

RT-PSDM2

Modular proportional amplifier without electrical position feedback, doubleelectromagnets.
Power supply range; 8~32VDC
Command Types: $\pm 10V, 0\sim 5V, 0\sim 10V, 4\sim 20mA$
(switchable on-site)
Maximum output current: 0.2~3A
(settable on-site)



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Features

- It can be Convenient installation: on the DIN 35mm rail.
- Easy operation: set various parameters through the amplifier's integrated buttons and digital tubes.
- Rich parameter configuration: configurable with multiple input command types, maximum and minimum currents, ramp-up and ramp-down times, dither frequency, and command dead zone.
- Wide voltage and current range: 8~32VDC wide voltage input, 0~3A wide current output, meeting the requirements of various double electromaget proportional valves without position feedback.
- Fault diagnosis: real-time monitoring of command wire breakage, overload, solenoid wire breakage, and overcurrent, and displaying the current fault code on the digital tube for easy fault location.
- RS485 communication interface: with the PC software EHC-Manager, it enables functions like batch parameter modification and remote monitoring.
- Support for Modbus RTU protocol:enables multi-machine communication control.

Ordering Model

RT-PSDM	2
01	02

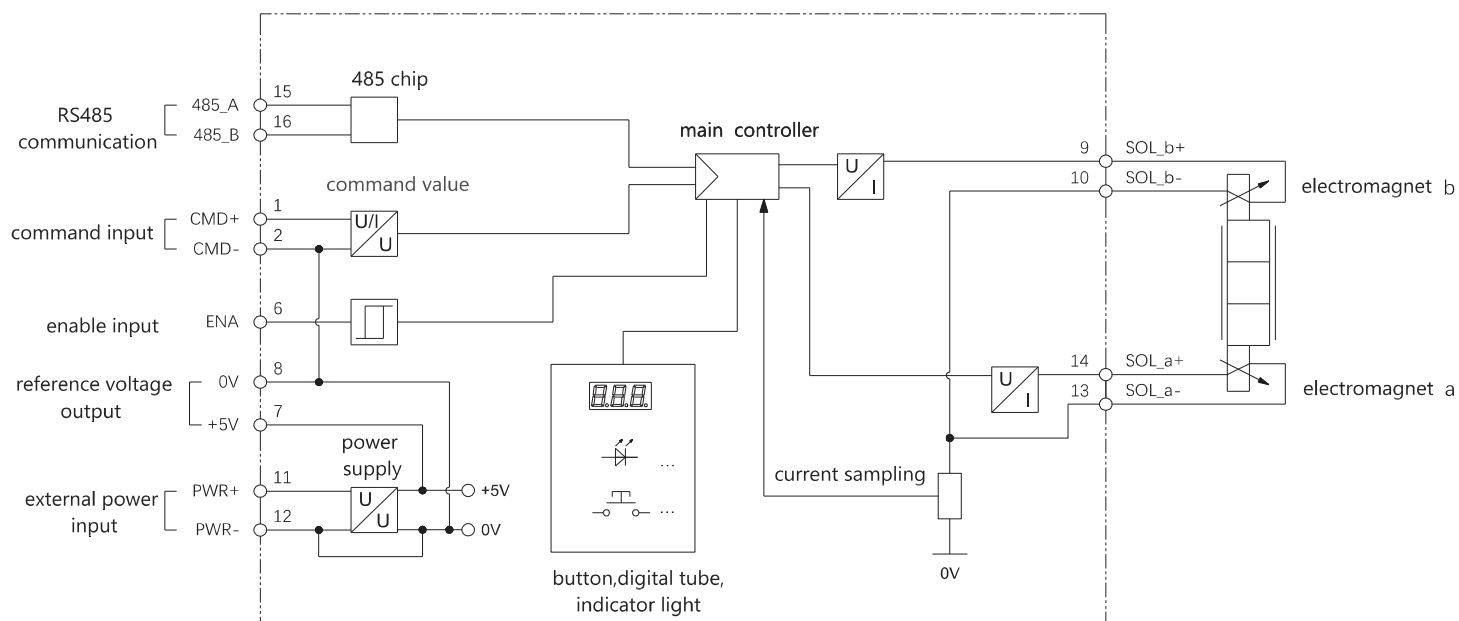
01	RT-PSDM	Modular proportional amplifier
02	2	Drive double-electromagnet proportional valve.(Powered electromagnets repel; only one can be activated at a time.)

