

Electrical Actuator for PICV

Modulating Type (24V)

For KIDS PICV DN32 – DN250

Specification

- DC Brushless Electric Motor
- Power Supply: 24V AC/DC $\pm 15\%$, 50Hz
- Power Consumption: Run 14VA; Max. 25VA
- Control Signal: 0(2)~10VDC, 0(4)~20mA
- Feedback Signal: : 0(2)~10VDC, 0(4)~20mA
- Stainless steel bracket
- Aluminum die casting base
- IP54 Protection Class



Type Summary

500N Actuator



Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN32-DN40 (Modulating)	Proportional & 3 Position Type	500N	30mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

1000N Actuator



Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN50-DN65 (Modulating)	Proportional & 3 Position Type	1000N	30mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

1000N Actuator



Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN80-DN150 (Modulating)	Proportional & 3 Position Type	1000N	50mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

3000N Actuator



Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN200-DN250 (Modulating)	Proportional & 3 Position Type	3000N	50mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

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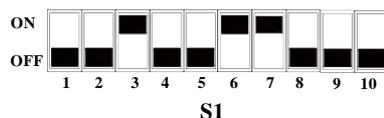
DIP Switch Instruction

Switch	Function	Description
S1-1	Starting of control/ feedback signal	ON 20%:the starting of control/feedback signal is 20%(namely 4~20mA or 0~10VDC)
		OFF 0:the starting of control/feedback signal is 0(namely 0~20mA or 0~10VDC)
S1-2	Type of control signal	ON II:currentsignal
		OFF UI:voltagesignal
S1-3	Impedence match of control signal	ON UI:voltagesignal
		OFF II:currentsignal
S1-4	Type of feedback signal	ON IO:currentsignal
		OFF UO:voltagesignal
S1-5	Operating mode	ON DA:When the control signal increase, actuator shaft extends;When the control signal decrease, actuator shaft retracts.
		OFF RA:When the control signal increase, actuator shaft retracts;When the control signal decrease, actuator shaft extends.
S1-6	Losing control signal mode	ON DW:When lose control signal (voltage type or current type), actuator will provide a min. control signal internally.
		OFF UP: 1)When lose control signal (voltage type),actuator will provide a max. control signal internally. 2)When lose control signal (current type),actuator will provide a min. control signal internally.
S1-7	Self-stroking mode	ON DF:Power on each time, self-stroking starts automatically.
		OFF RF:Self-stroking starts only when press the red self-stroking button manually.
S1-8	Control mode (when S1-9 is OFF)	ON 3-position type
		OFF Proportional type
S1-9	Control type	ON RS485 interface control (Modbus protocol)
		OFF Proportional type and 3-position type
S1-10	Speed	ON high speed: 1s/mm
		OFF medium speed: 2s/mm

Function Introduction

Proportional Type

Control signal/feedback signal: 0~10VDC



When the Actuator is proportional type, terminal B,O is power input, actuator can be controlled by connecting terminal O,E

As shown in the left, when equipped with Pressure Independent Control Valve, DIP Switch S1-5 is DA mode:

Control signal at terminal O,E increasing: actuator shaft retracts, valve stem extends, valve tends to open.

Control signal at terminal O,E decreasing, actuator shaft extends, valve stem retracts, valve tends to close.

Control signal at terminal O,E has no changing, actuator shaft and valve stem stay in present position.

When voltage (or current) signal is disconnected, this is equivalent to input a min. control signal, actuator shaft extends, valve closed.

3-position Type

(the terminal O,E,Y doesn't work)



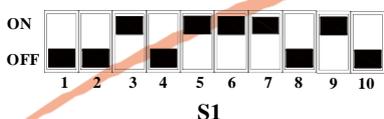
When the Actuator is 3-position type, terminal B,O is power input, control the actuator by the switch O, UP, DOWN:

O, UP connected: actuator shaft extends, and valve stem retracts

O, DOWN connected: actuator shaft retracts, and valve stem extends

Notes: Terminal E, Y doesn't work by this time!

RS485 Bus Communication



When the Actuator is RS485 bus communication, terminal B,O is power input, remote control by terminal 8,9:

Actuator can be controlled remotely by RS485 bus communication, actuator supports ModBus protocol.

Notes: Terminal O,E,Y,UP,DOWN doesn't work by this time!

