

MiSUMi

Motorized Drum Driver Controller

with Magnetic Encoder (N1 Type, 1:1,)

Quick Start Guide

Ver1.0

Version Change Record

Version	Time	Description
V1.0	2025/08/04	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 Sensor: A device installed inside the motor to provide feedback on rotor position signals.
3. PNP: Active high, general power supply range: 15~30V
4. NPN: Active low, general power supply range: 0~0.8V
5. Rotary Switch: Used in manual mode to change the operating status of the motorized roller.
6. Digital Signal: A signal representing discrete values, controlled using IO points.
7. Analog Signal: A continuously varying physical quantity controlled by analog voltage or current to achieve stepless speed regulation.
8. Braking Resistor: A component used to dissipate regenerative energy during motor braking, converting the back electromotive force (regenerative energy) generated when the motor stops into heat energy to prevent potential damage.
9. EXT: External interface / external connection.
10. LED: Light Emitting Diode, used to indicate the status of the drive system.

2. Basic Functions

- Closed-loop speed control
- 15-step speed setting via rotary knob
- 2.3 ~ 10V analog voltage stepless speed regulation
- 8-step digital speed adjustment
- 8-level acceleration/deceleration time adjustment
- Two-wire forward/reverse control
- Dual LED status display
- Fault output
- Built-in braking resistor

- Switchable PNP/NPN IO input logic
- Speed control priority: rotary knob, stepless speed control (analog), digital speed control

3. Compatible Motorized Roller 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: For multi-roller applications, a higher-capacity power supply is recommended. Avoid using an undersized single power supply. For example:** For a 35W motorized roller, a 450W power supply can support 9 to 11 rollers when the rollers are started sequentially. As a general rule, the power supply capacity may be selected at 1.2 to 1.5 times the total rated power of the motorized rollers.

5. Controller Layout

Sequence position	Function	Description
1	Motorized Roller Connector	5-pin motorized roller connector
2	Power	Control card power supply (1.5mm ² max) Use wire gauge range 28~16AWG
3	LED	Power indicator and status indicator
4	Speed	Speed knob adjustment
5	RAMP	Acceleration/deceleration knob adjustment
6	Signal Terminal	Control signal input and error signal output, using wire gauge 28~20 AWG (0.5 mm ² max)
7	Power	Control card power supply (1.5mm ² max) Use wire gauge range 28~16AWG

***Note:**

- 1) Use crimp terminals for signal lines. It is recommended to use 0.2~0.3 mm² wire with matching crimp terminals (E03xx). The maximum supported wire size for single-wire connection is 0.5 mm²;
- 2) Use crimp terminals for the power wires. It is recommended to use wires up to 1 mm² with matching crimp terminals (E10xx). In long-distance applications, use 1.5 mm² conductors for the power interface.

6. Rotary Switch Settings

6.1 Speed---Speed Setting (Start Signal Speed A/B/C)

Rotary encoder Switch Position	motor speed (rpm/min)	Speed (m/s) of 50mm diameter electric drum with different gear ratios										
		5	7	13	18	25	30	42	65	78	90	108
F	6960	3.61	2.58	1.39	1	0.72	0.6	0.43	0.28	0.23	0.2	0.17
E	6496	3.37	2.41	1.3	0.93	0.67	0.56	0.4	0.26	0.21	0.19	0.16
D	6032	3.13	2.24	1.2	0.87	0.62	0.52	0.37	0.24	0.2	0.17	0.15
C	5568	2.89	2.06	1.11	0.8	0.58	0.48	0.34	0.22	0.18	0.16	0.14
B	5104	2.65	1.89	1.02	0.73	0.53	0.44	0.32	0.21	0.17	0.15	0.12
A	4640	2.41	1.72	0.93	0.67	0.48	0.4	0.29	0.19	0.15	0.13	0.11
9	4176	2.17	1.55	0.83	0.6	0.43	0.36	0.26	0.17	0.14	0.12	0.1
8	3712	1.93	1.38	0.74	0.53	0.38	0.32	0.23	0.15	0.12	0.11	0.09
7	3248	1.68	1.2	0.65	0.47	0.34	0.28	0.2	0.13	0.11	0.09	0.08
6	2784	1.44	1.03	0.56	0.4	0.29	0.24	0.17	0.11	0.09	0.08	0.07
5	2320	1.2	0.86	0.46	0.33	0.24	0.2	0.14	0.09	0.08	0.07	0.06
4	1856	0.96	0.69	0.37	0.27	0.19	0.16	0.11	0.07	0.06	0.05	0.05
3	1392	0.72	0.52	0.28	0.2	0.14	0.12	0.09	0.06	0.05	0.04	0.03
2	928	0.48	0.34	0.19	0.13	0.1	0.08	0.06	0.04	0.03	0.03	0.02
1	700	0.24	0.17	0.09	0.07	0.05	0.04	0.03	0.02	0.02	0.01	0.01
0	not zero	Speed is not zero										

