



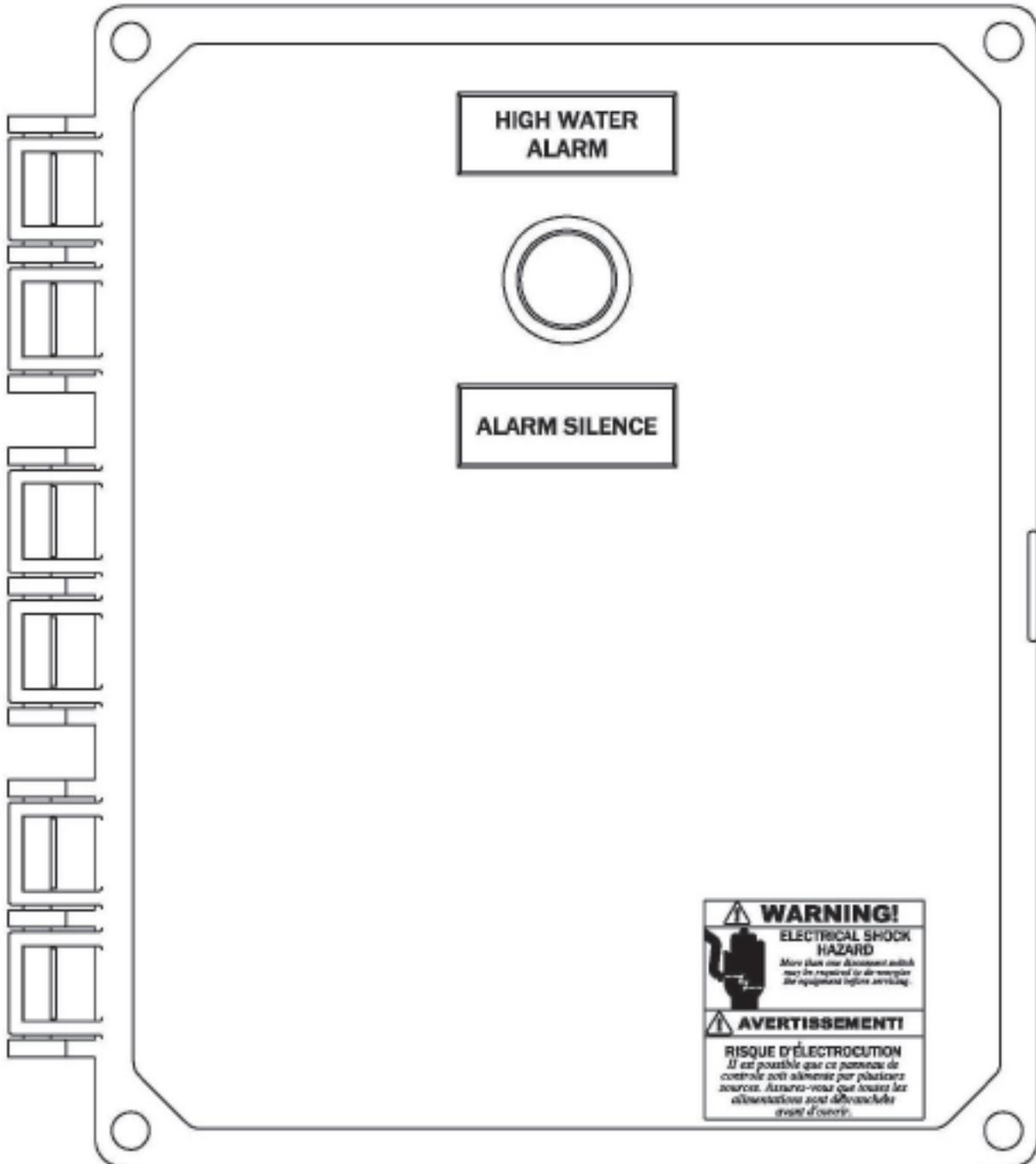
MERCURY DISPLACEMENT INDUSTRIES, INC.

Post Office Box 710 - U.S. 12 East - Edwardsburg, Michigan 49112-0710

Phone (269) 663-8574 - Fax (269) 663-2924

(800) 634-4077

Instructions for 50A808 Control Panel



Contactors - Relays - Switches

<http://www.mdius.com>

Warning! Electrical Shock Hazard – Be sure to disconnect all power sources before installing or servicing any control panel or pump system. Failure to do so could result in severe personal injury or death! This or any other control panel must be installed by a certified electrician and be wired in accordance to all National Electric Code requirements as well as all state or local code requirements.

