

VS1ST AC DRIVES



Micro drive that is compact, cost effective, and provides powerful control functions. The VS1ST can be started by adjusting just a few basic parameters.

The VS1ST is a feature rich V/Hz product targeted at the equipment manufacturing markets. Combining performance with an intuitive operator interface, the VS1ST can handle the most demanding applications.

Features

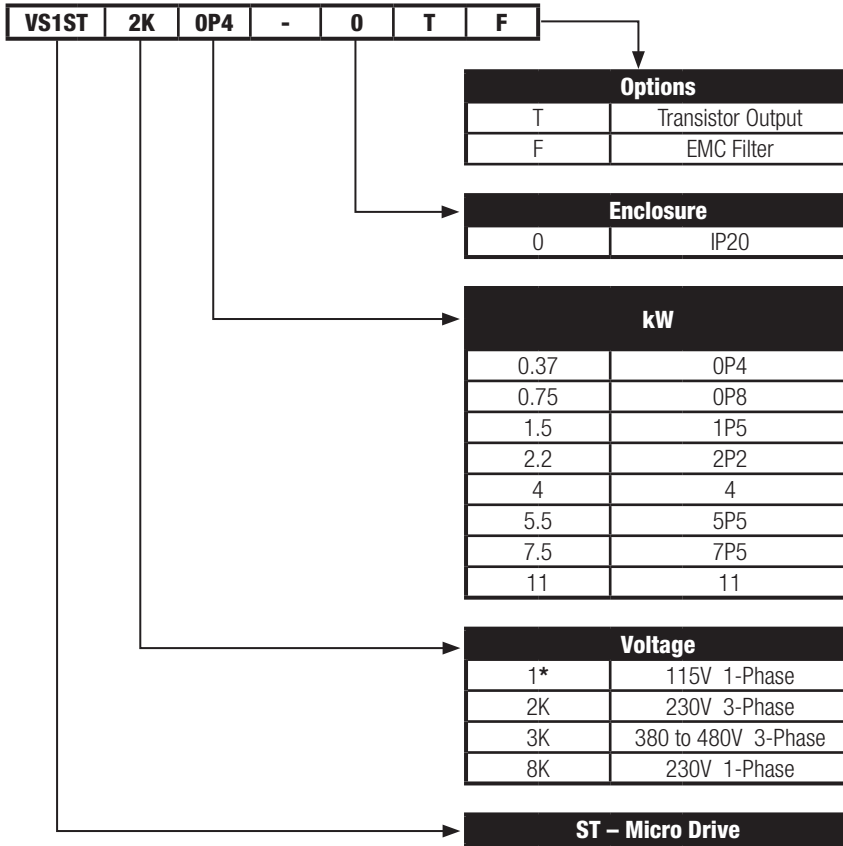
- Single Phase Input Voltage / Power Ratings
 - 115 VAC: 0.37 to 1.1 kW (0.5 to 1.5 Hp)
 - 240 VAC: 0.37 to 2.2 kW (0.5 to 3 Hp)
- Three Phase Input Voltage / Power Ratings
 - 240 VAC: 0.37 to 4 kW (0.5 to 5 Hp)
 - 400 VAC: 0.75 to 11 kW (1.0 to 15 Hp)
- IP20 Enclosure
 - DIN rail mounting
 - Pluggable I/O terminal strip
 - Easy access power terminals
- Enhanced V/Hz Control (Fan/Pump, Linear, Custom)
- Operator Interface
 - User friendly control; basic start/stop, forward/reverse and speed control
 - LED Display; six character
 - Basic parameter list for quick start up
 - Remote keypad option
 - Program loader (upload/download capable)
- Operation Functions
 - Power – Off E-Stop
 - DC injection braking
 - Power line dip ride through
 - Skip frequency
 - Software parameter lock
 - Display speed scaling for custom units
 - PI control
 - Auto restart
 - Slip compensation
 - Brake transistor (frames B & C)
 - Start into a rotating load
- Modbus-RTU Standard (built-in)

