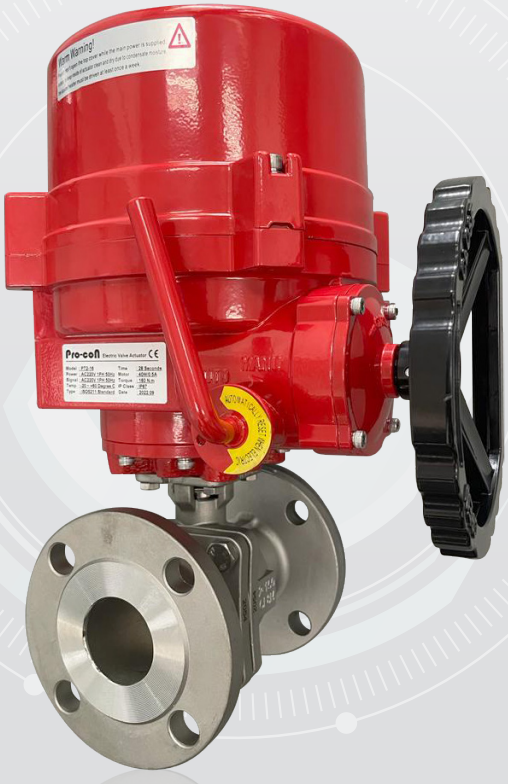
Wisco

WISCO Electric Actuator
PT Series Part Turn
Electric Actuator



FROM AN INDUSTRY LEADER IN INNOVATION COMES
A WHOLE NEW CLASS OF QUARTER TURN ELECTRIC ACTUATORS

PT Series Advantages And Features

Handwheel
- Manual override and handwheel for emergency manual operation.

Mounting base
- Flange according to ISO5211 standard with removable bushing.

Multi-Enclosure
- Flange according to ISO5211 standard with removable bushing.

Excellent enclosure
- Better enclosure due to less interfaces.

Control types and structure
- On-off and Modulating
- Options available for local controller providing easy operation in field such as intelligent and battery packup

Removable motor
- Easy to maintain as the removable squirrel caged induction motor.

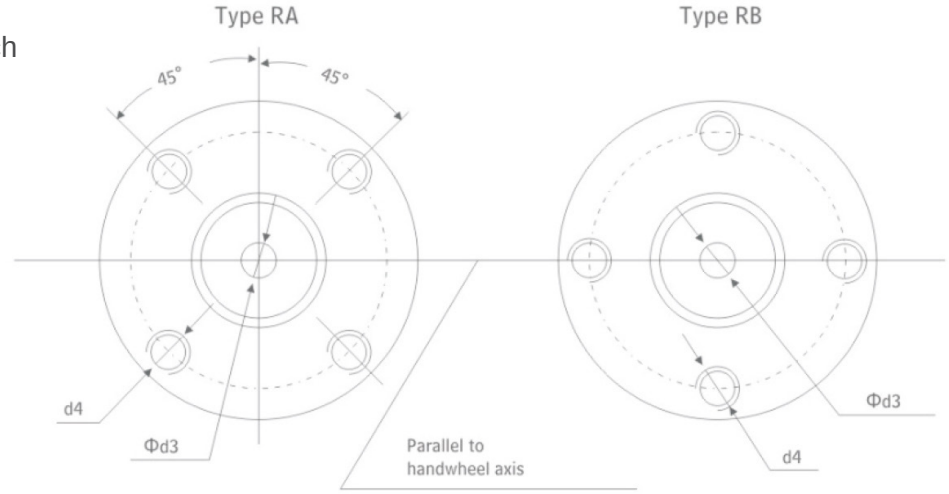
Terminal block
- Spring loaded push type terminal block for tight wiring connection under severe vibration.
- Enough number of terminal strips for customer’s convenience Double wormgear
- With a low noise and self-locking to keep position of valve unchanged against reverse torque from valve.

Space heater
- Anti-condensation due to the temperature difference

Torque switch
- Auxiliary limit switch and torque switch to protect actuator from damage caused by overload.

Mechanical position indicator
- Check the position of your valve at a glance, dome indicator option.

1. Indicator
2. Motor
3. Travel switch and signal switch
4. Water-resistance interface
5. Double wormgear
6. Handwheel
7. Torque Train
8. Manual Override
9. Mounting base
10. Status/Failure Lamp
11. Integral Control Unit
12. Mode selector Switch
13. LCD Display
14. Command Selector Switch



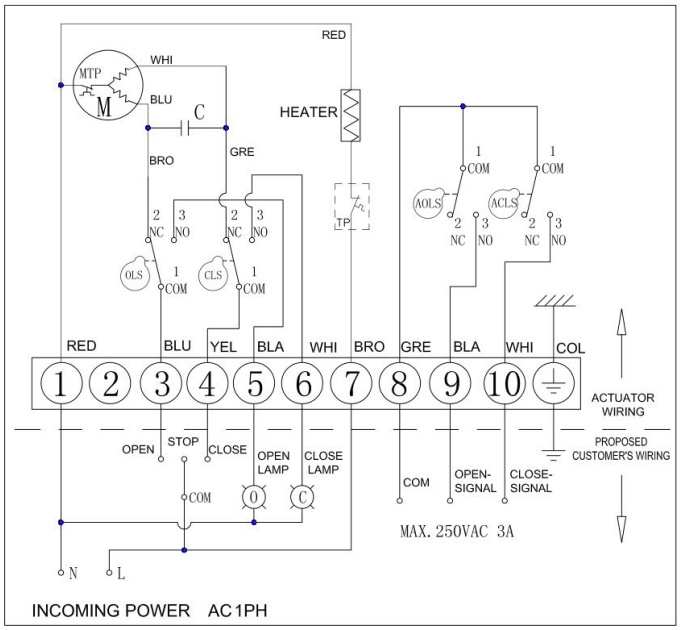
PT0-5 Performance Parameter and Dimension Drawing

General description

PT valve actuators are the new generation of our company and can be used for driving and controlling the butterfly valves, ball valves and plug valves with 90° movement.
They are widely used in the fields such as oil, chemistry, chemistry, power generation, water treatment, paper making.etc.

The enclosure protection is IP 65 for outdoor.
This operation instruction is applied for basic type with ON-OFF control, additional instruction will be provided for special functions.

- Comply with JB/T8219-1999
- Enclosure protection: IP65
- Ambient Temperature: –20–60°
- Height above sea level: ≤1000M
- Humidity: 90%(25°C)
- Weather proof only
- Working atmosphere without strong corrosion
- Duty rating: S2:10Min ~ 30Min
- No strong vibration.

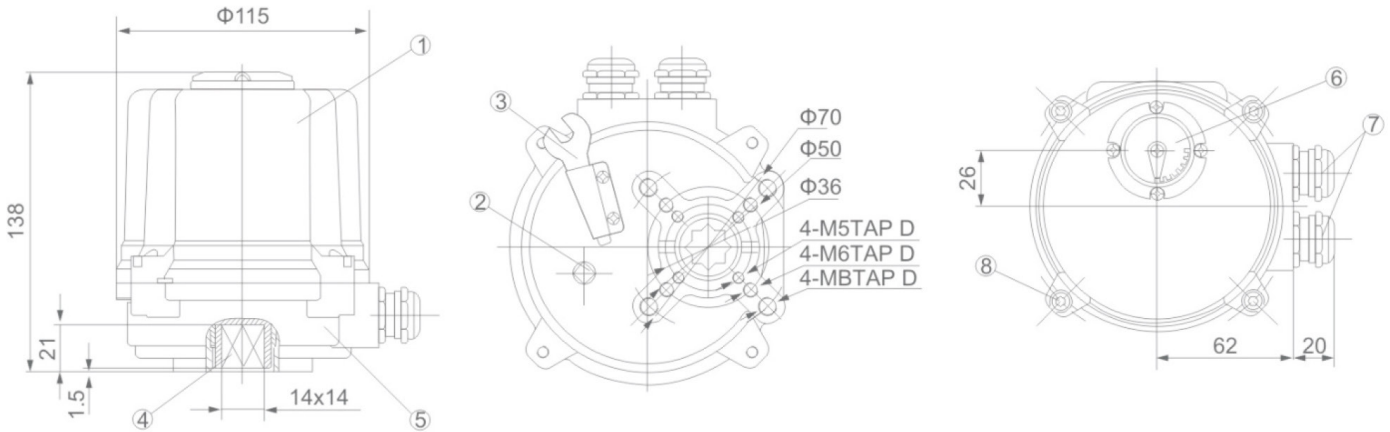


Item	Output Torque(N.m)	Working time 0~90°(S)	Motor consumption (W)	Rated current (A)	Motor rating	Handwheel turns	Weight (Kg)	Power supply
PT0-5	50	10	10	2.2	with brush	10	2	DC12V
				1.2				DC24V
		21		0.25	E			AC110V
				0.15				AC220V
				0.09				AC380V
				0.11				AC415V
				0.13				AC440V

Note: Cable entries:M20 x l.5

Number	Name	Materials/ Specifications
1	Indication cover	ZL102
2	Handel level	6.7 x 6.7
3	Manual shaft	6.5 x 6.5
4	Output shaft	14 x l4
5	Body	ZL102
6	Indicator	0-90°
7	PG13.5 Cable entries	M20xl.5
8	Captive cover bolts	M5x22

