VERSA DRIVES

There is more to Drives

Variable Speed Drives
VDM Series

VERSA DRIVES

Motor Control products from

COMPUTER CONTROLLS CORPORATION

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Versa Drive Module (VDM) is a frequency inverter for 3-phase asynchronous motors. VDM series are available from 0.18 kW to 2.2 kW with three types of input voltages.

- 100 V to 132 V single phase
- 200 V to 264 V single phase
- 200 V to 264 V three phase

APPLICATIONS

- Appliances – Washing machines, Floor/carpet cleaning machines, Air Conditioners, Grinders
- Door Operators – Automatic doors, elevator/lift doors, Garage doors
- Fitness Equipment
- Material Handling and conveyor systems
- Machines – Printing, packaging, plastics and more
- Textiles – cone/assembly winding machines, sewing machines and others
- Pumps & Fans

FEATURES

- Compact
- EMC filter option
- Modbus communication to connect to PLCs or Controllers
- IP20 Enclosures (Optional open frame inverter)
- Handheld programmer for setting up drives
- Saves time, drive parameters can be set without powering on

FUNCTIONS

- Controlled starting and speed control
- Acceleration, deceleration, and stopping
- Ramp down adaptation
- Reversal of motor direction
- Jogging
- DC injection braking
- Voltage boost
- Various stopping modes
- Automatic restart after fault
- Motor and drive protection
- Skip frequency
- Slip compensation
- Custom functions

VDM series specifications

VDM series common specifications

S.no	Parameter	Range / Characteristics	Unit
1	Control method	V/F	
2	Switching frequency	4/8 (selectable)	kHz
3	Output frequency	0.0 to 100.0	Hz
4	Acceleration	0.5 to 99.9	S
5	Deceleration	0.5 to 99.9	S
6	Voltage boost	0.0 to 20.0	%
7	Slip compensation	0.0 to 5.0	Hz
8	Skip frequency	0 to maximum frequency	Hz
9	DC injection	0 to 20	%
10	Drive protection	Over voltage protection Under voltage protection Over current protection Over temperature protection Thermal overload protection Short circuit protection Earth fault protection	
11	Operating position	Vertical	
12	Ambient temperature	0 to 45	°C
13	Humidity	90% non condensing max.	
14	Conforming to standards	EMC Immunity IEC/EN 61000 - 4 - 2 ESD level 3 IEC/EN 61000 - 4 - 3 Radiated immunity level 3 IEC/EN 61000 - 4 - 4 EFT level 3 IEC/EN 61000 - 4 - 8 Power frequency magnetic fields level 4 IEC/EN 61000 - 4 - 11 Power quality Conducted and radiated emissions EN 55011 class A (group1)	

VDM series electrical specifications

Single phase supply voltage: 100 to 132V, 50/60Hz							
Model	Motor Power (kW)	Max.output current continuous Arms (A)	Max.input current Arms (A)	Motor voltage (Vrms)	Recommended conductor cross section (mm^2)		Recommended MCB rating (A)
					Input	Output	
VDM1005	0.375	2.2	8	200 to 240	1.0	1.0	10
VDM1010	0.75	4	15		1.0	1.0	20
Single phase supply voltage: 200 to 264V, 50/60Hz							
Model	Motor Power (kW)	Max.output current continuous Arms (A)	Max.input current Arms (A)	Motor voltage (Vrms)	Recommended conductor cross section (mm^2)		Recommended MCB rating (A)
					Input	Output	
VDM2102	0.18	1.1	1.9	200 to 240	1.0	1.0	4
VDM2105	0.375	2.2	4.2		1.0	1.0	10
VDM2110	0.75	4	7.3		1.5	1.0	16
VDM2115	1.125	6	10.7		2.5	1.5	20
VDM2120	1.5	7.5	13.3		2.5	1.5	20
VDM2130	2.2	10.6	18.7		2.5	1.5	25
Three phase supply voltage: 200 to 264V, 50/60Hz							
Model	Motor Power (kW)	Max.output current continuous Arms (A)	Max.input current Arms (A)	Motor voltage (Vrms)	Recommended conductor cross section (mm^2)		Recommended MCB rating (A)
					Input	Output	
VDM2002	0.18	1.1	1.3	200 to 240	1.0	1.0	4
VDM2005	0.375	2.2	2.4		1.0	1.0	6
VDM2010	0.75	4	4.2		1.0	1.0	10
VDM2015	1.125	6	6.2		1.5	1.5	16
VDM2020	1.5	7.5	7.7		1.5	1.5	16
VDM2030	2.2	10.6	10.8		2.5	1.5	20

Two types of VDM21xx series are available.

