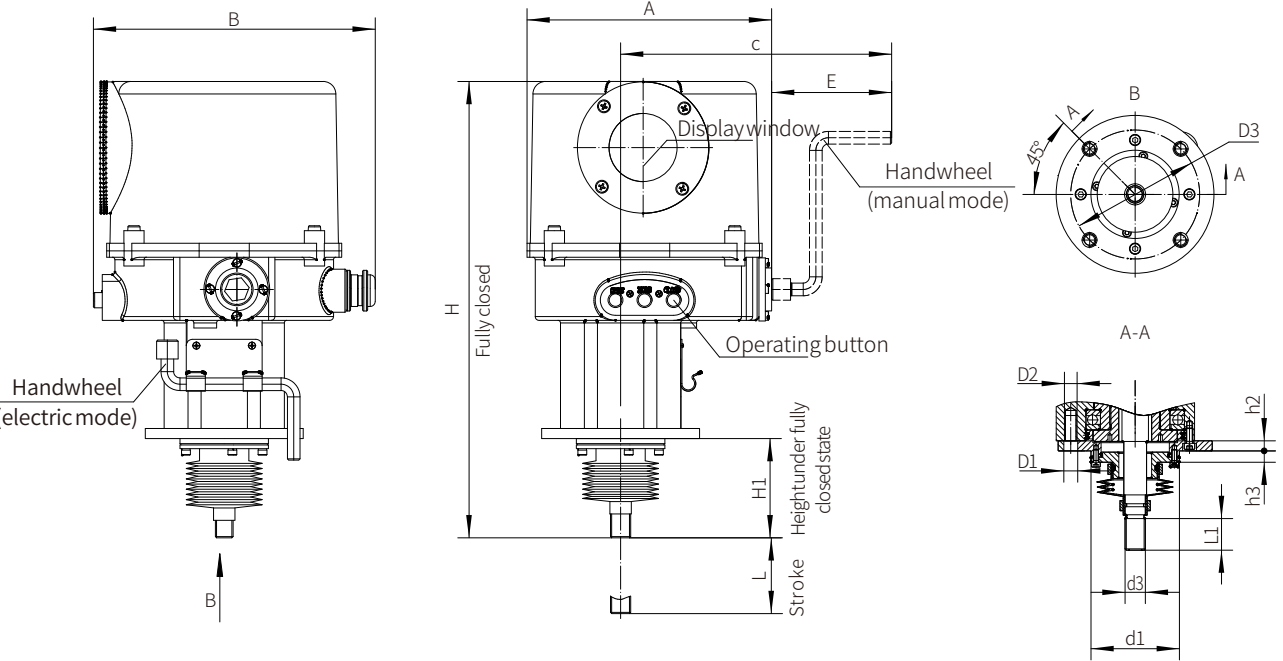


Figure of dimension and mounting size of M Series Low-thrust Electric Actuator



M-series explosion-proof small thrust electrical connection diagram

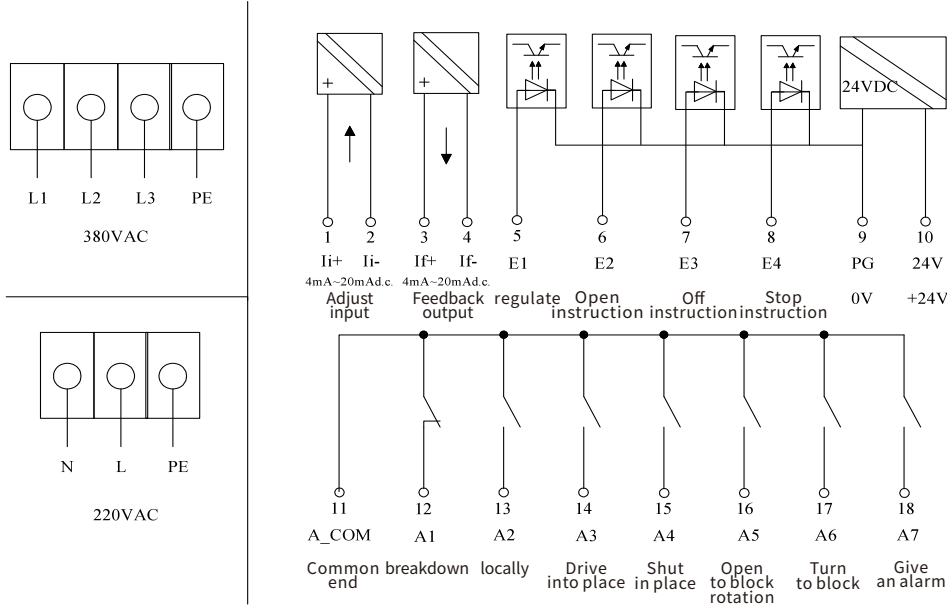
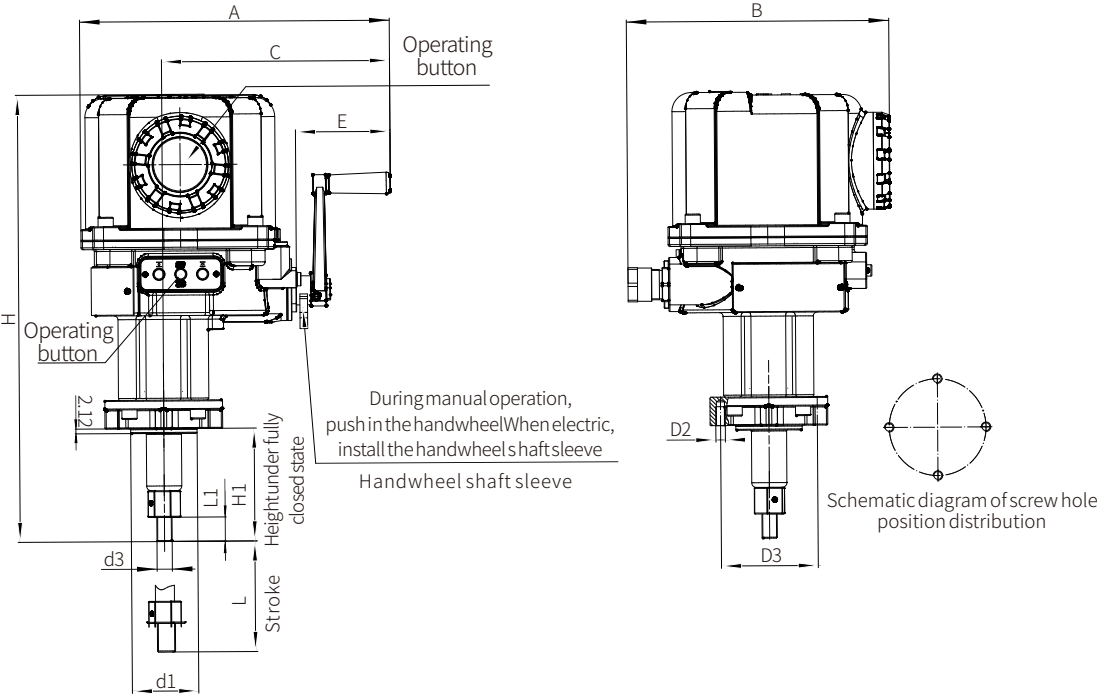


