

A24 Series Built-in Digital Speed Regulator

Operating Instruction

Dear User:

Thank You for Purchasing and Using This Product. To Ensure Safety and Proper Operation, Please Carefully Read This Instruction Manual Before Use.

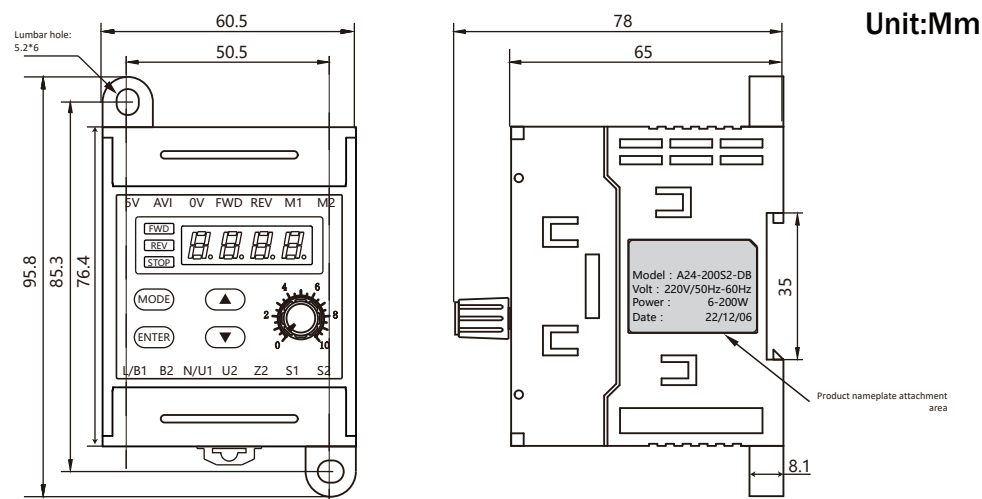
1 Features and Functions

- Utilizing MCU digital control technology, it offers extensive functionality and superior performance;
- The digital menu-based interface allows for quick and easy configuration adjustments;
- The display scaling factor can be set based on the user's display requirements, and the target display value will be automatically converted;
- It enables complex motion control, including slow acceleration, slow deceleration, three-speed operation, and stopping via electromagnetic braking upon power loss;
- Can be controlled via an external switch or a 0–5 V analog signal;
- Analog control automatically matches the maximum rotational speed, making speed regulation both convenient and safe;
- Automatically detects the input power frequency;
- Locked rotor protection prevents the motor and speed controller from burning out due to a locked rotor condition. (This function protects against locked rotor overcurrent, but does not protect against non-locked rotor overcurrent.)

2 Model/Performance Parameters Table

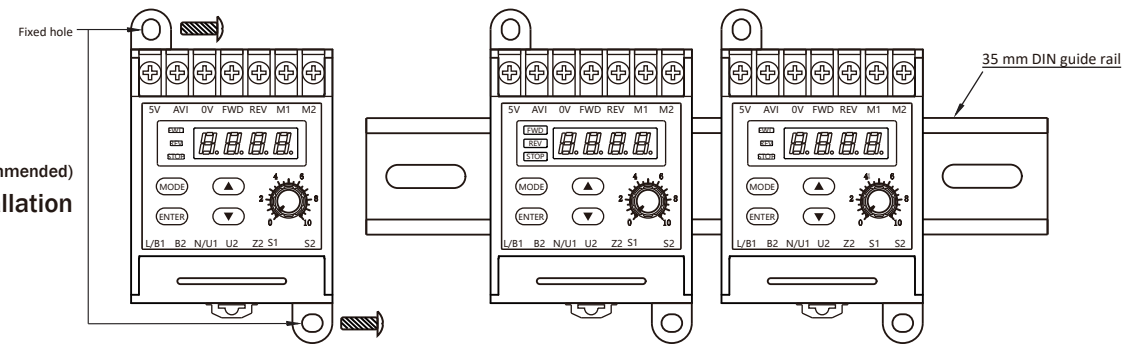
Model					
ZDRV.A24-200S2-DB					
Model Definition	Product Type: ZDRV	Series: A24	Maximum applicable motor power: 200 W	Power supply: S2, single-phase, 220 V $\pm$ 10%	Functions: D – Digital display; B – Brake
Applicable motor power	6W~200W				
Applicable motor types	Speed-regulating electromagnetic braking motor (with magnetic isolation module)				
Way to install	Built-in				
Motion Control Function	External switch operation control; speed regulation; slow acceleration; slow deceleration; power-off electromagnetic braking; 3-speed capability				
Mode of speed regulation	Panel ▲ and ▼ buttons; panel rotary knob; 0–5 V analog input				
Speed regulation range	50 Hz: 90–1,400 rpm; 60 Hz: 90–1,700 rpm (adjustable by the user based on the motor pole number, power supply frequency, and application requirements)				
Operating capacitor	External (placed inside the speed-regulating motor packaging; the user must connect it manually)				
Power input	Single-phase, 220 V $\pm$ 10%; 50 Hz–60 Hz				
Service environment	Ambient temperature: -10 °C to +40 °C (no freezing); Ambient humidity: below 85% (no condensation)				

