Electric Actuator

HA500…suitable for valve stroke ≤20m, nominal output force 500N

Product Features

◆ RS485 Remote Control

The actuator is equipped with RS485 communication interface. The valve can be remotely controlled by ModBus protocol.

◆ Stroke Test Function

It can automatically measure the max. valve stroke without debugging.

◆ Manual Device

The actuator has the mechanical manual function for easy maintenance and debugging.

◆ Supporting APP

Supporting APP is offered to control the valve opening, set and read a number of parameters.

◆ Speed Adjustability

The speed can be switched through Dip switch.

◆ Seamless Connection

It adopts the seamless connection structure. It can ensure there is no gap during the movement which let the actuator have a higher control precision. The structure is simple and convenient to operate without tools.

Electric Actuator

HA600…, suitable for valve stroke ≤20m, nominal output force 600N
HA1000…, suitable for valve stroke ≤20m, nominal output force 1000N
HA1001…, suitable for valve stroke ≤40m, nominal output force 1000N
HA3000…, suitable for valve stroke ≤40m, nominal output force 3000N
HA5000…, suitable for valve stroke ≤60m, nominal output force 5000N

Product Features

◆ RS485 Remote Control

The actuator is equipped with RS485 communication interface. The valve can be remotely controlled by ModBus protocol.

◆ Stroke Test Function

It can automatically measure the max. valve stroke without debugging.

◆ Manual Device

The actuator has the mechanical manual function for easy maintenance and debugging.

◆ Local Mode (Electric manual function)

The actuator has local control function which can control the valve opening and closing by the buttons on the plate.

◆ Supporting APP

Supporting APP is offered to control the valve opening, set and read a number of parameters.

◆ Speed Adjustability

The speed can be switched through Dip switch.

◆ Seamless Connection

It adopts the seamless connection structure. It can ensure there is no gap during the movement which let the actuator have a higher control precision. The structure is simple and convenient to operate without tools.

◆ LED Indicating Light

There are LED indicating lights on the actuator cover which is convenient to observe the actuator running status.

Electric Actuator

HA16000…, suitable for valve stroke ≤100m, nominal output force 16000N

Product Features

◆ RS485 Remote Control

The actuator is equipped with RS485 communication interface. The valve can be remotely controlled by ModBus protocol.

◆ Stroke Test Function

It can automatically measure the max. valve stroke without debugging.

◆ Manual Device

The actuator has the mechanical manual function for easy maintenance and debugging.

◆ Local Mode (Electric manual function)

The actuator has local control function which can control the valve opening and closing by the buttons on the plate.

◆ Supporting APP

Supporting APP is offered to control the valve opening, set and read a number of parameters.

◆ Optional control/feedback signals

Four kinds of signals (0-10V, 2-10V, 0-20mA, 4-20mA) are optional. It can be selected via Dip switch.

◆ More reliable connection structure

The connection between actuator and valve stem adopts high strength connection mechanism to ensure the stability and avoid slippage.

◆ LED Indicating Light

There are LED indicating lights on the actuator cover which is convenient to observe the actuator running status.

