CPN1 Quick Start Manual

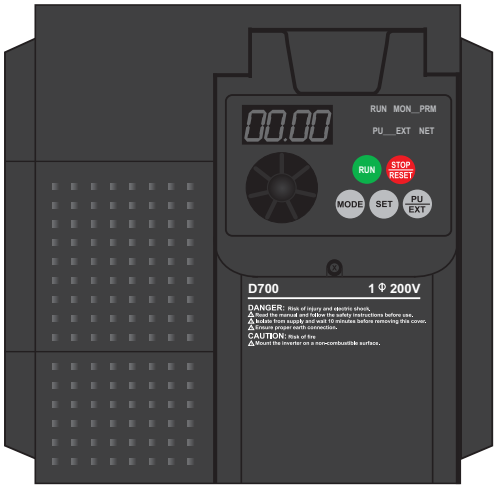
for Constant Pressure Applications

This CPN1 Drive has been factory pre-programmed for your specific pressure control application.

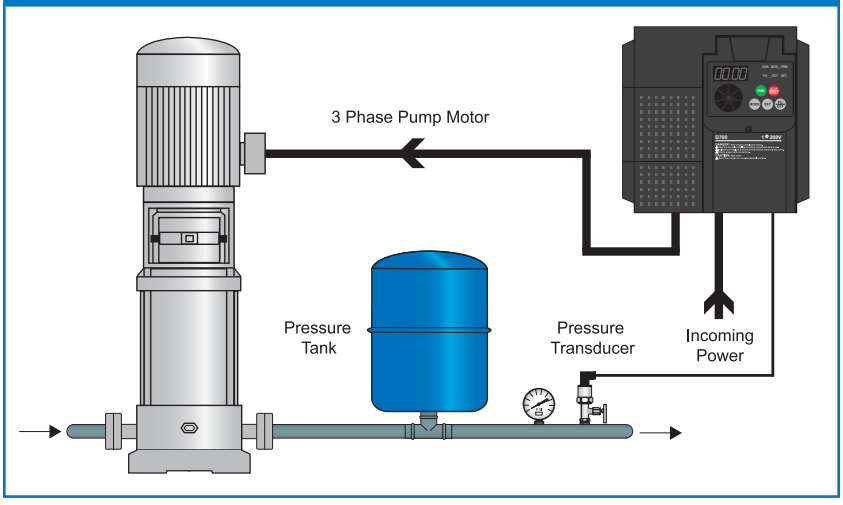
All relevant parameters have been configured to match the provided pump data and system pressure requirements.

Should you need to make minor adjustments, please consult the parameter table enclosed in this document.

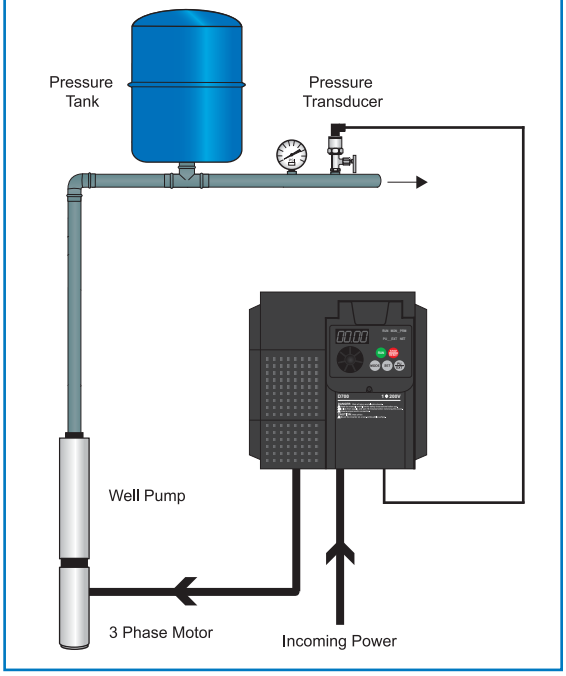
Consult the factory for assistance.



