

RT-PSDM1

Modular Proportional Amplifier without electrical position feedback, single electromagnet.
Power Supply Range 8~32VDC
Command Types: 0~10V,0~5V,4~20mA (switchable on-site)
Maximum Output Current 0.2~3A (settable on-site)



PSDM1

Contents

	Pages
Conte nt	1
Features	1
Ordering Model	2
Technical Data	2
Principle Block Diagram	3
Terminal Definition	3
Parameter Setting Navigation	4
Parameter Table	5
Diagram of Parameter Meanings	6
Alarms and Indications	6
Wiring Examples	7
Overall Dimensions	7
Installation Guidance	7
Precautions	8

Features

- Convenient installation can be installed on the DIN 35mm rail.
- Easy operation set various parameters through the amplifier's integrated buttons and digital tube.
- 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 single-solenoid 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£ In conjunction with the PC software EHC-Manager, it can realize functions such as batch parameter modification and remote monitoring.
- Support for Modbus RTU protocol£ enables multi-machine communication control

Ordering Model

RT-PSDM	1
---------	---

01

02

01	RT-PSDM	Modular proportional amplifier
02	1	Drive single-electromagnet proportional valve

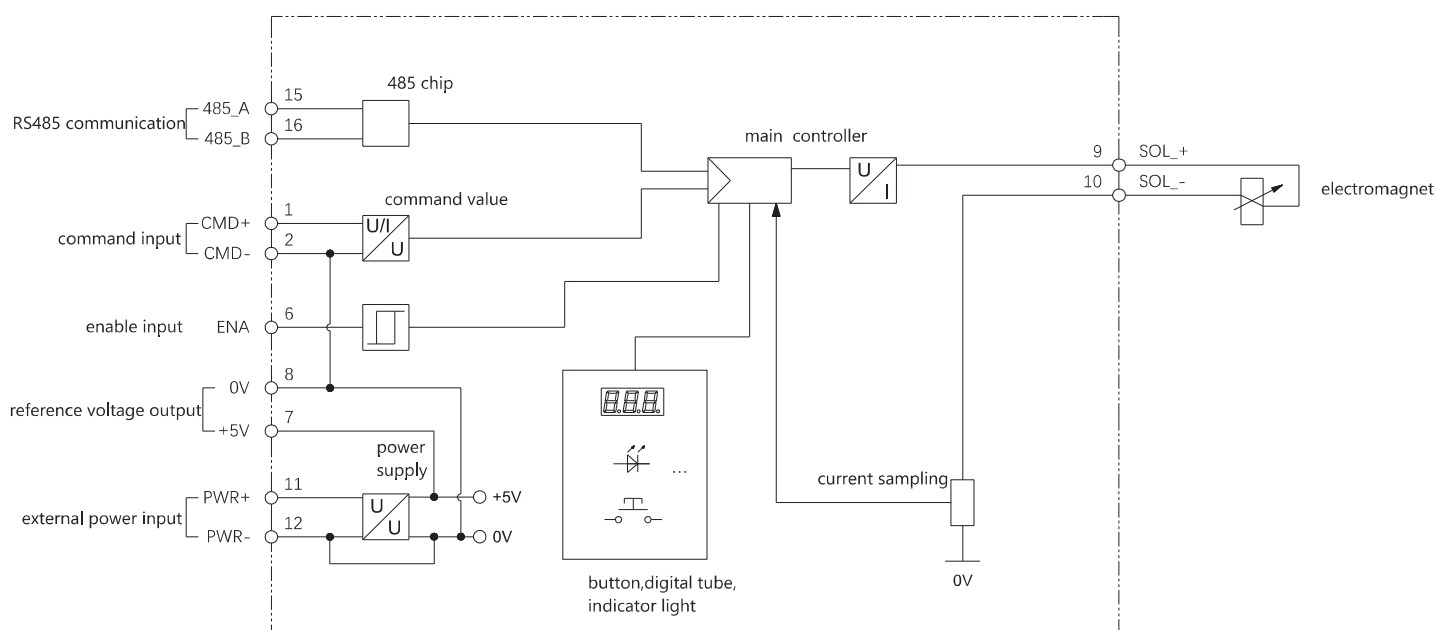
Technical Data

PSDM1

Working Voltage	8~32 VDC
No-load Current	≤40mA
Command Input	0~5 V, $RE \geq 100K\Omega$ 0~10 V, $RE \geq 100K\Omega$ 4~20 mA, $RE=250\Omega$ (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	-20~85 °C
Operating and Storage Humidity	0 %~90 %
Terminal connection types	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

