



# Stepping Drives

## Leadshine 2-phase Digital Stepper Drives

Leadshine has been an industry leading motion control supplier since 1997, and is one of the largest stepper drive manufacturers in the world. Leadshine steppers offer high quality products (Leadshine factories are ISO9001 certified) at very affordable prices. Leadshine steppers are simple, easy to use, long-lasting, and reliable.

AutomationDirect sells a wide range of linear and switching power supplies, stepper motors, cables, and PLCs with hi-speed outputs that are compatible with Leadshine stepper drives.

### Features

- 2-phase digital stepper drives
- Anti-resonance for optimal torque, extra smooth motion, low motor heating and noise
- Motor auto-config on power up
- All drives support step and direction control, some models support CW/CCW as well
- Micro-stepping for smooth motor movement
- DIP switch configurable
- Wide range of input voltages supported (12-110 VDC, 18-80 VAC)
- Pulse input frequency up to 200kHz
- Soft-start with no "jump" when powered on
- Automatic idle-current reduction
- Protections for over-voltage and over-current
- NEMA 11, 14, 17, 23, 24, 34 and 42 frame size step motors supported



### Leadshine Series – Drives Features Comparison<sup>1</sup>

| Drive Model                | DM322E                                                                                | DM542E                           | DM556E                          | DM860E                           | DMA860E                                                                     | DM805-AI                                 | EM542S                                                       | EM556S                         |
|----------------------------|---------------------------------------------------------------------------------------|----------------------------------|---------------------------------|----------------------------------|-----------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|--------------------------------|
| Price                      | \$32.00                                                                               | \$46.00                          | \$51.00                         | \$63.00                          | \$79.00                                                                     | \$129.00                                 | \$59.00                                                      | \$72.00                        |
| Drawing                    | <a href="#">PDF</a>                                                                   | <a href="#">PDF</a>              | <a href="#">PDF</a>             | <a href="#">PDF</a>              | <a href="#">PDF</a>                                                         | <a href="#">PDF</a>                      | <a href="#">PDF</a>                                          | <a href="#">PDF</a>            |
| Drive Type                 | 2-phase digital stepper drive                                                         |                                  |                                 |                                  |                                                                             |                                          |                                                              |                                |
| Supply Voltage             | 12–30 VDC<br>(24 VDC typical)                                                         | 20–50 VDC<br>(24–48 VDC typical) |                                 | 24–74 VDC<br>(48–68 VDC typical) | 24–110 VDC<br>(48–90 VDC typical)<br>or<br>18–80 VAC<br>(36–70 VAC typical) | 20–80 VDC<br>(30–60 VDC typical)         | 20–50 VDC<br>(24–48 VDC typical)                             |                                |
| Pulse Input Type           | Single-ended2                                                                         | Differential, Single-ended       |                                 |                                  |                                                                             | Single-ended2                            | Differential, Single-ended                                   |                                |
| Step Input Modes           | Step & Direction                                                                      |                                  |                                 | Step & Direction, CW & CCW       |                                                                             | Step & Direction,<br>Analog input        | Step & Direction, CW & CCW                                   |                                |
| Digital Input Voltage      | 5V<br>(add a 1K resistor to accept +12V input, or a 2K resistor to accept +24V input) |                                  |                                 |                                  |                                                                             |                                          | DIP switch selectable for 5V or 24V                          |                                |
| PPR Range                  | 400–12800                                                                             | 400–25600                        |                                 | 400–51200                        |                                                                             | 200–12800                                | 200–25600                                                    |                                |
| Motor Output Current Range | 0.3–2.2 A peak<br>(0.2–1.6 RMS)                                                       | 1.0–4.2 A peak<br>(0.7–3.0 RMS)  | 1.8–5.6 A peak<br>(1.3–4.0 RMS) | 2.4–7.2 A peak<br>(1.7–5.1 RMS)  |                                                                             | 2.6–7.0 A peak<br>(0.3–5.0 RMS)          | 0.5-4.2A peak<br>(0.4-2.9 RMS)                               | 0.5-5.6A peak<br>(0.4-3.9 RMS) |
| Digital Output             | No                                                                                    |                                  |                                 |                                  |                                                                             |                                          | +24VDC (Brake and Fault Detection)                           |                                |
| Self-test Capable          | No                                                                                    | No                               | No                              | No                               | No                                                                          | Yes                                      | Yes                                                          | Yes                            |
| Special Features           | Soft-start, motor auto-config                                                         |                                  |                                 |                                  | Accepts a DC or an AC power supply, soft-start, motor auto-config           | Built-in pulse generator, command source | Auto-tuning, soft-start, fault and brake outputs, shaft lock |                                |

