

MOTORTRONICS

Solid State AC Motor Controls



VC V Series

Sensorless Vector AC Drive

0.5-75HP 200-480 Volts





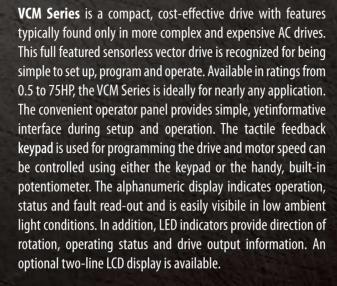
- Sensorless Vector or V/Hz control
- Simplicity by design
- 150% starting torque
- Full protection
- Flexible I/O
- PID function
- RS485 communications

The ideal AC drive...
Full featured, yet easy to use!

Simplicity by Design







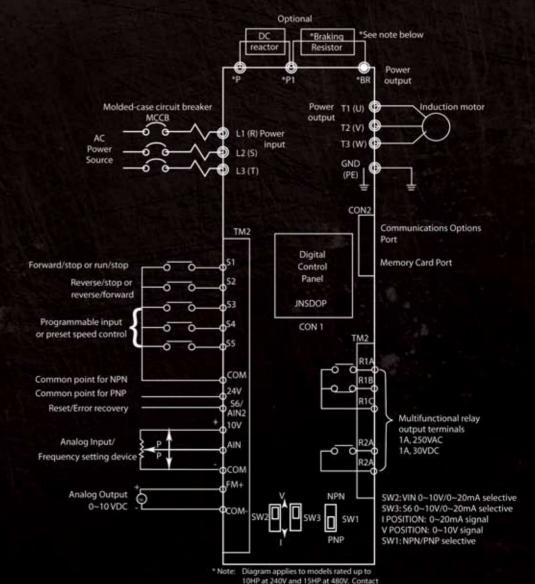


TYPICAL WIRING DIAGRAM

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.







NTROL CHARACTERISTICS

Specifications

Control Mode
Carrier Frequency
Frequency Control Range
Speed Control Precision
Frequency Resolution
Frequency Setting Signal

ACCEL/DECEL Time

Starting Torque
Braking Torque

V/f Pattern
Frequency limit function
Instantaneous Overcurrent
Overload Capacity of Drive
Motor Overload Protection
Overvoltage

Undervoltage

DC Bus Protection
Heat Sink Fin Overheat
Ground Fault Protection
Stall Prevention
Digital Inputs
Digital Relay Outputs
Built-in Functions

Momentary Power Loss

Analog Inputs

AIN1

AIN2

Analog Output (0-10 VDC)
Display function

Communications

Standard Enclosure Location and Altitude

Ambient Temperature

Storage Temperature Humidity Vibration EMC LVD Approvals Sensorless Vector Control with Auto-tuning, or V/Hz control of three phase AC motors

2 - 16 KHz

0.1 - 400 Hz

1:50 (Vector mode)

+ 0.5%

Digital: 0.01 Hz (Note 1); Analog: 0.06Hz/60 Hz (10bits)

Local: Built-in potentiometer or Up/Down keys on Operator Interface

Remote: Analog Input or multifunction contacts on terminal block (TM2)

2 separately programmable ACCEL/DECEL times

0.1 - 3600 seconds with two S-curves

Programmable DECEL or free run to stop

150%/ 1Hz (Vector mode)

Standard braking torque = 20%, 10% duty cycle (>20HP requires braking module option)

100% braking torque available with addition of optional braking resistors

18 patterns, one curve programmable

Upper/lower frequency limits, programmable skip frequencies and vibration control

Approximately 200% of unit rated current

150% for 1 minute

Programmable electronic thermal overload relay

200V Class: DC bus exceeds 410V 400V Class: DC bus exceeds 820V

200V Class: DC bus voltage drop < 190V 400V Class: DC bus voltage drop <380V

Programmable 0~2 seconds: unit can be restarted via speed search

Motor coast to stop at blown fuse Protected by thermister/thermostat

Standard on all units

Stall prevention for Acceleration/Deceleration while running

Dry contacts through internal power supply: NPN/PNP toggle

(1) FORM C, (1) FORM A, 16 functions, 250 VAC 1A, 30 VDC 1A maximum

Momentary power loss restart, speed search, overload detection, 8 preset speeds, accel/decel (2 stages), S-curves, 3-wire control, PID control, auto/manual torque boost, slip compensation, frequency upper/lower limit, auto energy savings, and auto reset

0-20ma, 0-10 VDC, or external 10Kohm potentiometer

Programmable offset and gain, positive or negative bias and slope

S6 multifunction input can be reconfigured to be 0 - 20mA or 0 -10 VDC analog input with offset/gain

Motor speed, voltage and current, DC bus voltage, PID feedback (all with gain calibration)

Four digit LED (or 2x16 LCD optional) and status indicator; display frequency/ speed/line speed/DC voltage/output voltage/current/rotation direction/

Inverter parameter/trouble log/program version

Control via RS232 or RS485 Modbus RTU

One-to-one or One-to-many (RS485 Only) control

Baud rate/Stop bit/Parity/ bit setting

NEMA 1 (IP20), Chassis (HP dependent)

Indoor (protected from gas and dust) 3,300 feet (without derating). Use in an enclosure with filtered forced ventilation, or if standalone, in a clean pollutionfree environment

Enclosed: -10°C to 40°C (14°F to 104°F)

Chassis: -10°C to 50°C (14°F to 122°F)

-10°C to 50°C (14°F to 122°F)

0-95% non-condensing

1.0 G

EN 61800-3

N 50178

UL listed and Canadian UL (cUL) listed, CE Approved

How to Order



VCM Series

Input Voltage	Model Number	Rated Output Current	HP	KW	Dimensions		
					Н	W	D
Single Phase 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 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
	VCM-230-N	96	30	22	25.69	10.60	10.91
	VCM-240-N*	130	40	30	25.69	10.60	10.91
Three Phase 380 - 480V	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.











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 thekeypad 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.

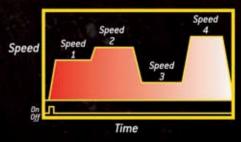
CREATIVE

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

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

Your best choice for Solid State Controls is a company that provides you with the attention, innovation andquality 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.



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.



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.



MOTORTRONICS™

Solid State AC Motor Controls

1600 Sunshine Drive Clearwater, Florida 33765 USA

Tel: 727.573.1819 or 888.767.7792 Fax: 727.573.1803 or 800.548.4104

E-mail: Motortronics@Yahoo.com

www: motortronics.com



Motortronics Int'l Korea Co Ltd #601, Daeryung Techno 5 Gasan-dong Geumcheon-gu Seoul, Korea Tel: 82-2-867-5808 Fax: 82-2-867-6004 M & P Machinery & Electronics Control 113 Zaoshan Road Qingdao, China 266100 Tel: 86-532-7660633 Fax: 86-532-7660733

www: mp-cn.com



www: motortronics-korea.com

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