



## Description

The AVFF actuator series has been designed to control the flanged globe valves of the VFF series and is available in ON-OFF, floating, proportional and Modbus RS485 (RTU) control versions. The 1500 N actuator is equipped with a high-efficiency brushless DC motor, while the 3000 N actuator is equipped with a bidirectional synchronous motor. Fast and easy assembly. All AVFF actuators are fitted with a manual override for manual operation in the event of power failure.

## Technical specifications

<b>Power supply</b>	see schedule
<b>Electrical connection</b>	screw terminal
<b>Torque</b>	see schedule
<b>Max. stroke</b>	see schedule
<b>Running time</b>	see schedule
<b>Materials</b>	ABS cover, self-extinguishing aluminium bracket
<b>Protection degree</b>	IP54
<b>Protection class</b>	III 24 V AC/DC, I 230 V AC, ±10%
<b>Working range °C</b>	-10...+55°C
<b>Storage temperature and humidity</b>	-15...+55°C, 1...95% RH, non-condensing
<b>Fluid temperature</b>	< 130°C
<b>Maintenance</b>	free



Model	Torque N	Action	Stroke mm	Power supply	Consump. VA	DN	Running time s/mm
<b>AVFF15</b> <b>AVFF15B</b>	1500	on-off	22	24 V AC/DC 230V AC	12	50-80	1,5 or 3,8
<b>AVFF15M</b> <b>AVFF15BM</b>	1500	proportional	22	24 V AC/DC 230V AC	12	50-80	1,5 or 3,8
<b>AVFF30</b> <b>AVFF30B</b>	3000	on-off	50	24 V AC/DC 230 V AC 50/60 Hz	18	100-200	3,1 (50 Hz)
<b>AVFF30M</b> <b>AVFF30BM</b>	3000	proportional	50	24 V AC/DC 230 V AC 50/60 Hz	20	100-200	3,1 (50 Hz)

Suffix: **S** for 2x SPDT microswitches (excluding modulating version)

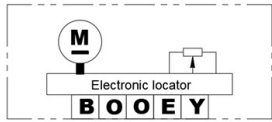
**MOD** Only for proportional models. Actuators with RS485 (RTU) control also include built-in analog control capability. The control mode, either Modbus RS485 RTU or analog, can be selected via RS485 (RTU) communication commands. When RS485 control is active, the analog input is disabled, while the analog output remains functional.



## Electrical wiring

### 1 - AVFF15M... proportional version

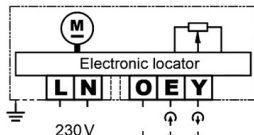
**AVFF15M**  
(power supply 24 V AC/DC)



<b>B</b>	System potential 24 V	~   +
<b>O</b>	System neutral 0 V	~     ⊥
<b>O</b>	Signal neutral (-)	~     ⊥
<b>E</b>	Positioning signal (+)	⊥
<b>Y</b>	Position feedback (+)	⊥

Wiring: max. 1.5 mm<sup>2</sup>

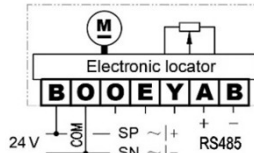
**AVFF15BM**  
(power supply 230 V AC)



<b>L</b>	System potential 230 V	~   +
<b>N</b>	System neutral 0 V	~   -
<b>O</b>	Signal neutral (-)	⊥
<b>E</b>	Positioning signal (+)	⊥
<b>Y</b>	Position feedback (+)	⊥

Wiring: max. 1.5 mm<sup>2</sup>

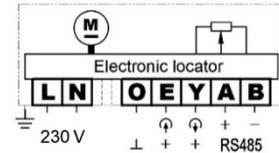
**AVFF15M/MOD, modbus RS485**  
(power supply 24 V AC/DC)



<b>B</b>	System potential 24 V	~   +
<b>O</b>	System neutral 0 V	~     ⊥
<b>O</b>	Signal neutral (-)	~     ⊥
<b>E</b>	Positioning signal (+)	⊥
<b>Y</b>	Position feedback (+)	⊥
<b>A</b>	485 Forward signal input (+)	
<b>B</b>	485 Reverse signal input (-)	

