

**VS1MD  
AC Micro Drive**

**1/4 thru 5 Hp  
1/2 thru 30 Hp  
1/2 thru 30 Hp**

**230 VAC  
230 VAC  
460 VAC**

**1 Phase - 50/60 Hz  
3 Phase - 50/60 Hz  
3 Phase - 50/60 Hz**



**Applications:** Variable torque, constant torque or constant horsepower applications. New installations, replacements and original equipment manufactures (OEM).

**Features:** Volts per Hertz or Sensorless Vector Control with peak overload capacity of 200% and PID capability. Flexible mounting options with IP20 enclosure as standard and NEMA 1 kit option. Integral keypad, operator interface and local speed control. Programming by Groups makes it easy to navigate and find parameters. Basic Program Group contains the most common application related parameters. Power ratings up to 30 Hp in both 230V and 460V versions. Built-in braking transistor allows connection to remote braking resistor for enhanced performance needs.

<b>Performance Features</b>	Control Modes	V/Hz or Sensorless Vector	
	Operator Interface Module	Integral Drive Mounted	
	Display Lines	4-Character LED Display	
	Programmable Preset Speeds	Eight	
	Analog Outputs	One (0-10 VDC)	
	Auto Restart	Yes -- Up to 10 attempts	
	Frequency Avoidance	Three Bands	
	Fault History	Last Five Faults	
<b>Drive Specifications</b>	Digital Inputs	Eight Completely Configurable Inputs	
	Digital Inputs Type	Pull-up or Pull-down	
	Analog Inputs: Two Total	One: 0-10VDC or -10 to 10VDC, One: 4-20mADC	
	Digital Outputs: Two Total	One Opto-coupled (Configurable), Form C Relay	
	Meter Outputs	0-10 VDC: One Analog Usable for Meter (Proportional to Frequency, Output Current, AC Output Voltage, or DC Output Voltage)	
	Maximum Load	30 Hp @ 460 VAC	
	Overload Capacity	Drive Output 150% for One Minute, 200% for Twelve Seconds	
	Frequency Accuracy	Digital Command: 0.01% of Max. Output Frequency, Analog Command: 0.1% of Max. Output Frequency	
	Input Voltage Ranges	230 VAC (170-253); 460 VAC (323-528)	
	Rated Input Frequency	50-60Hz (±5%)	
	Carrier Frequency	1-15 kHz (3 kHz default)	
	Operating Temperature	-10° to 50°C (IP20)	
	Snubber (Dynamic Braking)	Built-in Transistor	
	Dynamic Braking External	Up to 150% Dynamic Braking with appropriately sized resistor	
	DC Injection Braking	Included	
	Volts/Hz	Linear V/Hz, Quadratic V/Hz, Custom 4-Point V/Hz Curve	
	Sensorless Vector	Full Sensorless Vector Control with Autotune Function and motor model	
	Frequency Control Range	0-400 Hz	
	Accel/Decel	Eight independently adjustable sets of ramps	
	Time Range	0.1 to 600 Seconds	
	S Curve Accel. & Decel.	Yes, with adjustable rounding percentage	
Keypad Speed Control	Yes		
<b>Protective Features</b>	Sink/Source Inputs	Selectable, 24 VDC Logic	
	Electronic Overload Trip	Electronic Motor Overload Inverse Time calculation with Programmable Warning Level	
	Communications	Built-in MODBUS-RTU (RS-485) Communications - optional Devicenet	
	PID Control	Built-in	
	Under Voltage	Level Depends on Voltage Class (240, 480)	
	Ground Fault Protection	Ground Fault protection active during run	
	Output Short Circuit	Phase-to-Phase on Drive Output	
	Over Temperature	Heatsink Monitor	
	DC Bus Overvoltage	DC Bus Level Trip	
	Drive Overload	Exceed Drive rating of 150% for One Minute	
<b>Agency Certifications</b>	Over Current	Over-current/short-Circuit protection	
	Output Phase	Trips on open Output Phase	
	Loss of Reference	Trips on Loss of Speed Command Signal	
	Cooling Fan	Detects an inverter fan failure (replace fan)	
	Comm. Error	Detects a communication error (fault)	
	<b>Service Conditions</b>	UL, cUL, CE	
		Altitude	1,000 m (3,300 ft.), derate by 1% per 100 m up to 2,000 m maximum.
		Ambient Temperature	IP20: -10°C (14°F) to 50°C (122°F)
		Storage Temperature	-20°C (-2°F) to 65°C (149°F)
	Relative Humidity	10% to 95%, non-condensing	