<sup>1</sup> - Refer to Specifications Tables for detailed specifications.

<sup>2</sup> - See the User Manual or Quick Start Guide for instructions on wiring Single-Ended drives to a Differential (Line Driver) controller.



# Stepping Drives



DM542E



DMA860E

## DM542E, DM556E, DM860E, DMA860E

The DM542E and DM556E drives are capable of pulse and direction operation, with auto-motor config on power up.

The DM860E and DMA860E drives possess the same capabilities but can also do CW and CCW pulse operation. The main difference between these models are output current range to the motor and supply voltage.

| Leadshine DM542E, DM556E, DM860E, DMA860E Specifications |                                                     |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
|----------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------|
| Drive Model                                              | DM542E                                              | DM556E                                                                                                                                                                                                                                                                                                 | DM860E                           | DMA860E                                                                     |
| Output Current                                           | 1.0–4.2 A peak<br>(0.7–3.0 RMS)                     | 1.8–5.6 A peak<br>(1.3–4.0 RMS)                                                                                                                                                                                                                                                                        | 2.4–7.2 A peak<br>(1.7–5.1 RMS)  | 2.4–7.2 A peak<br>(1.7–5.1 RMS)                                             |
| Input Voltage                                            | 20–50 VDC<br>(24–48 VDC typical)                    |                                                                                                                                                                                                                                                                                                        | 24–74 VDC<br>(48–68 VDC typical) | 24–110 VDC<br>(48–90 VDC typical)<br>or<br>18–80 VAC<br>(36–70 VAC typical) |
| Logic Signal Current                                     | 7–16 mA (10mA typical)                              |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Pulse Input Frequency                                    | 0–200 kHz                                           |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Minimal Pulse Width                                      | 2.5 μs                                              |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Minimal Direction Setup                                  | 5.0 μs                                              |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Isolation Resistance                                     | 500mΩ                                               |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Connector P1 Functions                                   | PUL+                                                | Pulse signal: 5V signal, differential input. High input is 4-5V, Low input is 0-0.5 V. Minimum pulse width = 2.5 μs. Add a 1kΩ resistor for +12V signals, 2kΩ for +24V signals.                                                                                                                        |                                  |                                                                             |
|                                                          | PUL-                                                |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
|                                                          | DIR+                                                | Direction signal: 5V signal, differential input. High input is 4-5V, Low input is 0-0.5 V. Minimum pulse width = 2.5 μs. Add a 1kΩ resistor for +12V signals, 2kΩ for +24V signals.<br>Direction Function: requires 5μs setup time.<br>CW/CCW Function (DM860E and DMA860E only): see DIP switch SW14. |                                  |                                                                             |
|                                                          | DIR-                                                |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
|                                                          | ENA+                                                | Enable signal: 5V signal, differential input. High input is 4-5V, Low input is 0-0.5 V. Minimum pulse width = 2.5 μs. Add a 1kΩ resistor for +12V signals, 2kΩ for +24V signals.<br>Enable Function: Close (pull low) to disable the drive.                                                            |                                  |                                                                             |
|                                                          | ENA-                                                |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Replacement Connectors                                   | Power = DN-6PLUG, I/O = DN-4PLUG, Enable = DN-2PLUG |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Cooling                                                  | Natural cooling or forced cooling                   |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Ambient Temperature                                      | 0°C to 65°C (32°F to 149°F)                         |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Humidity                                                 | 40–90% relative humidity                            |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Operating Temperature                                    | 0°C to 50°C (32°F to 122°F)                         |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Vibration                                                | 10–50 Hz / 0.15 mm                                  |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Storage Temperature                                      | -20°C to 65°C (-4°F to 149°F)                       |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Self Test                                                | No                                                  |                                                                                                                                                                                                                                                                                                        |                                  |                                                                             |
| Weight                                                   | 227g (8 oz)                                         | 300g (10.6 oz)                                                                                                                                                                                                                                                                                         | 510g (1.13 lbs)                  | 510g (1.13 lbs)                                                             |

