NUTORK®
Actuators & Valves

NTQ/SR Series Spring Return Electric Actuator

High performance and Reliability
Compliant with International Standards
Applicable to wide range of specifications and torque requirements
Compact Design reduces space requirements

Design

NTQ/SR series spring return electric actuator is designed for fail-safe positioning of valves or dampers upon loss of supply voltage. Mechanical spring return design is used to position controlled device to either fully open or fully closed position without any external power source.

Under normal power supply condition,actuator is launched by motor driven equipment and spring stores energy in the mean time.When emergency power off,spring releases the energy to drive the actuator and ensures the equipment and device return to safe position (full open or full close).The whole process is secure and stable to eliminate the burst pipes(hammer-blow effect).The mechanical part of spring return electric actuator includes driver unit, energy storage unit and energy locking unit. The three units constitute integrated transmission chain system by gear drive.

Besides, the optional manual override ensures operators manually rotate equipment or device to a proper position and get locked with lock-up button.Manual release is not required during electric control operation. It has been fully approved by practice the series features following advantages:

☆ High performance and reliability
☆ Fully compliant with the latest international standards and regulations
☆ More applicable to a wide range of specifications and higher cost performance
☆ Compact design is better suited for a variety of industrial applications

Structure

1.Product Construction
Compact design with small space occupation.

2.Security Maintenance
Long term failure-free operation without periodic maintenance.Spring effectively drives 90°full stroke. Emergency on/off type employs mechanical buffer without impacts on pipes.

3.Security Integrity Grade
Spring return electric actuator is in compliance with SIL2/SIL3 standard regulations and is maintenance.-free with anti-explosive application.

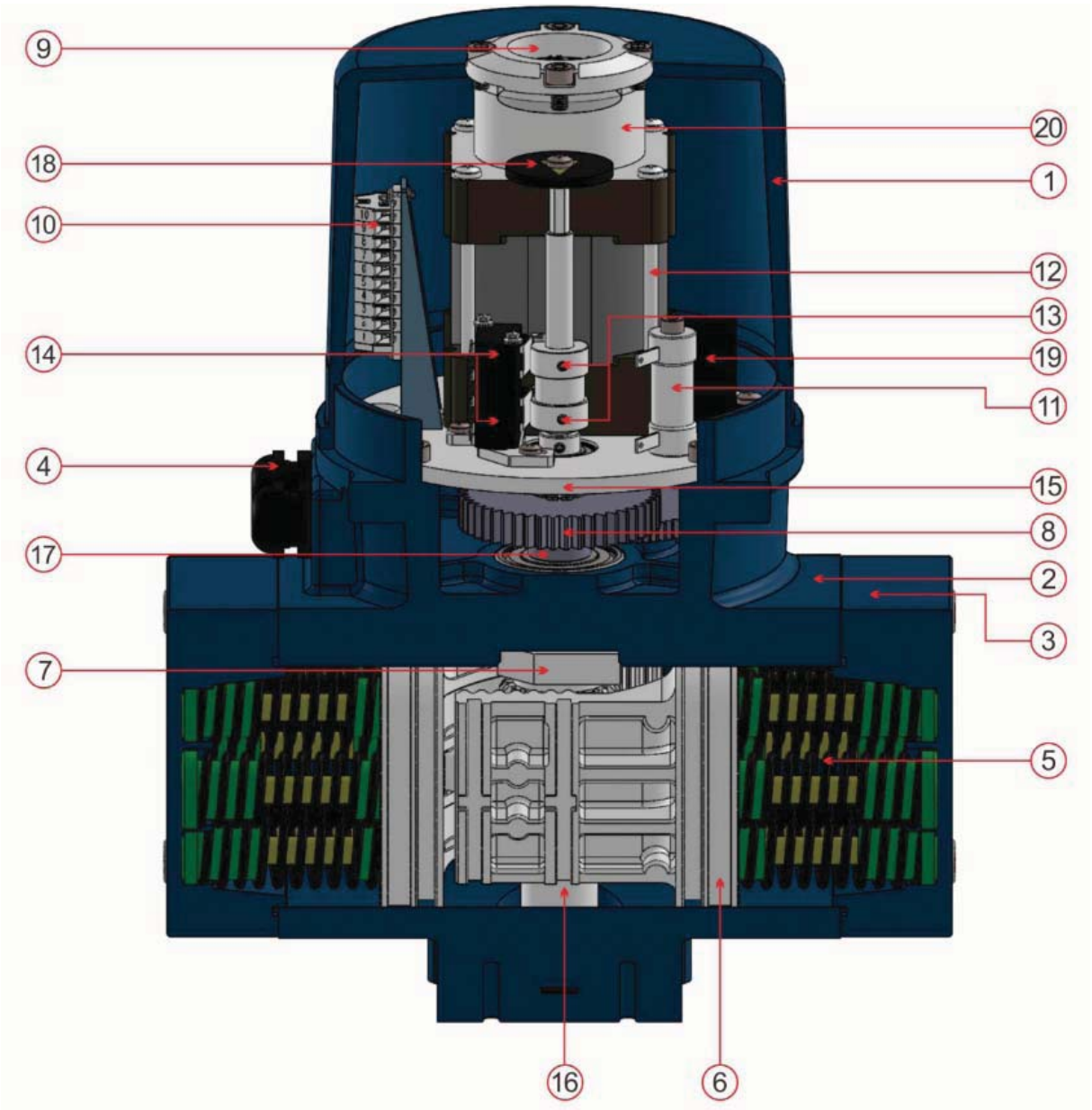
4.Security Operation
Under urgent condition,the product provides top security grade with mechanical solutions. Spring return electric actuator generates required torque through energy storage mechanism for returning to safe position without any assistance during the whole spring return operation process.

