



# MOTORTRONICS™

## Solid State AC Motor Controls



# VCM Series

**Sensorless Vector**

**AC Drive**

0.5-75HP

200-480 Volts



- Sensorless Vector or V/Hz control
- Simplicity by design
- 150% starting torque
- Full protection
- Flexible I/O
- PID function
- RS485 communications

**The ideal AC drive...**

**Full featured, yet easy to use!**

# Simplicity by Design

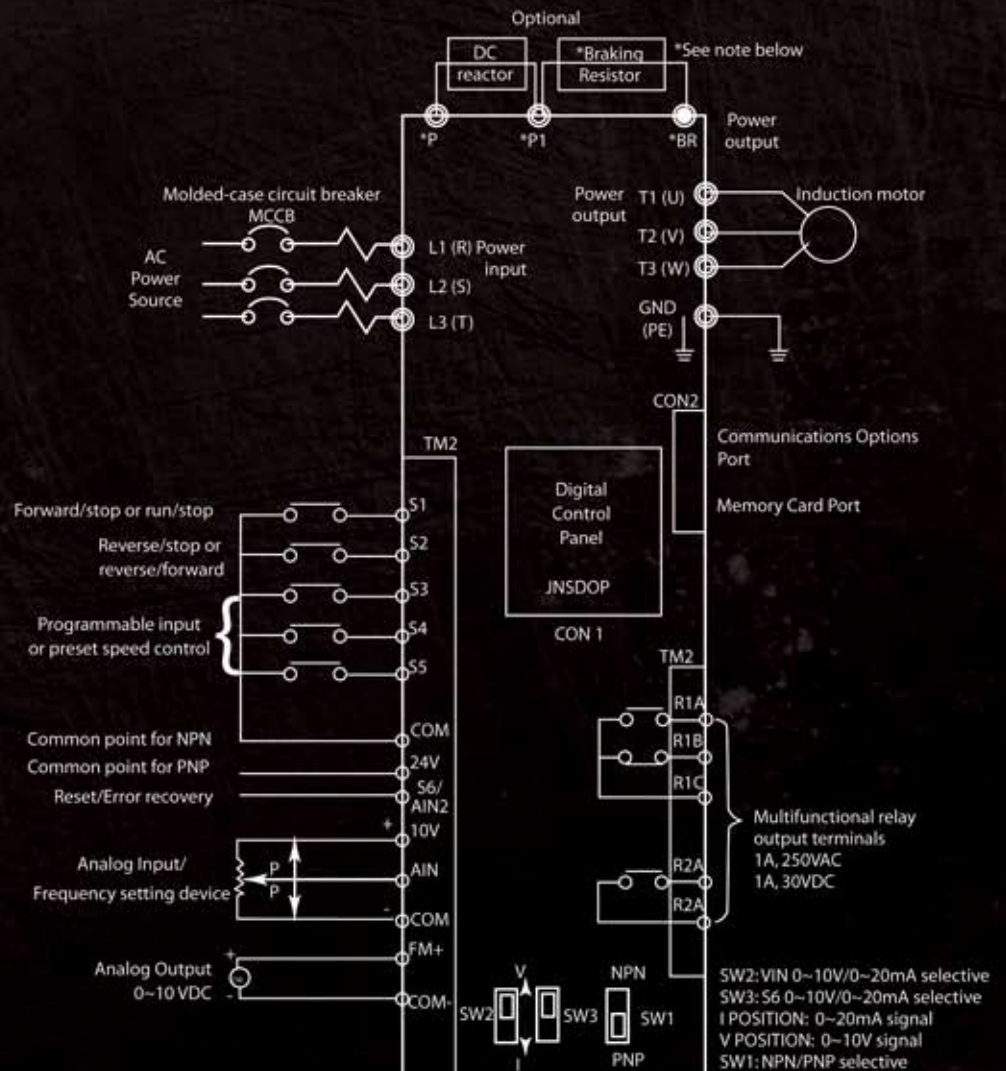


**VCM Series** is a compact, cost-effective drive with features typically found only in more complex and expensive AC drives. This full featured sensorless vector drive is recognized for being simple to set up, program and operate. Available in ratings from 0.5 to 75HP, the VCM Series is ideally for nearly any application. The convenient operator panel provides simple, yet informative interface during setup and operation. The tactile feedback keypad is used for programming the drive and motor speed can be controlled using either the keypad or the handy, built-in potentiometer. The alphanumeric display indicates operation, status and fault read-out and is easily visible in low ambient light conditions. In addition, LED indicators provide direction of rotation, operating status and drive output information. An optional two-line LCD display is available.



