

VS1SP Inverter/Encoderless Vector Drive

1 thru 3 Hp	115/230 VAC	1 Phase - 50/60 Hz
1 thru 60 Hp	230 VAC	3 Phase - 50/60 Hz
1 thru 1000 Hp	460 VAC	3 Phase - 50/60 Hz
1 thru 300 Hp	600 VAC	3 Phase - 50/60 Hz



Applications: Constant torque, variable torque or constant horsepower applications. New installations, replacements and original equipment manufacturers (OEM).

Features: NEMA 1 and NEMA 4 enclosure. Output frequency 0 to 500 Hz with peak overload capacity of 175%. Separate accel/decel rates and controlled reversing. Built-in two and three input PID process control loop.

Input Ratings	Voltage	115	230	230	460	600
	Voltage Range	95-130	180-264	180-264	340-528	515-660
	Phase	Single Phase			Three Phase (single phase with derating)	
	Frequency	50/60Hz +5%				
	Impedance	1% minimum from mains connection				
Output Ratings	Horsepower	1-3 Hp @ 115/230VAC, 1PH; 1-60 Hp @ 230VAC, 3PH; 1-1000 Hp @ 460VAC, 3PH; 1-300 Hp @ 575VAC, 3PH				
	Overload Capacity	Heavy Duty (Constant Torque) = 150% for 60 seconds, 175% for 3 seconds Normal Duty (Variable Torque) = 115% for 60 seconds				
	Frequency	0-500Hz				
	Voltage	0 to maximum input voltage (RMS) (Note: 0 to 230 V for 115 V Single Phase Units)				
Protective Features	Trip	Missing control power, over current, over voltage, under voltage, over temperature (motor or control), output shorted or grounded, motor overload				
	Stall Prevention	Over voltage suppression, overcurrent suppression				
	External Output	LED trip condition indicators, 4 assignable logic outputs, 2 assignable analog outputs				
	Short Circuit	Phase to phase, phase to ground				
	Electronic Motor Overload	Meets UL508C (I ² T)				
Environmental Conditions	Temperature	-10 to 45°C. Derate 3% per °C to maximum ambient temperature of 55°C. (NEMA 4X B-Frame -10-40°C)				
	Cooling	Forced air				
	Enclosure	NEMA 1	NEMA 4X			
	Altitude	Sea level to 3300 Feet (1000 Meters) Derate 2% per 1000 Feet (303 Meters) above 3300 Feet				
	Humidity	NEMA 1: 10 to 90% RH Non-Condensing		NEMA 4X: To 100% RH Condensing		
	Shock / Vibration	1G / 0.5G at 10Hz to 60Hz				
	Storage Temperature	-10 to +65°C				
Keypad Display	Display	LCD Graphical 128x64 Pixel				
	Keys	14 key membrane with tactile feedback				
	Functions	Output status monitoring, Digital speed control, Parameter setting and display, Diagnostic and Fault log display, Motor run and jog, Local/Remote toggle				
	LED Indicators	Forward run command, Reverse run command, Stop command, Jog active				
	Remote Mount	200 feet (60.6m) maximum from control, NEMA 4 Rated				
	Trip	Separate message and trace log for each trip, last 10 trips retained in memory				
Control Specifications	Control Method	Microprocessor controlled PWM output, selectable encoderless vector or V/Hz inverter				
	PWM Frequency	Adjustable 1.5-5kHz STD, 5-16 kHz quiet				
	Frequency Setting	±5 VDC, 0-5 VDC ±10 VDC, 0-10 VDC, 4-20 mA or 0-20 mA; digital (keypad), Serial Comms/USB 2.0, and Modbus RTU standard				
	Accel/Decel	0-3600 seconds				
	V/Hz Ratio	Linear to squared reduced, base frequency, output voltage, minimum frequency limit, maximum frequency limit				
	Torque Boost	0-30% of input voltage; automatic with manual override				
	Brake Torque	20% standard on Sizes AA and B, 1% standard on Size C, D; External on E, F, G-Frames				
	Skip Frequency	Three zones 0-Max frequency				
	PC Setup Software	MINT® WorkBench Software available using the USB 2.0 port for commissioning wizard, firmware download, parameter viewer, scope capture and cloning				
	Maximum Output Frequency	500 Hz				
	Selectable Operating Modes	Keypad, Standard Run 2-Wire, Standard Run 3-Wire, 15 Preset Speeds, Fan Pump 2-Wire, Fan Pump 3-Wire, Process Control, 3-SPD ANA 2-Wire, 3-SPD ANA 3-Wire, Electronic Pot 2-Wire, Electronic Pot 3-Wire, Network Profile Run, Bipolar				
Analog Inputs	One Differential	±5VDC, ±10VDC, 4-20 mA and 0-20 mA, 11-bit + sign				
	One Single Ended	0 - 10 VDC, 11-bit				
	Input Impedance	80 kOhms (Volt mode); 500 Ohms (Current mode)				
Analog Outputs	Analog Outputs	2 Assignable				
	Full Scale Range	AOUT1 (0-5V, 0-10V, 0-20mA or 4-20mA), AOUT2 (+5V, +10V)				
	Source Current	1 mA maximum (volt mode), 20mA (current mode)				
	Resolution	9 bits				
Digital Inputs	Opto-isolated Inputs	8 Assignable, 1 dedicated input (Drive Enable)				
	Rated Voltage	10 - 30 VDC (closed contacts std)				
	Input Impedance	4.71 k Ohms				
	Leakage Current	10 mA maximum				
	Update Rate	16 msec				
Digital Outputs (2 Opto Outputs)	Rated Voltage	5 to 30VDC				
	Maximum Current	60 mA Maximum				
	ON Voltage Drop	2 VDC Maximum				
	OFF Leakage Current	0.1 mA Maximum				
	Output Conditions	31 Conditions				
Digital Outputs (2 Relay Outputs)	Rated Voltage	5 to 30VDC or 240VAC				
	Maximum Current	5A Maximum non-inductive				
	Output Conditions	31 Conditions				

