

LOW-VOLTAGE DIGITAL-DISPLAY PANEL-MOUNT BRUSHLESS DRIVER

EA-DRVC20-200-L-DR USER MANUAL



V1.03
 English Edition

Revision Summary

The following table summarizes changes and updates made to this document.

Version	Date	Revision Description	Revised By
V1.01	2022-11-08	Initial release	Hua Rongyu
V1.02	2023-03-08	Added power-off retention of front-panel RUN/STOP operating status during terminal control; removed the long-press RUN jog function.	Yu Chuang
V1.03	2023-04-23	Updated the contents, revised the wiring-diagram rear label, and modified the FUN-key function code.	Hua Rongyu

Before Use

Read this manual and all safety information carefully before operating the product.



DANGER

- Before wiring or installing the driver, make sure the power supply is switched off.
- Internal circuit-board components can be damaged by static electricity. Do not touch the circuit board unless proper anti-static precautions have been taken.
- Do not modify internal components or circuits.
- Do not use the product in locations exposed to moisture, corrosive gas, flammable gas, or similar hazardous substances; electric shock or fire may result.
- Install the driver and accessories away from heat sources, open flames, and flammable materials.
- Before starting the machine, adjust all parameters to suit the application. Incorrect settings may cause uncontrolled operation or malfunction.
- Confirm that the emergency-stop device can be activated at any time before starting the machine.
- At power-on, make sure the motor shaft is stationary and cannot rotate because of inertia or other external forces.
- Do not change wiring while power is on; electric shock or personal injury may result.



WARNING

- Do not apply DC power to the driver output I/O terminals.
- The rated power-supply voltage is DC 24-48 V.
- Test the driver and motor without load before connecting the load.
- Do not switch the power supply on and off frequently. When repeated switching is necessary, limit it to no more than once per minute.
- Do not use this product for vertical lifting or lowering of a load.
- Only qualified personnel may install, wire, and service the driver.

Notes

- Some illustrations show covers removed to explain product details. During operation, reinstall all covers, complete the wiring correctly, and follow this manual.
- Illustrations are for explanation and may differ slightly from the actual product without affecting function.
- Product documentation may be revised without prior notice.
- Contact the supplier or authorized technical support for product-use questions.

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1. Product Inspection and Description

1.1 Product Inspection

To prevent problems caused during purchase or transportation, carefully check the following items:

- Confirm that the received product is the intended model by checking the package nameplate.
- Visually inspect the product for damage or scratches.
- Check for loose or missing screws.
- Check for missing accessories against the component list.

Contact the supplier or sales representative promptly if any issue is found.

A complete operable driver package includes:

- EA-DRVC20-200-L-DR driver - 1 unit
- 6-pin power terminal - 1 piece
- 8-pin I/O terminal - 1 piece

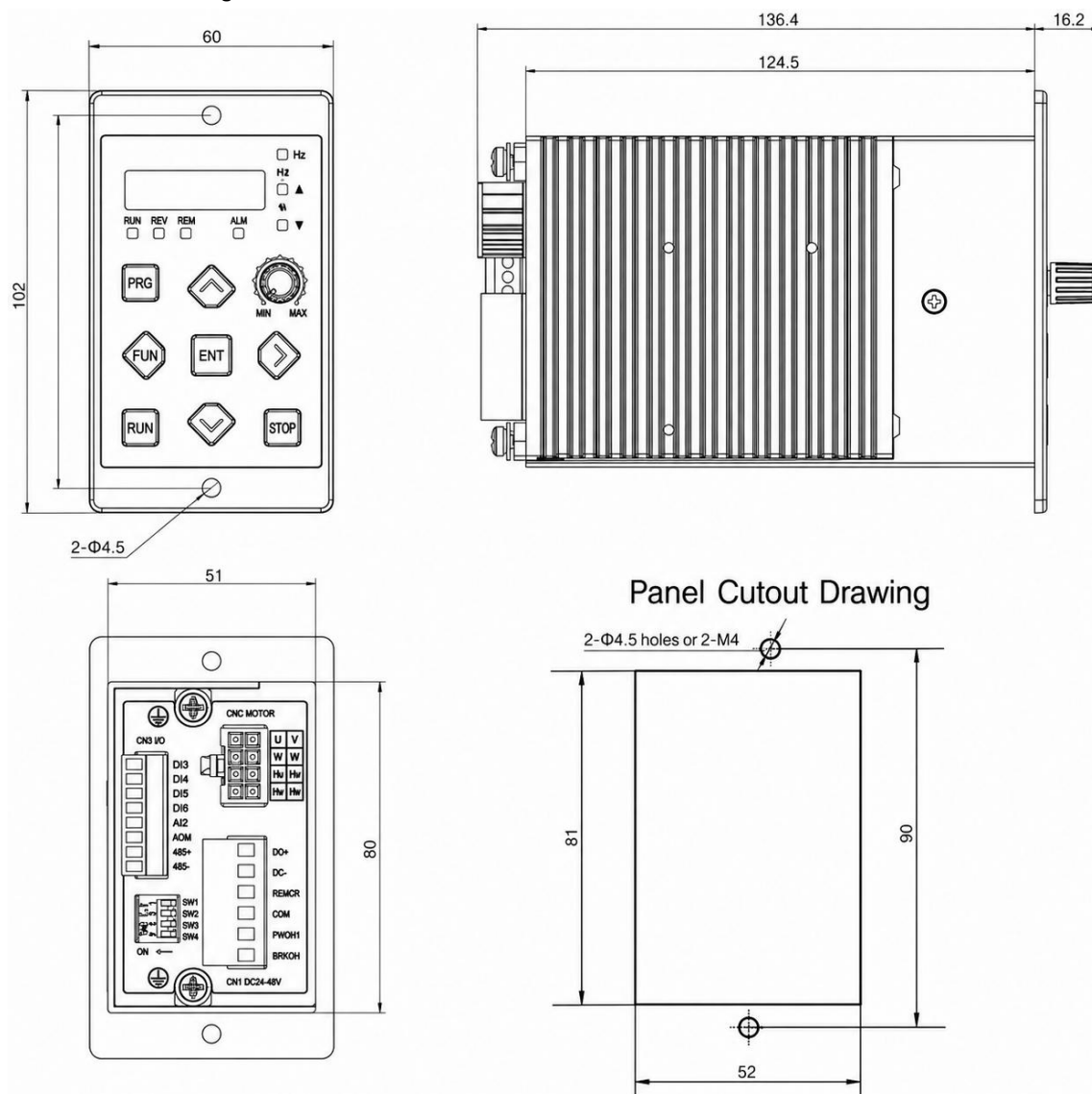
1.2 Nameplate / Model Description and Specifications

Code	Meaning
EA	Product prefix
DRV	Brushless driver
C20	C20 series
200	Maximum output power: 200 W
L	Low-voltage input
D	Digital-display panel-mount type
R	RS485 communication

Item	Specification
Model	EA-DRVC20-200-L-DR
Input voltage	DC 24-48 V ($\pm 10\%$)
Output current	3.0-7.5 A; adjustable from the panel
Output power	DC 24 V: 120 W; DC 48 V: 200 W
Compatible motor	DC 24 V motor up to 120 W; DC 48 V motor up to 200 W
Default speed	3000 rpm
Motor pole pairs	5 by default; other values can be set with the DIP switches
Digital inputs	DI1-DI5, active low
Digital output	DO fault output
Analog input	External analog voltage, 0-5 V / 10 V, or PWM 3-10 kHz
HDI input	Not provided
Speed control	Panel-mounted speed knob
Cooling	Natural air cooling
Communication	RS485 Modbus RTU; 1200-57600 bit/s; frame interval at least 30 ms
Protection rating	IP20
Protection functions	Undervoltage, overvoltage, overcurrent, overload, stall, phase loss, and overtemperature
Panel	Built-in panel and digital display
Installation type	Embedded / panel-mount type
Operating mode	Open loop or closed loop; closed-loop control accuracy $\pm 0.5\%$
Brake	Electronic braking

2. Product Dimensions, Environmental Conditions, and Installation

2.1 Product Dimension Drawing



Original technical drawing; text contained in the figure is retained. Units: mm.

This product is designed for embedded panel installation. Mount it on a grounded metal surface with good heat dissipation. Use M4 combination screws and the panel cutout dimensions shown in the drawing.

2.2 Operating, Storage, and Transportation Conditions

Do not expose the driver to dust, direct sunlight, corrosive or flammable gas, grease, humidity, dripping water, or vibration.

The salt content in the air must be below 0.01 mg/cm² per year.

IP20 protects against solid foreign objects larger than 12 mm; it does not provide moisture protection.

Condition	Operating	Storage / Transportation
Ambient temperature, individual installation	-10 to 40 °C; -20 to -10 °C or 40 to 50 °C only with derating	Storage: -33 to 55 °C; Transportation: -20 to 50 °C
Ambient temperature, side-by-side	-10 to 30 °C; -20 to -10 °C or 30 to 40 °C only with derating	-
Relative humidity	Maximum 85% RH	Maximum 90% RH; no condensation
Atmospheric pressure	86-106 kPa	70-106 kPa
Altitude	Below 1000 m; derating required above 1000 m	-

- Store in a clean, dry, dust-free location.
- Keep temperature and relative humidity within the specified limits.
- Avoid corrosive gases and liquids.
- Keep the packaged unit on a shelf or flat surface.

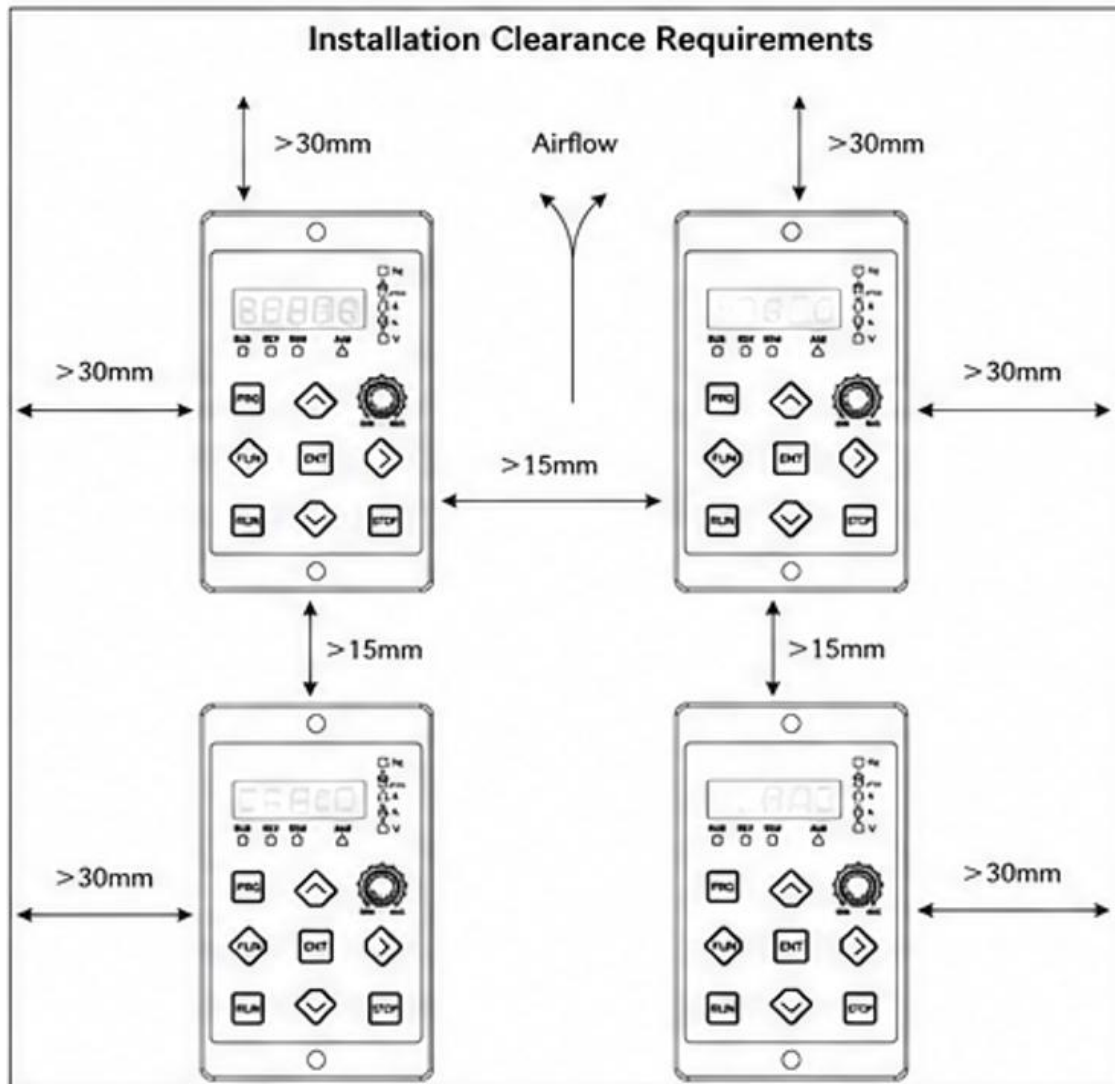
At rated current, operate between -10 and 40 °C. Above 40 °C, reduce rated current by 2.5% for each 1 °C increase. Maximum ambient temperature is 50 °C.