Technical Data

Working Voltage	8~32 VDC
No-load Current	≤40mA
Command Input	±10V, RE≥100KΩ 0~5 V, RE≥100KΩ 0~10 V, RE≥100KΩ 4~20 mA, RE=250Ω (command type switchable on-site)
Reference Voltage	5V, 5mA Max
Resolution	≤1 ‰
Nonlinearity	≤1 ‰
Maximum Output Current	0.2~3 A (settable)
Dither Frequency	50~450Hz (settable)
Ramp Time	0~99.9 S
Communication Interface	RS485
Communication Protocol	ModBus-RTU
Baud Rate	4800~57600 Baud (default 9600)
Operating Temperature	-20~70 °C
Storage Temperature Operating and Storage Humidity	-25~85 °C 0 %~90 %
Terminal Connection Type	Plug-in threaded fastening terminals
PC Software	EHC_Manager ①

① For more information about the EHC-Manager software, please refer to the "EHC_Manager Software User Manual".

Principle Block Diagram

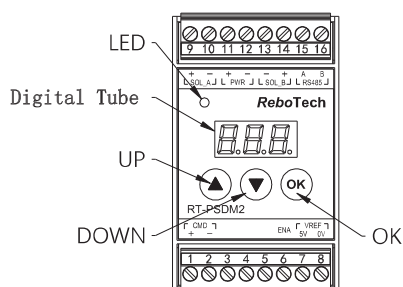


Terminal Definition

Terminals	Function Descriptions
1	CMD+
2	CMD-
3	N.C.
4	N.C.
5	N.C.
6	ENA ①
7	VREF_5V
8	VREF_0V
9	SOL_b+
10	SOL_b-
11	PWR+
12	PWR-
13	SOL_a-
14	SOL_a+
15	RS485_A
16	RS485_B

- ① The external enable is disabled by default (that is, the amplifier can work normally even without connecting this terminal). It is necessary to set the parameter "PEA" to make the external enable effective, and then this terminal can be used. For details, please refer to the "Parameter Table".
- ② For the command range of 0 - 10V: Electromagnet b is energized, pushing the valve core to move towards port A. For the command range of - 10 - 0V: Electromagnet a is energized, pushing the valve core to move towards port B.
- ③ For the double - ended three - wire electromagnet: The negative pole only needs to be connected to terminal 10 or terminal 13.