VS1SP Inverter/Encoderless Vector – NEMA 1 Enclosure

Catalog Number	Size	Heavy Duty				Normal Duty				List Price	Mult. Sym.
		Hp	kW	Cont. Amps	Peak Amps	Hp	kW	Cont. Amps	Peak Amps		
115/230 Volts - Single Phase Input											
VS1SP61-1B	AA	1	0.75	4.2	7.4	2	1.5	6.8	8.5	1,100	EC
VS1SP62-1B	AA	2	1.5	6.8	11.9	3	2.2	9.6	12	1,252	EC
VS1SP63-1B	AA	3	2.2	9.6	16.8	3	2.2	9.6	12	1,463	EC
230 Volts - Three Phase Input											
VS1SP21-1B	AA	1	0.75	4.2	7.35	2	1.5	6.8	8.5	1,000	EC
VS1SP22-1B	AA	2	1.5	6.8	11.9	3	2.2	9.6	12	1,138	EC
VS1SP23-1B	AA	3	2.2	9.6	16.8	5	3.7	15.2	19	1,330	EC
VS1SP25-1B	AA	5	3.7	15.2	26.6	7.5	5.6	22	27.5	1,521	EC
VS1SP27-1B	AA	7.5	5.6	22	38.5	7.5	5.6	22	27.5	1,904	EC
VS1SP210-1B	B	10	7.5	28	49	15	11	42	52.5	2,681	EC
VS1SP215-1B	B	15	11	42	73.5	20	15	54	67.5	3,191	EC
VS1SP220-1B	B	20	15	54	94.5	25	18.7	68	85	4,255	EC
VS1SP225-1B	C	25	18.7	68	119	30	22.4	80	92	5,106	EC
VS1SP230-1B	C	30	22.4	80	140	40	29.8	104	120	6,596	EC
VS1SP240-1B	C	40	29.8	104	182	40	29.8	104	120	7,872	EC
VS1SP250-1B	D	50	37	130	228	60	45	154	177	10,000	EC
VS1SP260-1B	D	60	45	154	270	60	45	154	177	12,703	EC
460 Volts - Three Phase Input											
VS1SP41-1B	AA	1	0.75	2.1	3.68	2	1.5	3.4	4.25	1,202	EC
VS1SP42-1B	AA	2	1.5	3.4	5.95	3	2.2	4.8	6	1,457	EC
VS1SP43-1B	AA	3	2.2	4.8	8.4	5	3.7	7.6	9.5	1,766	EC
VS1SP45-1B	AA	5	3.7	7.6	13.3	7.5	5.6	11	13.75	1,915	EC
VS1SP47-1B	AA	7.5	5.6	11	19.3	10	7.5	14	17.5	2,426	EC
VS1SP410-1B	AA	10	7.4	14	24.5	10	7.5	14	17.5	2,660	EC
VS1SP415-1B	B	15	11	21	36.75	20	15	27	33.75	2,979	EC
VS1SP420-1B	B	20	15	27	47.25	25	18.7	34	42.5	3,617	EC
VS1SP425-1B	B	25	18.7	34	60	30	22	40	50	4,468	EC
VS1SP430-1B	C	30	22.4	40	70	40	29.8	52	60	5,319	EC
VS1SP440-1B	C	40	29.8	52	91	50	37.3	65	75	6,170	EC
VS1SP450-1B	C	50	37.3	65	114	60	44.8	77	89	7,660	EC
VS1SP460-1B	D	60	45	77	135	75	56	96	110	9,998	EC
VS1SP475-1B	D	75	56	96	168	100	75	124	143	11,596	EC
VS1SP4100-1B	D	100	75	124	217	125	93	156	179	13,404	EC
VS1SP4125-1B	D	125	93	156	273	125	93	156	179	14,362	EC
VS1SP4150-1 *	E	150	112	180	315	200	149	240	300	17,250	EC
VS1SP4200-1 *	E	200	149	240	420	250	187	302	378	23,000	EC
VS1SP4250-1 *	E	250	187	302	529	300	224	361	451	28,750	EC
VS1SP4300-1 *	F	300	224	361	632	350	261	414	476	31,915	EC
VS1SP4350-1 *	F	350	261	414	725	400	298	477	549	37,234	EC
VS1SP4400-1 *	F	400	298	477	835	450	336	534	614	42,553	EC
VS1SP4450-1 *	F	450	336	534	935	500	373	590	679	48,936	EC
VS1SP4500-1 *	F	500	373	590	1033	500	373	590	679	57,447	EC
VS1SP4600-1 *	G	600	450	690	1208	700	522	875	1006	CF	EC
VS1SP4700-1 *	G	700	522	875	1531	800	600	975	1121	CF	EC
VS1SP4800-1 *	G	800	600	975	1706	900	671	1095	1259	CF	EC
VS1SP4900-1 *	G	900	671	1095	1916	1000	750	1202	1382	CF	EC
VS1SP41000-1 *	G	1000	750	1202	2104	1000	750	1202	1382	CF	EC

