

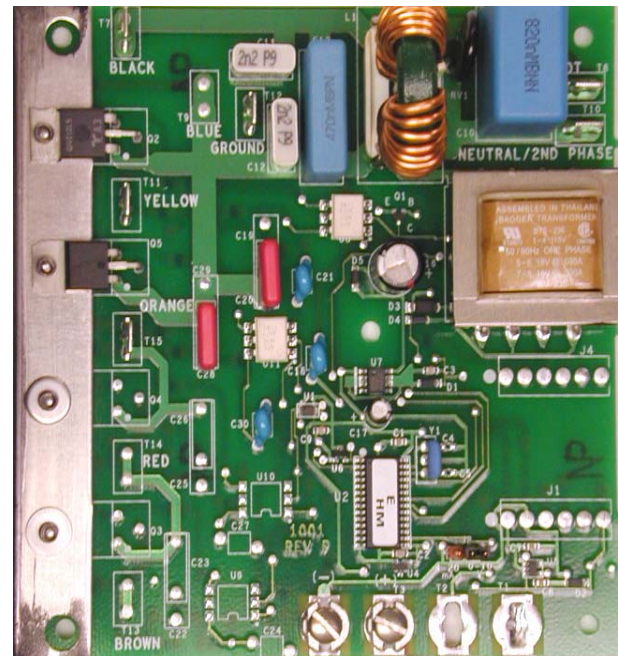
VSM-CA2 VARIABLE SPEED MOTOR CONTROLLER Analog input

APPLICATION

The Varidigm Variable Speed Motor Controller with analog input provides variable speed output to single speed or multi-tap Permanent Split Capacitor (PSC) motors in response to an analog (0–10 Volt DC or 4 – 20 maDC) signal from the building automation system or other source.

This controller is designed for use with most standard Definite Purpose, Permanent Split Capacitor (PSC) Frame 42, Frame 48, and 3.3 inch diameter motors ranging from 1/20 to 3/4 HP. Controllers are available for 120V, 240V, and 277V, 60 Hz motors.

This Varidigm controller provides a wider speed range than traditional multi-tap motors.



FEATURES

- Cuts building operating cost through reduced power usage.
- Provides continuously variable motor speed in response to 0 -10 VDC or 4 - 20 maDC input signals.
- Interfaces with typical building controls.
- Incorporates soft start and soft transition between speeds, reducing objectionable device noise.
- Improves comfort by providing continuous air circulation at off-peak use times.
- Lower first cost when compared with inverter type controllers.
- For use with most PSC AC induction motors.
- UL/CUL component recognized.

SPECIFICATIONS

CONTROLLER MODELS:

V | S | M | - | C | A | 2 | - | 1 | 2 | 6 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | - | 0 | (Example)

Series Number

Customer Special Options

Input # 5 0 = Not Used
 Input # 4 0 = Not Used
 Input # 3 0 = Not Used
 Input # 2 0 = Not Used

Input # 1 Setpoint Adjustment:
 0 = 0 - 10 VDC, 4 = 4 - 20MA,
 7 = Remote Pot

Voltage: 126 = 120VAC - 60HZ,
 246 = 240VAC - 60HZ,
 276 = 277VAC - 60HZ

Product: C = Controller
 Type of Control: A = Analog
 Output Type: 2 = Dual Triac

Family: VSM = Motor Control

NOTE: Most standard PSC motors can be used with this controller by making minor external changes to the motor hookup. Refer to Varidigm Form 1006 for details.

SPEED RANGE:

2:1 turndown is typical and can vary with the application. Contact Varidigm for details.

SETTING RESOLUTION:

0.1 VDC (0.1 mADC) minimum

AMBIENT TEMPERATURE RATING:

-40 °C to 70 °C (-40°F to 160°F)

SETPOINT INPUTS:

Input	Controller Response	Jumper J2
0 - 10 Volt DC	Off 0 to 1 V Modulates 1 to 9 V Full On 9 to 10 V	0-10V
4 - 20 mADC	Off 0 to 2 mA Modulates 2 to 18 mA Full On 18 to 20 mA	4-20 mA
Remote Pot	Off 0 to 10% Modulates 10 to 90% Full On 90 to 100%	Not field selectable

MOTOR LOAD CURRENT:

Still air environment

Ambient Temperature (°C)	120 V	240 V or 277 V
	Max Current (Amps)	Max Current (Amps)
20	13.5	10.0
30	12.1	10.0
40	10.7	10.0
50	9.3	9.3
60	7.8	7.8
70	6.5	6.5

Locked Rotor

120V

240 / 277V

22.5A

15A

Higher ambients are permissible in moving air. Contact Varidigm for assistance.

