

## NTM Series

MULTI-TURN ELECTRIC ACTUATOR

The max. output torque:400,000Nm(with gearboxes)



## 1. Body & Cover:

The housings of all NTM series of actuators are high grade aluminum alloy which are robust and light weight and epoxy-polyurethane coated as the standard on the outside. With rugged design construction, there are two types of enclosure: watertight (IP68 according to EN60529. The permissible immersion height of 15M head of water for 72 hours results) and flame proof enclosure (ExdIICT4)

Classified in corrosively categories C5-I and C5-M, NTM series multi-turn actuators and gearboxes meet the highest requirements and defined in EN ISO12944-2.

## 2. Motor

Available in 1 phase and 3 phase. All motors are custom built suited for valve automation (high torque, low current and low inertia). The thermostatic protection is ensured by the thermostat resistor inside the motor, which prevents the motor from its overheat (up to 135 °C).

## 3. Side-Mounted Handwheel & Manual Override Push-Button Design

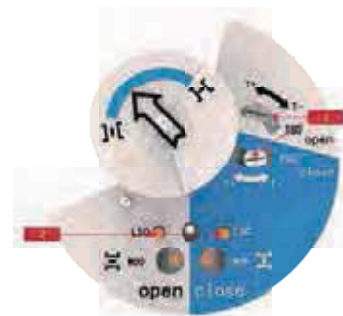
Handwheel drive can be activated when the manual override push-button is locked into the manual operation (push down), handwheel drive is independent of the motor drive thus it provides safe operation. The manual override push-button can be push down and locked regardless of the motor status (whether motor is running or not), this design makes possible an easy, high efficient and safe aerial work done.

## 4. Cable Entries:

2xNPT 3/4" as the standard, 1xNPT 3/4" as spare. The other various type are available.



**Intelligent type LCD display with local control unit**



**Basic type (on/off control only) torque switch & travel switch is adjustable by screw driver**



**Planetary Gear Operator**

### 5.Double-Sealed Structure:

NTM series of actuators have double-sealed water-tight metallic enclosure to IP68 standards(15 meters 72 hours).Explosion-proof BT4 and CT4 are optional. The terminal compartment are entirely separated.The internal electric control parts can be waterproof and dustproof even when the terminal compartment cover is removed for site wiring.

### 6.High-Definition LCD Display:

NUTORK NTM series of actuators incorporate a unique high-definition LCD. Large display window with backlight enables users to see valve position, torque and functional status at a long distance.

### 7.Non-Intrusive Local Control Switches:

non-intrusive hall switch(open/close/stop) and lockable operation selector(local/stop/remote) switches that do not penetrate the control cover. This ensures isolation of the internal circuits and enhances the actuator protection from the environment.

### 8.Worm Gear System:

The NTM series of mechanical worm gear system provides a necessary self-locking effect which prevents displacement of valve position when an external force acts upon the closing element.

### 9.Mounting Base:

All thrust(ISO5210) and non-thrust type(ISO5211 or MSS SP102) bases can be separated for easy installation. Meanwhile the actuator is still protected by the remaining bottom cover. If the actuator should be removed for maintenance purpose, the valve position can be maintained by leaving the base on the valve where the bottom cover still protects the actuator during maintenance.

### Basic Type



### ◇Description:

NUTORK NTM series of electric multi-turn actuators is specially designed for all multi-turn valve applications (linear motion valves), such as globe valve, gate valve, diaphragm valve and etc. Moreover, by attaching a worm-gearbox, it can also be used for a large sized quarter turn valve applications, such as butterfly valve, ball valve and plug valve.

### Smart & Intelligent Type



### ◇Wide application range of torque output

NTM series electric actuator provides wide range of torque output to meet specific customer's torque requirements. Direct torque outputs range is from 40Nm to 800Nm. When combined with a worm gearbox, the max. torque output up to 400,000Nm can be achieved.

### ◇High enclosure protection

The housings of all NTM series of actuators are high grade aluminum alloy which are robust and light weight, and epoxy-polyurethane coated as the standard on the outside. With rugged design construction, there are two types of enclosure: watertight(IP68 according to EN60529. The permissible immersion height of 15M head of water for 72 hours results) and flame proof enclosure (ExdIICT4).

### External Control Unit



Classified in corrosively categories C5-I and C5-M, NTM series multi-turn actuators and gearboxes meet the highest requirements and defined in EN ISO12944-2.

### ◇User friendly controls and indications

For setting NTM series actuator, there is no need to remove the cover(non-intrusive setting). All settings can be done via either local control switches or infrared wireless communicator. The simple user interface supports English and Chinese languages.

## Standard Specification:

Torque	50-3000Nm(direct output)	
Speed(RPM)	18/24/36/48/72/96/144	
Voltage	3 phase: 380VAC(±10%), 3 phase/4 wire	
	1 phase: 220VAC(±10%)	
	The other voltages are available on requested	
Noise degree	Less than 75dB within 1 meter	
Vibration resistance	Comply with JB/T8219	
Temperature	-30°C ~ +70°C	
Manual Operation	Side Mounted Declutchable Manual Override	
Enclosure	Standard	Waterproof enclosure IP67
	WTA	Option:Waterproof enclosure (IP68, 10M/72hours)
	EXD	Option:Explosion-proof enclosure EExdIICT6
Coating	Epoxy polyurethane coating	
Mounting	JB2920 (standard)	
	Optional: T type (thrust type) or Z type (rotary type) ISO5210 standard	
Cable Entry	2xNPT3/4"(standard, can upgrade to 2xNPT1")	
	Optional: 3xNPT3/4"(standard, can upgrade to 3xNPT1")	