5.Position Detection
Strock limit switch is able to be set up simply and reliably. Three-dimensional indicator can be observed in multi angles.Optional with switching value and analog quantity control.

6.Replaceable Connection Part
Flange and drive sleeve of the actuator confirm to ISO5211 standard with a variety of design options for replacement with convenience and flexibility.

Quality Management

- NTQ/SR series spring return electric actuator production process is fully complaint to ISO9001.
- 100% of all units are factory tested and externally marked with dedicated serial number for traceability.
- 100% of all units are individually boxed with suitable cardboard carton for protection and appropriately labeled in detail for identification



Serial No.	Part Name	Material	Serial No.	Part Name	Material
1	Upper Cap	ADC12	**11**	Space Heater	Ceramic
2	Body	AL104	**12**	Electrical Motor	Integrated Set
3	Side Cap	ADC12	**13**	Adjustment Cam	ADC12
4	Connection Lock	Nylon	**14**	Micro switch	Integrated Assembly
5	Safety Spring	Spring Steel	**15**	Mounting Retaining Plate	Q235
6	Piston	ADC12	**16**	output Shaft	45# Steel
7	Spacing Block	45# Steel	**17**	Locating Bearing	Bearing Steel
8	Driving Gear	40CR	**18**	Position Indicator	Nylon
9	Display Window	Tempered Glass	**19**	Capacitor	Composite Material
10	Wiring Terminal	Flame-retarded Nylon	**20**	Brake	Integrated Set

1.Body:
Material:aluminium alloy coated with polyester powder.ISO12944-6 C3 corrosion-proof grade, CSA test,NEMA 4X/5 outdoor application and

IP67 protection grade test.

2.Convex Position Indicator:
Continuous mechanical position indicator is available on the top of the body as to all the models for the convenient understandings of actuator working condition.

3.Lubrication
◆ All the gearing sets have been factory lubricated
◆Additional lubrication oil is unnecessary to be added during identified service life.

4.Starting Frequency:
50% starting frequency (as per IEC standard)

5.Certifications:
CE/CSA/RoHS/REACH

6.Working Condition:
◆Working Temperature:-13℉～149℉
◆ Humidity(77℉):95%

7.Safety Integrity Grade:
SIL2

8.Conduit Entry:
Standard:2×M20*1.5
Optional:2×3/4"NPT、2×1/2"NPT

9.Heater:
◆The heater can keep the temperature at a proper level to avoid freezing lubrication oil caused by low temperature and keep the interior actuator dry to eliminate product failure caused by invaded moisture.
◆Heater is not recommended if the working temperature is above 35℃C(95d℉).
◆A temperature control switch of 25℃±5℃ (77±9d℉)in front of heater is recommended in case of huge temperature variation between day and night as well as summer and winter so to let the heater function properly.

