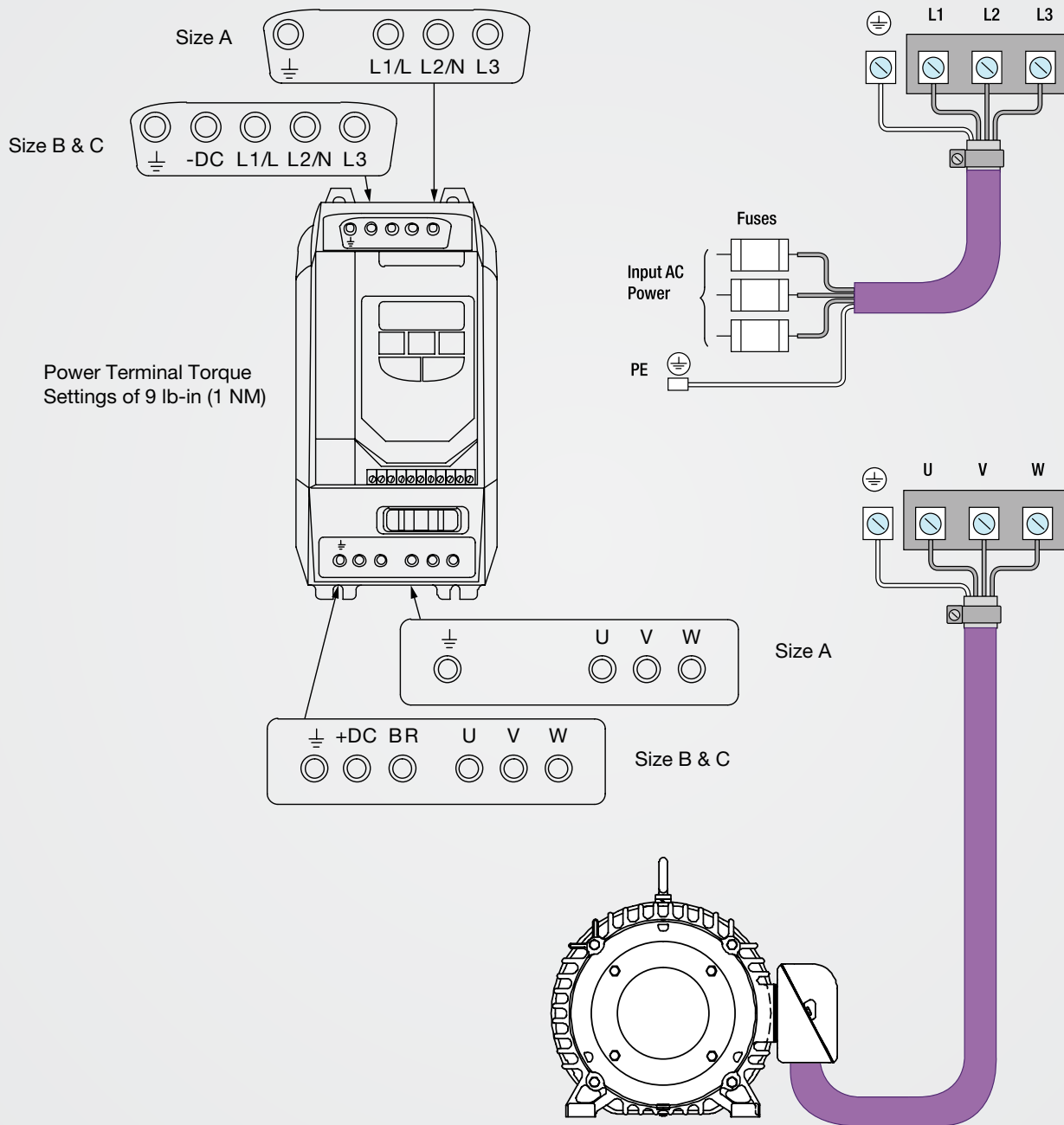
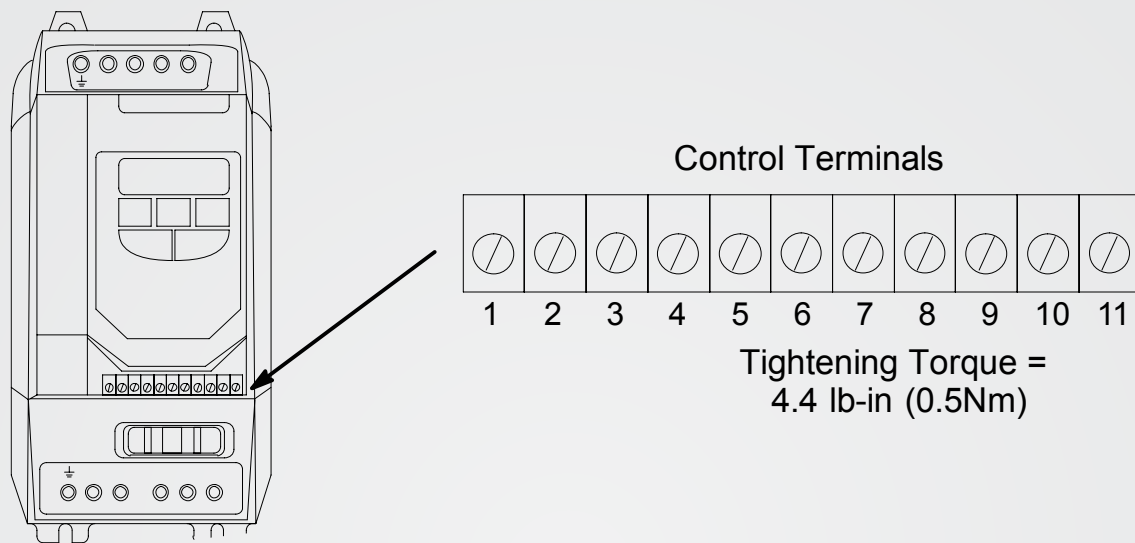


