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Model PC-0500 Simplex Pump Controller Specification Document

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DS-PC500

1.0 INTRODUCTION

The model PC-500 is a float switch based simplex pump controller intended primarily for wastewater lift station and other pump down applications. It includes sensor inputs for the seal fail and temperature fail sensors for most submersible pumps. It connects to three float switches to measure the tank level and has outputs to control a pump, a high alarm light, a seal fail light, and an alarm horn. It has a built in HOA (hand-off-automatic) switch and pump running light. The PC500 uses removable terminal strips to make replacement in the field quick and easy. With the addition of an enclosure, alarm light, circuit breakers, and motor starter, the PC500 makes a complete low cost lift station controller.

2.0 OPERATION

The PC500 uses three normally open floats as level sensing inputs so when the tank is empty all of the floats are open. On rising water the Off float closes first which causes the controller to take no action. The On float will close next as the water rises. The controller will then turn on the pump. If this pump causes the water level to fall the pump will be turned off when both the On and Off float are out of the water and open.

The last float input is for the High float. Whenever the high float is under water (closed) then the high alarm condition is set. This will cause the alarm light to flash on and off and the horn to activate. The horn output will remain on until the High float comes out of the water or until the mute input is closed. The controller has an alarm test button which will simulate the high float and cause the high alarm and horn to activate.

The pump controller has an input (two terminals) for a pump seal fail (leak) sensor. This input measure the resistance between the two pins. If the resistance is less than 50,000 ohms then the seal fail indicator will be turned on. This action does not disable the pump.

The pump controller has an input (two terminals) for a pump temperature sensor. If the controller detects an open circuit between these two pins then a temperature failure is set and the pump will be disabled from automatic operation and the TEMP FAIL lamp will be illuminated. This condition does not latch up and will return to normal if the short is reestablished. The controller has a switch that select what mode the pump is in. This HOA switch has the following function:

- H** When in HAND the pump will be constantly called to run.
- O** When in OFF the pump will be off.
- A** When in AUTOMATIC the pump will be called by the pump controller.

The Hand and Off functions of this switch will operate even if the controller is off or has failed. The controller has an input, which should be connected to the auxiliary switches on the motor starter. This input cause the pump run indicator to be illuminated. Using this inputs may eliminate the need for a panel-mounted pump running lamp.

3.0 SPECIFICATIONS

3.1 Float and Sensor Input

There are three float inputs, one leak sensor input, one mute input, and one temperature fail inputs. They have the following specifications:

Short circuit current less than 100 Ma.
Open circuit voltage 12 VDC

3.2 Aux contact inputs

There is one input for the auxiliary contacts on the motor starter. When this input is shorted, the pump running lamp is illuminated. This input has the following specifications:

Short circuit current less than 20 Ma.
Open circuit voltage 12.0 VDC

3.3 Relay outputs

There are two form A (SPST) relay outputs. They are to call the pump and one for the Seal Fail. They have the following specifications:

Maximum current at 120 VAC 5 Amps with a resistive load
Maximum voltage 140 Volts

3.4 Driver outputs

There are two 12VDC driver outputs. They are used to drive the alarm light and alarm horn which must be 12VDC devices or 12VDC relays. They can drive a maximum of 100 Ma.

3.5 Power inputs

The controller is designed to run on 120 VAC control power. The controller can optionally be provided with a dual power supply, one for the control circuitry and one for the alarm circuitry. If a dual supply is provided each one will be independently fused and protected internally. The fuses (one or two) are internally mounted and the transient protection is a MOV transient protector. It uses a transformer isolated regulated power system with the following specifications.

Input voltage 120 Volt A.C. + or - 15% 50 to 70 Hz.
Maximum current 0.25 Amps

3.6 Temperature range

-20 to +60 degrees C.

4.0 CONNECTOR PIN DEFINITIONS

CONNECTOR J1

PIN FUNCTION

1	120 VAC POWER INPUT FOR ALARM POWER
2	120 VAC POWER INPUT FOR CONTROL POWER
3	NEUTRAL
4	GROUND
5	HIGH ALARM LIGHT - TERMINAL
6	HIGH ALARM LIGHT + TERMINAL
7	MUTE SWITCH INPUT
8	MUTE SWITCH INPUT
9	HORN - TERMINAL
10	HORN + TERMINAL
11	STARTER AUX SWITCH
12	STARTER AUX SWITCH
13	PUMP CALL RELAY OUTPUT
14	PUMP CALL RELAY OUTPUT
15	SEAL FAIL RELAY OUTPUT
16	SEAL FAIL RELAY OUTPUT

