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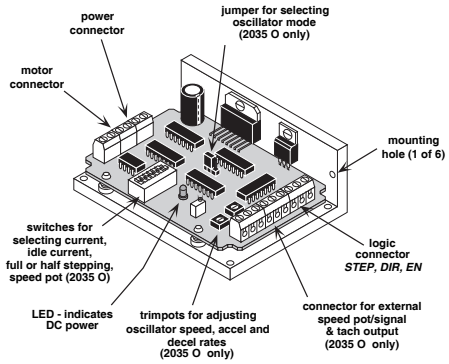
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Find the *Applied Motion Products 2035* at our website: ***Click HERE***

Applied Motion Products

Quick Setup Guide
2035 & 2035-O

TO DOWNLOAD A FULL USER MANUAL PLEASE VISIT OUR WEBSITE
WWW.APPLIED-MOTION.COM



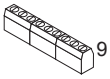
Is This the Right Manual?



3 terminals - old 2035 or 2035 O. This is the wrong manual.

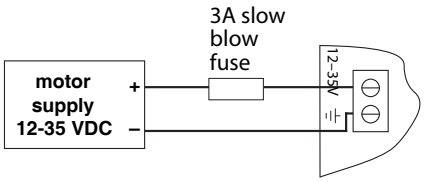


4 terminals - new 2035. This is the right manual.



9 terminals - new 2035 O. Right manual.

Connecting the Power Supply

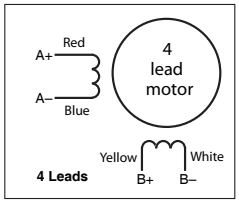


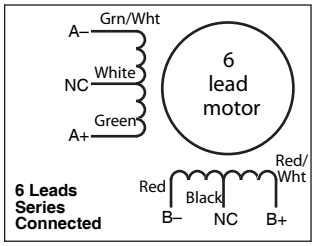
DO NOT REVERSE WIRES - THIS WILL DAMAGE THE DRIVE

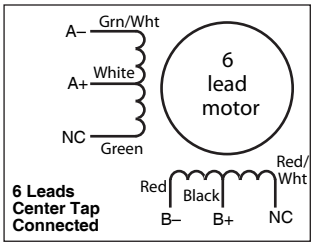
Connecting the Motor

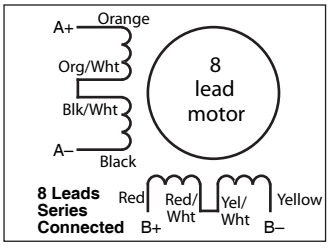
STEP motors have 4, 6 or 8 leads , these are wired to 4 connections on the drive in various combinations.

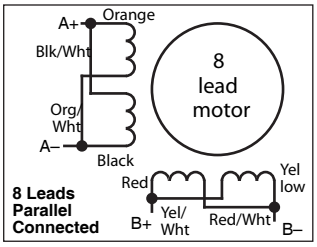
Motors will perform differently according to the way it is connected. To find out more about the different ways of connecting your motor, see the specs or FAQs on our website.







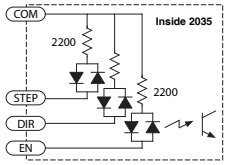




Warning: When connecting the motor to the driver, be sure that the motor power supply is off. Secure any unused motor leads so that they can't short to anything. Never disconnect the motor while the drive is powered up. <u>Never connect motor leads to ground or to a power supply!</u>

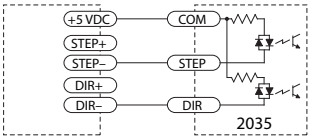
Connecting Logic

A schematic diagram of the input circuit is shown below. Connect your logic circuitry to the signal connector as shown in the sketch at the right. Even though the drive provides it's own 5 volt logic power, you must supply 5-24 volts DC to activate the LEDs on the input side of the optoisolators. Most CMOS and open collector TTL devices are directly compatible with this drive. If you are using open collector outputs, no pull up resistor is necessary.