For long-term operation, keep the ambient temperature below 40 °C and provide good ventilation. Avoid heat sources, dripping water, steam, dust, oily dust, corrosive or flammable gas, airborne metal particles, vibration, and strong electromagnetic interference.

Install the driver in a panel opening on a grounded metal mounting surface with good heat dissipation. Improper installation may create an electric-shock or fire hazard.



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Recommended installation spacing; written dimensions take precedence over the drawing scale.

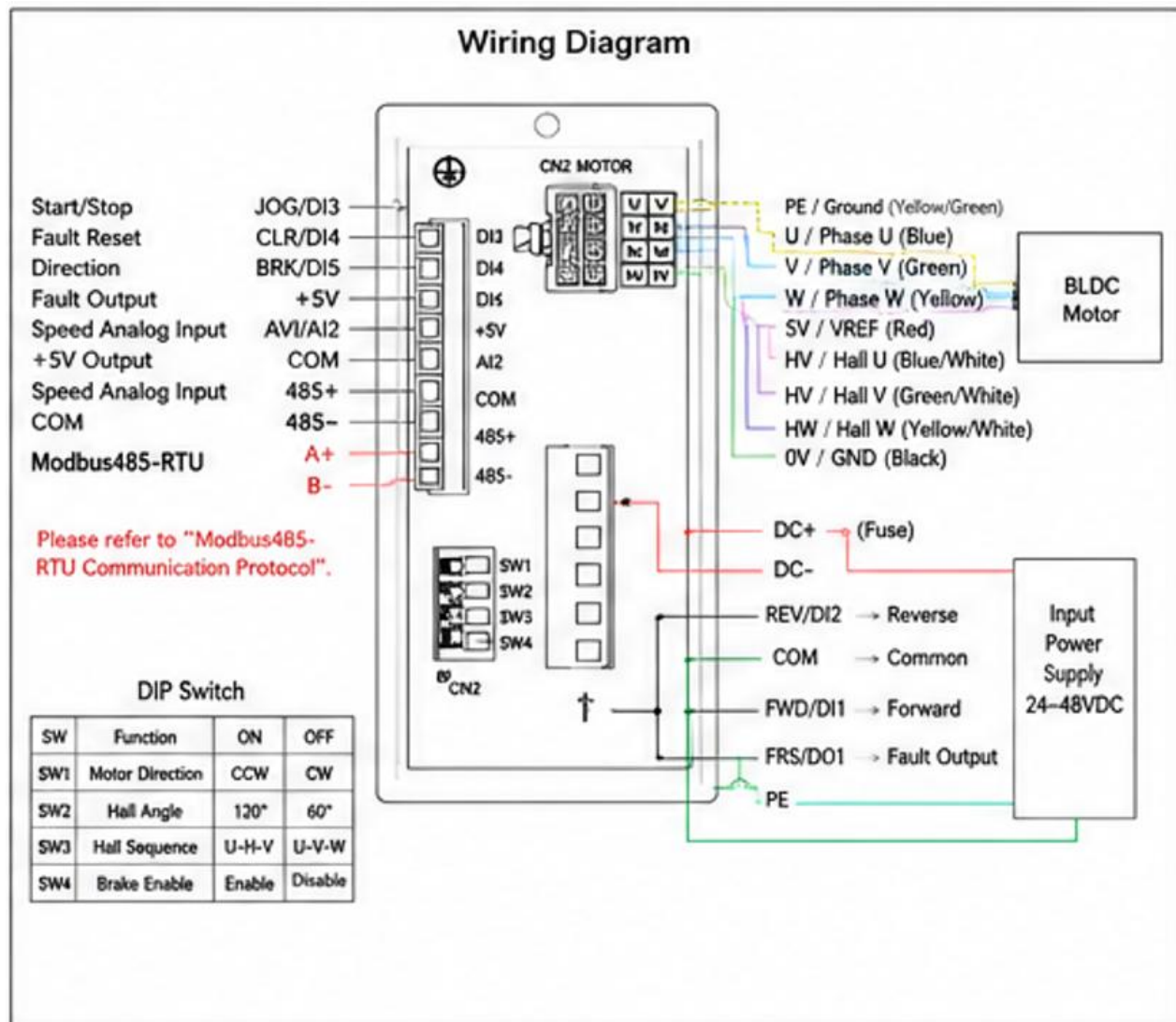
Installation precautions

- Do not pull the driver-to-motor cable tight.
- Tighten all mounting screws securely.

3. Wiring

3.1 Wiring Diagram

The following figure shows the wiring arrangement for the EA-DRVC20-200-L-DR.

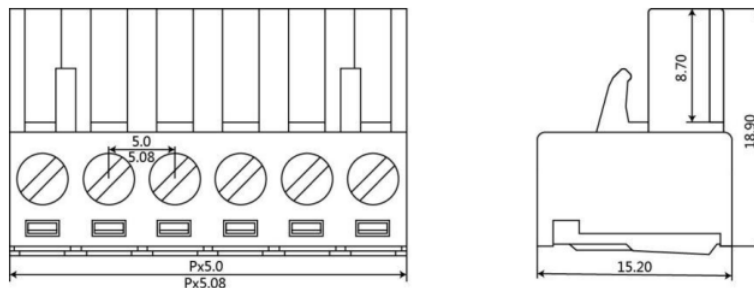


Original wiring diagram; text contained in the figure is retained.

3.2 Ports

3.2.1 Power and I/O Interface

Six-pole pluggable screw terminal. Use a flat-blade screwdriver with a blade width of 2.5 mm or less.



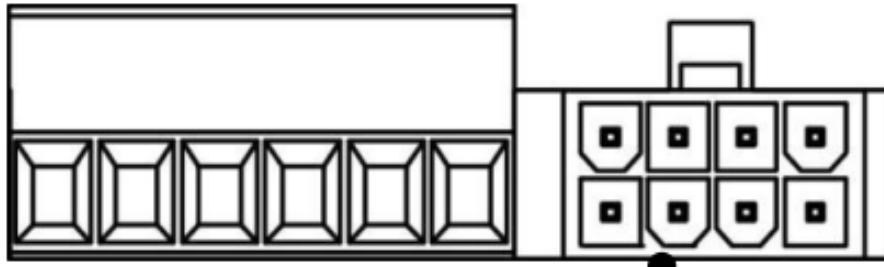
Six-pole terminal dimensions.

3.2.2 Motor Interface

Signals and wire colors for the low-voltage motor connector are shown below. Text embedded in the original figure is retained.

Socket	Signal	Wire color
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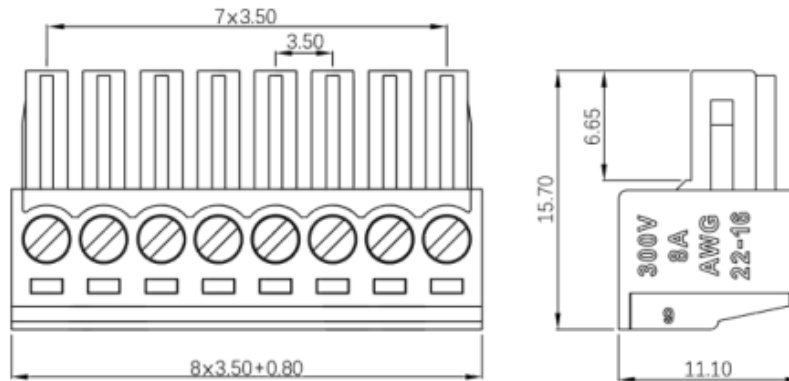
Socket	Signal	Wire color
1	Hu	Yellow
2	Hv	Green
3	W	Thick blue
4	U	Thick yellow
5	Vcc	Red
6	Hw	Blue
7	GND	Black
8	V	Thick green



Motor connector and terminal arrangement.

3.2.3 Expansion Port

Eight-pole pluggable screw terminal. Use a flat-blade screwdriver with a blade width of 2 mm or less.

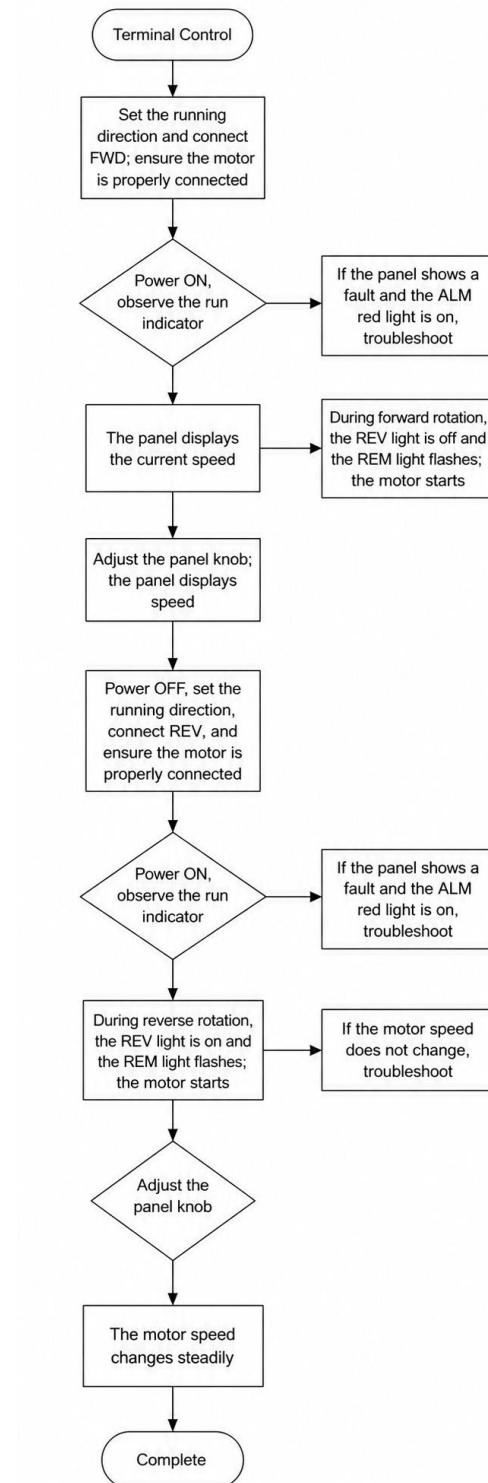


Expansion-port terminal dimensions.