Type Overview

Force	Operating Voltage	Type	Control signal	Feedback signal	Stroke	Velocity		Power	Rec. Transformer
						High	Low		
500N	24V	HA500S-24M-10	0(2)~10VDc, 0(4)~20mA , Floating	0(2)~10VDc, 0(4)~20mA	26mm	2s/mm	4s/mm	24VAC:10VA	30VA
								24VDC:5VA	15VA
		HA500S-24M485-10	0(2)~10VDc, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		2s/mm	4s/mm	24VAC:10VA	30VA
								24VDC:5VA	15VA
	220V	HA500S-220MF2-10	Floating	2 SPDT feedback		2s/mm		15VA	/
600N	24V	HA600S-24M-12	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC,0(4)~20mA	30mm	1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
		HA600S-24M485-12	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
		HA600S-24MF2-12	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
	220V	HA600S-220M-12	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC,0(4)~20mA		1s/mm	2s/mm	30VA	/
		HA600S-220M485-12	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	30VA	/
		HA600S-220MF2-12	0(2)~10VDC, 0(4)~20mA Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	30VA	/
1000N	24V	HA1000S-24M-12	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA	30mm	1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
		HA1000S-24M485-12	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
		HA1000S-24MF2-12	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
	220V	HA1000S-220M-12	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA		1s/mm	2s/mm	30VA	/
		HA1000S-220M485-12	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	30VA	/
		HA1000S-220MF2-12	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	30VA	/
1000N	24V	HA1000L-24M-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA	50mm	1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
		HA1000L-24M485-14	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
		HA1000L-24MF2-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	24VAC:33VA	50VA
								24VDC:12VA	30VA
	220V	HA1000L-220M-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA		1s/mm	2s/mm	30VA	/
		HA1000L-220M485-14	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	30VA	/
		HA1000L-220MF2-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	30VA	/
3000N	24V	HA3000L-24M-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA	50mm	1s/mm	2s/mm	24VAC:40VA	60VA
								24VDC:20VA	50VA
		HA3000L-24M485-14	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	24VAC:40VA	60VA
								24VDC:20VA	50VA
		HA3000L-24MF2-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	24VAC:40VA	60VA
								24VDC:20VA	50VA
	220V	HA3000L-220M-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA		1s/mm	2s/mm	50VA	/
		HA3000L-220M485-14	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		1s/mm	2s/mm	50VA	/
		HA3000L-220MF2-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		1s/mm	2s/mm	50VA	/
5000N	24V	HA5000L-24M-14	0(2)~10VDCC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA	70mm	2s/mm	4s/mm	24VAC:50VA	80VA
								24VDC:25VA	50VA
		HA5000L-24M485-14	0(2)~10VDC, 0(4)~20mA, RS485	0(2)~10VDc, 0(4)~20mA, RS485		2s/mm	4s/mm	24VAC:50VA	80VA
								24VDC:25VA	50VA
		HA5000L-24MF2-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		2s/mm	4s/mm	24VAC:50VA	80VA
								24VDC:25VA	50VA
	220V	HA5000L-220M-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA		2s/mm	4s/mm	60VA	/
		HA5000L-220M485-14	0(2)~10VDC, 0(4)~20mA ,RS485	0(2)~10VDc, 0(4)~20mA, RS485		2s/mm	4s/mm	60VA	/
		HA5000L-220MF2-14	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		2s/mm	4s/mm	60VA	/
16000N	220V	HA16000L-220M-15	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA	110mm	2.7s/mm		150VA	/
		HA16000L-220M485-15	0(2)~10VDC, 0(4)~20mA ,RS485	0(2)~10VDc, 0(4)~20mA, RS485		2.7s/mm		150VA	/
		HA16000L-220MF2-15	0(2)~10VDC, 0(4)~20mA, Floating	0(2)~10VDC, 0(4)~20mA 2 SPDT feedback		2.7s/mm		150VA	/

DIP Switch Instruction

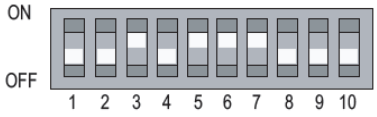
Switch	Function	Description	
S1-1	Starting of control/ feedback signal	ON	4~20mA or 2~10VDC
		OFF	0~20mA or 0~10VDC
S1-2	Type of control signal	ON	Current signal
		OFF	voltage signal
S1-3	Input impedance	ON	voltage signal
		OFF	Current signal
S1-4	Type of control signal	ON	Current signal
		OFF	voltage signal
S1-5	Operating mode	ON	When the control signal increases, actuator shaft extends; When the control signal decreases, actuator shaft retracts.
		OFF	When the control signal increases, actuator shaft retracts; When the control signal decreases, actuator shaft extends.
S1-6	Losing control signal mode	ON	When lose control signal (voltage type or current type), actuator will provide a min. control signal internally.
		OFF	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	Power on each time, self-stroking starts automatically.
		OFF	Self-stroking starts only when press the self-stroking button manually.
S1-8	Control type (when S1-9 is OFF)	ON	Floating
		OFF	Modulating
S1-9	Control mode	ON	RS485 interface control (Modbus protocol)
		OFF	Modulating and floating type
S1-10	Velocity	ON	High
		OFF	Low