10.Temperature control switch:
Temperature control switch for the heater immediately cut off the circuit to halt heating process when the interior temperature of the actuator exceeds25℃±5℃(77±9d℉)

11.Supporting Micro switch:
The series is standard with full open/full close micro switch(LS1&LS2)and additional two supporting micro switches(LS3&LS4) can be added to feedback passive contact.

12.Proportional Control:
During proportional control process,the flow is effectively controlled and output to valve position and then to central control room by valve open/close position control through analog signal.

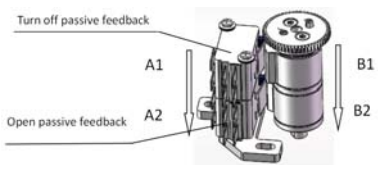
13.Variable Resistor:
Apply to on/ff type or three-point floating type actuator.Resistance value of 1K ohm or 5K ohm are selectable to provide output signal to position indicator.

14.Analog Signal Output Panel:
◆Designed for three-point floating type actuator
◆Output signal:0-20mA/4-20mA /0-5V/0-10V/ 1-5V/2-10V

15. Floating Control:
●The actuator is available to be controlled to open,close or stop at any intermediate positions between 0°and 90° via external signal.
◆In the case of failed power, the actuator is available to operate clockwise or counter- clockwise to the end position and then stop via spring drive.

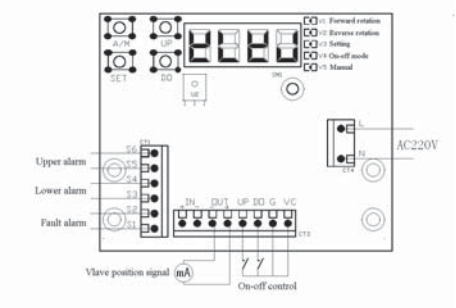
16.Operating Direction:
The actuator rotation direction is not changable as it has been set by factory. Customer need to clarify in PO about the operating direction,clockwise or counter- clockwise.
◆Standard:the spring is released in power failure condition and drive output shaft rotate clockwise.
◆Optional the spring is released in power failure condition and drive output shaft rotate counter-clockwise.

Potentiometer 1K
Resistance Output



Cam B1 (screw with upper word) is closed control, closed feedback cam B2 (screw with lower word) is open control, open feedback

