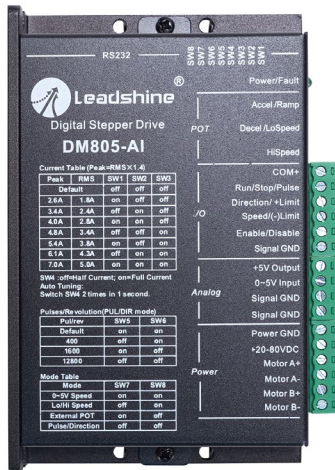# Leadshine

Leadshine Stepper Drives Quick Start Guide

1st Edition, November 04, 2019

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Leadshine Stepper Drives Overview

Leadshine stepper drives are compact, simple drives designed to work with a wide range of NEMA stepper motors.

Many stepper motors come with only 4 leads. They are easily wired to the drive terminals A+, A-, B+, and B-. Some stepper motors come with 6 or 8 wires coming from the motor. These motors' windings can be wired in series or parallel - please see the applicable stepper drive user manual for more detail on how to wire a 6 or 8 lead stepper motor (and the benefits of each configuration).

Stepper drives can typically be supplied with a range of DC voltage (some can even accept AC input). Higher DC supply voltages translate into higher available torque at higher speeds, but higher supply voltage causes motors to run hotter. When selecting a power supply, choose the one with the lowest voltage that will satisfy your application. For more information, please see the drive's user manual. Regulated and unregulated power supplies can supply stepper drives. Regulated (switching) power supplies are generally less expensive and smaller than linear power supplies, but they are sometimes susceptible to regen. If using a switching power supply, choose a supply above the expected capacity. Linear power supplies are better at handling motor regeneration, but care must be taken to ensure that the no-load voltage of a linear power supply does not float above the upper voltage limit of the stepper drive.

⚠️ *WARNING: DO NOT PLUG/UNPLUG MOTOR CONNECTIONS WITH POWER APPLIED TO THE DRIVE.*

⚠️ *WARNING: RUN SIGNAL WIRING SEPARATELY FROM MOTOR POWER WIRING.*

⚠️ *WARNING: DO NOT DAISY CHAIN WIRING FROM THE POWER SUPPLY TO DRIVE TO DRIVE. RUN SEPARATE WIRES FROM THE POWER SUPPLY TO EACH ONE.*

⚠️ *WARNING: IF YOUR APPLICATION COULD HAVE REGENERATION (FAST DECELERATION, OR AN OVERHAULING LOAD THAT BACKDRIVES THE MOTOR) YOU SHOULD INSTALL A REGEN CLAMP (P/N STP-DRVA-RC-050A).*

Getting Started

To set up your Leadshine Stepper Drive, make sure you have the following at hand:
- *Stepper drive*
- *Stepper motor*
- *Power supply*
- *Small flathead screwdriver*
- *Wire strippers*

Basic Steps to Set up Your Drive

To connect and configure your stepper drive, follow the steps below.

1) Set the DIP switches on the drive to the desired motor and configuration for your application.

2) Connect the drive to the motor.

3) Connect the drive to the power supply.

4) Power on the system.

5) Test the motor's speed and direction before connecting the shaft to a load.

Please refer to the drive specific section for details relevant to your drive, such as switch settings and wiring configuration.

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.

SPECIFICATIONS

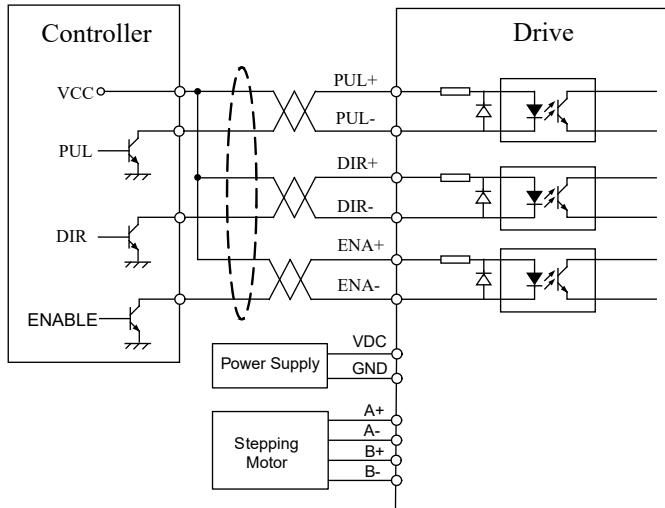| DM542E, DM556E, DM860E, DMA860E Specifications				
Part Number		**DM542E**	**DM556E**	**DM860E**	**DMA860E**
Output Current		1.0–4.2 A peak (0.7–3.0 RMS)	1.8–5.6 A peak (1.3–4.0 RMS)	2.4–7.2 A peak (1.7–5.1 RMS)	2.4–7.2 A peak (1.7–5.1 RMS)
Supply Voltage	**DC**	20–50 VDC (24–48 VDC typical)		24–74 VDC (48–68 VDC typical)	24–110 VDC (48–90 VDC typical)
	AC	n/a		n/a	18–80 VAC (36–70 VAC typical)
Connector P1 Pin Function	**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. **Direction Function:** requires 5µs setup time. **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. **Enable Function:** Close (pull low) to disable the drive.			
	ENA-				
Connector P2 Pin Function	**GND**	Power supply ground connection.			
	+V	Power supply positive connection.			
	A+,A-	Motor phase A connections. Connect motor A+ wire to A+ pin, motor A- wire to A- pin.			
	B+,B-	Motor phase B connections. Connect motor B+ wire to B+ pin, motor B- wire to B- pin.			

