DM Series Stepper Drive

The DM series is digital stepper drive with simple design and easy setup. By implementing Leadshine advanced stepper control technology, this stepper drive is able to power 2-phase and 4 phase stepper motors smoothly with optimal torque and low motor heating & noise. All the micro step and output current are done via DIP switches. Therefore, the DM series is ideal choices for applications requiring simple step & direction control of NEMA11, 14, 16, 17, 23, 24stepper motors.

Feature

- Step & direction (PUL/DIR) control
- 200 KHz max pulse input frequency
- 16 microstep resolutions of 200-51,200 via DIP switches
- Idle current reduction to 50% or 90% selection
- Auto-tuning to match wide-range NEMA 11, 14, 17, 23 and 24 stepper motors
- Anti-Resonance for optimal torque, extra smooth motion, low motor heating and noise
- Soft-start with no ''jump'' when powered on
- Optically isolated inputs with 5V or 24V
- Fault output
- Over-voltage and over-current protections

Model Designation

DM 5 42 - E
①   ②   ③   ④

① Series Name
DM: Open loop stepper drive
3DM: Open loop stepper drive for 3-phase motor
DMA: Open loop stepper drive, available AC input

② Max operatoin Voltage
4: 40VDC
5: 50VDC
8: 80VDC

③ Output Current (Peak)
15: 1.5A
22: 2.2A
32: 3.2A
42: 4.2A
56: 5.6A
70: 7.0A
82: 8.2A

④ Remark
S: Normal type
CAN: CANopen communication
IO: Built-in pulser for speed control
IO-24: Built-in pulser for speed control, 24V pulse
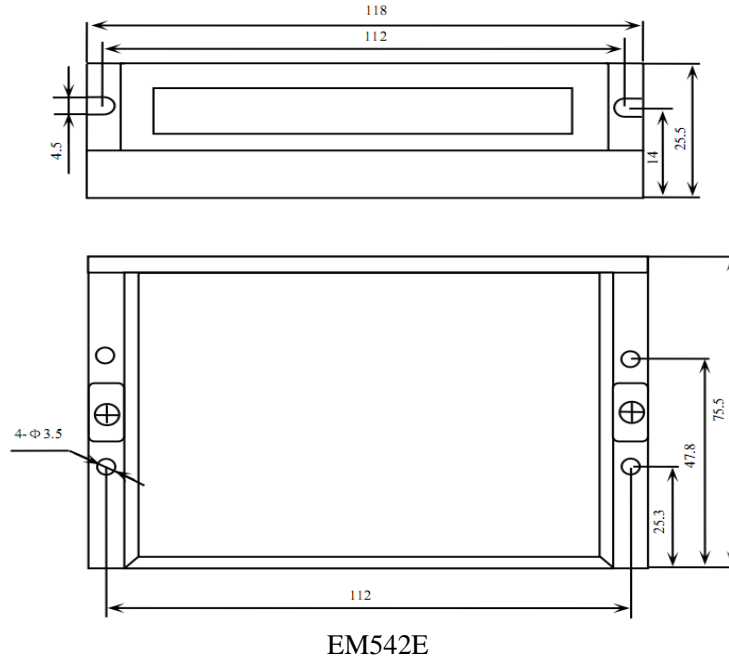V-24: 24V pulse
AI: Analog input

Technical Specification

Name	DM322E	DM542E	DM556E	DMA860E	DMA882S	DM1182	DM2282
Command Source	PUL&DIR	PUL&DIR	PUL&DIR	PUL&DIR CW&CCW	PUL&DIR CW&CCW	PUL&DIR CW&CCW	PUL&DIR CW&CCW
Operation Voltage	12-30VDC	20-50 VDC	20-50 VDC	18-80VAC 30-110VDC	18-80VAC 30-110VDC	70-130VAC	180-240VAC
Output Current (A, Peak)	2.2	4.2	5.6	7.2	8.2	8.2	8.2
Input Frequency (KHz, Max.)	70	200	200	200	200	200	200
Logical Voltage (VDC)	5	5 or 24	5 or 24	5 or 24	5	5	5

Name	3DM580S	3DM883	3DM2283	DMA882-CAN
Command Source	PUL&DIR, CW&CCW	PUL&DIR CW&CCW	PUL&DIR CW&CCW	CANopen
Operation Voltage	20-50 VDC	20-80 VDC	180-240VAC	18-80VAC 30-110VDC
Output Current (A, Peak)	0.5-8.0A	2.2-8.3A	2.2-11.7A	8.2
Input Frequency (KHz, Max.)	500	500	200	10
Logical Voltage (VDC)	5 or 24	5 or 24	5	5-24

Name	DM442-IO-24	DM805PbF-AI	DMA882S-IO	DM456-V-24	DM480-V-24	DM2282-IO-24
Command Source	I/O signals	PUL&DIR, 0-5V analog	5-24V digital input	I/O, 0-10V analog	I/O, 0-10V analog	I/O signals
Operation Voltage	20-40 VDC	20-80 VDC	18-80VAC 30-110VDC	20-40 VDC	20-40 VDC	180-240VAC
Output Current (A, Peak)	4.2	7.0	8.2	5.6	8.4	8.2
Input Frequency (KHz, Max.)	/	200	/	/	/	/
Logical Voltage (VDC)	24	5	5-24	24	24	24