## Basic Type Specification(on/off type only):

Motor	Class F, with thermal protector up to 135°C	
Duty Cycle (on/off)	S2: 25%~15min.	
On/Off Type	Control signal	4 switches, built-in contact with 16A@250VAC as standard(Option: 8 switches)
	Feedback signal	Dry contact for fully open / fully close Dry contact for open torque switch / close torque switch Position feedback potentiometer(Option)
Position Display	Mechanical Indicator	
The Other Function	1. Heater (anti-humidity resistor)	
	2. Over-torque	
	3. Motor over-heating (setting at 135°C)	

Note:The input/output signal, please refer wiring diagram

## Intelligent Type Specification(on/off & modulating type):

Motor	Class F, with thermal protector up to 135°C	
Duty Cycle (on/off)	S2: 25%~15min.	
Duty Cycle (modulating)	S4: 30%~1200 Start/Hour	
On/Off Type	Control signal	6 switches, dry contact with 16A@250VAC, exchange between inching and keep
	Feedback signal	6 x relay contacts (5 x status relay + 1 x fault relay) 1 x analogue feedback: 4-20mA, output impedance 750 Option: 0-10V, 2-10V
Modulating Type	Control signal	6 switches, dry contact with 16A@250VAC, analogue signal: 4-20mA Input impedance 100 , Option:0-10V, 2-10V
	Feedback signal	1 x analogue feedback: 4-20mA, output impedance 750 , Option:0-10V, 2-10V
	Dead Zone	0.3 ~ 9.9% adjust within full stroke
Position Display	LCD display with open/close/remote/fault LED	
Local Control Switches	Non-intrusive hall switch (open/close/stop) and lockable operation selector (local/stop/remote) switches	
The Othe Function(as standard):		
◇Automatic phase correction and adjustment (3ph only)      ◇Space heater(anti-humidity resistor)		
◇Over torque protection      ◇Intelligent Aalarm      ◇Motor over-heating(setting at 135°C)		
◇ESD can be setted at open/close/last position      ◇Auto inspetion      ◇Phase lost protection		
◇Intelligent protection during valve jams      ◇Instantaneous reversal protection		
◇Better record:user can observe actuator production date/code, recent commands/error, max. open&close torque, contactor operation times ---etc.		
The Othe Function(as optional):		
◇Infrared Controller      ◇Modbus      ◇Profibus      ◇External Control Unit		
◇Watertight enclosure(IP68,10M@72hrs)      ◇Fire proofing actuator up to 1050±5°C/50min.		

Note:The input/output signal, please refer wiring diagram

## Performance Data

3 phase 380VAC/50Hz,on/off & modulating type  
(available for starting frequency < 600 times/hours)

Actuator				Motor		
Series	Model	RPM	Torque	Rated Power KW	Rated Current A	Stall Current A
		r/min	N.m			
NTM10	NTM10-18	18	100	0.42	2.60	5.46
	NTM10-24	24	100			
	NTM10-36	36	90	0.5	2.88	5.92
	NTM10-48	48	80			
	NTM10-72	72	70	0.71	3.25	6.83
	NTM10-96	96	50			
NTM10-144	144	40				
NTM15	NTM15-18	18	150	0.5	3.00	5.80
	NTM15-24	24	150			
	NTM15-36	36	130	0.84	3.20	6.72
	NTM15-48	48	120			
	NTM15-72	72	100	0.84	3.50	7.35
	NTM15-96	96	75			
NTM15-144	144	60				
NTM20	NTM20-18	18	200	0.89	4.82	14.47
	NTM20-24	24	200			
	NTM20-36	36	190	1.49	4.99	14.98
	NTM20-48	48	180			
	NTM20-72	72	170	2.14	6.20	18.60
	NTM20-96	96	150			
NTM20-144	144	100				
NTM30	NTM30-18	18	300	0.89	4.82	14.47
	NTM30-24	24	300			
	NTM30-36	36	280	1.49	4.99	14.98
	NTM30-48	48	250			
	NTM30-72	72	200	2.14	6.20	18.60
	NTM30-96	96	170			
NTM30-144	144	120				
NTM40	NTM40-18	18	400	1.49	4.99	14.98
	NTM40-24	24	400			
	NTM40-36	36	350	1.78	5.17	15.50
	NTM40-48	48	300			
	NTM40-72	72	250	2.68	7.58	22.73
	NTM40-96	96	230			
NTM40-144	144	150				
NTM50	NTM50-18	18	500	2.30	9.64	27.00
	NTM50-24	24	500			
	NTM50-36	36	450	2.85	9.82	27.49
	NTM50-48	48	400			
	NTM50-72	72	350	3.35	12.40	34.72
	NTM50-96	96	300			
NTM50-144	144	200				
NTM60	NTM60-18	18	600	2.85	9.82	27.49
	NTM60-24	24	600			
	NTM60-36	36	550	3.25	10.68	29.90
	NTM60-48	48	500			
	NTM60-72	72	450	4.77	13.78	38.58
	NTM60-96	96	400			
NTM60-144	144	260				
NTM90	NTM90-18	18	900	3.25	12.18	26.80
	NTM90-24	24	900			
	NTM90-36	36	800	3.50	13.12	28.86
	NTM90-48	48	730			
	NTM90-72	72	630	5.50	20.62	45.36
	NTM90-96	96	550			
NTM90-144	144	420				