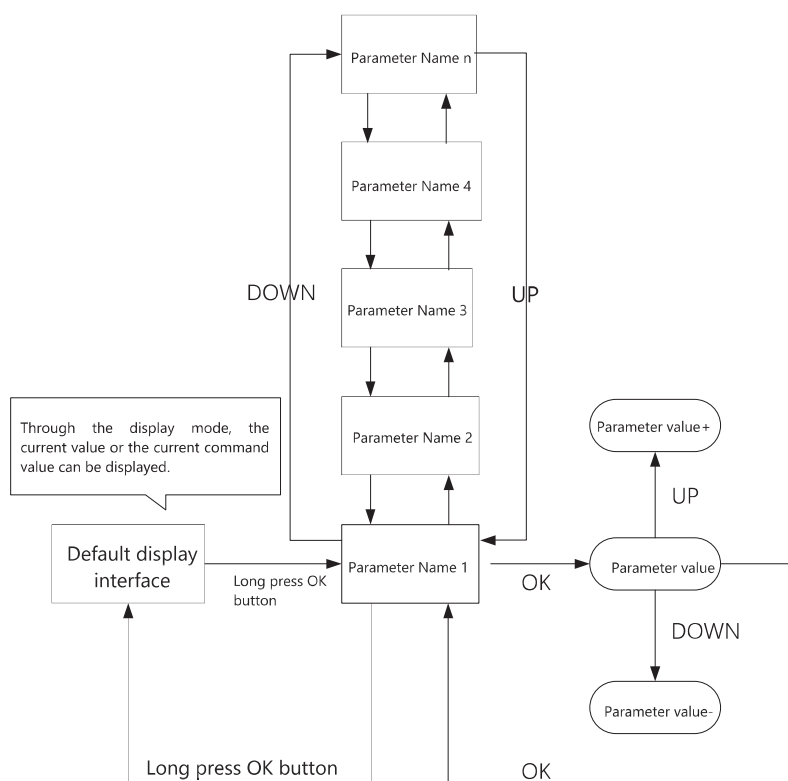
Parameter Setting Navigation



By pressing the "OK", "UP", and "DOWN" buttons to set parameters. Long press the "OK" button (>2S) to enter the "parameter name" interface. Press the "UP" and "DOWN" buttons to select the parameter, and short press the "OK" button to enter the "parameter value" interface. After entering a parameter value interface, change the parameter value by pressing the "UP" and "DOWN" buttons. Short press the "OK" button to return to the "parameter name" interface.

In the "parameter name" interface, long press the "OK" button (>2S) to return to the "default display interface".

In the "parameter name" or "parameter value" interface, if there is no input for more than 60S, it will automatically return to default display interface.



Parameter Table

Serial Number	Item	Digital Tube Display	Factory-set Value	Value Range	Unit	Descriptions
1	a Maximum Current	<i>R iH</i>	1.00	0.20~3.00	A	Adjustment step length: 0.01A ④
2	a Minimum Current	<i>R iL</i>	0.00	0.00~1.00	A	Adjustment step length: 0.01A ④
3	a Ramp-up Time	<i>R rU</i>	0.0	0.0~99.9	S	Adjustment step length: 0.1S
4	a Ramp-down Time	<i>R rD</i>	0.0	0.0~99.9	S	Adjustment step length: 0.1S
5	b Maximum Current	<i>b iH</i>	1.00	0.20~3.00	A	Adjustment step length: 0.01A ④
6	b Minimum Current	<i>b iL</i>	0.00	0.00~1.00	A	Adjustment step length: 0.01A ④
7	b Ramp-up Time	<i>b rU</i>	0.0	0.0~99.9	S	Adjustment step length: 0.1S
8	b Ramp-down Time	<i>b rD</i>	0.0	0.0~99.9	S	Adjustment step length: 0.1S
9	External Enable Mode	<i>PER</i>	0	0~1		0: External enable ineffective ⑤ 1: External enable effective
10	Mid-position adjustments	<i>P cE</i>	50	40~60	%	Adjustment step length: 1%
11	Input Signal	<i>PR i</i>	-10	10/5/420/-10/485		10: 0~10V 5: 0~5V 420: 4~20mA -10: -10~+10V 485: RS485 bus
12	Dither Frequency	<i>P dF</i>	140	50~450	Hz	Adjustment step length: 10Hz
13	Command Dead Zone	<i>P cD</i>	2	0~5	%	Adjustment step length: 1%
14	Display Mode	<i>P dS</i>	0	0~1		0: Current Current (Unit: A) 1: Current Command (Unit: V or mA)
15	Parameter Save	<i>P sR</i>	0	0~5		When the value is over 5, save the parameters ①
16	Restore Factory Parameters	<i>P rF</i>	0	0~5		When the value is over 5, restore the factory parameters ②
17	Fault Clear	<i>P cL</i>	0	0~5		When the value is over 5, clear the overcurrent fault code ③
18	Device Address	<i>PR d</i>	2	1~127		Adjustment step 1
19	Baud Rate	<i>P bD</i>	9.6	4.8/9.6/19.2/38.4/57.6	K	⑥

①The values of parameters 1 to 18 will take effect immediately during the setting process and can be retained until the power is turned off. If you want to save the parameter values permanently, after setting parameters 1 to 18, you need to enter the parameter "*P sR*", and then press the "UP" key to make the setting value of "*P sR*" greater than 5. In this way, the parameter values will be saved permanently, and at the same time, the amplifier will return to the "default display interface". If you want to abandon the changes, turn off the power without operating the parameter "*P sR*" and then turn it on again, and the parameters will be restored to the previously saved values.

