RTELLIGENT

To become the Innovation Engine of Motion Control

ISC60 Speed Torque Driver
User Manual

Shenzhen Rtelligent Technology Co.,Ltd

ADDRESS: 2-6F, A Building, Ruitech Industrial Park, Xingyu Road No.23, Xixiang Street, Bao an District, Shenzhen,Guang Dong Province, China

PHONE/WHATSAPP: +86 138 2653 6186
OFFICE DIRECT LINE: +86 755 27440012
EMAIL: info@rtelligent.cn
WEBSITE: www.rtelligentglobal.com

Contents

1. Characteristic

ISC60 is the innovative comprehensive stepping motor torque characteristics of Rtelligent, combined with a unique closed-loop stepping motor using FOC control algorithm to achieve high precision torque and speed control controller.

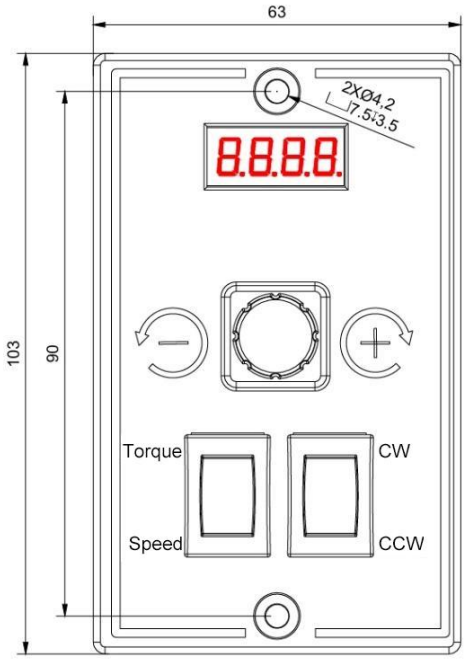
- Maintenance cost reduced (no magnetic powder wear, life extended by 50%)
- Higher control accuracy (torque and speed fluctuation rate ≤1%, more than 4 times higher than the first generation product)
- Switch: forward, reverse and stop control
- IO extension: 4, isolated input-24V NPN, PNP, polarity connection
- Communication interface: isolated RS485

