

# VS1PF

## AC DRIVES

The pump and fan drive designed to provide the control needed for maximizing energy savings without sacrificing functionality.

The Baldor V\*S Drives VS1PF is a feature-rich AC drive targeted at the pump and fan markets but with functionality that rivals more sophisticated general purpose products. The VS1PF provides ability to gain traditional energy savings achieved by controlling centrifugal loads with a variable frequency drive while implementing unique algorithms that further reduce energy consumed by your application. Industrial ratings for variable torque and constant torque loads allow the usage of this product beyond pump and fan loads providing commonality throughout your facility.



- ✓ Aggregate/Cement
- ✓ Food/Beverage
- ✓ Mining
- ✓ Paper/Forest Products
- ✓ Petroleum/Chemicals
- ✓ Unit/Baggage Handling
- ✓ Air Handling
- ✓ Power Generation
- ✓ Pump/Fluid Handling

### Features

- Input Voltages / Power Ratings
  - 200-240 Vac/ 7.5 ~ 40 Hp
  - 380-480 Vac/ 7.5 ~ 700 Hp
- Enclosures / Mounting
  - NEMA 1 / IP20 (7.5 ~ 15 Hp)
  - Chassis / IP00 w/optional NEMA 1 conduit kits available (20 ~ 125 Hp)
  - Chassis / IP00 (150 ~ 700 Hp)
- Control Modes
  - V/Hz (Pump/Fan, Linear, Custom)
  - Sensorless Vector
- User-friendly keypad with 2-line by 16 character backlit LCD display
  - Parameter Upload/Download Capability
  - Customizable units for display variables
- Automatic Energy Savings
- Dual PID Control Loops
- Motor pre-heat capability for damp locations
- Normal duty and heavy duty ratings
- Sleep/Wake Function

- Multi-Motor Control (available late 2007)
- Flying start & Skip Frequencies (3)
- Power-dip ride-through and auto restart
- Pull-apart terminal blocks

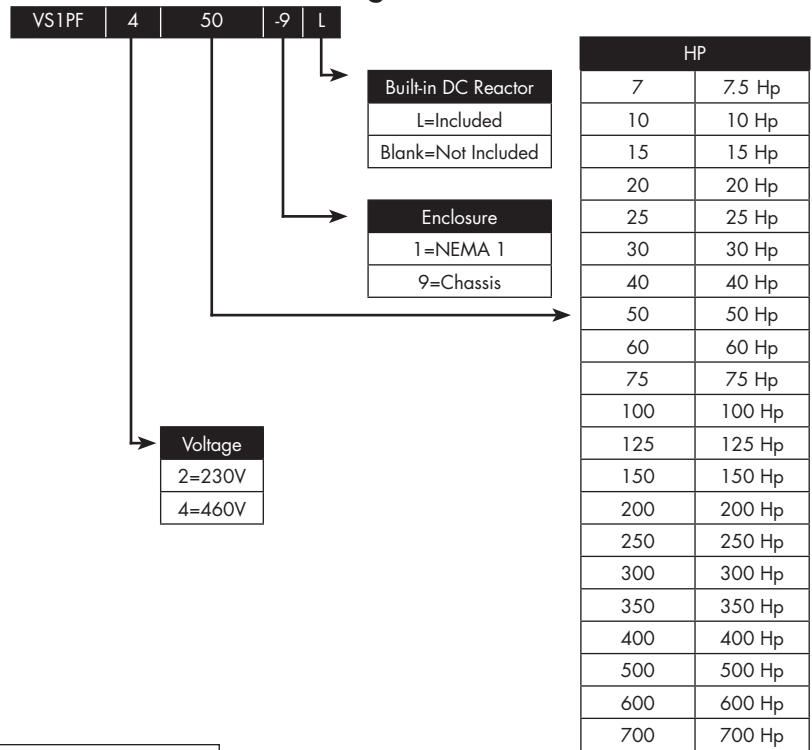
### Specifications

- Digital Inputs (8), User programmable, 24 Vdc sink/source
- Relay Outputs (5)
  - 4 normally open (form A)
  - 1 normally open / normally closed (Form C)
- Analog Inputs (1 for speed ref, 1 for PID feedback)
  - $\pm 10V / 0 \sim 10V / 4 \sim 20mA$
- Analog Outputs (2) 0 ~ 10V
- Pulse Input (0 ~ 100 KHz, 12 Vdc) (A, or A+B)
- PTC/NTC motor thermal sensor input
- Environmental
  - -10 ~ 40°C (higher available w/derate)
  - 1000m Altitude w/o derate
  - 0 ~ 90% Humidity, non-condensing