Dimension drawing and parts name



Technical Parameters

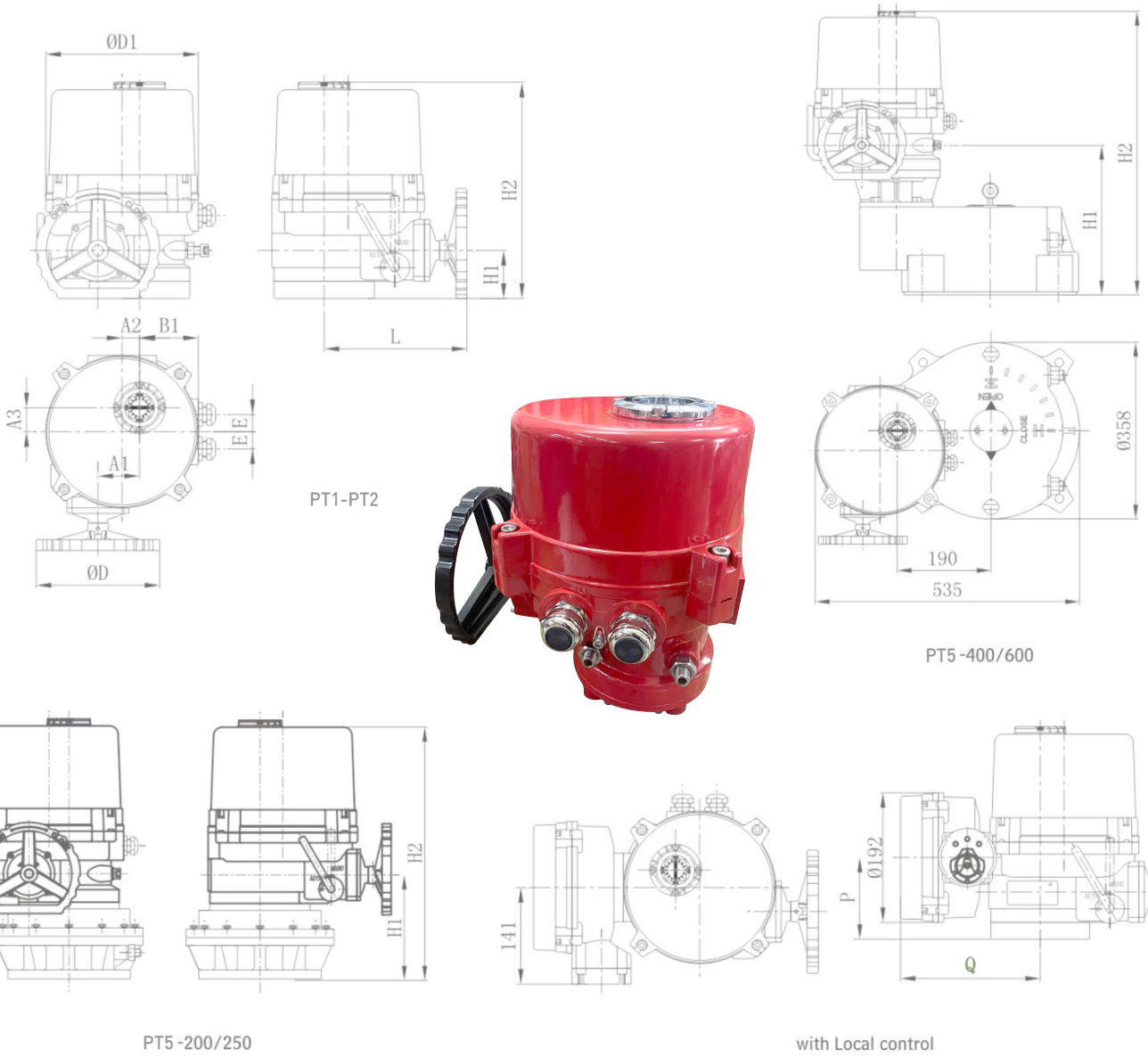
Item	PT1		PT2			PT3		PT4		PT5			
	–6	–10	–16	–20	–24	–35	–50	–80	–110	–200	–250	–400	–600
Output Torque(N.m)	60	100	160	200	240	350	500	800	1100	2000	2500	4000	6000
Standard working time(S)	26	26	28	28	28	32	32	36	36	110	110	180	180
Working time option(S)											55S		90S
Motor consumption(W)	20	20	40	40	45	60	90	120	180	120	180	120	180
Rated current(A) AC220V	0.45	0.5	0.6	0.6	0.7	0.9	1.3	1.5	2.2	1.5	2.2	1.5	2.2
AC110V	–	1.0	1.45	1.5	1.6	1.8	3.2	3.9	4.2	3.9	4.2	3.9	4.2
AC440V	–	0.26	0.30	0.35	0.39	0.42	0.86	1.2	1.6	1.2	1.6	1.2	1.6
AC415V	–	0.24	0.28	0.32	0.37	0.40	0.81	1.15	1.55	1.15	1.55	1.15	1.55
AC380V	–	0.22	0.25	0.3	0.35	0.38	0.8	1.1	1.5	1.1	1.5	1.1	1.5
AC/DC 24V	–	1.7	2.0	2.2	2.8	4.0	6.9	9.8	12.5	9.8	12.5	9.8	12.5
Handwheel turns	8.5		12			13		14.5		46		73	
Weight (Kg)	8		14			18	19	24	26	50	52	104	106

Standard Specification	
Enclosure	Weatherproof IP67,Watertight IP68,Explosion proof with Ex option
Main Power supply	110/220VAC/1Ph/50/60Hz,380/440/VAC/3Ph/50/60Hz ±10%,24VDC
Control power supply	110/220VAC/1Ph/50/60Hz ±10%
Duty rating(on-off)	S2:10Mm-30Mm
Duty rating(modulating)	S4:30-50%,1200 start/Hour
Motor	Squirrel Cage induction motor
Limit switches	2 each for Open and Close (SPDT 250VAC/SA rating)
Torque switches	1 each for Open and Close (SPDT 250VAC/SA rating)(Except for LQI-06 and LQI-10)
Stall protection/set temp.	Built in Thermal protection
Rotary angle	90° ± 5°(0° ~ 100°)
Position indicator	Continuous mechanical indicator with arrow
Manual override	De-clutchable
Self locking	Provided by double worm gearing (no brake)
Mechanical stopper	1 each for each travel end (Open and Close), external & adjustable
Space Heater	2W,SW,7W for anti-condensation
Cable entries	2XNPT3/4'
Lubrication	EP type grease
Terminal block	Screw and Lever Push type (spring loaded)
Ambient temperature	-20°C ~ +60°C
Cable entries Lubrication Terminal block	90%RH Max (Non-Condensing)
Anti vibration	XYZ lOg.02–34Hz, 30 minutes
External coating	Epoxy polyester powder coating
Options	Potentiometer, R/I converter. Modulating with module, local controller, Intelligent with LCD display, Battery backup

Selection Table For A Whole Set With Valve For Your Reference Only

Item	Output torque	Working time (0-90°C)	Power supply	Metal seat butterfly valve	Soft seat butterfly valve	Ball valve	Aeration butterfly valve
PT0–5	50N.m	21S		/	≤DN80	≤DN32	≤DN80
PT1–6	60N.m	26S		/	≤DN80	≤DN32	≤DN80
PT1–10	100N.m	26S		DN40-DN65	DN100-DN15	DN40-DN50	DN100-DN200
PT2–16	160N.m	28S		DN80-DN100	DN150	DN65	DN200
PT2–20	200N.m	28S		DN80-DN125	DN150-DN200	DN65-DN60	DN250-DN300
PT2–24	240N.m	28S	DC24V,	DN100-DN125	DN150-DN200	DN65-DN80	DN300
PT3–35	350N.m	32S	AC110V,	DN125	DN200	DN80	DN350
PT3–50	500N.m	32S	AC220V,	DN150-DN200	DN250	DN100-DN125	DN350 DN500
PT4–80	800N.m	36S	AC380V,	DN250	DN300	DN150	DN500-DN600
PT4–110	1100N.m	36S	AC440V	DN250	DN350	DN150	DN600-DN800
PT5–200	2000N.m	110S/ 55S		DN300-DN400	DN400-DN500	DN200-DN250	DN800-DN1000
PT5–250	2500N.m	110S/ 55S		DN450	DN500-DN600	DN250	DN1000-DN1200
PT5–400	4000N.m	180S/ 90S		DN600	DN700	DN300	DN1200
PT5–600	6000N.m	180S/ 90S		DN600	DN800-DN900	DN350-DN400	DN1500-DN1800

Outline dimension

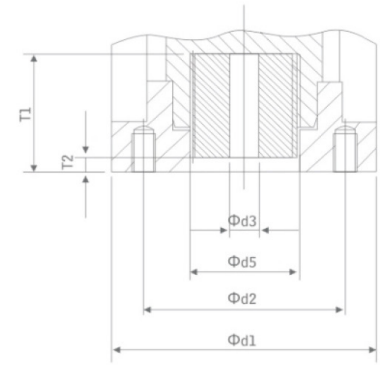


Item	A1	A2	A3	B1	D	D1	E	H1	HS	L	P	Q
PT1	41	12	31	67	100	157	23	55	223	167	96	179
PT2	57.5	23.5	27	80.5	180	206	25	67	261	197	115	207
PT3	60.5	25.5	35	85.5	180	222	25	70	315	208	121	207
PT4	70	35	40	96	180	262	25	81	352	230	132	222
PT5-200/250	70	35	40	96	180	262	25	185	456	230	236	222
PT5-400/600	70	35	40	96	180	262	25	303	574	/	/	/

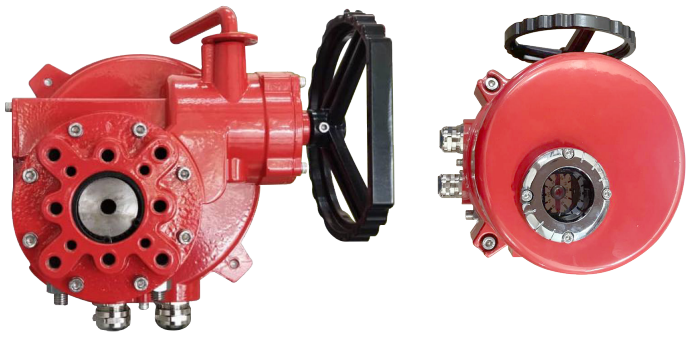
> Actuators with local control based on the basic type.