Function Introduction

- **Modulating type**

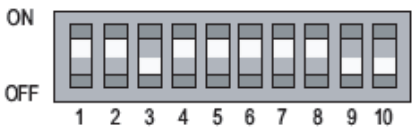
Control signal/feedback signal: 4~20mA

Control signal/feedback signal: 0~10VDC



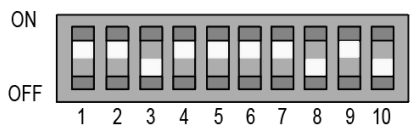
When TW...is modulating type, terminal B,O is power input, actuator can be controlled by connecting terminal O,E, as shown above, when equipped with our TL.../TF.../TTF...series Globe Valve, DIP Switch S1-5 is DA mode:
Control signal at terminal O,E increasing: actuator shaft extends, valve stem retracts, valve tends to open.
Control signal at terminal O,E decreasing: actuator shaft retracts, valve stem extends, 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 retracts, valve closed.

- **Floating Type**



When Dip switch S1-8 is on, it is floating type. Terminal B,O is power input, control the actuator by the switch O,UP,DOWN:
O, UP connected: actuator shaft retracts, and valve stem extends
O, DOWN connected: actuator shaft extends, and valve stem retracts
Notes: Terminal E,Y doesn't work by this time!

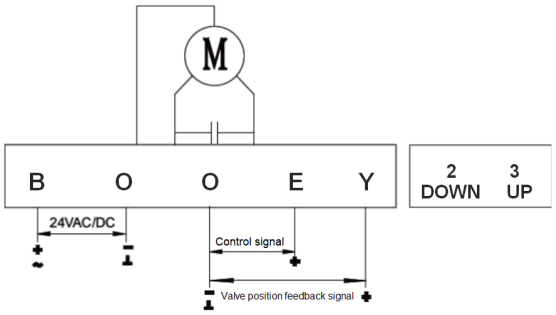
- **RS485 Bus Communication**



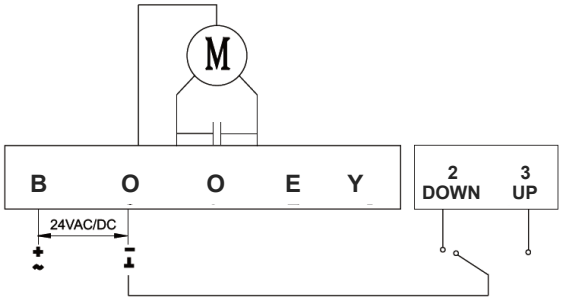
When Dip switch S1-9 is on, it is RS485 Bus communication type. Terminal B,O is power input, remote control by terminal 8,9:
Actuator can be controlled remotely by RS485 bus communication, actuator supports ModBus protocol.
Notes: Terminal O,E,Y,UP,DOWN doesn't work by this time!

Wiring (HA500...)