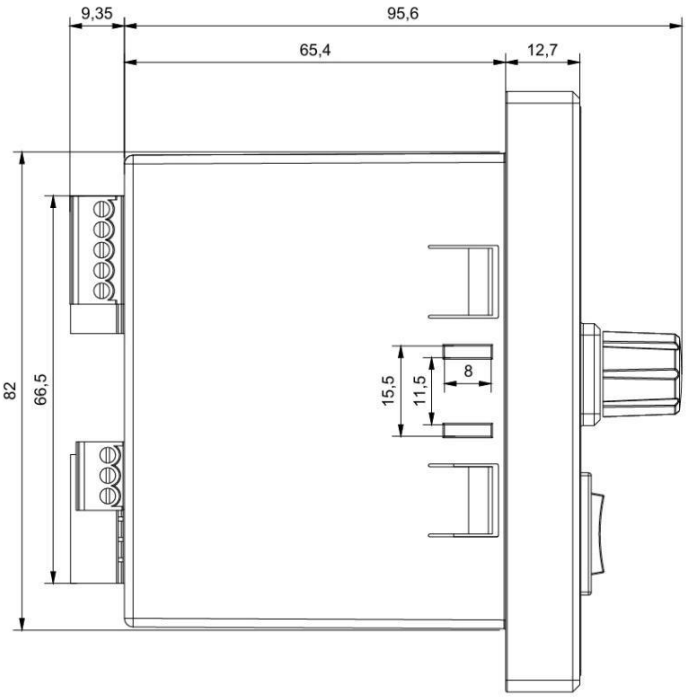
2. Electrical Specification

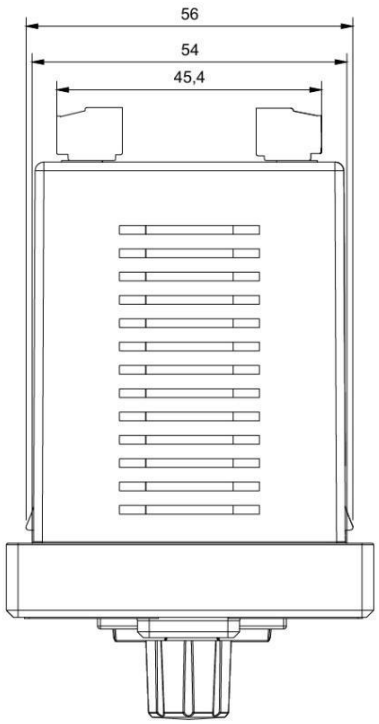
Table: Electrical specifications

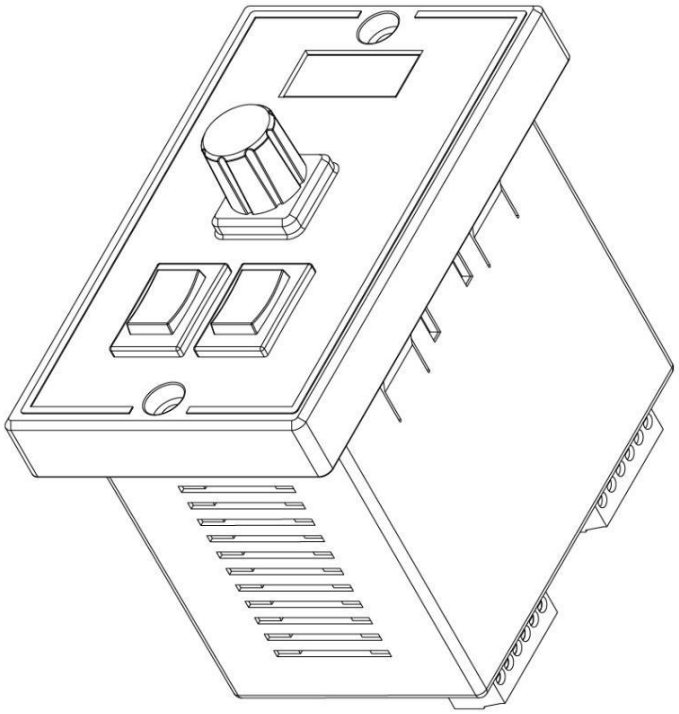
Characteristic	ISC60
voltage range	18~48VDC
current range	0 ~6.0A
input power	0~80W
debugging interface	Isolated RS485
Number of input ports	4
Input port level	24V
Input signal form	PNP, NPN

