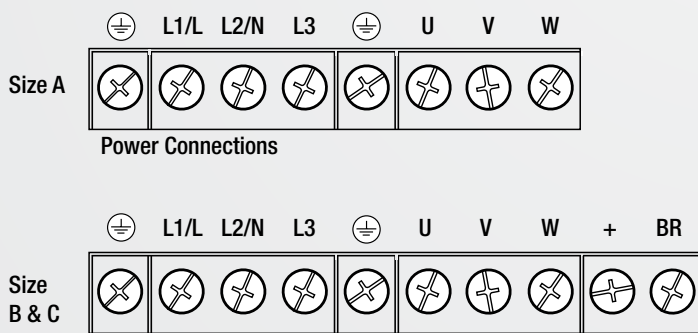
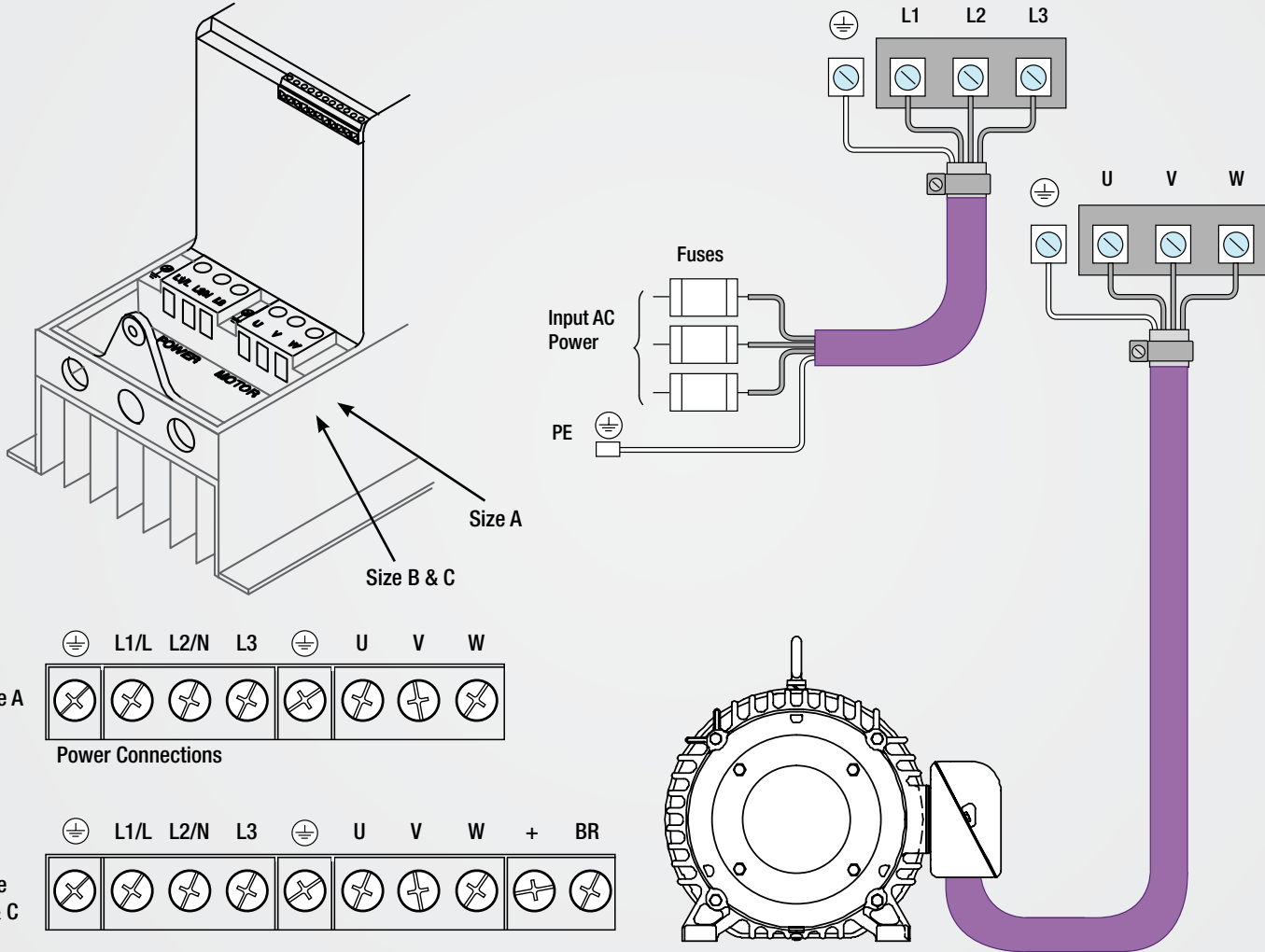