CONNECTING DEVICES TO THE DRIVE

4-lead motors are the easiest to connect, and the speed – torque of the motor depends on winding inductance. To determine the output current of the drive, multiply the nameplate motor phase current by 1.4 to determine the peak output current. If the motor runs too hot then multiply by 1.2 instead. For 6-lead and 8-lead motor wiring information, please refer to the drive User Manual.

The drives are designed to operate within a specific voltage input (see specifications table). When selecting a power supply, choose a power supply with an output range within the minimum and maximum of the drive and be sure to leave room for power supply fluctuation and motor back-EMF.

The DM542E, DM556E, DM860E, and DMA860E drives can be connected for either sinking or sourcing signals. Wire the connections to the motor, power supply, and controller according to the diagrams on the next page:

DM542E, DM556E, DM860E, DMA860E Connection to a Sinking Output Controller

DM542E, DM556E, DM860E, DMA860E Connection to a Sourcing Output Controller
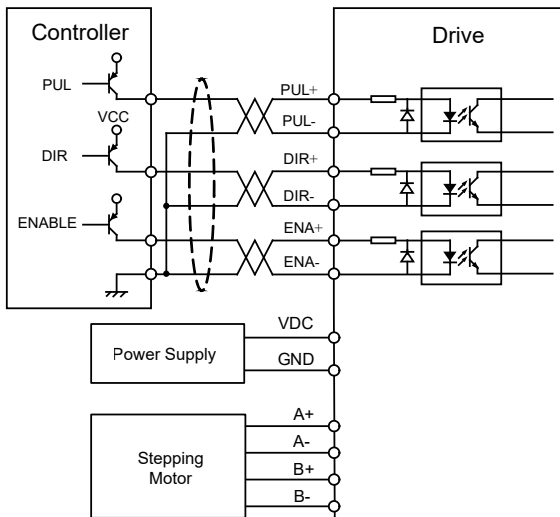
DM542E, DM556E, DM860E, DMA860E Connection to Differential Signal

JUMPER SETTINGS

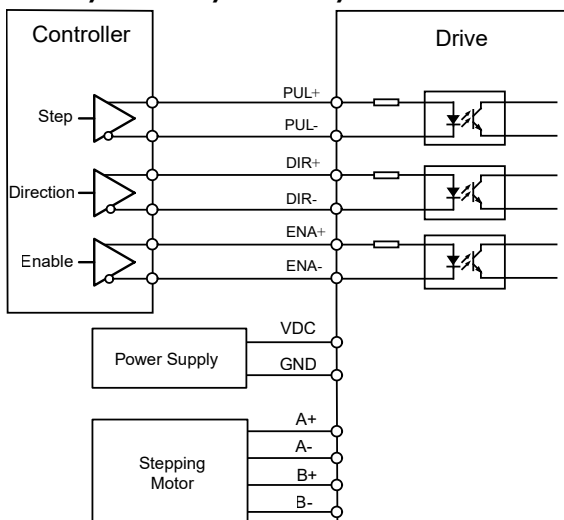| DM860E Jumper Settings			
Jumper	**Not Jumpered**	**Jumpered**	**Factory Default**
CN6	Use PUL/DIR inputs	Use CW/CCW pulses	Not jumpered (PUL/DIR)
CN7	Internal micro-step (pulse smoothing) ON	Internal micro-step (pulse smoothing) OFF	Not jumpered (internal microstep ON)

DMA860E Jumper Settings			
Jumper	**Not Jumpered**	**Jumpered**	**Factory Default**
J1	Use falling edge of pulses	Use rising edge of pulses	Jumpered (rising edge)
J2	Default motor rotation direction	Reverse motor rotation direction	Not jumpered (default direction)
J3	Use PUL/DIR inputs	Use CW/CCW pulses	Not jumpered (PUL/DIR)

DIP SWITCH SETTINGS

DYNAMIC CURRENT CONFIGURATIONS

DM542E Current Configuration				
Peak Current (A)	**RMS Current (A)**	**SW1**	**SW2**	**SW3**
1.00	0.71	ON	ON	ON
1.46	1.04	OFF	ON	ON
1.91	1.36	ON	OFF	ON
2.37	1.69	OFF	OFF	ON
2.84	2.03	ON	ON	OFF
3.31	2.36	OFF	ON	OFF
3.76	2.69	ON	OFF	OFF
4.20	3.00	OFF	OFF	OFF

DM556E Current Configuration				
Peak Current (A)	**RMS Current (A)**	**SW1**	**SW2**	**SW3**
1.8	1.3	ON	ON	ON
2.1	1.5	OFF	ON	ON
2.7	1.9	ON	OFF	ON
3.2	2.3	OFF	OFF	ON
3.8	2.7	ON	ON	OFF
4.3	3.1	OFF	ON	OFF
4.9	3.5	ON	OFF	OFF
5.6	4.0	OFF	OFF	OFF