4. Operation Instructions

Precautions

- Operation must be performed by personnel who understand the product and the application.
- Perform no-load commissioning before formal use.



No-load commissioning flowchart; text contained in the figure is retained.

4.1 Terminal Control

4.1.1 Port Description

Category	Port	Function
Input	FWD/DI1	Forward rotation
Input	REV/DI2	Reverse rotation
Input	JOG/DI3	Jog
Input	CLR/DI4	Fault clear
Input	BRK/DI5	Electronic brake
Common	COM	Input/output common terminal
Output	ERR/DO1	Fault output, open collector

The default motor direction may vary with the number of pole pairs. Always perform a no-load test and confirm direction before use.



Forward direction.

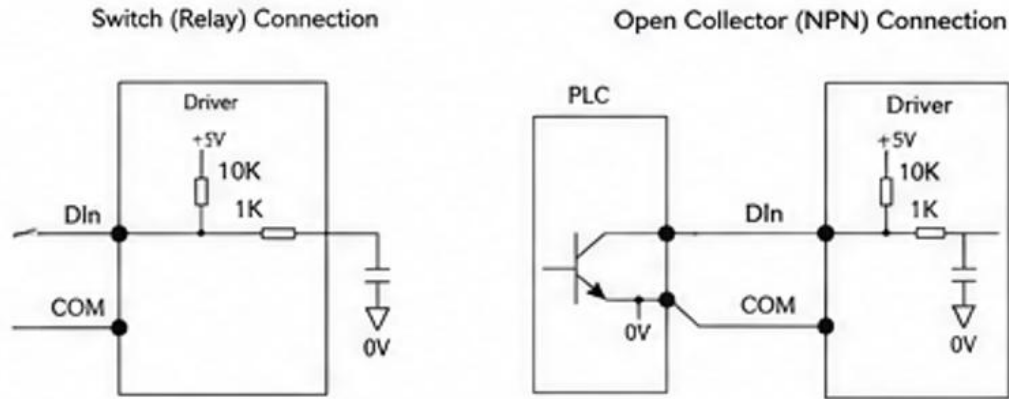


Reverse direction.

4.1.2 Input Start/Stop Control

Short FWD to COM to run forward. Short REV to COM to run in reverse. The user may connect an external switch, relay, or NPN-output PLC for start/stop control.

Digital Input (DI) Circuit



Switch and PLC connection examples; text contained in the figure is retained.

- Do not connect FWD and REV simultaneously.
- Avoid changing direction at high speed; stop the motor before changing direction.
- Do not connect a 24 V power supply to COM.

4.1.3 Speed Reference

The panel speed knob is the factory-default speed reference. Turn clockwise to increase speed and counterclockwise to decrease speed. The DIP switches or F00.02 can be used to select another speed reference.



Panel speed knob.

4.1.4 DIP Switches

The driver has four DIP switches, SW1-SW4. The down position is ON.

Switch	Function	OFF	ON
SW1	Analog reference selection	AI1 panel knob	AI2 external analog input
SW2	Control method	Panel / terminal control	RS485 control
SW3/SW4	Motor pole-pair setting	See combinations	See combinations

Pole pairs	SW3	SW4
2	ON	ON
3	OFF	ON
4	ON	OFF
5	OFF	OFF

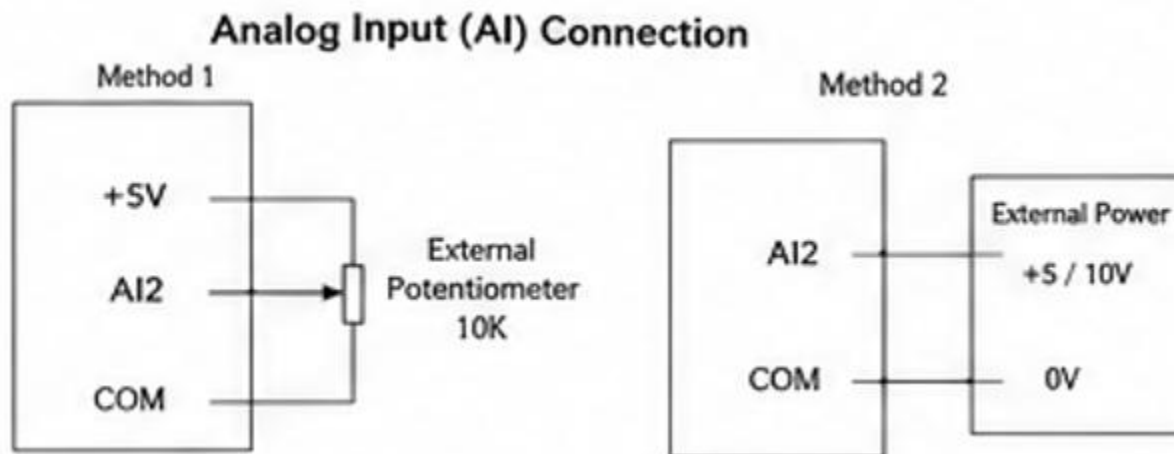


SW1 (模拟量选择)	AI1调速=OFF		AI2调速=ON	
SW2 (控制方式选择)	内部控制=OFF		485控制=ON	
SW3 (电机极对数匹配)	2对极	ON	3对极	OFF
SW4 (电机极对数匹配)	2对极	ON	4对极	ON
			5对极	OFF

Original DIP-switch setting table; text contained in the figure is retained.

4.1.5 Analog AI2 Speed Reference

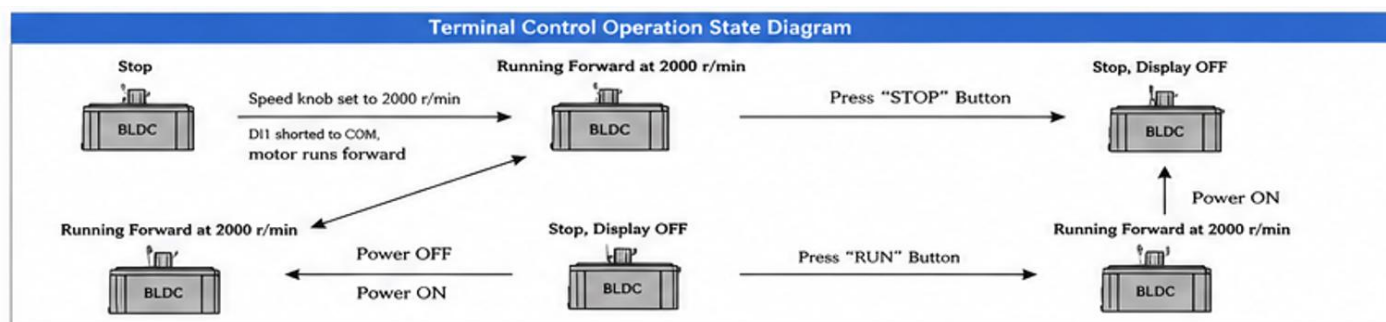
To use external analog voltage, switch SW1 to ON or set F00.02 to 2 from the panel. The default input range is 0-5 V. A 10 k Ω external potentiometer is recommended. For 0-10 V input, set F05.39 to 10 V.



External analog-input wiring methods; text contained in the figure is retained.

4.1.6 Run-State Retention After Power-Off

When terminal control is used, the operating state before power loss is retained after power is restored. The original operation diagram is shown below.

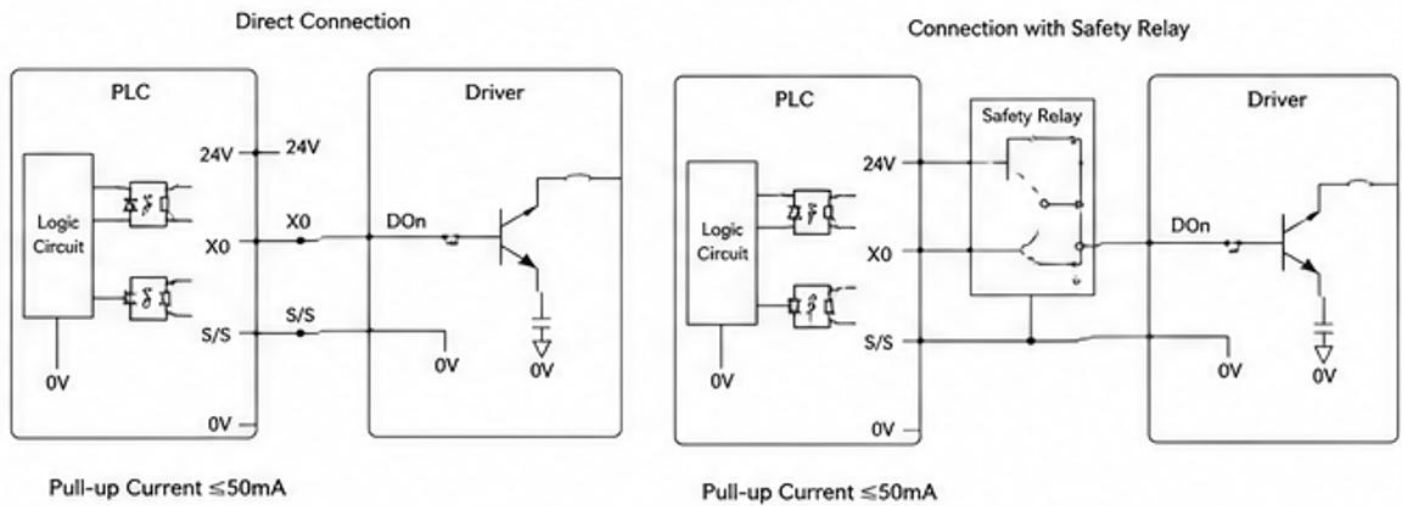


Run-state retention sequence; text contained in the figure is retained.

4.1.7 DO Output Terminal

The open-collector output sinks less than 50 mA and is assigned as a fault output. The actual PLC wiring depends on the PLC brand and the application.