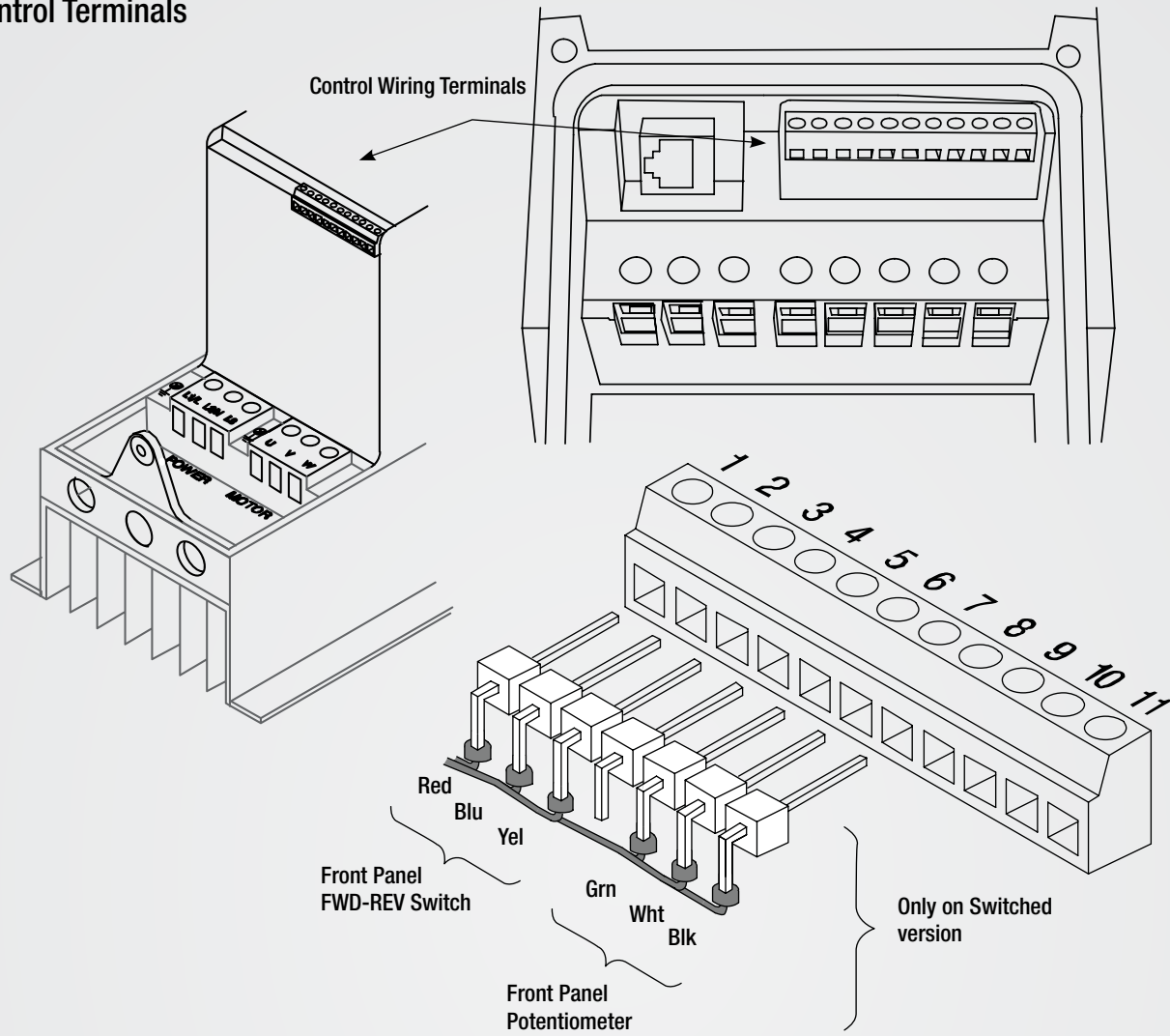