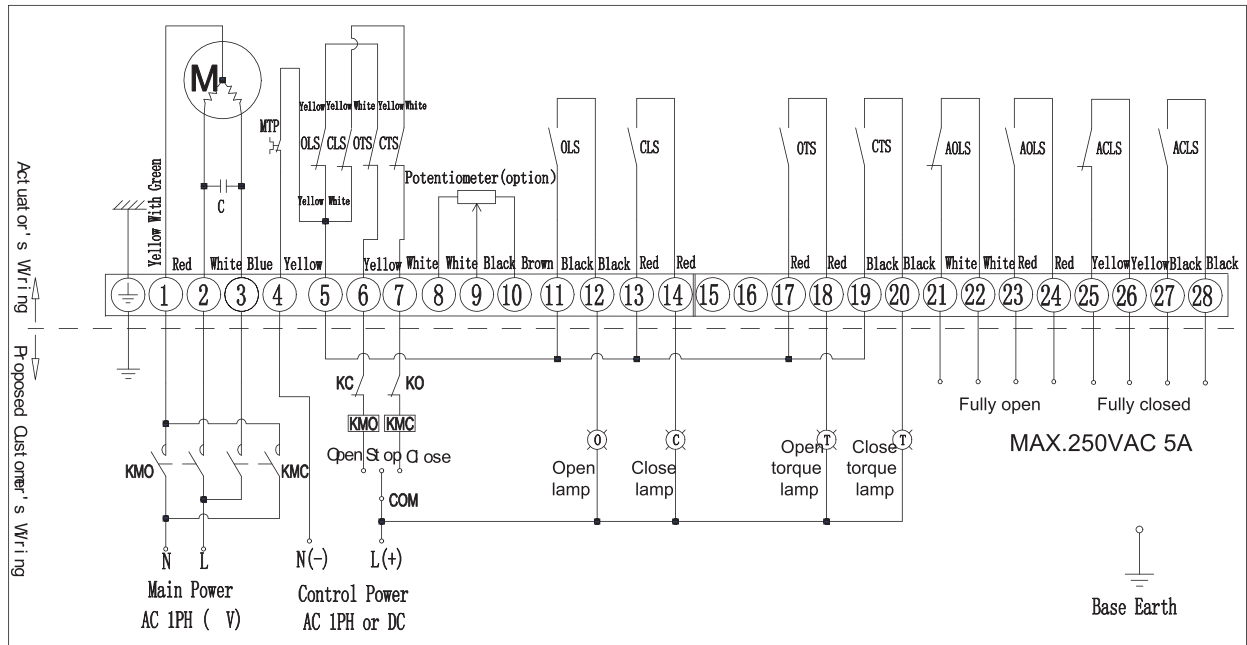
3 phase 380VAC/50Hz,on/off & modulating type  
(available for starting frequency < 600 times/hours)

Actuator				Motor		
Series	Model	RPM	Torque	Rated Power KW	Rated Current A	Stall Current A
		r/min	N.m			
NTM100	NTM100-18	18	1000	3.89	11.37	88.0
	NTM100-24	24	1000			
	NTM100-36	36	850	4.50	13.78	88.0
	NTM100-48	48	700			
	NTM100-72	72	650	6.91	24.11	90.0
	NTM100-96	96	530			
NTM100-144	144	380				
NTM150	NTM150-18	18	1500	5.89	17.22	90.0
	NTM150-24	24	1500			
	NTM150-36	36	1300	7.77	22.73	90.93
	NTM150-48	48	1000			
	NTM150-72	72	900	9.42	27.56	99.2
	NTM150-96	96	750			
NTM150-144	144	650				
NTM200	NTM200-18	18	2000	7.77	22.73	90.93
	NTM200-24	24	2000			
	NTM200-36	36	1700	8.90	29.28	105.4
	NTM200-48	48	1400			
	NTM200-72	72	1200	12.57	37.89	136.4
	NTM200-96	96	1000			
NTM200-144	144	850				
NTM300	NTM300-18	18	3000	9.42	29.28	105.4
	NTM300-24	24	3000			
	NTM300-36	36	2000	10.47	30.31	109.12
	NTM300-48	48	1800			
	NTM300-72	72	1600	16.75	48.22	173.6
	NTM300-96	96	1450			
NTM300-144	144	1350				