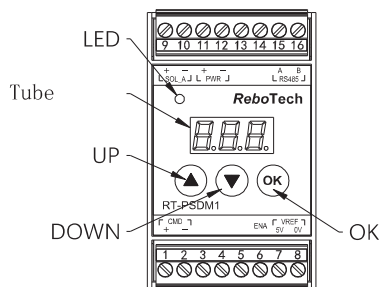


Terminal Definition

Terminals		Function Descriptions
1	CMD+	Command input
2	CMD-	
3	N.C.	
4	N.C.	Not connected
5	N.C.	
6	ENA ①	
7	VREF_5V	Reference voltage output
8	VREF_0V	
9	SOL_+	electromagnet
10	SOL_-	
11	PWR+	External power input
12	PWR-	
13	N.C.	Not connected
14	N.C.	
15	RS485_A	RS485 interface
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".

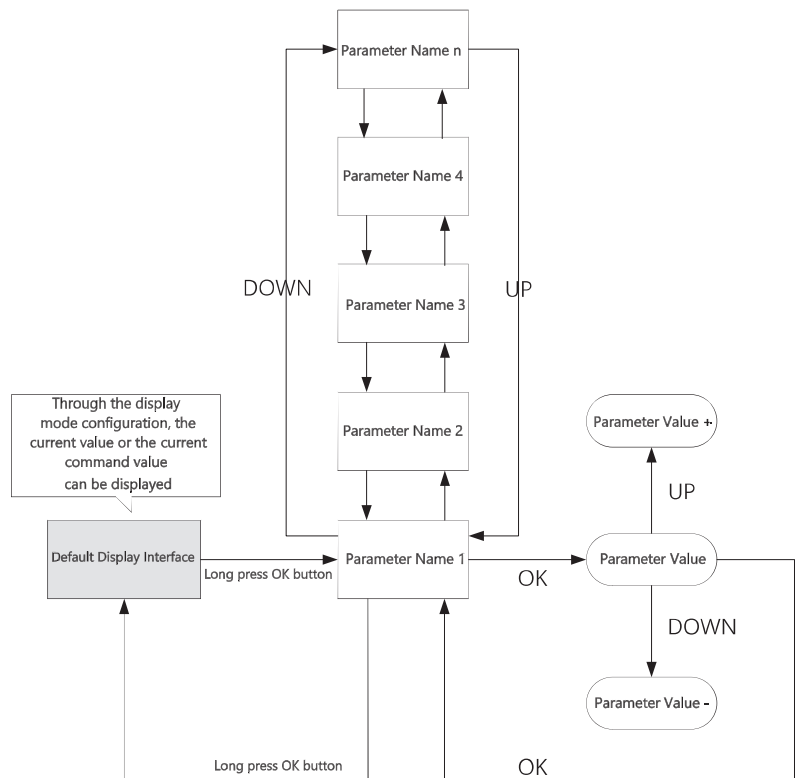
Parameter Setting Navigation



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 the default display interface.