Power Connections

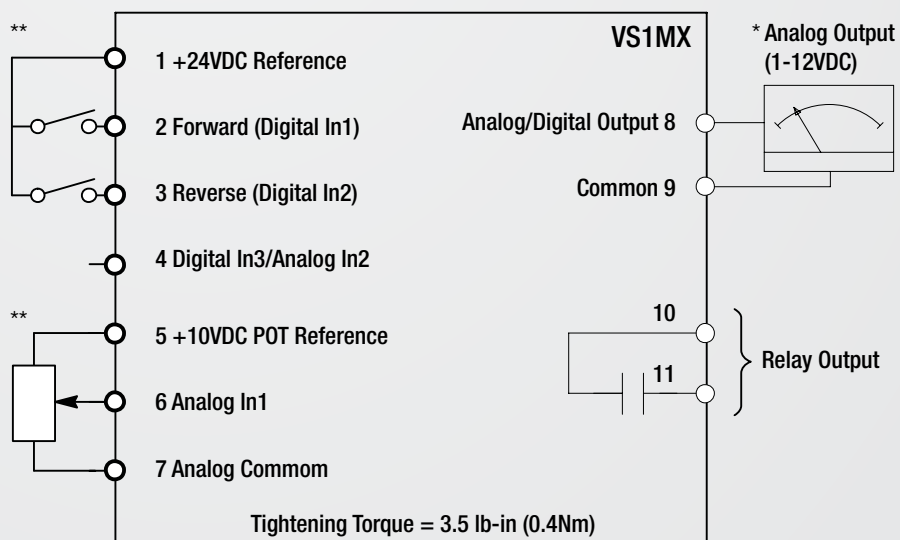
Size A, B, C
VS1MX10P5 shown as an example



Control Terminals



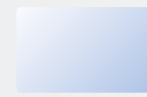
Terminal	Signal Description
1	+24VDC (@ 100 mA)
2	Digital In1
3	Digital In2
4	Digital In3 / Analog In2
5	+10VDC (@ 10 mA) Reference for Potentiometer (1kohm minimum)
6	Analog In1 / Digital In4
7	Common (terminals 7 & 9 are connected)
8	Analog Output (0-10VDC @ 10mA) / Digital Output (0-24VDC)
9	Common (terminals 7 & 9 are connected)
10	Relay Common
11	Relay N.O. Contact (rated 250VAC@6A; 30VDC@5A)



* Optional Hardware not provided.
** Only provided in Switched version.



NEMA 4X (IP66) KEYPAD
(Models with Disconnect)



Display
6 Digit seven segment display. Display of parameter numbers, values, error messages and other information.



Start
Starts motor if Direction command and Speed reference are set. Only active if P07 is set to allow keypad control. Programmable to change the motor direction if pressed while running.



Stop / Reset
Stops the drive in all modes. Stop is always active and stops the drive in both keypad, terminal and network control modes. Resets any active faults, if fault condition has been cleared.



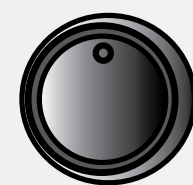
Enter / Program
Momentarily press to view available displays. Pressing and holding the ENT Key for approximately 2 Seconds or more will enter the programming mode or escape back out of the programming mode.



Increase
During operation increases the speed reference. (Active in keypad mode). Pressing for a period of time will increase the reference value rate of change. In edit mode, navigates between parameters and increments parameter values.

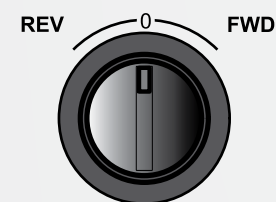


Decrease
During operation decreases the speed reference. (Active in keypad mode). Pressing for a period of time will increase the reference value rate of change. In edit mode, navigates between parameters and decrements parameter values.



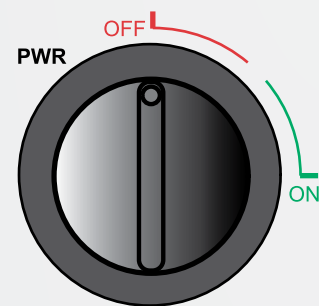
Speed Reference
(Disconnect models only)

Adjusts the motor speed when Analog In1 is set as the Speed Reference Source.