> PT5 actuators based on the PT4 with worm gearbx.

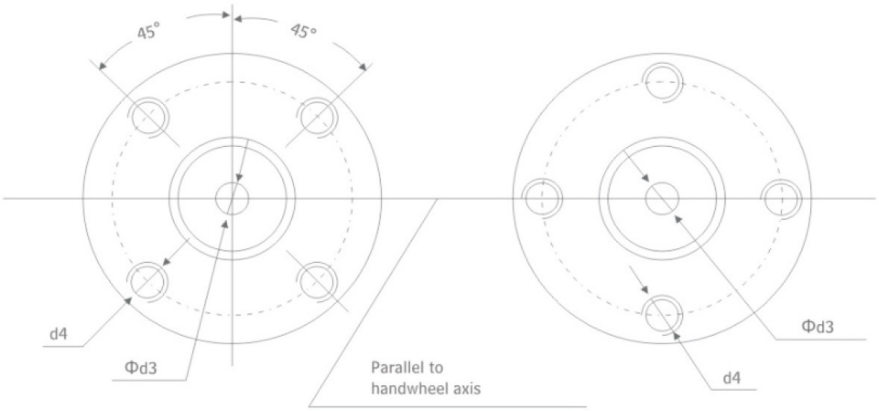
PT1~PT5 Performance Parameter and Dimension Drawing



Type RA



Type RB



Item	Flange size		d1	d2		d3		d5	T1	T2	d4
				Standard dimensions	Factory dimensions	Factory dimensions	Max				
PT1	RA	F05	Φ92	Φ50	Φ50	Φ8	Φ22	Φ39	42	3	4-M6 TAP DP 12
		F07		Φ70	Φ70						4-M8 TAP DP 12
	RB	2"		Φ57.15	/		Φ20				
		3"									4-M6 TAP DP 12
PT2	RA	F07	Φ132	Φ70	Φ70	Φ10	Φ32	Φ48.5	49	3	4-M8 TAP DP 15
		F10		Φ102	Φ102						4-M10 TAP DP 15
	RB	4"		Φ69.85	/		Φ25				4-M10 TAP DP 15
		5"									
		6"									
PT3	RA	F10	Φ146	Φ102	Φ102	Φ10	Φ32	Φ48.5	51	5	4-M10 TAP DP 15
		F12		Φ125	Φ125						4-M12 TAP DP 15
	RB	8"		Φ88.9	/		Φ25				4-M12 TAP DP 15
		10"									
PT4	RA	F12	Φ176	Φ125	Φ140	0	Φ42	Φ90	62	7	4-M12 TAP DP 18
		F14		Φ140							4-M16 TAP DP 25
	RB	12"		Φ107.95	/		Φ38				4-M12 TAP DP 20
		14"									
PT5-200/250	RA	F14	Φ215	Φ140	Φ165	0	Φ60	Φ118	75	7	4-M12 TAP DP 25
		F16		Φ165							4-M20 TAP DP 25
	RB	16"		Φ158.75	/		Φ50				4-M18 TAP DP 25
		18"									
		20"									
PT5-400/600	RA	F16	Φ350	Φ165	Φ165	Φ25	Φ60	Φ135	118	8	4-M20 TAP DP 25
		F25		Φ254	Φ254						4-M16 TAP DP 30
		F30		Φ298	Φ298		Φ50				4-M20 TAP DP 35

Note: d2 and d3 dimensions can be machined in accordance with customer requirements of the corresponding size.

Enclosure protection : IP68

Enclosure protection : Explosion proof

With Dome indicator

Local controller with LED lamp

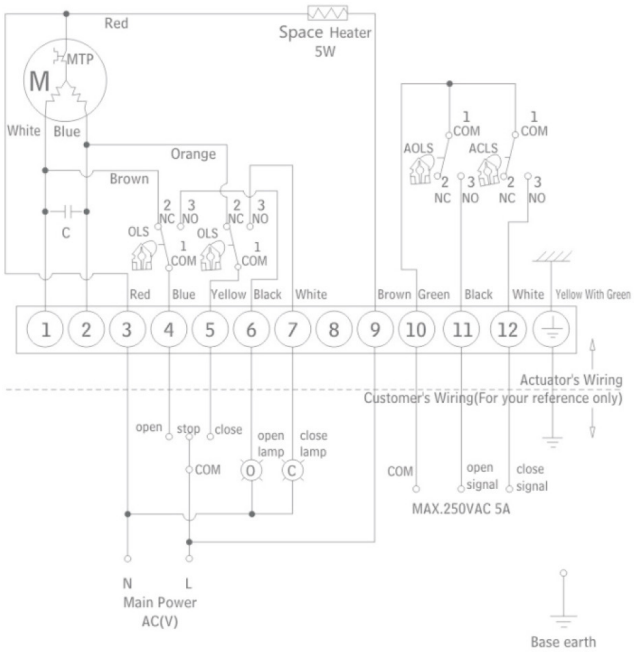
With LCD displays (intelligent/ Profibus/ Mod bus/Can bus

With battery packup

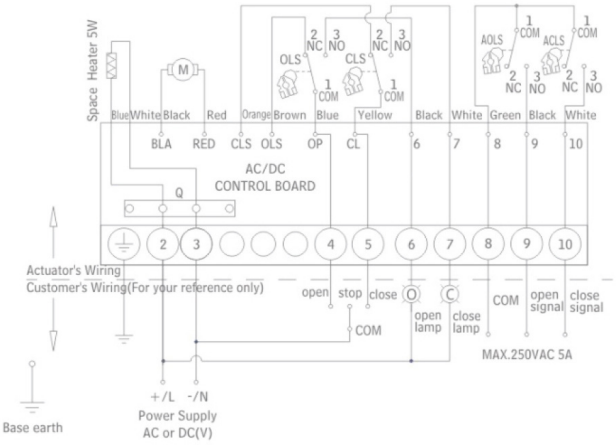
Wiring Drawing

Wiring drawing of ON-OFF type

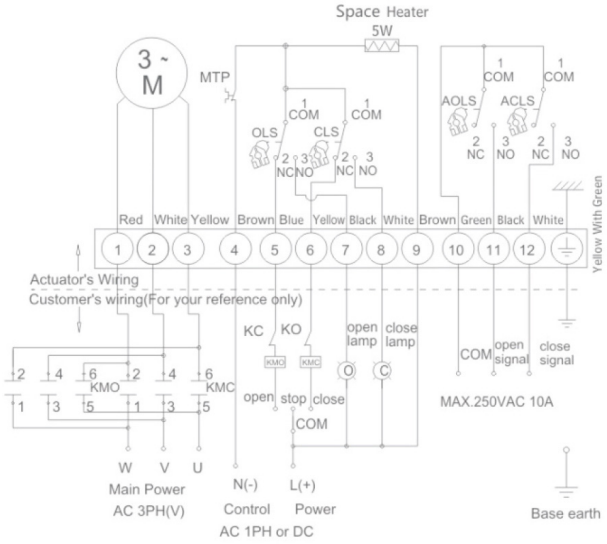
PT1 ON-OFF(IPH AC HOV/220V)



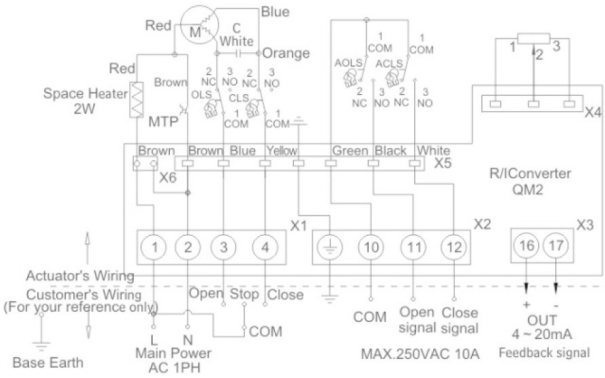
PT1 ON-OFF(24VDC/AC)



PT1 ON-OFF(3PH,AC380V/415V/440)



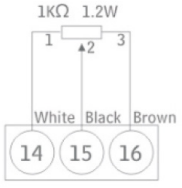
PT1 R/1 Converter(K type)