This control panel is designed and wired to operate on a particular power supply voltage as well as a specific horsepower and current. Do not attempt to operate this or any other control panel with different power supply voltages or current ratings exceeding the specified value on the nameplate or wiring schematic. Failure to do so will void warranty and damage components within the control panel or the pump being used with this control.

When installing any control panel or pump, it is advisable to put them on their own circuit with a properly sized disconnect or circuit breaker. The disconnect should be sized in accordance to local or state codes as well as the National Electric Code. All wiring between the main power source and the control panel should be sufficiently sized to not only handle the operating current of the pump(s) being operated but to prevent any significant voltage drop due to extended distances from the power source. Failure to size wiring properly can prevent the panel and the pump from operating properly and can even result in damage. It is best for the supply voltage to be within 5% of the nominal nameplate voltage rating. Exceeding 5% voltage drop or variance increases the potential for damage to control panel as well as the pump.

This instruction manual should be used in conjunction with the pump instructions and should be kept in a safe and easy to find location, so that it can be referred to often by the installer as well as the person(s) in charge of maintaining the system.

Caution – Do not proceed with the installation of the control panel until this entire instruction manual has been read and is understood. Always take appropriate precautions and be sure that all power sources have been disconnected before beginning to service or install any control panel or pump.

Locating and Mounting the Control Panel

This control panel is constructed to a NEMA 4x standard and can be installed in either an indoor or outdoor location. However, this control should be mounted in a location which will limit the potential for the panel to become submerged in water or other mediums, since this panel is not rated for submersible locations. The panel enclosure is provided with either mounting feet or integral mounting bar. The following items should be considered when determining where to mount this or any control panel:

- 1) The Visibility of the Visual Alarm Light.
- 2) The Distance from the Power Source.
- 3) The Distance from the Collection Tank.
- 4) Accessibility for Maintenance
- 5) Damage Prevention

The panel enclosure should be mounted to a secure and stable base or wall. Also, the enclosure should be mounted in a vertical position and be high enough from the ground to allow for easy access for maintenance personnel. Once the appropriate position is determined, the mounting holes provided in the mounting feet or mounting bar can be used to secure the enclosure to the wall or mounting base.

Important! – The enclosure used with this control panel has locking latches. It is advisable to use a pad lock to prevent any unauthorized access to the inside of the control panel.

Connecting Incoming Power Supply

Warning! Electrical Shock Hazard – Be sure to disconnect all power sources before installing or servicing any control panel or pump system. Failure to do so could result in severe personal injury or death!

All entries created in the control panel must be appropriately sealed per the National Electric Code (NEC Code NFPA#70), and all fittings, conduit, cord seals, etc. should be the same rating as the

control panel (NEMA 4X). Failure to use appropriately rated fittings, conduit, and cord seals will void all warranties as well as result in damage to the components inside the control panel.

Once the appropriate fittings are determined, a hole must be created in the panel enclosure to secure and seal the entry fitting to the control panel. Once this is done the cord from the incoming power source will be feed through this fitting and conduit. After the incoming power cord has been feed into the control panel, it will connect to the terminal block provided in the control panel. 115V – 1phase power is being provided the terminal block will be marked L1 & N1 or X1 & N. The control panel is provided with grounding lugs, which must be properly grounded per NEC code.

Connecting the Pump and Float Cords

Note: if using a single entry and conduit for the incoming power, pump cords, and float cords, be sure the fitting and conduit are large enough to allow for all of these cords.

If using separate entries for all of the pump and float cords, please be sure all fittings and conduit and properly rated per NEC Code. Then a separate hole must be cut into the panel enclosure for each cord entry fitting. Once the appropriate fittings are determined, a hole must be created in the panel enclosure to secure and seal the entry fitting to the control panel. Once this is done the pump power cord will be fed through the appropriate fitting and conduit and into the control panel. The pump power cord will be connected to the terminal block provided inside the control panel. The terminal block will be marked as follows: T1, N. It is good practice to label or mark the leads on the pump power cord T1, N as well. The control panel is provided with grounding lugs, which must be properly grounded per NEC code

Float or Level Control Connections

Before connecting any of the float or level controls, it is a good practice to mark the float cords. For example:

“OFF” Float = Label “OFF”

“TIMER” Float = Label “TIMER”

High Level Alarm Float = Label “HWA”

This will help prevent any confusion after feeding these cords thru any conduit entering the control panel. If the floats are not connected in the appropriate sequence the panel will not function properly. A terminal block is provided inside the panel for connecting the appropriate number of floats into the panel. Normally, three floats are required for a simplex, four floats for a duplex. The provided wiring schematic and connection diagrams are located inside the door of the panel enclosure as well as a loose copy inside the control panel. Normally the float terminal blocks are marked as follows:

Simplex Control

- 1 & 5 = “Redundant OFF/Low Level” Float
- 2 & 5 = “Standard Timer” Float
- 3 & 5 = “Override Timer” Float
- 4 & 5 = “High Water Alarm” Float

(Always check provided panel schematic)

Important! – Always located the floats or level controls in accordance with the pump manufacturer’s recommendation as well as the system requirements. Always check the float or level control before installing. This can be done using an ohm meter. To check the float simply connect one of the meter leads to the black wire on the float and the other to the white lead on the float. When the float is in the “OFF” position, meter should read infinity. When float is in the “ON” position the meter should read zero.