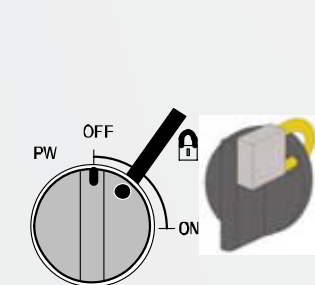
Direction Command
(Disconnect models only)

Sets the direction of motor rotation and issues a run command, 0 (OFF), FWD (run forward) or REV (Run reverse). At 0 position, the motor output is disabled but power is applied to the control circuits.



On/Off Power Switch
(Disconnect models only)

OFF removes power from internal circuits. On powers up the control for operation. Note: In OFF, AC power is still present at the L1, L2, L3 terminals. Separate disconnect required to remove AC power from drive terminals.

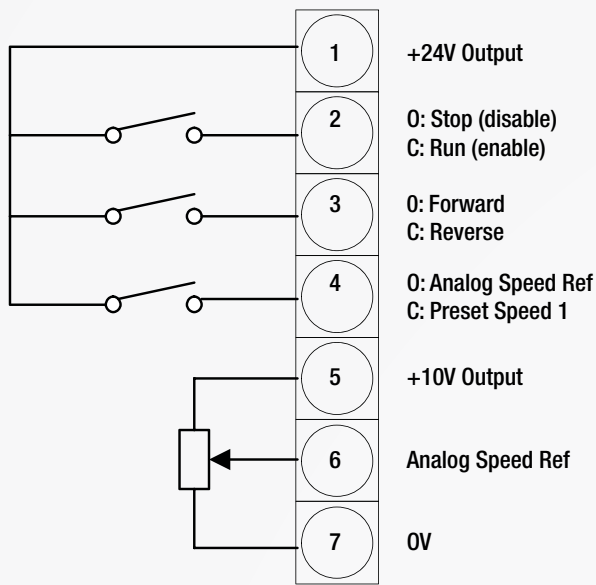


NEMA12 only
(Disconnect models only)

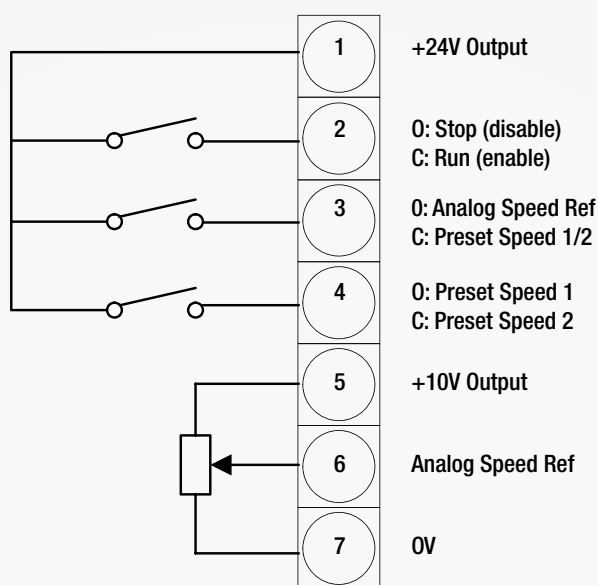
On/Off Power Switch (with Lockout). Allows the On/Off Power Switch to be locked in the OFF position using a 20mm standard shackle pad lock (not provided). This ensures no one will accidentally turn power on. Note: NEMA4X models with disconnect do not have lock out capability.

Connection Mode Examples

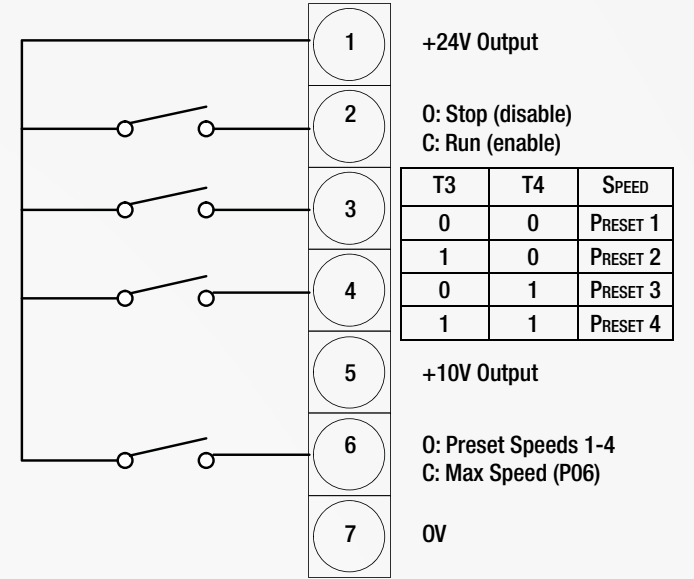
Analog speed input with 1 preset speed and fwd/rev switch
Terminal mode P07 = 0, P08 = 0