On/Off Type Passive Contact

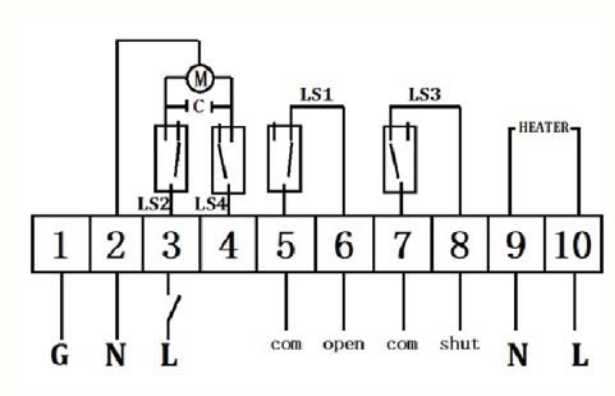


Analog Quantity Control Panel

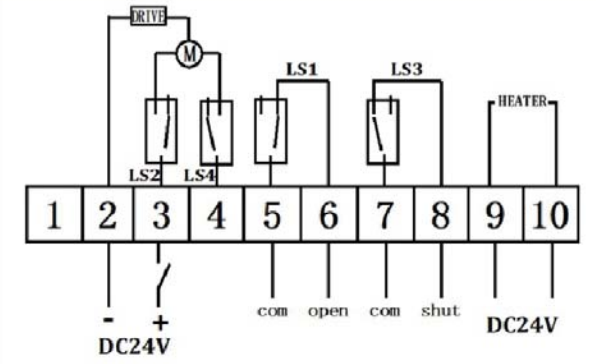
Electrical Information

Model	Torque		Spring Torque at 90" （Nm）	Spring Torque at 0" （Nm）	Electrical Torque at 90" （Nm）	Electrical Torque at 0"(Nm)	Electric Current	
	Nm	In.ibs					DC24V	AC110V 50/60HZ
NTQ/SR-1	20	177	31.4	20	75	75	1.8A	0.9A
NTQ/SR-2	38	336	62.5	38	110	110	2.5A	1.2A
NTQ/SR-3	55	487	92	55	180	180	3.5A	1.6A
NTQ/SR-3	70	620	110	70	220	220	5A	1.8A
NTQ/SR-4	140	1239	220.2	140	400	400	8.5A	4.2A
NTQ/SR-4	210	1859	293.6	210	600	600	9.5A	4.5A
NTQ/SR-5	300	2655	527	300	920	920	21A	5.5A