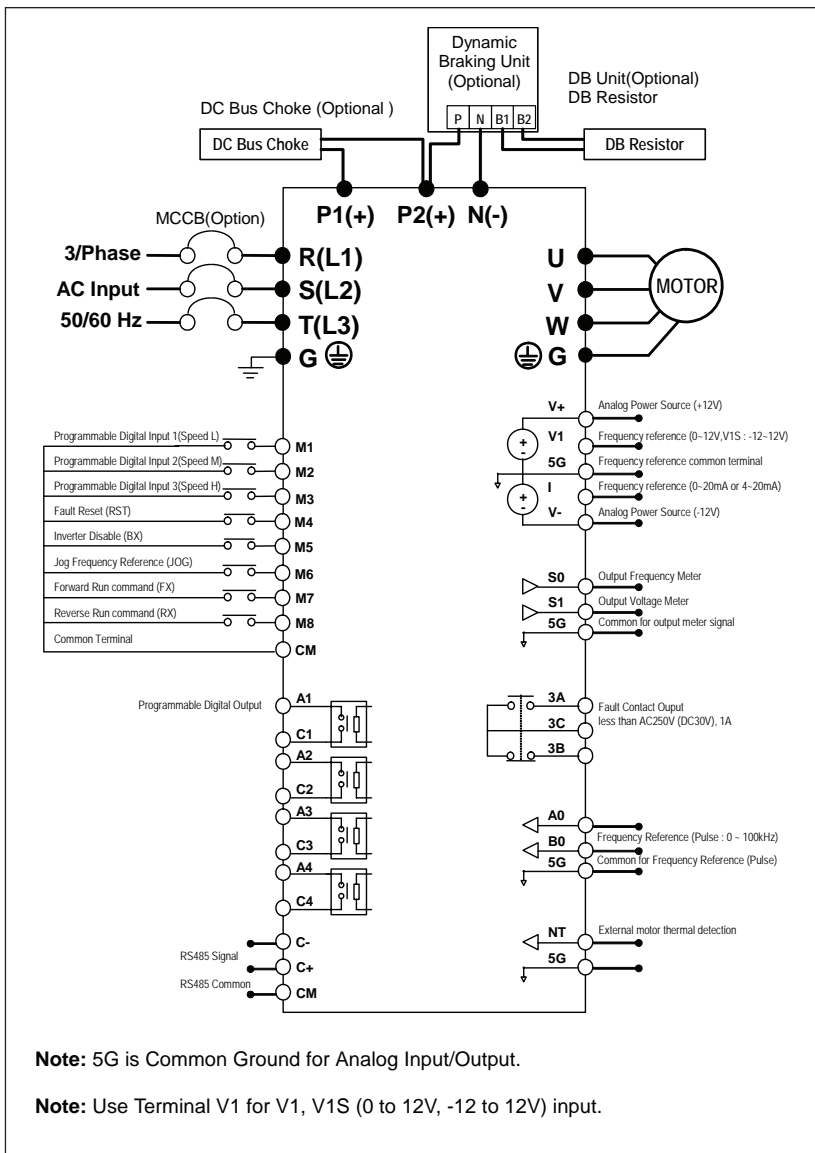
## Specifications (continued)

- Electrical
  - Input voltage -15% / +10% of nominal, 48 ~ 63 Hz
  - Operational on single-phase input with 50% derate
  - 65,000 symmetrical fault amps capability
- Output Ratings
  - 0.01 ~ 120Hz Output Frequency
  - 2 ~ 15KHz switching frequency
  - 110% Overload Normal Duty Ratings
  - 150% Overload Heavy Duty Ratings
- RS485 Standard (Built-In)
  - Provides interface for PC based drive interface software
  - Provides ability for multi-drop control from PLC without need for expansion board

## VS1PF Catalog Number Definition



## VS1PF Connections



## Agency Certifications / Listings:

- UL
- cUL
- CE

## Instruction Manuals:

- Drive: MN763
- Remote Keypad Mounting: MN763RK
- Dynamic Braking Unit: MN701VS
- Modbus-RTU Expansion Board: MN763MB
- DeviceNet Expansion Board: MN763DN
- PROFIBUS Expansion Board: MN763PB
- Ethernet Expansion Board: MN763EN
- Lonworks Expansion Board: MN763LW
- BacNet Expansion Board: MN763BC