3. Installation dimensions

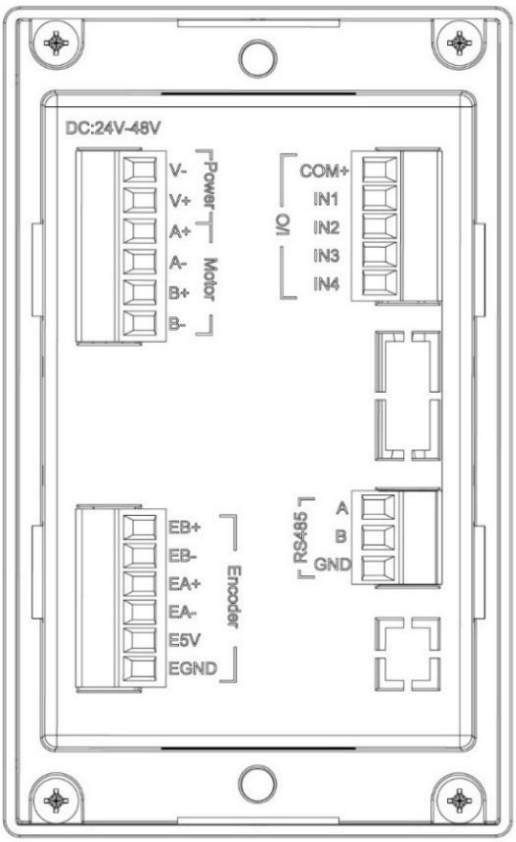








4. Ports and Wiring



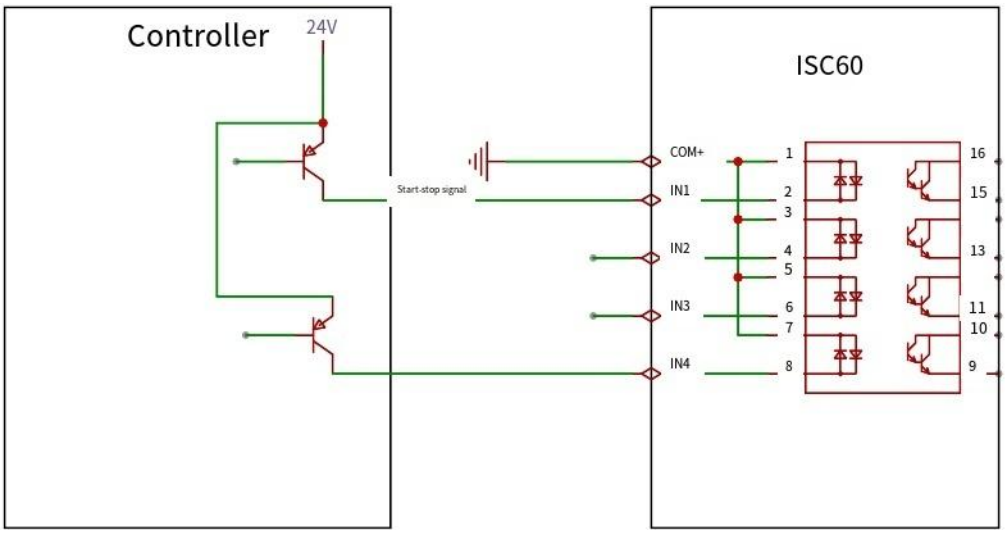
4.1 Terminal Wiring Instruction

Number	Name	Sign	Explanation
①	Power Supply and motor	V+ V- A+ A- B+、B-	Do not reverse the polarity of the input power supply! Connect the positive terminal of the power supply to the V+ of the driver, Connect the negative terminal of the power supply to the V-of the driver; The voltage range is 18~50V, and it is recommended to use 48V switching power supply with a power of about 100W. Connect the power line of the stepper motor by default as red, blue, green and black

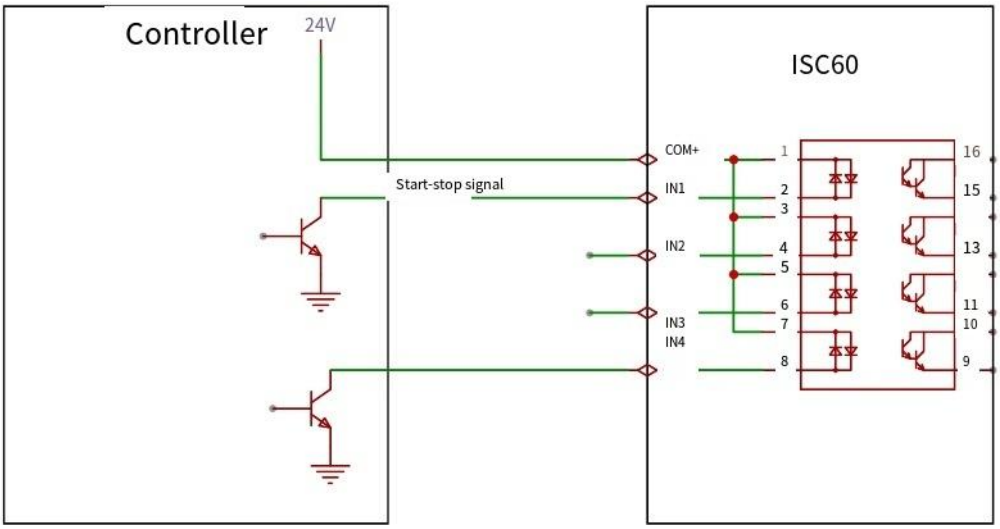
②	Encoder interface	EB+ EB EA+ EA E5V EGND	green; yellow ; grown ; white ; Red: encoder power positive terminal blue: encoder power negative terminal
③	Input port		
④	RS485	A B GND	Isolated RS485