- **HA500S-24M-10**

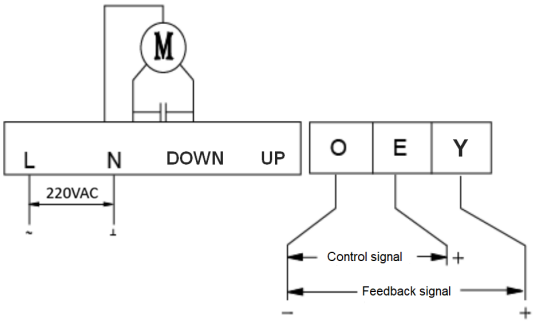


Modulating

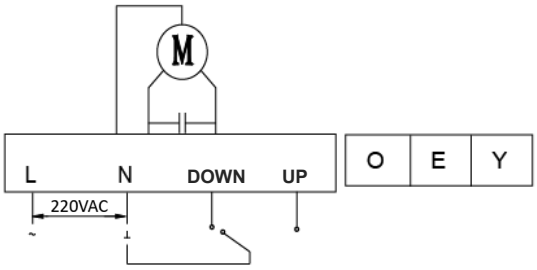


Floating

- **HA500S-220M-10**

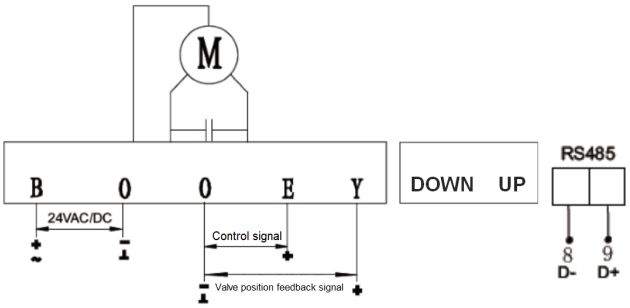


Modulating

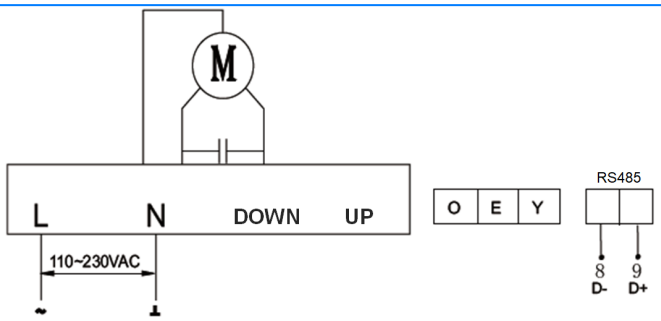


Floating

- **HA500S-24(220)M485-10**



HA500S-24M485-10



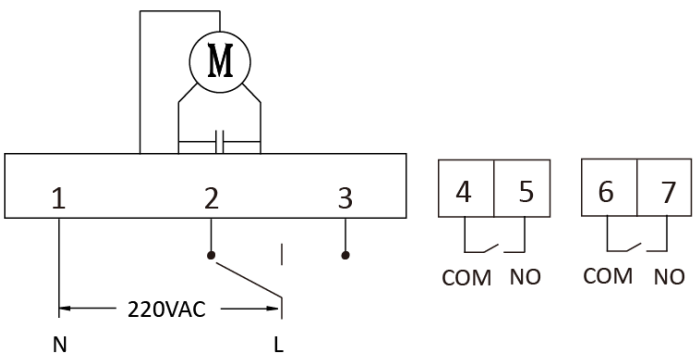
HA500S-220M485-10

Note:

1) when wire the actuator of BX24 with RS485, only connect terminals B, O and RS485;

1) when wire the actuator of BX220 with RS485, only connect terminals L, N and RS485;

- **HA500S-220MF2-10**



Floating with 2 SPDT Feedback Function

Notes:

Terminal 1, 2, and 3 are power input:

When terminal 1 and 2 power on, the actuator will run from 1 to 0.

When terminal 1 and 3 power on, the actuator will run from 0 to 1.

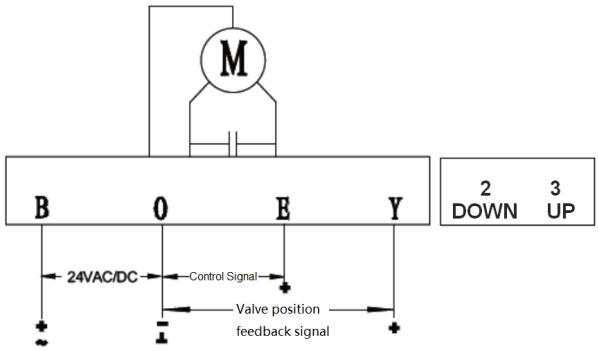
Terminal 4, 5, 6, and 7 are SPDT feedback:

When the actuator runs to limiting position 0, terminal 4 and 5 will conduct and output dry contact feedback.

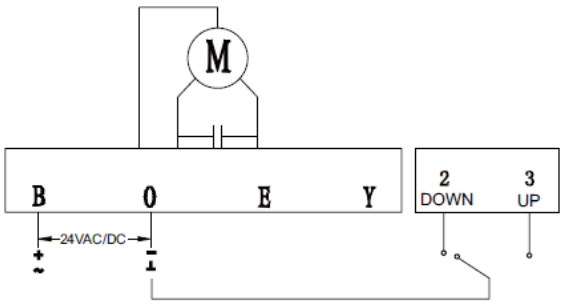
When the actuator runs to limiting position 1, terminal 6 and 7 will conduct and output dry contact feedback.

Wiring (HA600/1000/1001/3000/5000/16000...)