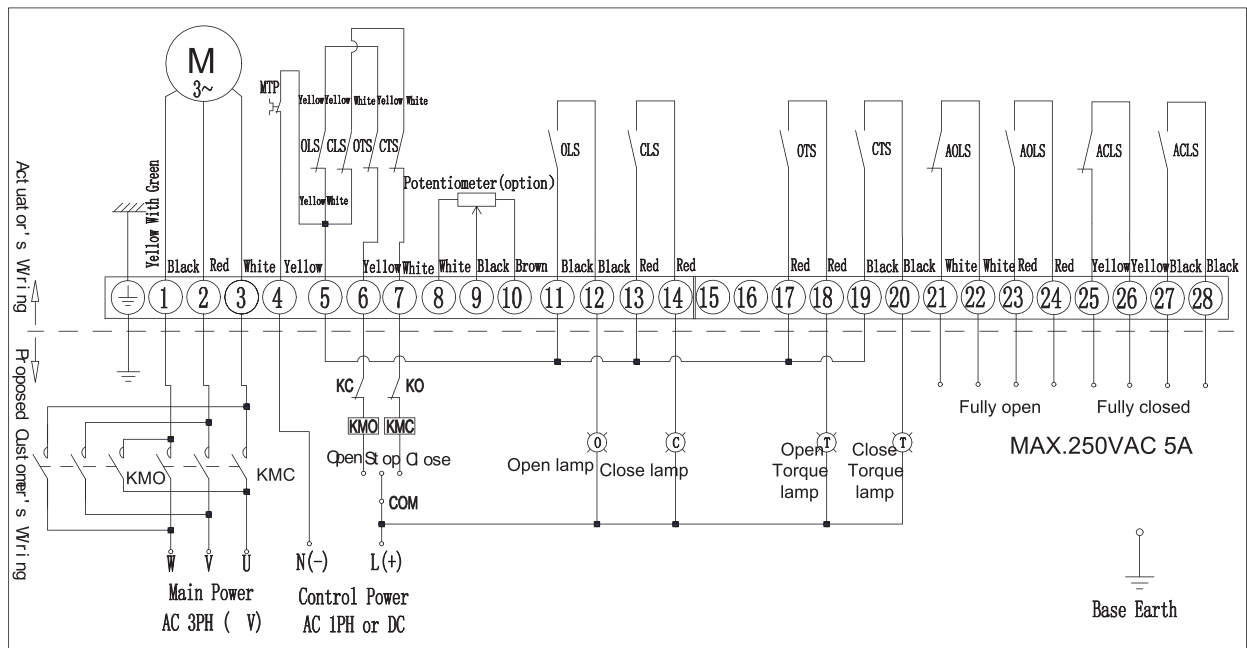
1 phase 220VAC/50Hz,on/off type

Actuator					Motor		
Series	Model	RPM	On/off Type	Modulating Type	Rated Power KW	Rated Current A	Stall Current A
		r/min	Torque(Nm)				
NTM10	NTM10-18	18	88	70	0.35	3.16	6.55
	NTM10-24	24	88	70			
	NTM10-36	36	60	48	0.40	3.56	7.12
	NTM10-48	48	45	35			
	NTM10-72	72	30	24	0.45	4.12	8.15
	NTM10-96	96	22	18			
NTM10-144	144	15	12				
NTM40	NTM40-18	18	190	150	0.48	5.35	10.71
	NTM40-24	24	190	150			
	NTM40-36	36	125	100	0.60	5.9	11.9
	NTM40-48	48	95	75			
	NTM40-72	72	65	50	0.60	6.5	13.09
	NTM40-96	96	48	40			
NTM40-144	144	32	25				
NTM60	NTM60-18	18	440	350	0.81	14.28	28.56
	NTM60-24	24	440	350			
	NTM60-36	36	300	235	1.10	14.87	29.75
	NTM60-48	48	220	175			
	NTM60-72	72	150	118	1.10	15.47	30.94
	NTM60-96	96	110	90			
NTM60-144	144	75	60				

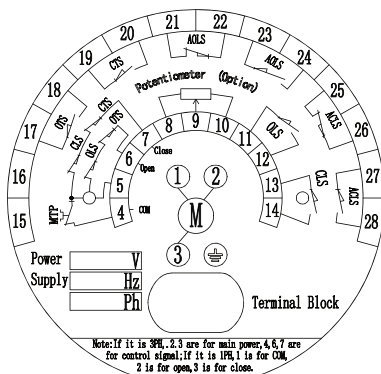
## Wiring Diagram of Basic Type(1PH/220VAC/50Hz),On/Off Type