Initial Panel Start Up

Once all of the connections have been made to the control panel, it is time to verify the panel is working properly. Before turning on the main circuit breaker or disconnect, the voltage should be checked on the line side. **Warning! – Live voltage can kill! Use caution when checking the power supply voltage.** This can be done with a volt meter or multi-meter. To check the supply voltage, place one of the meter leads to the first leg of the incoming power and the other to the second

leg. Unequal voltage can severely damage the pump and the control panel. After confirming the incoming power supply, verify that the power supply matches the voltage of the control panel and the pump. Before turning on the main circuit breaker or disconnect, be sure all of the circuit breakers in the control panel are in the “OFF” position.

Panel Initialization

First turn on the main circuit breaker or disconnect switch. Once again check the voltage, this time check the voltage at the CB1 circuit breaker in the panel. Use the same procedure describes in the previous section. If voltage is still good, then turn “ON” all circuit breakers in the control panel.

The pump should be started to make sure it is working and running operating properly. Note – It is important to check the rotation of the impeller. Consult the instructions provided with the pump to confirm the proper rotation. The control panel is supplied with an HAND-OFF-AUTO switch. The pump can be run manually by pushing the switch into the HAND position. The pump should turn “ON”. This should allow the rotation of the impeller to be checked. **Warning! – Do not place fingers, hands or wear loose clothing that can get caught in the impeller.** If the impeller is not rotating the proper direction, consult the pump manufacturer. **Warning! – Live voltage can kill! Be sure all power sources are disconnected before attempting to disconnect the pump motor leads from the terminal block.**

Verifying the Float Switch Connections

To check the float switch connections on a simplex panel, place the H-O-A switch in the Auto position. First, make sure all of the floats are in the down position. If the “Redundant OFF” float is in the down position, the audible alarm should sound and the red alarm light should flash slowly. Once this float is raised the alarm light and audible should turn “OFF”. If you do not wish to have a “Redundant OFF” switch, simply place a jumper wire between the “1” terminal block position & “5”

terminal block position. Then, raise the “Standard Timer Enable” float switch the pump should remain “OFF” until the customer set “OFF” time has elapsed (see instructions for setting timer parameters). After, the customer set “OFF” time has passed, the pump will turn “ON” for the set “ON” time or until the “Standard Timer Enable” switch is lowered.

If the “Override Timer Enable” float switch is raised the pump will remain “OFF” for the customer determined “OFF” time. Once the “OFF” time has elapsed the pump will start and run for the preset time (see instructions for setting timer parameters). Also, once the override timer is engaged the pump will cycle for a minimum number of cycles on the override timer setting before returning to the standard timer.

If the “High Water Float” is raised the audible alarm will turn “ON” and the Alarm Light will come on. The audible alarm can be silenced by pressing the “SILENCE” button located on the front of the panel door. The audible alarm will automatically reset once the high water alarm condition has been removed or if a predetermined time has passed (see instructions for setting timer parameters).

Additional (Optional) Features

Pump Cycle Counter – This feature is included in the programmable relay and can be viewed on the small LCD screen.

Pump Elapsed Hours – This feature is included in The programmable relay and can be viewed on the small LCD screen.

Troubleshooting Panel

Pump Does Not Run In “Hand” Position

- 1) Check for tripped Circuit Breakers
- 2) Motor Overloads may be “OPEN” wait for a few minutes and try again.
- 3) Verify incoming power voltage is Correct and matches the pump nameplate.
- 4) If the pump requires start components

(I.e. start or run capacitors, and start relays), verify they are working properly and size appropriately for the specific pump being used.

In “Auto” Position

- 1) Check Liquid level in basin
- 2) Check Float Switches in Tank
 - a) Do they Float Freely?
 - b) Functioning Properly
- 3) Check for tripped Circuit Breakers
- 4) Motor Overload may have tripped?
- 5) Verify incoming power voltage is correct and matches the pump nameplate.
- 6) If the pump requires start components (I.e. start or run capacitors, and start relays), verify they are working properly and size appropriately for the specific pump being used.