Wiring: max. 1.5 mm<sup>2</sup>

**AVFF15BM/MOD, modbus RS485**  
(power supply 230 V AC)

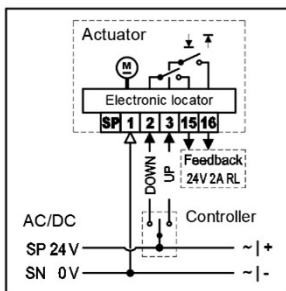


<b>L</b>	System potential 230 V	~   +
<b>N</b>	System neutral 0 V	~   -
<b>O</b>	Signal neutral (-)	⊥
<b>E</b>	Positioning signal (+)	⊥
<b>Y</b>	Position feedback (+)	⊥
<b>A</b>	485 Forward signal input (+)	
<b>B</b>	485 Reverse signal input (-)	

Wiring: max. 1.5 mm<sup>2</sup>

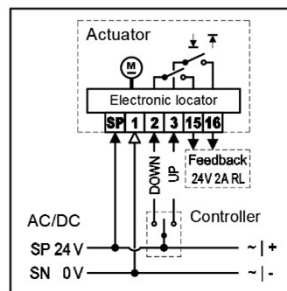
### 2 - AVFF15... on-off floating version

**AVFF15**  
(power supply 24 V AC/DC)



Optional: Connected as 3 wire

<b>SP</b>	System Potential 24V AC/DC	
<b>1</b>	System Neutral 0V AC/DC	
<b>2</b>	Stem extends ↓	Power Supply 24 V AC/DC
<b>3</b>	Stem retracts ↑	24 V AC/DC
<b>15</b>	Bottom limit	Output Power Supply
<b>16</b>	Top limit	Max. 3 A

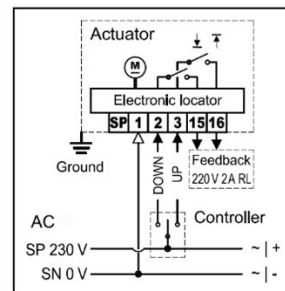


Optional: Connected as 4 wire

**For** Precise control and fast response in 3-point mode (0.02s)

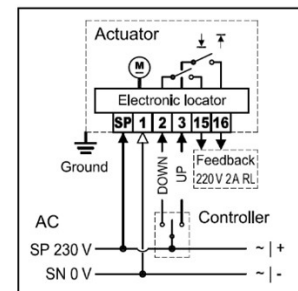
Wiring: max. 1.5 mm<sup>2</sup>

**AVFF15B**  
(power supply 230 V AC)



Optional: Connected as 3 wire

<b>SP</b>	System Potential 230 V AC	
<b>1</b>	System Neutral 0V AC	
<b>2</b>	Stem extends ↓	Power Supply 230 V AC
<b>3</b>	Stem retracts ↑	230 V AC
<b>15</b>	Bottom limit	Output Power Supply
<b>16</b>	Top limit	Max. 3 A



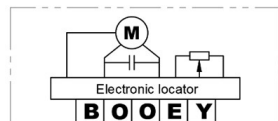
Optional: Connected as 4 wire

**For** Precise control and fast response in 3-point mode (0.02s)

Wiring: max. 1.5 mm<sup>2</sup>

### 3 - AVFF30M... proportional version

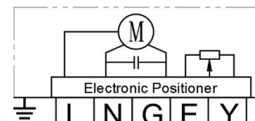
**AVFF30M**  
(power supply 24 V AC)



<b>B</b>	System potential 24 V AC	~
<b>O</b>	System neutral 0 V AC	~
<b>O</b>	Signal neutral (-)	⊥
<b>E</b>	Positioning signal (+)	⊥
<b>Y</b>	Position feedback (+)	⊥

Wiring: max. 1.5 mm<sup>2</sup>

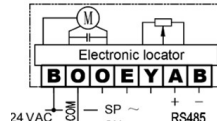
**AVFF30BM**  
(power supply 230 V AC)



<b>L</b>	Power supply 230 V AC	~
<b>N</b>	Power neutral 0 V AC	~
<b>G</b>	Signal neutral (-)	⊥
<b>E</b>	Input   0-10V or 4-20 mA (+)	⊥
<b>Y</b>	Output   0-10V or 4-20 mA (+)	⊥