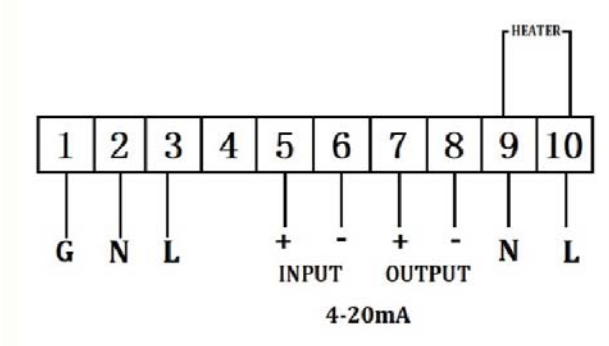
Wiring Diagram



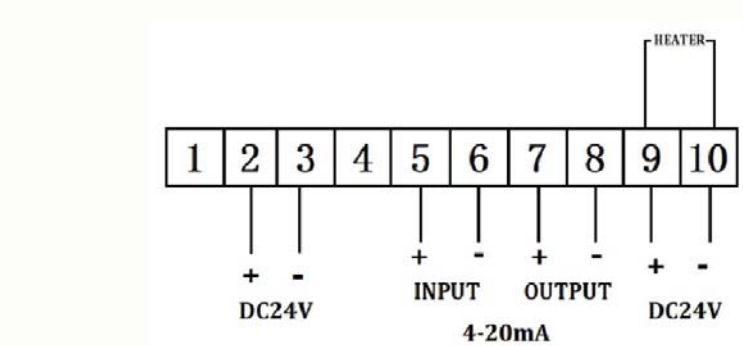
Single-phase AC120V/AC220V On/Off Type



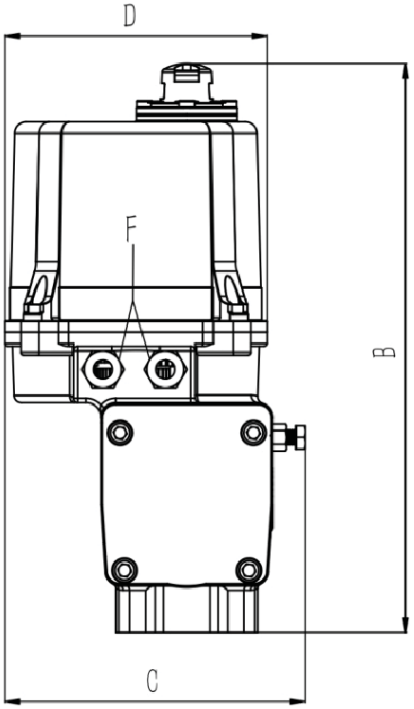
DC24V On/Off Type

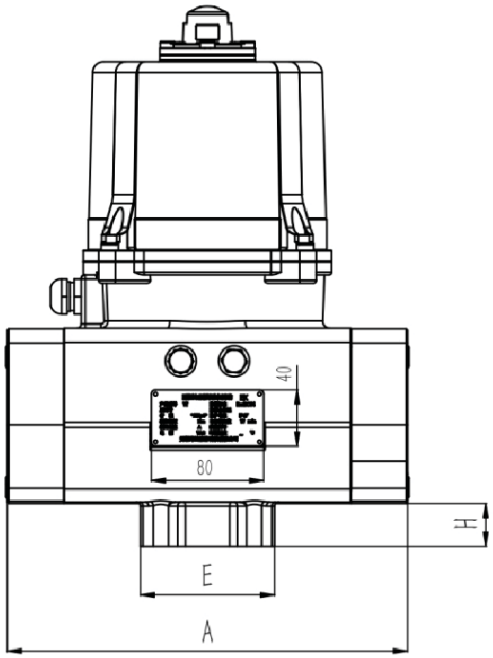


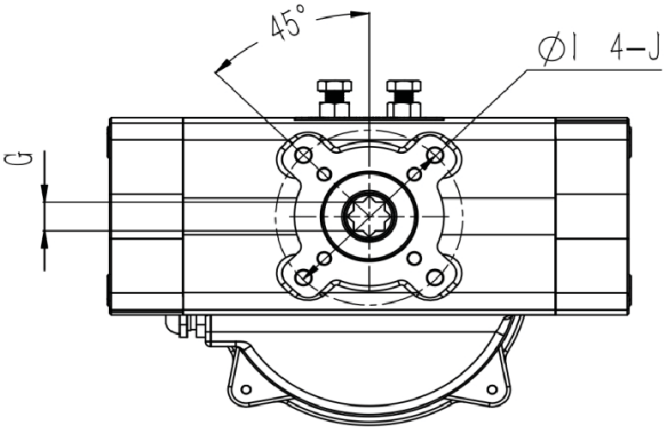
Single-phase AC120V/AC220V Modulating Type



DC24V Modulating Type







Model	Unit	A	B	C	D	E	F	G	H	ΦI	J
NTQ/SR-1	In	7.44	9.06	4.92	4.65	2.95	NPT1/2	0.55	0.63	F03	#10-24UNCx0.39
NTQ/SR-2		9.02	11.93	6.38	5.71	2.95	NPT1/2	0.55	0.67	F05/F07	1/4-20UNCx0.59
											5/16-18UNCx0.59
NTQ/SR-3		10.47	14.96	7.83	6.97	3.78	NPT1/2	0.67	0.75	F07/F10	5/16-18UNCx0.59
											3/8-16UNCx0.79
NTQ/SR-4		14.84	17.17	9.45	8.11	4.72	NPT1/2	0.87	0.98	F10	3/8-16UNCx0.79
NTQ/SR-5		15.98	21.06	11.02	10.24	4.72	NPT1/2	1.06	1.18	F10/F12	3/8-16UNCx0.79
											1/2-13UNCx0.79

Model	NTQ/SR-1	NTQ/SR-2	NTQ/SR-3		NTQ/SR-4		NTQ/SR-5
Torque	177in.Lbs	336in.Lbs	487in.Lbs	620in.Lbs	1239in.Lbs	1859in.Lbs	2655in.Lbs
	20Nm	38Nm	55Nm	70Nm	140Nm	210Nm	300Nm
Power(W)	10W	18W	40W	60W	90W	120W	200W
Voltage (DC/AC)	120VAC/220VAC、24VDC						
Frequency (Hz)	50/60						
Operation Mode	S2-20Min						
Start Time(S)	12	8	8	8	10	12	12
Spring Return Time(S)	5	3	3	3	5	5	5
Spring Circle Life (Times)	100000	100000	100000	100000	100000	100000	100000
Ambient Temperature	·-13℉~149℉						
Ambient Humidity(77℉)	95%						
Protection Class	NEMA4X & IP67						
Manual Override	Optional with open,need to be customized						
Manual Override Method	Operation under power off (system power supply interrupted)						
Power Loss Return Direction	Close(or open)						
Half Stop	Electromagnetic brake control						
Cable Entry	2*NPT1/2						
Lubrication	Grease						
Limit Method	Electronic control: electronic limit						
	Spring return at power failure: mechanical limit						
On-Off Type Signal	Passive feedback,two-wire/three-wire						
Mechanical Stopper	Full close/open mechanical stopper						
Anti-explosion Class	Ex db IIB T4 Gb (For Canada) Class I, Zone 1, AEx db IIB T4 Gb (For US) Ex tb IIIC T130˚C Db (For Canada) Zone 21, AEx tb IIIC T130˚C Db (For US) Class I, Division 1, Groups C, D T4 / Class II, Division 1, Groups E, F, G T130°C						
Color	Available for customization as per customer requirement						

Cautions

1.Electric actuator should not be installed inversely.