## Wiring Diagram of Basic Type(3PH/380VAC/50Hz),On/Off Type



## Terminal Block Chart

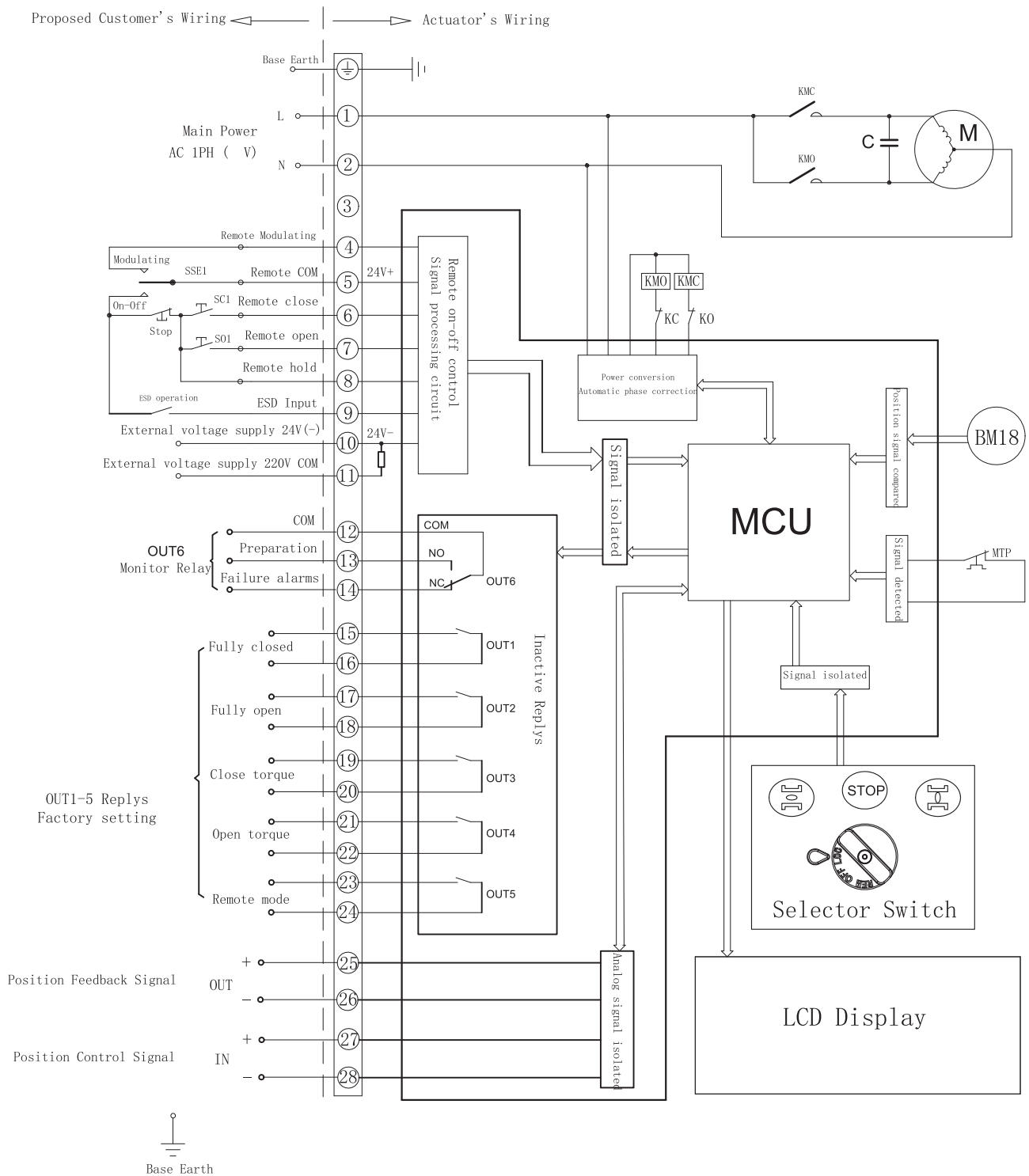


Note:

- (1) If it is 3PH, 2,3 are for main power supply, 4,6,7 are for control signal;
- (2) If it is 1PH, 1 is for COM, 2 is for open, 3 is for close.

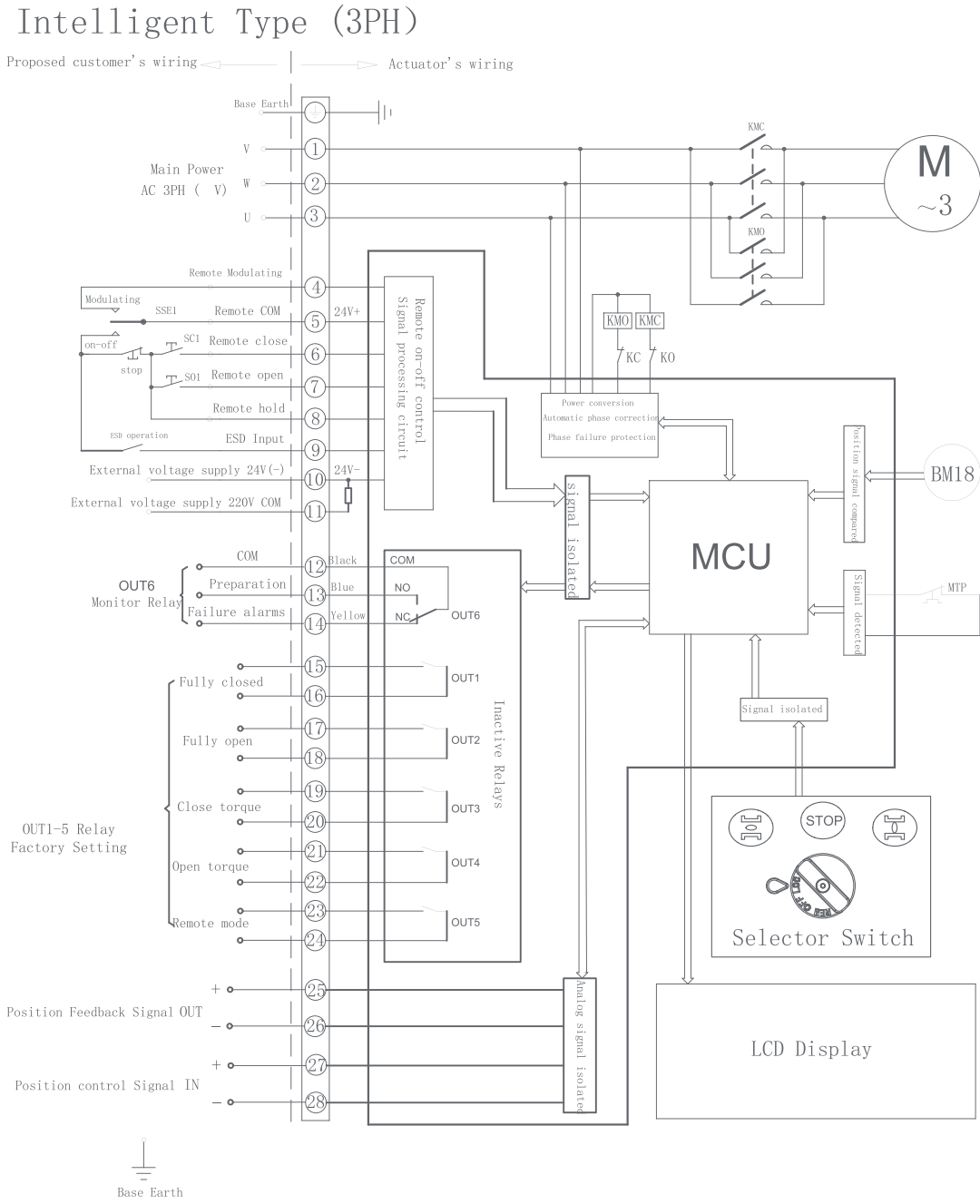
## Wiring Diagram of Intelligent Type(On/Off Type & Modulating Type) (1PH/220VAC/50Hz)

