iCS-RS Series Integrated Stepper Motor

iCS-RS Series is integrated stepper motor with 14-bit magnetic encoder based on standard Modbus RTU protocol, using RS485 communication can network up to 31 axes. Its 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.

The iCS-RS series motors are highly reliable, affordable and excellent in many industrial applications such as solar equipment, textile, civil, robotics, power generation equipment, 3C, packaging...

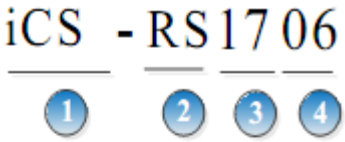
Feature

- 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
- 14-bit single-turn incremental encoder
- iCS-RS17xx: 20-36VDC supply voltage, max output current 3.0A peak
  iCS-RS23xx: 20-50VDC supply voltage, max output current 7.0A peak
- RS232 port for tuning software connection, RS485 port for motion control
- Protections for over voltage, over current, 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



1 Series Name
iEM : Integrated closed loop stepper motor

2 Command Source
RS: Modbus RTU

3 Frame Size
17: NEMA17
23: NEMA23

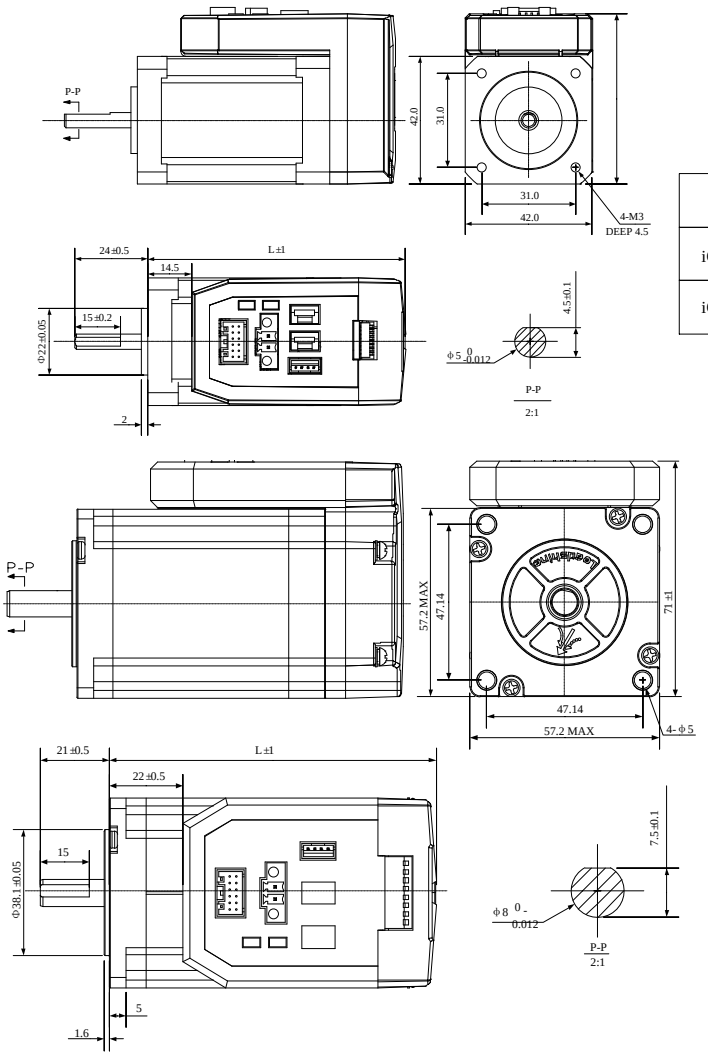
4 Holding Torque
06: 0.6N.m
08: 0.8N.m
13: 1.3N.m
23: 2.3N.m

Technical Specification

Model	Frame Size	Length (mm)	Holding Torque (N.m)	Weight (Kg)	Command Source	Power Voltage (VDC)	Peak Current (A)	Input Logical Voltage	Output Capability	Max Baud Rate	Digital Input	Digital Output
iCS-RS1706	NEMA 17	73	0.4	1.0	Modbus-RTU	20-36	0.3 - 3.0	12-24V	24V@ 100mA	115200	3	1
iCS-RS1708		86	0.8	1.1		20-36	0.3 - 3.0					
iCS-RS2313	NEMA 23	78	1.3	1.1		20-50	0.5 - 4.5					
iCS-RS2323		99	1.9	1.4		20-50	0.5 - 7.0					