- **HA600/1000/1001/3000/5000-24M...**

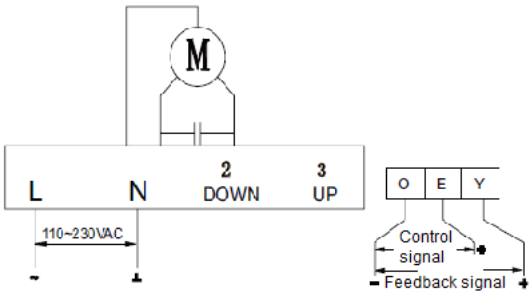


Modulating

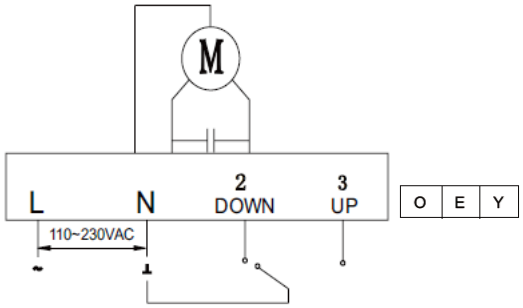


Floating

- **HA600/1000/1001/3000/5000/16000-220M...**

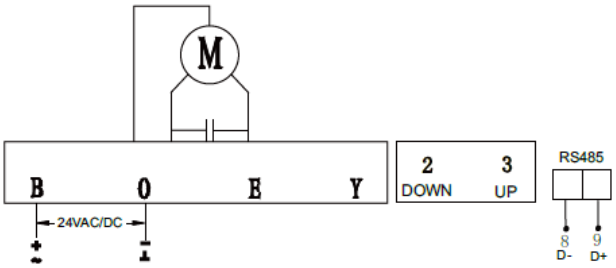


Modulating

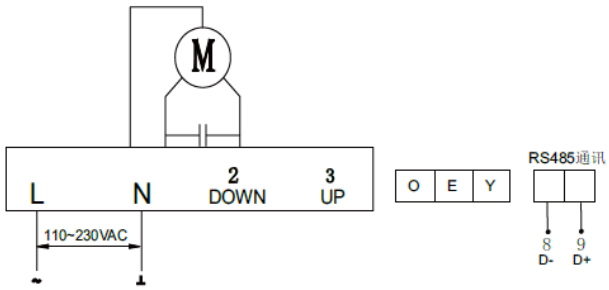


Floating

- **HA600/1000/1001/3000/5000-...M485...**

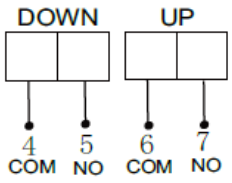


HA...-24M485...



HA...-220M485...

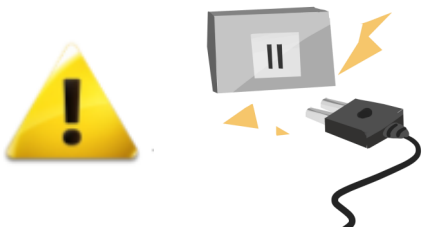
- **HA600/1000/1001/3000/5000-... MF2...**



Note:
When TW...is 2 SPDT, terminal 4,5,6,7 are normally open contact, contact capacitance ≤30VDC:
When the actuator runs to lower limit position, terminal 4,5 connect.
When the actuator runs to upper limit position , terminal 6,7 connect.

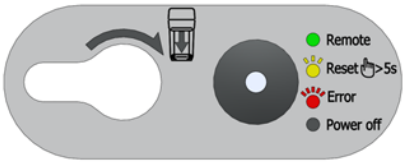
Wiring Instruction

1. Please cut off power supply during wiring in order to ensure personal safety!
2. Carefully check the power voltage when wiring, wire according to the product parameter, if not, it may cause fire and endanger personal safety in severe case!
3. Open the cover when wiring, prohibit disassembling other spare parts!
4. After wiring, please install the cover to the original position to avoid electric shock!