②Enter the parameter "*P rF*", and then press the "UP" key to make the setting value of "*P rF*" greater than 5. All the parameters will be restored to their factory-set values, and at the same time, the amplifier will return to the "default display interface".

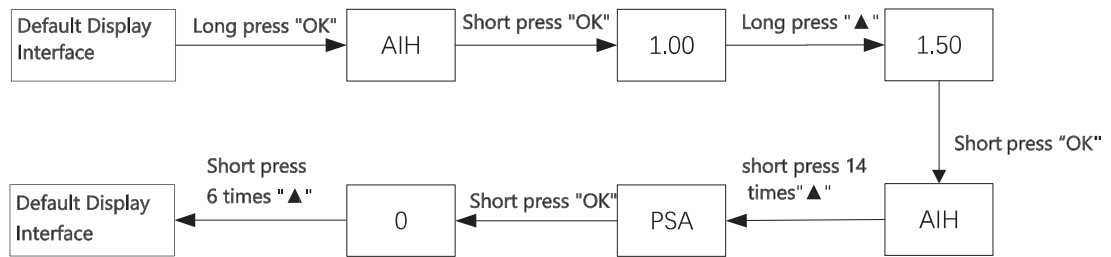
③When the overcurrent fault codes "*E3 I*" or "*E4 I*" appear, after the faults are eliminated, the fault codes need to be manually cleared before the amplifier can work normally. Enter the parameter "*P cL*", and then press the "UP" key to make the setting value of "*P cL*" greater than 5. In this way, the fault codes will be cleared, and at the same time, the amplifier will return to the "default display interface". (The "*E3 I*" fault code can also be cleared by turning off the power and then turning it on again.)

④The maximum and minimum currents of electromagnets A and B can be set separately. When setting the maximum current "*R iH*" and the minimum current "*R iL*", the amplifier forces "*R iH*" to be more than 0.10 A greater than "*R iL*" (for example, when "*R iL*" is set to 0.20 A, "*R iH*" can only be set to be greater than or equal to 0.30 A). The same applies to the electromagnet on side B.

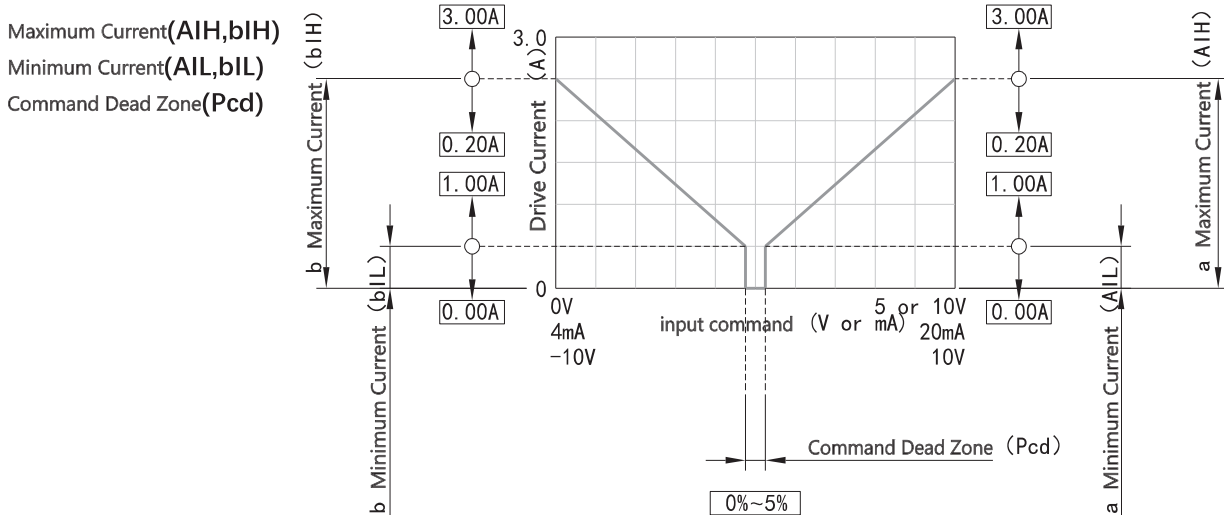
⑤The external enable mode (*PER*) is set to no external enable by default. If customers need to use the external enable, they should set this parameter to 1 and then operate "*P sR*" to save the parameter permanently. After the setting is completed, the amplifier will start working only when the terminal No. 6 is connected to a high level (> 8V).

