EM2RS Series Stepper Drive

EM2RS Series are stepper drive based on standard Modbus RTU protocol, using RS485 communication can network up to 31 axes. They built-in PR feature with 16-segment position table (PR Mode) can save additional controllers in most of point-to-point applications, to greatly enhance system reliability and reduce the cost. EM2RS Series also support the feature of teaching, the operation modes of Profile Position, Profile Velocity and Homing. They can power 2-phase NEMA 8, 11, 14, 17, 23, 24, 34 stepper motors.

The EM2RS series is highly reliable, affordable and performs excellently in many industrial applications such as solar equipment, textile, civil, robotics, power generation equipment, 3C, packaging...

Feature

- Low noise and vibration, smooth motion
- Support Modbus RTU protocol, Internal 16-segment position Commands
- Motion can be started by External IO or RS485 or HMI
- Support operation modes: Profile Position, Profile Velocity, Homing
- 7 configurable digital inputs, 3 optically isolated digital outputs
- Limit +, Limit -, Origin, Quick stop, Enable, JOG +, JOG - and Position Table inputs
- Alarm, Brake, Homing complete, In Position complete, Commands complete, Path complete outputs
- 20-50VDC supply voltage for EM2RS-522, max output current 2.2A
  20-50VDC supply voltage for EM2RS-556, max output current 5.6A
  20-80VDC supply voltage for EM2RS-870, max output current 7.0A
  20-80VAC or 30-100VDC supply voltage for EM2RS-A882, max output current 8.2A
- RS232 communication for parameters configuration
- Protections for over voltage, over current, motor cable error, etc.

Compare with Step/Direction

- Built-in single-axis control can save the PLC in most of point-to-point applications to reduce cost;
- Built-in rich diagnostic functions and input and output signals to setup easily;
- Modbus brings more expansion possibility to add value;

Model Designation

EM2 RS- □ 5 22- □

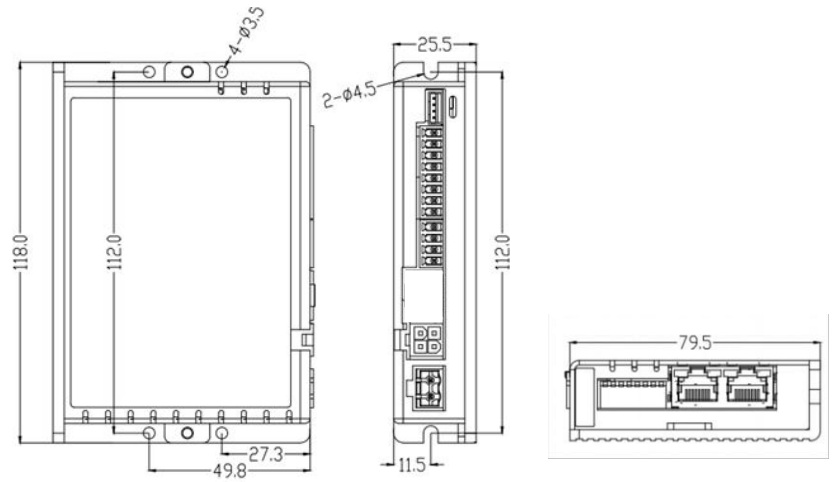
1 2 3 4 5 6

1. Series Name
   EM2: 2nd generation stepper drives
2. Communication Mode
   RS: RS485
3. AC or DC
   A: AC power voltage
   Blank: DC power voltage
4. Maximum Operating Voltage
   5: 50V
   8: 80V
5. Maximum Output Current
   22: 2.2A
   56: 5.6A
6. Customerized Code
   Blank: standard