Connection with Safety Relay

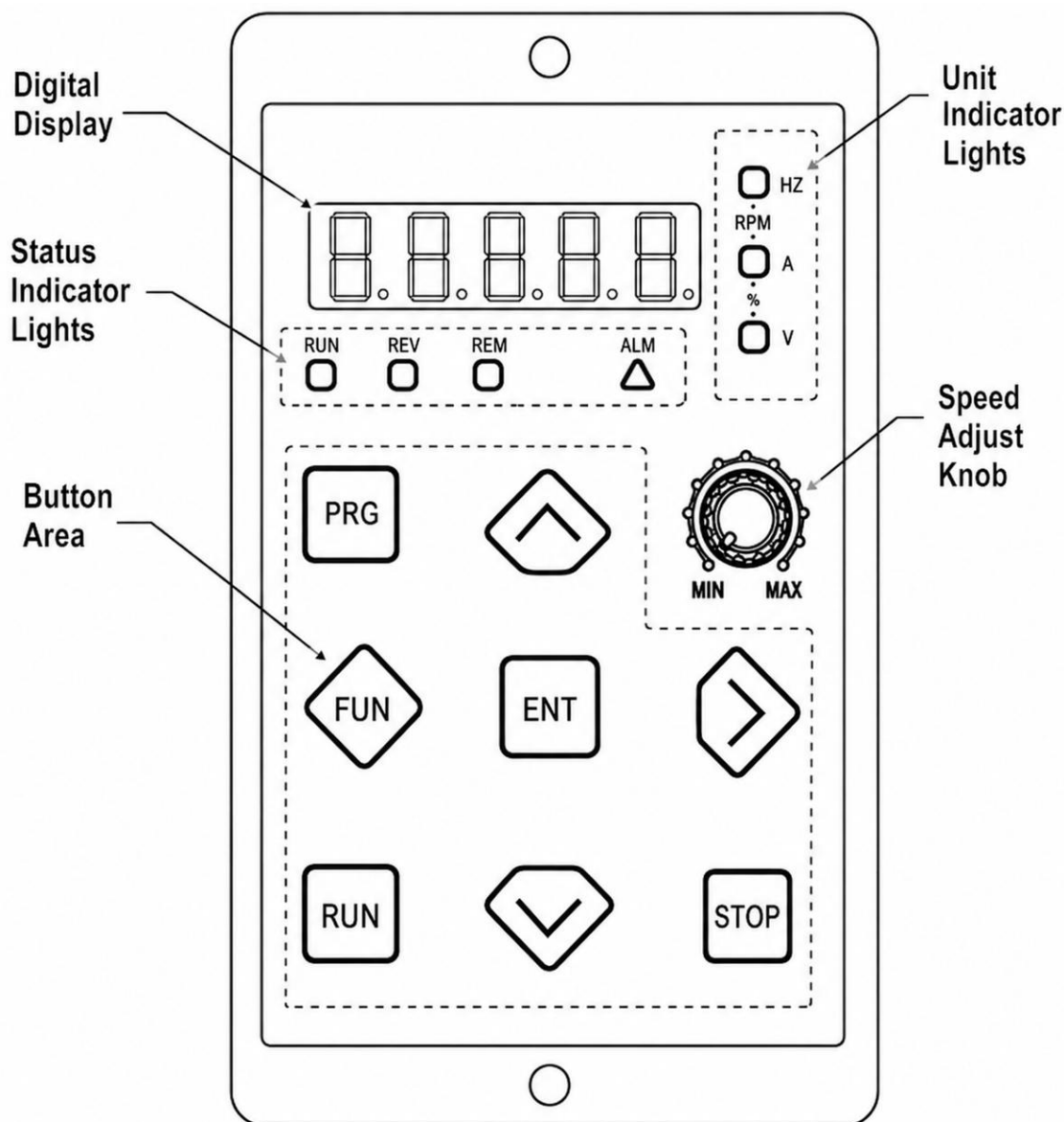


PLC output wiring examples; text contained in the figure is retained.

4.2 Panel Control

4.2.1 Panel Description

The built-in panel is used to set driver parameters, read driver status, and control motor operation.



Panel layout; text contained in the figure is retained.

No.	Item	Description
1	Digital display	Five-digit LED display for function codes, operating parameters, and fault alarms.
2	Status indicators	RUN: off stopped, flashing identification, on running. REV: off forward, on reverse. REM: off panel control, flashing terminal control, on communication control. ALM: off normal, flashing pre-alarm, on fault.
3	Unit indicators	Hz frequency; A current; V voltage; RPM speed; % percentage.
4	PRG	Enter or exit the first-level menu.
4	ENT	Enter menu screens level by level and confirm settings.
4	Up / Down	Increase or decrease data or function-code values.
4	Right shift	Move the cursor or cycle the displayed parameter.
4	FUN	Press to start the assigned function and release to stop it; default function is direction switching.

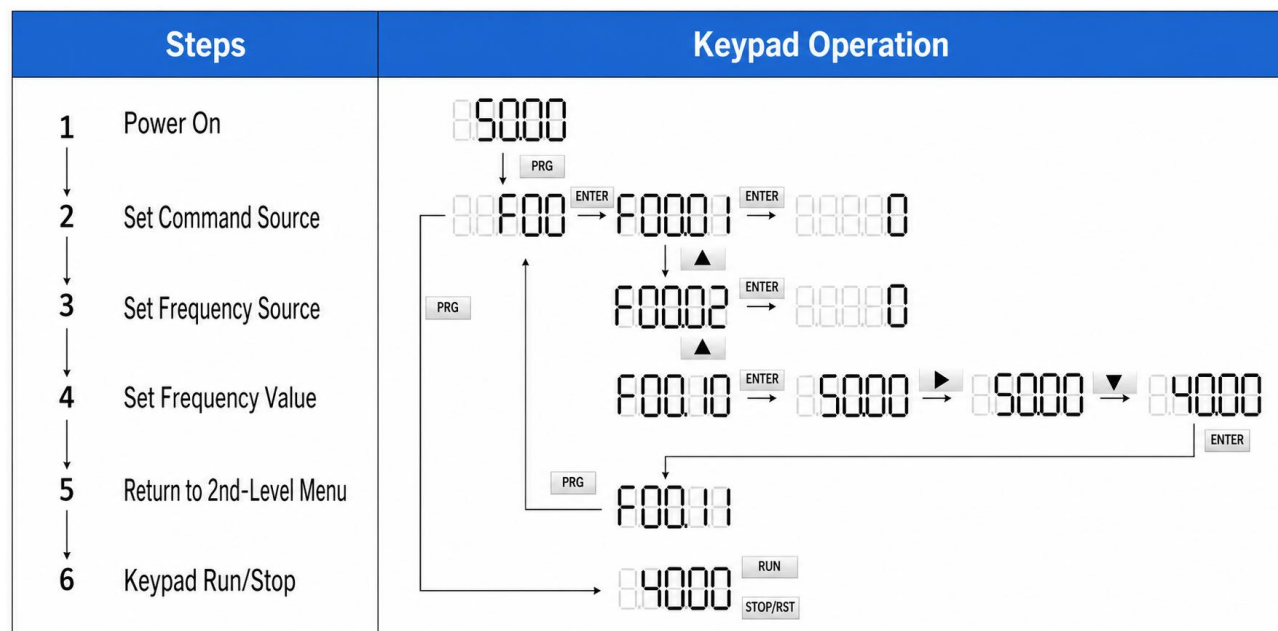
No.	Item	Description
4	RUN	Start operation.
4	STOP	Stop during operation or reset a fault.

4.2.2 Panel Operation

The driver uses a three-level operation menu:

- Function-code group, first-level menu, for example F00.
- Function-code number, second-level menu, for example F00.00.
- Function-code value, third-level menu, for example 50.00 Hz.

If no digit flashes in the third-level menu, the parameter cannot be modified. It may be read-only or writable only while the driver is stopped.



Panel menu operation; text contained in the figure is retained.

4.2.3 Function Codes

C20 driver parameters are grouped by function. R/W = readable and writable; R/W* = writable only while stopped and readable at any time; RO = read-only; N = reserved.

F00 Basic Function Group

Parameter	Name	Setting Range	Default	Attribute
F00.00	Control mode	0 Test mode; 1 Hall open loop; 2 Hall closed loop; 3 DIP-switch setting, SW1 on supported models	2	R/W*

Parameter	Name	Setting Range	Default	Attribute
F00.01	Run-command selection	0 Panel command, LED off; 1 Terminal command, LED flashing; 2 Communication command, LED on; 3 DIP-switch setting, SW3 on supported models	3	R/W
F00.02	Speed-reference selection	0 Panel digital setting; 1 Analog AI1, knob potentiometer; 2 Analog AI2, external voltage; 3 Modbus communication; 4 Multi-speed; 5 DIP-switch setting, SW2/SW3; 6 Simple PLC, F04 group; 7 High-speed pulse input, HDI selected by F05.00; 8 CAN communication on supported models	5	R/W
F00.03	Upper operating-frequency limit	F00.04-500.00 Hz	250.00 Hz	R/W*
F00.04	Lower operating-frequency limit	0.00 Hz-F00.03	5.00 Hz	R/W*
F00.05	Communication run-command channel	0 Modbus; 1 CAN on supported models	0	R/W*
F00.06	Pole-pair setting source	0 Function code F02.05; 1 DIP switch on supported models	1	R/W*
F00.07	Current setting source	0 Function code F02.04; 1 Analog setting on supported models	0	R/W*
F00.08	Acceleration/deceleration time setting source	0 Function codes F00.11 and F00.12; 1 Analog setting for panel and terminal models	0	R/W*
F00.09	Jog frequency	0.00 Hz-F00.03	10.00 Hz	R/W
F00.10	Panel frequency	0.00 Hz-F00.03	250.00 Hz	R/W
F00.11	Acceleration time 1	0.1-600.0 s	1.0 s	R/W

Parameter	Name	Setting Range	Default	Attribute
F00.12	Deceleration time 1	0.1-600.0 s	1.0 s	R/W
F00.13	Rotation-direction selection	0 Default direction; 1 Opposite direction; 2 Reverse operation disabled	0	R/W
F00.14	Carrier frequency	8.0-20.0 kHz	Model dependent	R/W*
F00.15	Parameter restore selection	0 No action; 1 Restore function-code defaults; 2 Restore CANopen communication defaults; 3 Restore all parameters	0	R/W*

F01 Start/Stop Control Group

Parameter	Name	Setting Range	Default	Attribute
F01.05	Stop mode	0 Deceleration stop; 1 Coast stop	1	R/W
F01.06	Forward/reverse dead time	0.000-9.999 s	0.200 s	R/W
F01.07	Reserved	0-1	0	R/W*
F01.08	Electronic-brake current limit	0.1%-200.0%	5.0%	R/W
F01.09	Electronic-brake adjustment time	0.1-999.9 s	5.0 s	R/W
F01.10	Stop speed	0.00-50.00 Hz; valid for deceleration stop	0.20 Hz	R/W
F01.11	Direction-change limit frequency	0.0-500.0 Hz; valid for deceleration stop	50.0 Hz	R/W
F01.12	Electronic-brake torque hold time	0.1-600.0 s	0.0 s	R/W
F01.13	Brake during deceleration stop	0 Disabled; 1 Enabled when F01.05=0	0	R/W
F01.14	Reduction-ratio numerator	1-9999. Displayed speed = motor speed / (numerator / denominator)	1	R/W
F01.15	Reduction-ratio denominator	1-9999	1	R/W

F02 Motor Parameter Group

Parameter	Name	Setting Range	Default	Attribute
F02.00	Rated motor power	15-2200 W	Model dependent	R/W*
F02.01	Rated motor frequency	0.01-500 Hz	Model dependent	R
F02.02	Rated motor speed	1-9999 rpm	Model dependent	R
F02.03	Rated motor voltage	0-1200 V	Model dependent	R

Parameter	Name	Setting Range	Default	Attribute
F02.04	Rated motor current	0.01-99.99 A; valid when F00.07 = 0	Model dependent	R/W*
F02.05	Motor pole pairs	1-20	5	R/W*
F02.08	Special parameter setting	Bit 0: 0 Hall count in default direction, 1 reversed Hall count, F09.29/F09.30. Bit 1: 0 display actual speed, 1 display set speed	0	R/W*

F03 Control Parameter Group

Parameter	Name	Setting Range	Default	Attribute
F03.00-F03.18	Reserved	Reserved	16.0	N

F04 Simple PLC and Multi-speed Group

Parameter	Name	Setting Range	Default	Attribute
F04.00	Simple PLC mode	0 Stop after one run	0	R/W