3 Outline Dimension

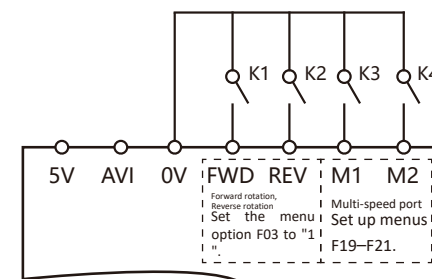


4 install

- Screw Fixation
(M5 Screws Are Recommended)
- Guide Rail Installation



5 hookup



● Operating Control Mode

When you set the menu option F03 to "2":
K1 controls the direction, and K2 controls the start/stop operation.

K1\K2	Open	Close
Open	Stop	Stop
Close	Reversal	Corotation

● Source

The power supply voltage must comply with the power supply voltage specifications of the speed regulator.
QF is a circuit breaker that protects the speed controller and the motor in the event of a short circuit.

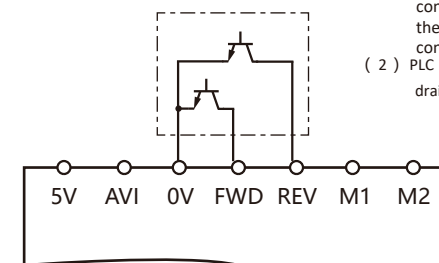
● Operating capacitor C specification table:

Power supply voltage and motor power	220V
6W	0.8μF/450V
15W	1.2μF/450V
25W	1.8μF/450V
40W	2.5μF/450V
60W	4μF/450V
90W	5μF/450V
120W	8μF/450V
140W	10μF/450V
200W	10μF/450V

Note: The operating capacitor should be selected according to the motor model and placed inside the speed-regulated motor packaging.

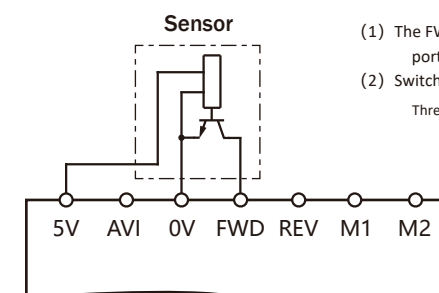
Supply voltage	Power of motor	QF Current Rating
220V	6-90W	1A
220V	120-200W	2A
110V	6-90W	2A
110V	120-200W	4A

PLC programmable controller (1) The FWD, REV, M1, and M2 control ports are controlled by the PLC programmable controller.
(2) PLC output types: NPN or drain-mode transistor outputs

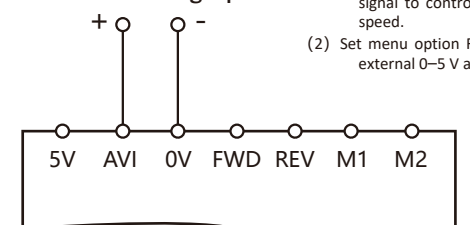


Sensor

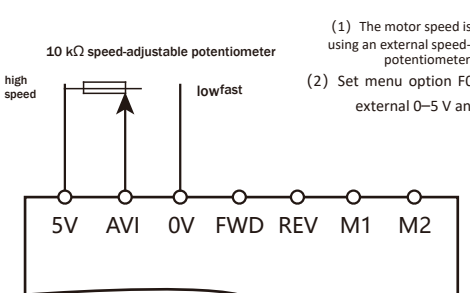
- (1) The FWD, REV, M1, and M2 control ports are controlled via sensors.
- (2) Switch output type:
Three-terminal NPN transistor output



0–5 V Analog Input



- (1) Use an external 0–5 V analog signal to control the motor speed.
- (2) Set menu option F06 to "3" for external 0–5 V analog control.