4.1.1 Extension I/O Signals

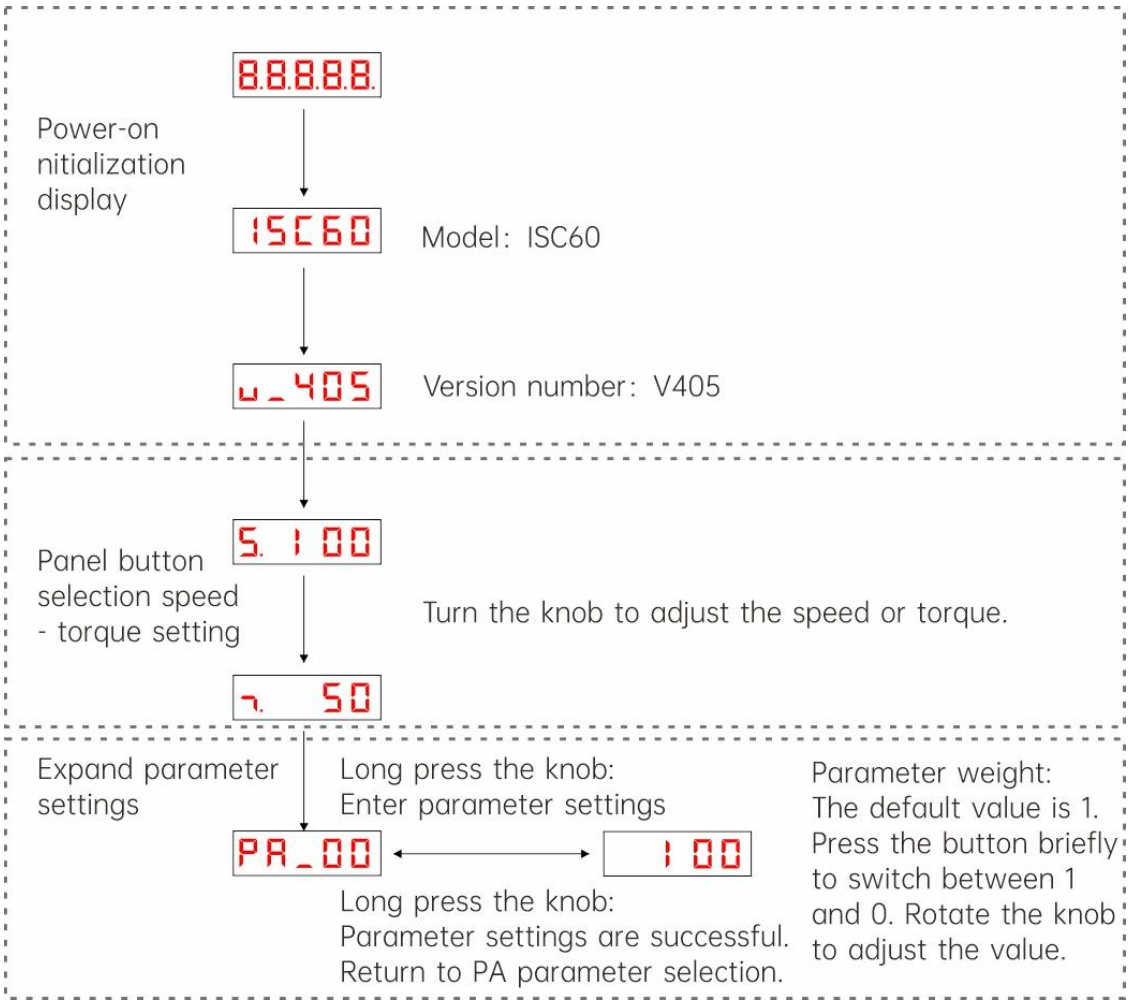
The ISC60 provides 4 channels of optically isolated input interfaces, with COM+ as the common terminal, supporting either NPN or PNP input configurations.
The default function of IN1 is "Motion Pause Function": when the panel knob is set to forward or reverse rotation, the motor operation can be controlled by the IN1 level.
PNP wiring: Connect COM+ to the 24V negative terminal (GND).



NPN connection: COM+ connects to the positive pole of 24V


Controller
24V
Start-stop signal
ISC60
COM+
IN1
IN2
IN3
IN4
1
2
3
4
5
6
7
8
16
15
13
11
10
9

5. Panel Operation Instructions



Speed-Torque Switch:When the switch is set to the speed or torque position, the knob is used to set the speed value or the torque ratio.
When the "Speed-Torque Switch" is set to the middle position, the controller alternately displays the current speed and torque, with an alternating interval of 2 seconds.
(Updated in version V407)

5.1 Panel Parameter List

LED NO.	MODBUS Address (Decimal)	Name	Default Value	Description
0	300	Speed	100	Motor running speed

