



Motorized Drum Driver Controller

with Magnetic Encoder (N1 Type, 1:1, RS-485 Communication)

Quick Start Guide

Ver1.0

Version Change Record

Version	Time	Description
V1.0	2025/09/11	Initial Version

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1. Professional Terminology

1. Brushless DC Motor: A brushless DC motor consists of a permanent magnet rotor and a stator with windings. This type of motor offers advantages such as simple structure, high reliability, good stability, high efficiency, and strong adaptability, leading to its widespread application.
2. Magnetic encoder: A device installed inside the motor to provide feedback on the rotor position signal.
3. DIP: Dip switch (used to manually configure operating parameters), which changes the operating status of the drum through manual mode.
4. LED: Light Emitting Diode, used to indicate the status of the drive system.

2. Basic Functions

- Closed-loop speed control
- Dual LED status indication
- 24V/48V DC power supply

3. Match Drum Parameter Specifications

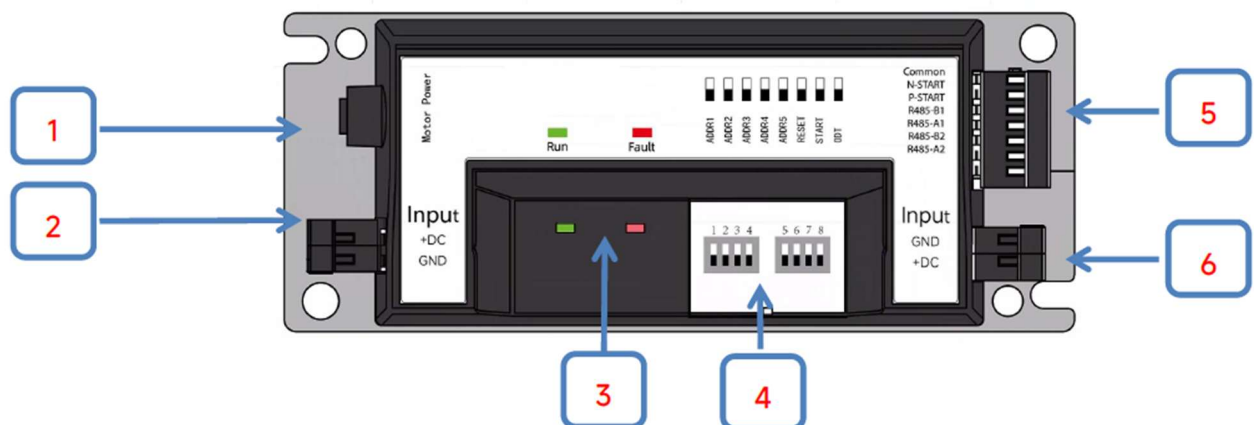
Rated voltage of the drum	Voltage Range (V)	Rated Power (W)	Rated Current (A)	Starting Current (A)
DC 24V	20~26	35	2.5 ± 0.5	6.25 ± 0.5
		50	3.2 ± 0.5	8 ± 0.5
		80	4.5 ± 0.5	11.25 ± 0.5
DC 48V	40~52	35	1.3 ± 0.5	3.25 ± 0.5
		50	1.6 ± 0.5	4 ± 0.5
		80	2.3 ± 0.5	5.75 ± 0.5

4. Power Supply Requirements

drum power	Switching power supply power	Suggested wire diameter	Suggested wire length
35W	≥80W	0.75mm ² (4A)	≤12 meters
50W	≥120W	0.75mm ² (4A)	≤9 meters
80W	≥200W	1mm ² (6A)	≤9 meters

***Note: When using multiple rollers in practice, it is recommended to use a high-power power supply and avoid using a single power supply for multiple rollers. For example:**

Using 35W electric rollers, a 450W power supply can connect 9 to 11 electric rollers for use (with sequential startup of rollers), which can be calculated as 1.2 to 1.5 times the power rating of the electric rollers.