- (1) The motor speed is controlled using an external speed-regulating potentiometer.
- (2) Set menu option F06 to "3" for external 0–5 V analog control.



Governor Menu

● Function Code List (R/W: Read/

Write; RO: Read-Only)

FC	Name	Detailed Parameter Description	Set the range	Default value	Change	Order number
F-01	Display Content	1: Motor speed setpoint 2: Speed ratio setpoint	1~2	1	R/W	
F-02	Scaling Setting	Scaling factor: 1.0~999.9 Speed ratio setpoint = Motor speed setpoint / speed ratio	1.0~999.9	1.0	R/W	
F-03	Operating control mode	1: Forward and Reverse Rotation 2: Three-line system	1~2	1	R/W	.
F-04	Rotation method	1: Forward and reverse rotation permitted 2: Forward rotation is permitted; reverse rotation is prohibited. 3: Reverse operation permitted; forward operation prohibited	1~3	1	R/W	
F-05	Rotation direction	1: Do not negate 2: Invert	1~2	1	R/W	
F-06	Mode of speed regulation	1: Speed adjustment via panel UP/DOWN buttons 2: Panel knob speed control 3: AI2 Speed Regulation	1~3	1	R/W	
F-07	Maximum speed	F-08 (minimum speed) ~ 1700 Limit the maximum rotational speed to prevent overspeeding and potential damage.	F-08~1700	1400	R/W	
F-08	Minimum speed	90~F-07 (maximum speed) Limit the minimum rotational speed to prevent motor instability caused by operation at excessively low speeds.	90~F-07	120	R/W	
F-09	Delay before activation after the out-of-position electromagnetic brake is released during forward rotation startup.	0.0~2.0 seconds	0.0~2.0	0.0	R/W	
F-10	Forward rotation start-up acceleration time	0.1~10.0 seconds	0.1~10.0	1.0	R/W	
F-11	Forward stop mode	1: Electromagnetic brake stops upon power loss 2: Free Stop 3: Decelerate and stop	1~3	1	R/W	
F-12	Delay before releasing the out-of-position electromagnetic brake during forward rotation or shutdown.	Effective from 0.0 to 5.0 seconds when F-11 = 1	0.0~5.0	0.0	R/W	
F-13	Forward rotation stop deceleration time	0.1~10.0s (valid when F-10=2)	0.1~10.0	1.0	R/W	
F-14	Delay before starting after the out-of-position electromagnetic brake is released during reverse start.	0.0~2.0 seconds	0.0~2.0	0.0	R/W	
F-15	Reverse start acceleration time	0.1~10.0 seconds	0.1~10.0	1.0	R/W	
F-16	Reverse stop mode	1: Electromagnetic brake stops upon power loss 2: Free Stop 3: Decelerate and stop	1~3	1	R/W	
F-17	Delay before releasing the out-of-position electromagnetic brake during a reversal shutdown.	Effective from 0.0 to 5.0 seconds when F-16 = 1	0.0~5.0	0.0	R/W	
F-18	Reverse stop deceleration time	0.1~10.0s (valid when F-13 = 2)	0.1~10.0	1.0	R/W	
F-19	First segment speed	For M1 and M2, select the first speed of the multi-speed selection.	F-08~F-07	500	R/W	
F-20	Second speed segment	For M1 and M2, select the second speed of the multi-speed selection.	F-08~F-07	800	R/W	