Wiring: max. 1.5 mm<sup>2</sup>

**AVFF30M/MOD, modbus RS485**  
(power supply 24 V AC)



<b>B</b>	System potential 24 V	~
<b>O</b>	System neutral 0 V	~     ⊥
<b>O</b>	Signal neutral (-)	~     ⊥
<b>E</b>	Positioning signal (+)	⊥
<b>Y</b>	Position feedback (+)	⊥
<b>A</b>	485 Forward signal input (+)	
<b>B</b>	485 Reverse signal input (-)	

Wiring: max. 1.5 mm<sup>2</sup>

**AVFF30M/MOD, modbus RS485**  
(power supply 230 V AC)



<b>L</b>	System potential 230 V	~
<b>N</b>	System neutral 0 V	~
<b>G</b>	Signal neutral (-)	⊥
<b>E</b>	Positioning signal (+)	⊥
<b>Y</b>	Position feedback (+)	⊥
<b>A</b>	485 Forward signal input (+)	
<b>B</b>	485 Reverse signal input (-)	

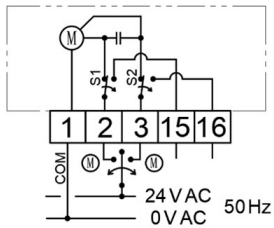
Wiring: max. 1.5 mm<sup>2</sup>



## 4 - AVFF30... on-off floating version

### AVFF30

(power supply 24 V AC)

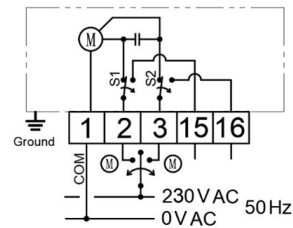


1	Power Neutral 0 V AC	
2	Stem extends ↓	Power Supply 24 V AC 50 Hz
3	Stem retracts ↑	
15	Bottom limit	Output Power Supply
16	Top limit	Max. 3 A

Wiring: max. 1.5 mm<sup>2</sup>

### AVFF30B

(power supply 230 V AC)



1	Power Neutral 0 V AC	
2	Stem extends ↓	Power Supply 230 V AC 50 Hz
3	Stem retracts ↑	
15	Bottom limit	Output Power Supply
16	Top limit	Max. 3 A

Wiring: max. 1.5 mm<sup>2</sup>

## Installation

As shown in the steps in the figure beside, install the electric actuator onto the control valve body:

**Fig.1:** First, use a tool (pliers or a wrench) to pull the valve stem of the control valve out of the valve body to its highest position (1).

**Fig.2:** Remove the U-bolt from the actuator and loosen the clamp on the actuator rod. Align the actuator rod with the valve stem and push them down together until the bottom surface of the actuator rests on the valve body mounting plane (2).

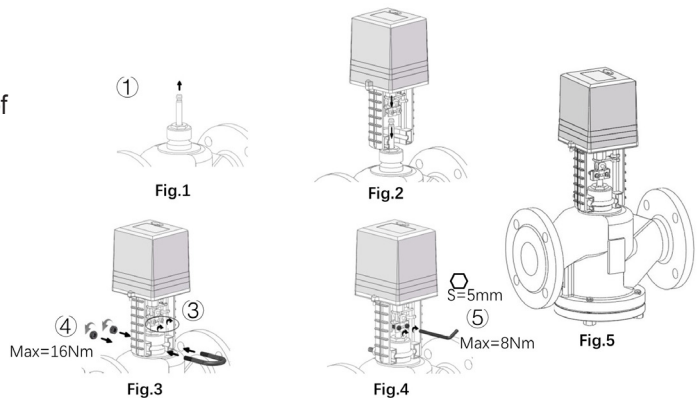
**Fig. 3:** Connect the actuator rod to the valve stem (3). Before assembly, ensure that the actuator rod and the valve stem are tightly butted against each other with no gaps. Using a 5 mm hex key, pre-connect the clamp clips, but do not fully tighten the screws yet.