Pump Does Not Shut-Off

- 1) Make sure H-O-A switch not in the “HAND” position
- 2) Check for Failed Float Switches
- 3) Make sure float switches are able to move freely and not hung up inside the tank.
- 4) Check for Failed Motor Contactor
- 5) Pump may be air locked refer to the instructions included with pump.

Chattering or Buzzing Motor Contactors

- 1) Check float switches – failing float switches can cause contactors to chatter.
- 2) Make sure float switches are located away from any turbulence inside the tank or to close the tank inlet.

Nuisance Tripping of Motor Overload , Circuit Breakers

- 1) Check Incoming Power
- 2) Check the Current Draw of the Pump
Pump may be clogged or motor may be failing.

Alarm Light Does Not Turn-On

- 1) Check Float Switch
- 2) Check Alarm Light bulb

For additional troubleshooting help, please consult the factory: (419) 282-5933 or the pump manufacturer.

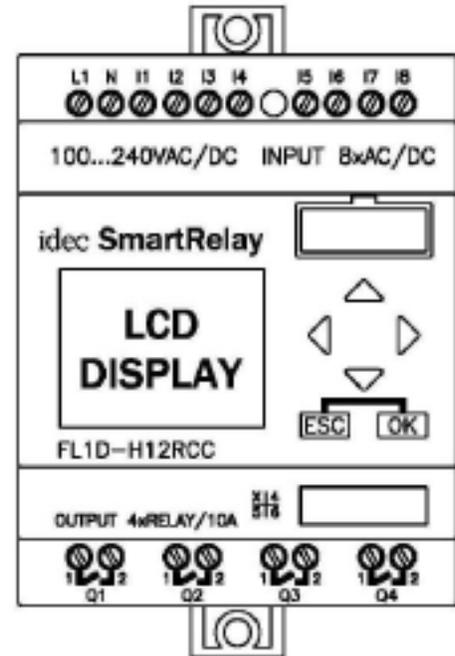
Instructions for Setting Timer on 50A808 Panel

These following instructions cover the changing and viewing of timer parameters for the 50A808 panel. These parameters are stored and controlled by the programmable relay contained in the control panel (see figure below). This programmable relay has a LCD display to allow for viewing parameters as well as setting timer values. The default screen will display the time of day and the date.

Viewing/Modifying Timer Settings

- 1) To view the default settings and parameter, the “ESC” key located on the lower right of the programmable timer must be pressed. Once this is done a series of options should appear on the LCD screen.
- 2) Once the options screen appears, press the arrow keys located at the middle right up or down to scroll thru the available options.
- 3) Select the “Set Param” option by high lighting it with the cursor and then pressing the “OK” key located next to the “ESC” key. Once this is done as series of timer settings will be visible by using the up or down arrow keys. A list of the available timer setting are below.

TOP VIEW OF THE PROGRAMMABLE TIMER



Available Timer Settings:

“OFF TIME” – This setting controls how long the “OFF” cycle will be for the standard timer. (Default Setting: 60:00 min.)

“ON TIME” – This setting controls how long the “ON” cycle will be for the standard timer. (Default Setting: 00:40 min.)

“OVR OFF” – This setting controls how long the “OFF” cycle will be for the secondary or override timer (Default Setting: 30:00 min.)

“OVR ON” – This setting controls how long the “ON” cycle will be for the secondary or override timer. (Default Setting: 00:40 min.)

“MINOCYCL” – This setting controls how many cycles will be run on the “Override Timer” settings before returning to the standard timer settings. (Default Setting: 3 cycles)

“HLA-DLY” – This setting controls the time delay before engaging the high water alarm light and audible alarm. (Default Setting: 00:05 min.)

“RESET” – This setting controls how long the audible alarm will remain silenced before restarting if The alarm condition has not been resolved (Default Setting: 12:00 hrs.)

Changing Timer Settings

- 1) To change a timer setting; first scroll thru the settings list using the up and down arrow keys on the middle right of the programmable timer, until the timer setting to change is displayed on the LCD screen. Then press the “OK” key and a small cursor should appear on the screen.
- 2) Once the cursor appears simply use the left and right arrow keys to move the cursor. To change a setting use the up and down arrow keys until the desired setting is displayed.