## TYPICAL WIRING DIAGRAM

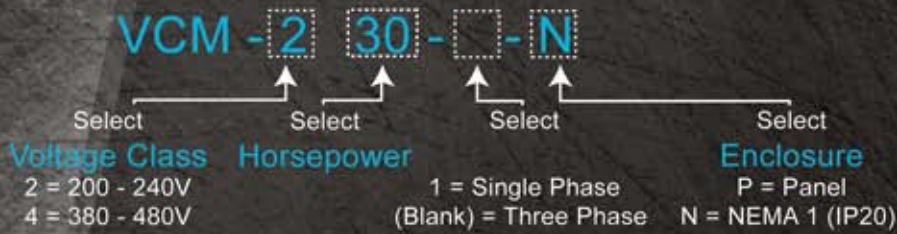
Wiring the VCM Series drive to your motor is easy. Simply decide how you want to control it, how the field connections should be terminated and program the drive to suit your needs.



\* Note: Diagram applies to models rated up to 10HP at 240V and 15HP at 480V. Contact factory for power schematic for larger sizes.



# How to Order



## VCM Series

| Input Voltage              | Model Number | Rated Output Current | HP  | KW    | Dimensions |       |       |
|----------------------------|--------------|----------------------|-----|-------|------------|-------|-------|
|                            |              |                      |     |       | H          | W     | D     |
| Single Phase<br>200 - 240V | VCM-2P5-1-P  | 3.1                  | 0.5 | 0.4   | 6.42       | 3.55  | 5.79  |
|                            | VCM-201-1-P  | 4.5                  | 1   | 0.75  | 6.42       | 3.55  | 5.79  |
|                            | VCM-202-1-P  | 7.5                  | 2   | 1.5   | 7.37       | 5.04  | 5.83  |
|                            | VCM-203-1-P  | 10.5                 | 3   | 2.2   | 7.37       | 5.04  | 5.83  |
| Three Phase<br>200 - 240V  | VCM-2P5-P    | 3.1                  | 0.5 | 0.4   | 6.42       | 3.55  | 5.79  |
|                            | VCM-201-P    | 4.5                  | 1   | 0.75  | 6.42       | 3.55  | 5.79  |
|                            | VCM-202-P    | 7.5                  | 2   | 1.5   | 6.42       | 3.55  | 5.79  |
|                            | VCM-203-P    | 10.5                 | 3   | 2.2   | 7.37       | 5.04  | 5.83  |
|                            | VCM-205-P    | 17.5                 | 5   | 3.7   | 7.37       | 5.04  | 5.83  |
|                            | VCM-207-P    | 26                   | 7.5 | 5.5   | 10.24      | 7.33  | 7.68  |
|                            | VCM-210-P    | 35                   | 10  | 7.5   | 10.24      | 7.33  | 7.68  |
|                            | VCM-215-N    | 48                   | 15  | 11    | 14.18      | 10.44 | 9.77  |
|                            | VCM-220-N    | 64                   | 20  | 15    | 14.18      | 10.44 | 9.77  |
|                            | VCM-225-N    | 80                   | 25  | 18.5  | 14.18      | 10.44 | 9.77  |
| Three Phase<br>380 - 480V  | VCM-230-N    | 96                   | 30  | 22    | 25.69      | 10.60 | 10.91 |
|                            | VCM-240-N*   | 130                  | 40  | 30    | 25.69      | 10.60 | 10.91 |
|                            | VCM-401-P    | 2.3                  | 1   | 0.75  | 6.42       | 3.55  | 5.79  |
|                            | VCM-402-P    | 3.8                  | 2   | 1.5   | 6.42       | 3.55  | 5.79  |
|                            | VCM-403-P    | 5.2                  | 3   | 2.2   | 7.37       | 5.04  | 5.83  |
|                            | VCM-405-P    | 8.8                  | 5   | 3.7   | 7.37       | 5.04  | 5.83  |
|                            | VCM-407-P    | 13                   | 7.5 | 5.5   | 10.24      | 7.33  | 7.68  |
|                            | VCM-410-P    | 17.5                 | 10  | 7.5   | 10.24      | 7.33  | 7.68  |
|                            | VCM-415-P    | 25                   | 15  | 11    | 10.24      | 7.33  | 7.68  |
|                            | VCM-420-N    | 32                   | 20  | 15    | 14.18      | 10.44 | 9.77  |
| VCM-425-N                  | 40           | 25                   | 18  | 14.18 | 10.44      | 9.77  |       |
| VCM-430-N                  | 48           | 30                   | 22  | 14.18 | 10.44      | 9.77  |       |
| VCM-440-N*                 | 64           | 40                   | 30  | 21.79 | 10.60      | 11.98 |       |
| VCM-450-N*                 | 80           | 50                   | 37  | 21.79 | 10.60      | 11.98 |       |
| VCM-460-N*                 | 96           | 60                   | 45  | 25.73 | 12.14      | 12.17 |       |
| VCM-475-N*                 | 128          | 75                   | 55  | 25.73 | 12.14      | 12.17 |       |

Note: Dimensions are subject to change. See manual for mounting dimensions.  
\* Contact Factory for availability.