DM860E, DMA860E Current Configuration				
Peak Current (A)	**RMS Current (A)**	**SW1**	**SW2**	**SW3**
2.40	1.70	ON	ON	ON
3.08	2.18	OFF	ON	ON
3.77	2.67	ON	OFF	ON
4.45	3.15	OFF	OFF	ON
5.14	3.64	ON	ON	OFF
5.83	4.12	OFF	ON	OFF
6.52	4.61	ON	OFF	OFF
7.20	5.09	OFF	OFF	OFF

IDLE CURRENT REDUCTION

DM542E, DM556E, DM860E, DMA860E Idle Current Reduction	
Idle Current Reduction	SW4
50%	OFF
100%	ON

MICROSTEP RESOLUTION CONFIGURATION

Microstep resolution is set by switches 5, 6, 7, and 8 as shown in the following table:

DM542E, DM556E Microstep Resolution					
Microstep	Steps/Rev (for 1.8° motor)	SW5	SW6	SW7	SW8
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	OFF	OFF	OFF

DM860E, DMA860E Microstep Resolution					
Microstep	Steps/Rev (for 1.8° motor)	SW5	SW6	SW7	SW8
2	400	ON	ON	ON	ON
4	800	OFF	ON	ON	ON
8	1600	ON	OFF	ON	ON
16	3200	OFF	OFF	ON	ON
32	6400	ON	ON	OFF	ON
64	12800	OFF	ON	OFF	ON
128	25600	ON	OFF	OFF	ON
256	512000	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
200	40000	OFF	OFF	OFF	OFF

DM322E

The DM322E is a compact drive capable of pulse and direction operations, with auto-motor configuration on power up.

SPECIFICATIONS

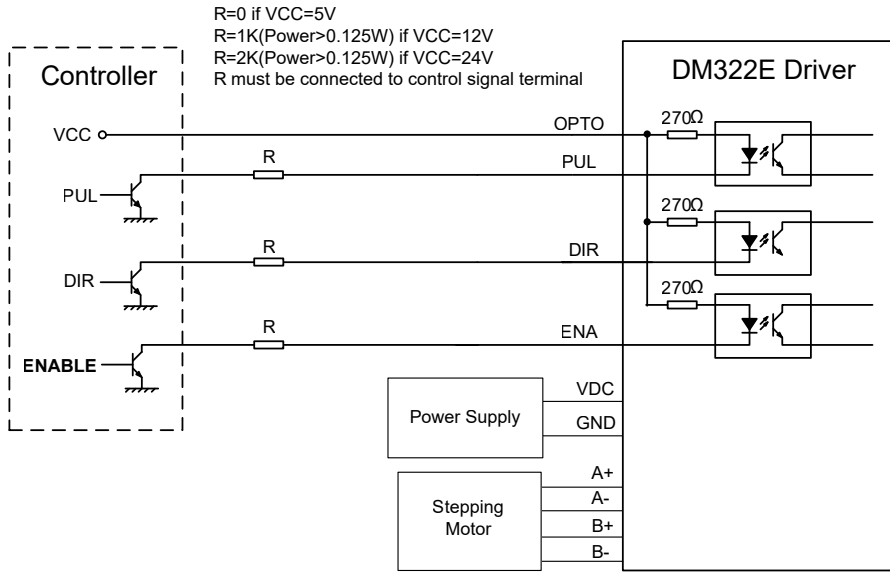| Electrical, Connector, and Environmental Specifications		
Part Number	**DM322E**	
Output Current	0.3–2.2 A peak (0.2–1.6 RMS)	
Supply Voltage	12–30 VDC (24 VDC typical)	
Connector P1 Pin Function	*PUL*	**Pulse signal:** 5V signal, single-ended input. High input is 4-5V, Low input is 0-0.5 V. Minimum pulse width = 2.5 µs. Add a 1kΩ resistor for +12V signals, 2kΩ for +24V signals.
	DIR	**DIR signal:** 5V signal, single-ended 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. **Direction Function:** requires 5µs setup time. **CW/CCW Function:** see DIP switch SW14.
	OPTO	This input is the voltage supply for the Pulse, Direction, and Enable opto-couplers. Connect 5VDC (or +12V, +24V with appropriate resistors on Pulse, Direction, and Enable inputs).
	ENA	**Enable signal:** 5V signal, single-ended 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. **Enable Function:** Close (pull low) to disable the drive.
Connector P2 Pin Function	*GND*	Power supply ground connection.
	+V	Power supply positive connection.
	A+,A-	Motor phase A connections. Connect motor A+ wire to A+ pin, motor A- wire to A- pin.
	B+,B-	Motor phase B connections. Connect motor B+ wire to B+ pin, motor B- wire to B- pin.

CONNECTING DEVICES TO THE DM322E DRIVE

4-lead motors are the easiest to connect, and the speed – torque of the motor depends on winding inductance. To determine the output current of the drive, multiply the nameplate motor phase current by 1.4 to determine the peak output current. If the motor runs too hot then multiply by 1.2 instead. For 6-lead and 8-lead motor wiring information, please refer to the drive User Manual.