1	301	Minimum speed	0	Adjustable minimum speed, unit: rpm
2	302	Maximum speed	300	Adjustable maximum speed, unit: rpm
3	303	Acceleration	10	Motor acceleration during operation, unit: r/s^2
4	304	Torque	50	Adjustable torque value
5	305	Minimum torque	0	Adjustable minimum torque
6	306	Maximum torque	200	Adjustable maximum torque
7	307	Torque filter	150	Reserved
8	308	Torque offset	40	Mainly used to overcome mechanical static friction, unit: 0.1%
9	309	Direction	0	0 or 1, indicates two motion directions
10	310	Stop mode	0	0 --- After motor stops, output power is disconnected 1 --- After the motor stops, maintain speed at 0
11	311	485 address	1	Range: 1~127
12	312	Panel save	0	Writing 1 to address 312 performs panel save

When setting PA-00 to PA-11 (Modbus addresses 300 to 311) via knob operation, the settings are automatically saved; no special save operation is required.

When setting PA-00 to PA-11 (Modbus addresses 300 to 311) via communication, you need to write 1 to address 312 to trigger saving.

6. RS485 Communication Function Description

MODBUS Address (Decimal)	Name	Default	Range	Description
0	Fault code			
96	Encoder count value (low 16 bits)			
97	Encoder count value (high 16 bits)			
2030	Command speed			Controller command speed, unit: rpm. Data is signed 16-bit, sign indicates motor direction.
2033	Actual speed			Motor actual speed, unit: rpm. Data is signed 16-bit, sign indicates motor direction.
2066	Command current			Current command from controller, unit: mA. Data is signed 16-bit, sign indicates motor torque direction.
2067	Actual current			Motor actual current, unit: mA. Torque = current × torque constant. For 86AM85MD motor, torque constant is 1 Nm/A.

Alarm flag register [0]

Define all alarm flags of the drive. MODBUS address: 0

15 ~ 11	10	9	8
Reserved			ECDE1

R-0							R-0
7	6	5	4	3	2	1	0
POSE	MPE	MEM	OT	UV	OV	OC	IVE
R-0	R-0	R-0	R-0	R-0	R-0	R-0	R-0

BIT	Name	Description
9~15	Reserved	Reading always returns 0
8	ECDE1	Encoder fault 0: Encoder signal normal 1: Encoder signal abnormal
7	POSE	Tracking error alarm 0: No tracking error alarm 1: Tracking error alarm has occurred, the motor cannot follow the encoder properly. ◆ Possible causes of tracking error alarm: ① Position deviation alarm threshold; ② Encoder wiring; ③ Motor wiring; ④ Whether the settings of parameters such as speed and acceleration are appropriate.
6	MPE	Motor phase loss alarm 0: No phase loss alarm 1: Phase loss alarm has occurred ◆ When a phase loss alarm occurs, the drive cannot properly detect the motor winding current. ① Check the motor wiring and motor type.
5	MEM	Parameter verification error 0: Parameter verification correct 1: Parameter verification error
4	OT	Overtemperature alarm flag 0: Drive temperature normal 1: Drive internal component temperature is too high

3	UV	Undervoltage alarm flag 0: No undervoltage alarm 1: Drive undervoltage has occurred
2	OV	Overvoltage alarm flag 0: No overvoltage alarm 1: Drive overvoltage has occurred ◆ When drive overvoltage occurs, the following checks are required: ① Check the input power supply; ② Check the pump-up voltage during motor deceleration.
1	OC	Overcurrent alarm flag 0: No overcurrent alarm 1: Drive overcurrent alarm has occurred ◆ Possible causes of drive overcurrent alarm: ① Motor winding short circuit; ② Drive current setting is too high, causing motor burnout; ③ Damage to internal drive components.
0	IVE	Internal voltage error alarm flag 0: No internal voltage error 1: Internal voltage error ◆ When an internal voltage error alarm occurs in the drive, it is usually caused by damage to internal drive components.

SUPPORTS

Shenzhen Rtelligent Technology Co.,Ltd

www.rtelligentglobal.com

ADDRESS: 2-6F, A BUILDING, RUITECH INDUSTRIAL PARK, XINGYU ROAD NO.23, XIXIANG STREET, BAO AN DISTRICT, SHENZHEN,GUANG DONG PROVINCE, CHINA

PHONE/WHATSAPP: +86 13826536186

OFFICE DIRECT LINE: +86 755 27440012

EMAIL: info@rtelligent.cn

To become the Innovation Engine of Motion Control