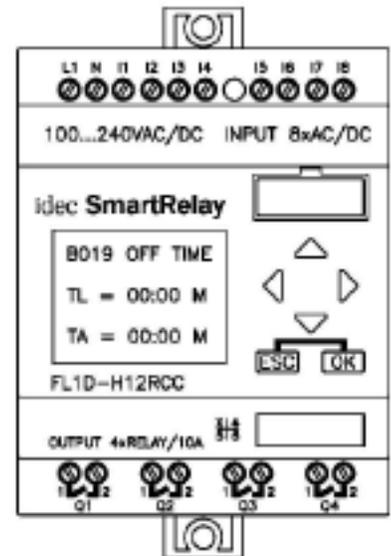
For example if we wanted to change to the standard timer “OFF” time.

First - press the “ESC” key to display the option menu.

Second – Use the up and down arrow keys to scroll the options list until the “SET PARAM” option is high lighted, then press the “OK” key.

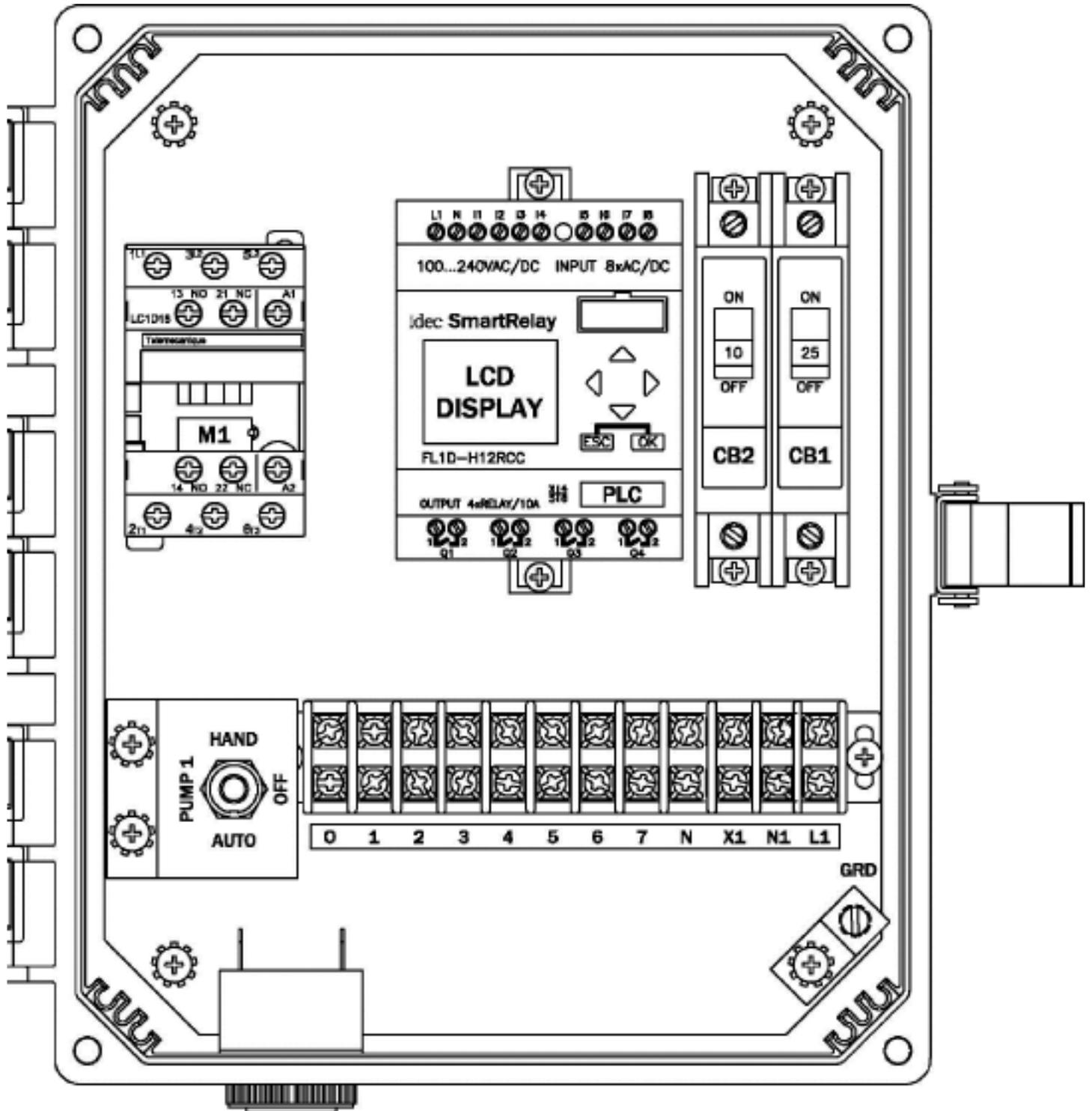
Third – Use the up and down arrow keys to locate the setting you would like to change. In this case “OFF TIME”. After locating the setting press the “OK” key to begin changing the setting. A sample screen is shown below.