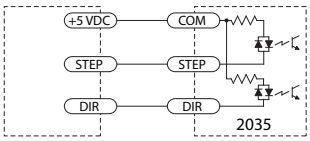


STEP tells the driver when to move the motor one step.
DIRECTION signals which way the motor should turn.
ENABLE allows the user to turn off the current to the motor by setting this signal to logic 0.
If you have no need to disable the amplifiers, you don't need to connect anything to the ENABLE input.

Connecting to a controller with a differential output

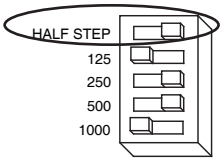


Connecting to controller with a single ended output



Selecting Between Full and Half Step Operation

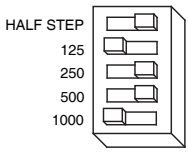
The top switch in the bank of DIP switches selects between FULL and HALF step operation. The diagram shows the drive in FULL step operation.



Setting Phase Current

The drive uses a combination or DIP switches to set the current. There is always a base of current of 125 mA. To add to that, slide the appropriate switches toward their labels.

Example
Suppose you want to set the driver for 1.25 amps per phase (1250 mA). You need the 125 mA base current plus another 1000 and 125 mA.
1250 = 125 + 1000 +125
Slide the 125 and 1000 mA switches toward the labels as shown in the figure.

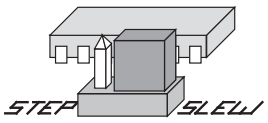


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Flip Over

Using the Oscillator

Drives with an O suffix are equipped with internal pulse generators that you can use to drive the motor. To set the drive to oscillator mode, simply find the jumper located near the center of the printed circuit board and move it to the SLEW setting. The figure at the right shows the proper setting of the jumper.



The oscillator is activated by driving the STEP input low. The frequency of step pulses will increase linearly, accelerating the motor until it reaches a preset slewspeed. The motor will remain at this speed until the STEP input is driven high. The step pulse frequency then decreases linearly, decelerating the motor and load to rest.

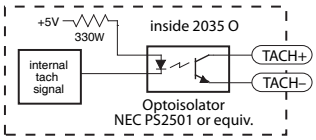
To change the slew speed, locate the trimpot labeled SPEED. By turning the brassscrew you can raise or lower the speed within a range of 0 to 5000 steps per second. Turning the screw clockwise makes the motor run faster.

The acceleration and deceleration rates can also be adjusted using the trimpotslabeled ACCEL and DECEL. The range of accel and decel time is 5 to 900 milliseconds. Turning the screw clockwise makes the motor accelerate and decelerate faster. **The ACCEL and DECEL pots are single turn, so don't try to turn them too far.**

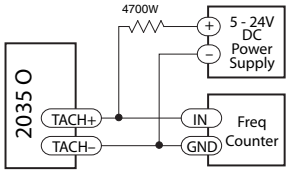
Tach Output

The Tach Out signal is provided for measuring the motor speed. It generates one pulse per motor step. The schematic diagram of the Tach Out optoisolation circuit is shown below.

Do not connect the Tach output to more than 24VDC.
The current into the Tach+ terminal must not exceed 20 mA.



Internal Tach Circuit



Connecting Tach Output to a Frequency Counter

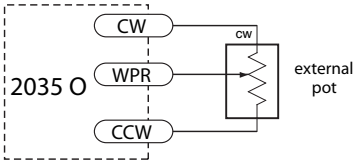
Using a Remote Speed Control Potentiometer

The 2035 O step motor driver includes an analog signal input connector that can be used to control the oscillator speed externally. Normally, an on board potentiometer controls the speed.