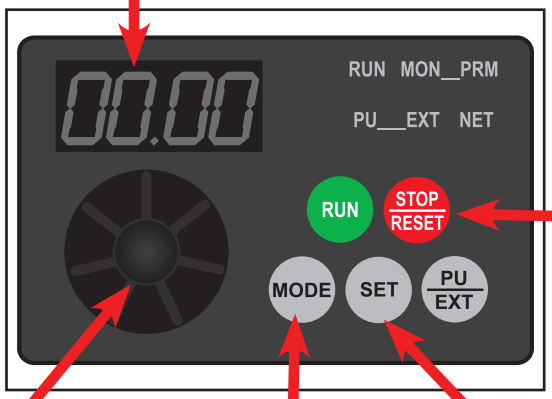
Pressure Booster Pump Application



Deep Well Submersible Pump Application



Display and Keypad



DISPLAY:
Monitor 4 digit LED

Monitoring Hz, Amps and PSI
Press the SET button to toggle the display from:
- Motor speed (Hz ON)
- Motor Amps (A ON)
- Pressure (Hz, A & V OFF)

STOP/RESET:
Fault RESET

SETTING DIAL: Used to scroll through parameter list and edit parameter value.

MODE: To display parameters. Also used to exit back to monitoring display.

SET: Used to save parameter value after editing. During operation the SET button is used to monitor motor Hz, amps and pump discharge pressure.

PARAMETERS	DESCRIPTION
P. 1	Maximum Frequency
P. 2	Minimum Frequency
P. 7	Thrust Bearing Accel time
P. 8	Thrust Bearing Decel time
P. 9	Electronic Thermal Overload
P. 42	Thrust Bearing Frequency
P. 44	Second Accel/Decel time
P. 83	Motor Voltage
P. 129	PID proportional band
P. 130	PID integral time
P. 133	PID Pressure set point
P. 575	Sleep timer
P. 576	Sleep frequency
P. 577	Start pressure (differential)

Example: Changing the Set Pressure

1. Press **MODE** to choose the parameter setting mode.

(The parameter number read previously appears.)

2. Turn the **SETTING DIAL** until P.133 (Pr. 1) appears.

3. Press **SET** to read the current pressure set point value. “50.00” (initial value) appears.

4. Turn the **SETTING DIAL** to change it to the pressure set point value “55.00”.

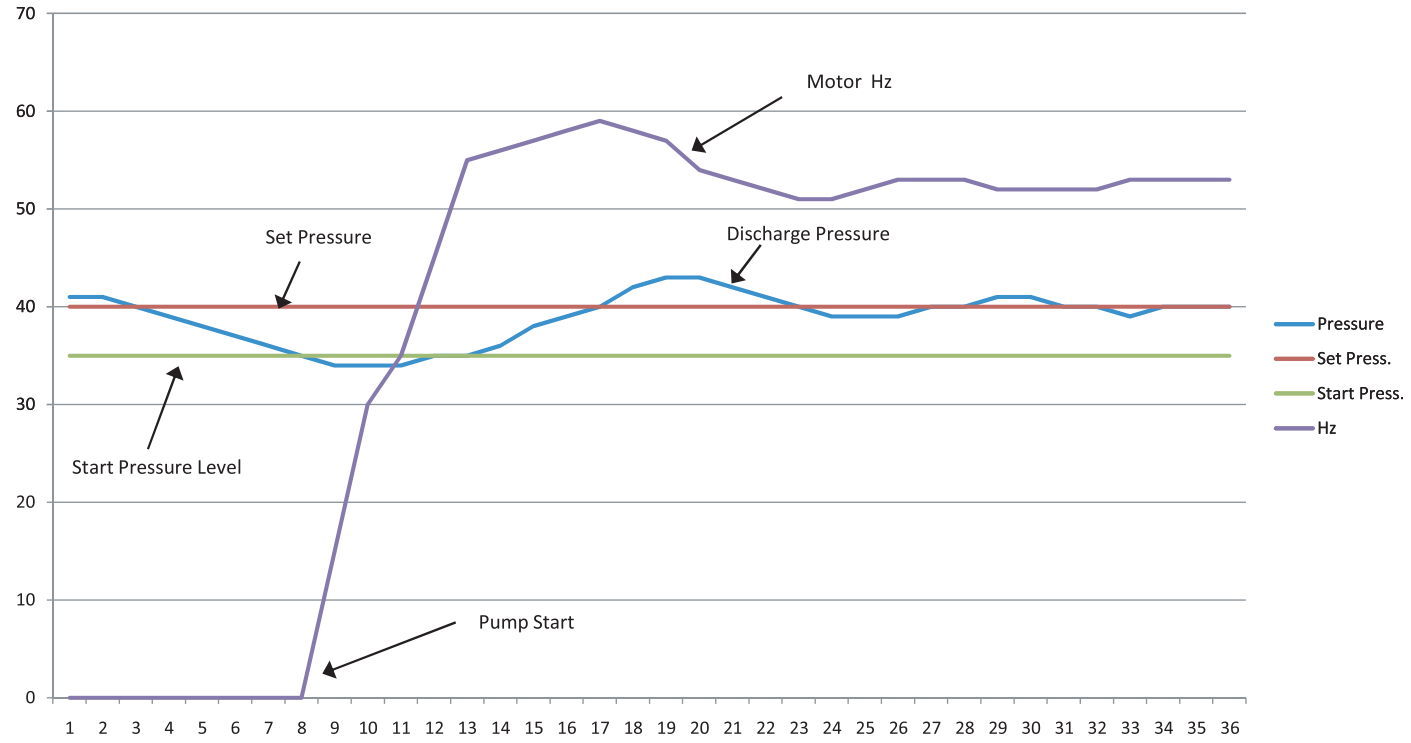
5. Press **SET** to save. **Flash --- Parameter setting complete!**