Fourth – A flashing cursor should appear on the screen. In the example the cursor would appear over the first “0” after “TL”. The “M” displayed on the right indicates “Minutes” (H = Hours, S = Seconds). To set the “OFF” time to 35 minutes, use the up arrow key until “3” appears then press the right arrow key to move the cursor over one position. Again use the up arrow key until “5” appears. The Screen should display “TL = 35:00 M” The next two numbers are seconds and would remain “00” in this case. After setting the desired “OFF” simply press the “OK” key to change the setting.



Follow the above procedure to change any of the existing timer parameters. The programmable timer has 30 day battery back-up feature to protect the program and settings in the case of power failure. After 30 days if the power is not restored all saved settings and data will be lost.

Component Layout





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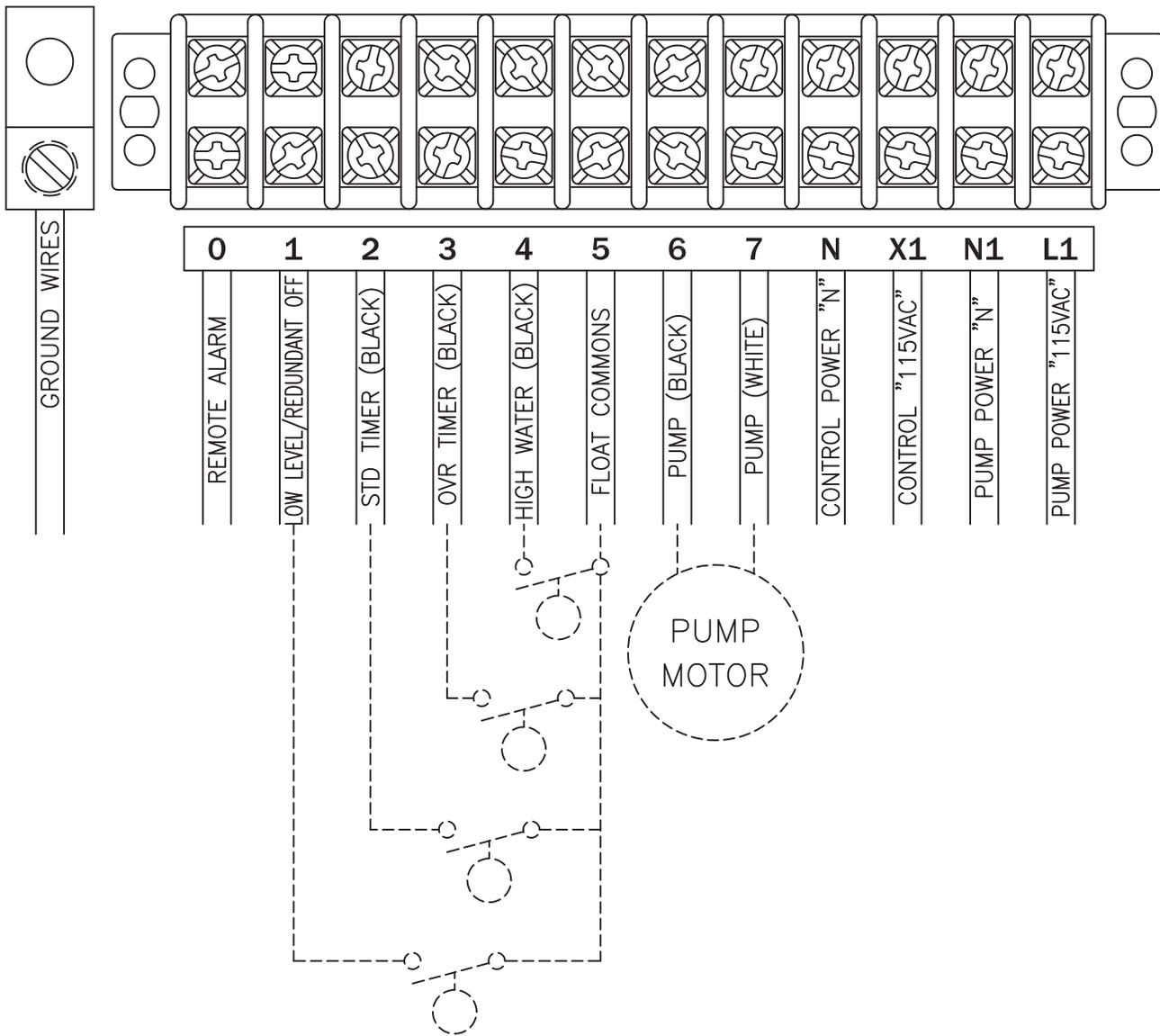
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TIGHTENING TORQUE FOR TERMINAL BLOCK IS 9 in-lbs.
TIGHTENING TORQUE FOR CIRCUIT BREAKER ARE AS FOLLOWS:
14 - 10 AWG = 20 IN-LBS
8 AWG = 25 IN-LBS
6 - 4 AWG = 27 IN-LBS