Note: The clamp clips of AVFF15.. and AVFF30.. differ slightly. For AVFF30.., ensure the clamp is oriented so that the direction of the clamp relative to the notch aligns correctly with the side of the actuator rod.

Insert the U-bolt into the mounting hole between the actuator and the valve body, and tighten it using two M8 nuts (max torque = 16 Nm) (4).

**Fig. 4:** Tighten the two clamp screws with a 5 mm hex wrench, applying a maximum torque of 8 Nm (5).

**Fig. 5:** Finally, slide the two pointer rings (one red, one blue) along the actuator bracket until they are close to the pointer position.



## Setting AVFF15... ON/OFF, FLOATING

The floating actuator is equipped with an electronic positioner, as shown in the figure beside:

### 1. Fully connect the actuator to the valve body

Install according to the diagram and the steps described in "Complete Machine Assembly".

### 2. Correctly connect the power cable or control wiring

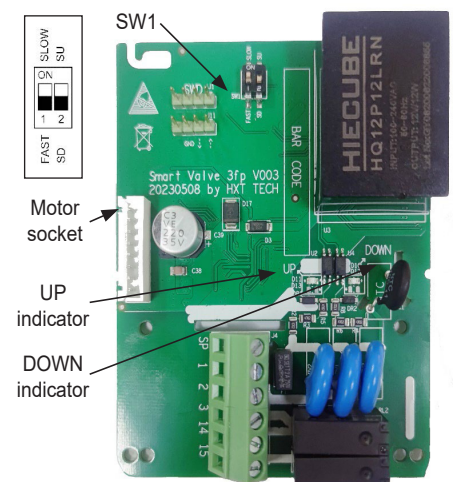
Perform wiring according to the "Wiring Diagram" included with the product.

### 3. Set the DIP switch to the required configuration

Adjust the DIP switch only after disconnecting the power supply.

### 4. Operate the actuator through the controller to perform a full run test

Once the test run is completed, the equipment commissioning is finished.



## Setting AVFF15... PROPORTIONAL

### DIP 1 – Feedback Signal Type

- ON:** DC current signal
- OFF:** DC voltage signal

### DIP 2 – Input (Control) Signal Type

- ON:** DC current signal
- OFF:** DC voltage signal

### DIP 3 – Positioner Action Mode (Direct / Reverse Acting)

- OFF – Direct Acting:** When the input signal increases, the actuator rod moves upward.
- ON – Reverse Acting:** When the input signal increases, the actuator rod moves downward.

### DIP 4 & DIP 5 – Signal Loss Response Mode (Applicable only when the input signal is DC 4–20 mA or DC 2–10 V)

#### > When DIP 5 = OFF:

- DIP 4 = ON:** Upward fail-safe – on input signal loss, the actuator rod moves to the upper limit position.
- DIP 4 = OFF:** Downward fail-safe – on input signal loss, the actuator rod moves to the lower limit position.

#### > When DIP 5 = ON:

- Position Hold** – regardless of DIP 4, on input signal loss the actuator rod remains at its current position.
- Note: This function is not available with DC 0–10 V or DC 0–20 mA input signals.
- For these signal types, if the input signal is lost, the actuator defaults to operating according to the 0% signal level.

### DIP 6 – Positioning Mode (Refer to the wiring diagram for system connections)

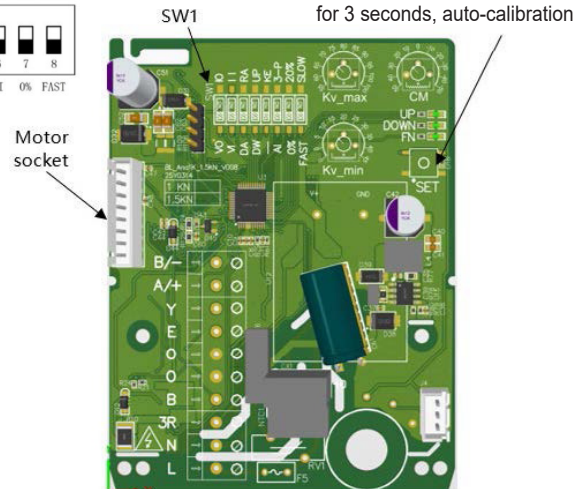
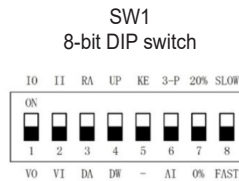
- OFF:** Modulating signal control mode
- ON:** 3-position control mode or manual control (manual operation possible using the mechanical handle)

