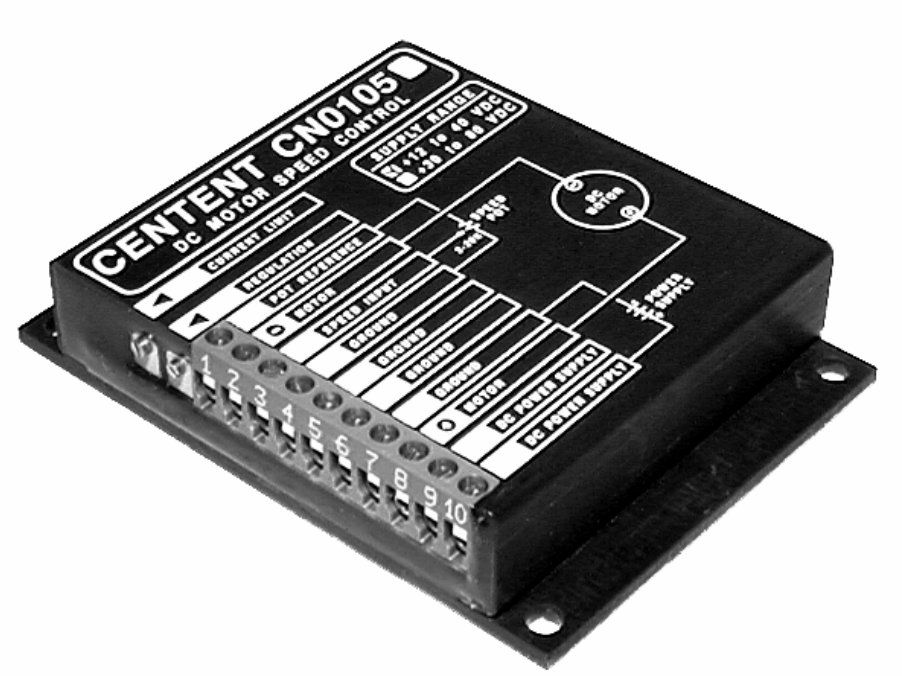
CN0105

DC MOTOR SPEED CONTROL



CENTENT COMPANY

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This manual contains information for installing and operating the following Centent Company product:

- CN0105 Speed Control for DC permanent magnet motors

GENERAL DESCRIPTION

The CN0105 is a high efficiency switching type speed control for direct current permanent magnet motors. It is designed for operation from DC power sources (batteries or filtered bridge rectifier circuits).

The CN0105 is available with a supply voltage range of 12-40 VDC or 30-80 VDC. In addition to supply voltage, the armature resistance of the motor must be specified. Use the following table to select the correct part number when ordering the CN0105 speed control:

PART NUMBER	SUPPLY VOLTAGE	ARMATURE RESISTANCE
CN0105	12-40 VDC	0-5 OHMS
CN0105A	12-40VDC	0-50 OHMS
CN0105B	30-80 VDC	0-5 OHMS
CN0105C	30-80 VDC	0-50 OHMS

All versions are rated for 10 amperes maximum load current. The control input voltage range for all versions is from 0-5 VDC. A voltage reference output is provided for operation with a potentiometer (2-20K ohm).

HEAT SINKING

The mounting plate also serves as a heat sink for the control. When operating the CN0105 at high power levels additional heat sinking is required. Care must be taken to insure adequate cooling to keep the CN0105 temperature below +70°C. Operation above this temperature will result in damage to the CN0105.

INSTALLATION

No terminals or connectors are required on the wiring to the CN0105. The recommended wire size is 16-22 gauge. The pin assignments and functions are described in the following sections.

MOTOR OUTPUTS *ERMINALS 2 & 8*

The positive motor lead goes to Terminal 8 and the negative motor lead goes to Terminal 2. The maximum motor current is 10 amps.

SPEED INPUT *TERMINAL 3*

Terminal 3 is the speed control input to the control. Connect this terminal to the wiper of the Speed potentiometer as illustrated on the cover of the control. The Speed potentiometer resistance should be 2K-20K ohms. If a control voltage is used instead of a speed potentiometer, the range is 0-5 VDC.

POT REFERENCE *TERMINAL 1*

Terminal 1 is the voltage reference output for the Speed potentiometer. Use a 'linear taper' potentiometer. Connect one end of the 2-20K potentiometer to this terminal. If a control voltage is being used instead of a potentiometer, leave this terminal unconnected.

DC POWER SUPPLY *TERMINALS 9 & 10*

The positive power supply input is connected to Terminal 10. A battery or regulated supply is required. The power supply voltage range is 12-40 VDC or 30-80 VDC, depending on the version ordered. The supply range for each control is indicated on the cover of the CN0105.

Exceeding the rated voltage of the CN0105 will result in damage to the control.