- Turn **SETTING DIAL** to read another parameter
- Press **SET** to show the setting again.
- Press **SET** twice to show the next parameter.
- Press **MODE** twice to return the monitor to frequency monitor.

OFF/AUTO Operation

OFF position
The pump will not run

AUTO position
The pump will not run if the pressure is above the set pressure. The pump will run if the pressure drops below the Set Pressure less the Start Pressure. Example if set the set pressure is 40PSI (P.133=40 PSI), and the Start Pressure is 5PSI (P.577=1005). The pump will start when the pressure drops below 35PSI (see example below)



High Pressure Shutdown
A normally closed pressure switch is highly recommended to be wired to the “High Pressure Shutdown” terminals in the CPN1 panel. The pressure switch should be sized so that the normally closed contacts will open when the system pressure exceeds approximately 10-15 psi above the system setpoint pressure. The high pressure shutdown is intended to shut the CPN1 panel down in the event of a transducer malfunction. Upon a drop in pressure, the CPN1 panel will return to normal operation. A pressure relief valve is also highly recommended.

Parameter List

PARAMETERS	DESCRIPTION	RANGE	DEFAULT	TYPICAL
P. 1	Maximum frequency	0 to 120Hz	60.00Hz	60.00Hz
P. 2	Minimum frequency	0 to 120Hz	30.00Hz	30.0Hz
P. 7	Thrust Bearing Accel time	0 to 3600s	2.0	2.0
P. 8	Thrust Bearing Decel time	0 to 3600s	2.0	2.0
P. 9	Electronic Thermal Overload	0 to 500A	--	Match Pump FLA
P. 42	Thrust Bearing Frequency	0 to 60Hz	30.0	30.0
P. 44	Second Accel/Decel. Time	0 to 3600s	3.0	3.0
P. 83	Motor Voltage	0 to 1000V	230.0	Match Pump Volt
P. 129	PID proportional band	0.1 to 1000%, 9999	100%	100%
P. 130	PID integral time	0.1 to 3600s, 9999	1.0	1.0
P. 133	PID Pressure set point	0 to 100%, 9999	60.00	60.00
P. 575	Sleep timer	0 to 3600s, 9999	10.0	10.0
P. 576	Sleep Frequency	0 to 400Hz	35.00Hz	35.00Hz
P. 577	Start Pressure (differential)	900 to 1100%	1005	1005

Maximum frequency: (P.1)
The pump will not be allowed run above this frequency. It must be set at 60Hz for most applications.