Parameter	Name	Setting Range	Default	Attribute
F04.01-F04.16	Multi-speed 0 through Multi-speed 15	-100.0% to 100.0%	0.0%	R/W
F04.17	Segment 0 run time	0.0-999.9 s or min	0.0 s	R/W
F04.18	Segment 1 run time	0.0-999.9 s or min	0.0 s	R/W
F04.19	Segment 2 run time	0.0-999.9 s or min	0.0 s	R/W
F04.20	Segment 3 run time	0.0-999.9 s or min	0.0 s	R/W
F04.21	Segment 4 run time	0.0-999.9 s or min	0.0 s	R/W
F04.22	Segment 5 run time	0.0-999.9 s or min	0.0 s	R/W
F04.23	Segment 6 run time	0.0-999.9 s or min	0.0 s	R/W
F04.24	Segment 7 run time	0.0-999.9 s or min	0.0 s	R/W
F04.25	Segment 8 run time	0.0-999.9 s or min	0.0 s	R/W
F04.26	Segment 9 run time	0.0-999.9 s or min	0.0 s	R/W
F04.27	Segment 10 run time	0.0-999.9 s or min	0.0 s	R/W
F04.28	Segment 11 run time	0.0-999.9 s or min	0.0 s	R/W

Parameter	Name	Setting Range	Default	Attribute
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Parameter	Name	Setting Range	Default	Attribute
F04.29	Segment 12 run time	0.0-999.9 s or min	0.0 s	R/W
F04.30	Segment 13 run time	0.0-999.9 s or min	0.0 s	R/W
F04.31	Segment 14 run time	0.0-999.9 s or min	0.0 s	R/W
F04.32	Segment 15 run time	0.0-999.9 s or min	0.0 s	R/W
F04.33	PLC restart mode	0 Restart from segment 1; 1 Continue at the stage frequency present when interrupted	0	R/W*
F04.34	Multi-segment time unit	0 Seconds; 1 Minutes	0	R/W*

F05 Input Terminal Parameter Group

Parameter	Name	Setting Range	Default	Attribute
F05.00	HDI function selection	0 DI3 as normal I/O input; 1 DI3 as HDI high-speed pulse input	0	R/W*
F05.01	DI1 terminal function	0 No function; 1 Forward run; 2 Reverse run; 3 Three-wire control; 4 Forward jog; 5 Reverse jog; 6 Coast stop; 7 Fault reset; 8 Electronic brake; 9 External fault input; 10-13 Reserved; 14 Forward limit; 15 Reverse limit; 16 Multi-speed 1; 17 Multi-speed 2; 18 Multi-speed 3; 19 Multi-speed 4; other values reserved	1	R/W*
F05.02	DI2 terminal function	Same options as F05.01	2	R/W*
F05.03	DI3 terminal function	Same options as F05.01	4	R/W*
F05.04	DI4 terminal function	Same options as F05.01	7	R/W*
F05.05-F05.08	DI5-DI8 terminal function	Same options as F05.01	0	R/W*
F05.09	Reserved	-	0	R/W*
F05.10	Input-terminal polarity	0x000-0x1FF	0x000	R/W
F05.11	Digital-input filter time	0.000-1.000 s	0.010 s	R/W
F05.12	Virtual-terminal setting	0x000-0x10F; 0 disabled, 1 enabled. Bit 0 DI1, Bit 1 DI2, Bit 2 DI3, Bit 3 DI4, Bit 4 DI5, Bit 5 DI6, Bit 6 DI7, Bit 7 DI8	0x000	R/W*

Parameter	Name	Setting Range	Default	Attribute
F05.13	Terminal-control run mode	0 Two-wire control 1; 1 Two-wire control 2; 2 Three-wire control 1; 3 Three-wire control 2	0	R/W*
F05.14	DI1 ON delay	0.000-9.999 s	0.000 s	R/W
F05.15	DI1 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.16	DI2 ON delay	0.000-9.999 s	0.000 s	R/W
F05.17	DI2 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.18	DI3 ON delay	0.000-9.999 s	0.000 s	R/W
F05.19	DI3 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.20	DI4 ON delay	0.000-9.999 s	0.000 s	R/W
F05.21	DI4 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.22	DI5 ON delay	0.000-9.999 s	0.000 s	R/W
F05.23	DI5 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.24	DI6 ON delay	0.000-9.999 s	0.000 s	R/W
F05.25	DI6 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.26	DI7 ON delay	0.000-9.999 s	0.000 s	R/W
F05.27	DI7 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.28	DI8 ON delay	0.000-9.999 s	0.000 s	R/W
F05.29	DI8 OFF delay	0.000-9.999 s	0.000 s	R/W
F05.30-F05.31	Reserved	0.000-9.999 s	0.000 s	R/W
F05.32	AI1 lower-limit voltage	0.00 V-F05.34	0.50 V	R/W
F05.33	AI1 lower-limit corresponding setting	-300.0%-300.0%	0.0%	R/W
F05.34	AI1 upper-limit voltage	F05.32-10.00 V	8.50 V	R/W
F05.35	AI1 upper-limit corresponding setting	-300.0%-300.0%	100.0%	R/W
F05.36	AI1 input filter time	0.000-9.999 s	0.030 s	R/W
F05.37	AI2 lower-limit voltage	0.00 V-F05.39	0.20 V	R/W
F05.38	AI2 lower-limit corresponding setting	-300.0%-300.0%	0.0%	R/W

Parameter	Name	Setting Range	Default	Attribute
F05.39	AI2 upper-limit voltage	F05.37-10.00 V	4.80 V	R/W

Parameter	Name	Setting Range	Default	Attribute
F05.40	AI2 upper-limit corresponding setting	-300.0%-300.0%	100.0%	R/W
F05.41	AI2 input filter time	0.000-9.999 s	0.030 s	R/W
F05.42	AI3 lower-limit voltage	0.00 V-F05.44	0.50 V	R/W
F05.43	AI3 lower-limit corresponding setting	-300.0%-300.0%	0.0%	R/W
F05.44	AI3 upper-limit voltage	F05.42-10.00 V	8.50 V	R/W
F05.45	AI3 upper-limit corresponding setting	-300.0%-300.0%	100.0%	R/W
F05.46	AI3 input filter time	0.000-9.999 s	0.030 s	R/W
F05.47	AI4 lower-limit voltage	0.00 V-F05.49	0.50 V	R/W
F05.48	AI4 lower-limit corresponding setting	-300.0%-300.0%	0.0%	R/W
F05.49	AI4 upper-limit voltage	F05.47-10.00 V	8.50 V	R/W
F05.50	AI4 upper-limit corresponding setting	-300.0%-300.0%	100.0%	R/W
F05.51	AI4 input filter time	0.000-9.999 s	0.030 s	R/W
F05.52	HDI lower-limit frequency	0.00 kHz-F05.54	0.00 kHz	R/W
F05.53	HDI lower-limit corresponding setting	-100.0%-100.0%	0.0%	R/W
F05.54	HDI upper-limit frequency	F05.52-20.00 kHz	19.99 kHz	R/W
F05.55	HDI upper-limit corresponding setting	-100.0%-100.0%	100.0%	R/W
F05.56	HDI input filter time	0.000-9.999 s	0.030 s	R/W
F05.57	FUN-key function selection	0 No function; 1 Forward jog; 2 Reverse jog; 3 Forward/reverse switching	3	R/W*

F06 Output Terminal Parameter Group

Parameter	Name	Setting Range	Default	Attribute
F06.00	Reserved	0-1	0	R/W*

Parameter	Name	Setting Range	Default	Attribute
F06.01	DO1 output selection	0 Invalid; 1 Running; 2 Forward running; 3 Reverse running; 4 Jog running; 5 Driver fault; 6 Overload warning; 7 Underload warning; 8 Communication virtual-terminal output; 9 Low DC-bus voltage; 10 Speed output, Hall signal; other values reserved	5	R/W
F06.02	DO2 output selection	Same options as F06.01	10	R/W
F06.03	DO3 output selection	Same options as F06.01	0	R/W
F06.04	DO4 output selection	Same options as F06.01	0	R/W
F06.05	Output-terminal polarity selection	00-0F	00	R/W

Parameter	Name	Setting Range	Default	Attribute
F06.06	DO1 ON delay	0.000-9.999 s	0.000 s	R/W
F06.07	DO1 OFF delay	0.000-9.999 s	0.000 s	R/W
F06.08	DO2 ON delay	0.000-9.999 s	0.000 s	R/W
F06.09	DO2 OFF delay	0.000-9.999 s	0.000 s	R/W
F06.10	DO3 ON delay	0.000-9.999 s	0.000 s	R/W
F06.11	DO3 OFF delay	0.000-9.999 s	0.000 s	R/W
F06.12	DO4 ON delay	0.000-9.999 s	0.000 s	R/W
F06.13	DO4 OFF delay	0.000-9.999 s	0.000 s	R/W

F07 Fault and Protection Group

Parameter	Name	Setting Range	Default	Attribute
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Parameter	Name	Setting Range	Default	Attribute
F07.00	Driver or motor overload/underload pre-alarm selection	0x000-0x131. Units digit: 0 motor pre-alarm relative to rated motor current; 1 driver pre-alarm relative to rated driver current. Tens digit: 0 continue after overload/underload alarm; 1 continue after underload alarm but stop on overload; 2 continue after overload alarm but stop on underload; 3 stop on either overload or underload fault. Hundreds digit: 0 detect continuously; 1 detect at constant speed only	0x000	R/W
F07.01	Overload pre-alarm detection level	F07.03-200%	140%	R/W
F07.02	Overload pre-alarm detection time	0.1-999.9 s	1.0 s	R/W
F07.03	Underload pre-alarm detection level	0%-F07.01	50%	R/W
F07.04	Underload pre-alarm detection time	0.1-999.9 s	1.0 s	R/W
F07.05	Motor overload protection	0 Disabled; 1 Enabled	0	R/W*
F07.06	Motor overload protection coefficient	20.0%-120.0%	100.0%	R/W
F07.07	MOS self-test enable	0 Disabled; 1 Enabled	0	R/W*
F07.08	Automatic current-limit level	10.0%-420.0% of driver rating	260.0%	R/W*

Parameter	Name	Setting Range	Default	Attribute
F07.09	Fault auto-reset time	0.0-999.9 s	5.0 s	R/W
F07.10	Number of fault auto-resets	0 Disabled; 1-9999 reset attempts	0	R/W
F07.11	Stall detection time	0.0-999.9 s	3.0 s	R/W*
F07.12	Stall current limit	1.0%-200.0% of driver rated current	70.0%	R/W*
F07.13	UP/DN panel function	0 Fine adjustment of speed reference, valid only for panel speed reference; 1 UP forward jog and DN reverse jog, valid on panel stop/run screens	0	R/W
F07.14	Undervoltage detection time	0-9.999 s	1.0 s	R/W

Parameter	Name	Setting Range	Default	Attribute
F07.15	Phase-loss detection time	0-999.9 s	3.0 s	R/W
F07.16	User password	0 Clear password; 1-9999 enable password protection	0	R/W
F07.19	Fan control	0 Fan on during operation; 1 Fan runs continuously	-	-