### DIP 7 – Starting Point of Input and Feedback Signals (0% / 20%)

- OFF:** 0% (e.g., DC 0–10 V, DC 0–20 mA)
- ON:** 20% (e.g., DC 2–10 V, DC 4–20 mA)

### DIP 8 – Running Speed Selection

- OFF:** High-speed mode – 1.5 s/mm
- ON:** Low-speed mode – 3.8 s/mm



## Setting AVFF30M... PROPORTIONAL 24 V AC

The proportional actuator is equipped with an electronic positioner, as shown above:

### 1. Connect the actuator to the valve body

Install according to the diagram and the steps described in “Complete Assembly”.

### 2. Perform correct wiring

Follow the “Wiring Diagram” provided inside the product.

### 3. Set the DIP switches to the required configuration

Refer to “Positioner Setting” below; make all adjustments with the power disconnected.

### 4. Turn on the actuator power supply

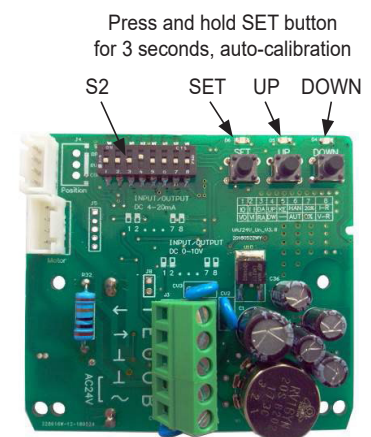
All three indicators will illuminate simultaneously and then turn off, indicating that the positioner self-test is complete.

### 5. Start the auto-calibration procedure

Press and hold the **SET** button for more than 3 seconds to initiate the full auto-calibration sequence:

- > The actuator rod first moves **downward**: During downward movement, the **SET** and **UP** indicators flash, while the **DOWN** indicator remains steadily lit. Once the rod reaches the valve's lower end position and the position is recorded, it begins to move upward.
- > The actuator rod then moves **upward**: During upward movement, the **SET** and **DOWN** indicators flash while the **UP** indicator remains steadily lit. After reaching the valve's upper end position and recording it, all indicators stop flashing and turn off.

Auto-calibration is now complete, and the system returns to the normal control state.





## Switch S2 – DIP Function Overview (Compact Table)

### DIP 1 – Feedback Signal Type

- ON:** Current (DC mA)
- OFF:** Voltage (DC V)

### DIP 2 – Input (Control) Signal Type

- ON:** Current (DC mA)
- OFF:** Voltage (DC V) Use together with DIP 7 and DIP 8.

### DIP 3 – Action Mode

- OFF:** Direct acting (signal ↑ → rod up)
- ON:** Reverse acting (signal ↑ → rod down)

### DIP 4 & DIP 5 – Signal Loss Response

- (For 0–10 V / 2–10 V / 4–20 mA)
- DIP 5 OFF + DIP 4 ON:** Fail-safe Up (rod → upper limit)
- DIP 5 OFF + DIP 4 OFF:** Fail-safe Down (rod → lower limit)
- DIP 5 ON:** Position Hold (rod stays in place)
- Note: Not functional for 0–20 mA (defaults to 0 mA behavior).

### DIP 6 – Manual / Auto Mode

- OFF:** Auto (follows input signal)
- ON:** Manual (operate via handle or UP/DOWN buttons)

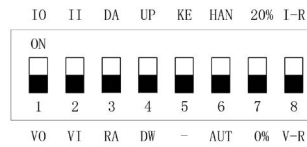
### DIP 7 – Signal Start Point

- OFF:** 0% (0–10 V, 0–20 mA)
- ON:** 20% (2–10 V, 4–20 mA)