Dimension

EM542E

Connector and Pin Assignment

P4: Tuning Port
S2:Control Signal Voltage Selector(5V or 24V)
Status LEDs
P1:Control Signal Inputs
P3:Power & Motor Connector
S1:DIP Switch Selector 1
P2:Fault Output
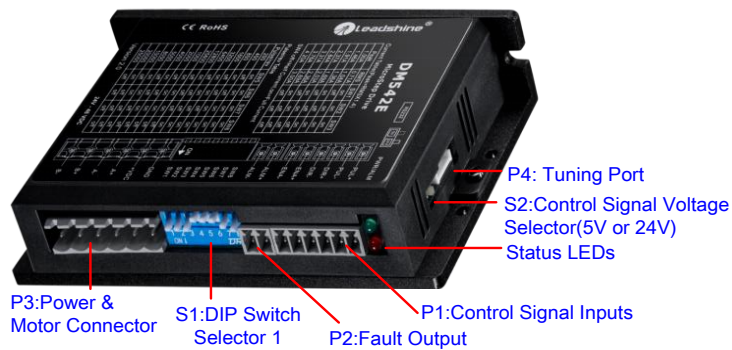
The DM542E has three connector blocks P1&P2&P3 (see above picture). P1 is for control signals connections, and P2 is for output signals connections, P3 is for power and motor connections. The following tables are brief descriptions of the three connectors. P4 is for modifying parameters more detailed descriptions are as below.
Note: This segment is based on DM542E.

➢ **P1 - Control Connector**

PIN	Details
PUL+	<u>Pulse and Direction Connection:</u>
	(1) Optically isolated, high level 4.5-5V or 24V, low voltage 0-0.5V
PUL-	**(2)** Maximum 200 KHz input frequency
	(3) The width of PUL signal is at least 2.5µs, duty cycle is recommended 50%
DIR+	**(4)** DIR signal requires advance PUL signal minimum 5 µs in single pulse mode
DIR-	**(5)** The factory setting of control signal voltage is 24V, must need to set S2 (figure 2) if it is 5V

ENA+	Enable Connection: (default no connection) (1) Optically isolated, differential.
ENA-	(2) Disable the drive by 4.5- 24V input connection; enable the drive by 0-0.5V connection (3) ENA signal requires advance DIR signal minimum 5µs in single pulse mode (4) Enable time to be at least 200ms

Notes:

(1) Shield cables are required for P1;

(2) Don't tie P1/P2 cables and P3 cables together.

➢ **P2 - Fault Output Connector**

Pin	Details
ALM+	(1) Maximum 30V/100mA output (2) Sinking or sourcing
ALM-	(3) The resistance between ALM+ and ALM- is low impedance as default, and will change to high when the drive goes into error protection.

➢ **P3 - Motor and Power Supply Connector**

| Pin Function	Details
GND	Power supply ground connection.
+Vdc	Power supply positive connection. Suggest 24-48VDC power supply voltage
A+, A-	Motor Phase A connections. Connect motor A+ wire to A+ Pin; motor A- wire to A-
B+, B-	Motor Phase B connections. Connect motor B+ wire to B+ Pin; motor B- wire to B-

Warning: Don't plug or unplug the P1 & P2&P3 terminal block to avoid drive damage or injury when DM542E is powered on.

➢ **P4 - RS232 Tuning Port**

The P4 connector in Figure 2 is a RS232 communication port for PC connection. Refer to the following pin definitions.

It is just used to modify parameter, not for equipment control because neither precision nor stability is sufficient. If you need a field bus drive, use a Leadshine RS485 or EtherCAT type drives
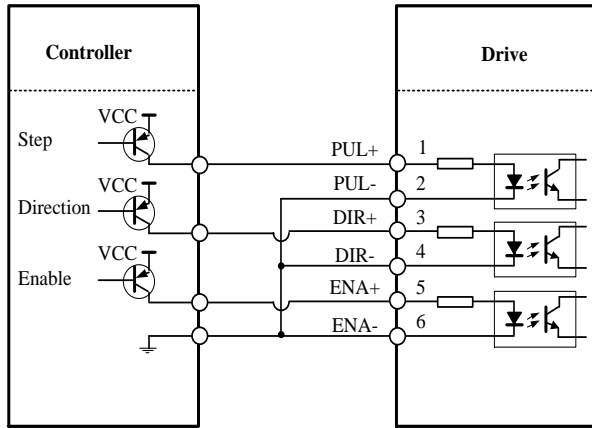
The interface definition is as follows:

4-pin white connector

Female DB9
(Look from the front side)
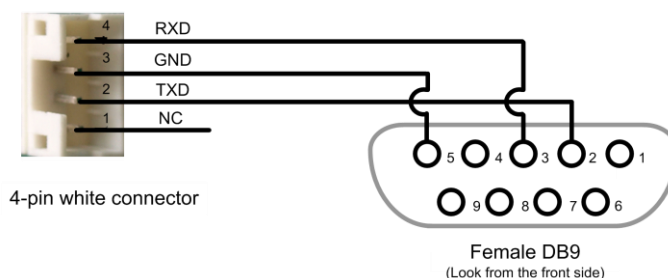
Wiring

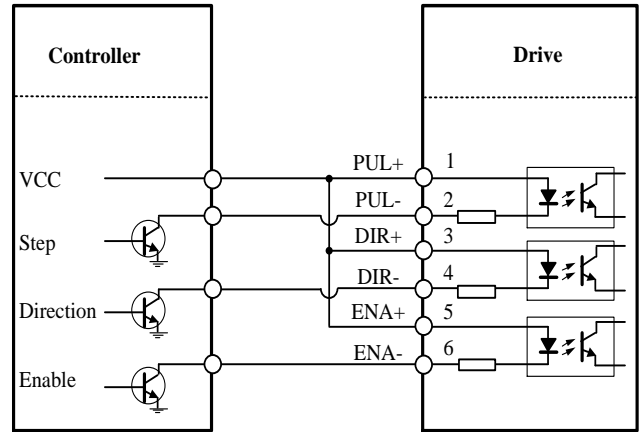**Figure 1** Connections to open-collector signals
(Common-anode)

Figure 2 Connections to PNP signals
(Common-cathode)