1) VDM21xx
2) VDM21xxEM

Model reference

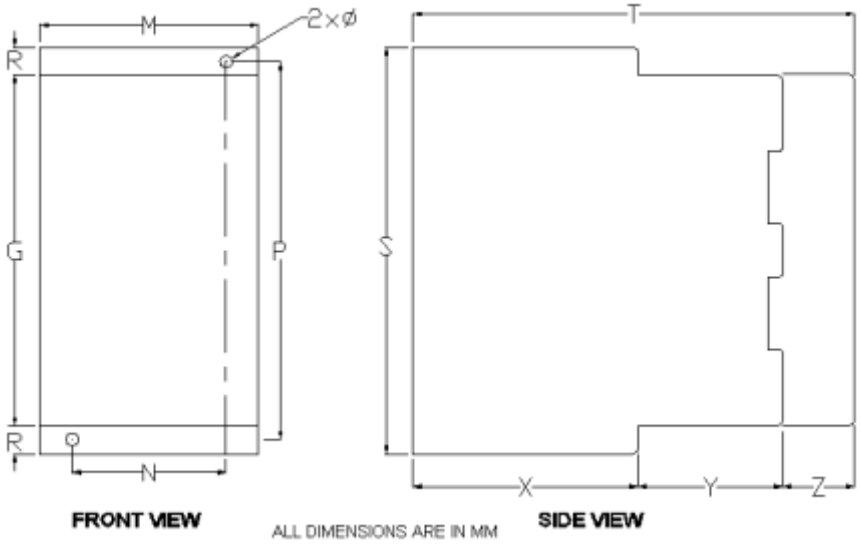
VDM xxxx E M

- M — Modbus communication
- E — Built in EMI filter

VDM series without "M" indicates SPI communication

The specifications are subject to change without notice

Dimensions



Single phase supply voltage: 100 to 132V, 50/60Hz												
Model	**G**	**M**	**N**	**P**	**R**	**S**	**T**	**X**	**Y**	**Z**	**Φ**	**Weight (Kg) approx.**
VDM1005	121	75	63	130	9.5	140	135.5	60.5	50	25	4.5	0.9
VDM1010	121	75	63	130	9.5	140	153	78	50	25	4.5	1.0
Single phase supply voltage: 200 to 264V, 50/60Hz												
Model	**G**	**M**	**N**	**P**	**R**	**S**	**T**	**X**	**Y**	**Z**	**Φ**	**Weight (Kg) approx.**
VDM2102	121	75	63	130	9.5	140	115	40	50	25	4.5	0.8
VDM2105	121	75	63	130	9.5	140	135.5	60.5	50	25	4.5	1.0
VDM2110	121	75	63	130	9.5	140	153	78	50	25	4.5	1.25
Three phase supply voltage: 200 to 264V, 50/60Hz												
Model	**G**	**M**	**N**	**P**	**R**	**S**	**T**	**X**	**Y**	**Z**	**Φ**	**Weight (Kg) approx.**
VDM2002	121	75	63	130	9.5	140	115	40	50	25	4.5	0.7
VDM2005	121	75	63	130	9.5	140	135.5	60.5	50	25	4.5	0.9
VDM2010	121	75	63	130	9.5	140	153	78	50	25	4.5	1.0

Installation guidelines

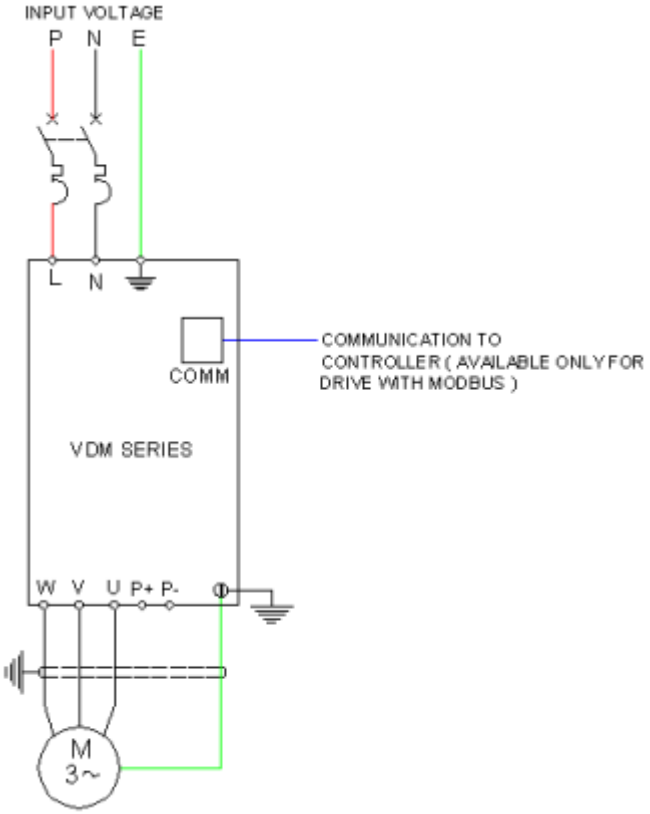
Mounting recommendations

- Install the unit vertically, at ± 10°.
- Do not install the unit near sources producing noise such as solenoid, contactor, relay etc.,
- Provide sufficient ventilation on all sides of the unit.
- Free space in front of unit: 10mm minimum.
- The communication cable must be kept separate from the motor and mains cables with minimum of 100mm between them.