FC	Name	Detailed Parameter Description	Set the range	Default value	Change	Order number
F-21	Third speed	For M1 and M2, select the third speed of the multi-speed range.	F-08~F-07	1000	R/W	
F-22	Power Supply Frequency Setting	1: Drive Automatic Detection 2: Power supply frequency: 50 Hz 3: Power supply frequency: 60 Hz	1~3	1	R/W	
F-23	Factory data reset	1: Not restored 2: Recovery	1~2	1	R/W	
F-24	Current power supply frequency adaptation	50: Compatible with 50 Hz AC power supply 60: Compatible with 60 Hz AC power supply			RO	
F-25	Temperature Display				RO	
F-26	Program version				RO	
F-27	Manufacturer password	Enter the correct password to access Group H.	0~9999	2000	R/W	

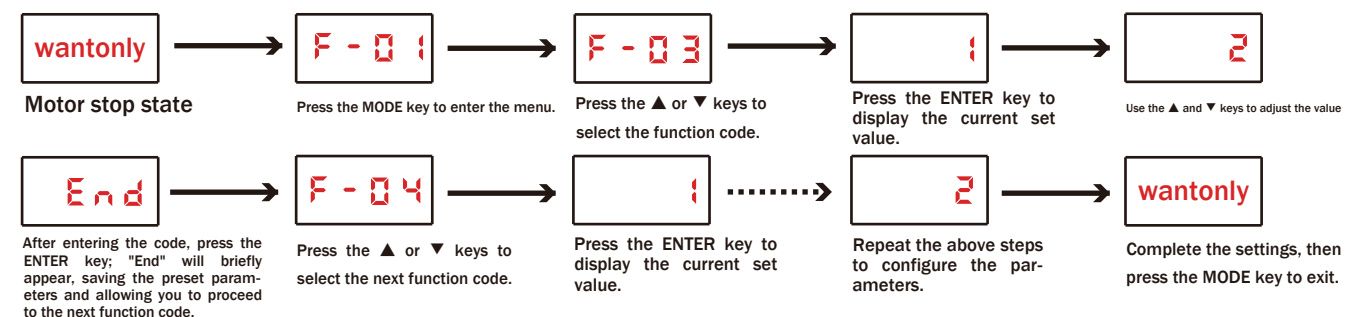
● Fault Maintenance and Status Display

	Name	Cause	Processing method
Fault code	E.LOC	Motor locked-rotor fault	Inspect the connection between the speed regulator and the motor; inspect for mechanical faults.
	E.EEP	Parameter storage failure	Power up again to clear the alarm
Hint Code	S.run	The motor is currently in operation; modification of the function code is prohibited.	Post-stop modifications
	S.not.	This button is currently in an invalid state.	Modify the F-04 or F-06 function codes
	S.Err	The drive is currently in a fault state.	After resolving the issue, retry.
	S.loc	The button is currently in a locked state.	Press both the DOWN and ENTER keys simultaneously to unlock.



Menu Modification

● For safety reasons, please perform the modifications only when the motor is stopped; do not perform these modifications while the motor is running.



Note: When the drive is in either operating or shutdown mode, pressing both the MODE and ENTER buttons simultaneously will lock these buttons, preventing them from controlling the motor or accessing the menu; pressing both the DOWN and ENTER buttons simultaneously will unlock the buttons and restore their functionality.

Instructions for Use

- Before use, please inspect whether the packaging is intact, whether the nameplate matches the model you purchased, and whether all accessories are complete.
- Accessories: User Manual – 1 copy.
- Installation, connection, inspection, and other related operations must be performed by qualified technical personnel.
- Please connect the wires correctly in accordance with this instruction manual or the markings on the top cover; otherwise, malfunctions and hazards may occur.
- Do not disassemble the equipment or alter the wiring while it is powered on; otherwise, you may suffer an electric shock.
- During your first use, please perform a no-load trial run to verify that the functions operate correctly, and then adjust the parameters required for use.
- Do not use in damp environments or in environments containing flammable or corrosive gases.
- To ensure safe operation, please ensure that the equipment is properly grounded.
- For ease of understanding, the images used in this manual have been slightly modified; please refer to the actual product for accuracy.
- Under normal operating conditions, the surface temperature of the motor housing may exceed 70 °C. Therefore, in environments where the motor may come into contact with personnel, users are advised to affix the warning label shown in the figure below!