The drives are designed to operate within a specific voltage input (see specifications table). When selecting a power supply, choose a power supply with an output range within the minimum and maximum of the drive and be sure to leave room for power supply fluctuation and motor back-EMF.
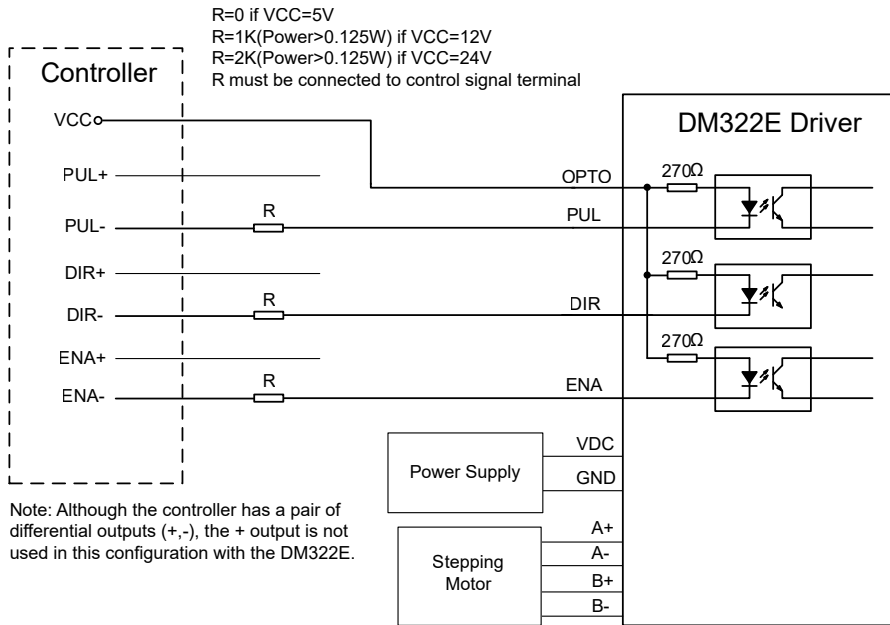
The DM322E drive can be connected for either sinking or differential control signals. Wire the connections to the motor, power supply, and controller according to the diagrams on the next page:

DM322E Connection to a Sinking Output Controller

R=0 if VCC=5V
R=1K(Power>0.125W) if VCC=12V
R=2K(Power>0.125W) if VCC=24V
R must be connected to control signal terminal

DM322E Connection to Differential Control Signal

R=0 if VCC=5V
R=1K(Power>0.125W) if VCC=12V
R=2K(Power>0.125W) if VCC=24V
R must be connected to control signal terminal

Note: Although the controller has a pair of differential outputs (+,-), the + output is not used in this configuration with the DM322E.

DIP Switch Settings

Dynamic Current Configurations

DM322E Current Configuration				
Peak Current (A)	RMS Current (A)	SW1	SW2	SW3
0.3	0.21	ON	ON	ON
0.5	0.35	OFF	ON	ON
0.7	0.49	ON	OFF	ON
1.0	0.71	OFF	OFF	ON
1.3	0.92	ON	ON	OFF
1.6	1.13	OFF	ON	OFF
1.9	1.34	ON	OFF	OFF
2.2	1.56	OFF	OFF	OFF

MICROSTEP RESOLUTION CONFIGURATION

Microstep resolution is step by switches 4, 5, and 6 as shown in the following table:

DM322E Microstep Resolution				
Microstep	Steps/Rev (for 1.8° motor)	SW4	SW5	SW6
2	400	ON	ON	ON
4	800	OFF	ON	ON
8	1600	ON	OFF	ON
16	3200	OFF	OFF	ON
32	6400	ON	ON	OFF
64	12800	OFF	ON	OFF
20	4000	ON	OFF	OFF
40	8000	OFF	OFF	OFF

DM805-AI

The DM805-AI drive is capable of pulse and direction as well as analog input and speed control. Auto-motor config on power up with self motor test capability. Comes with built in potentiometers for adjusting speed limits and accel and decel rates, and can be controlled via an external potentiometer.

