

G201 REV-5 INSTALLATION NOTES:

(March 28, 2002)

Thank you for purchasing the G201 drive. The G201 microstep drive is warranted to be free of manufacturing defects for 1 year from the date of purchase. Also anyone who is dissatisfied with it or is unable to make it work will be cheerfully refunded the purchase price if the G201 is returned within 15 days of the purchase date.

PLEASE READ FIRST BEFORE USING THE G201

Before you start, you must have a suitable step motor, a DC power supply suitable for the motor and a current set resistor. The motor's rated phase current must be between 0.3 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.

G201 TERMINAL WIRING

POWER SUPPLY HOOKUP

(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. The drive has a 2 second power-on reset time before the motor is energized.

CAUTION! Power supply voltage in excess of 80 VDC will damage the G201.

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

Connect one motor winding to terminals 3 and 4. Connect the other winding to terminals 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 terminals 3 and 4.

CAUTION! Do not short the motor leads to each other or to ground; damage will result to the G201.

4-wire, 6-wire and 8-wire motor 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.

(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. Term. 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 G201A's current output to the motor windings. The G201 will accommodate motor winding currents from 1 to 7A and 0.3 to 2A. Use the following equation to calculate the value, (in kilo-ohms) of the current set resistor:

R (in kilo-ohms) = $47 * I / (7 - I)$ or for the low current range, $R = 47 * I / (2 - I)$

HEATSINKING: The G201 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 G201 and the heatsink.

CAUTION! Current settings above 3 Amps without a heatsink will result in damage to the G201.

OPTION JUMPER BLOCK: The G201 has four settable options. These options are enabled/disabled via the jumper block shunt settings. See the diagram below for how to set the shunts. The four options are described below.

(1) AUTO CURRENT REDUCTION: The G201 reduces motor phase current to 33% of the set value when the motor is stopped. If enabled, this reduction occurs 1 second after the last step pulse is sent to the drive. Auto current reduction can be enabled or disabled.

(2) REDUCED CURRENT RANGE: In addition to the normal current range (1A to 7A), the G201 can also operate over a reduced current range (0.3A to 2A). This range is used for motor phase currents of less than 1A. Auto current reduction is not available for this reduced current range.

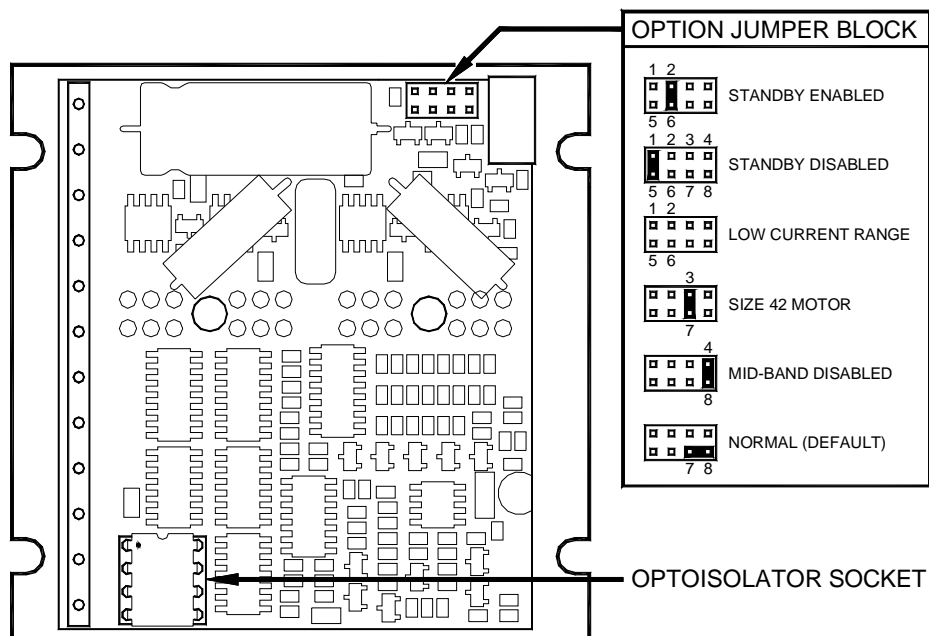
(3) NEMA-42 MOTOR: Use this option if the drive is to be used with NEMA-42 frame size motors. This option adjusts the mid-band compensation circuit for optimum performance with this size motor.

(4) MID-BAND COMPENSATION DISABLE: Some step pulse sources generate very "ragged" timing. If the pulse-to-pulse period varies by more than +/-30%, the drive may have problems counting that step pulse. This option disables the mid-band compensation circuit, making the drive insensitive to this timing restriction. As a consequence, the motor may exhibit mid-band instability problems.

ADJUST: This trimpot adjusts the motor for the smoothest possible low-speed operation. Set the motor speed to about 1/4 revolution per second, and 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.

CONVERTING THE G201 TO A G210: The G201 can be converted to a G210 by installing the G901 step pulse multiplier board. Remove the cover of the drive, and then use a small pair of needle-nose pliers to remove the opto-isolator from its socket. Plug the G901 board into this socket and replace the cover.

MAIN CONNECTOR: The G201 uses a 2-piece modular main connector. The connector is split in two pieces; terminals 1 thru 6 (power supply and motor leads) and terminals 7 thru 12 (control interface). Each can be removed separately by pulling the connector body upwards and off of the mating header pins on the G201. The connectors must initially be removed to mount the G201 to a heatsink or chassis.



SPECIFICATIONS:

Supply Voltage:	24 to 80 VDC
Phase Current:	1 to 7 Amps and 0.3 to 2 Amps (2 ranges)
Auto Current Reduction:	33% of set current, 1 second after last Step Pulse
Size:	2.5"W, 2.5"D, .85"H (63.5mm, 63.5mm, 21.5mm)
Mounting Pattern:	4 6-32 screws, 1.75" by 2.375" (44.5 mm, 60 mm)
Quiescent Current:	15 Ma or less
Weight:	3.6 oz. (100 gm)
Step Frequency:	0 to 200 kHz
Step Pulse "0" Time:	0.5 uS min (Step on falling edge)
Temp:	0 to 70 C
Step Pulse "1" Time:	4 uS min
Humidity:	0 to 95 % (non-condensing)
Direction Setup:	1 uS min (20 uS min hold time after Step edge)
Power Dissipation:	1 to 18 W (1 to 7 Amps)

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G201A 10 uStep Drive

Cover: Aluminum, Anodized
Plate: Aluminum, Hard Anodized
Color: Black, Yellow Text
Weight: 3.6 oz (100 gm)
Size: 2.5" X 2.5" X 0.825"
(63.6 X 63.5 X 21 mm)