CONNECTION DIAGRAM (STANDARD)



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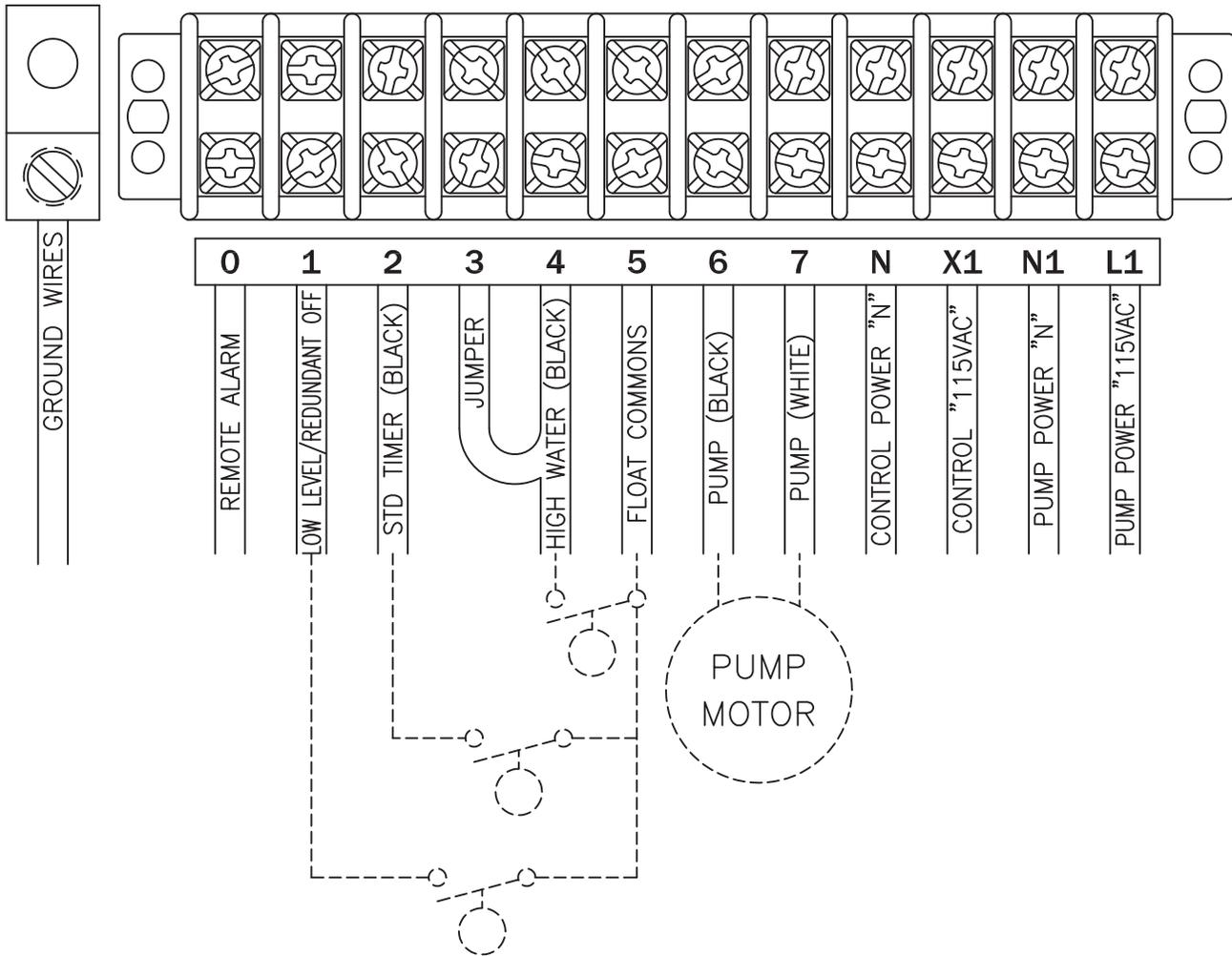
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CONNECTION DIAGRAM (3 FLOAT)



