

DM8007

Installation Instructions

PLEASE READ FIRST BEFORE USING THE DM8007!

Before you start, you must have a suitable step motor, a DC power supply suitable for the motor and a current set resistor (if you order motors with connectors, the proper resistor will already be installed). The motor's rated phase current must be between 1 Amp and 7 Amps. The power supply voltage must be between 4 times and 20 times the motor's rated voltage. The current set resistor may be a 1/4 Watt, 5% part. Finally have a STEP and DIRECTION pulse source available.

DM8007 TERMINAL WIRING

(TERM. 1) POWER GROUND Connect the power supply ground to term. 1

(TERM. 2) +24 TO 80 VDC Connect the power supply "+" to this terminal

The power supply voltage must be between 24 VDC and 80 VDC. The maximum power supply current required is 67% of the motor's rated phase current. An unregulated power supply may be used as long as the voltage stays between the limits; keep the ripple voltage to 10% or less for best results.

CAUTION! Power supply voltage in excess of 80 VDC will damage the DM8007.

If the power supply is more than 1 foot (300 mm) away from the G201, a 470 uF capacitor must be connected across the G201's power supply terminals. Keep the capacitor lead length to 1 inch (25 mm) or less.

The choice of power supply voltage depends on the high speed performance required of the motor; doubling the voltage doubles the motor's high speed power. In all cases the power supply voltage should be no less than 4 times or no more than 25 times the motor's rated voltage. The motor may not run as smoothly as possible if the power supply voltage is less than 4 times the motor's rated voltage. A power supply voltage greater than 25 times the motor's rated voltage will overheat and damage the motor, even if it is not turning. Motor winding inductance should be 500 uH or greater.

(TERM. 3) PHASE A Connect one motor winding to this terminal

(TERM. 4) PHASE B Connect the other end of the winding to this terminal

(TERM. 5) PHASE C Connect the other motor winding to this terminal

(TERM. 6) PHASE D Connect the other end of the winding to this terminal

One motor winding connects to term. 3 and 4, while the other winding connects to term. 5 and 6. Turn the power supply off when connecting or disconnecting the motor. If the motor turns in the wrong direction, reverse the motor winding connections to term. 3 and 4.

CAUTION! Do not short the motor leads to each other or to ground; damage will result to the DM8007. 4-wire, 6-wire and 8-wire motors may be used. When 6-wire motors are used, they may be connected in half winding or full winding. This is equivalent to an 8-wire motor connected in parallel or series. If a motor is connected in series or full winding, the motor's phase current rating is half of its parallel or unipolar rating. The choice depends on the high-speed performance required; a parallel-connected motor will provide twice the power of a series-connected motor at the same power supply voltage.

(TERM. 7) DISABLE

Shorting this input to ground (term. 7 to 12) forces winding currents to zero and stops all output switching activity. The G201 will continue totalizing step and direction inputs if any are sent. The power supply current drops to less than 15 ma. The motor will return to its original position when the disable input is released if no step pulses have been sent and the motor has not been moved more than 2 full steps.

MicroKinetics Corporation

Sales (770) 422-7845

Fax (770) 422-7854

2117-A Barrett Park Drive, Kennesaw, Georgia 30144

(TERM. 8) DIR Connect the DIRECTION line to this terminal.

(TERM. 9) STEP Connect the STEP line to this terminal.

(TERM. 10) +5VDC Connect this terminal to the controller +5VDC power supply

These inputs are optically isolated from the rest of the drive. Tem. 10 is the common anode connection for the opto-isolators and must be connected to the +5 VDC supply of your indexer or pulse generator. These inputs are meant to be driven by standard TTL logic or other driver capable of sinking 16 mA of current. The minimum logic "0" time is .5 uS while the minimum logic "1" time is 4 uS. Microstepping occurs on the falling edge of the step input.

(TERM. 11) CURRENT SET Connect the current set resistor to this terminal

(TERM. 12) CURRENT SET Connect the other end of the current set resistor to this terminal

This input programs the DM8007's current output to the motor windings. The DM8007 will accommodate motor winding currents from 1 amp to 7 amps. Use the following equation to calculate the value, (in kilo-ohms)

of the current set resistor: **$R \text{ (in kilo-ohms)} = 47 * \text{Amps} / (7 - \text{Amps})$**

HEATSINKING: The DM8007 needs heatsinking for current settings greater than 3 amps. The case temperature (measured on the bottom plate) should not exceed 70 degrees C, and for best life should be kept to 50 degrees or less. Use heatsink compound between the DM8007 and the heatsink.

CAUTION! Current settings above 3 Amps without a heatsink will result in damage to the DM8007.

ADJUST: This trimpot adjusts the motor for the smoothest possible low-speed operation. Set the motor speed to about 1/4 revolution per second, then turn the trimpot until a distinct null is noted in the motor's vibration. This will result in the most even microstep placement for a given motor and power supply voltage.

SPECIFICATIONS:

Drive Circuit	Constant current
Chopping rate	20 KHz
Operating voltage range	24-80 VDC
Output current	1 to 7 amps
Stepping mode	1/10 step
Step input signal	TTL compatible negative edge trigger
Direction input signal	TTL compatible
Motor control outputs	4 screw terminal connections
Current capability	7 amps per phase continuous
Physical dimensions	2.5 x 2.5 x 0.85
Working temperature range	0° to 70° C
Warranty	1 year parts & labor