***Note:**

1) Speed knob speed control takes precedence over terminal block speed control;

2) Rule for calculating linear velocity (for other diameters such as rubber-coated):

Linear speed (m/min) = Motor speed (rpm) ÷ Gear ratio * Pipe diameter (m) * 3.14159

6.2 Ramp---Acceleration/Deceleration Time Setting

Rotary Switch DIR/RAMP	Rotation direction as viewed from the cable side	Slope duration (s)
0	counterclockwise	0
1		0.2
2		0.3
3		0.45
4		0.675
5		1
6		1.5
7		2
8	clockwise	0
9		0.2
A		0.3
B		0.45
C		0.675
D		1
E		1.5
F		2

***Note:**

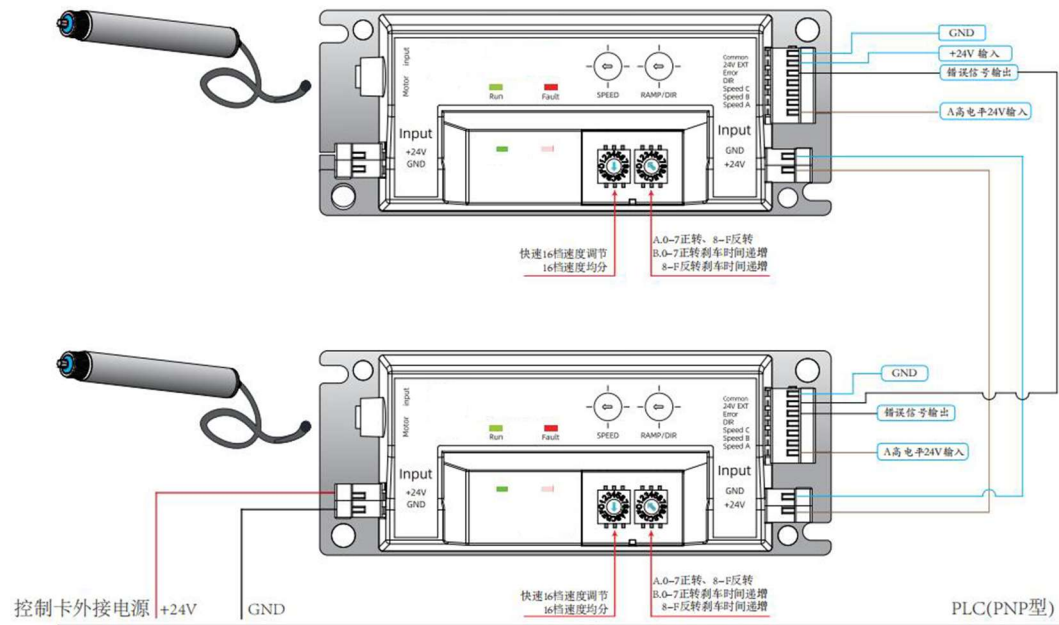
- 1) Acceleration/deceleration time, braking distance, and braking repeatability are positively correlated;
- 2) The longer the acceleration and deceleration time, the smaller the impact on the power supply.

7. Signal Terminal Description

Serial Number	Function	"Description"
1	COMMON	Connect to PLC 0V
2	24V EXT	24V input voltage, supplies power to ERROR
3	ERROR	Fault output signal, PNP/NPN configurable
4	DIR	Interface for PLC-controlled electric drum rotation direction NPN 24V: Same as DIP switch setting direction 0V: DIP switch set in reverse direction PNP 0V: Same direction as DIP switch setting 24V: DIP switch set in reverse direction
5	Speed C	As an analog signal input port, 0-2V is for braking, and 2.3 ~ 10V is for stepless speed regulation (with the SPEED knob adjusted to 0). As the start signal input port, combined with Speed A/B for speed control: In PNP mode, 24V serves as the start signal. In NPN mode, 0V serves as the start signal.
6	Speed B	As the start signal input port, combined with Speed A/C for speed control: In PNP mode, 24V serves as the start signal In NPN mode, 0V serves as the start signal.
7	Speed A	As the start signal input port, combined with Speed B/C for speed regulation: In PNP mode, 24V serves as the start signal In NPN mode, 0V serves as the start signal.