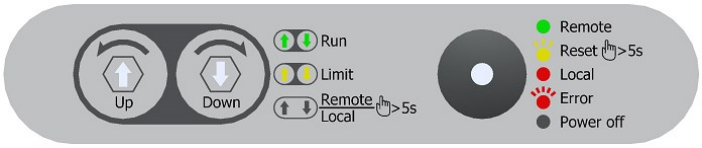
Indicating Light

- **HA500...**



Reset	Status	Description
Green	Always	Normal mode
Orange	Flashing	Self-stroking
Red	Quick flashing	Alarming

- **HA600/1000/1001/3000/5000/16000...**



Reset	Status	Description
Green	Always	Normal mode
Red	Always	Local mode
Orange	Flashing	Self-stroking
Red	Quick flashing	Alarming

UP	Status	Description
Green	Always	Normal mode
Red	Always	Local mode
Orange	Always	Reach upper limit posi-tion
Red	Flashing	Alarming

DOWN	Status	Description
Green	Always	Normal mode
Red	Always	Local mode
Orange	Always	Reach lower limit position
Red	Flashing	Alarming

Debugging Instruction

A. Connect actuator and valve body, wiring according to wiring diagram.

B. Automatic self-stroking (factory default setting): actuator will repeat automatic self-stroking when power on each time, the process is as follows:

1) The Reset yellow indicating light will keep flashing, actuator shaft extends to lower limit position firstly and then, it retracts to upper limit position, actuator will not be controlled by signal by this time.

2) Reset yellow light stop flashing, self-stroking stops. By then, actuator running direction can be controlled by control signal.

3) If the Reset red light is quick flashing during the self-stroking, it means the self-stroking status is not correct and the actuator will start alarming. The actuator can not match with the valve's max. stroke.

Remarks: If you don't need automatic self-stroking function , you can set the 7th switch to OFF, it will change into manual self-stroking.

C. Manual self-stroking function: If self-stroking is need in a power-on state, press down the Reset button over 5 seconds, and then the actuator starts self-stroking. The phenomenon is the same as step B.

D. RS485 function:

RS485 adopts standard Modbus protocol, the following parameters can be set through supporting APP:

RS485 address: the default address is 1.

Band rate:2400/4800/9600(Default) /19200

Byte format: 8bit Data Bits, No Parity (Default)/odd check/even check, 1 stop bit

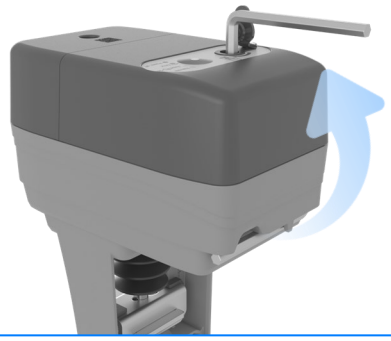
E. Cellphone supporting APP: Open the mobile APP client and close to the actuator scanning area. After connected, it can set the actuator parameters.

Notes:

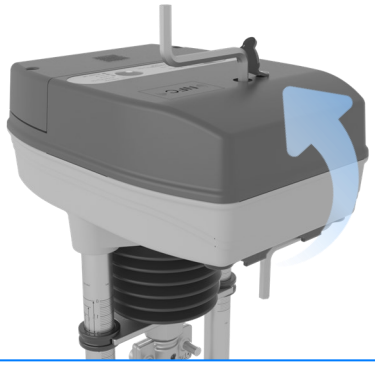
Current type actuator can't set signal division, please use the function after setting voltage type.

Assembling instruction

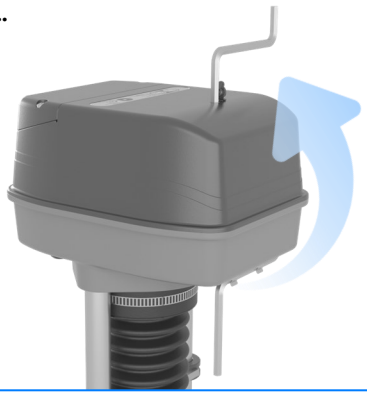
HA500...



HA600/1000/1001/3000/5000...



HA16000...