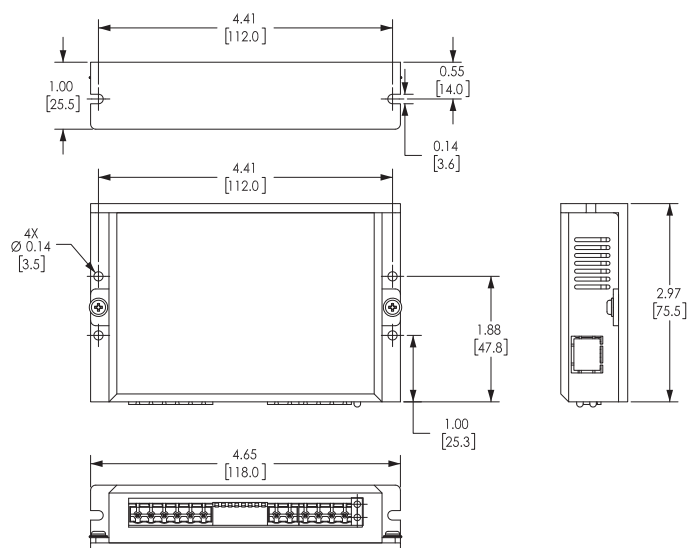


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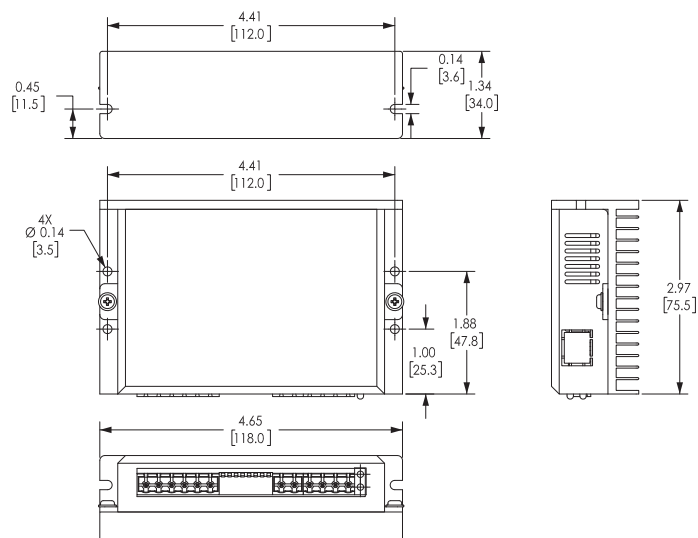
## Leadshine Drive Dimensions

Dimensions = in [mm]