Specifications

- Digital Inputs 1 & 2
 - Fully configurable
 - Factory set to common defaults
 - 24 VDC sink / source
- Digital Input 3 / Analog Input 2:
 - Configurable for motor thermistor input
 - Programmable as Analog Input 2
 - 0-10V or 4-20mA
 - 12 bit resolution
- Analog Input 1 / Digital Input 4:
 - 0-10V or 4-20mA
 - 12 bit resolution
 - Programmable as Digital Input 4
- Relay Output: Normally Open Contact
- Analog Output: 0-10V / Digital Output
 - Proportional to Motor Speed, Motor Current, Drive Enable or Motor at Speed
 - Programmable as Digital Output
- Preset Speeds (4)
- Fault Memory
 - Last (4) fault history
- Environmental
 - 0 to 50° C
 - 1000m (3300 feet)
 - 10 to 95% Humidity, non-condensing
- Electrical
 - 115 VAC (99-126 VAC) @ 48-62 Hz
 - 240 VAC (198-264 VAC) @ 48-62 Hz
 - 400 VAC (342-528 VAC) @ 48-62 Hz
 - 97% efficiency @ full load and frequency
- Output Ratings
 - 150% for 1 minute, 175% for 2 seconds
 - 0 to 500Hz Output Frequency
 - 4 to 32 kHz switching frequency

VS1ST AC DRIVES

VS1ST Catalog Number Definition



Agency Certifications/ Listings:

- UL
- cUL
- CE

Optional Equipment and Accessories

- Remote Keypad VS1ST-RKEY3
- CopyCat Loader VS1ST-CCL
- 2nd Relay Output Card VS1ST-2ROUT
- HVAC Output Card VS1ST-HVAC
(Fault & Drive Run)
- 110 or 230V Control Input Card VS1ST-LOGHV-11 or 23
- DB Resistor Kit VS1ST-R100W200
- Serial Network Cables:
 - Splitter Cable VS1ST-J45SP
 - 0.5, 1 or 3M Cable VS1ST-CBL0P3, CBL1 or CBL3
- Communication Network Gateway Interface:
 - Profibus Gateway VS1ST-PBUS
 - DeviceNet Gateway VS1ST-DNET
 - Ethernet Gateway VS1ST-ENET

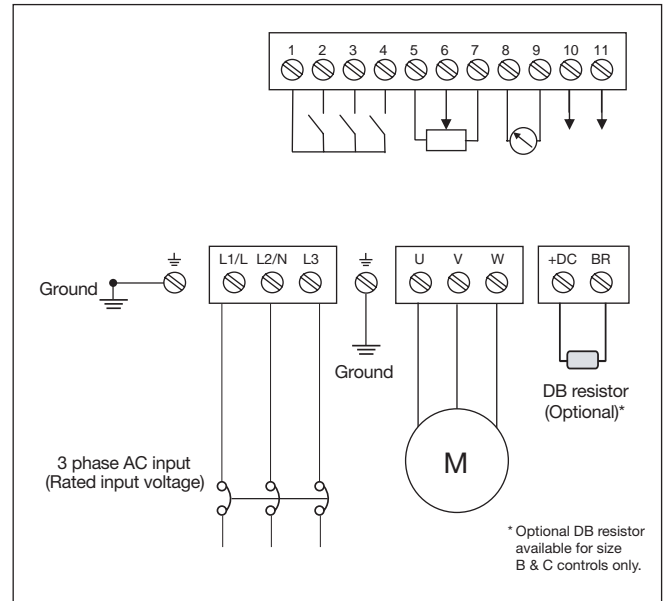
* Note: 115Vac part numbers are listed in Hp ratings; refer to the ratings table for the correct part number.

VS1ST Connections

Control Terminal	Signal	Description
1	+24 Volts	+24V, 100mA
2	Digital Input 1	"Logic 1" input range: 8V to 30V DC
3	Digital Input 2	"Logic 2" input range: 0V to 4V DC
4	Digital Input 3	Digital: 8 to 30V
	Analog Input 2	Analog: 0 to 10V, 0 to 20 mA or 4 to 20mA
5	+10 Volts	10mA, (1kOhm min) potentiometer
6	Analog Input 1	Analog: 0 to 10V, 0 to 20 or 4 to 20mA
	Digital Input 4	Digital: 8 to 30V
7	0 Volts	User ground, connected to terminal 9
8	Analog Output	Analog: 0 to 10V, 20mA maximum
	Digital Output	Digital: 0 to 24V
9	0 Volts	User ground, connected to terminal 7
10	Relay Common	
11	Relay N/O	250V AC 6A / 30V DC 5A