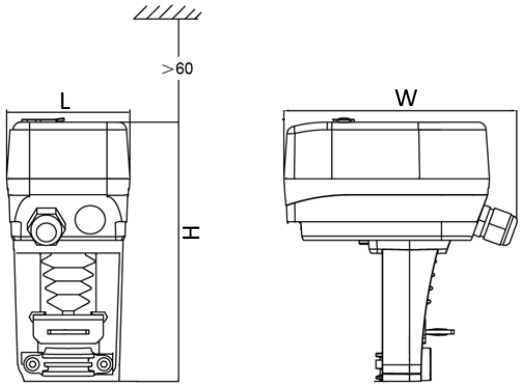
1. Shut off and prepare for manual operation.
2. Insert the Allen wrench into the manual hole on the top of the cover.
3. Turn the Allen wrench anticlockwise, the actuator shaft retracts;
   Turn it clockwise, the actuator shaft extends.
4. Manual operation is done, take out the wrench and cover tightly the red plug.

Note: In the case of power off, the actuator needs self-stroking again after the manual operation is completed.

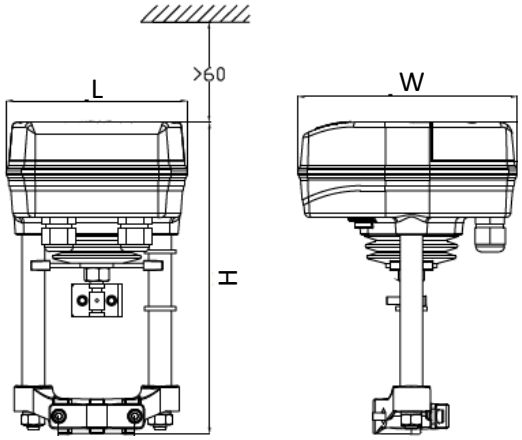
Manual self-stroking method: press the Reset button on the actuator cover over 5s, actuator will enter self-stroking!

Dimension

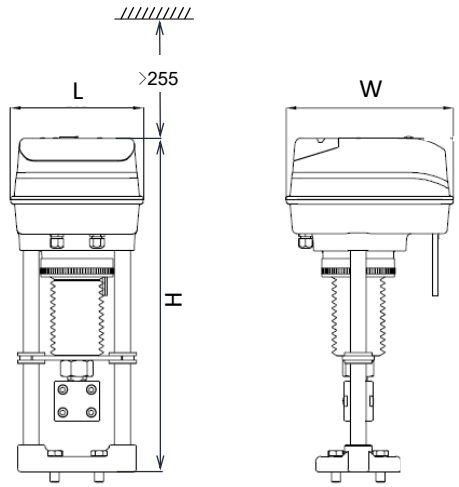
HA500...



HA600/1000/1001/3000/5000...



HA16000...



HA series	L mm	W mm	H mm
HA500...	97	170	192
HA600...	143	173	255
HA1000...	143	173	255
HA1001...	143	173	275
HA3000...	143	193	285
HA5000...	143	193	305
HA16000...	232	292	583

Technical Parameters

• Operating Parameters	
Rated output power	500N / 600N / 1000N / 3000N / 5000N / 16000N
Operating Voltage HA...-24M... HA...-220M...	 24VAC ± 15%，24VDC ± 15% 220VAC ± 15%
Control sensibility	Modulating: 0.8% (For TW200: 1%) RS485: 0.3% (default setting)
Dead zone (only for modulating type)	2% (default setting)
Impedance (only for modulating type) voltage input impedance current input impedance	 >100K <0.2K
Load requirements (only for modulating type) voltage output load requirement current output load requirement	 ＞2K ＜0.5K
Degree of protection	HA500：IP54 HA600/1000/1001/3000/5000：IP65 HA16000：IP65
Cable connector	PG13.5
Life time	100 thousand cycles

• Spare Parts Material	
Cover	HA500：PC HA600/1000/1001/3000/5000：PC HA16000：Aluminum die casting
Body	HA500：PC HA600/1000/1001/3000/5000：Aluminum die casting HA16000：Aluminum die casting
Bracket	HA500：Aluminum die casting HA600/1000/1001/3000/5000：stainless steel HA16000：stainless steel
Seat	HA500：Aluminum die casting HA600/1000/1001/3000/5000：Aluminum die casting HA16000：casting iron

• Environment Parameter	
Running	
Ambient temperature	-25~+65℃
Ambient humidity	≤95% RH non-condensation
Storage	
Ambient temperature	-40~+65℃
Ambient humidity	≤95% RH non-condensation