You will need:
• a 10k to 100k ohm linear potentiometer. A multiturn type is recommended.
• a shielded, three wire cable

To install the external pot:
• move switch #1 toward the EXTSPEED label. That disconnects the on board pot.
• wire your pot to the 2035 O:
- the potentiometer wiper connects to the WPR terminal
- the potentiometer CW terminal connects to the CW terminal
- the third pot terminal connects to the CCW terminal
- the cable shield connects to the CCW terminal

With this arrangement, speed will increase as you turn the external pot clockwise. The frequency range will be 0 to 5000 steps per second.
The on board trimpots will still control acceleration and declerations times. Turning the pots clockwise makes the acceleration and deceleration faster (i.e. reduces the time to or from speed).

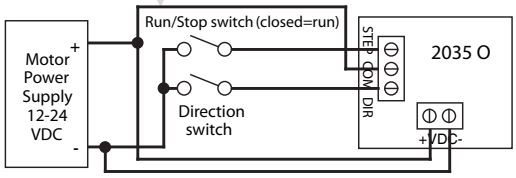


The Using Mechanical Switches with 2035 O Drive

The 2035 O was designed to be used with active logic and for that reason has optically isolated inputs. To activate the optoisolators a small, but not insignificant amount of current at 5 to 24 volts DC is required.

In some applications, step motors and drives are used with mechanical switches only and there is no readily available source of 5 - 24 volts.
In these instances, the motor power supply can be used if it does not exceed 24VDC. The recommended wiring diagram is shown below.

Check your wiring carefully before turning on the power supply!



Current Reduction

The 2035 and 2035 O drives include a feature that automatically reduces the motor current by 50% when the motor is not moving. This is known as idle current reduction.
If you want full current all the time, move the switch away from the 50% IDLE label.



50% Idle Current



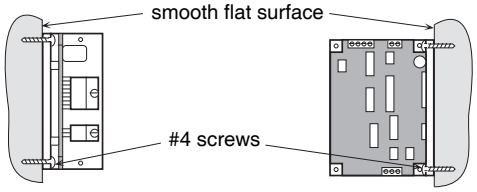
No Idle Current Reduction

Choosing a Power Supply

To find out how to choose a power supply refer to the tech notes on our website.

Mounting the Drive

You can mount your drive on the wide or the narrow side of the chassis. If you mount the drive on the wide side, use #4 screws through the four corner holes. For narrow side mounting applications, you can use #4 screws in the two side holes.



wide side mount **narrow side mount**

Never use your drive in a space where there is no air flow or where other devices cause the surrounding air to be more than 50°C. Never put the drive where it can get wet or where metal particles can get on it.

Technical Specifications

Amplifiers

Dual, bipolar H-bridge, pulse width modulated switching at 20kHz. 12-35 VDC input. 0.125 - 2.5 amps/phase output current,switch selectable in 0.125 A increments. 70 watts maximum outputpower. Automatic idle current reduction, reduces current to 50%of setting after one second

Oscillator (O suffix)

0 to 5000 steps per second. Linear acceleration and deceleration, individually adjustable from 5 to 900 msec.

Inputs

Step, direction and enable, optically isolated, 5-24V logic. 2200 ohms input impedance. Motor steps when STEP input turns off.
10 µsec minimum low pulse. 50 µsec minimum set up time for direction signal.
Step input is run/stop in oscillator mode. (0 =run, 1 = stop.)

Tach Output (O suffix)

Optically isolated. Uncommitted (open collector, open emitter) phototransistor, 24V max, 20 mA max. One pulse per step.

Physical

Mounted on 1/4 inch thick black anodized aluminum heat transfer chassis. 1.5 x 3.0 x 4.0 inches overall. Power on LED.
Maximum chassis temperature: 70°C. Weight: 9 ounces (250 g).
Ambient temp range (operating): 0 - 70°C.

Connectors

European style screw terminal blocks.
Power Supply: 2 position.
Motor: 4 position.
Signal Input: 4 position (2035), 9 position (2035 O)
Max wire size: AWG 16.

CE

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