DCD-24V05A-D2 (DUAL)(RS485)(DC12~24V)(User Manual)

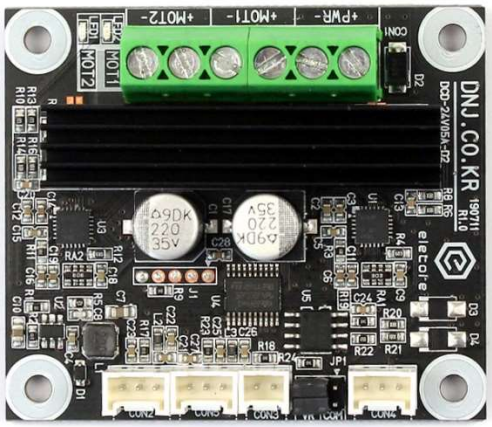
The dual full-bridge PWM dc motor driver (DCD-24V05A-D2) can control the speed of the two-axis (2-channel) DC motor or the brightness of the DC lamp. You can interface with an external host controller using RS485 communication.

The external volume (DC control voltage) can be used to control the speed and direction of rotation of the DC motor. The driver can also control two DC motors simultaneously.

You can select RS485 communication (COM mode) or analog 3.3V (volume mode) using the jumper switch on the board.

Compact in size, easy to insert into a panel or small case.

The operation status of the load can be checked by LED.



1. DC Power supply voltage Vm, 12 ~ 24Vdc. Normal operating range
2. Maximum continuous rated current, 5A.rms (1 channel)
3. Peak current 15A (1 channel)
   - non repetitive : t=100us
   - Repetitive : 90% on –10% off; ton = 10ms

4. PWM switching frequency 20KHz
5. Chopping Current Limit (OCP) : 14A (1 channel).
6. Motor speed control input

   The motor speed can be controlled using a 3.3V dc control voltage or an external volume resistor (10kΩ).

   Speed input range is 0 ~ 3.3Vdc and is controlled proportionally in CW or CCW direction based on 1.65V.

7. Motor rotation direction

   The motor rotation direction is converted based on 3.3Vdc x 1/2 (± 5%).

   When the speed control input voltage is 1.65 ~ 3.3V, it rotates in CW direction.

   If it is 1.65 ~ 0V, it rotates to CCW direction.

8. Enable / Disable (ON / OFF): TTL (3.3Vdc),

   If the input is low (connected with GND), the driver is Enabled (On) and the motor is ready to run. When the input is high (GND disconnected, float), the driver is disabled (OFF) and the motor does not run.

   If the motor is turned off while the motor is running, the motor is stopped by the inertia of the load.

   Note : If power is applied while Enable (ON) is input, the driver is off.

   To run the motor, turn on the power while in the disable (OFF) state.

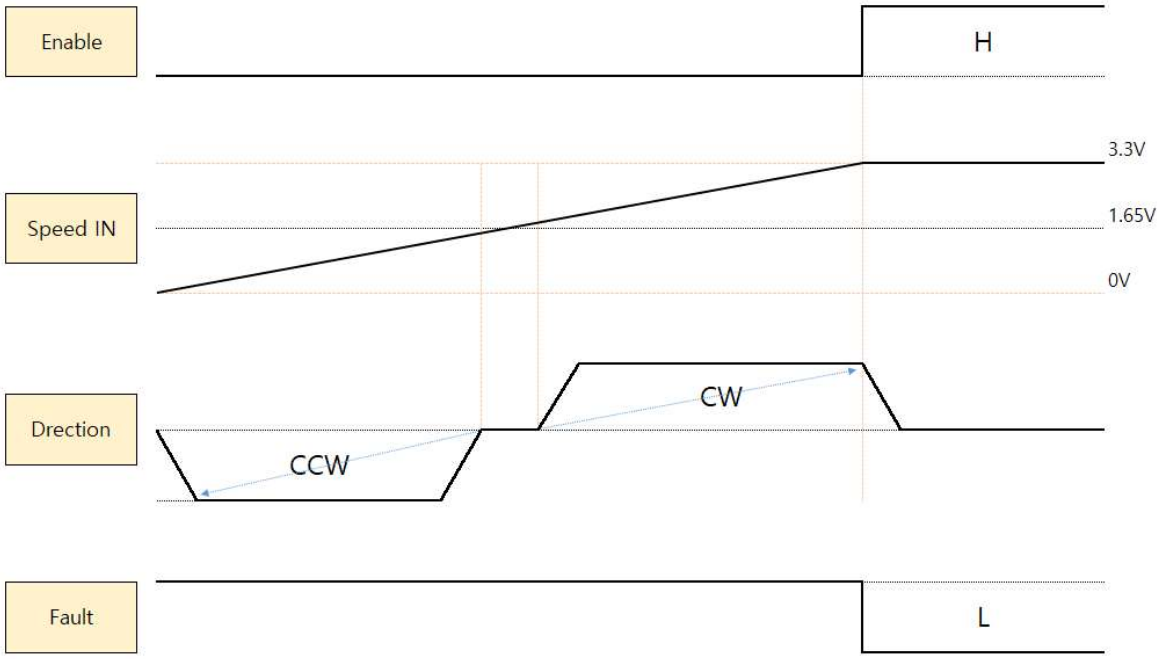
9. Alarm output (FAULT): Red LED light

   Chopping current limit, Over-temperature(150℃), Disable(off)