### Intelligent type (1PH)

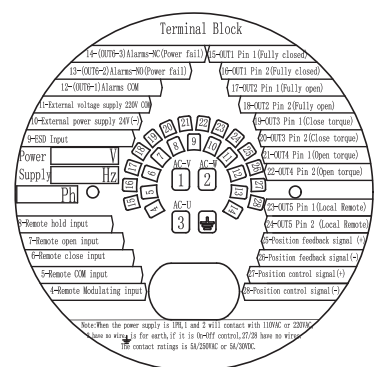




## Wiring Diagram of Intelligent Type(On/Off Type & Modulating Type) (3PH/380VAC/50Hz)



### Terminal Block Chart



## The different wiring table for on/off & modulating control

### Remote On-Off (Manual) Control

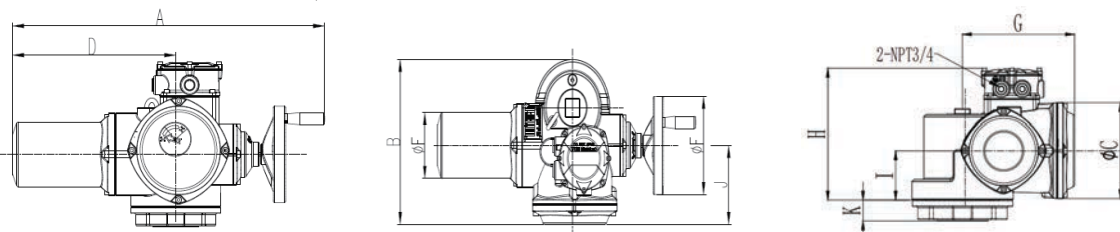
Remote On-Off (Manual) Control (Note: terminal 4 has no wire.)

Dry contact control					
	Inching open/close control	Maintain open/close control, possible to retrograde the travel, but impossible to stop at intermediate position	Maintain open/close/stop control	Two-wire control, close first	Two-wire control, open first
	DC24V external voltage supply				
Inching open/close control		Maintain open/close control, possible to retrograde the travel, but impossible to stop at intermediate position	Maintain open/close/stop control	Two-wire control, close first. (Default value: Disable)	Two-wire control, open first. (Default value: Disable)
AC220V external voltage supply					
	Inching open/close control	Maintain open/close control, possible to retrograde the travel, but impossible to stop at intermediate position	Maintain open/close/stop control	Two-wire control, close first. (Default value: Disable)	Two-wire control, open first. (Default value: Disable)
	ESD Control				
Dry contact		DC24V External voltage supply		AC220V External voltage supply	

### Remote Modulating (Auto) Control

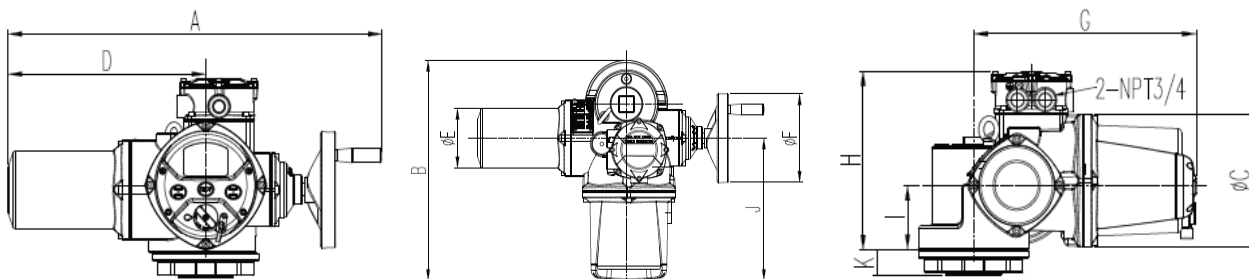
Remote Modulating control	Switch remote On-Off and remote modulating	Switch remote On-Off and remote modulating	Switch remote On-Off and remote modulating
	DC24V Internal voltage supply	DC24V External voltage supply	AC220V External voltage supply

Outline Dimension Table (Basic Type)



Model	A	B	ΦC	D	ΦE	Φf	G	H	I	J	K		Weight (kg)
											Z type flange	T type flange	
NTM10	569	294	222	293	105	125	219	262	81	160	0	60	26
NTM15	569	294	222	293	105	125	219	262	81	160	0	60	26
NTM20	682	332	222	360	135	200	394	300	108	160	41	60	42
NTM30	682	332	222	360	135	200	394	300	108	160	41	60	42
NTM40	682	332	222	360	135	200	394	300	108	160	41	60	42
NTM50	732	387	222	404	155	200	404	300	108	165	41	62	56
NTM60	732	387	222	404	155	200	404	300	108	165	41	62	56
NTM90	732	387	222	404	155	200	404	300	108	165	41	62	56
NTM100	855	445	222	512	226	247	287	304	115	165	0	125	165
NTM150	855	445	222	512	226	247	287	304	115	165	0	125	165
NTM200	855	445	222	512	226	247	287	304	115	165	0	125	165
NTM300	855	445	222	512	226	247	287	304	115	165	0	125	165

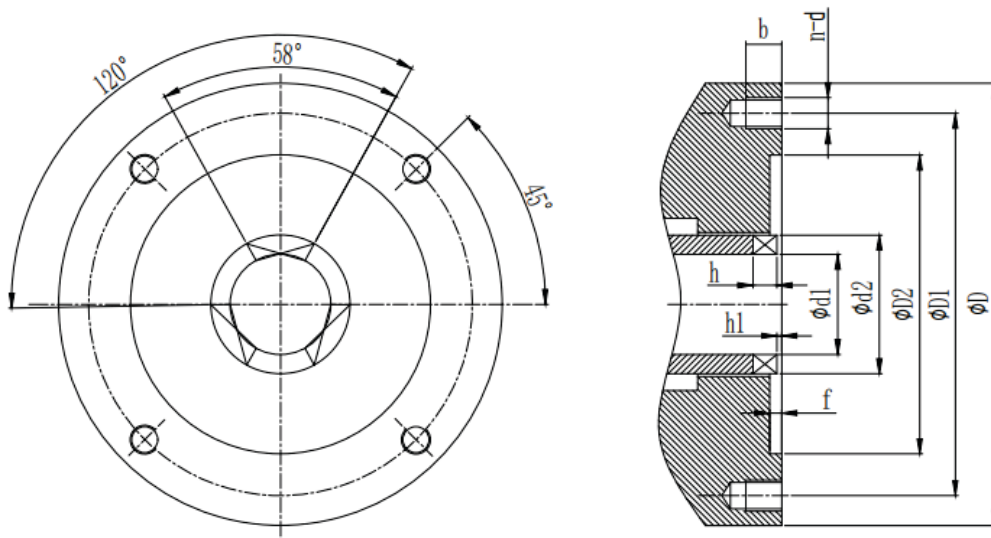
Outline Dimension Table (Intelligent Type)