5. Layout of the Drive and Control Card

Sequence Position	Function	Description
1	Roller Terminal	5-pin drum terminal
2, 6	Power Supply	Control card power supply (1.5mm ² max) Use wire gauge 28~16AWG
3	LED	Power indicator and status indicator
4	DIP switch	Address dip switch, reset dip switch, startup dip switch

5	Signal Terminal	Control signal input and error signal output, using wire range 28~20AWG (max 0.5mm ²)
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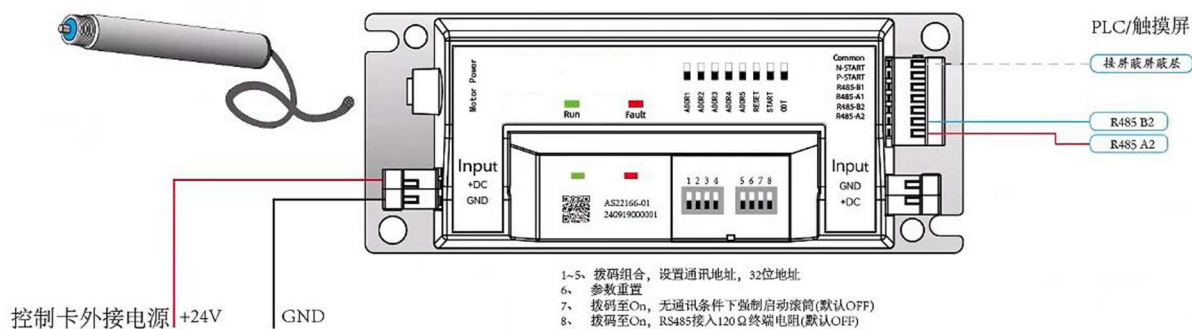
***Note:**

- 1) Signal lines and power lines shall use crimp terminals; the maximum recommended size is 1mm² with matching crimp terminals (E10xx). In long-distance applications, the power interface must use 1.5mm² wires.
- 2) Power interface: Use 24V or 48V DC. Note that when using a 24V switching power supply, it must be paired with a 24V drum motor; when using a 48V switching power supply, it must be paired with a 48V drum motor.
- 3) The DIP switches from left to right are RS-485 address setting bits 1~5 (supporting up to 32 devices), factory reset DIP switch, RS-485 communication fault forced start switch, and RS-485 terminal resistor switch.
- 4) 7-Pin Control Signal: (from top to bottom)
 - COM: When RS-485 is used in harsh electromagnetic interference environments or for long-distance communication, it is recommended to connect the common grounds (COM) of different RS-485 circuits together to enhance anti-interference capability.
 - NPN_IN: When an RS-485 communication error occurs, connecting to 0V or an NPN-type PLC forces the drum to start.
 - PNP_IN: When an RS-485 communication error occurs, connect the COM port to 0V and the PNP_IN to 24V or a PNP-type PLC to forcibly start the drum.
 - RS485_B: RS-485 differential communication B interface; twisted pair is recommended to enhance anti-interference capability.
 - RS485_A: RS-485 differential communication A interface; twisted pair is recommended to enhance anti-interference capability.
 - RS485_B: RS-485 differential communication B interface; twisted pair is recommended to enhance anti-interference capability.
 - RS485_A: RS-485 differential communication A interface; twisted pair is recommended to enhance anti-interference capability.