2.Prior to wiring,please make sure voltage is correct first.

3.Power should be turned off prior to wiring or troubleshooting to avoid damage.

4.Please ensure outlet hole and upper cover locked to prevent dust and rain drop from entering.

5.Please ensure water-proof sealing parts are installed correctly prior to locking the upper cover to prevent dust and rain drop from entering.

6.Please be careful with the direction of the actuator outlet hole to avoid dust and rain drop infiltration.

7.Please separately wire actuator but not connect parallelly when two or more actuators are co-installed.

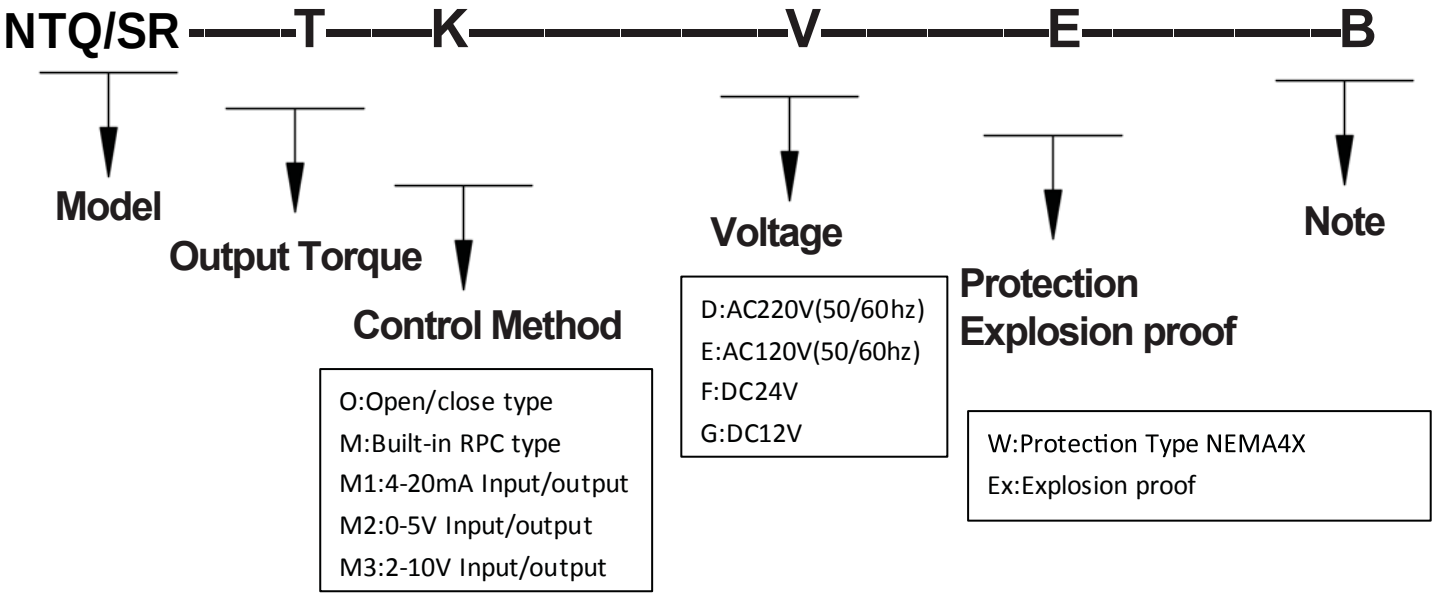
8.Each actuator contains ground wire connector which should be connected.

9.Non-explosive proof product should not be installed in hazardous area（explosive gas,etc.）and completely vacuum environment.

10.Interval time between each switch operation should exceeds 5mins to avoid shut motor caused by overheating.

11.Please don't let metal tools or hands touch any of the components on the PCB plate to avoid affected product function caused by electrostatic interference.

Order Information



⚠ Notice

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