Model	A	B	ΦC	D	ΦE	Φf	G	H	I	J	K		Weight (kg)
											Z type flange	T type flange	
NTM10	569	452	222	293	105	125	378	262	81	318	0	60	26
NTM15	569	452	222	293	105	125	378	262	81	318	0	60	26
NTM20	682	490	222	360	135	200	394	300	108	317	41	60	42
NTM30	682	490	222	360	135	200	394	300	108	317	41	60	42
NTM40	682	490	222	360	135	200	394	300	108	317	41	60	42
NTM50	732	545	222	404	155	200	410	300	114	333	41	62	56
NTM60	732	545	222	404	155	200	410	300	114	333	41	62	56
NTM90	732	545	222	404	155	200	410	300	114	333	41	62	56
NTM100	853	602	222	519	226	247	445	300	114	323	0	125	165
NTM150	853	602	222	519	226	247	445	300	114	323	0	125	165
NTM200	853	602	222	519	226	247	445	300	114	323	0	125	165
NTM300	853	602	222	519	226	247	445	300	114	323	0	125	165

## Bottom connection dimension

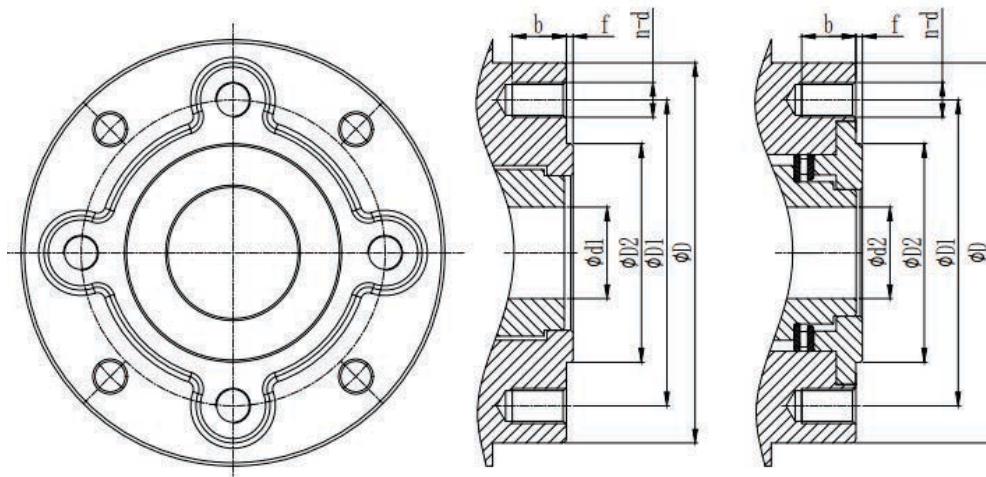
Y: Three jaw coupling - rotary type (JB 2920 standard)



Product No.:	Base No.	ϕD	ϕD1	ϕD2	ϕd1	ϕd2	f	h	h1	n-d	b
NTM-10	JB2	145	120	90	30	45	5	8	2	4-M10	15
NTM-20/30/40	JB3	185	160	125	43	58	5	10	2	4-M12	15
MTM-50/60/90	JB4	225	195	150	50	72	5	12	2	4-M16	30
NTM-100/150	JB7	338	254	215	82	108	5	16	2	8-M16	25
NTM-200/300	JB7	338	298	215	82	108	5	16	2	8-M20	30