Power Terminal	Signal	Description
L1/L, L2/N, L3	AC Line Input	Input power to drive
U, V, W	Drive output	Output terminals to motor (3-Phase)
+DC, BR	Brake control	DB Resistor Connection only available for B and C frames
⏏	Ground	Chassis Ground

Terminal Description Chart



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Operation – Using the Keypad

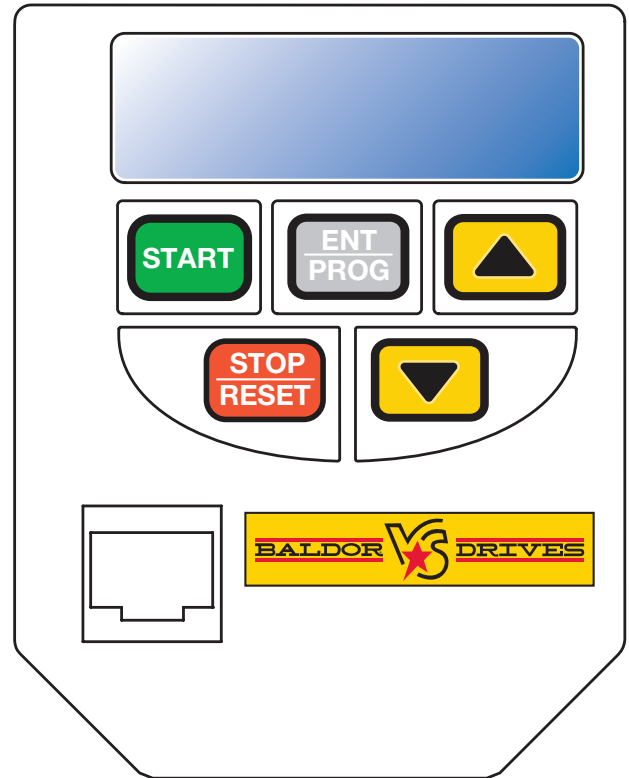
Increase/Decrease: In operation mode, increase/decrease arrows increase or decrease the speed reference. Used to navigate between parameters in edit mode.

Ent/Prog: Press momentarily to view display screens.

Access the parameters menu by holding the Ent/Prog key for >1 second. Used to display a parameter and store a new value into memory.

Stop: Stop the drive.

Start: Run the drive in keypad operation mode. Changes motor direction if pressed while running.



Programming Parameters

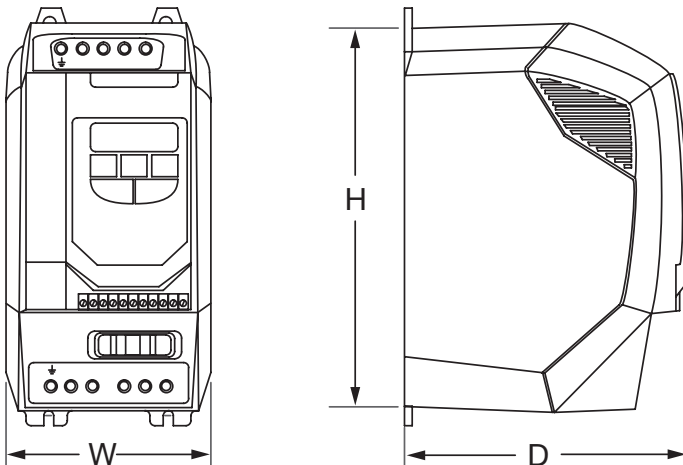
Keypad Display	Parameter Name
P-00	Read-only Parameters
P-01	Motor Rated Voltage
P-02	Motor Rated Current
P-03	Motor Rated Frequency
P-04	Motor Rated Speed
P-05	Minimum Speed
P-06	Maximum Speed
P-07	Start/Stop Source
P-08	Operating Mode
P-09	Stop Mode
P-10	Accel Time
P-11	Decel Time
P-12	Preset Speed 1
P-13	Preset Speed 2
P-14	Preset Speed 3
P-15	Preset Speed 4
P-16	Analog Input Scaling
P-17	Analog In 1
P-18	Voltage Boost
P-19	Energy Savings Enable
P-20	Trip Log
P-21	PWM Frequency
P-22	Relay Output