F08 Communication Group

Parameter	Name	Setting Range	Default	Attribute
F08.00	RS485 slave address	1-247; 0 is broadcast	1	R/W*
F08.01	RS485 baud rate	0 1200; 1 2400; 2 4800; 3 9600; 4 19200 default; 5 38400; 6 57600 bps. Some models do not permit baud-rate changes	4	R/W*
F08.02	RS485 data/parity setting	0 No parity N,8,1; 1 Even E,8,1; 2 Odd O,8,1; 3 No parity N,8,2. Some models do not permit parity changes	0	R/W*
F08.03	RS485 response delay	0-200 ms	5 ms	R/W*
F08.04	RS485 timeout-fault time	0.0 disabled; 0.1-60.0 s	0.0 s	R/W*
F08.05	Reserved	-	0	R/W*
F08.06	RS485 processing action	0x0-0x1. Units digit: 0 write operation returns a response; 1 write operation returns no response	0x00	R/W*

Parameter	Name	Setting Range	Default	Attribute
F08.10	CAN slave address	1-127	1	R/W*
F08.11	CAN baud rate	0 10 kbit/s, unsupported on some models; 1 20 kbit/s; 2 50 kbit/s; 3 100 kbit/s; 4 125 kbit/s default; 5 250 kbit/s; 6 500 kbit/s; 7 1 Mbit/s	4	R/W*
F08.12	CAN response delay	0-200 ms	5 ms	R/W*
F08.13	CAN protocol selection	0 CAN Modbus; 1 CANopen on supported models	0	R/W*

Parameter	Name	Setting Range	Default	Attribute
F08.14	CAN function setting	CANopen bits 0-7: Bit 0 action when not Operational during running, 0 stop and report E.CAN5, 1 retain previous state. Bit 1 heartbeat timeout action, 0 stop and report E.CAN4, 1 retain previous state. Bit 2 CAN receive/transmit fault detection, 0 disable E.CAN2/E.CAN3, 1 enable. CAN Modbus bits 8-15: Bit 8 broadcast response, 0 no response, 1 response	0x00	R/W*

F09 Monitoring Parameter Group

Parameter	Name	Setting Range	Default	Attribute
F09.00	Set frequency	0.00 Hz-F00.03	0.00 Hz	RO
F09.01	Output frequency	0.00 Hz-F00.03	0.00 Hz	RO
F09.02	Ramp set frequency	0.00 Hz-F00.03	0.00 Hz	RO
F09.03	Output voltage	0.0-1200.0 V	0.0 V	RO
F09.04	Output current	0.00-100.00 A	0.00 A	RO
F09.05	Set speed	0-65535 rpm	0 rpm	RO
F09.06	Motor speed	0-65535 rpm	0 rpm	RO

Parameter	Name	Setting Range	Default	Attribute
F09.07	Output power	0-2200 W	0 W	RO
F09.08	DC-bus voltage	0.0-2000.0 V	0 V	RO
F09.09	Hall value	0-7	0	RO
F09.10	Software version	1.00-99.99	1.00	RO

Parameter	Name	Setting Range	Default	Attribute
F09.11	Current fault type	0 No fault; 1 Hardware acceleration overcurrent E.OCH1; 2 Hardware deceleration overcurrent E.OCH2; 3 Hardware constant-speed overcurrent E.OCH3; 4 Acceleration overcurrent E.OC1; 5 Deceleration overcurrent E.OC2; 6 Constant-speed overcurrent E.OC3; 7 Acceleration overvoltage E.OV1; 8 Deceleration overvoltage E.OV2; 9 Constant-speed overvoltage E.OV3; 10 DC-bus undervoltage E.UV; 11 Motor overload E.OL1; 12 Driver overload E.OL2; 13 Hall fault E.HALL; 14 Stall fault E.LOC; 15 Rectifier-module overtemperature E.OH1; 16 Inverter-module overtemperature E.OH2; 17 External fault E.EF; 18 RS485 communication fault E.485; 19 Current-detection fault E.CUr; 20 Inverter U-phase fault E.OUT1; 21 Inverter V-phase fault E.OUT2; 22 Inverter W-phase fault E.OUT3; 23 Electronic overload E.OL3; 24 Underload fault E.LL; 25 MOS short-circuit fault E.Sht; 26 Panel communication fault E.boAd; 27 EEPROM storage fault E.EEP; 28 MOS conduction fault E.Cnd; 29 Hardware overcurrent-feedback fault E.OCHF; 30 Output phase-loss fault E.POUT; 31 CAN bus-off E.CAN1; 32 CAN transmit error E.CAN2; 33 CAN receive error E.CAN3; 34 Internal communication fault E.Conn; 35 CANopen heartbeat timeout E.CAN4; 36 CANopen NMT operation fault E.CAN5	0	RO

Parameter	Name	Setting Range	Default	Attribute
F09.12	Previous fault 1	Same fault-code list	0	RO
F09.13	Previous fault 2	Same fault-code list	0	RO
F09.14	Previous fault 3	Same fault-code list	0	RO
F09.15	Previous fault 4	Same fault-code list	0	RO

Parameter	Name	Setting Range	Default	Attribute
F09.16	Inverter temperature	-20.0 to 120.0 °C	0.0 °C	RO
F09.17	Digital input-terminal status	0000-1FF; Bit 0 DI1, Bit 1 DI2, Bit 2 DI3, Bit 3 DI4, Bit 4 DI5	0	RO
F09.18	Digital output-terminal status	0000-000F; Bit 0 DO1, Bit 1 DO2	0	RO
F09.19	AI1 input voltage	0.00-10.00 V	0.00 V	RO
F09.20	AI2 input voltage	0.00-10.00 V	0.00 V	RO
F09.21	AI3 input voltage	0.00-10.00 V	0.00 V	RO
F09.22	Peak current	0.00-100.00 A	0.00 A	RO
F09.23	DIP-switch status	0x00-0xFF	0x00	RO
F09.24	Rated-current setting	0.00-100.00 A	0.00 A	RO
F09.25	AI4 input voltage	0.00-10.00 V	0.00 V	RO
F09.26	HDI input frequency	0.00-20.00 kHz	0.00 kHz	RO
F09.27	Simple PLC cycle count	0-9999	0	RO
F09.28	Pole-pair setting	1-20	0	RO
F09.29	Hall count, high 16 bits	0-65535	0	RO
F09.30	Hall count, low 16 bits	0-65535	0	RO

F10 Reserved Group

Parameters in the F10 group are reserved unless specified by an approved product revision.

4.3 PC Software

4.3.1 Software Overview

DriverStudio is PC software for online commissioning of C20-series drivers equipped with RS485 communication. Main functions include parameter configuration, motor-status monitoring, motion control, simple PLC and multi-speed configuration, and fault monitoring.

4.3.2 Software Acquisition

Obtain the approved software installation package and operating instructions from the supplier or authorized technical support.

5. Status Display and Fault Maintenance

Precautions

- Except for faults that require panel parameter changes, disconnect power before troubleshooting or maintenance.
- Confirm that the indicators and panel operate normally before use.
- Do not move, wire, or service the driver while an indicator is lit.
- After troubleshooting, perform a trial run.
- Maintenance must be performed by personnel familiar with the product.
- If the fault cannot be resolved, do not remove the housing; contact qualified technical support.

5.1 LED Fault Indication

Operating state	Normal indication	Other indication
Stopped	Green continuously on; red off	Fault: red and green flash alternately to indicate the fault number
Running	Green flashing; red off	Current limiting: green and red flash; braking: green continuously on and red flashes rapidly

One green flash represents 5 and one red flash represents 1. Fault number = green flashes × 5 + red flashes.

Fault No.	Fault	LED indication	Main causes	Corrective action
1-6	Hardware/software overcurrent during acceleration, deceleration, or constant speed	0-1 green and 1-5 red	Acceleration/deceleration too fast; low voltage; driver power too low; sudden load; phase-to-phase short circuit; strong interference	Increase acceleration/deceleration time; check input voltage; use a larger driver; inspect the load; inspect/replace cable or motor; remove interference
7-9	Overvoltage during acceleration, deceleration, or constant speed	1 green and 2-4 red	High input voltage; rapid forward/reverse switching; motor driven by external force and regenerating	Check supply voltage; increase direction-change time; add external braking equipment
10	DC-bus undervoltage	1 green and 5 red	Low supply voltage; acceleration too fast causing supply protection; supply dip; driver hardware fault	Check supply; increase acceleration time; reset fault; obtain technical service

Fault No.	Fault	LED indication	Main causes	Corrective action
11	Motor overload	2 green, 1 red	Low supply voltage; motor power or rated-current setting too high; stalled motor or sudden load change	Check supply; set the rated motor current correctly; reduce load and inspect the motor/mechanism
12	Driver overload	2 green, 2 red	Low supply voltage; acceleration too fast; excessive load	Check supply; increase acceleration time; select the next larger driver

Fault No.	Fault	LED indication	Main causes	Corrective action
13	Hall fault	2 green, 3 red	Hall wiring open; strong external interference	Check Hall wiring; remove interference
14	Stall fault	2 green, 4 red	Excessive load; motor mechanically jammed	Check mechanical connection and motor cable
16	Driver overtemperature	3 green, 1 red	Excessive load; driver hardware fault	Lower temperature; derate the driver
19	Current-detection fault	3 green, 4 red	Driver hardware damaged	Replace the driver
27	Parameter-storage fault	5 green, 2 red	Maximum number of writes during one power cycle reached	Power cycle the driver
29	Overcurrent-feedback fault	5 green, 4 red	Driver hardware damaged	Replace the driver
30	Output phase loss	5 green, 5 red	U/V/W output phase missing; driver hardware damaged	Check U/V/W connections; replace the driver if required

5.2 Panel Fault Indication

When the driver stops because of a fault, the digital panel displays the following fault codes.

Fault No.	Code	Fault name	Typical causes	Corrective action
1	E.OCH1	Hardware overcurrent during acceleration	Acceleration/deceleration too fast; low voltage; undersized driver; sudden load; ground/phase short circuit; interference	Increase ramp time; check input voltage; use a larger driver; inspect load/cable/motor; remove interference
2	E.OCH2	Hardware overcurrent during deceleration	Same as E.OCH1	Same as E.OCH1
3	E.OCH3	Hardware overcurrent at constant speed	Same as E.OCH1	Same as E.OCH1
4	E.OC1	Software overcurrent during acceleration	Same as E.OCH1	Same as E.OCH1
5	E.OC2	Software overcurrent during deceleration	Same as E.OCH1	Same as E.OCH1
6	E.OC3	Software overcurrent at constant speed	Same as E.OCH1	Same as E.OCH1
7	E.OV1	Overvoltage during acceleration	High input voltage; electronic braking too strong	Check supply voltage; adjust electronic-brake parameters
8	E.OV2	Overvoltage during deceleration	Same as E.OV1	Same as E.OV1
9	E.OV3	Overvoltage at constant speed	Same as E.OV1	Same as E.OV1