Digital speed combination in PNP mode (speed knob must be set to 0)

input			Speed (m/s) of different gear ratios for the reducer										
C	B	A	5	7	13	18	25	30	42	65	78	90	108
H	H	H	3.61	2.58	1.39	1.00	0.72	0.60	0.43	0.28	0.23	0.20	0.17
H	H	L	3.09	2.21	1.19	0.86	0.62	0.51	0.37	0.24	0.20	0.17	0.15
H	L	H	2.58	1.84	0.99	0.71	0.51	0.43	0.31	0.20	0.16	0.14	0.12
H	L	L	2.06	1.47	0.79	0.57	0.41	0.34	0.25	0.16	0.13	0.11	0.10
L	H	H	1.55	1.11	0.60	0.43	0.31	0.26	0.18	0.12	0.10	0.09	0.07
L	H	L	1.03	0.74	0.40	0.29	0.21	0.17	0.12	0.08	0.07	0.06	0.05
L	L	H	0.52	0.37	0.20	0.14	0.10	0.09	0.06	0.04	0.03	0.03	0.02
L	L	L	0										

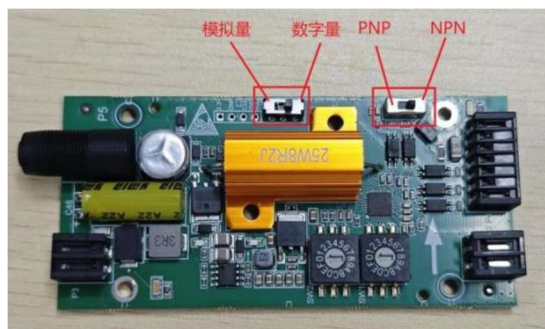


9. Fault Indicator Description

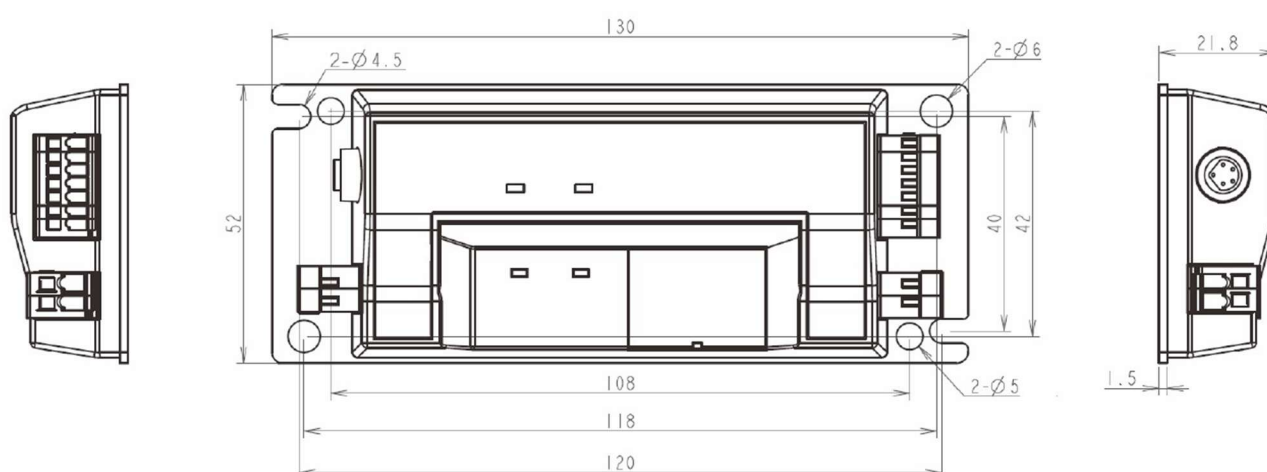
RUN (Green)	FAULT (Red)	Status / Meaning
Always on	Off	Ready
Off	Always on	Control card ready
extinguish	rapid flashing	Motorized roller running
Always on	Off	Fuse damaged
Slow flashing	Off	Operating voltage is lower than 18V
Slow flashing	Always on	Roller fault or not connected
slowly flashing	Always on	Brake resistor overtemperature

* Dual LED Fault Indicator

- 1) Different status combinations output fault signals with a continuous flashing interval of 0.5s, allowing for preliminary determination of the product's fault cause;
- 2) Description of ERROR fault output signal: The fault output signal can be set to PNP (high level 24V indicates no fault, high impedance state indicates a fault). When using NPN (low level indicates no fault, high impedance state indicates a fault), you can remove the white strip at the back and manually adjust the DIP switch, as shown in the figure below:



10. Dimensions and Installation



11. Operating Environment

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

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