SPECIFICATIONS

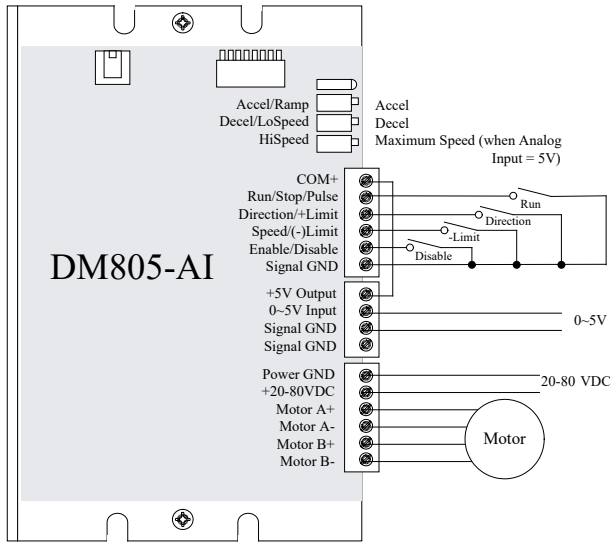| Electrical, Connector, and Environmental Specifications		
Part Number		**DM805-AI**
Output Current		2.6–7.0 A peak (0.3–5.0 RMS)
Supply Voltage		20–80 VDC (60 VDC typical)
Pin Function	**Run/Stop or Pulse**	**Pulse signal:** 5V signal, single-ended input. High input is 4-5V, Low input is 0-0.5 V. Minimum pulse width = 2.5 μs. Add a 1kΩ resistor for +12V signals, 2kΩ for +24V signals. **Run/Stop Function:** Close (pull low) to enable the motor.
	Direction or +Limit	**DIR signal:** 5V signal, single-ended 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. **Direction Function:** requires 5μs setup time. **(+)Limit Function:** Close (pull low) to stop motor movement in the positive direction.
	Speed or (-)Limit	**Speed:** 5V signal, single-ended 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. **Speed Function (Low Speed/High Speed Mode):** Close (pull low) to select Lo Speed pot setpoint. Open (float high) to enable Hi Speed pot setpoint. **(-)Limit Function:** Close (pull low) to stop motor movement in the negative direction.
	Enable/Disable	**Enable signal:** 5V signal, single-ended 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. **Enable Function:** Close (pull low) to disable the drive.

CONNECTING DEVICES TO THE DM805-AI DRIVE

4-lead motors are the easiest to connect, and the speed – torque of the motor depends on winding inductance. To determine the output current of the drive, multiply the nameplate motor phase current by 1.4 to determine the peak output current. If the motor runs too hot then multiply by 1.2 instead. For 6-lead and 8-lead motor wiring information, please refer to the drive User Manual.

The drives are designed to operate within a specific voltage input (see specifications table). When selecting a power supply, choose a power supply with an output range within the minimum and maximum of the drive and be sure to leave room for power supply fluctuation and motor back-EMF.

DM805-AI can be connected in a number of different ways depending on the desired mode of operation. Wire the connections to the motor and power supply according to the applicable diagram on the next few pages:

ANALOG 0–5 V SPEED MODE

DM805-AI

Accel/Ramp — Accel
Decel/LoSpeed — Decel
HiSpeed — Maximum Speed (when Analog Input = 5V)

COM+
Run/Stop/Pulse
Direction/+Limit
Speed/(-)Limit
Enable/Disable
Signal GND

Run
Direction
-Limit
Disable

+5V Output
0~5V Input — 0~5V
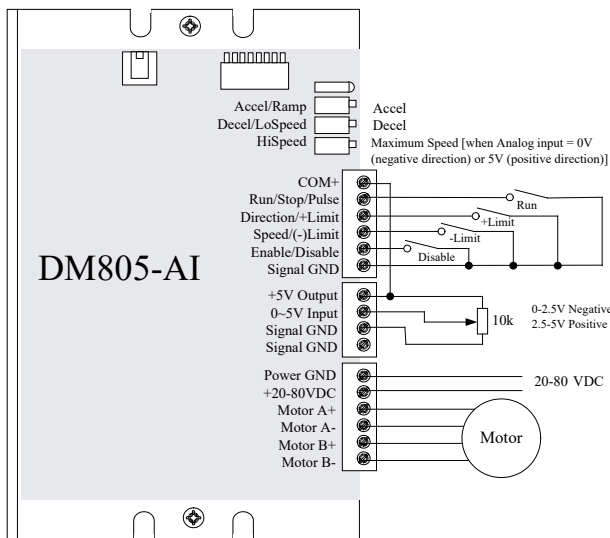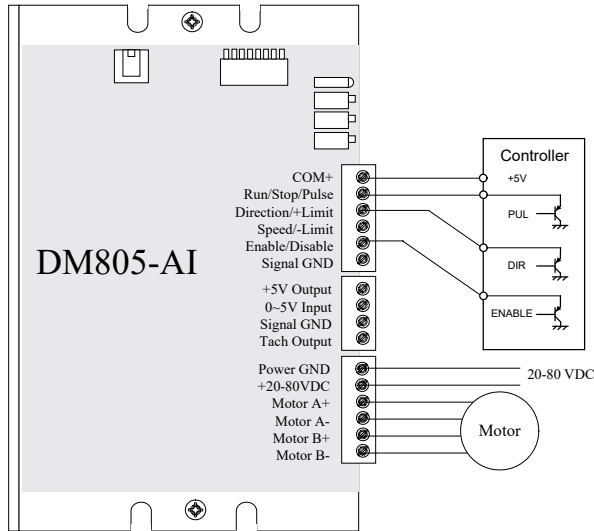Signal GND
Signal GND