CURRENT LIMIT TRIMPOT

The Current Limit and Regulation trimpots are located on the front face of the CN0105 adjacent to the Input/Output Connector. The Current Limit Trimpot sets the maximum current level of the CN0105. To increase the current turn the Trimpot screw clockwise. This is a 15-20 turn trimmer, turning the screw more than 20 turns in either direction will not increase or decrease the current setting.

REGULATION TRIMPOT

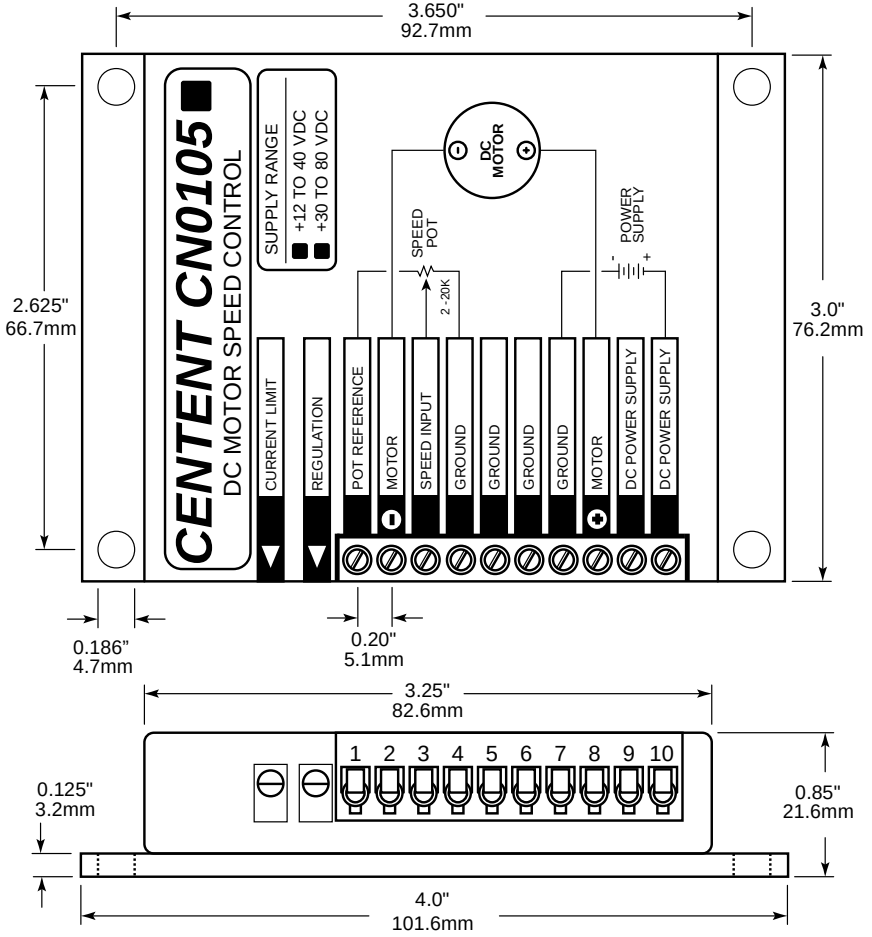
Proper adjustment of the Regulation Trimpot will ensure that the motor speed is independent of the torque load. When trimmed correctly the CN0105 will not vary in speed by more than 2% from no load to full load.

The following procedure is used to adjust the CN0105:

1) Before attempting to set the speed regulation, first turn the Current Limit Trimpot clockwise as far as it will go (no more than 20 turns).

2) If the motor slows down with increasing load, turn the Regulation Trimpot clockwise to increase regulation. If the motor cogs or pulses, indicating over-regulation, turn the Regulation Trimpot counter-clockwise until the cogging stops. Adjust the Speed Regulation Trimpot as needed to get speed of the unloaded motor equal to the speed of the motor under full load.

3) Connect an ammeter in series from Terminal 8 to the positive motor lead. With the motor running under maximum load adjust the Current Limit Trimpot until the measured current equals the desired current limit. Turn the Current Limit Trimpot counter-clockwise to lower the limit and clockwise to raise it.



SPECIFICATIONS

ELECTRICAL	MIN.	MAX.	UNIT
Power Supply Voltage			
CN0105, CN0105A	12	40	VDC
CN0105B, CN0105C	30	80	VDC
Load Current	0	10	A
Speed Regulation	--	2	%
Control Input Voltage	0	5	V
Armature Resistance			
CN0105, CN0105B	0	5	ohm
CN0105A, CN0105C	0	50	ohm
ENVIRONMENTAL	**MIN.**	**MAX.**	**UNIT**
Operating Temperature	-40	+75	ºC
Weight	300	400	gram
Terminal Screw Torque		4.5	lb/in