Limit Switches Operation

Switch	Full Close ⟵ Intermediate ⟶ Full Open
CLS 1-2	
CLS 1-3	
OLS 1-2	
OLS 1-3	
ACLS I-3	
AOLS 1-3	

R type:with potentiometer

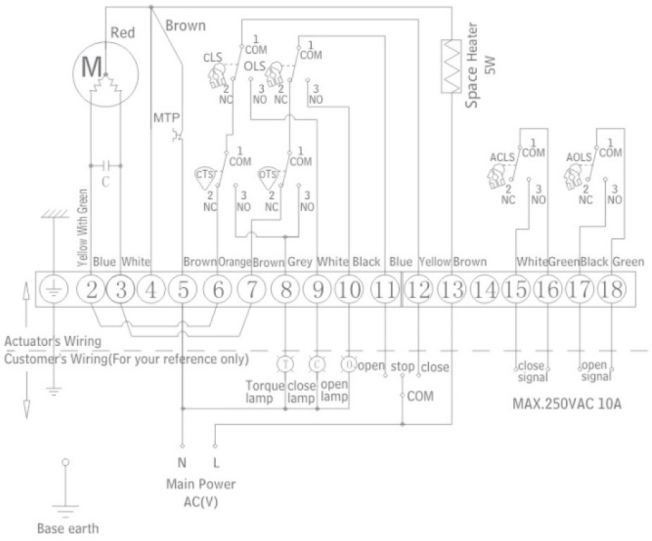


AOLS:AUX.Open Limit Switch
ACLS:Aux.Close Limit Switch
O:Open lamp
C:Close lamp
CLS:Close Limit switch
OLS:Open Limit switch

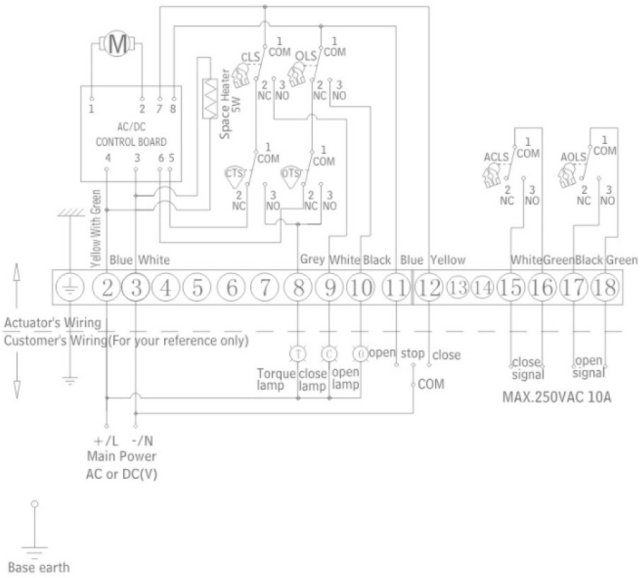
KMC:Magnetic Contactor Close
KMO:Magnetic Contactor Open
MTP:Motor Thermal Protector
M:Motor

Wiring drawing of ON-OFF type

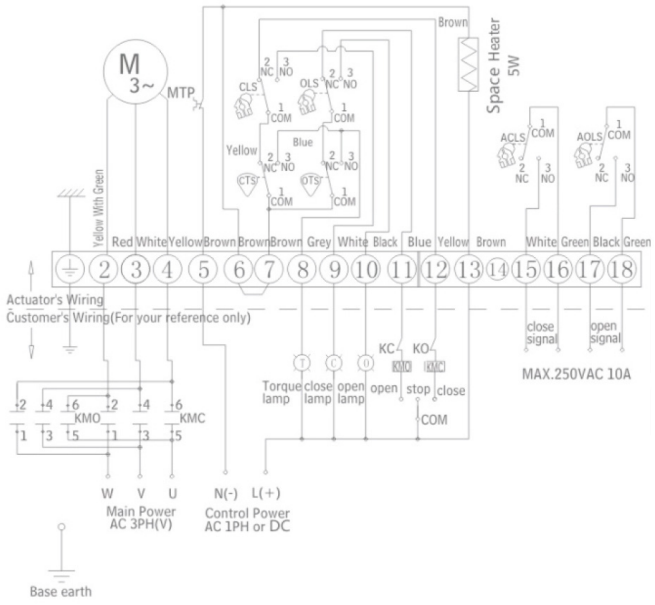
PT2~PT5 ON-OFF(1PH AC 110V/220V)



PT2~PT5 ON-OFF(24VDC/VAC)



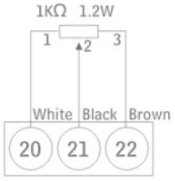
PT2~PT5 ON-OFF(3PH AC380V/415V/440V)



Limit Switches And Torque Switches Operation

Switch	Full Close ← Intermediate → Full Open
CLS 1-2	
CLS 1-3	
OLS 1-2	
OLS 1-3	
ACLS I-2	
ACLS I-3	
AOLS I-2	
AOLS I-3	
CTS I-3	Closing torque switch interrupts control when mechanical overload occurs during closing cycle
OTS I-3	Opening torque switch interrupts control when mechanical overload occurs during opening cycle

R type:
(with precision potentiometer)

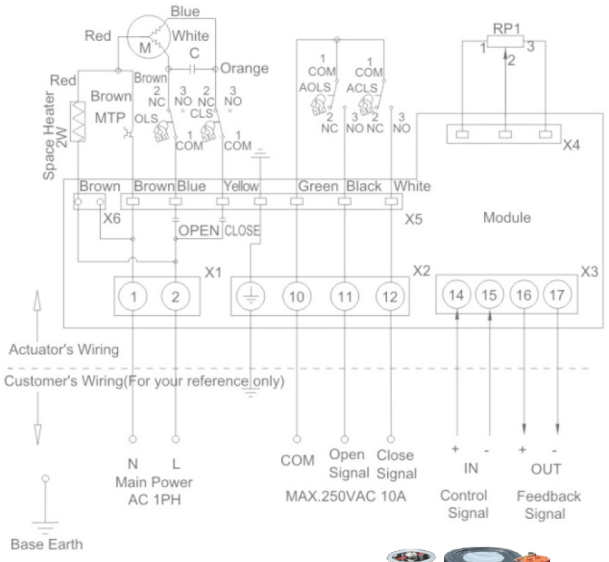


AOLS: Aux.Open Limit Switch
AILS: Aux Close Limit Switch
O: Open lamp
C: Close lamp
T: Torque Switch
CLS: Close limit switch
OLS: Open limit switch
CTS: Close torque switch
OTS: Open torque switch
KMC: Magnetic, Contactor Close
KMO: Magnetic, Contactor Open
MTP: Motor Thermal Protector
M: Motor

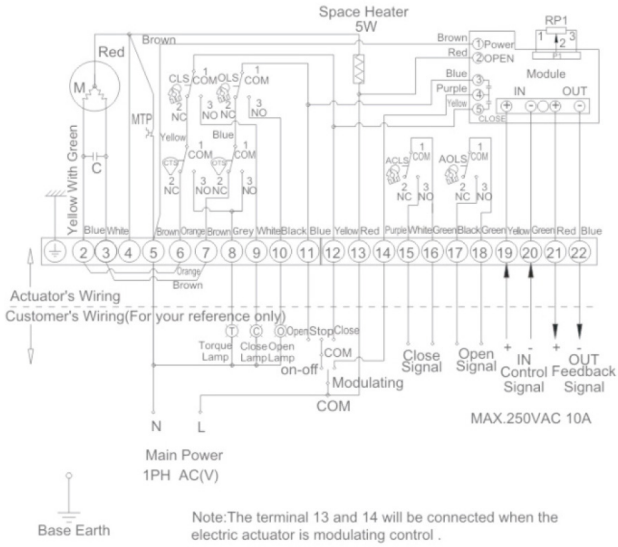
Wiring Drawing

Wiring drawing of Modulating type (with remote position controller)

PT1 Modulating (with remote position controller) (1PH,AC110V/220V)

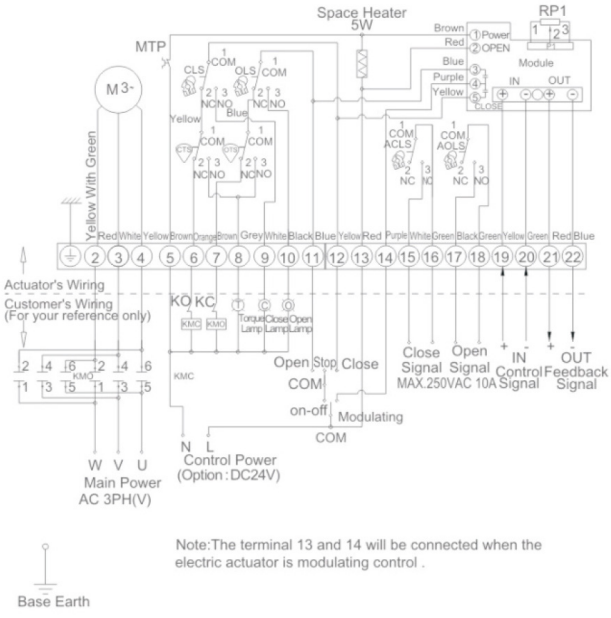


PT2~PT5 Modulating (with remote position controller) (1PH,AC110V/220V)



Note:The terminal 13 and 14 will be connected when the electric actuator is modulating control .