### DIP 8 – Signal Resistance Matching

- ON:** Current input matching
- OFF:** Voltage input matching

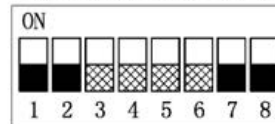
S2



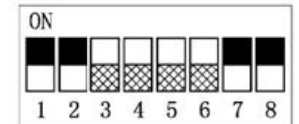
S2	Setting status												Starting point		Resistance matching	
	Output signal		Input signal		Positioner Action modes		Signal loss response			Manual/ Auto selection		0%	20%	Voltage signal	Current signal	
	Voltage	Current	Voltage	Current	Direct Acting	Reverse acting	Down	Up	Position hold	Auto	Manual					
	VO	IO	VI	II	DA	RA	DW	UP	KE	AUT	HAN					
1	OFF	ON														
2			OFF	ON												
3					OFF	ON										
4							OFF	ON	-							
5							OFF	OFF	ON							
6										OFF	ON					
7												OFF	ON			
8														OFF	ON	

Standard signal  
DIP switch status  
Setting map

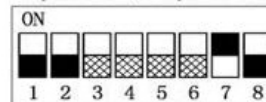
Input: 0–10V/Output: 0–10V



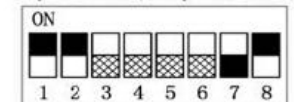
Input: 4–20mA/Output: 4–20mA



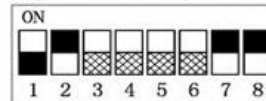
Input: 2–10V/Output: 2–10V



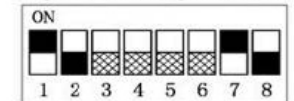
Input: 0–20mA/Output: 0–20mA



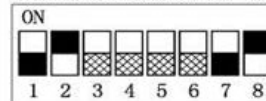
Input: 4–20mA/Output: 2–10V



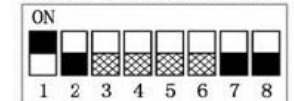
Input: 2–10V/Output: 4–20mA



Input: 0–20mA/Output: 0–10V



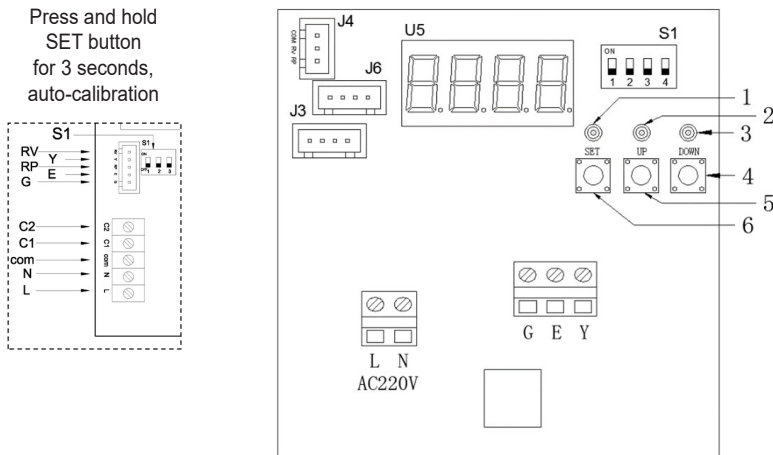
Input: 0–10V/Output: 0–20mA





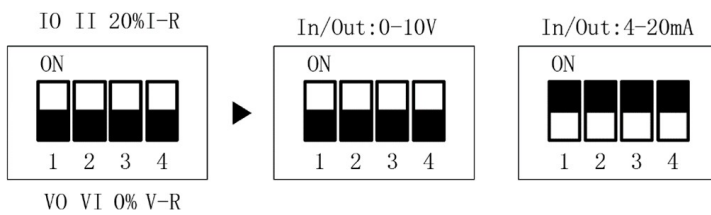
## Proportional 230 V AC (AVFF...B)

### Instructions for the actuator panel with an electronic locator



- U5: Display
- 1: "SET" Indicator light
- 2: "UP" Indicator light
- 3: "DOWN" Indicator light
- 4: "DOWN" button
- 5: "UP" button
- 6: "SET" button
- S1: Signal type selector
- J3: Motor socket
- J4: Power socket
- J6: Limit switch socket

### Status and setting of 4-digit DIP switch S1



#### DIP1: Feedback signal type

- ON: current output
- OFF: voltage output

#### DIP2: input signal type:

- ON: current output
- OFF: voltage input

#### DIP3: Starting point selector, i.e., percentage of the starting point and full point of input and output signals.

- OFF: 0%; e.g., DC0-10V-DC0-20mA etc.
- ON: 20%; e.g., DC2-10V-DC4-20mA etc.