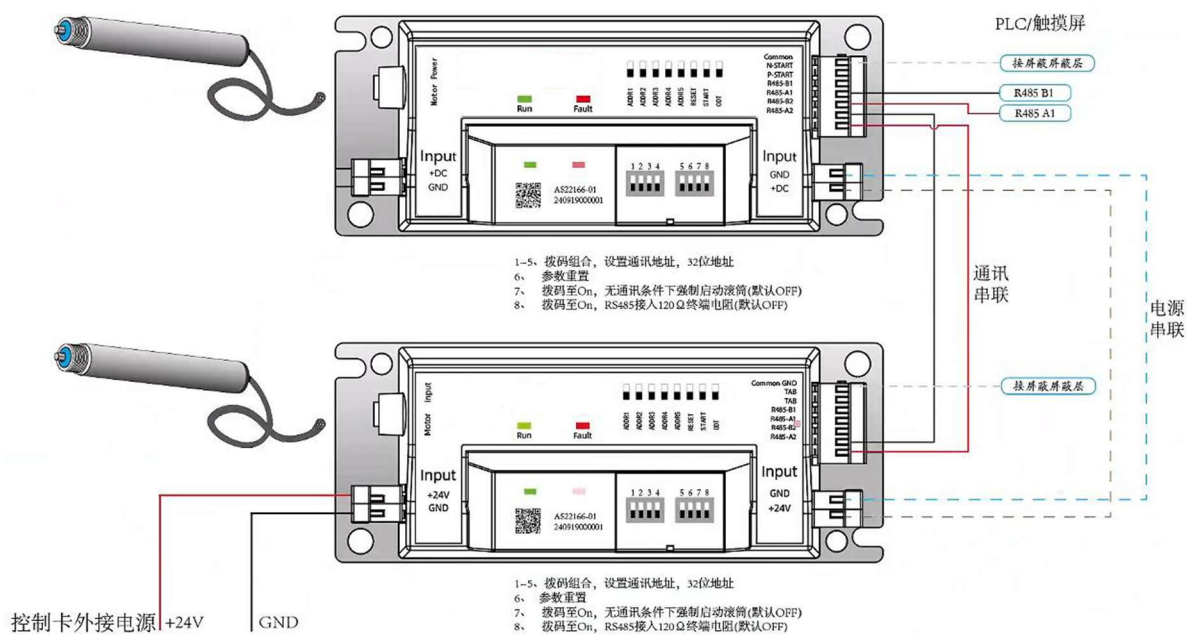
6. Wiring Instructions

6.1 RS-485 Communication Connection

485通讯接线说明



6.2 485 Communication in Series, Power Supply in Series



7. 485 Communication Control

 Note: To enable communication control, ensure that the 7th DIP switch is set to "OFF". This communication protocol is based on ModBus-RTU.

1) Protocol:

Slave Address: 0x01 (default)

Data format: 8 data bits, 1 stop bit, odd parity

8-bit data, 1 stop bit, even parity

8 data bits, 1 stop bit, no parity (default)

8 data bits, 2 stop bits, no parity

Baud rate: 4800, 9600 (default), 19200, 38400, 57600, 115200, 230400 bps

2) Data Format

Module Address	Function Code	Data	GRC16 verification
1 byte	1 byte	0-252 bytes	2 bytes

3) Write Single Coil (Function Code 0x05)

"Write format"

Slave Address	Function Code	Coil Address		Coil Status Value		CRC check	
Addr	0x05	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits

Slave return format

Slave Address	Function Code	Coil Address		Coil Status Value		CRC check	
Addr	0x05	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits

4) Write Single Register (Function Code 0x06)

"Write Format"

Slave Address	Function Code	Register Address		Register Value		CRC check	
Addr	0x06	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits

Slave Return Format

Slave Address	Function Code	Register Address		Register Value		CRC check	
Addr	0x06	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits	high 8 bits	lower 8 bits

5) Coil list:

"Name"	Address	Status Value Type	"Description"	Attribute	Default value
Motor start/stop Control	0x0001	16-bit unsigned integer	0x0000: Motor Brake 0xFF00: Motor Start	Read/Write	0x0000
Motor direction control	0x0002	16-bit unsigned integer	0x0000: Motor forward rotation 0xFF00: Motor reverse rotation	Read/Write	0x0000
.....					

For example, the command to start the control motor is:

- 01 05 00 01 FF 00 DD FA

6) Register List

"Name"	Address	Register Type	"Description"	Attribute	Default value
Slave Address Settings	0x0001	16-bit unsigned integer	Default address at factory: 0x01 Range 1-247 (Unlock Required)	Read/Write	0x01
Baud rate setting	0x0002	16-bit unsigned integer	Unit: bps (unlock required) 0x00:1200 0x01:2400 0x02:4800 0x03:9600 (default) 0x04:19200 0x05:38400 0x06:57600 0x07:115200 0x08:230400	Read/Write	0x03
Data Frame Format Settings	0x0003	16-bit unsigned integer	(Requires Unlock) 0x03: 8 data bits, even parity, 1 stop bit 0x04: 8 data bits, odd parity, 1 stop bit 0x05: 8 data bits, no parity, 1 stop bit (default) 0x06: 8 data bits, no parity, 2 stop bits	Read/Write	0x05
Command Response Delay Setting	0x0004	16-bit unsigned integer	Unit: ms (unlock required) When used for RS485 communication, some hosts have slow transmit/receive switching, which may cause response commands to be lost. Range: 0~255; 0 means no delay	Read/Write	0x0000
Lock/Unlock System Configuration	0x0005	16-bit unsigned integer	To prevent the module from receiving erroneous commands during operation that could lead to unintended modifications of the system configuration. Once the configuration is locked, the module will be unable to receive external serial commands for modification until the lock is released. Includes: module address, baud rate, data frame format, protocol type, factory reset, and other registers. Write 0x5AA5 to unlock system configuration; write any other value to lock system configuration	Read/Write	0x0000
Firmware Version	0x0006	16-bit unsigned integer	Module internal software version	Read	—
Reset to factory settings	0x0007	16-bit unsigned integer	(Requires unlocking) Restore to factory default parameters; write 0x55 to start module initialization. After initialization is complete,	write	—

			the module will restart.		
Restart device	0x0008	16-bit unsigned integer	After modifying the system configuration, a device restart is required for the changes to take effect. Writing 0x5AA5 will trigger a system restart.	write	—
Motor speed setting	0x0020	16-bit unsigned integer	Set value: 0 to 0xFFFF (below 0x3999 is braking; motor startup requires a value greater than this). Corresponding motor speed: 0 to 6960 RPM	Read/Write	0x0000
motor acceleration Settings	0x0021	16-bit unsigned integer	Set value: 0 to 7 corresponds to motor acceleration levels: 0-7	Read/Write	0x0000
.....					