PT2~PT5 Modulating (3PH,AC380V/415V/440V)



Note:The terminal 13 and 14 will be connected when the electric actuator is modulating control .

Limit Switches And Torque Switches Operation

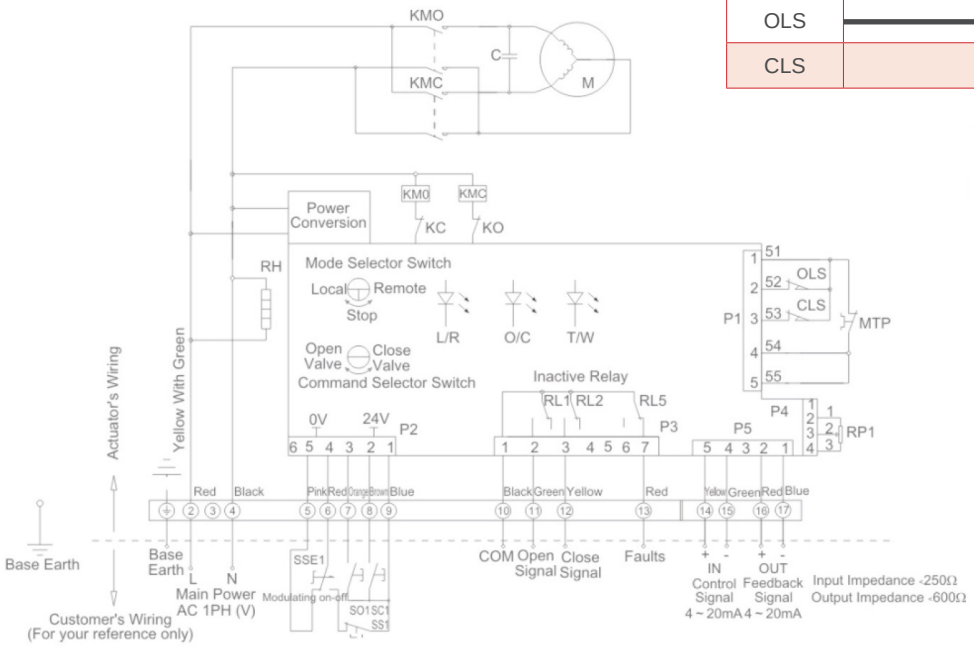
Switch	Full Close ⟵ Intermediate ⟶ Full Open
CLS 1-2	
CLS 1-3	
OLS 1-2	
OLS 1-3	
ACLS 1-2	
ACLS 1-3	
AOLS 1-2	
AOLS 1-3	
CTS 1-3	Closing torque switch interrupts control when mechanical overload occurs during closing cycle
OTS 1-3	Opening torque switch interrupts control when mechanical overload occurs during opening cycle

AOLS: Aux.Open Limit Switch
ACLS: Aux Close Limit Switch
O: Open lamp
C: Close lamp
T: Torque Switch
CLS: Close limit switch
OLS: Open limit switch

CTS: Close torque switch
OTS: Open torque switch
RP1: Potentionmeter, 1kΩ
KMC: Magnetic, Contactor Close
KMO: Magnetic, Contactor Open
MTP: Motor Thermal Protector
M: Motor

Wiring drawing of with local controller+LED

PT1 With Local Controller(1PH,AC110V/220V)



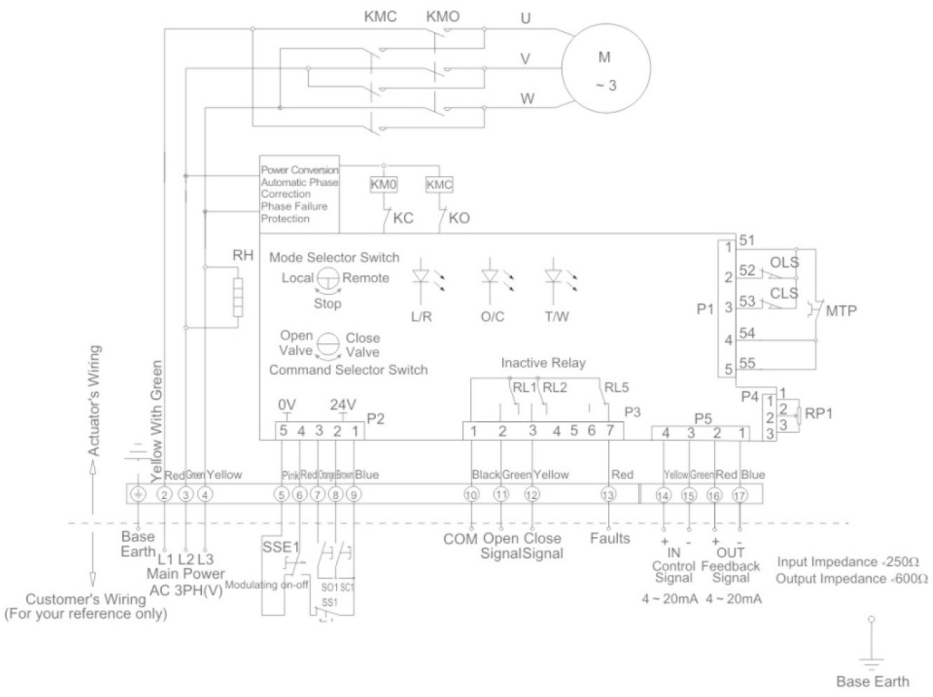
Limit Switches Operation

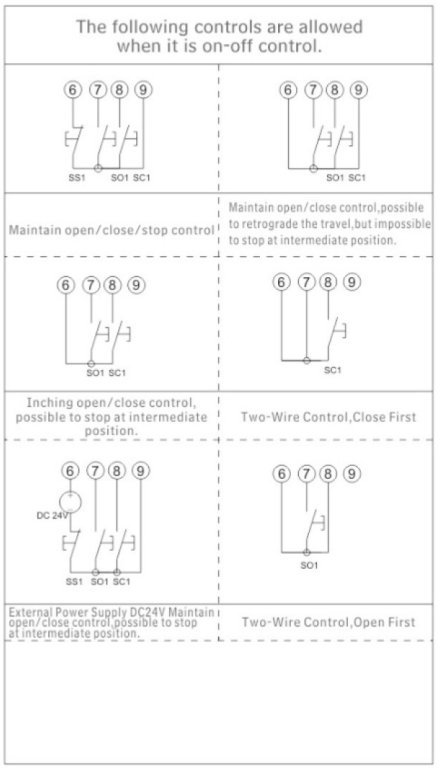
Switch	Full Close ⟵ Intermediate ⟶ Full Open		
OLS	———		
CLS		———	———

Illustration:

1. Electric actuator located on intermediate position in the wiring drawing.
2. Actuator's element:
   - L/R: Local/Remote Lamp
   - 0/C: Open Valve/Close Valve Lamp
   - T/W: Failure/Power lamp.
   - RP1: Potentiometer,1KΩ
   - RH: Space Heater
   - OLS: Open limit switch
   - CLS: Close limit switch
   - KMC: Magnetic Contactor Close
   - KMO: Magnetic Contactor Open
   - M: Motor
   - MTP: Motor Thermal Protector
3. Customer's element:
   - SSE1: Selector switch
   - SO1: Open valve button
   - SC1: Close valve button
   - SS1: stop button

PT1 With Local Controller(3PH,AC380V/415V/440V)



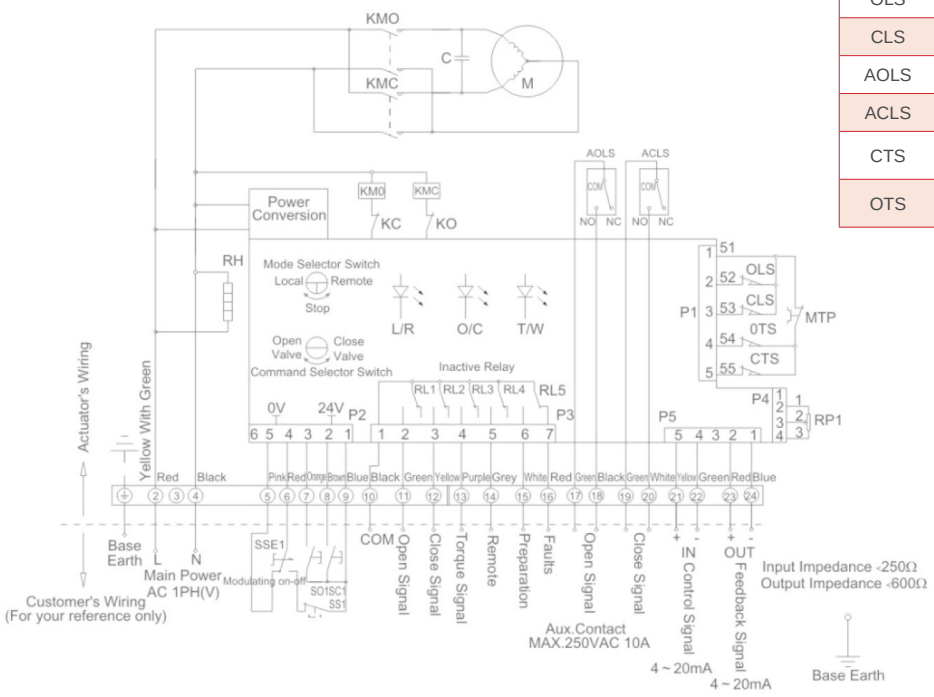


Note: 1. Above wiring drawing is for modulating control with local controller.
2. There is without modulating control with potentiometer feedback and analogue signal when the electric actuator is on-off control.