Dimension

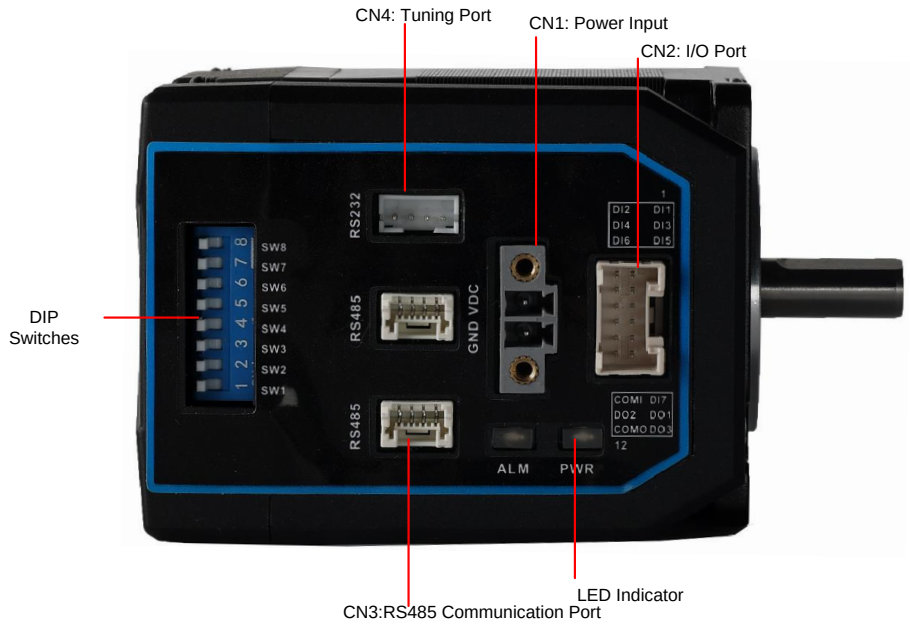
(Unit: mm [1inch=25.4mm])



Models	Length
iCS-RS1706	73 mm
iCS-RS1708	86 mm

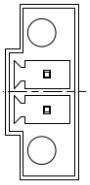
Models	Length
iCS-RS2313	78 mm
iCS-RS2323	99 mm

Connector and Pin Assignment

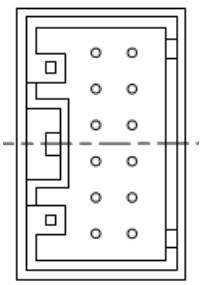


Name	Description
CN1	Input power connector
CN2	Digital inputs and outputs connector
CN3	RS485 communication connector
CN4	RS232 tuning connector
DIP Switch	Salve ID: SW1-SW5 Baud Rate: SW6-SW7 Terminal Resistance: SW8

➢ **CN1 Input Power Connector**

Name	Pic	PIN	Signal	Description
CN1		1	VDC	20V- 36V
		2	GND	GND

➢ **CN2 I/O Connector**

Name	Pic	PIN	Signal	I/O	Description
CN2		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	

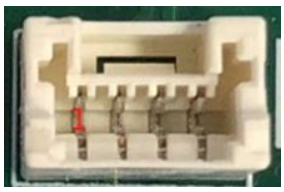
		6	DI6	I	
		7	DI7	I	
		8	COMI	I	
		9	DO1	O	Configurable Single-ended Outputs Signals DO1-DO3 (common-cathode or common-anode), Max. 24V/100mA, GPIOs.
		10	DO2	O	
		11	DO3	O	
		12	COMO	O	

Note:

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

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

➢ **CN3-RS485 Communication Connector**

Name	Pic	PIN	Description
CN3		1	RS485 +
		2	RS485 -
		3,4	GND

➢ **CN4-RS232 Tuning Port**

Name	Pic	PIN	Signal
CN4		1	NC
		2	TxD
		3	GND
		4	RxD

➢ **DIP Switches**

The iCS-RS series 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
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:

(1) 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:

(1) 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:

(1) The last slave in the network needs to connect a 120Ω terminal resistance, it means set the SW8 to on.

Wiring