Minimum frequency: (P.2)
The pump will not be allowed run below this frequency. It must be set at 30Hz for submersible well pumps.

Acceleration/Deceleration time: (P.7, P.8)
P.7 Acceleration rate in seconds
P.8 Deceleration rate in seconds
Applicable to the Acceleration/Deceleration rate from 0Hz to 60Hz. Typically for submersible motors/pumps, the Accel/Decel time should be set to 2 seconds. This Accel/Decel rate is only valid up to the thrust bearing frequency (P. 42).

Electronic thermal O/L relay: (P.9)
The electronic overload will trip the VFD and protect the motor from damage in the event an overload condition. Set this value to match the motor nameplate Full Load Amps. For submersible well pumps, set to the motor Max. Amps (Service Factor Amps).

Thrust Bearing Frequency: (P.42)
The thrust bearing frequency should be set on submersible motors to the manufacturer's recommended setting. Settings P. 7 and P. 8 should also be adjusted when using a submersible motor. If a submersible motor/pump is not used, the thrust bearing frequency should be set to 5 Hz.

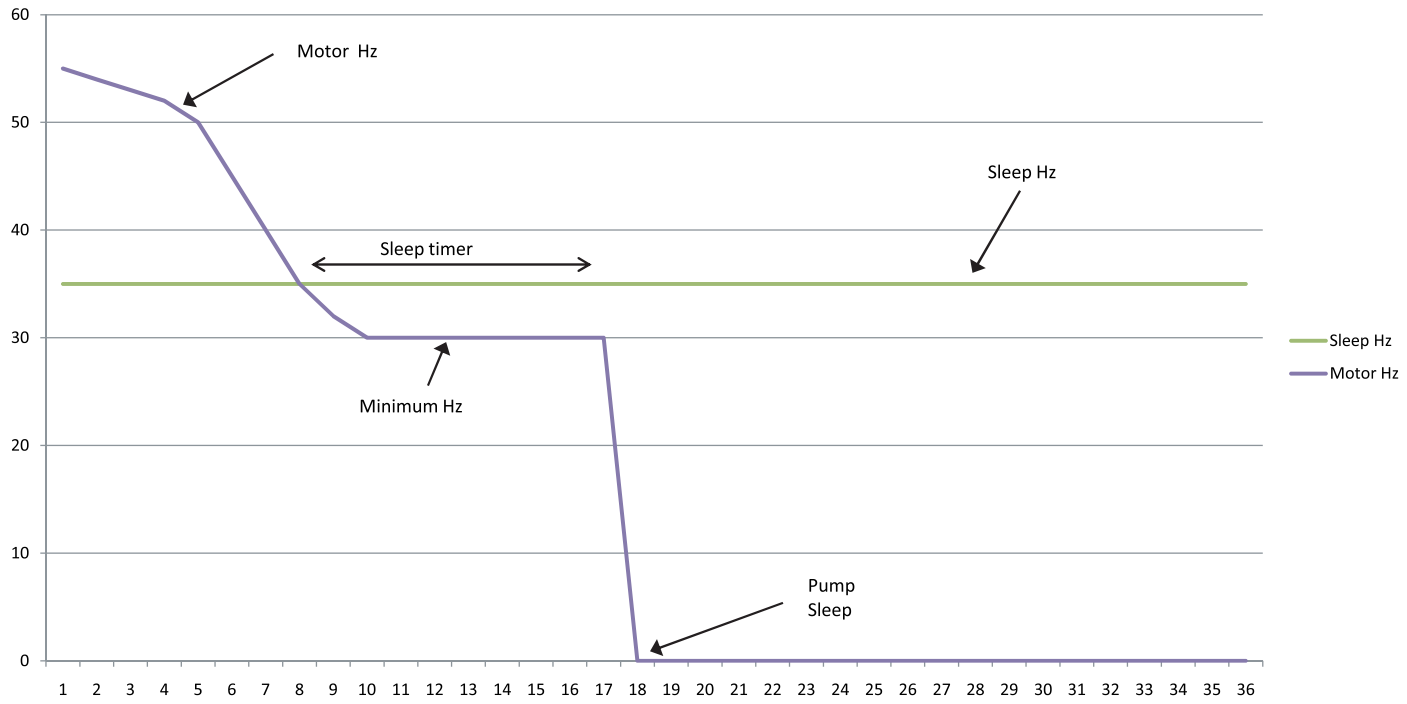
Acceleration/Deceleration time 2: (P.44)
P.44 Acceleration and Deceleration rate in seconds
Applicable to the Acceleration/deceleration rate from 0Hz to 60Hz.
This Accel/Decel rate is only valid for frequencies greater than the thrust bearing frequency (P. 42).