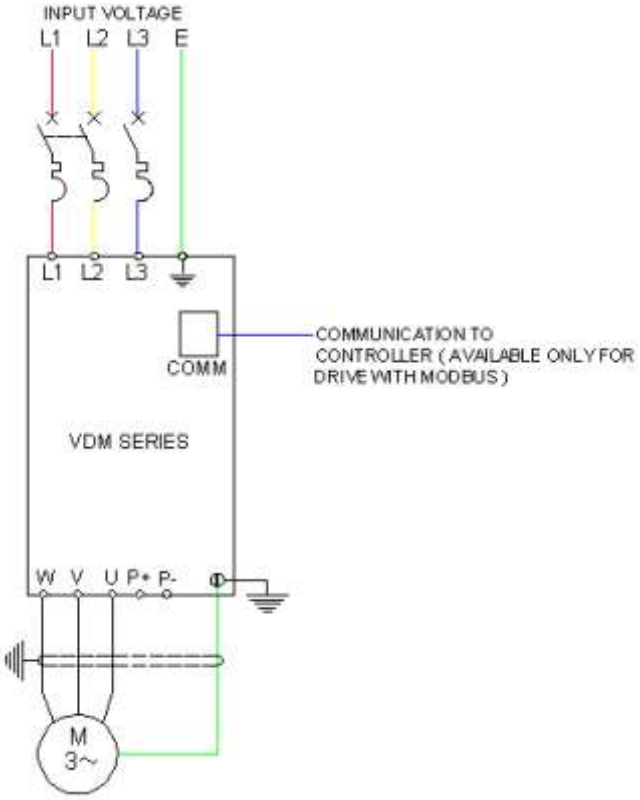
VDM series wiring diagram

100 to 132Vac, 1Φ, 50/60 Hz

200 to 264Vac, 1Φ, 50/60 Hz



200 to 264Vac, 3Φ, 50/60 Hz



Communication cable crimping details

RJ45 Pin #	Wire Color	Diagram
1	White/Orange	
2	Orange	
3	White/Green	
4	Blue	
5	White/Blue	
6	Green	
7	White/Brown	
8	Brown	

Summary of functions

- **Operating speed range**

  It defines the speed range permitted by the drive under actual operating conditions.

  LSP (Low speed) : 0 Hz to HSP.

  HSP (High speed) : LSP to 100.0 Hz.

- **Acceleration and deceleration ramp times**

  Acceleration ramp : This is the time taken by the motor to accelerate from idle to maximum frequency.

  Acceleration ramp time: 0.5 to 99.9 s

  Deceleration ramp : This is the time taken by the motor to decelerate from maximum frequency to idle.

  Deceleration ramp time: 0.5 to 99.9 s

- **Automatic adaptation of deceleration ramp**

  If initial deceleration is low, the system will automatically adjust the deceleration while the load inertia is taken into account.

- **Forward/reverse**

  Forward/reverse operation of the motor can be achieved through logic inputs.

- **Jog operation**

  Used to advance the motor by small amounts. This can be used for gradual movements.

- **DC injection braking**

  This stops the motor by applying a DC current (Adjustable from 1 to 20% in steps of 0.1%). This heats the motor relatively more than the inverter and holds the shaft stationary until the end of d.c injection period (0.0 to 25.5s).

- **Voltage boost**

  If high starting torque is required, the voltage can be boosted during ramping. This is only effective during initial start up and until the frequency set point is reached.

  Voltage boost : 0.0 to 20.0 %

- **Various stopping modes**

  There are three stopping modes available:

  “Freewheel stop”: The motor stops in accordance with the inertia and the resistive torque of the load.

  “Normal stop”: The motor stops with the deceleration time.

  “Fast stop”: The motor stopping time depends on the inertia and the braking ability of the drive.

- **Thermal protection of drive**

  The integrated thermistor in the drive's power module protects the drive from poor ventilation and excessive ambient temperature.

- **Motor thermal protection**

  The motor is protected from excessive temperature rise through continuous calculation of theoretical temperature rise (I^2t).

- **Skip frequencies**

  Used to avoid the effects of mechanical resonance. Frequencies within the skip frequency band are suppressed. Stationary operation is not possible within the suppressed frequency range – the range is just passed through.

- **Slip compensation**

  The inverter can estimate the amount of slip in an asynchronous motor at varying loads and increase its output frequency to compensate.

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