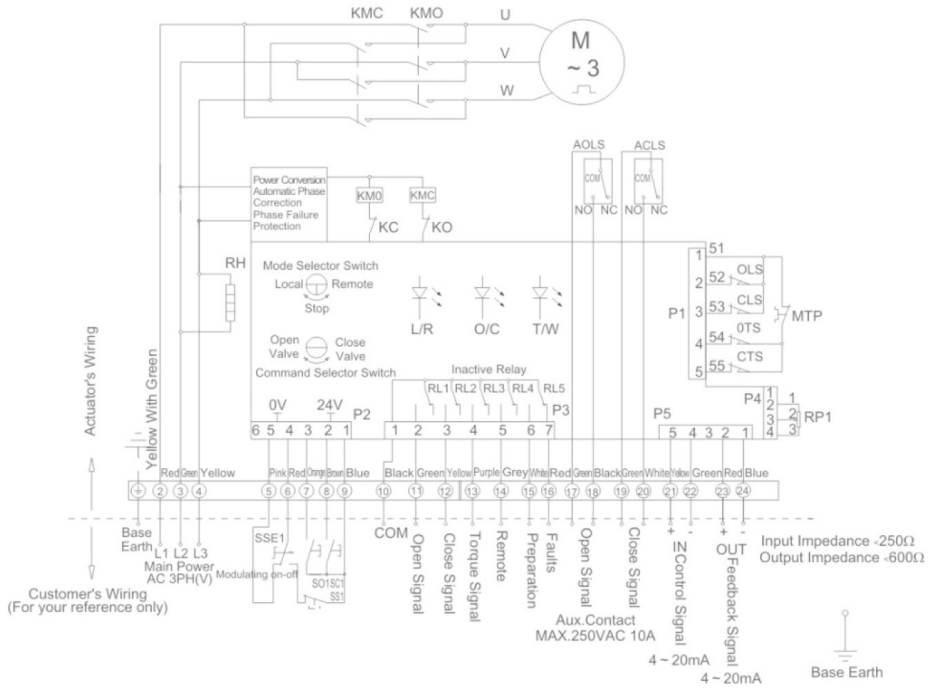
Wiring Drawing

Wiring drawing of with local controller+LED

PT2~PT5 With Local Controller(1PH,AC110V/220V)



PT2~PT5 With Local Controller (3PH,AC380V/415V/440V)

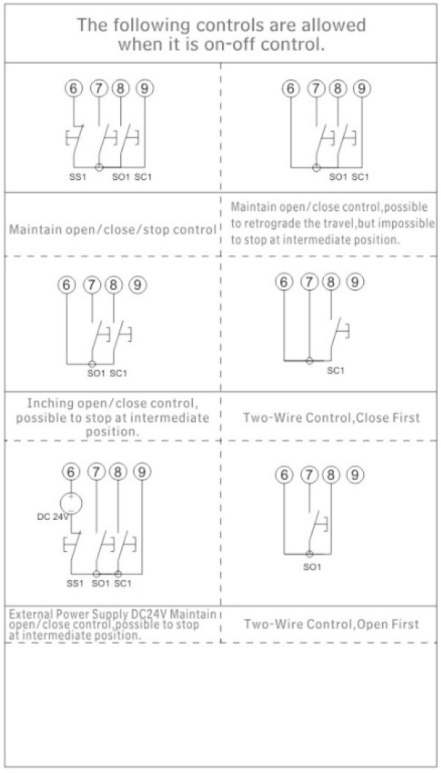


Limit Switches And Torque Switches Operation

Switch	Full Close ⟵ Intermediate ⟶ Full Open
OLS	
CLS	
AOLS	
ACLS	
CTS	Closing torque switch interrupts control when mechanical overload occurs during closing cycle
OTS	Opening torque switch interrupts control when mechanical overload occurs during opening cycle

Illustration:

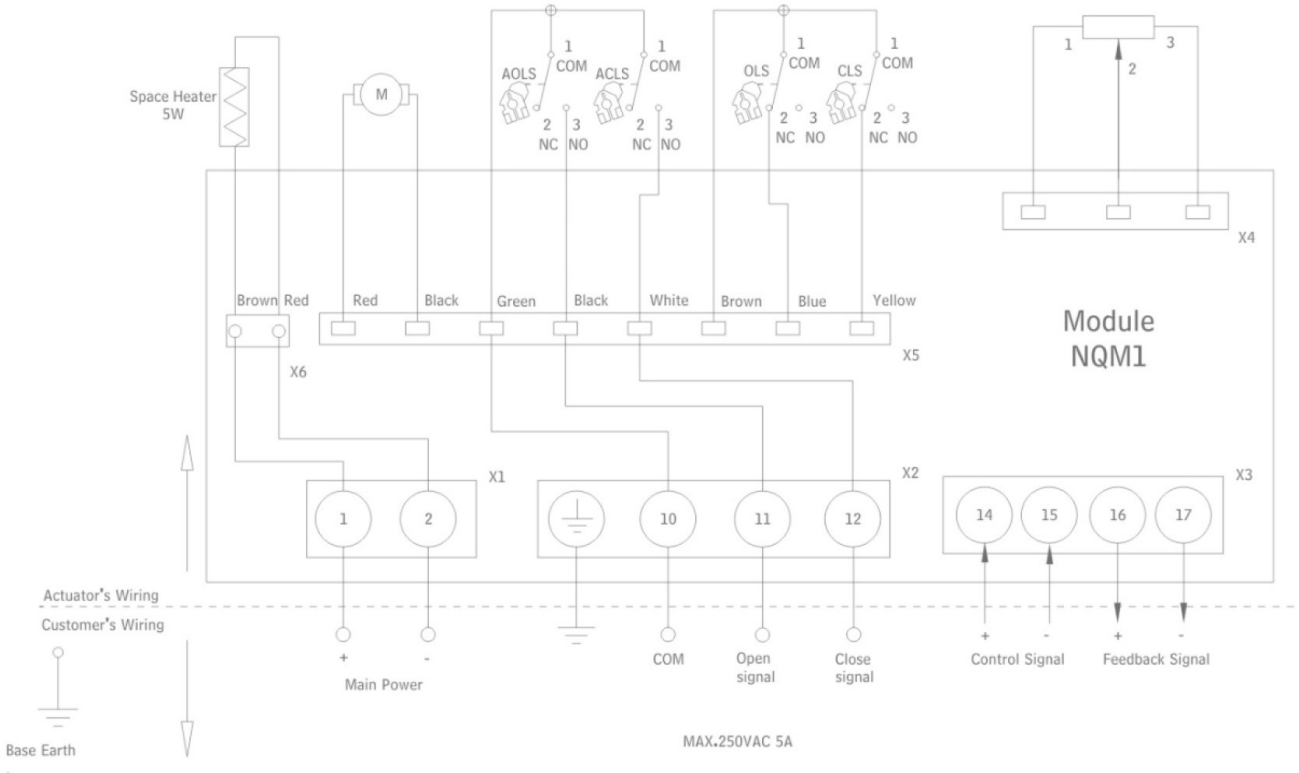
1. Electric actuator located on intermediate position in the wiring drawing.
2. Actuator's element:
   L/R: Local/Remote Lamp
   0/C: Open Valve/Close Valve Lamp
   T/W: Failure/Power lamp.
   RP1: Potentiometer,1KΩ
   RH: Space Heater
   OLS: Open limit switch
   CLS: Close limit switch
   CTS: Close torque switch
   OTS: Open torque switch
   AOLS: Aux.Open limit switch
   ACLS: Aux.Close limit switch
   KMC: Magnetic Contactor Close
   KMO: Magnetic Contactor Open
   M: Motor
   MTP: Motor Thermal Protector
3. Customer's element:
   SSE1: Selector switch
   SO1: Open valve button
   SC1: Close valve button
   SS1: stop button