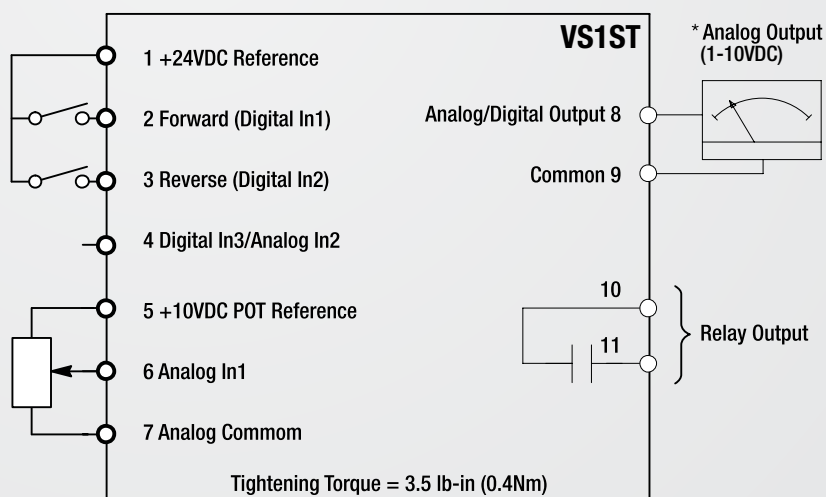
## Power Connections



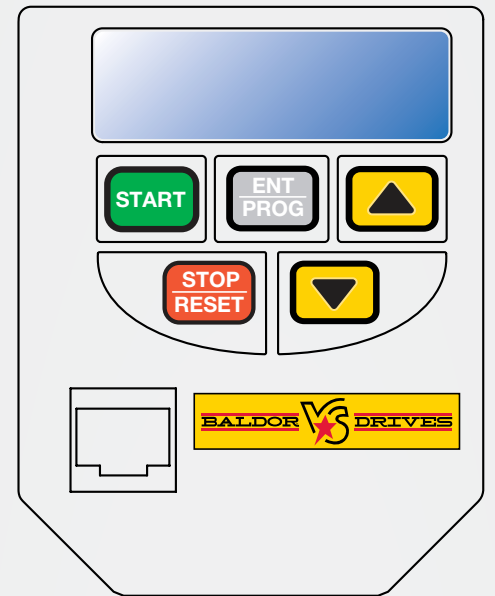
## Control Terminals



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.



**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.

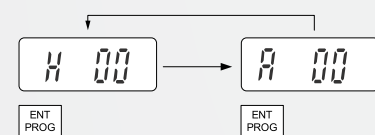


**Decrease**  
During operation decreases the speed reference. (Active in keypad mode). Pressing for a period of time will increase the reference value rate of change. In edit mode, navigates between parameters and decrements parameter values.