* VS1SP E, F & G-Frame Drives do not include an internal braking transistor.

CF = Contact Factory

NOTE: For higher HP Ratings, see pages 294-295 for information on the Baldor 15H Drives.

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

VS1SP Inverter/Encoderless Vector – NEMA 1 Enclosure

Catalog Number	Size	Heavy Duty				Normal Duty				List Price	Mult. Sym.
		Hp	kW	Cont. Amps	Peak Amps	Hp	kW	Cont. Amps	Peak Amps		
600 Volts - Three Phase Input											
VS1SP51-1B	AA	1	0.75	1.7	3	2	1.5	2.7	3.4	1,322	EC
VS1SP52-1B	AA	2	1.5	2.7	4.7	3	2.2	3.9	4.9	1,603	EC
VS1SP53-1B	AA	3	2.2	3.9	6.8	5	3.7	6.1	7.6	1,943	EC
VS1SP55-1B	AA	5	3.7	6.1	10.7	7.5	5.6	9	11.3	2,106	EC
VS1SP57-1B	AA	7.5	5.6	9	15.8	10	7.5	11	13.8	2,668	EC
VS1SP510-1B	AA	10	7.5	11	19.3	10	7.5	11	13.8	2,926	EC
VS1SP515-1B	B	15	11	17	29.8	20	15	22	27.5	3,745	EC
VS1SP520-1B	B	20	15	22	38.5	25	18.7	27	33.8	4,447	EC
VS1SP525-1B	B	25	18.7	27	47.2	30	22	32	40	5,500	EC
VS1SP530-1B	C	30	22.4	32	56	40	29.8	41	47	6,670	EC
VS1SP540-1B	C	40	29.8	41	72	50	37.3	52	60	8,191	EC
VS1SP550-1B	C	50	37.3	52	91	60	45	62	71	9,830	EC
VS1SP560-1B	D	60	45	62	109	75	56	77	89	11,000	EC
VS1SP575-1B	D	75	56	77	135	100	75	99	114	12,755	EC
VS1SP5100-1B	D	100	75	99	173	125	93	125	144	14,745	EC
VS1SP5125-1B	D	125	93	125	219	150	112	144	166	15,798	EC
VS1SP5150-1 *	E	150	112	144	252	200	149	192	240	18,900	EC
VS1SP5200-1 *	E	200	149	192	336	250	187	242	302	25,200	EC
VS1SP5250-1 *	E	250	187	242	423	300	224	289	361	31,500	EC
VS1SP5300-1 *	E	300	224	289	506	300	224	289	361	35,100	EC

* VS1SP E-Frame drives do not include an internal braking transistor.