Parameter Table

Serial Number	Item	Digital Tube Display	Factory Value	Value Range	Unit	Description
1	Maximum Current	PIH	1.00	0.20~3.00	A	Adjustment step: 0.01A ④
2	Minimum Current	PIL	0.00	0.00~1.00	A	Adjustment step: 0.01A ④
3	Ramp-up Time	PIU	0.0	0.0~99.9	S	Adjustment step: 0.1S
4	Ramp-down Time	PID	0.0	0.0~99.9	S	Adjustment step: 0.1S
5	External Enable Mode	PEA	0	0~1		0 External enable ineffective ⑤ 1 External enable effective
6	Input Signal	PII	10	10/5/420/485		10: 0~10V 5: 0~5V 420: 4~20mA 485: RS485 bus
7	Dither Frequency	PIF	140	50~450	Hz	Adjustment step: 10Hz
8	Command Dead Zone	PcD	2	0~5	%	Adjustment step: 1%
9	Display Mode	PdS	0	0~1		0: Current current (Unit: A) 1: Current command (Unit: V or mA)
10	Parameter Save	PSA	0	0~5		When the value is greater than 5, save the parameters①
11	Restore Factory Parameters	PrF	0	0~5		When the value is greater than 5, restore the factory parameters ②
12	Fault Clear	PcL	0	0~5		When the value is greater than 5, clear the overcurrent fault code③
13	Device Address	PIAd	2	1~127		Adjustment step: 1
14	Baud Rate	Pbd	9.6	4.8/9.6/19.2/ 38.4/57.6	K	

① The values of parameters 1 to 14 will take effect immediately during the setting process and will remain unchanged until the power is cut off. If you want to save the parameter values permanently, after setting parameters 1 to 14, you need to enter parameter "PSA". By pressing the "UP" key to make the setting value of "PSA" greater than 5, the parameter values will be saved permanently. Meanwhile, the amplifier will return to the "default display interface". If you want to abandon the changes, turn off the power and then turn it on again without operating parameter PSA, and the parameters will revert to the previously saved values.

② Enter parameter "PrF". By pressing the "UP" key to make the setting value of "PrF" greater than 5, all parameters will be restored to their factory default values. Meanwhile, the amplifier will return to the "default display interface".

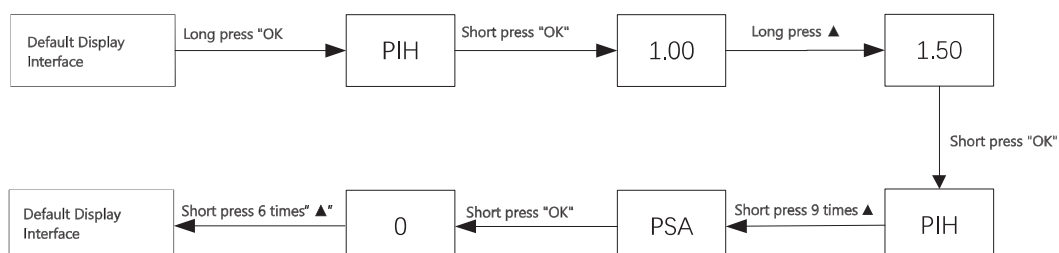
③ When the overcurrent fault code "E31" appears, after the fault is eliminated, the fault code needs to be manually cleared before the amplifier can work properly. Enter parameter "PcL". By pressing the "UP" key to make the setting value of "PcL" greater than 5, the fault code will be cleared. Meanwhile, the amplifier will return to the "default display interface". (The "E31" fault code can also be cleared by turning off the power and then turning it on again.)

④ When setting the maximum current "PIH" and the minimum current "PIL", the amplifier forces "PIH" to be greater than "PIL" by 0.10A or more (for example: when "PIL" is set to 0.20A, then "PIH" can only be set to greater than or equal to 0.30A).

⑤ The external enable mode (PEA) 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 "PSA" to save the parameter permanently. After the setting is completed, the amplifier will start working only when terminal No. 6 is connected to a high-level voltage (greater than 8V).

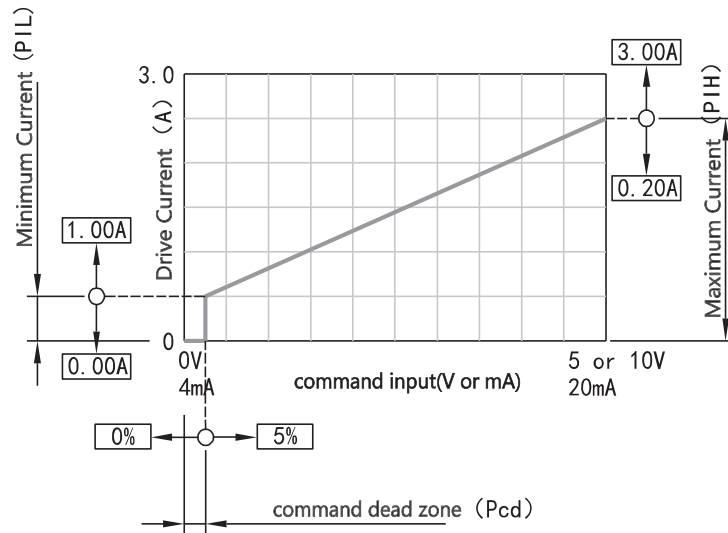
⑥ After setting the baud rate (Pbd), you need to operate "PSA" to permanently save this parameter. After saving, you need to power on again for the new baud rate to take effect.