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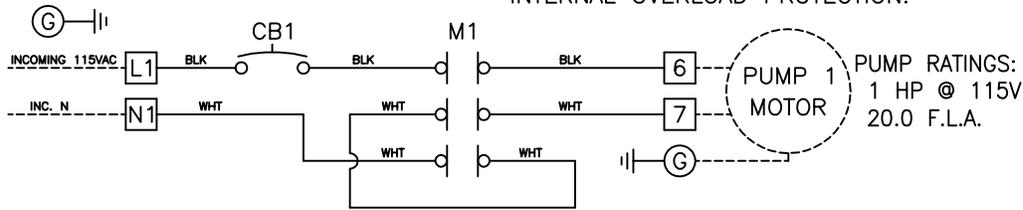
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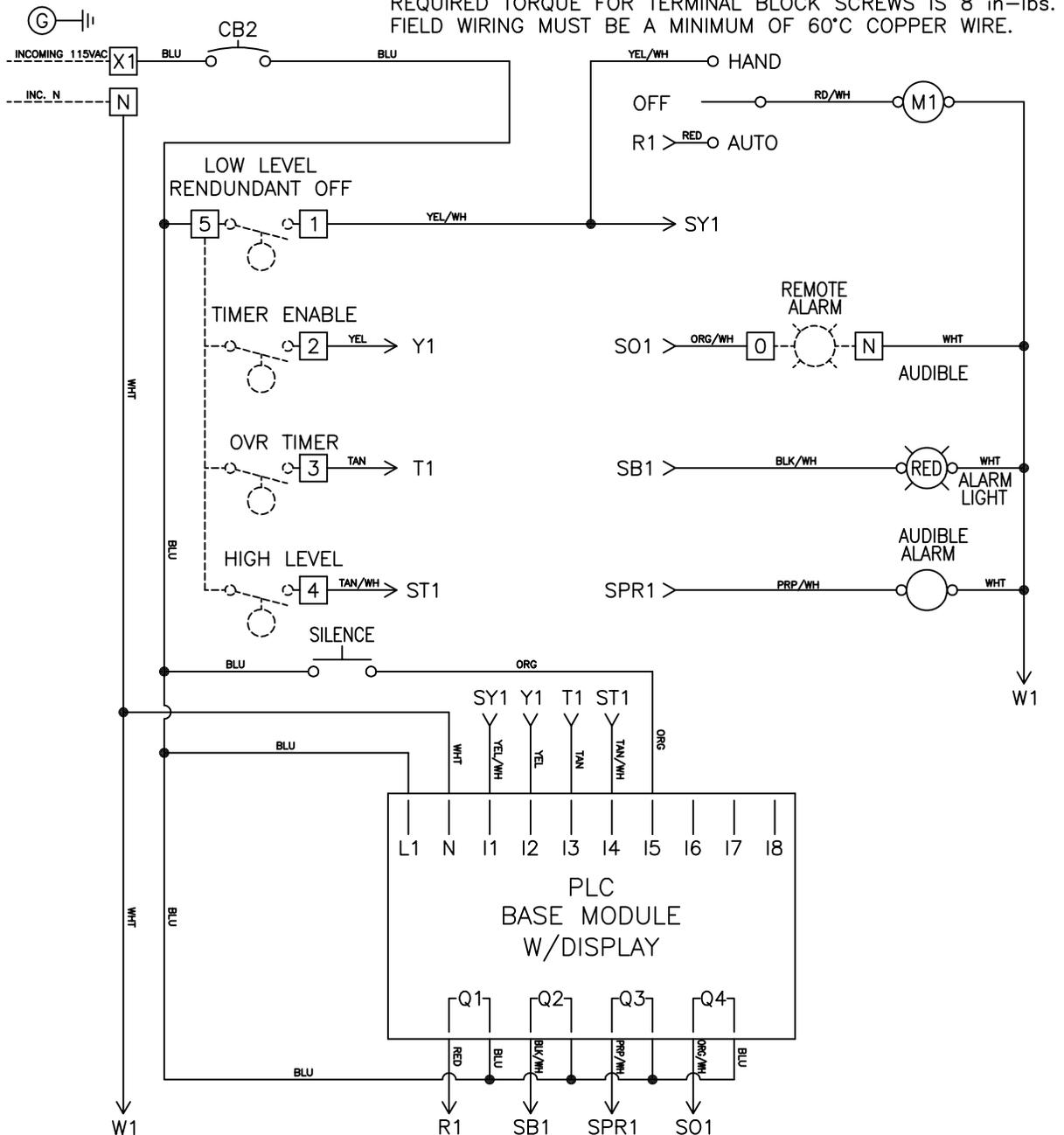
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PUMP POWER CIRCUIT 115V - 1PH



CONTROL POWER CIRCUIT 115V - 1PH



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