Farm Duty Motors

Definite Purpose Motors

Unit Handling Motors

Brake Motors

200 & 575 Volt Motors

IEC Frame Motors

50 Hertz Motors

Inverter/Vector Motors & Controls

DC Motors and Controls

Soft Starters & Dynamic Brakes

**VS1MD – 230V, 50/60 Hz, 3-Phase**

Catalog Number	Frame	3-Phase Hp	1-Phase Hp	Output Current	List Price	Mult. Sym.
VS1MD20P5	A	0.5	0.25	2.5A	459	EA
VS1MD21	A	1	0.5	5.0A	476	EA
VS1MD22	B	2	1	8.0A	596	EA
VS1MD23	C	3	2	12.0A	688	EA
VS1MD25	C	5	3	16.0A	882	EA
VS1MD27	D	7.5	-	24.0A	1,288	EA
VS1MD210	D	10	5	32.0A	1,528	EA
VS1MD215	E	15		46.0A	1,909	EA
VS1MD220	E	20		60.0A	2,387	EA
VS1MD225	F	25		74.0A	2,983	EA
VS1MD230	F	30		88.0A	3,728	EA

**VS1MD – 460V, 50/60 Hz, 3-Phase**

Catalog Number	Frame	Hp	Output Current	List Price	Mult. Sym.
VS1MD40P5	A	0.5	1.25A	548	EA
VS1MD41	A	1	2.5A	574	EA
VS1MD42	B	2	4.0A	694	EA
VS1MD43	C	3	6.0A	802	EA
VS1MD45	C	5	8A	997	EA
VS1MD47	D	7.5	12.0A	1,290	EA
VS1MD410	D	10	16.0A	1,541	EA
VS1MD415	E	15	24.0A	1,926	EA
VS1MD420	E	20	30.0A	2,407	EA
VS1MD425	F	25	39.0A	3,009	EA
VS1MD430	F	30	45.0A	3,761	EA

**VS1MD – 230V, 50/60 Hz, 3-Phase Communication Ready Base Unit**

Does not include local keypad

Catalog Number	Frame	Hp	Output Current	List Price	Mult. Sym.
VS1MD20P5-8	A	0.5	2.5A	413	EA
VS1MD21-8	A	1	5.0A	429	EA
VS1MD22-8	B	2	8.0A	537	EA
VS1MD23-8	C	3	12.0A	619	EA
VS1MD25-8	C	5	16.0A	794	EA
VS1MD27-8	D	7.5	24.0A	1,159	EA
VS1MD210-8	D	10	32.0A	1,375	EA
VS1MD215-8	E	15	46.0A	1,837	EA
VS1MD220-8	E	20	60.0A	2,315	EA
VS1MD225-8	F	25	74.0A	2,911	EA
VS1MD230-8	F	30	88.0A	3,677	EA

**VS1MD – 460V, 50/60 Hz, 3-Phase Communication Ready Base Unit**

Does not include local keypad

Catalog Number	Frame	Hp	Output Current	List Price	Mult. Sym.
VS1MD40P5-8	A	0.5	1.25A	493	EA
VS1MD41-8	A	1	2.5A	516	EA
VS1MD42-8	B	2	4.0A	624	EA
VS1MD43-8	C	3	6.0A	722	EA
VS1MD45-8	C	5	8A	898	EA
VS1MD47-8	D	7.5	12.0A	1,160	EA
VS1MD410-8	D	10	16.0A	1,387	EA
VS1MD415-8	E	15	24.0A	1,855	EA
VS1MD420-8	E	20	30.0A	2,336	EA
VS1MD425-8	F	25	39.0A	2,927	EA
VS1MD430-8	F	30	45.0A	3,689	EA

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## Mounting Dimensions

Frame	Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)
A	5.04 (128)	2.75 (70)	5.12 (130)
B	5.04 (128)	3.94 (100)	5.12 (130)
C	5.04 (128)	5.20 (140)	6.10 (155)
D	8.66 (220)	7.08 (180)	6.69 (170)
E	15.40 (320)	11.30 (235)	9.12 (189.50)
F	19.73 (410)	12.50 (260)	10 (208.50)

## VS1MD – Accessories

## DB Resistor Kits

VS1MD drives include built-in braking transistors to aid in applications requiring the ability to stop rapidly. External braking resistors are required to implement the dynamic braking function. The below resistor selection provides resistors that are designed for 15% to 20% duty cycle braking applications. These resistors must be separately mounted.