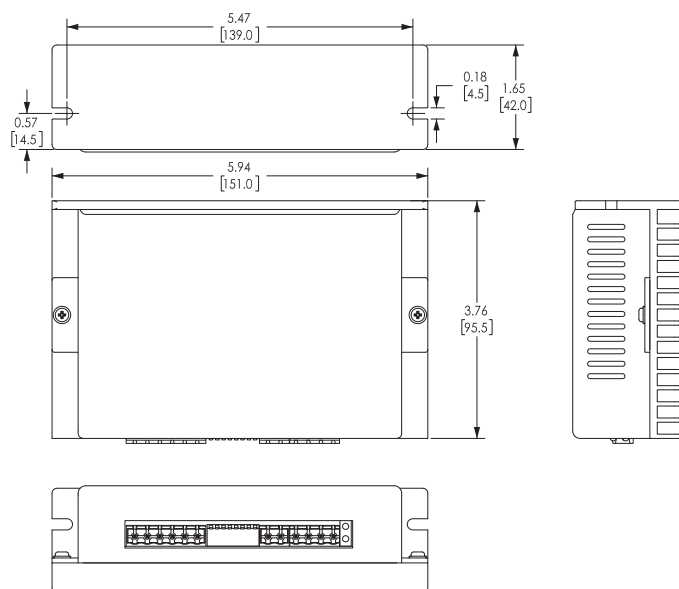
### DM542E



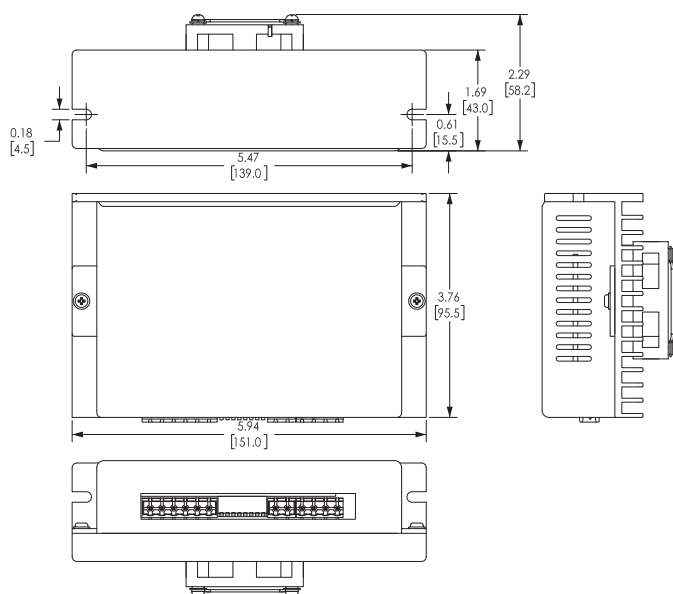
### DM556E



### DM860E



### DMA860E

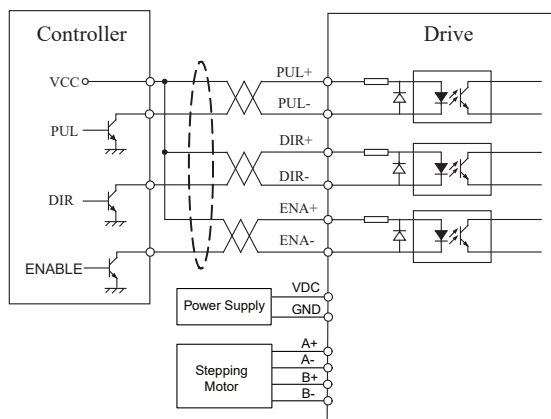




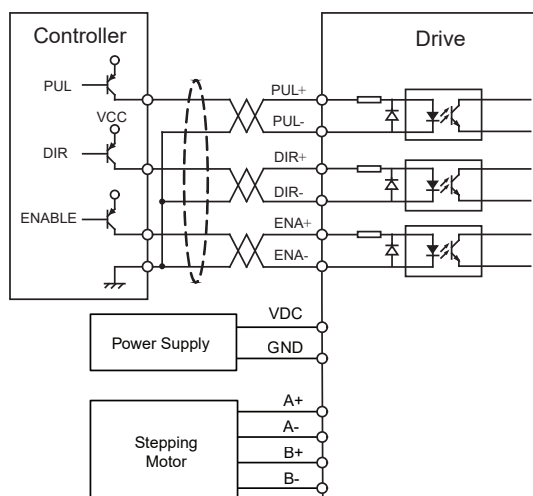
# Stepping Drives

## Leadshine Drive Wiring

### DM542E, DM556E, DM860E, DMA860E Connection to Open Collector Signal



### DM542E, DM556E, DM860E, DMA860E Connection to PNP Signal



### DM542E, DM556E, DM860E, DMA860E Connection to Differential Signal