Power GND — 20-80 VDC
+20-80VDC
Motor A+
Motor A-
Motor B+
Motor B-
Motor

LOW/HIGH SPEED MODE

DM805-AI

Accel/Ramp — Ramp
DecelLoSpeed — LoSpeed
HiSpeed — HiSpeed

COM+
Run/Stop/Pulse
Direction/+Limit
Speed/(-)Limit
Enable/Disable
Signal GND

Run
Direction
Speed
Disable

+5V Output
0~5V Input
Signal GND
Signal GND

Power GND — 20-80 VDC
+20-80VDC
Motor A+
Motor A-
Motor B+
Motor B-
Motor

EXTERNAL POTENTIOMETER MODE

DM805-AI

Accel/Ramp — Accel
Decel/LoSpeed — Decel
HiSpeed — Maximum Speed [when Analog input = 0V (negative direction) or 5V (positive direction)]

COM+
Run/Stop/Pulse
Direction/+Limit
Speed/(-)Limit
Enable/Disable
Signal GND

Run
+Limit
-Limit
Disable

+5V Output
0~5V Input — 10k — 0-2.5V Negative / 2.5-5V Positive
Signal GND
Signal GND

Power GND — 20-80 VDC
+20-80VDC
Motor A+
Motor A-
Motor B+
Motor B-
Motor

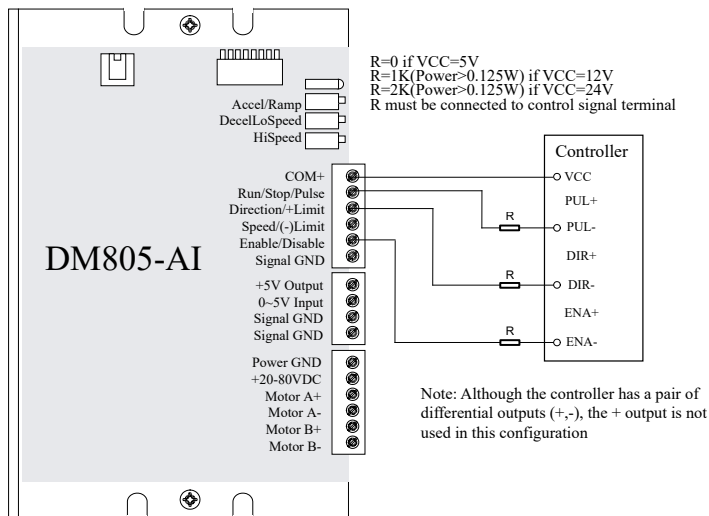| Mode Diagram Overview	
Input	*Description*
Multi-Function Inputs	The active function of each input is shown next to the external switches in the Mode diagrams. Example: In **Analog 0-5V Speed Mode**, the inputs' functions are **Run**, **Direction**, **-Limit**, and **Disable**.
Run/Stop Inputs	The **Run/Stop** function (in analog modes) uses accel and decel ramps to transition speed.
Limits Inputs	The Limit inputs are direction-sensitive and are Normally Open (they allow motion if left unconnected). The Limit function uses decel and accel ramps. Note that only the **-Limit** is available in **Analog 0-5V Speed Mode**.
Enable/Disable Inputs	This input is often left unconnected. The **Disable** input does not use a decel ramp (stops quickly), but does use an accel ramp to restart. Once the drive is disabled, the **Run** input should be removed before the drive is re-enabled. Otherwise, the drive *may* lose synchronization with the motor on restart (if accel or set speed is high).

PULSE/DIRECTION MODE

CONNECTION TO DIFFERENTIAL SIGNAL CONTROLLER

R=0 if VCC=5V
R=1K(Power>0.125W) if VCC=12V
R=2K(Power>0.125W) if VCC=24V
R must be connected to control signal terminal

Note: Although the controller has a pair of differential outputs (+,-), the + output is not used in this configuration

DIP SWITCH SETTINGS

NOTE: When DIP switches are set to the "Default" settings, these values can be changed via Protuner for DM805-AI software.

DYNAMIC CURRENT CONFIGURATIONS

DM805-AI Current Configuration				
Peak Current (A)	RMS Current (A)	SW1	SW2	SW3
Default		OFF	OFF	OFF
2.6	1.8	ON	OFF	OFF
3.4	2.4	OFF	ON	OFF
4.0	2.8	ON	ON	OFF
4.8	3.4	OFF	OFF	ON
5.4	3.8	ON	OFF	ON
6.1	4.3	OFF	ON	ON
7.0	5.0	ON	ON	ON

IDLE CURRENT REDUCTION

DM805-AI Idle Current Reduction	
Idle Current Reduction	SW4
50%	OFF
100%	ON

NOTE: Toggle SW4 back and forth twice within one second to enable Auto Tuning.

PULSES/REVOLUTION

DM805-AI Pulses/Revolution (PUL/DIR mode)		
Pul/Rev	SW5	SW6
Default	ON	ON
400	OFF	ON
1600	ON	OFF
12800	OFF	OFF

MODE SETTINGS

DM805-AI Mode Settings		
Mode	SW7	SW8
0–5V Speed	ON	ON
LO/HI Speed	OFF	ON
External POT	ON	OFF
Pulse/Direction	OFF	OFF

NOTE: Remove power from the drive before changing modes.

EM542S, EM556S

The EM542S and EM556S are digital stepper drives capable of pulse and direction as well as CW and CCW operation, with auto-motor config on power up and self-test capability. These drives have a built-in current-limiting resistor (on a switch) to allow either 5V or 24V input pulses. They also include a fault and a brake output.