Parameter Setting Example: When you need to adjust the maximum current 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.

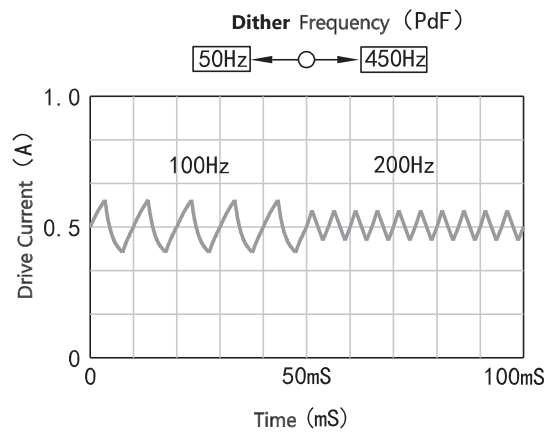


Parameter Meaning Diagram

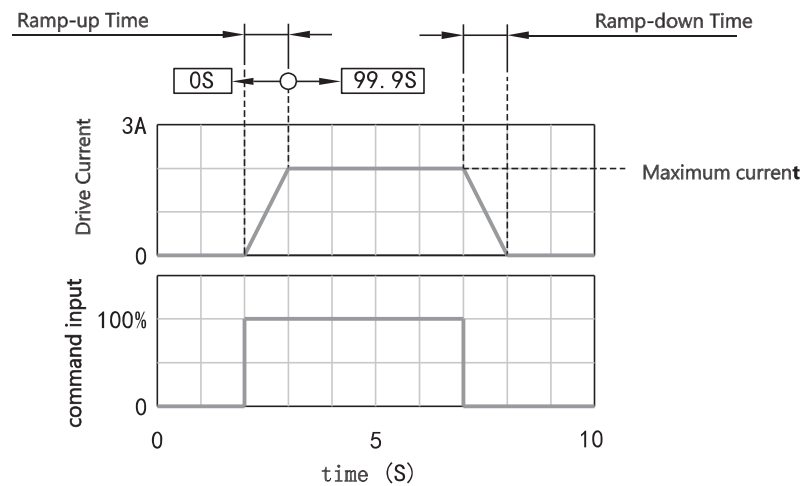
Maximum Current (PIH)
Minimum Current (PIL)
Command Dead - Zone (Pcd)



Dither Frequency (PdF)



Ramp-up Time (PrU)
Ramp-down Time (Prd)



Alarm and Indication

Digital Tube Display	Fault Description
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	Electromagnet wire break (Electromagnet coil open circuit or plug loose) ①
E31	Overcurrent occurs in electromagnet (the coil of electromagnet is short-circuited). ②
E80	EEPROM fault 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" and "E30" 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" 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 Indication	Description
Green Light Always On	Normal
Red Light Flashing	Fault

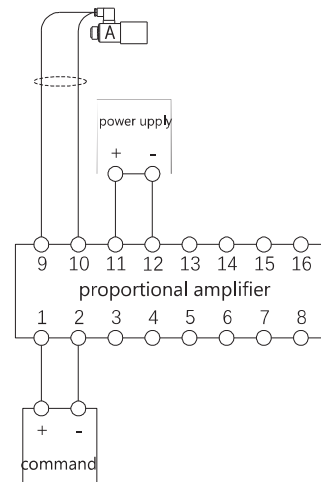
Wiring Examples

Example 1

Give an analog command through PLC, CNC, acquisition card, etc.