10. Jumper Selection

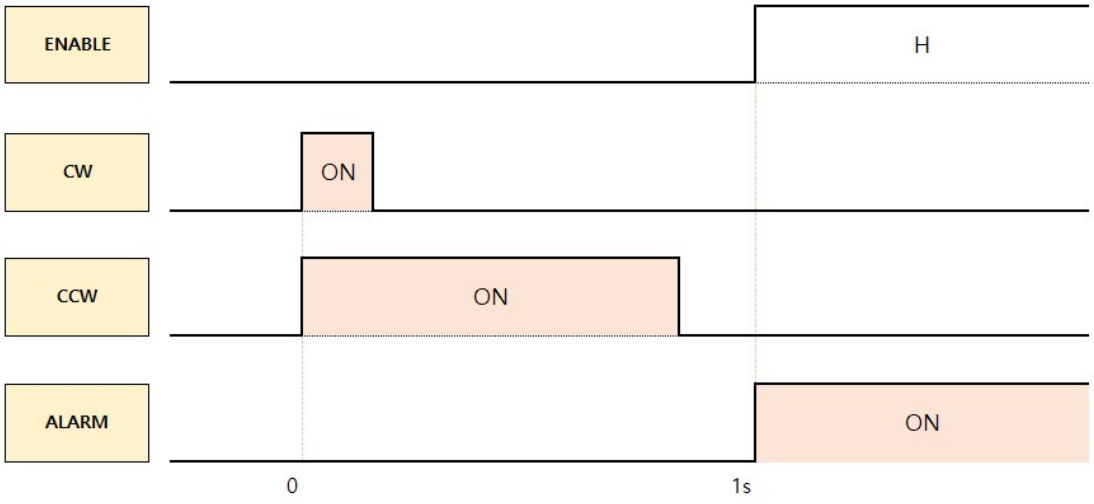
External speed control voltage (volume resistance) mode or RS485 communication mode is selectable.

11. Motor response curve according to input signal



12. LED status indication

When the motor rotates with CW or CCW, LED flashing time is displayed differently.



13. Communication mode (RS485) : Connect the jumper selection switch to COM mode.

    RS485 1ch, Baudrate : 9,600bps, data 8bit, no-parity, 1stop bit

14. Connector

    PCB header : SMW200-03, SMW200-02**,** Pitch : 2.0 mm, YEON HO

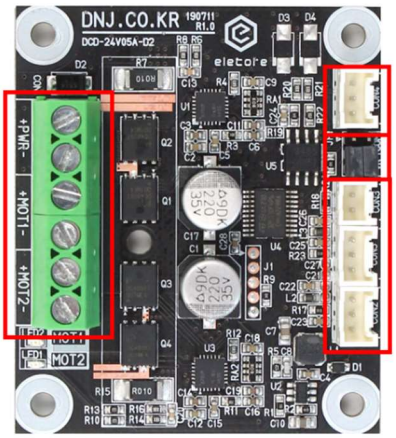
    Crimp terminal (Suitable plug) : SMH200-03, SMH200-02, YEON HO

15. Driver Layout

VM+	**DC 12~24V**
GND	**Power Ground**

MOT +	Motor + (1CH)
MOT -	Motor - (1CH)

MOT +	Motor + (2CH)
MOT -	Motor - (2CH)



1	**B**	RS485 DP-
2	**A**	RS485 DP+
3	**GND**	Ground

COM	RS485 communication mode
VR	Volume (voltage) speed control mode

1	**nEN**	ON/OFF
2	**GND**	Ground

1	**VCC**	3.3V Out
2	**SIG (1ch)**	Speed in (1CH)
3	**GND**	Ground

1	**VCC**	3.3V Out
2	**SIG (2ch)**	Speed in (2CH)
3	**GND**	Ground

16. Weight 21.8 g

    Dimension 58 * 50 * 15.3 mm

17. Operating junction temperature, T_J : -10 ~ 85℃ (no condensation)

    Storage temperature, T_{stg} : -20 ~ 120℃

Protocol (RS485)

1) This product applies MODBUS-RTU communication protocol
2) The device ID is "0x64: 100" (Device ID can be changed)
3) Baudrate: 9,600bps, data 8bit, no-parity, 1stop bit
4) It supports only Read Holding Registers (Function Code 3) and Write Single Register (Function Code 6) in the function code of MODBUS.
   Other function codes are not supported.
5) Table 1 as below describes the registers and functions.

Table 1

Reg Index (HEX)	Reg. Name	Description	Read / Write
0009	MOT1_SPEED	This is the speed value (duty 100%) for Motor 1 (0 ~ 1000)	R/W
000A	MOT1_CW_CCW	This is the direction (CW/CCW) for Motor 1. CW: 0, CCW:1	R/W
000B	MOT1_ENABLE	This is the enable (ON/OFF) for Motor 1. MOTOR OFF(stop) : 0 MOTOR ON(start) : 1	R/W
0029	MOT2_SPEED	This is the speed value (duty 100%) for Motor 1 (0 ~ 1000)	R/W
002A	MOT2_CW_CCW	This is the direction (CW/CCW) for Motor 1. CW: 0, CCW:1	R/W
002B	MOT2_ENABLE	This is the enable (ON/OFF) for Motor 1. MOTOR OFF(stop) : 0 MOTOR ON(start) : 1	R/W

DIMENSION (mm)