Keypad Display	Parameter Name
P-23	Display Speed Scaling
P-24	Analog Output Function
P-25	Digital & Relay Output Limits
P-26	Skip Frequency
P-27	Skip Frequency Band
P-28	Restart Mode
P-29	Restart Attempts
P-30	Analog Input Offset
P-31	Brake After Stop
P-32	Brake Before Start
P-33	Decel 2 Fast Stop
P-34	Brake Chopper Enable
P-35	Communication Node Address
P-36	V/Hz Frequency
P-37	V/Hz Voltage
P-38	PI Proportional Gain
P-39	PI Integral Time Constant
P-40	PI Operating Mode
P-41	PI Reference Select
P-42	PI Digital Reference
P-43	PI Feedback Select
P-44	Analog In 2 Format
P-45	Parameter Access Lock

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Ratings and Dimensions:

Model Number		Transistor Output	kW	Hp	Input Current (Amps)	Output Current (Amps)	Frame
Standard	w/ EMC Filter						
115V 50/60Hz 1-Phase Input, 230V 3-Phase Output							
VS1ST10P5-0	VS1ST10P5-0F	No	0.37	0.5	6.7	2.3	A
VS1ST11-0	VS1ST11-0F	No	0.75	1	12.5	4.3	A
VS1ST11P5-0T	VS1ST11P5-0TF	Yes	1.1	1.5	16.8	5.8	B
230V 50/60Hz 1-Phase Input, 3-Phase Output							
VS1ST8K0P4-0	VS1ST8K0P4-0F	No	0.37	0.5	6.7	2.3	A
VS1ST8K0P8-0	VS1ST8K0P8-0F	No	0.75	1	12.5	4.3	A
VS1ST8K1P5-0	VS1ST8K1P5-0F	No	1.5	2	19.3	7	A
VS1ST8K1P5-0T	VS1ST8K1P5-0TF	Yes	1.5	2	19.3	7	B
VS1ST8K2P2-0T	VS1ST8K2P2-0TF	Yes	2.2	3	28.8	10.5	B
230V 50/60Hz 3-Phase Input/Output							
VS1ST2K0P4-0	N/A	No	0.37	0.5	3	2.3	A
VS1ST2K0P8-0	N/A	No	0.75	1	5.8	4.3	A
VS1ST2K1P5-0	N/A	No	1.5	2	9.2	7	A
VS1ST2K1P5-0T	VS1ST2K1P5-0TF	Yes	1.5	2	9.2	7	B
VS1ST2K2P2-0T	VS1ST2K2P2-0TF	Yes	2.2	3	13.7	10.5	B
VS1ST2K4-0T	VS1ST2K4-0TF	Yes	4	5	20.7	18	C
380-480V 50/60Hz 3-Phase Input/Output							
VS1ST3K0P8-0	VS1ST3K0P8-0F	No	0.75	1	2.9	2.2	A
VS1ST3K1P5-0	VS1ST3K1P5-0F	No	1.5	2	5.4	4.1	A
VS1ST3K1P5-0T	VS1ST3K1P5-0TF	Yes	1.5	2	5.4	4.1	B
VS1ST3K2P2-0T	VS1ST3K2P2-0TF	Yes	2.2	3	7.6	5.8	B
VS1ST3K4-0T	VS1ST3K4-0TF	Yes	4	5	12.4	9.5	B
VS1ST3K5P5-0T	VS1ST3K5P5-0TF	Yes	5.5	7.5	16.1	14	C
VS1ST3K7P5-0T	VS1ST3K7P5-0TF	Yes	7.5	10	17.3	18	C
VS1ST3K11-0T	VS1ST3K11-0TF	Yes	11	15	28.2	24	C



Dimensions – mm (inches)			
Size	H	W	D
VS1ST Micro Drive			
A	173 (6.81)	82 (3.23)	123 (4.84)
B	221 (8.70)	109 (4.29)	150 (5.91)
C	261 (10.28)	131 (5.16)	175 (6.89)
Weight – Kg (lbs)			
Frame	A	B	C
	1.1 (2.42)	2.6 (5.73)	3 (6.61)

BALDOR

Baldor Electric Company

World Headquarters: P.O. Box 2400 • Fort Smith, AR 72902-2400 U.S.A.

Phone +1 479 646-4711 • Fax +1 479 648-5792 • International Fax +1 479 648-5895 • www.baldor.com