For example, the command to set the motor speed to the maximum is:

- 01 06 00 20 FF FF 89 B0
- 01 06 00 05 5A A5 63 10 (Unlock)
- 01 06 00 07 00 55 FB 34 (Factory Reset)

8) Common Instructions

Function	Instruction
Motor start	01 05 00 01 FF 00 DD FA
motor brake	01 05 00 01 00 00 9C 0A
Motor forward rotation	01 05 00 02 00 00 6C 0A
Motor reverse rotation	01 05 00 02 FF 00 2D FA
Maximum speed setting	01 06 00 20 FF FF 89 B0
Speed set to 0	01 06 00 20 00 00 88 00
Acceleration set to maximum	01 06 00 21 00 00 D9 C0
Acceleration setting is the slowest	01 06 00 21 00 07 98 02
Unlock	01 06 00 05 5A A5 63 10
Lock	01 06 00 05 00 00 99 CB
Reset to factory settings	01 06 00 07 00 55 F8 34

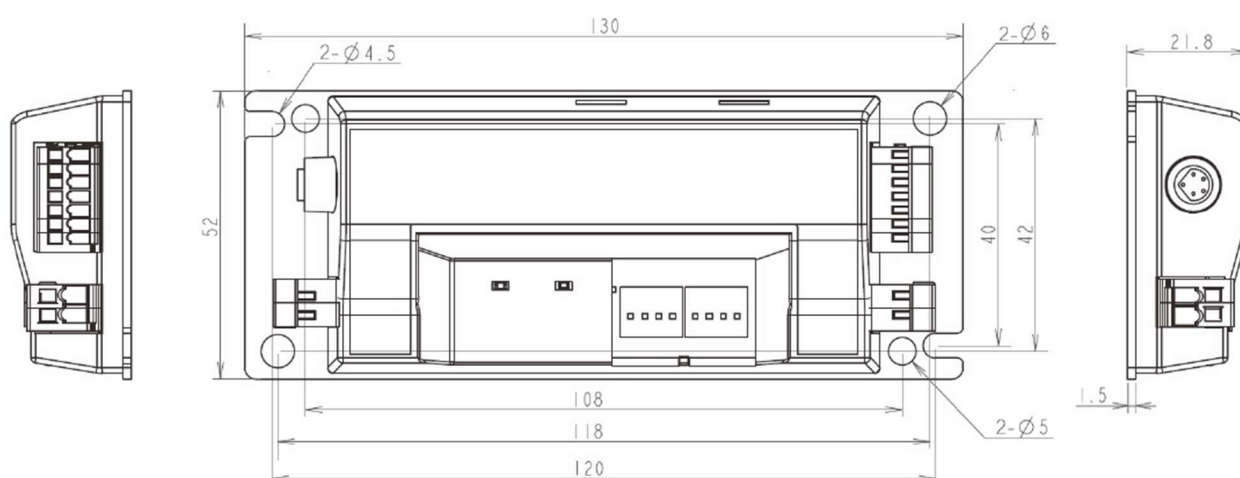
8. Description of Fault Indicator Lights

FAULT red light	RUN green light	"Meaning"
Always on	OFF	Product Readiness Status
not lit	Always on	Control card ready
not lit	rapid flashing	Drum running
Always on	not lit	Fuse damaged
slowly flashing	OFF	Operating voltage below 18V
slowly flashing	Always on	Roller fault or not connected
rapidly flashing	Always on	Brake resistor overtemperature

* Dual LED Fault Indicator

Different combinations of states output fault signals, with a continuous flashing interval of 0.5s, allowing for an initial determination of the product's fault cause.

9. Dimensional Installation



10. Application Environment

Operating environment temperature	0°C~+55°C
Operating environment humidity	10%~85% (non-condensing)
Environmental temperature for transportation and storage	-40°C to +85°C
Vibration	2G or lower

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