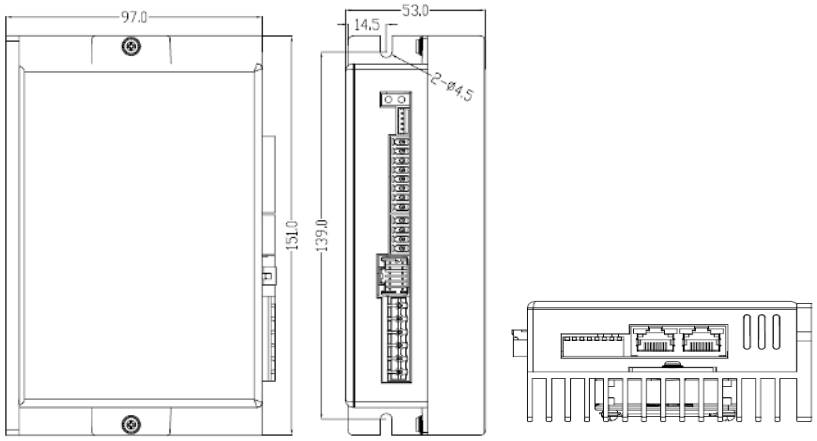
Technical Specification

Name	**EM2RS-522**	**EM2RS-556**	**EM2RS-D870**	**EM2RS-A882**
Supply Voltage	20-50VDC	20-50VDC	20-80VDC	30-100VDC or 20-80VAC
Output Current (Peak)	0.5-2.2A	1.0-5.6A	1.0-7.0A	2.1-8.2A
Size (H*W*L mm)	118*79.5*25.5			151*91*53
Weight (kg)	0.23			0.58
Matched Motor	NEMA 8, 11, 14, 17	NEMA 17, 23, 24	NEMA 24, 34	NEMA34
Input Signals	Limit +, Limit -, Origin, Quick stop, Enable, JOG +, JOG - and Position Table			
Output Signals	Brake, Alarm, In Position, GPIOs			
Protection Functions	Over Current, Over Voltage, Motor Cable Error, etc.			
PC Software	Leadshine MotionStudio			
Operating Environment	Environment	Avoid dust, oil, fog and corrosive gases		
	Operating Temperature	0-50℃ (32 F – 122 F)		
	Storage Temperature	-20℃-65℃ (-4 F – 149 F)		
	Humidity	40-90%RH		
	Vibration	10-55Hz/0.15mm		
	Mount	Vertical or horizontal mounting		

Dimension

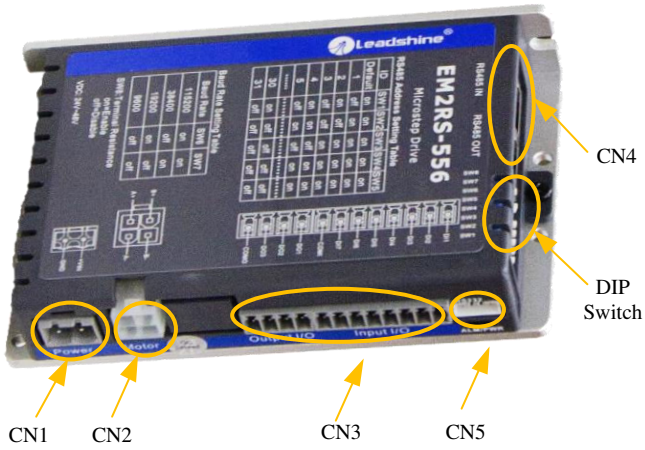


EM2RS-522/556/870



EM2RS-A882

Connector and Pin Assignment

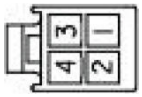


Name	Description

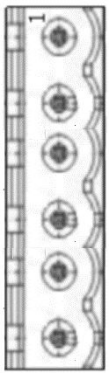
CN1	Input power connector
CN2	Motor connector
CN3	I/O signals connector
CN4	RS485 communication connector
CN5	RS232 tuning connector
DIP Switch	Salve ID: SW1-SW5 Baud Rate: SW6-SW7 Terminal Resistance: SW8

➢ **CN1 &CN2 Input Power Connector**

■ **EM2RS-522/556/870**

Name	Pic	PIN	Signal	Description
CN1		1	VDC	24V- 48V
		2	GND	GND
CN2		4	A+	Motor phase A+
		3	B+	Motor phase B+
		2	A-	Motor phase A-
		1	B-	Motor phase B-

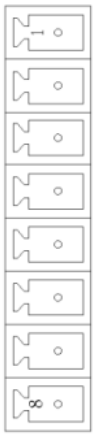
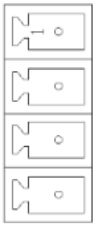
■ **EM2RS-A882**

Name	Pic	PIN	Signal	Description
CN1& CN2		1	A+	Motor phase A+
		2	B+	Motor phase B+
		3	A-	Motor phase A-
		4	B-	Motor phase B-
		5	AC	18-80VAC or 24-100VDC; No polarity
		6	AC	