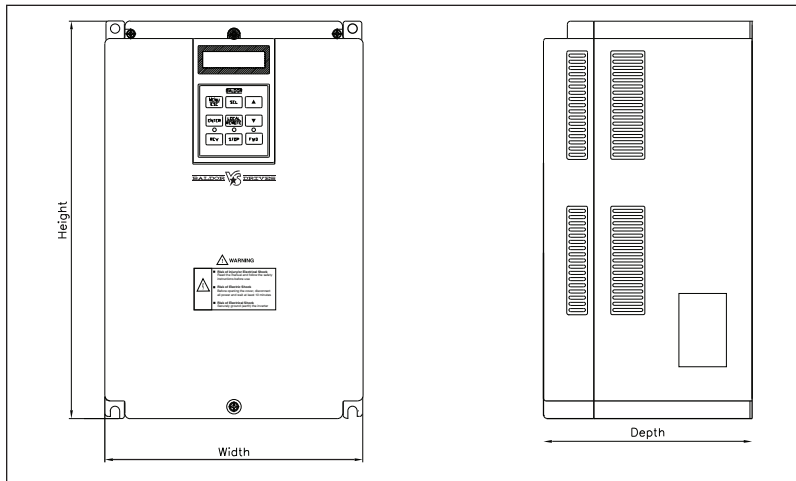
## RATINGS AND DIMENSIONS

Catalog Number	Normal Duty HP	kW	Continuous Normal Duty Amps	Heavy Duty HP	kW	Continuous Heavy Duty Amps	Frame	Height inches (mm)	Width inches (mm)	Depth inches (mm)	Weight lbs. (kg)
<b>230Vac Input</b>											
VS1PF27-1	7.5	5.5	24	5	3.7	17	A	11.18 (284)	5.91 (150)	6.16 (156)	10.8 (4.9)
VS1PF210-1	10	7.5	32	7.5	5.5	23	B	11.18 (284)	7.87 (200)	7.16 (182)	13.2 (6.0)
VS1PF215-1	15	11	46	10	7.5	33	B	11.18 (284)	7.87 (200)	7.16 (182)	13.2 (6.0)
VS1PF220-9	20	15	60	15	11	44	C	15.16 (385)	9.84 (250)	7.91 (201)	28.7 (13.0)
VS1PF225-9	25	18.5	74	20	15	54	C	15.16 (385)	9.84 (250)	7.91 (201)	29.8 (13.5)
VS1PF230-9	30	22	88	25	18.5	68	E	18.11 (460)	11.97 (304)	9.21 (234)	44.1 (20.0)
VS1PF240-9	40	30	115	30	22	84	E	18.11 (460)	11.97 (304)	9.21 (234)	44.1 (20.0)
<b>460Vac Input</b>											
VS1PF47-1	7.5	5.5	12	5	3.7	8	A	11.18 (284)	5.91 (150)	6.16 (156)	10.8 (4.9)
VS1PF410-1	10	7.5	16	7.5	5.5	11	B	11.18 (284)	7.87 (200)	7.16 (182)	13.2 (6.0)
VS1PF415-1	15	11	24	10	7.5	17	B	11.18 (284)	7.87 (200)	7.16 (182)	13.2 (6.0)
VS1PF420-9	20	15	30	15	11	22	C	15.16 (385)	9.84 (250)	7.91 (201)	27.6 (12.5)
VS1PF420-9L*	20	15	30	15	11	24	D	15.88 (403)	9.84 (250)	10.28 (261)	42.9 (19.5)
VS1PF425-9	25	18.5	39	20	15	28	C	15.16 (385)	9.84 (250)	7.91 (201)	28.7 (13.0)
VS1PF425-9L*	25	18.5	39	20	15	30	D	15.88 (403)	9.84 (250)	10.28 (261)	42.9 (19.5)
VS1PF430-9	30	22	45	25	18.5	34	E	18.11 (460)	11.97 (304)	9.21 (234)	44.1 (20.0)
VS1PF430-9L*	30	22	45	25	18.5	39	F	18.89 (480)	10.23 (260)	10.57 (268)	58.3 (26.5)
VS1PF440-9	40	30	61	30	22	44	E	18.11 (460)	11.97 (304)	9.21 (234)	44.1 (20.0)
VS1PF440-9L*	40	30	61	30	22	45	F	18.89 (480)	10.23 (260)	10.57 (268)	58.3 (26.5)
VS1PF450-9	50	37	75	40	30	55	G	21.02 (534)	11.81 (300)	10.46 (266)	59.5 (27.0)
VS1PF450-9L*	50	37	75	40	30	55	J	26.92 (684)	11.81 (300)	10.46 (266)	86.0 (39.1)
VS1PF460-9	60	45	91	50	37	66	G	21.02 (534)	11.81 (300)	10.46 (266)	59.5 (27.0)
VS1PF460-9L*	60	45	91	50	37	66	J	26.92 (684)	11.81 (300)	10.46 (266)	88.2 (40.1)
VS1PF475-9	75	55	110	60	45	80	H	21.02 (534)	11.81 (300)	11.52 (293)	64.0 (29.1)
VS1PF475-9L*	75	55	110	60	45	80	K	26.92 (684)	11.81 (300)	11.52 (293)	92.6 (42.1)
VS1PF4100-9	100	75	152	75	55	111	L	24.02 (610)	14.57 (370)	13.29 (338)	92.6 (42.1)
VS1PF4100-9L*	100	75	152	75	55	111	M	29.92 (760)	14.57 (370)	13.29 (338)	147.4 (67.0)
VS1PF4125-9	125	90	183	100	75	134	L	24.02 (610)	14.57 (370)	13.29 (338)	94.8 (43.1)
VS1PF4125-9L*	125	90	183	100	75	134	M	29.92 (760)	14.57 (370)	13.29 (338)	149.9 (68.1)
VS1PF4150-9L*	150	110	223	125	90	164	N	30.26 (769)	20.08 (510)	16.64 (423)	222.7 (101.2)
VS1PF4200-9L*	200	132	264	150	110	194	N	30.26 (769)	20.08 (510)	16.64 (423)	222.7 (101.2)
VS1PF4250-9L*	250	160	325	200	132	240	P	33.23 (844)	20.08 (510)	16.64 (423)	251.3 (114.2)
VS1PF4300-9L*	300	200	413	250	160	317	R	41.85 (1063)	27.17 (690)	17.70 (450)	441.9 (200.9)
VS1PF4350-9L*	350	220	432	250	160	317	R	41.85 (1063)	27.17 (690)	17.70 (450)	441.9 (200.9)
VS1PF4400-9L*	400	280	547	300	200	401	R	41.85 (1063)	27.17 (690)	17.70 (450)	441.9 (200.9)
VS1PF4500-9	500	315	613	350	220	450	S	44.90 (1141)	30.39 (772)	17.40 (442)	535.7 (243.5)
VS1PF4600-9	600	375	731	400	280	536	T	51.28 (1303)	36.30 (922)	19.49 (495)	837.7 (380.8)
VS1PF4700-9	700	450	877	500	315	643	T	51.28 (1303)	36.30 (922)	19.49 (495)	837.7 (380.8)