#### DIP4: Resistance matching for input signals (The same as the DIP2)

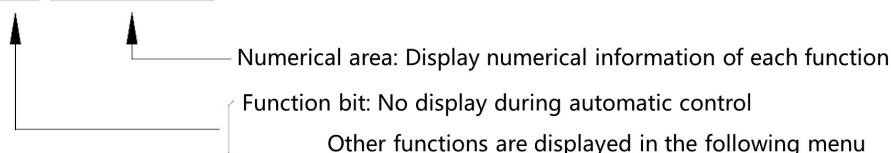
- ON-Perform resistance matching for the current input signal
- OFF- Perform resistance matching for the voltage input signal

S1-DIP	Signal type selector							
	Output signal		Input signal		Starting point selector		Resistance matching for input signals	
	Voltage	Current	Voltage	Current	0%	20%	at voltage	at current
DIP1	OFF	ON						
DIP2			OFF	ON				
DIP3					OFF	ON		
DIP4							OFF	ON



## ■ Proportional 230 V AC (AVFF...B)

8.8.8.8.



### 1. Quick debugging ( Auto-calibration of valve stroke):

After each power - on of the device, it directly enters the "automatic control" state. In the "automatic control" state, press and hold the ["SET"] key for three seconds, then the auto-calibration program will be started:

- > The actuator rod moves downward first. The "SET indicator light" and "UP indicator light" flash, and the "DOWN indicator light" is always on.
- > Stop slightly at the bottom dead center, memorize it and then move upward. The "SET indicator light" and "DOWN indicator light" flash, and the "UP indicator light" remains on. Move upward to the limit position, stop slightly, memorize it, and then all indicator lights stop flashing. The auto-calibration is completed.

### 2. Manual/Auto control status

In the normal "automatic control" state, when the ["SET" + "UP"] two keys are pressed simultaneously for three seconds, the "automatic control" and "manual control" states can be switched alternately.

In the "manual control" state, the function bit displays "H", and at this time, the up and down actions of the actuator can be operated through the ["UP"] key or the ["DOWN"] key.

### 3. Automatic control state

#### 3.1. Feedback signal display

Under the normal "automatic control" state, there is no display of the function bit. At this time, the value displayed in the numerical area of the display screen is the percentage value of the valve position feedback signal.

#### 3.2. Input Signal Display

In the normal "automatic control" state, by switching the ["DOWN"] key, the percentage value of the valve position feedback signal and the percentage value of the input signal can be alternately displayed in the numerical area of the display screen.

When the percentage value of the input signal is displayed in the numerical area, the function position shows ". After the percentage value of the input signal is displayed for 10 seconds without any operation, it will automatically return to the normal "automatic control" state.

### 4. Overload alarm function

For the actuator, stalling (when the resistance value of the potentiometer does not change within 30 seconds) at non - extreme positions (near the two dead - point positions, that is, within 5% of approaching zero and full scale) is regarded as a fault. At this time, the current feedback value and E01 are displayed alternately, and the output of the thyristor is cut off. Then, try to output again after 30 seconds, and repeat this process.



## ■ Engineers set parameters

In the “Automatic Control” state, press and hold the three keys [“SET” + “UP” + “DOWN”] simultaneously for three seconds to enter the engineer parameter setting state. Press the [“SET”] key in sequence, and the function bit and the value area will flash alternately. When the function bit is flashing and the value area is not flashing, you can change the function bit through the [“UP”] and [“DOWN”] keys. When the value area is flashing and the function area is not flashing, you can change the value in the value area through the [“UP”] and [“DOWN”] keys. In the parameter setting state, if there is no operation for more than 10 seconds, it will return to the “Automatic Control” state.