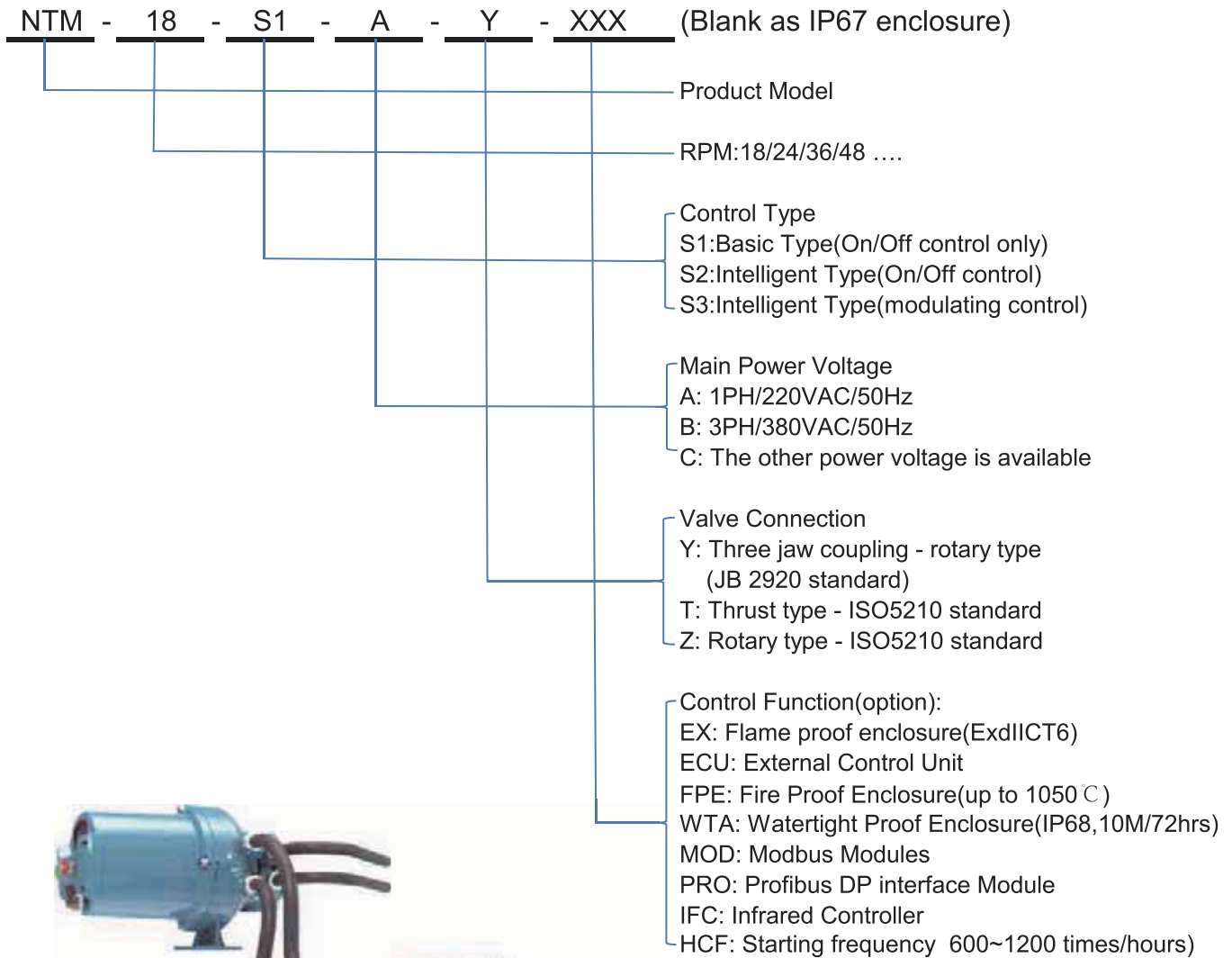
T: Thrust type/Z: Rotary Type - ISO5210 standard

Type Z (Bore and keyway) Type T (Thrust)

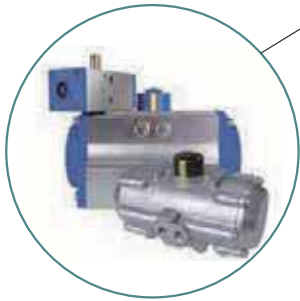


Product No.:	PCD	ϕD	ϕD1	ϕD2	ϕd1(max.)	ϕd2(max.)	f	n-d	b
NTM-10	F10	138	102	-	22	Tr26	-	4-M10	15
NTM-20/30/40	F14	175	140	100	48	Tr48	4	4-M16	24
MTM-50/60/90	F16	205	165	130	62	Tr62	5	4-M20	30
NTM-100/150	F25	338	254	-	62	Tr80	-	8-M16	25
NTM-200/300	F30	338	298	-	62	Tr80	-	8-M20	30

## Ordering Information<sub>(NTM Series multi-turn electric actuator)</sub>



**NUTORK CORP.** manufactures a wide range of pneumatic actuators, electric actuators and the accessories of pneumatic actuator (limit switchbox, solenoid valve, manual override ---etc.) for quarter turn valves



Rack & Pinion Type Pneumatic Actuator.  
**(Certificated by CE-ATEX/SIL3)**  
**Max. Output Torque: 9340Nm**



Scotch Yoke Type Pneumatic & Hydraulic Actuator.  
**(Certificated by CE-ATEX/SIL3)**  
**Max. Output Torque 293800Nm**



NTQ Series Electric Actuator  
IP67/IP68(30M@24hrs)Enclosure & EExdIIBT6  
**Max. Output Torque 6000Nm**  
Approved by SIL3/IP68/MD/LVD/EMC.



NTE Series Electric Actuator  
IP67/IP68(30M@24hrs)  
Enclosure  
**Max. Output Torque 6000Nm**  
Approved by SIL3/IP68/MD/LVD/EMC.



Limit Switchbox IP67/IP68(50M@72hrs)  
Enclosure & EExdIIBT6/EExdIICT6



Solenoid Valve 3/2NC & 5/2 Way, Static O-ring Sealing Design.  
Aluminum & 316SS Body  
**IP67 & EExdIIBT6/EExdIICT6**



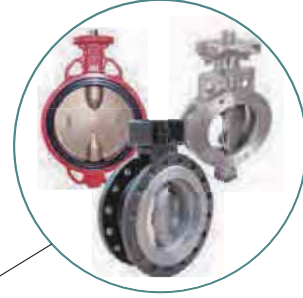
Air Filter Regulator Aluminum Body with Vinyl Paint & 316SS Body.  
**Size: 1/4" ~ 1"**



Manual Override Aluminum & Cast Iron & Ductile Iron Body  
**Max Output Torque 70000Nm**



Ball valve (Floating ball design),  
We can provide different pressure rating/ connection type/ operation mode.



Concentric Soft Seated Butterfly Valve  
High Performance Double Eccentric Butterfly Valve  
High Performance Triple Offset Metal Seated Butterfly Valve  
We can provide different pressure rating/ connection type/ operation mode.