Motor Voltage: (P.83)
P.83 Voltage rating of pump motor.

Parameter List

PID: (P.133, P.129, P130)
P.133 is the **Pressure Set Point** (target pressure to be maintained at pump discharge). It cannot exceed the range of the pressure transducer (typically 0-100PSI).
P.129 is the **Proportional Band**. For advanced users only.
This parameter is used for adjusting the frequency output control reaction to pressure changes. Decrease for larger (faster) corrections. Default is 100%. Decrease if large pressure overshoots on start up occurs.
P.130 is the **Integral Time**. For advanced users only.
This parameter is used for adjusting the frequency output control reaction to pressure changes. Decrease for larger (faster) corrections. Default is 1 sec. Decrease for faster response, increase if quick unstable oscillations occur.

Sleep Mode: (P.575, P.576, P577)
P.575 is the **Sleep Timer**. This timer starts when the VFD output frequency drops below the Sleep Frequency (P.575). The pump will go to sleep (pump stopped) when this timer is done (typically 10Sec).
P.576 is the **Sleep Frequency**. The Sleep Timer (P.575) starts the VFD output frequency drops below this frequency (typically 35Hz).
P.577 is the **Start Pressure (Differential)**. The pump will start if the pressure drops below the Set Pressure less the Start Pressure. **Example:** If set the Set Pressure is 40PSI (P.133=40 PSI), and the Start Pressure is 5PSI (P.577=1005, the pump will start when the pressure drops below 35PSI (see example on page 3.) Typically set to 1005 (5PSI).
Notes:
If the system cycles on and off too frequently try the following: increase the Sleep Timer (P.575), or lower the Sleep Frequency (P.576) or increase the Start Pressure (P.577). A combination of change in all three parameters may be necessary. If the pump does not go to sleep when there is no water demand (no flow), the Sleep Frequency (P.576) must be increased.