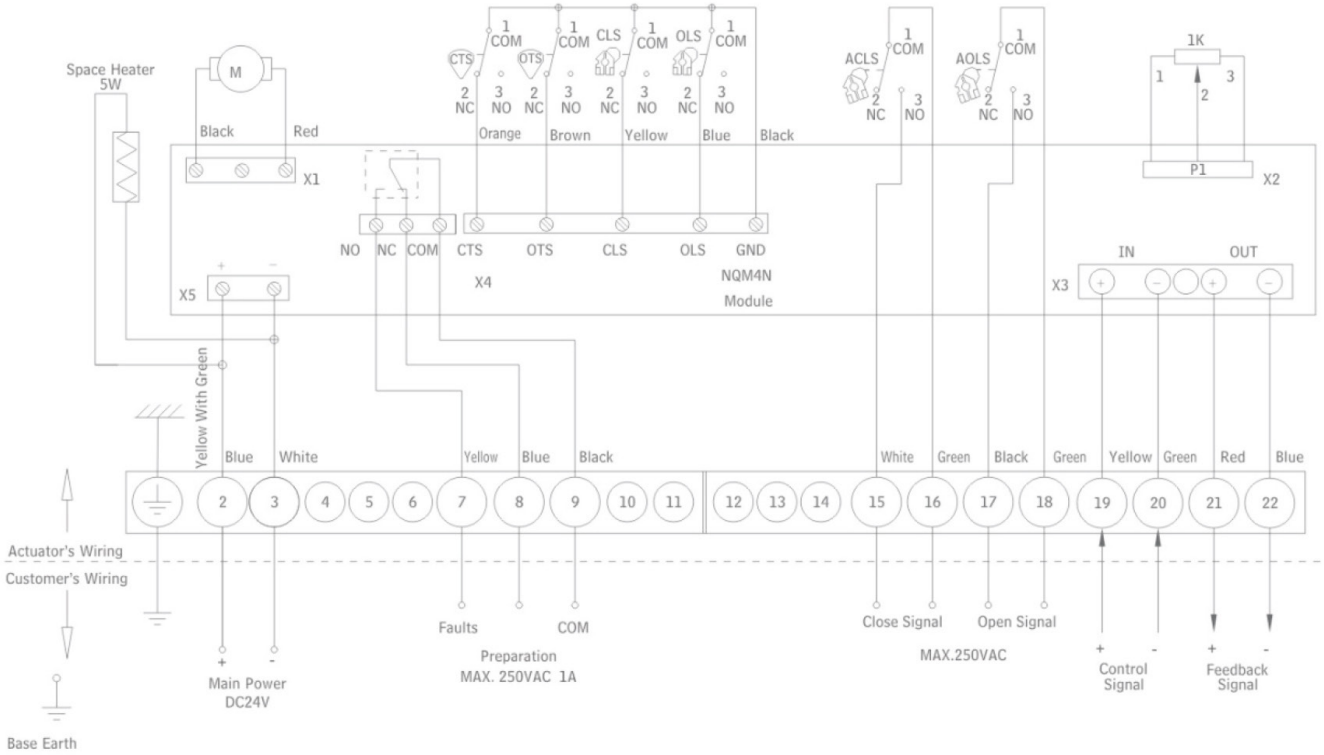
Note: 1. Above wiring drawing is for modulating control with local controller.
2. There is without modulating control with potentiometer feedback and analogue signal when the electric actuator is on-off control.

Wiring drawing of modulating (Remote Position Controller) 24VDC/AC

PT1 Modulating(24VDC/AC)



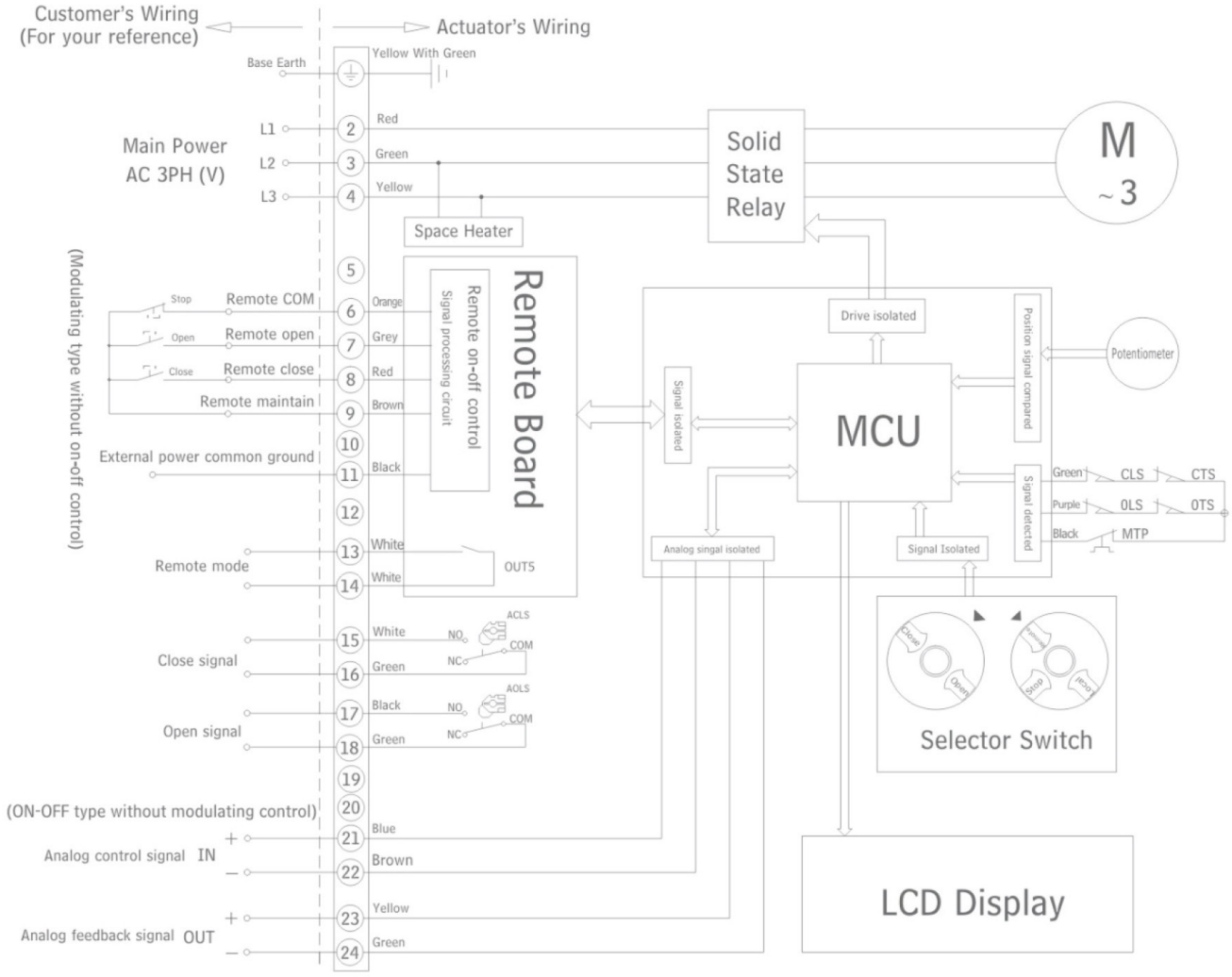
PT2~PT5 Modulating(24VDC/AC)



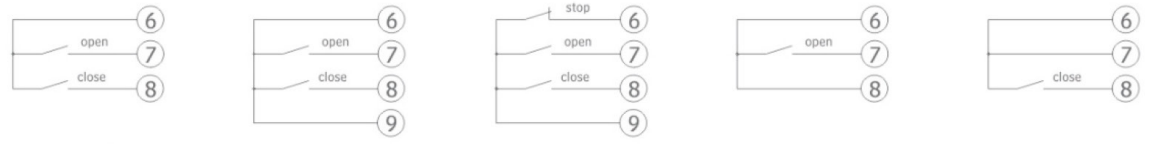
Wiring Drawing

Wiring drawing of intelligent

PT2~PT5 Wiring Drawing of Intelligent YS Type (3PH,AC380V/415V/440V)



Remote on-off（Manual）control options



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,open first. (Default value:Disable)

Two-wire control,close first. (Default value:Disable)

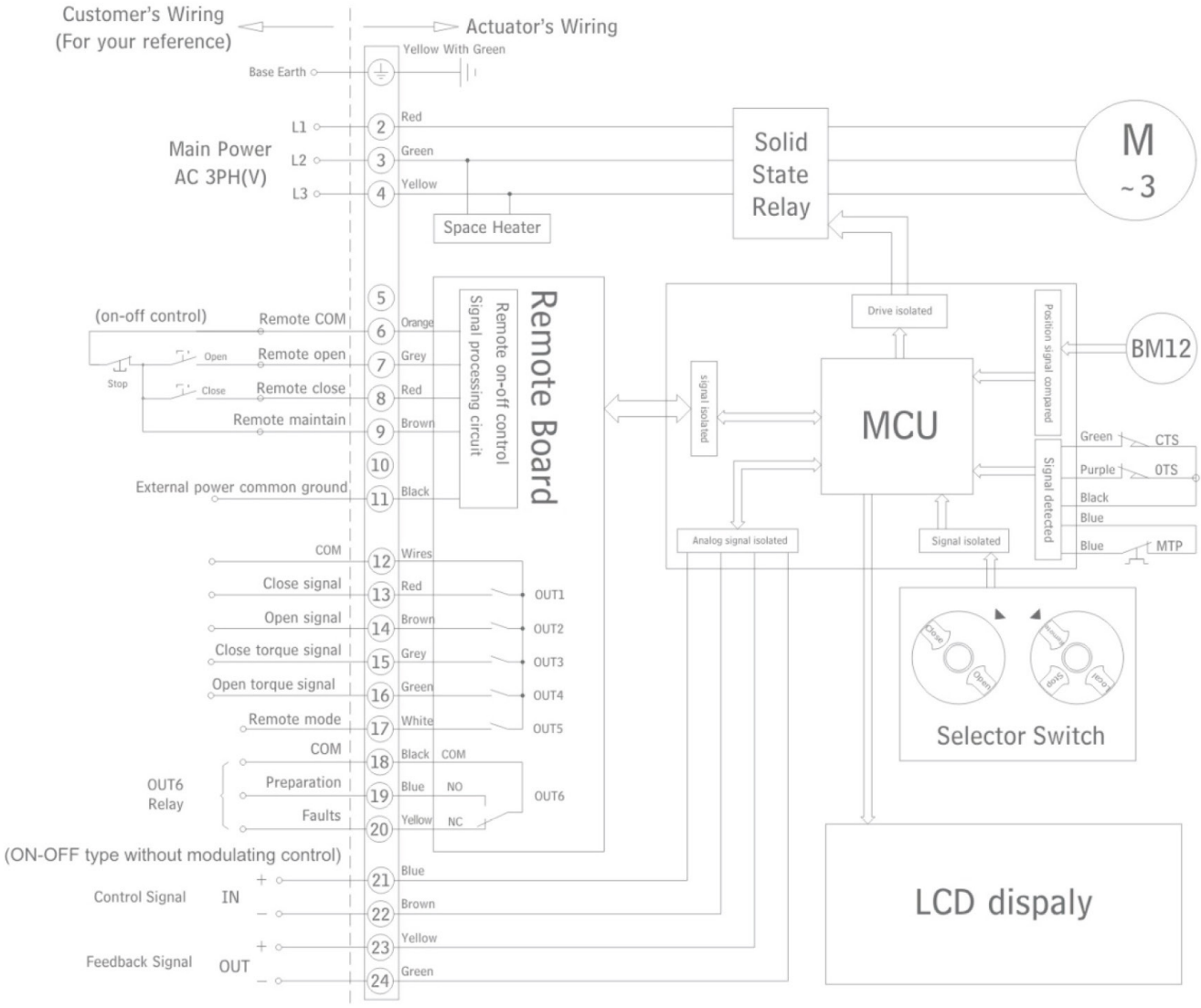
DC24V external power supply, Inching open/close control