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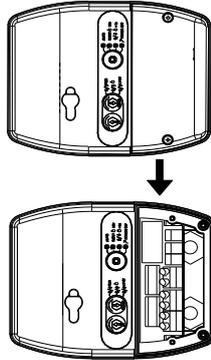
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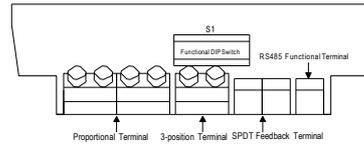
Wiring Instruction

1. Open the cover and prepare to wire.

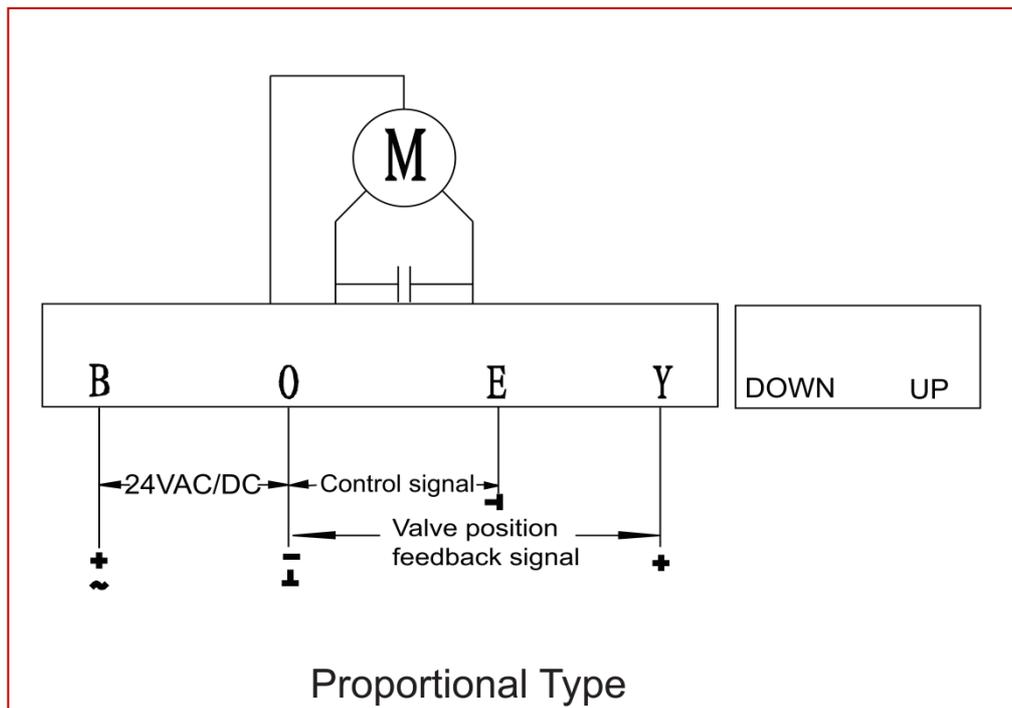
2. Wire correctly according to the wiring diagram.



24V Terminal Diagram



Wiring Diagram

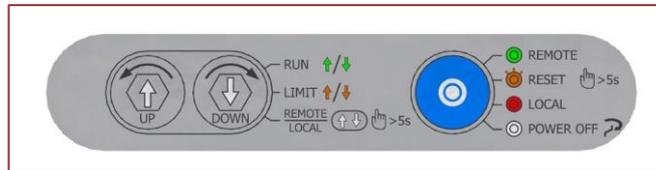


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Indicating Light



❖ Reset Light

Reset	Status	Description
Green	Always	Normalmode
Red	Always	Local mode
Yellow	Flickering (1Hz)	Self-stroking

❖ Retractive Light-UP

UP	Status	Description
Green	Always	Normalmode
Yellow	Always	Reach upper limit position
Red	Flickering (1Hz)	Alarming
Red	Always	Local mode

❖ Extended Light-DOWN

DOWN	Status	Description
Green	Always	Normalmode
Yellow	Always	Reach down limit position
Red	Flickering (1Hz)	Alarming
Red	Always	Local mode

Debugging Instruction

A. Connect actuator and valve body.

B. Wiring power and control signal wires.

C. Set DIP Switch to needed position. After the setting, turn on power of actuator, pre-setting function will come into effect. (DIP Switch can be set with power)

D. Turn on the actuator power.

E. Actuator Self-stroking: this step is for matching stroke of actuator and valve.

1) Actuator shaft extends to down limited position firstly and the Reset yellow indicating light will keep flickering (frequency is 1Hz). And then, it retracts to upper limited position and the Reset yellow indicating light will keep flickering (frequency is 1Hz). (Actuator will not be controlled by signal now).

2) Indicating light stops flickering after about 3 minutes and the Reset indicating light stop flickering. Self-stroking stops and the matching modulating of the valve and actuator is finished. By then, actuator running direction can be controlled by control signal.

Remarks: If self-stroking is needed in a power-on state, press down the Reset button on PCB over 5 seconds, and then the actuator start self-stroking. Self-stroking phenomenon are the same as step (1), (2) above.

F. Local mode: press the button UP and DOWN at the same time over 5s, loosen the buttons and actuator enter into local mode, at that time the UP, DOWN and Reset light will always be on red. If you need actuator shaft retracts, long press UP, the UP light will always be on green; If you need actuator shaft extends, long press DOWN, the DOWN light will always be on green. After reach to the expected position, repress UP and DOWN at the same time over 5s, and then loosen the buttons, it will exit the local mode.