⑥After the baud rate "*P bD*" is set, it is necessary to operate "*P sR*" to save this parameter permanently. After the saving is completed, the power must be turned on again for the new baud rate to take effect.

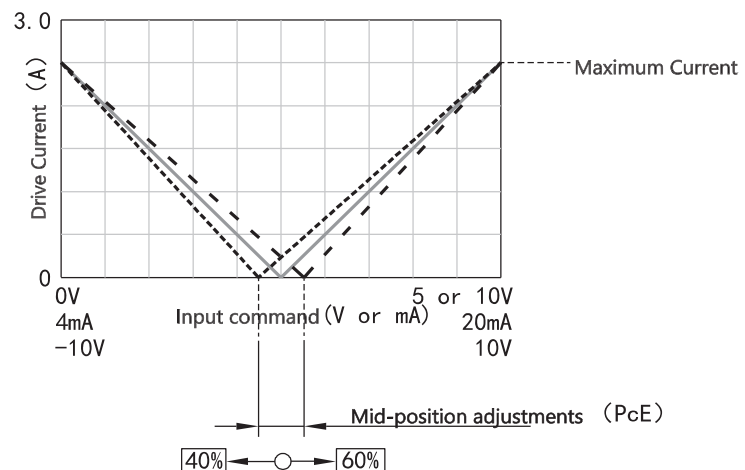
Parameter Setting Example: When you need to adjust the maximum current of electromagnet A from 1A to 1.5A, follow the process shown in the figure below. Other parameter adjustments are similar. If multiple parameters need to be adjusted at once, adjust the other parameters first, and then perform the PSA parameter save operation only once at the end.



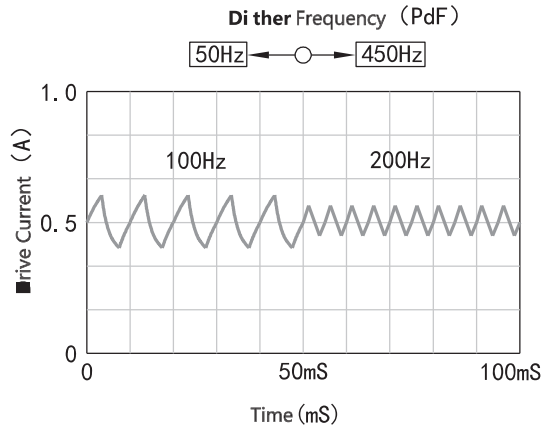
Parameter Meaning Diagram



Mid-position adjustments (PcE)

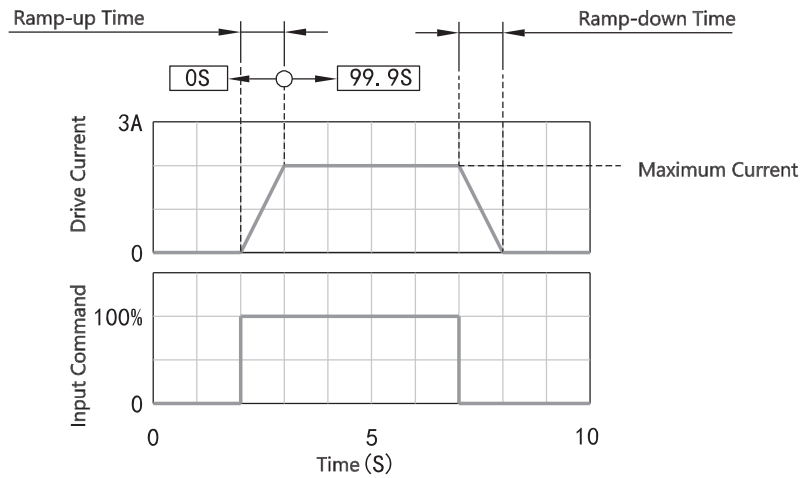


Dither Frequency (PdF)