SPECIFICATIONS

Electrical, Connector, and Environmental Specifications			
Part Number		**EM542S**	**EM556S**
Output Current		0.5–4.2 A peak (0.4–3.0 RMS)	0.5–5.6 A peak (0.4–4.0 RMS)
Supply Voltage		20–50 VDC (24–48 VDC typical)	
Connector P1 Pin Function	PUL+	**Pulse signal:** 5V or 24V signal (Switch S3 determines voltage), differential input. High input is 4-5V or 22-24V, Low input is 0-0.5 V. Minimum pulse width = 2.5 µs.	
	PUL-	Switch S3 factory default = 24V position. **WARNING!** If switch S3 is in the 5V position and 24V is applied, the drive will be damaged.	
	DIR+	**DIR signal:** 5V or 24V signal (Switch S3 determines voltage), differential input. High input is 4-5V or 22-24V, Low input is 0-0.5 V. Minimum pulse width = 2.5 µs. **Direction Function:** requires 5µs setup time.	
	DIR-	**CW/CCW Function:** see DIP switch SW14. **WARNING!** If switch S3 is in the 5V position and 24V is applied, the drive will be damaged.	
	ENA+	**Enable signal:** 5V or 24V signal (Switch S3 determines voltage), differential input. High input is 4-5V or 22-24V, Low input is 0-0.5 V. Minimum pulse width = 2.5 µs.	
	ENA-	**Enable Function:** Close (pull low) to disable the drive. **WARNING!** If switch S3 is in the 5V position and 24V is applied, the drive will be damaged.	
Fault and Brake Output Connector	ALM	Optional output connections. Maximum of 30V/100mA output, sinking or sourcing. The Brake output is active (current flowing) at all times except: a. When power is off to the drive, or b. When the drive is disabled (EN input) and NOT using Shaft Lock (DIP Switch SW15)	
	BR		
	COM-		
Power Connector	GND	Connect to power supply ground connection.	
	+VDC	Connect to power supply positive connection (24-48 VDC recommended)	
Motor Connector	A+,A-	Connect motor A+ wire to A+, and motor A- wire to A-.	
	B+,B-	Connect motor B+ wire to B+, and motor B- wire to B-.	

CONNECTING DEVICES TO THE EM542S, EM556S DRIVES

4-lead motors are the easiest to connect, and the speed – torque of the motor depends on winding inductance. To determine the output current of the drive, multiply the nameplate motor phase current by 1.4 to determine the peak output current. If the motor runs too hot then multiply by 1.2 instead. For 6-lead and 8-lead motor wiring information, please refer to the drive User Manual.

The drives are designed to operate within a specific voltage input (see specifications table). When selecting a power supply, choose a power supply with an output range within the minimum and maximum of the drive and be sure to leave room for power supply fluctuation and motor back-EMF.

The EM542S and EM556S drives can be connected for either sinking or sourcing signals, with optional brake and fault outputs. Wire the connections to the motor, power supply, and controller according to the diagrams on the next page:
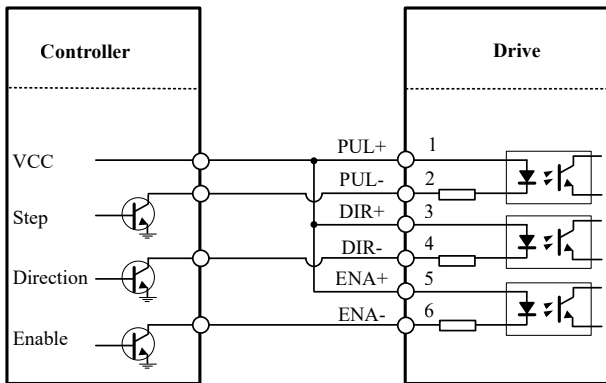
NOTE: These drives can accept Vcc of 24V or 5V. Set switch S3 before applying power.