Faults, Alarms and Warning Codes

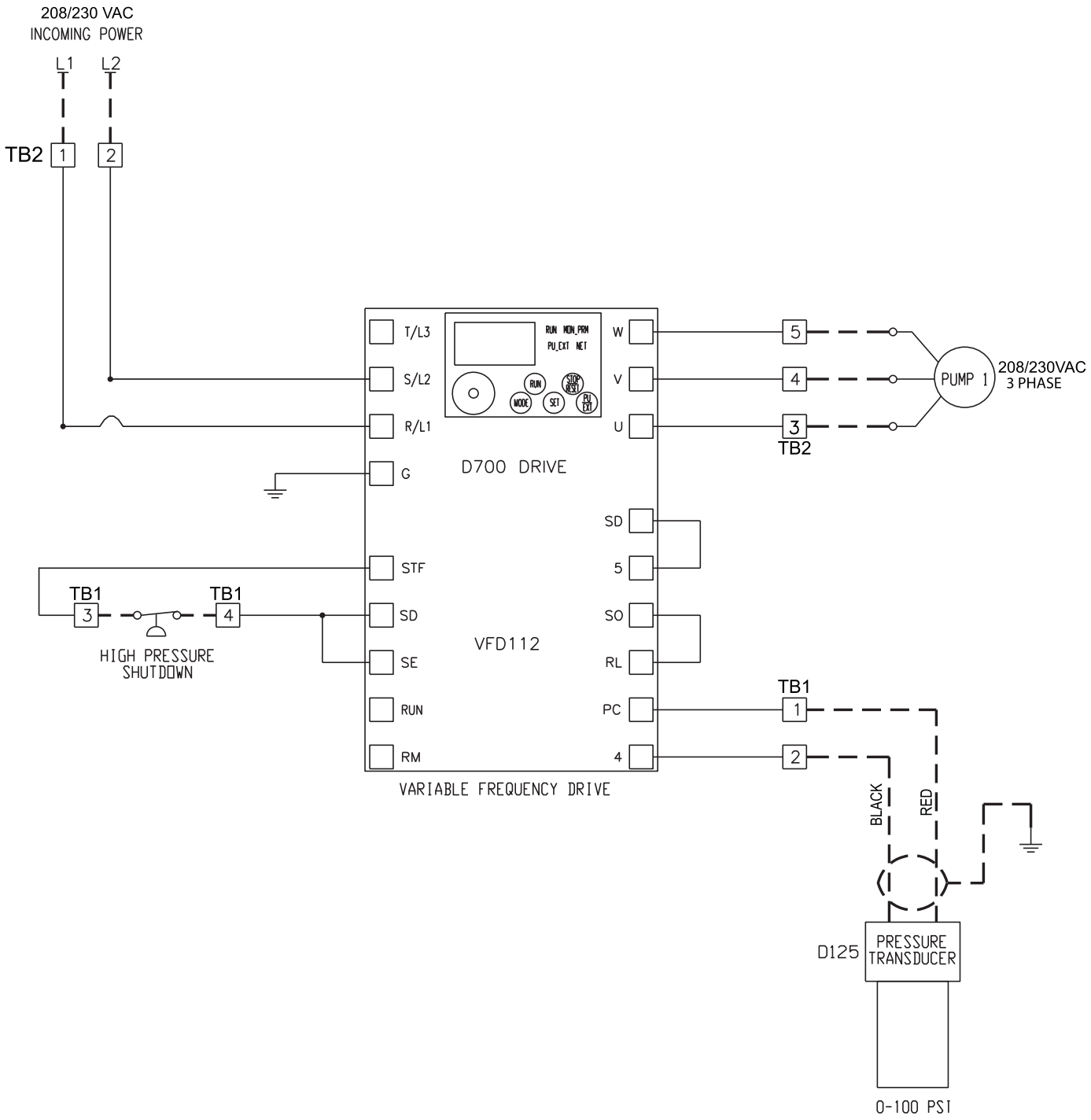
FAULTS	
E.OC1	Overcurrent trip during acceleration
E.OC2	Overcurrent trip during constant speed
E.OC3	Overcurrent trip during deceleration
E.OV1	Regenerative overvoltage
E.OV2	Regenerative overvoltage
E.OV3	Regenerative overvoltage trip
E.THT	Inverter overload trip
E.THM	Motor overload trip
E.FIN	Fin overheat
E.BE	Brake transistor alarm
E.ILF	Input phase loss
E.OLT	Stall prevention
E.GF	Output side earth (ground)
E.LF	Output phase loss
E.OHT	External thermal relay trip
E.PTC	PTC thermistor operation
E.PE	Parameter storage device
E.PUE	PU disconnection
E.RET	Retry count excess
E. 5	CPU Fault
E. 6	CPU Fault
E. 7	CPU Fault
E.CPU	CPU Fault
E.CTE	CPU Fault
E.CDO	Output current detection
E.IOH	Inrush current limit circuit
E.AIE	Analog input fault
E.SAF	Safety circuit fault

ALARMS	
FN	Fan alarm
E---	Faults history
HOLD	Operation panel lock
Er1 to 4	Parameter write error
Err.	Error
WARNINGS	
OL	Stall prevention overcurrent
oL	Stall prevention overvoltage
RB	Regenerative brake prealarm
TH	Electronic thermal relay function prealarm
PS	PU stop
MT	Maintenance signal output
UV	Undervoltage
SA	Safety Stop

IMPORTANT:
Faults can be reset by pressing the STOP/RESET button on the VFD. The selector switch must be in the "OFF" position to reset fault. Please contact your distributor if you are not able to reset a fault.

Terminal Connections

CPN1 1.5 & 3 HP PANELS



NOTES:

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