### Keypad Display: Standard and Custom

Speed and Amps can be displayed by the drive in its default configuration. Press the ENT/PROG key momentarily to toggle between Hertz and Amps on the display.

Parameter Settings P-04=0, P-23=0



### RPM Display

Setting P-04 to a value other than zero will set units for the VS1ST in RPM. This will enable a third display screen in operational mode to show the RPM units set in parameter P-04.

Parameter Settings P-04=1800, P-23=0



### Custom Display Units

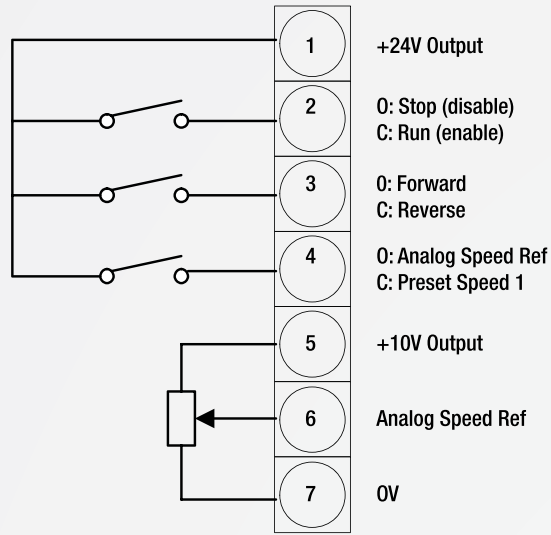
Parameter P-23 is used to configure the display and show custom units based on the scale factor assigned. When a value other than zero is assigned to P-23, a new display is enabled in operational mode. If P-04=0, P-23 will scale units in Hertz, and if P-04 is not zero, P-23 will scale the RPM units set by P-04 (see display examples set below):

Parameter Settings P-04=0, P-23=2.0

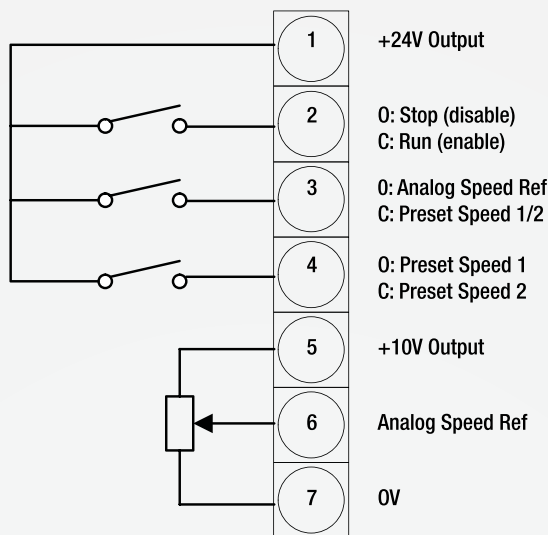


# Connection Mode Examples

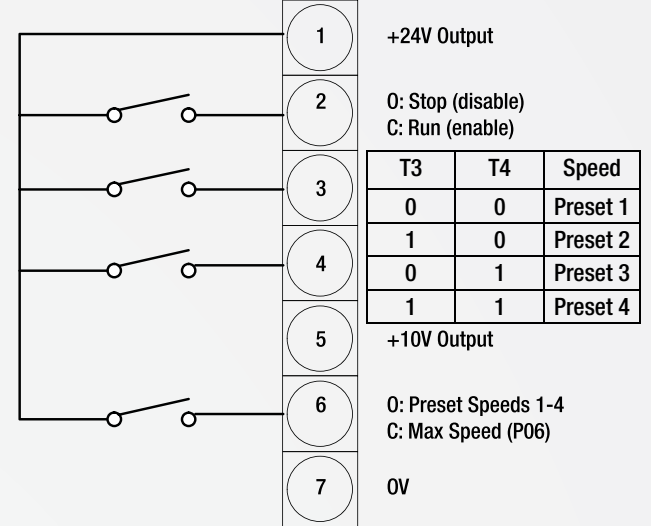
Analog speed input with 1 preset speed and fwd/rev switch  
Terminal mode P07 = 0, P08 = 0