Fault No.	Code	Fault name	Typical causes	Corrective action
10	E.UV	DC-bus undervoltage	Low supply; acceleration too fast causing supply protection; momentary power loss; driver hardware fault	Check supply; increase acceleration time; reset; obtain technical service
11	E.OL1	Motor overload	Low supply; incorrect motor rated-current setting; motor stalled or load changed abruptly	Check voltage; set rated current; reduce load and inspect motor/mechanism
12	E.OL2	Driver overload	Acceleration too fast; low supply; excessive load	Increase acceleration time; check supply; use a larger driver
13	E.HALL	Hall fault	Hall wire open; strong interference	Check Hall wiring; remove interference
14	E.LOC	Stall fault	Excessive load; motor jammed; motor phase-to-phase short circuit	Use a larger driver; inspect mechanics and wiring
15	E.OH1	Module overtemperature 1	Ambient temperature too high; thermistor damaged; inverter module damaged	Reduce ambient temperature; replace the complete unit
16	E.OH2	Module overtemperature 2	Same as E.OH1	Same as E.OH1
17	E.EF	External input fault	External-fault input is active	Check the external input source
18	E.485	RS485 communication fault	Incorrect baud/parity; wiring fault; wrong address; strong interference	Verify settings, wiring, and address; use shielded cable and improve noise immunity
19	E.CUr	Current-detection fault	Internal circuit fault	Replace the driver
20	E.OUT1	Inverter U-phase fault	Acceleration too fast; inverter circuit damaged; interference	Increase acceleration time; replace power devices/driver; remove interference
21	E.OUT2	Inverter V-phase fault	Same as E.OUT1	Same as E.OUT1
22	E.OUT3	Inverter W-phase fault	Same as E.OUT1	Same as E.OUT1
23	E.OL3	Electronic overload	Overload pre-alarm enabled	Check load and overload threshold
24	E.LL	Electronic underload	Underload pre-alarm enabled	Check load and underload threshold
25	E.Sht	Short-circuit fault	MOS/inverter short circuit; phase-to-ground short circuit	Replace driver; check wiring
26	E.boAd	Panel communication fault	Panel cable connection/interference problem	Reconnect cable; shorten cable and remove interference

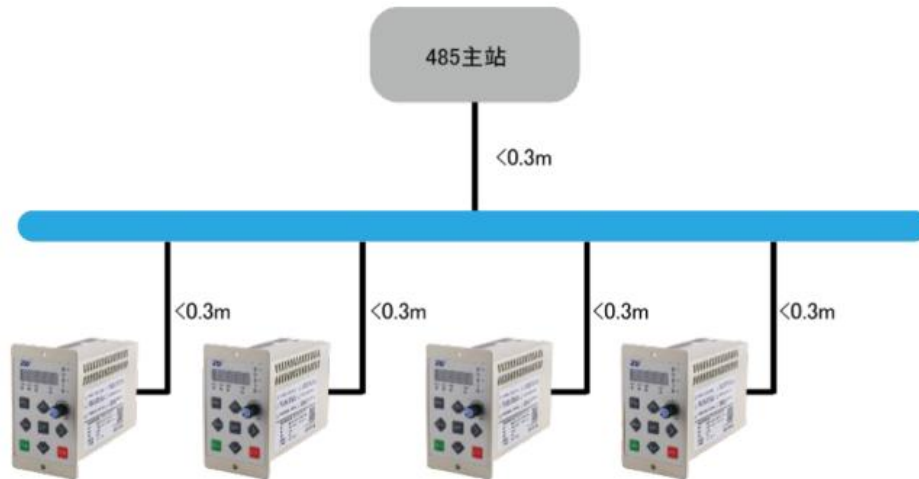
Fault No.	Code	Fault name	Typical causes	Corrective action
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Fault No.	Code	Fault name	Typical causes	Corrective action
27	E.EEP	Parameter-storage fault	EEPROM damaged; write limit reached during one power cycle	Reset or power cycle; obtain technical service
28	E.Cnd	Conduction self-test fault	Motor not connected during self-test; MOS/inverter damaged	Check motor wiring; replace driver
29	E.OCHF	Overcurrent-feedback fault	Driver hardware damaged	Replace driver
30	E.POUT	Output phase loss	U/V/W phase missing; driver hardware fault	Check driver-to-motor wiring; obtain technical service
31	E.CAN1	CAN bus-off	Excessive CAN errors	Check and reconnect the CAN network
32	E.CAN2	CAN transmit error	Too many transmit error frames	Check nodes, wiring, and baud rate
33	E.CAN3	CAN receive error	Too many receive error frames	Check baud rate and interference sources
34	E.Conn	Internal communication fault	Internal hardware damaged	Replace driver
35	E.CAN4	Heartbeat timeout	Consumer timeout reached for a CANopen node	Clear the fault; confirm node is online; check CANopen configuration
36	E.CAN5	NMT operation fault	NMT initialize/stop command received while motor is running	Clear the fault; stop the motor before changing NMT state

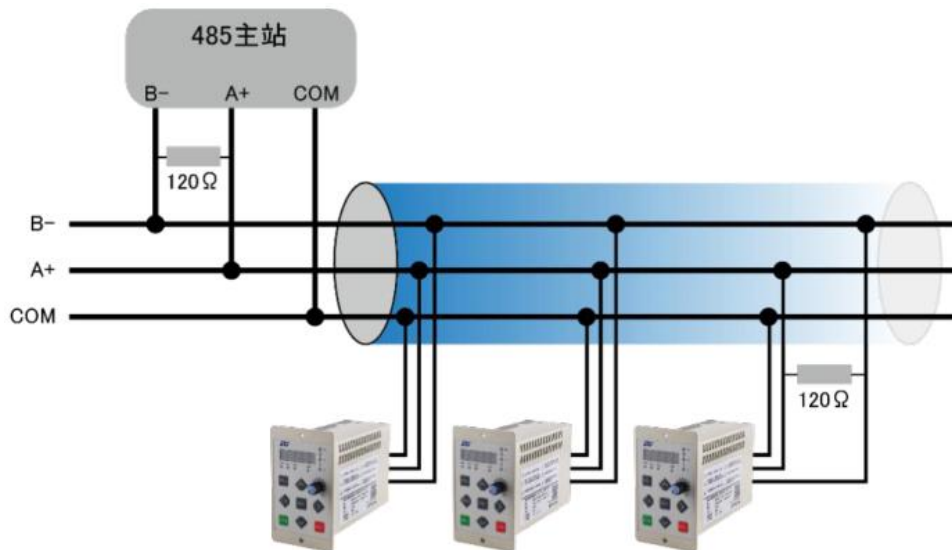
6. RS485 Communication

6.1 RS485 Communication Network

Use a bus topology. Connect each RS485 transceiver to the main bus and keep each branch no longer than 10 m; longer branches can cause reflections and communication errors.



RS485 bus topology; text contained in the figure is retained.

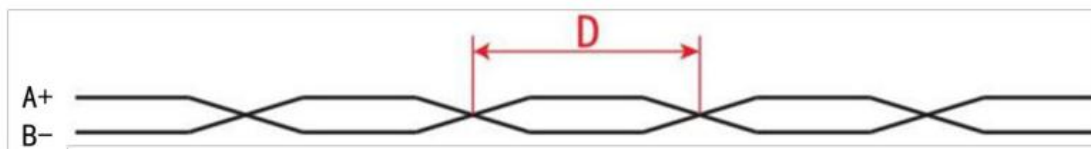


Recommended RS485 wiring and termination; text contained in the figure is retained.

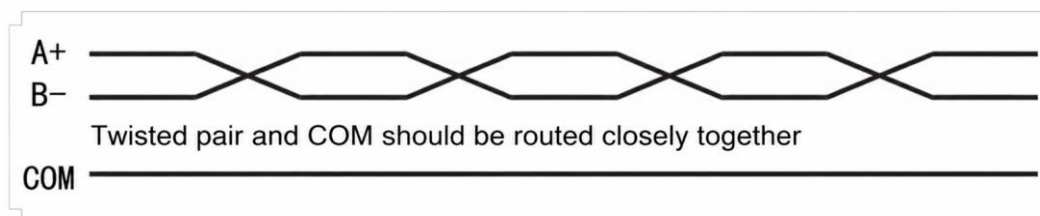
- Use twisted-pair cable. Install a 120 Ω termination resistor at each physical end of the bus.
- With power off, a correctly terminated bus measures approximately 60 Ω between A+ and B-.
- Connect no more than 32 devices to one network.
- For long-distance communication, interconnect the COM reference of the RS485 circuits.

6.2 RS485 Communication Cable

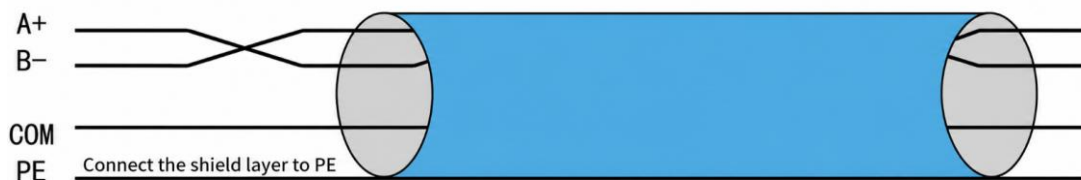
Use twisted-pair cable. A twist pitch below 2 cm improves high-frequency noise rejection and reduces radiation.



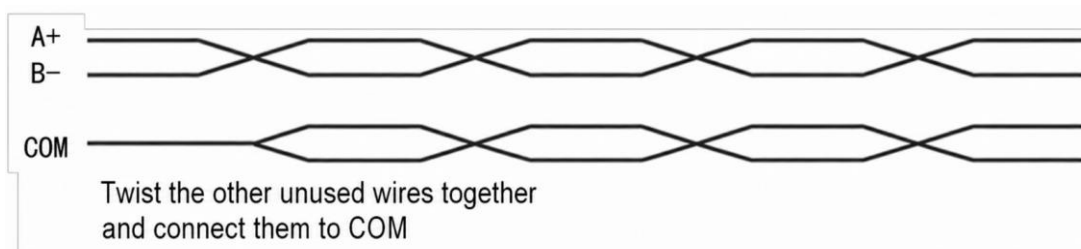
Twisted-pair geometry; text contained in the figure is retained.



Recommended cable arrangement 1.



Recommended cable arrangement 2.

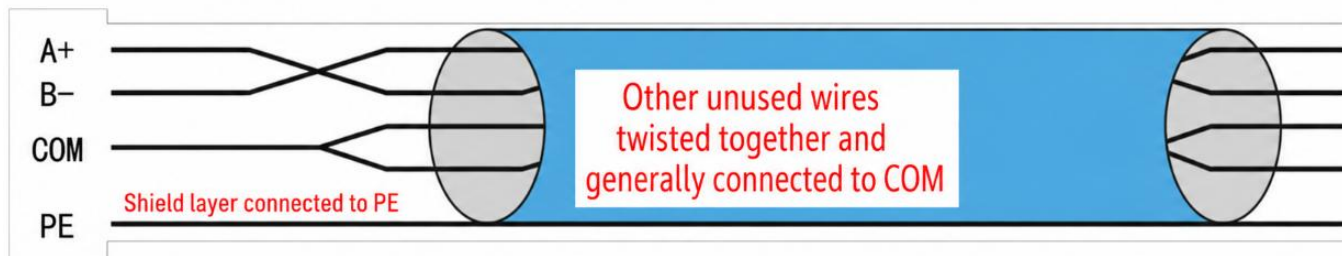


Recommended cable arrangement 3.