## VS1MD Dynamic Braking Resistors

Input Volts	Hp	Braking Transistor Specifications		100% Torque Braking Resistors					150% Torque Braking Resistors				
		Minimum Allowable Ohms	Maximum Continuous Braking Wattage	Ohms	Wattage	Catalog Number	List Price	Mult. Sym.	Ohms	Wattage	Catalog Number	List Price	Mult. Sym.
230	0.5	50	116	200	200	VS1-R200W200	60	EA	200	200	VS1-R200W200	60	EA
	1	44	174	160	200	VS1-R160W200	60	EA	100	200	VS1-R100W200	45	EA
	2	40	278	50	400	VS1-R50W400	132	EA	50	400	VS1-R50W400	132	EA
	3	26	464	50	400	VS1-R50W400	132	EA	33	600	VS1-R33W600	278	EA
	5	16	767	33	600	VS1-R33W600	278	EA	20	800	VS1-R20W800	306	EB
	7.5	8	929	20	800	VS1-R20W800	306	EB	15	1200	VS1-R15W1200	370	EB
	10	8	1394	15	1200	VS1-R15W1200	370	EB	10	2400	VS1-R10W2400	489	EB
460	0.5	133	116	200	200	VS1-R200W200	60	EA	200	200	VS1-R200W200	60	EA
	1	66	174	200	200	VS1-R200W200	60	EA	200	200	VS1-R200W200	60	EA
	2	66	348	200	400	VS1-R200W400	132	EA	200	400	VS1-R200W400	132	EA
	3	80	464	200	400	VS1-R200W400	132	EA	130	600	VS1-R130W600	278	EA
	5	64	755	100	400	VS1-R100W400	132	EA	85	1000	VS1-R85W1000	346	EB
	7.5	32	1235	85	1000	VS1-R85W1000	346	EB	40	2000	VS1-R40W2000	465	EA
	10	32	1394	60	1200	VS1-R60W1200	370	EB	40	2000	VS1-R40W2000	465	EA

## NEMA 1/IP30 Kit

The VS1MD AC drive has an enclosure rating of IP20, but includes provisions to mount a NEMA 1 kit. This kit provides a metal conduit plate for attaching user conduit, as well as a plastic top cover for the drive.

## VS1MD NEMA 1 Kits

Description	Catalog Number	List Price	Mult. Sym.
VS1MD NEMA 1 Kit, Frame A	VS1MD-NM1A	40	EA
VS1MD NEMA 1 Kit, Frame B	VS1MD-NM1B	40	EA
VS1MD NEMA 1 Kit, Frame C	VS1MD-NM1C	48	EA
VS1MD NEMA 1 Kit, Frame D	VS1MD-NM1D	58	EA
VS1MD NEMA 1 Kit, Frame E	VS1MD-NM1E	64	EA
VS1MD NEMA 1 Kit, Frame F	VS1MD-NM1F	87	EA

**VS1MD – Accessories Continued...**

**DIN Rail Mounting Kit**

Adapter Kit to convert the VS1MD drive for DIN Rail Mounting. Low profile mounting to the back of the AC Drive adds minimal depth.

**VS1MD Din Rail Kit**

Description	Catalog Number	List Price	Mult. Sym.
VS1MD Din Rail Kit A-Frame	<b>VS1MD-DINA</b>	19	EA
VS1MD Din Rail Kit B-Frame	<b>VS1MD-DINB</b>	25	EA
VS1MD Din Rail Kit C-Frame	<b>VS1MD-DINC</b>	33	EA

**VS1MD NEMA 1 Remote Keypads**

The VS1MD Remote Keypad can be panel mounted for remote keypad configuration or control of the VS1MD. The remote keypad can be mounted up to 15ft. from the VS1MD drive.

Description	Catalog Number	List Price	Mult. Sym.
VS1MD Remote Keypad with 6 ft. (2m) cable	<b>VS1MD-RKEY2</b>	98	EA
VS1MD Remote Keypad with 9 ft. (3m) cable	<b>VS1MD-RKEY3</b>	107	EA
VS1MD Remote Keypad with 15 ft. (5m) cable	<b>VS1MD-RKEY5</b>	127	EA

**VS1MD CopyCat Keypad**

The VS1MD CopyCat Keypad allows a CopyCat function so that the parameters of the drive can be stored to and retrieved from the Remote Keypad.

Description	Catalog Number	List Price	Mult. Sym.
VS1MD CopyCat Keypad	<b>VS1MD-CCL</b>	101	EA

**VS1MD Communication Option Kits**

Ideal for factory, building and process automation industries, Communication cards are available for DeviceNet, dual protocol Ethernet IP/ModBus TCP/IP and Profibus.

Network cards fit internal to the VS1MD drive replacing the standard operator interface and I/O board. In order to use a communication option, order a VS1MD Communication Ready Drive from the preceding pages. The Communication Ready Drives can be identified by the “-8” suffix on the part number. Then, select a VS1MD Communication Option from the list below. It is also possible to convert a standard VS1MD Drive to work with these communication options. In order to use a standard VS1MD Drive with a Communication Option, you must also order a communications-ready conversion kit MD11040001769 (includes a new front cover, baseplate, and communications board header adapter).

Description	Catalog Number	List Price	Mult. Sym.
DeviceNet Communication Card	<b>VS1MD-DNET</b>	216	EA
Profibus Communication Card	<b>VS1MD-PBUS</b>	325	EA
Ethernet IP Communication Card	<b>VS1MD-ENET</b>	283	EA

**VS1 USB to RS485 Converter Kit**

This kit allows communications between a USB port on a computer and the VS1MD Drive RS485 control terminals.

Description	Catalog Number	List Price	Mult. Sym.
VS1 USB to RS485 Converter Kit	<b>VS1-COMMUSB</b>	513	EA

**DriveView Software**

DriveView communications software for Baldor VS1MD Drives is available at no charge by downloading from the Baldor VS Drives web site at [www.baldor.com](http://www.baldor.com).

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