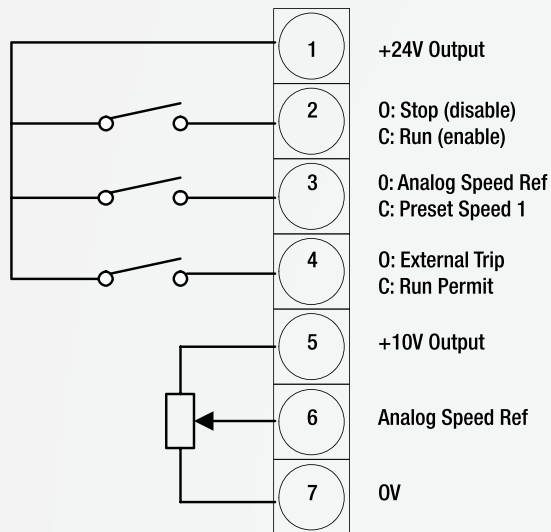
Analog speed input with 2 preset speeds  
Terminal mode P07 = 0, P08 = 1



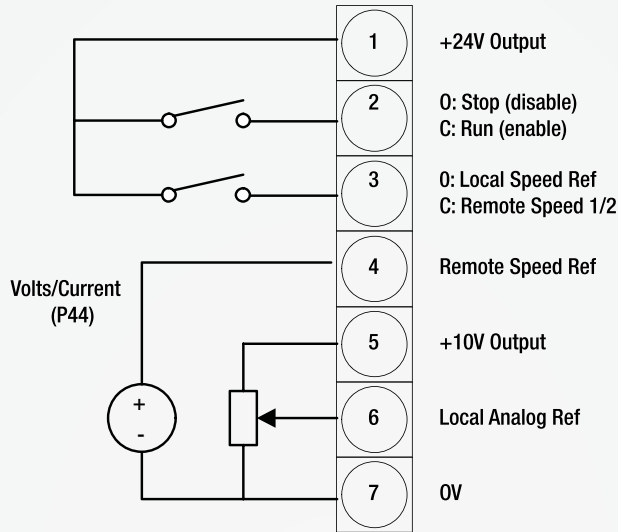
4 preset speeds and Max Speed switch  
Terminal mode P07 = 0, P08 = 2



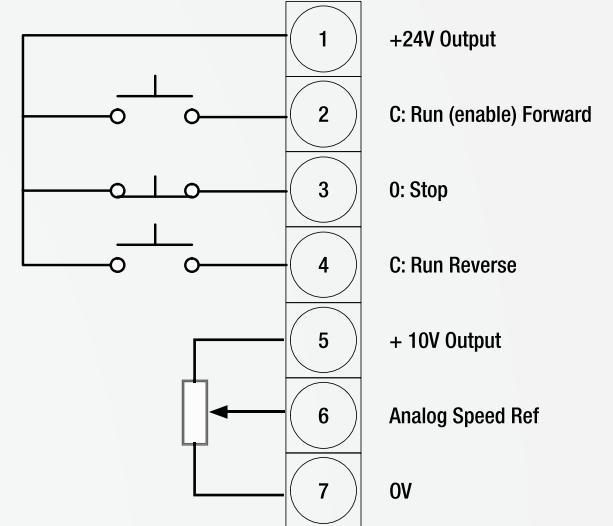
Analog Speed input with 1 preset speed and motor thermistor trip  
Terminal mode P07 = 0, P08 = 3



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



## 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 the 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.

## Keypad Mode – Power UP Procedures

1. Remove all power from the control.
2. Couple the motor to its load.
3. Verify freedom of motion of motor shaft.
4. Verify the motor coupling is tight without backlash.
5. Connect input control wires and output control wires, see figure "Control Terminals"
6. Connect a control switch between terminals 1 and 2 ensuring that the contact is open (drive disabled).
7. Connect Power and Motor wires to the control, See Figure "Power Connections"
8. Turn power on. Be sure there are no faults.
9. Set the following parameters for the values displayed on the motor nameplate:  
P-01 Motor Rated Voltage  
P-02 Motor Rated Current  
P-03 Motor Rated Frequency  
P-04 Motor Rated Speed
10. Set P07 = 1 or 2 (Start/Stop Source), P-08=4 (allows keypad up and down arrows for speed control).
11. Verify the holding brakes if any, are properly adjusted to fully release and set to the desired torque.
12. Enable the drive by closing the switch between control terminals 1 & 2
13. Run the drive from the keypad.

To restore operation to terminal strip (remote) mode, set P-07 to 0 or as desired. Remove all power from the control and then remove the jumper at 1 & 2 of the control terminal strip.