CONNECTOR J2

1	OFF FLOAT TERMINAL
2	OFF FLOAT TERMINAL
3	ON FLOAT TERMINAL
4	ON FLOAT TERMINAL
5	HIGH FLOAT TERMINAL
6	HIGH FLOAT TERMINAL
7	SEAL FAIL INPUT
8	SEAL FAIL INPUT (GROUND)
9	TEMPERATURE FAIL INPUT
10	TEMPERATURE FAIL INPUT

Notes: Header and plugs use copper conductors only.
Torque requirement for plugs 1.47 Ft. Lbs.
Unit operates at "Pollution Degree 2".

FIG. 1

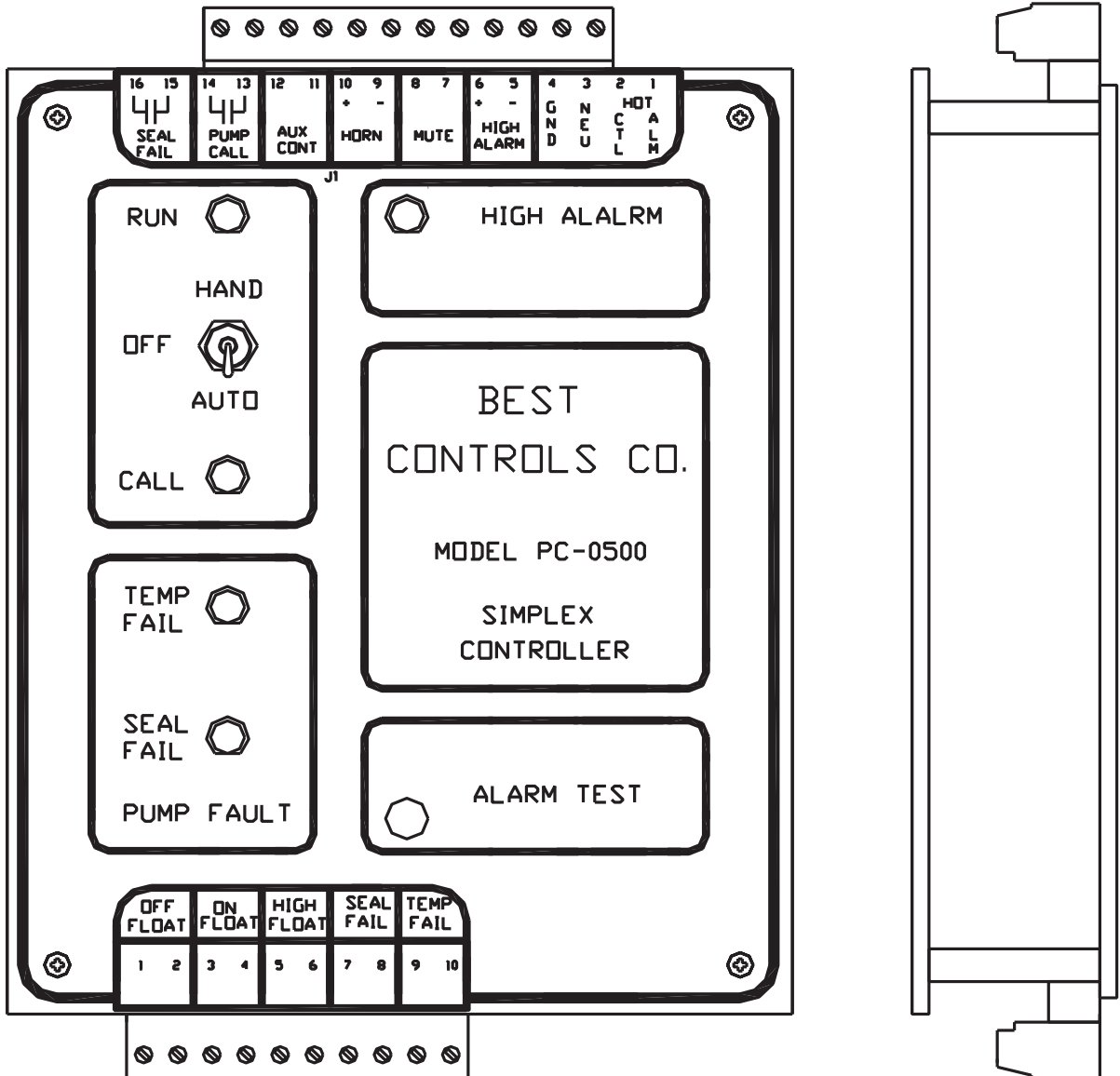
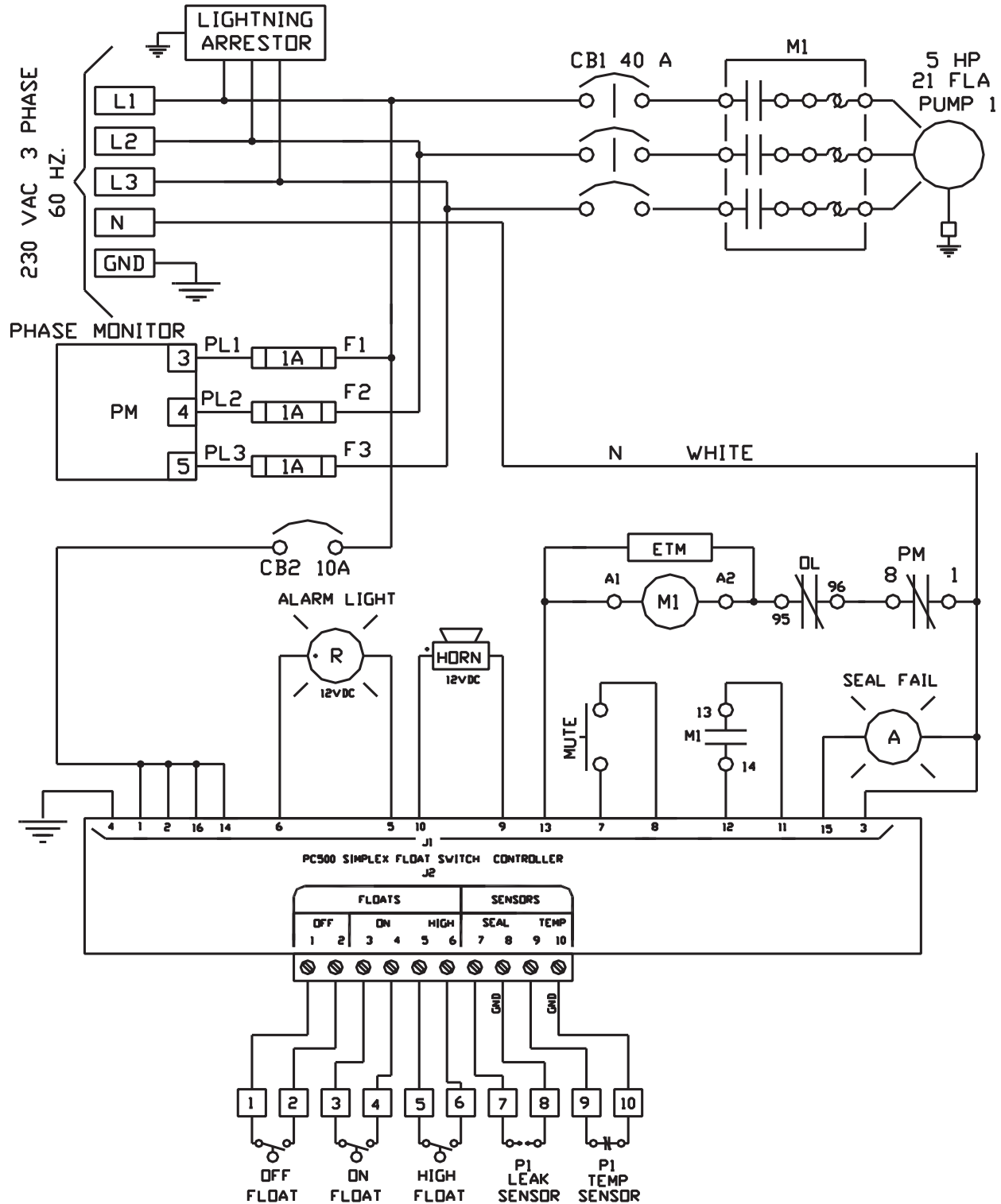


FIG. 2 WIRING DIAGRAM



DRAWN BY: WDB	PAGE 1 OF 1	REV.	BEST CONTROLS CO. CLEARWATER, FL. 727-531-7141
DWG NO.	DATE:		
DWG NAME: SIMPLEX 230V 3P 5 HP 21 FLA PC500 CONTROLLER			