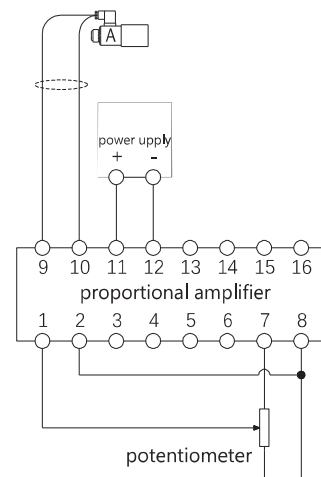
The analog command can be any signal of 0~5V, 0~10V, or 4~20mA.

(Modify the parameter "PR1" to the corresponding command type).

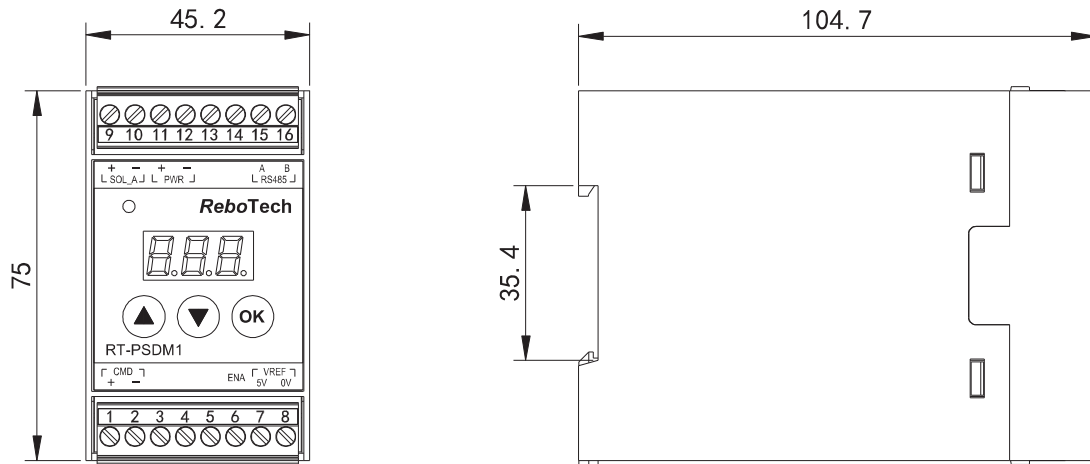


Example 2:

An analog command is given through a potentiometer, which is connected to the 5V and 0V reference voltages of the amplifier. (It is necessary to set the parameter "PAI" to 5.) Note: It is recommended that the resistance value of the potentiometer be 5KΩ or 10KΩ.

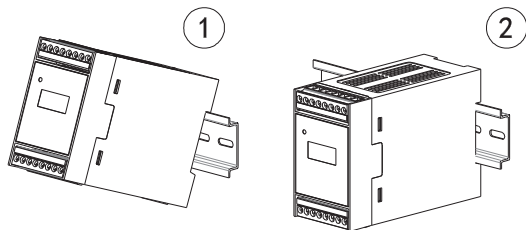


Overall Dimensions (Unit: mm)



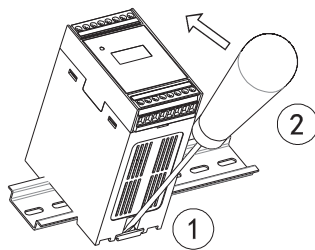
PSDM1

Installation Guidance



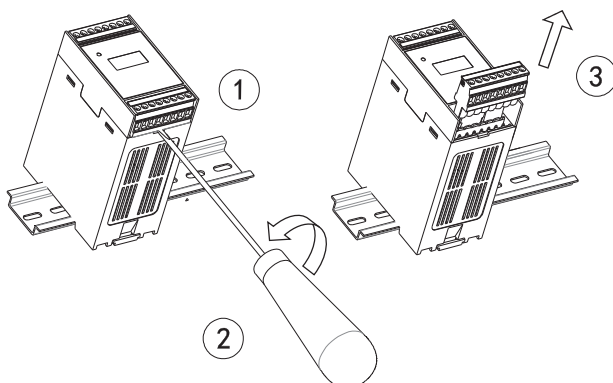
Amplifier Disassembly

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 gap 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".