Ramp-up Time (ArU,brU)

Ramp-down Time (ArD,brD)



Alarm and Indications

Digital Tube Displays	Fault Descriptions
E10	4~20mA signal wire break (command signal is much less than 4mA) ①
E11	4~20mA signal overload (command signal is much greater than 20mA) ①
E30	The wire of electromagnet B is broken (the coil of electromagnet A is open or the plug is loose) . ①
E31	Overcurrent occurs in electromagnet B (the coil of electromagnet A is short-circuited). ②
E40	The wire of electromagnet A is broken (the coil of electromagnet B is open-circuited or the plug is loose). ①
E41	Overcurrent occurs in electromagnet A (the coil of Electromagnet B is short-circuited). ②
E80	EEPROM malfunction. ③

When the above faults occur in the amplifier, the LED digital display tube will display the fault codes and flash at a frequency of 2Hz.

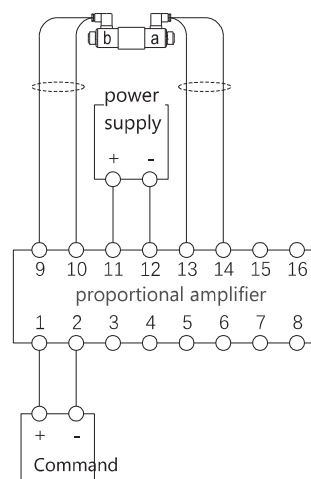
- ① When the fault codes "E10", "E11", "E30" and "E40" appear, after the faults are eliminated, the amplifier will automatically clear the fault codes and return to the normal working state.
- ② When the "E31" and "E41" fault code appears, after the overcurrent fault has been eliminated, it is necessary to enter the parameter "PCL" to clear the fault code (or power on again after powering off), and then the amplifier can resume working.
- ③ When the "E80" fault code appears, please power off and then power on again to restart the amplifier. If the fault code is still not cleared, please contact ReboTech.

LED Indications	Descriptions
Green Light Always On	Normal
Red Light Flashing	Fault

Wiring Examples

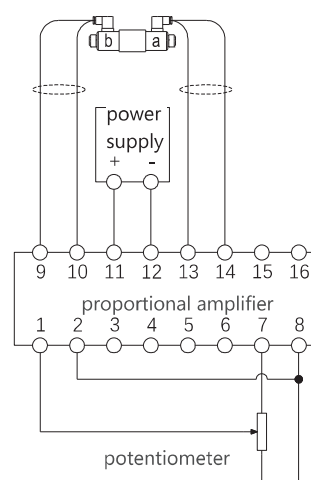
Example 1

Give an analog commands through PLC, CNC, acquisition card, etc.
The analog commands can be any signal of 0~5V, 0~10V, 4~20mA or $\pm 10V$.
(Note that the parameter "**PR f**" should be modified into the corresponding command type.)



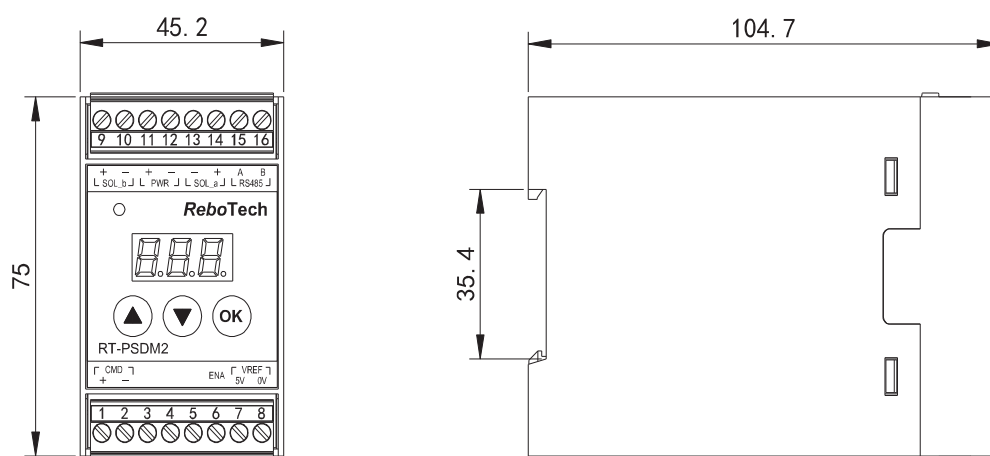
Example 2:

Give an analog command through a potentiometer, which is connected to the 5V and 0V reference voltages of the amplifier. (It is necessary to set the parameter "**PR f**" to 5.)
Note: It is recommended that the resistance value of the potentiometer be 5K Ω or 10K Ω .

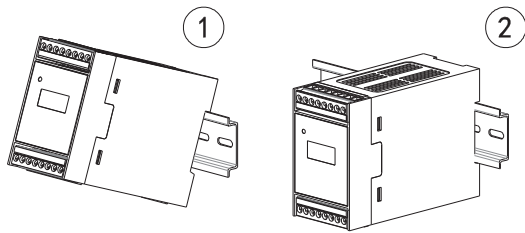


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Overall Dimensions (Unit: mm)

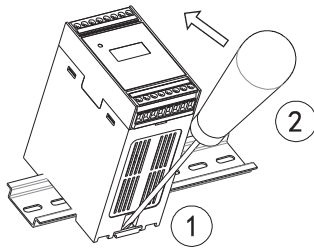


Installation Guide



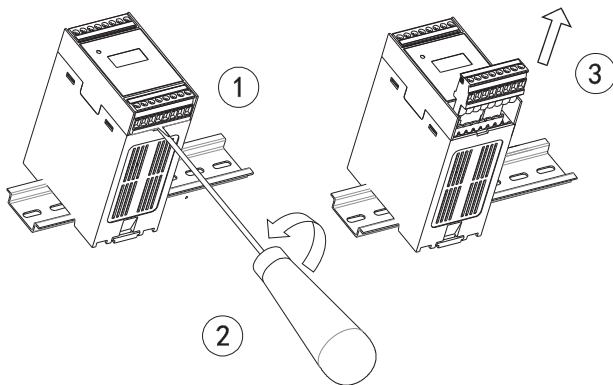
Amplifier Disassembly

1. Clip the upper end of the back bayonet of the amplifier onto the guide rail
2. Press the lower front of the amplifier by hand until you hear a "click", meaning it is installed properly.



Amplifier Removal:

1. Insert a flathead screwdriver into the bottom latch.
2. Push the handle of the screwdriver in the direction shown in the illustration to remove the amplifier from the guide rail.



Terminal Disassembly:

1. Insert a flathead screwdriver into the rectangular between the terminal and the housing.
 2. Rotate the handle of the screwdriver to separate the terminal from its socket.
 3. Pull out the terminal in the direction shown in the illustration.
- Note: If it is necessary to replace the amplifier on site, the terminals can be directly removed and then a new amplifier can be inserted. There is no need to repeatedly disassemble and assemble the wires. This effectively prevents the amplifier from malfunctioning due to incorrect wiring.

Precautions

- The amplifier can only be plugged in or unplugged when the power is off!
- When connecting to the electromagnet, do not use plugs with freewheeling diodes or LED displays!
- When measuring the amplifier, instruments with an input resistance greater than $100\text{k}\Omega$ ($R_i > 100\text{k}\Omega$) must be used!
- Use relays with gold contacts to switch the command values (low voltage, low current)!
- When using external control, the maximum fluctuation of the control voltage should not exceed 10%.
- The distance from antennas, wireless power sources and radar equipment must be greater than 1m.
- Don't lay the electromagnet and the command value cables near the power cables!
- For coil cables with a length within 50 m, wires with a wire diameter of 1.5 mm^2 are applicable. If longer cables are needed, please contact us.
- Suggestion: The connections of the electromagnet should also be shielded.
- The electrical signals generated by the amplifier (such as the reference voltage +5V) are not allowed to be used as functional signals related to equipment safety! Please refer to the European standard "BS EN 982:1996 Safety of machinery - Safety requirements for fluid power systems and their components - Hydraulic power transmission devices".