## Options

The VCM Series includes options for every configuration. Cable extension kits, LCD Keypads, Communication cards and NEMA 1 kits are available. Contact factory for more information.



RS-232 Comm



Memory Pack



RS-485 Comm



Extension cable

## KEY DESIGN FEATURES

VCM Series - .5 to 75HP, 200 to 480V ratings

### Sensorless Vector or V/Hz Control

- Maintain frequency accuracy to 0.01 Hz
- 150% starting torque, up to 200% running torque
- Autotuning for sensorless vector control

### Built-in Electronic Overload Relay

- Program to match the exact motor FLA

### Wide Frequency Output Range

- 0.1 - 400Hz with 18 selectable V/f patterns, one programmable custom curve

### Adjustable Carrier Frequency

- Up to 16kHz for low noise applications

### Heavy Duty Power Design

- 150% overload for 1 minute
- Maximizes power delivery, yet compact in size

### Flexible Speed Command Choices

- Local via keypad or built-in potentiometer
- Remote via 4-20mA, 0-10Vdc, 0-5Vdc 10k ohm potentiometer or floating point (up-down) signal

### 7 Preset Speeds for Complete Process Control

- Selectable via digital inputs

### Programmable I/O Maximizes System Design

- 6 digital inputs, 2 relay outputs
- 2 analog inputs, 1 analog output
- Analog inputs can be reconfigured for additional digital inputs

### PID Function

- 8 PID modes
- Feedback loss detection
- Sleep function
- Engineering unit display



## Small but Tough

### FRIENDLY

Not a word you often associate with industrial technology products, but it fits the VCM series from Motortronics. Known as the AC drive that is "easy to use...right out of the box," the VCM Series requires only a few simple setup steps and you are ready to run. A quick touch of the keypad or twist of the potentiometer for simple speed control... what could be easier?

Simple to use, but with the features you need... this is what the VCM Series is all about.

### HARDWORKING

#### Heavy Duty Design

Built to be a "workhorse," the VCM Series design provides maximum thermal capacity in a compact package. Sensorless Vector Control allows full motor torque down to 1Hz.

#### Braking Intelligence

Standard units provide 20% braking torque with 100% braking capability by simply adding braking transistors and resistors. The VCM Series can stop the load quickly and safely for maximum productivity.

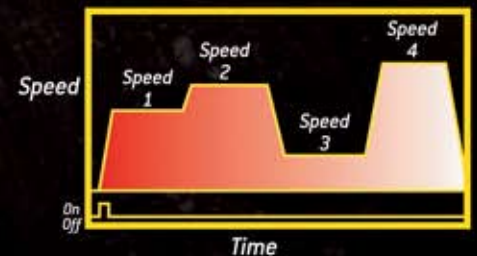
### CREATIVE

#### Built-in Process Timers

Seven timers can be used with pre-set speeds in sequential process applications for up to 60 minutes. Examples:

- Mix ingredient for 3 minutes at low, then blend at high speed for 1 hour
- Run product slowly through a conveyor oven for 12 minutes, then...
- On start command, run at set speed for 3 hours then turn off (add 3 presets together)

Timers can be setup for "on-delay" or "off-delay"



### DEPENDABLE

#### Active Stall Prevention

Automatically adjusts the output to prevent nuisance trips due to rapid load changes

#### Vibration Reduction

Three selectable skip frequencies to reduce or

THE COMPANY

Your best choice for Solid State Controls is a company that provides you with the attention, innovation and quality you deserve and these things can only come from a company dedicated to that one endeavor. We do one thing and we do it well, and with more field experience than any other motor control manufacturer that offers Solid State Controls. Our range of AC motor starting products is second to none with a commitment to quality in design.



THE PRODUCTS

At Motortronics, we believe in designing all of our products to be capable of controlling even the toughest loads. This "Heavy Duty Attitude" provides our customers with the greatest reliability, the most flexibility and the highest value for their electrical control budget.



THE PEOPLE

Motortronics headquarters in Clearwater, Florida, provides an experienced and knowledgeable Customer Service, Technical Support and Engineering staff to complement our manufacturing capabilities. Local support can also be obtained through our distributors and regional offices located in key industrial areas around the world.



No matter how you choose to start or protect your motor, you can always expect the best from Motortronics... in our products, our prices, our service and our support.



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