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50 Hertz Motors

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DC Motors and Controls

Soft Start & Dynamic Brakes

VS1SP Inverter/Encoderless Vector – NEMA 4 Washdown Enclosure

Catalog Number	Size	Heavy Duty				Normal Duty				List Price	Mult. Sym.
		Hp	kW	Cont. Amps	Peak Amps	Hp	kW	Cont. Amps	Peak Amps		
115/230 Volts - Single Phase Input											
VS1SP61-4B	AA	1	0.75	4.2	7.4	2	1.5	6.8	8.5	1,182	EC
VS1SP62-4B	AA	2	1.5	6.8	11.9	3	2.2	9.6	12	1,346	EC
VS1SP63-4B	AA	3	2.2	9.6	16.8	3	2.2	9.6	12	1,568	EC
230 Volts - Three Phase Input											
VS1SP21-4B	AA	1	0.75	4.2	7.35	2	1.5	6.8	8.5	1,074	EC
VS1SP22-4B	AA	2	1.5	6.8	11.9	3	2.2	9.6	12	1,223	EC
VS1SP23-4B	AA	3	2.2	9.6	16.8	5	3.7	15.2	19	1,429	EC
VS1SP25-4B	AA	5	3.7	15.2	26.6	7.5	5.6	22	27.5	1,649	EC
VS1SP27-4B	AA	7.5	5.6	22	38.5	7.5	5.6	22	27.5	2,043	EC
VS1SP210-4B	B-N4X	10	7.5	28	49	15	11	42	52.5	2,895	EC
VS1SP215-4B	B-N4X	15	11	42	73.5	20	15	54	67.5	3,446	EC
VS1SP220-4B	B-N4X	20	15	54	94.5	25	18.7	68	85	4,595	EC
460 Volts - Three Phase Input											
VS1SP41-4B	AA	1	0.75	2.1	3.68	2	1.5	3.4	4.25	1,330	EC
VS1SP42-4B	AA	2	1.5	3.4	5.95	3	2.2	4.8	6	1,511	EC
VS1SP43-4B	AA	3	2.2	4.8	8.4	5	3.7	7.6	9.5	1,840	EC
VS1SP45-4B	AA	5	3.7	7.6	13.3	7.5	5.6	11	13.75	2,106	EC
VS1SP47-4B	AA	7.5	5.6	11	19.3	10	7.5	14	17.5	2,766	EC
VS1SP410-4B	AA	10	7.4	14	24.5	10	7.4	14	17.5	2,926	EC
VS1SP415-4B	B-N4X	15	11	21	36.75	20	15	27	33.75	3,744	EC
VS1SP420-4B	B-N4X	20	15	27	47.25	25	18.7	34	42.5	4,447	EC
VS1SP425-4B	B-N4X	25	18.7	34	60	30	22	40	55	5,500	EC
575 Volts - Three Phase Input											
VS1SP51-4B	AA	1	0.75	1.7	3	2	1.5	2.7	3.4	1,463	EC
VS1SP52-4B	AA	2	1.5	2.7	4.7	3	2.2	3.9	4.9	1,662	EC
VS1SP53-4B	AA	3	2.2	3.9	6.8	5	3.7	6.1	7.6	2,024	EC
VS1SP55-4B	AA	5	3.7	6.1	10.7	7.5	5.6	9	11.3	2,317	EC
VS1SP57-4B	AA	7.5	5.6	9	15.8	10	7.5	11	13.8	3,043	EC
VS1SP510-4B	AA	10	7.5	11	19.3	10	7.5	11	13.8	3,218	EC
VS1SP515-4B	B-N4X	15	11	17	29.8	20	15	22	27.5	4,120	EC
VS1SP520-4B	B-N4X	20	15	22	38.5	25	18.7	27	33.8	4,892	EC
VS1SP525-4B	B-N4X	25	18.7	27	47.2	30	22	32	40	6,050	EC

Mounting Dimensions

Frame	Dimensions inches (mm)					Ap'x. Shpg. Wgt.
	Outside			Mounting		
	Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)	Height Inches (mm)	Width Inches (mm)	lbs. (kg)
AA	12.27 (312)	7.97 (202)	8.21 (209)	11.75 (298)	7.38 (187)	20 (9.1)
B	18.00 (457)	9.10 (231)	9.77 (248)	17.25 (438)	7.00 (178)	30 (13.6)
C	22.00 (559)	9.10 (231)	9.77 (248)	21.25 (540)	7.00 (178)	60 (27.2)
D	28.00 (711)	11.50 (292)	13.00 (330)	27.25 (692)	9.50 (241)	120 (54.4)
E	42.81 (1087)	18.75 (476)	16.00 (406)	39.75 (1010)	15.75 (400)	250 (113.4)
F	86.56 (2199)	31.78 (807)	24.59 (625)	Floor Mount		915 (415)*
G	Contact Factory					
B-N4X	17.5 (444)	10.73 (273)	10.47 (266)	16.5 (419)	9.78 (248) or 7.88 (200)	32 (14.5)

Note: E-Frame dimensions include a 3.0" H x 17.5" W x 5.2" D conduit box which is removable for panel mount (chassis) applications.

Frame size F Drives supplied as standard for bottom entry of conduits. Top entry styles available in wider cabinet.

*VS1SP4300-1 weighs 825 lbs. (374 kg); all other F-Frame models are 915 lbs. (415 kg)

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