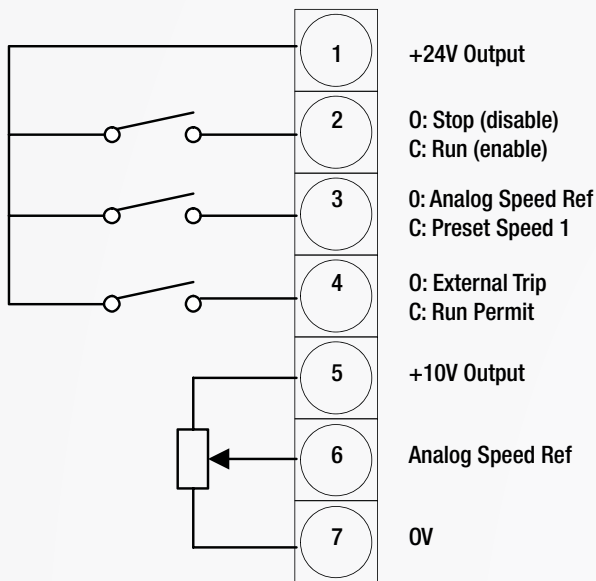
Analog speed input with 2 preset speeds
Terminal mode P07 = 0, P08 = 1



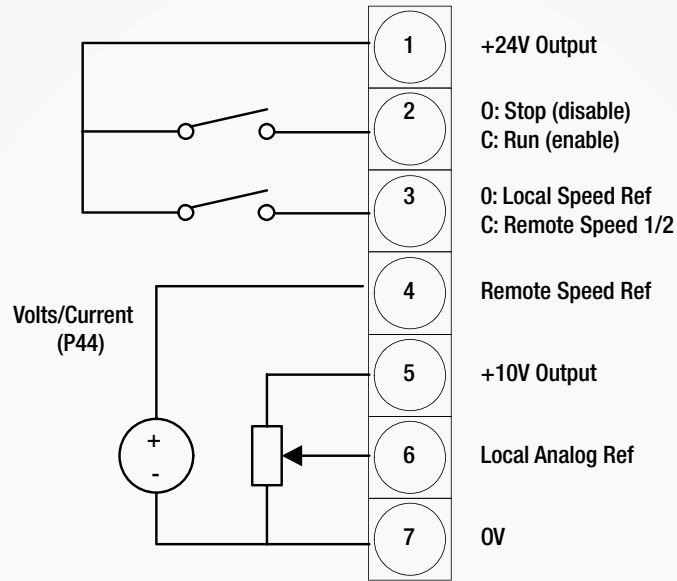
4 preset speeds and fwd rev switch
Terminal mode P07 = 0, P08 = 2



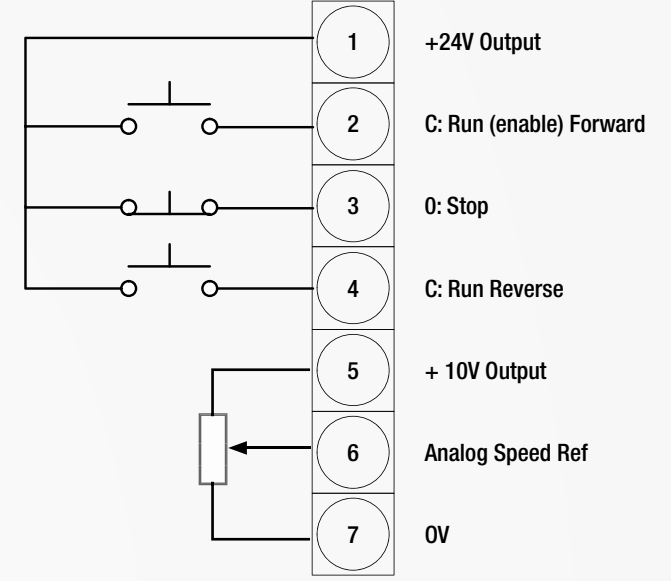
Analog Speed input with 1 preset speed and motor thermistor trip
Terminal mode P07 = 0, P08 = 3



Local or remote analog speeds (2 analog inputs)
Terminal mode P07 = 0, P08 = 4



3-wire start/stop with analog speed input
Terminal mode P07 = 0, P08 = 11



Using the REV/0/FWD selector switch (Switch Version Only)

By adjusting the parameter settings the VS1MX can be configured for multiple applications and not just for Forward or Reverse. This could typically be for Hand/Off/Auto applications (also known as Local/Remote) for HVAC and pumping industries.