Conventional “Function Bit” Display Table			
Function description	Function bit	Display	Explanation
Position feedback	No display	8880 8100	Numeric range: 0% - 100% In automatic mode, only the position feedback value is displayed. In the automatic state, if you need to view the input signal values, you can use the DOWN key to switch between the position feedback values and the input signal values.
Input signal	P	P880 P100	Note: After 10 seconds of no operation while the input signal value is displayed, the positioner automatically reverts to the state of displaying the position feedback value.
Manual function	H	H880 H100	Numeric range: 0% - 100% Only display the position feedback value. It is not allowed to switch to the input signal display state. In this state, the actuator can be operated to run by pressing the “UP” key or the “DOWN” key. Phenomenon: Flashing the current feedback value;
Stroke calibration alarm		E800	E00 = Warning that the stroke calibration has not been completed correctly. Phenomenon: The UP and DOWN indicator lights flash alternately with an interval of 1 second.
Locked Rotor Alarm		E801	E01 = Locked Rotor Alarm (The overload switch has been triggered) 1. Upward rotation blocking alarm Phenomenon-The alarm code E01 flashes, and the SET and UP indicator lights flash together with a cycle of 1 second. 2. Downward blocking alarm Phenomenon-The alarm code E 01 flashes, and the SET and DOWN indicator lights flash together with a cycle of 1 second.
Lost signal alarm	E	E802	E02= Lost signal alarm In the automatic state, if the input signal line is disconnected, the positioner determines it as a lost signal alarm.
Potentiometer Upper Limit Alarm		E803	E03= Potentiometer upper limit alarm In the automatic state, when the output shaft of the mechanism moves upward to the potentiometer protection position, the positioner determines it as an upper limit alarm.
Potentiometer Lower Limit Alarm		E804	E04= Potentiometer lower limit alarm In the automatic state, when the output shaft of the mechanism descends to the potentiometer protection position, the positioner judges it as a lower limit alarm.
Operating failure		E805	E05 = Actuator running failure, such as abnormal transmission system, or abnormal potentiometer operation, etc. 1. Downward failure Phenomenon: Display E05, and the DOWN indicator light flashes 3 times and pauses for 1s. 2. Upward failure Phenomenon: Display E05, and the UP indicator light flashes 3 times and pauses for 1s.



Level 1 parameter table			
Function description	Function bit	Display	Factory values
Starting point selector	1	1 00 1 01	Selection of the starting point of the input signal. Value range: 00 = 0%, 01 = 20% Note: The DIP switch settings take precedence. This parameter does not need to be set and can use the default value.
Direct or inverse acting selector	2	2 00 2 01	Value range: 00, 01 00= Direct acting (Signal increases, the output shaft of the actuator moves upward) 01= Inverse acting (Signal increases, the output shaft of the actuator moves downward) Note: When not specified, the factory default is "00".
The working mode of the lost signal	3	3 00 3 01 3 02	Value range: 00, 01, 02 00= Downward movement 01= Upward movement 02= Hold the position, Note: The default setting at the factory is "00".
Lower limit value of the stroke Kv-min	4	Value range: 0-55	Stroke limit setting when the input signal is at 0% 00= Disable The factory default is "00".
Upper limit value of the stroke Kv-max	5	Value range: 55-100	Stroke limit setting when the input signal is at 100% 100= Disable; The factory default is "100".
Flow characteristic	6	Value range: 00, 01, 02	The curve relationship between the percentage of the input signal and the percentage of the stroke: 00= Linear, 01= Equal percentage, 02= Reverse equal percentage The factory default is "00".
Rangeability	7	Value range: 25, 30, 33, 50, 60, 80, 100	Only available when the equal percentage characteristic is used. Note: The factory default is "30".
Level 2 parameters unlocking bit	8		Users cannot change it at will. Note: The default factory setting is "08". Set it to "16", and after confirmation, enter the level 2 parameters setting.

Level 2 parameter table			
Function description	Function bit	Display	Factory values
Signal dead zone setting	9	9 05 9 100	Value range: 0.4-10.0 !! Please change with caution. Note: The default factory setting is "0.6", and the dead zone parameter is 0.6%. If it is set to "2.0", after confirmation, the dead zone parameter will be 2.0%.



## ■ Dimensions (mm)