\*Built-in DC reactor

## Additional Features

- Basic Parameter Menu for Fast Startup
  - BAS-01 Motor Nameplate Hp
  - BAS-02 Motor Nameplate Voltage
  - BAS-03 Motor Nameplate Base Frequency
  - BAS-04 Motor Nameplate Current
  - BAS-05 Motor Nameplate RPM
  - BAS-06 Minimum Frequency
  - BAS-07 Maximum Frequency
  - BAS-08 Start / Stop Source
  - BAS-09 Speed Reference Source
  - BAS-10 Acceleration Time
  - BAS-11 Deceleration Time
  - BAS-12 Stop Mode
- Multiple Monitor Screens (7) in Operation Mode
  - Set Frequency / Output Frequency
  - Motor Speed / Motor Current
  - Motor Voltage / Drive Status
  - DC Link Voltage / Output Power
  - Digital Input Status / Digital Output Status
  - Analog Input Status
  - Analog Output Status



## Optional Equipment and Accessories

- Remote NEMA 4X/12 Keypad
  - Keypad: VS1PF-RKEY
  - 2 meter (6.6 ft.) cable: VS1PF-CBL2
  - 3 meter (9.8 ft.) cable: VS1PF-CBL3
  - 5 meter (16.4 ft.) cable: VS1PF-CBL5
- Communications Options
  - DeviceNet: VS1PF-DNET
  - Modbus-RTU: VS1PF-MBUS
  - PROFIBUS: VS1PF-PBUS
  - Ethernet – Modbus TCP (late 2007): VS1PF-ENET
  - Lonworks (late 2007): VS1PF-LON
  - BacNet (late 2007): VS1PF-BAC
- Conduit Kits (460Vac Models Only)
  - 20 ~ 25 Hp: VS1PF-NM1C (Frame C)
  - 30 ~ 40 Hp: VS1PF-NM1E (Frame E)
  - 50 ~ 75 Hp: VS1PF-NM1GH (Frames G & H)
  - 100 ~ 125 Hp: VS1PF-NM1L (Frame L)
- Dynamic Braking Units
  - 230 Vac, 10 ~ 20 Hp: VS1PF-T220
  - 230 Vac, 25 ~ 30 Hp: VS1PF-T230
  - 230 Vac, 40 ~ 50 Hp: VS1PF-T250
  - 230 Vac, 60 ~ 75 Hp: VS1PF-T275
  - 460 Vac, 10 ~ 20 Hp: VS1PF-T420
  - 460 Vac, 25 ~ 30 Hp: VS1PF-T430
  - 460 Vac, 40 ~ 50 Hp: VS1PF-T450
  - 460 Vac, 60 ~ 75 Hp: VS1PF-T475
  - 460 Vac, 100 HP: VS1PF-T4100
- Dynamic Braking Resistors
  - See dynamic braking unit manual for selection
- Line Reactors
  - See accessories and options section of catalog
- Line (CE) Filters
  - See accessories and options section of catalog

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