POWER SUPPLY:

120V, 60 Hz, 1 phase (102 to 132 VAC),
 240V, 60 Hz, 1 phase (204 to 264 VAC),
 277V, 60 Hz, 1 phase (235 to 305 VAC)

Controller and motor must have same power supply rating.

WIRING

WARNING

Disconnect and branch circuit protection required per NEC and local codes.

Disconnect/Breaker Protection

External overcurrent and disconnect means must be provided in accordance with the NEC and local codes. A 20 amp time-delay fuse or breaker protecting the motor/controller is recommended.

CAUTION

1. Wire size must be selected to have capacity to handle the maximum motor current.
2. Insulated female quick connects must be used to connect the field power wiring to the control.
3. All wiring must be secured so that it does not contact moving parts.

INSTALLATION

WHEN INSTALLING THIS PRODUCT:

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check ratings given in instructions and on product to make sure product is suitable for the application.
3. Installer must be a trained experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

Controller carries line voltage. Suitable interlocks must be used to protect service personnel.

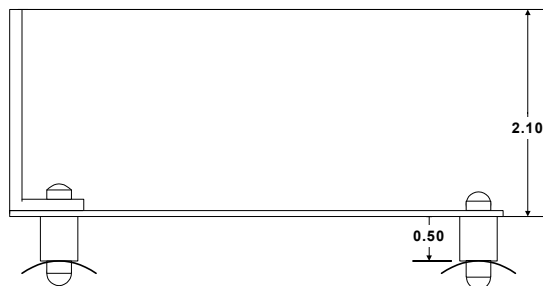
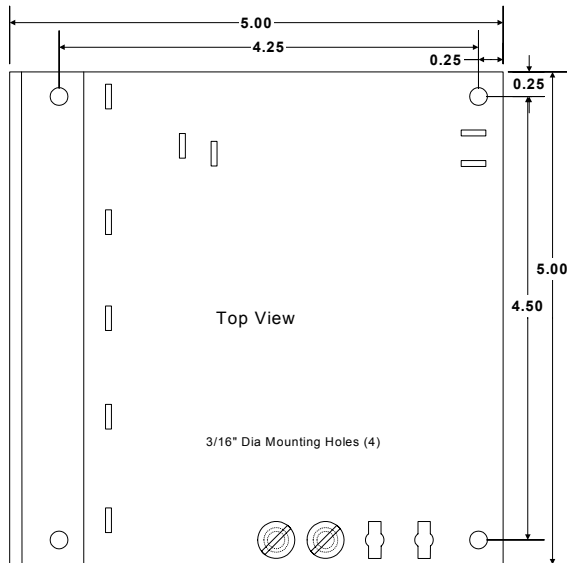


Figure 1
Mounting dimensions (inches)

CONNECTIONS

The motor is connected to ¼ in. male quick connect terminals on the control as follows:

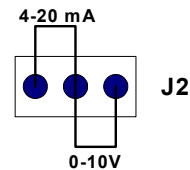
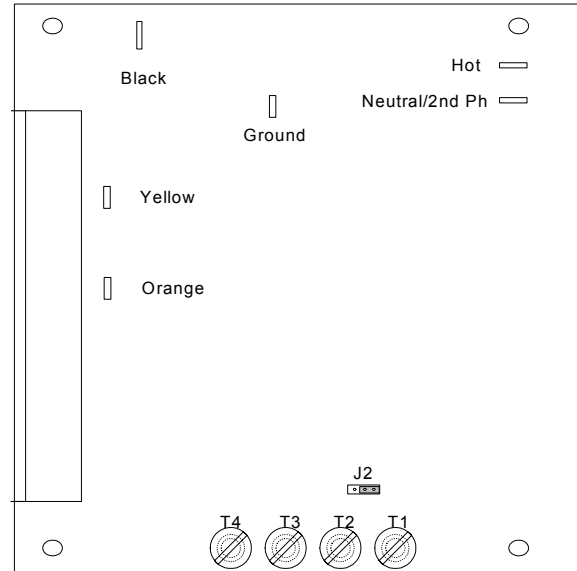


Figure 2
Wiring terminal locations and
jumper locations

SETTING AND CHECKOUT

1. Set jumper for control input: 0 –10 VDC, 4 –20 maDC, remote 20K potentiometer.
2. Energize motor and controller by turning on power source.
3. Adjust system control so that it provides a setpoint signal of either: 0-10 VDC or 4-20 mADC at terminals T3 and T4; or a 20K potentiometer across terminals T2 and T4 with wiper connected to T3.
4. Motor must start and increase speed proportionally to the input signal.
5. Adjust setting up or down to verify that motor/control responds to changing control signal (i.e. if voltage or current input increases, then speed should increase).