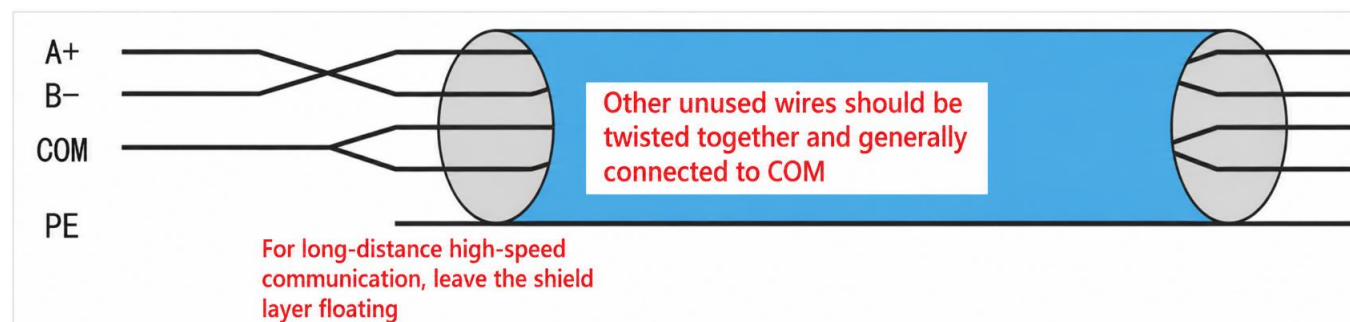
Wiring distance	Recommended signal cable
Within 200 m	0.3 mm ² twisted-pair sheathed cable
200-500 m	0.5 mm ² twisted-pair sheathed cable
500-1200 m	0.75 mm ² shielded twisted-pair sheathed cable
Above 1200 m	1.0 mm ² shielded twisted-pair sheathed cable; add a repeater at 1200 m

6.2.1 Recommended RS485 Wiring Methods

Use a continuous bus. Avoid star wiring, long branches, reversed A+/B- polarity, and termination resistors at intermediate nodes.



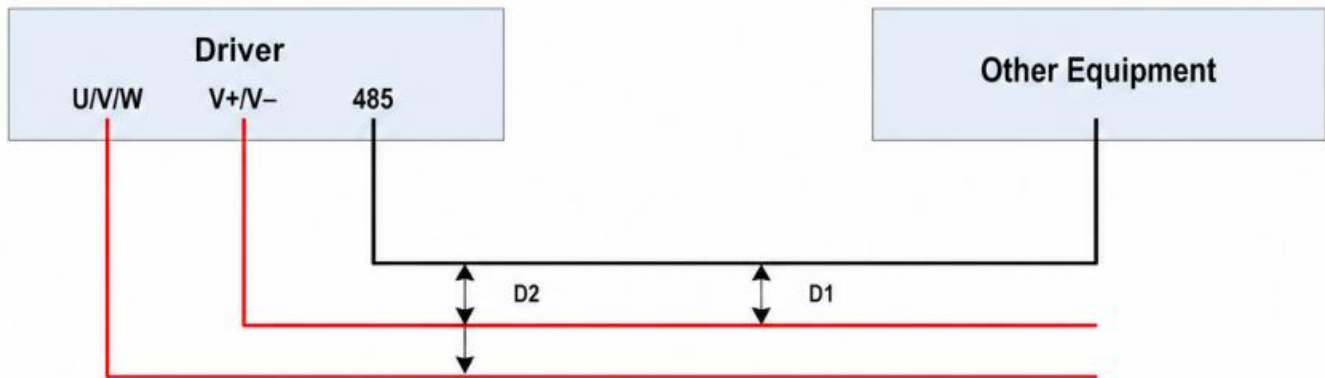
Recommended cable arrangement 4.



Recommended cable arrangement 5.

6.2.2 Recommended RS485 Cable Routing

Route interference cables and RS485 cables perpendicular whenever possible. When parallel routing is unavoidable, maintain more than 10 cm between power cables and RS485 cables, and more than 20 cm between motor U/V/W cables and RS485 cables.



RS485 cable-routing example; text contained in the figure is retained.

6.3 System Settings

Parameter	Name	Setting Range	Default	Attribute
F00.01	Run-command selection	0 Panel; 1 Terminal; 2 Communication; 3 DIP-switch setting	3	R/W
F00.02	Speed-reference selection	0 Panel; 1 AI1; 2 AI2; 3 Modbus; 4 Multi-speed; 5 DIP switch; 6 Simple PLC	5	R/W
F08.00	RS485 slave address	1-247; 0 broadcast	1	R/W*
F08.01	RS485 baud rate	0 1200; 1 2400; 2 4800; 3 9600; 4 19200; 5 38400; 6 57600 bit/s	4	R/W*
F08.02	Data / parity format	0 N-8-1; 1 E-8-1; 2 O-8-1; 3 N-8-2	0	R/W*
F08.03	Response delay	0-200 ms	5 ms	R/W*
F08.04	Communication timeout	0.0 disabled; 0.1-60.0 s	0.0 s	R/W*

6.4 Data-Frame Format

The driver uses Modbus RTU. Default serial format: 19200 bit/s, one start bit, eight data bits, no parity, and one stop bit.

Address	Function	Data	CRC low	CRC high
ADDR, 1 byte	CMD, 1 byte	n bytes	1 byte	1 byte

Function	Description
0x03	Read holding registers
0x06	Write one register
0x10	Write multiple registers

6.4.1 Function 0x03 - Read Registers

Field	Length	Description
Address	1 byte	0x01-0xF7
Function	1 byte	0x03
Register address	2 bytes	High byte then low byte
Register count	2 bytes	Read quantity
CRC	2 bytes	CRC16 low byte then high byte

Read at most 16 addresses per request. The normal response returns the byte count followed by the requested register values. Exception responses use function code 0x83.

6.4.2 Function 0x06 - Write One Register

Field	Length	Description
Address	1 byte	0x01-0xF7
Function	1 byte	0x06
Register address	2 bytes	High byte then low byte
Data	2 bytes	Value to write
CRC	2 bytes	CRC16 low byte then high byte

The normal response repeats the request. Exception responses use function code 0x86.

6.4.3 Function 0x10 - Write Multiple Registers

Field	Length	Description
Address	1 byte	0x00-0xF7
Function	1 byte	0x10
Start register	2 bytes	High byte then low byte
Register quantity	2 bytes	N
Data byte count	1 byte	2 × N
Data	2 × N bytes	Each value high byte then low byte
CRC	2 bytes	CRC16 low byte then high byte

Exception responses use function code 0x90.

6.4.4 Exception Codes

Code	Meaning	Description
0x01	Illegal function	The slave does not support the command or cannot process it in the current state.
0x02	Illegal data address	The requested address is outside the valid range.
0x03	Illegal data value	The request contains a value that is not permitted.
0x04	Operation failed	The parameter operation is invalid.
0x05	Password error	The verification password is incorrect.
0x06	Data-frame error	Frame length or CRC is invalid.
0x07	Read-only parameter	A write request targeted a read-only parameter.
0x08	Cannot change while running	A write request targeted a stop-only parameter during operation.

6.5 Communication Address Definition

Function	Address	Data Meaning	Attribute
Communication control command	2000H	0001H Forward; 0002H Reverse; 0003H Forward jog; 0004H Reverse jog; 0005H Stop; 0006H Coast / emergency stop; 0007H Fault reset; 0008H Jog stop; 0009H Brake stop	W/R
Communication speed reference	2001H	0-3000 rpm, unit 1 rpm	W/R
Motor pole pairs	2002H	1-20	W/R*
Acceleration time	2003H	1-6000, unit 0.1 s	W/R
Deceleration time	2004H	1-6000, unit 0.1 s	W/R
Control mode	2005H	0 Test; 1 Open loop; 2 Closed loop; 3 DIP-switch setting	W/R*
Run-command selection	2006H	0 Panel; 1 Terminal; 2 Communication; 3 DIP switch	W/R
Speed-reference selection	2007H	0 Panel; 1 AI1; 2 AI2; 3 Modbus; 4 Multi-speed; 5 DIP switch; 6 Simple PLC	W/R
Local communication address	2008H	1-247; 0 broadcast	W/R*
Communication baud rate	2009H	0 1200; 1 2400; 2 4800; 3 9600; 4 19200; 5 38400; 6 57600 bit/s	W/R*
Function-code write enable	200EH	0 Disabled; 1 Enabled	W/R
Restore defaults	200FH	0 No action; 1 Restore default parameters	W/R*
Driver status word 1	2100H	0001H Forward; 0002H Reverse; 0003H Stopped; 0004H Fault; 0005H OFF; 0006H Electronic brake	R
Driver status word 2	2101H	Bit-coded operating status	R
Driver fault code	2102H	See the fault-code table	R
Driver identification	2103H	C20 series: 0x0020	R
Set frequency	3000H	0-Fmax, unit 0.01 Hz	R
Output frequency	3001H	0-Fmax, unit 0.01 Hz	R
Output voltage	3003H	Unit 0.1 V	R
Output current	3004H	Unit 0.01 A	R
Set speed	3005H	Unit 1 rpm	R
Motor speed	3006H	Unit 1 rpm	R
Output power	3007H	0-2200 W	R
DC-bus voltage	3008H	Unit 0.1 V	R
Hall value	3009H	0-7	R
Software version	300AH	1.00-99.99	R
Most recent fault	300BH	See the fault-code table	R
Inverter temperature	300CH	-20.0 to 120.0 °C	R
Input-terminal status	300DH	000-1FF	R

Function	Address	Data Meaning	Attribute
Output-terminal status	300EH	00-0F	R
AI1 voltage	300FH	0.00-10.00 V	R
AI2 voltage	3010H	0.00-10.00 V	R
AI3 voltage	3011H	0.00-10.00 V	R
Hall count high 16 bits	3013H	0-65535	R
Hall count low 16 bits	3014H	0-65535	R

6.6 Read/Write Operation Examples

Operation	Example Frame	Description
Forward run	TX: 01 06 20 00 00 01 43 CA; RX: same	Write 0x0001 to 2000H
Reverse run	TX: 01 06 20 00 00 02 03 CB; RX: same	Write 0x0002 to 2000H
Stop	TX: 01 06 20 00 00 05 42 09; RX: same	Write 0x0005 to 2000H
Fault reset	TX: 01 06 20 00 00 07 C3 C8; RX: same	Write 0x0007 to 2000H
Set speed to 3000 rpm	TX: 01 06 20 01 0B B8 D4 88; RX: same	Write 0x0BB8 to 2001H
Enable function-code writes	TX: 01 06 20 0E 00 01 23 C9; RX: same	Write 0x0001 to 200EH

7. Basic Inspection and Maintenance

7.1 Basic Inspection

Inspection Stage	Inspection Items
General inspection	Periodically check mounting points, terminals, wiring, motor shaft, and mechanical connections for looseness. Prevent oil, water, metal powder, harmful gas, and dust from entering the driver. Verify the wiring order whenever wiring is changed.
Before operation, power off	Confirm power is disconnected and the motor is stopped before wiring. Insulate terminal connections, check wiring correctness, remove conductive or flammable objects, verify emergency-stop and power-isolation circuits, and confirm the applied voltage.
Before operation, power on	Check that cables do not rub against moving parts or become stretched. Investigate excessive vibration or noise. Confirm parameters are suitable for the machine and that the panel indications and commands are normal.

7.2 Maintenance and After-Sales Service

Routine maintenance

- Store and use the product under suitable environmental conditions.
- Clean the exterior of the driver and motor to prevent dust accumulation.
- Do not disassemble mechanical parts during cleaning.
- Clean openings in the housing to prevent foreign-object entry.
- Avoid prolonged operation in extreme environments.

Component service life

Electrolytic-capacitor life is strongly affected by ambient temperature and operating conditions. Under ideal conditions, each 10 °C reduction in operating temperature approximately doubles service life. For long-term storage, periodically apply rated voltage to maintain electrolyte activity.

After-sales service

- Contact the supplier or authorized technical support for operating questions.
- The product warranty is one year from the shipment date and covers repair under normal use during the warranty period.
- When returning a product for repair, provide a detailed description of the fault and observed symptoms.

Damage caused by improper use, unauthorized repair or modification, dropping, transportation after receipt, operation outside the specified limits, natural disasters, corrosion, or ingress of water, oil, metal fragments, or other foreign matter is excluded from warranty coverage.