Note: When the user uses an AC transformer to supply power, be sure to use an isolation transformer to prevent electric shock or burn out the computer

➢ **CN3-I/O Signals Connector**

Name	Pic	PIN	Signal	I/O	Description

CN3		1	DI1	I	Configurable Single-ended Digital Inputs DI1-DI7, 12V - 24V. DI1 is enabling signal default, DI2-DI7 are GPIOs.
		2	DI2	I	
		3	DI3	I	
		4	DI4	I	
		5	DI5	I	
		6	DI6	I	
		7	DI7	I	
		8	COMI	I	
		9	DO1	O	Configurable Single-ended Outputs Signals DO1-DO3 (common-cathode or common-anode), Max. 24V/100mA, GPIOs.
		10	DO2	O	
		11	DO3	O	
		12	COMO	O	

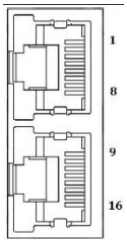
Note:

(1) DI or DO is shown as SI or SO in Leadshine MotionStudio.

(2) DI1 is normally closed, default by Enable signal. It means the motor is locked shaft after the driver powered on.

(3) When using Brake output signals, you need to connect a relay and a diode.

- **CN4-RS485 Communication Connector**

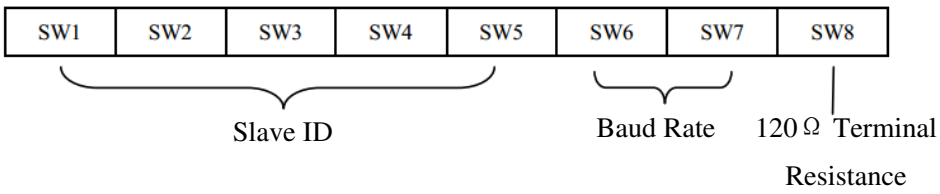
Name	Pic	PIN	Signal	Description
CN4		1	RS485+	RS485 TxD+
		9		RS485 RxD+
		2	RS485-	RS485 TxD-
		10		RS485 RxD-
		5, 6, 13, 14	GND	GND
		7, 8, 15, 163, 4, 11, 12	NC	Received
		Connector cover	PE	Shield GND

- **CN5-RS232 Tuning Port**

Name	Pic	PIN	Signal
CN5		1	NC
		2	TxD
		3	GND
		4	RxD

➢ **DIP Switches**

The EM2RS series drives use an 8-bit DIP switched to set Salve ID (also called Site Alias), Baud Rate and Terminal Resistance, they are shown as below:



(1) Slave ID: SW1-SW5 (off=1, on=0)

Slave ID	SW1	SW2	SW3	SW4	SW5
1 (default)	on	on	on	on	on
1 (factory)	off	on	on	on	on
2	on	off	on	on	on
3	off	off	on	on	on
4	on	on	off	on	on
5	off	on	off	on	on
6	on	off	off	on	on
7	off	off	off	on	on
8	on	on	on	off	on
9	off	on	on	off	on
10	on	off	on	off	on
11	off	off	on	off	on
12	on	on	off	off	on
13	off	on	off	off	on
14	on	off	off	off	on
15	off	off	off	off	on
16	on	on	on	on	off
17	off	on	on	on	off
18	on	off	on	on	off
19	off	off	on	on	off
20	on	on	off	on	off
21	off	on	off	on	off
22	on	off	off	on	off
23	off	off	off	on	off
24	on	on	on	off	off
25	off	on	on	off	off
26	on	off	on	off	off
27	off	off	on	off	off

28	on	on	off	off	off
29	off	on	off	off	off
30	on	off	off	off	off
31	off	off	off	off	off

Note: When the SW1-SW5 is default (all are on), the Slave ID can be configured by the PC software

(2) Baud Rate: SW6 - SW7

Baud Rate	SW6	SW7
115200 (Default)	on	on
38400 (Factory)	off	on
19200	on	off
9600	off	off

Note: When the SW6-SW7 is default (all are off), the Baud Rate can be configured by the PC software

(3) Terminal Resistance Selection: SW8

SW8=ON: terminal resistance is valid;

SW8=OFF: terminal resistance is invalid (Factory setting)

Note: The last slave in the network needs to connect a 120Ω terminal resistance, it means set the SW8 to on

Wiring