Note:

1. The factory default setting is automatic self-stroking, it means that actuator will repeat automatic self-stroking when power on each time!

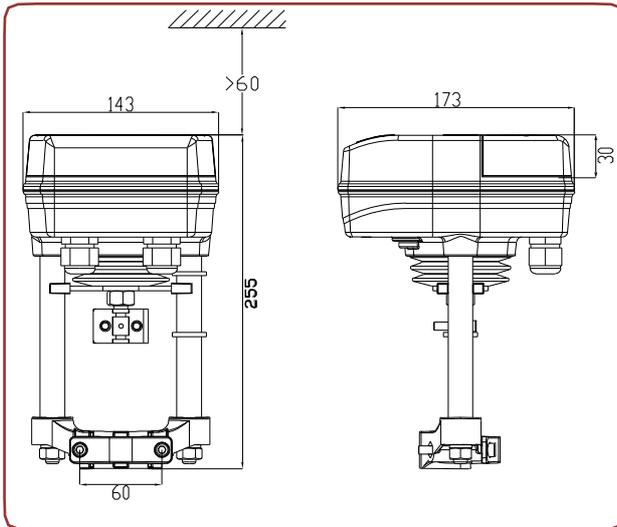
2. If you don't need automatic self-stroking function, you can set the 7th switch to OFF, it will change into manual self-stroking (Phenomenon as same with (1), (2)).

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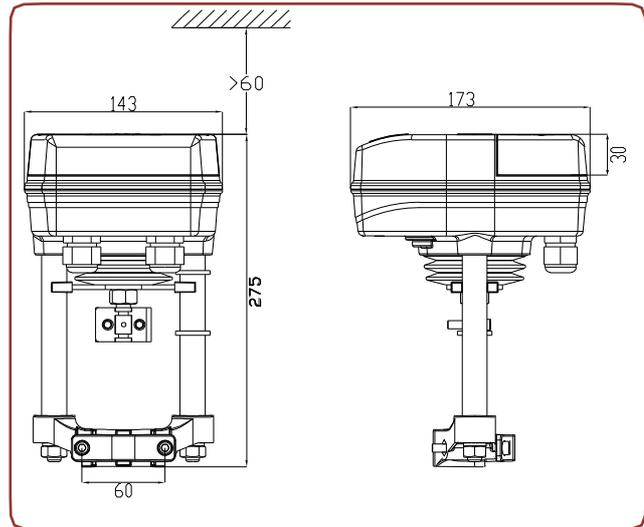
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Dimension

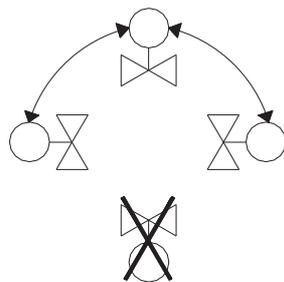


DN32-DN65



DN80-DN250

Installation Orientation



Note: Do not install the actuator in Downward position.

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Technical Parameters

Operating Parameters	
Electric Motor	DC Brushless Motor
Operating Voltage DN32 to DN150	24VAC± 15%, 24VDC+ 15%
Frequency	50Hz / 60Hz
Power consumption	Run : 14VA ; Max. : 25 VA
Running speed	High speed : 1s/mm; Medium speed : 2s/mm
Sensitivity	Proportional type: 0.8% (factory setting)
Dead zone	2% (factory setting)
Impedance(only for proportional type)	
Voltage input impedance	> 100K
Current input impedance	< 0.125K
Load requirements(only for proportional type)	
Voltage output load requirement	> 1K
Current output load requirement	< 0.5K
Control signal	0(2)~10VDC, 0(4)~20mA
Feedback signal	0(2)~10VDC, 0(4)~20mA
Lifetime	100 000 times full open and close

Material

Cover	PC
Bracket	Stainless steel
Base	Aluminum die casting

Environment Parameter

Protection Level	IP54
*Permissible medium temperature	
Water valve	-25~+150°C
Running	
Ambient temperature:	-10~+55°C
Ambient humidity:	≤95%RH
Transportation Ambient temperature: Ambient humidity:	-30~+65°C ≤95%RH
Storage	
Ambient temperature:	-15~+50°C
Ambient humidity:	≤95%RH
*Remark: when medium temperature in valve is below 0°C, such as: refrigerant(R12,R22,R134a ,R202) glycol and so on, valve stem should be protected by stem heater(Type:THOT...) to avoid the connection parts of valve body and valve stem frosting and icing.	
Weight : 3.0 Kg (DN32-DN150) Weight : 3.8Kg (DN200-DN250)	