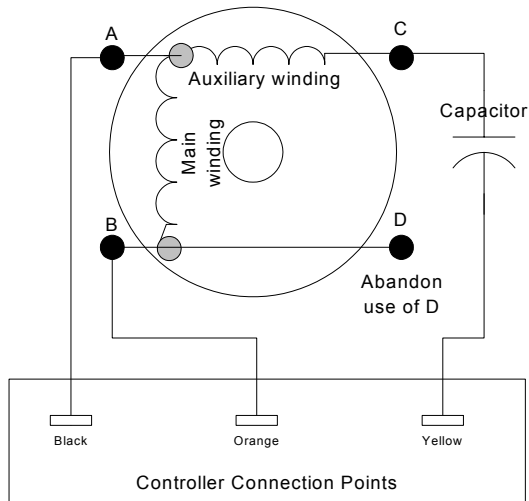


Figure 3
Wiring connections for VSM-CA2 with standard PSC motor

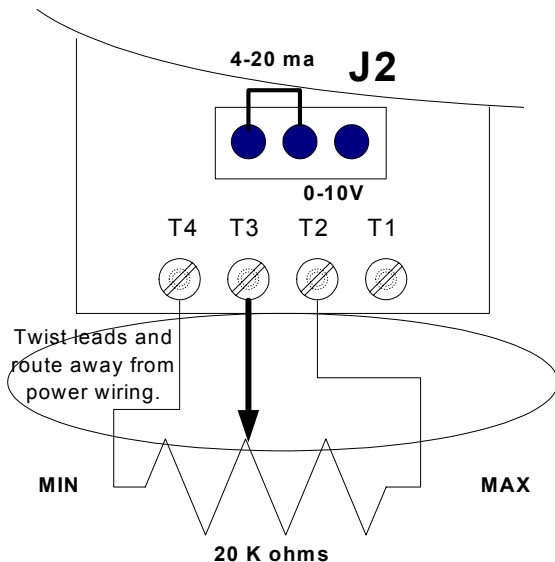


Figure 4
Connections for Remote Potentiometer

IMPORTANT

Motor horsepower must be selected so that high speed operation loads the motor to the rated maximum speed. If the motor selected is too powerful for the application, it will not respond correctly to the control input signal.

Note: When using a 230 or 277 volt multi-tap motor, the motor must have a built-in isolation lead. This prevents excess voltage across unused taps. Single speed motors do not require an isolation lead. Any speed tap (High, Medium, Low) can be used to further optimize the speed control over the full speed range. For maximum speed always attach black terminal to the high-speed tap.

LOCATION

Choose a location where the ambient temperature will not exceed the temperature rating of the controller and where it is protected from moisture and combustion condensate.

MOUNTING

The controller is furnished with 4 plastic mounting stand-offs. These are designed to snap into four (4) 3/16 in. diameter holes in the mounting surface. The mounting plate can be up to .063 in. thick.

ENCLOSURE REQUIRED

800 in³, (10 in. x 10 in. x 8 in.), or larger metal enclosure is required to meet temperature rise requirements. The enclosure should meet appropriate NEMA enclosure requirements.

UL/CUL COMPONENT RECOGNIZED:

UL 508, File No. E221364

ORDERING INFORMATION

The VSM-CA2 can be used with most standard PSC motors. Refer to Varidigm Form 1006 for details on how to determine if your standard PSC motor is compatible with the Varidigm Controller. Order motor separately.

ORDER FROM

Varidigm Corporation
3070 Ranchview Lane
Plymouth, MN 55447 USA
Tel: (763) 258-0170 Fax: (763) 258-0411
E-mail: sales@varidigm.com
www.varidigm.com



Varidigm Corporation

3070 Ranchview Lane
Plymouth, MN 55447 USA

Tel (763) 258-0170
Fax (763) 258-0411
email: sales@varidigm.com
www.varidigm.com