DC24V external power supply, Maintain open/close control possible to retrograde the travle,but impossible to stop at intermediate position

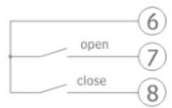
DC24V external power supply, Maintain open/close/stop control

AC220V external power supply, Inching open/close control

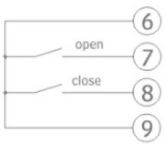
PT2~PT5 Wiring Drawing of Intelligent YE Type (3PH,AC380V/415V/440V)



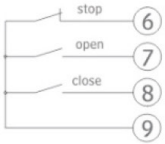
Remote on-off（Manual）control options



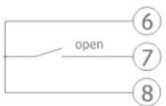
Inching open/close control



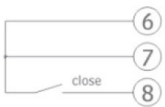
Maintain open/close control, possible to retrograde the travel,but impossible to stop at intermediate position.



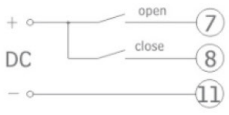
Maintain open/close/stop control



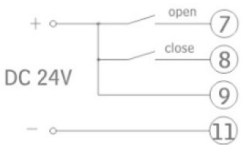
Two-wire control,open first. (Default value:Disable)



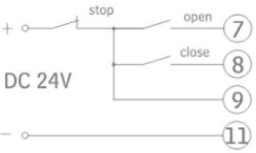
Two-wire control,close first. (Default value:Disable)



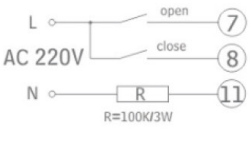
DC24V external power supply, Inching open/close control



DC24V external power supply, Maintain open/close control possible to retrograde the travle,but impossible to stop at intermediate position

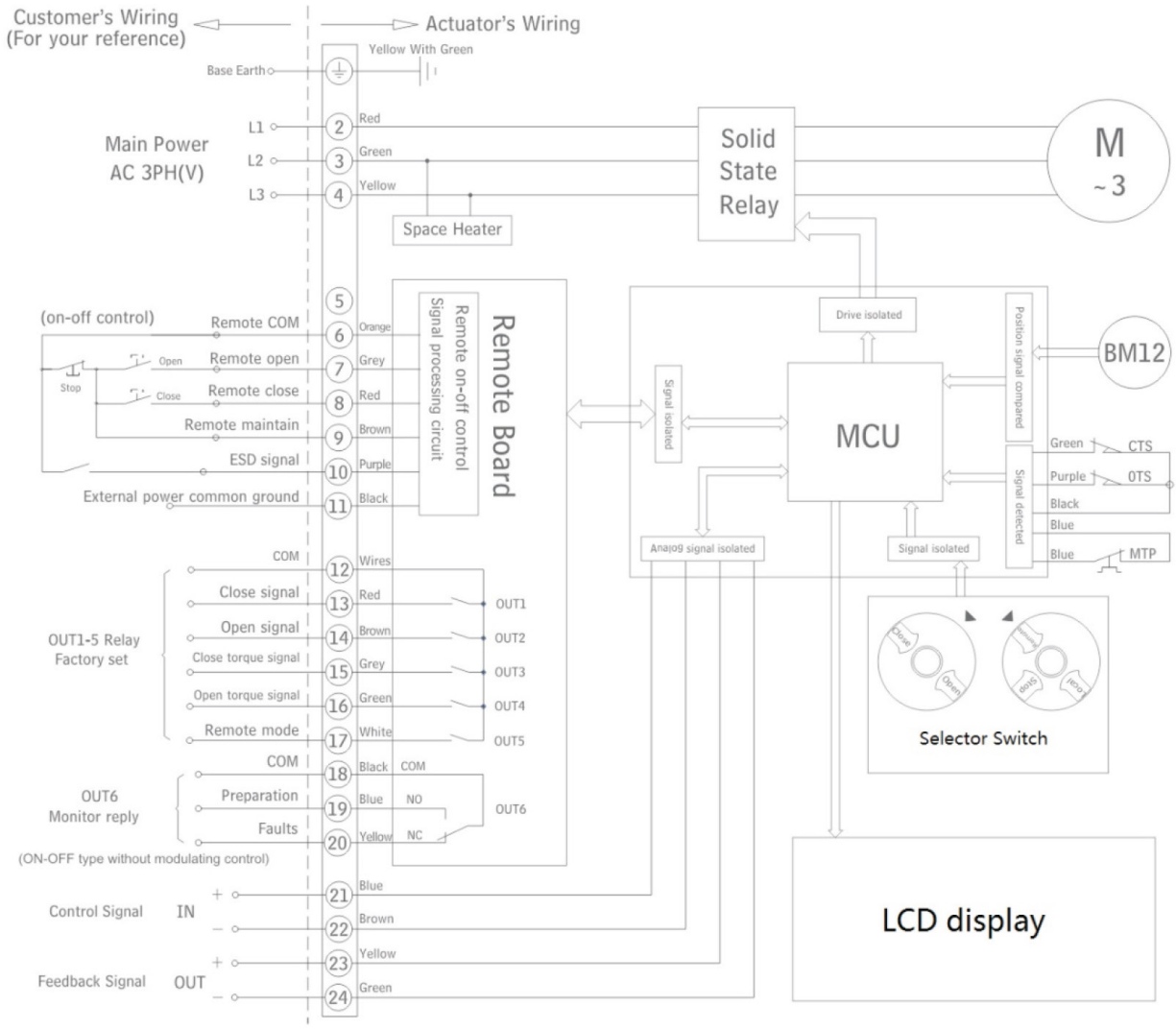


DC24V external power supply, Maintain open/close/stop control

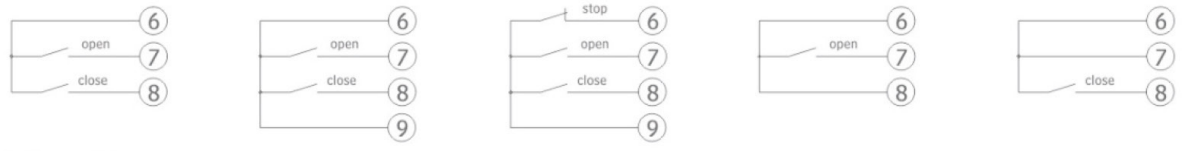


AC220V external power supply, Inching open/close control

PT2~PT5 Wiring Drawing of Intelligent Y Type (3PH,AC380V/415V/440V)



Remote on-off（Manual）control options



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

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Two-wire control,close first. (Default value:Disable)

DC24V external power supply, Inching open/close control

DC24V external power supply, Maintain open/close control possible to retrograde the travle,but impossible to stop at intermediate position

DC24V external power supply, Maintain open/close/stop control

AC220V external power supply, Inching open/close control

PT Electric Actuator Standard selection guide for valves

Valve / Actuator	Butterfly valve 10K ANSI 150#	2-Way Ball valve 10K ANSI 150#	3-Way Ball valve 10K ANSI 150#
PT1-10	100A (4")	40A (1 1/2")	40A (1 1/2")
PT2-16	125A (5")	50/65A (2",2 1/2")	50/65A (2",2 1/2")
PT2-24	150A (6")	80A (3")	80A (3")
PT3-35	200A (8")	100A (4")	
PT3-50	250A (10")	125A (5")	100A (4")
PT4-80	300A (12")	150A (6")	125A (5")
PT4-110	350A (14")		
PT5-200	450A (18")	250A (10")	200A (8")
PT5-250	500A (20")	300A (12")	250A (10")
PT5-400/600	600/750A (24",30")	350/400A (14",16")	300A (12")

* The above table is just reference without PROCON responsibility.

* Actuator sizing must be done based on actual valve torque.