Switch Position			Parameters		Notes
REV	OFF	FWD	P-07	P-08	
Run Reverse	STOP	Run Forward	0	0	Factory Default Configuration Run Forward or Reverse with speed controlled from the Local Potentiometer (POT)
STOP	STOP	Run Forward	0	5, 7	Run forward with speed controlled from the local POT Run Reverse - disabled
Preset Speed 1	STOP	Run Forward	0	1	Run Forward with speed controlled from the Local POT Preset Speed 1 provides a 'Jog' Speed set in P-12
Run Reverse	STOP	Run Forward	0	6, 8	Run Forward or Reverse with speed controlled from the Local POT
Run in Auto	STOP	Run in Hand	0	4	Run in Hand - Speed controlled from the Local POT Run in Auto - Speed controlled using Analog input 2 e.g. from PLC with 4-20mA signal.
Run in Speed Control	STOP	Run in PI Control	5	1	In Speed Control the speed is controlled from the Local POT In PI Control, Local POT controls PI set point
Run in Preset Speed Control	STOP	Run in PI Control	5	0, 2, 4, 5, 8..12	In Preset Speed Control, P-12 sets the Preset Speed In PI Control, POT can control the PI set point (P-44=1)
Run in Hand	STOP	Run in Auto	3	6	Hand - speed controlled from the Local POT Auto - Speed Reference from Modbus
Run in Hand	STOP	Run in Auto	3	3	Hand - Speed reference from Preset Speed 1 (P-12) Auto - Speed Reference from Modbus

Read Only Parameters

Selecting P00 and pressing ENT/PROG accesses a read-only menu to monitor internal drive values. Once in the display view, the UP and Down arrows will scroll between the read only variables shown below.



Number	Value Range, Description and Preset Value
P00-01	Analog Input 1 Value (100%=Max Vin).
P00-02	Analog Input 2 Value (100%=Max Vin).
P00-03	Speed Reference Input -P-06 to P-06 (Hz if P-04=0, RPM if P-04≥1)
P00-04	Digital Input Status
P00-05	Reserved
P00-06	Reserved
P00-07	Motor Voltage
P00-08	DC Bus Voltage
P00-09	Internal Heatsink Temperature (in °C)
P00-10	Total Hours Run Time (Power applied)
P00-11	Run time since last trip. Reset on next enable after trip or power down.
P00-12	Run time since last trip. Reset on next enable after trip. Not by Undervolt trip or power down (unless after a trip condition).
P00-13	Run time since drive enabled. Reset on next enable after disable.
P00-14	PWM Frequency. May be less than selected by P-21 if drive is hot.
P00-15	DC Bus Volts Log. Last 8 sample values (every 250 msec).
P00-16	Thermistor temperature log. Last 8 sample values (every 250 msec).
P00-17	Motor Current. Last 8 sample values (every 250 msec).
P00-18	Software ID, I/O Processor & Motor Control versions.
P00-19	Drive Serial Number.
P00-20	Drive Identifier. (Drive Rating & Type).

Simple Parameter Adjustments

Factory settings may give satisfactory performance, however certain adjustments may be beneficial

Adjustment	Parameter	Parameter Name
Motor Rated Volts	P-01	The factory default setting P01 = 0 should be used unless voltage compensation is required.
Motor Rated Current	P-02	Must be set to the value on the motor nameplate. P04 is optional. If this parameter is set to zero (default state), speed is displayed in Hz (otherwise, RPM).
Motor Rated Frequency	P-03	
Motor Rated Speed	P-04	
Minimum Speed	P-05	Set P06 to the maximum speed and P05 to the minimum speed. These limits can also be negative for reverse speeds. If a non-zero minimum speed is set in P05, the motor will ramp to this minimum speed at the rate set in P10 as soon as the drive is enabled.
Maximum Speed	P-06	
Start/Stop Source	P-07	Set as required by the application.
Speed Ref Source	P-08	Set as required by the application.
Stop Mode	P-09	Select method of stopping required when drive is disabled.