Figure of dimension and mounting size of M-series Explosion proof Small Thrust



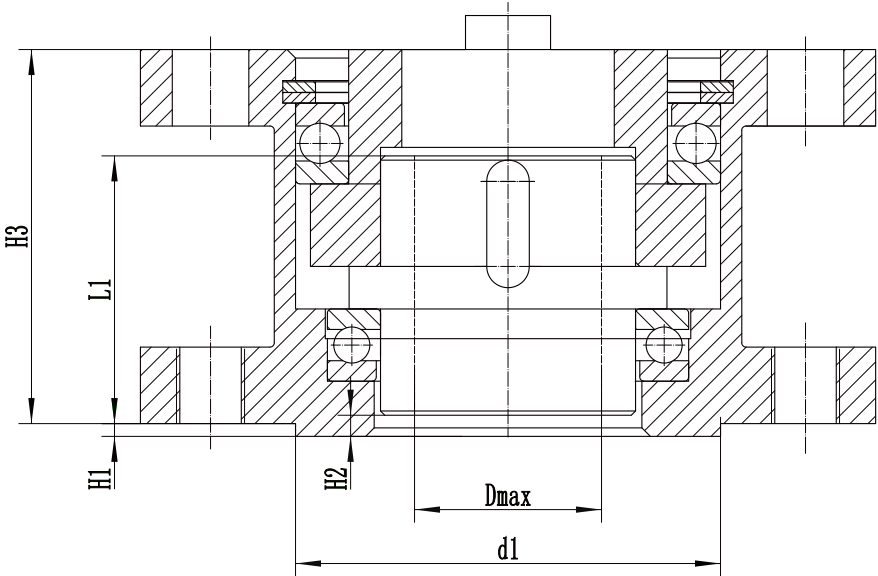
Technical references of M Series Low-thrust Linear Type

Product model	A	B	C	E	H	H1	h2	h3	D1	D2	D3(Φ)	d1(Φ)	d3	L1	L
M13(4)03(S)-□□	193.5	223	215	95	361	78.5	8	7	4×Φ12	4×M10	102	70	M16×1.5-6g	25	10~60 optional
M13(4)07(S)-□□	193.5	223	215	95	361	78.5	8	7	4×Φ12	4×M10	102	70	M16×1.5-6g	25	10~60 optional
M13(4)10(S)-□□	193.5	223	215	95	361	78.5	8	7	4×Φ12	4×M10	102	70	M16×1.5-6g	25	10~60 optional
M13(4)20(S)-□□	227	249	233	95	535	134.5	10	7	4×Φ12	4×M10	102	70	M20×1.5-6g	30	10~100 optional
M13(4)03d-□□	326.5	276.5	240.5	100	471	119	\	\	\	4×M10	102	70	M16×1.5-6g	25	10~60 optional
M13(4)07d-□□	326.5	276.5	240.5	100	471	119	\	\	\	4×M10	102	70	M16×1.5-6g	25	10~60 optional
M13(4)10d-□□	326.5	276.5	240.5	100	471	119	\	\	\	4×M10	102	70	M16×1.5-6g	25	10~100 optional
M13(4)20d-□□	397	302.5	293	131	626	180	\	\	\	4×M10	102	70	M20×1.5-6g	30	10~100 optional

Note: The mounting bracket is customized according to the actual size of the valve.
The models not mentioned in the table are subject to the manufacturer's confirmation.



Table of A-type flange specifications



Dimension diagram of A-type thrust flange

Product model	Flange No.	d1	Dmax	L1	h1	H2	H3
M8□10(d) / M8□20(d)	F10	70	26/38	50	3	5	56
M8□30(d)	F14	100	44/50	67	3	5	88
M8□40(d) / M8□50(d) M8□60(d)	F16	130	44/70	92	4	19	131
M8□50(d)+G7020	F25	200	70	112	4	18	131
	F30	230	70	112	4	18	131
M8□50(d)+G7050	F30	230	90	112	4	18	131
	F35	260	90	112	4	18	131

If the valve rod size exceeds the Dmax, please contact the manufacturer for confirmation.