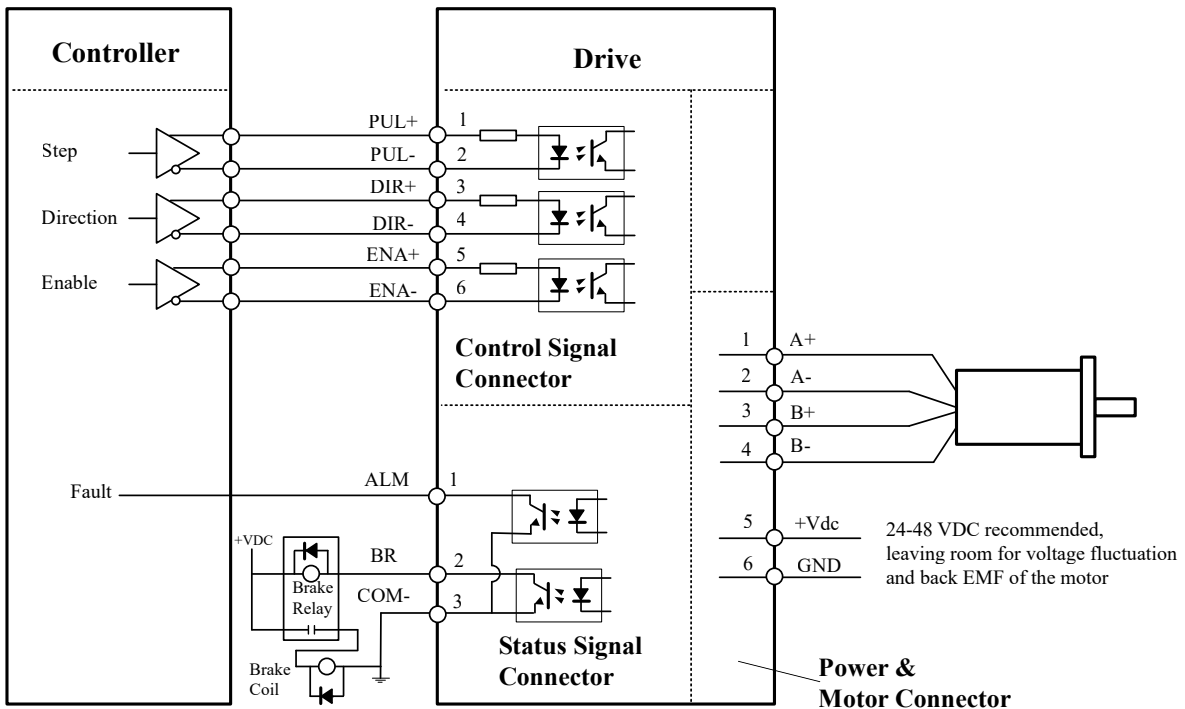### EM542S, EM556S CONNECTION TO A SOURCING OUTPUT CONTROLLER
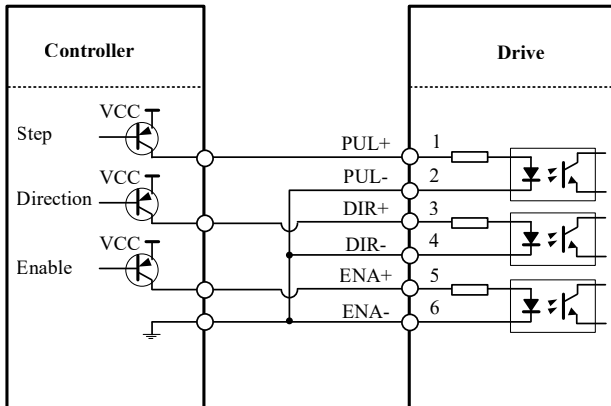
EM542S, EM556S CONNECTION TO A SINKING OUTPUT CONTROLLER

EM542S, EM556S CONNECTION TO DIFFERENTIAL SIGNAL; TYPICAL POWER AND OUTPUT CONNECTIONS

DIP SWITCH SETTINGS

DYNAMIC CURRENT CONFIGURATIONS

EM542S Current Configuration				
Peak Current (A)	**RMS Current (A)**	**SW1**	**SW2**	**SW3**
1.0	0.7 (default)	ON	ON	ON
1.5	1.1	OFF	ON	ON
1.9	1.4	ON	OFF	ON
2.4	1.7	OFF	OFF	ON
2.8	2.0	ON	ON	OFF
3.3	2.4	OFF	ON	OFF
3.8	2.7	ON	OFF	OFF
4.2	3.0	OFF	OFF	OFF

EM556S Current Configuration				
Peak Current (A)	**RMS Current (A)**	**SW1**	**SW2**	**SW3**
1.8	1.3 (default)	OFF	OFF	OFF
2.1	1.5	ON	OFF	OFF
2.7	1.9	OFF	ON	OFF
3.2	2.3	ON	ON	OFF
3.8	2.7	OFF	OFF	ON
4.3	3.1	ON	OFF	ON
4.9	3.5	OFF	ON	ON
5.6	4.0	ON	ON	ON

IDLE CURRENT REDUCTION

EM542S, EM556S Idle Current Reduction	
Idle Current Reduction	**SW4**
50%	OFF
90%	ON

MICROSTEP RESOLUTION CONFIGURATION

Microstep resolution is step by switches 5, 6, 7, and 8 as shown in the following table:

EM542S, EM556S Microstep Resolution					
Microstep	**Steps/Rev (for 1.8° motor)**	**SW5**	**SW6**	**SW7**	**SW8**
1	200 (default)	ON	ON	ON	ON
2	400	OFF	ON	ON	ON
4	800	ON	OFF	ON	ON
8	1600	OFF	OFF	ON	ON
16	3200	ON	ON	OFF	ON
32	6400	OFF	ON	OFF	ON
64	12800	ON	OFF	OFF	ON
128	25600	OFF	OFF	OFF	ON
5	1000	ON	ON	ON	OFF
10	2000	OFF	ON	ON	OFF
20	4000	ON	OFF	ON	OFF
25	5000	OFF	OFF	ON	OFF
40	8000	ON	ON	OFF	OFF
50	10000	OFF	ON	OFF	OFF
100	20000	ON	OFF	OFF	OFF
125	25000	OFF	OFF	OFF	OFF