

# Installation Manual

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## Most Versatile Panel EAS-PLCS1 PTROTS LAA UV Manual# EIN-CP-PLC-6

### This Manual Contains:

<b>Description</b>	<b>Document Number</b>
1. Installation Instructions	EIN-CP-GEN-6
2. Wiring Diagram	EDW-WD-OEM-44
3. Operation	EIN-CP-OP-2257
4. Setting Instructions	EIN-CP-SET-2504
5. MVP Time & Date Setting Instructions	EIN-CP-SET-469

# Panel Installation

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## Before Installing Panel

1. *Read all instructions before proceeding with the installation. Improper installation may void warranties.*
2. Inspect your order for completeness and inspect each component for shipment damage. If something is missing or damaged, you will need to contact your supplier to obtain replacements.
3. Check to be sure the instructions and items supplied comply with state and local regulations.
4. A qualified electrician must be employed to install and service the panel and ancillary wiring. The equipment must be installed in compliance with the National Electric Code, as well as state and local codes.

## Placement of the Control Panel

5. Install the electrical control or alarm panel within view of the tank. The panel should be attached to a post or an exterior wall. Panels that contain motor contactors should not be mounted to an exterior wall unless the mounting method includes sound deadening. If possible, position the panel in the shade to protect it from weather. Extreme temperatures can cause inconsistent performance of the electrical components. Locate the panel at a convenient height (usually about five feet above the ground) and where it will be accessible for maintenance.

## Install Floats and Pumps

6. Install the electrical splice box(es) for the floats and pump(s) before installing the actual floats and pumping equipment. The splice box(es) are installed in the grommet(s) provided near the top of the riser.
7. Install the floats. Thread the float and pump cords through the cord grips into the PVC splice box, leaving adequate lengths of electrical cord coiled inside the riser to allow easy removal of the pump and float assembly. Do not remove the colored markers or the paper tags from the float cords, and do not try to thread the markers and tag through the cord grip. These should be left on the float cord, outside the splice box. Tighten the cord grips by hand, not by tool, then check the tightness of the cord grips by tugging on each cord. A cord is secure and the connection watertight when the cord grip is tight enough to prevent slippage. Adequate lengths of cord should be left within the splice box to allow for easy removal for future disconnecting and re-splicing.
8. Run the wires from the control panel to the splice box. The wires can be brought through a conduit, or can be buried using suitable direct-burial wire. Conduit that enters the splice box must be sealed with a conduit seal. A conduit seal should be used, even if the wires are direct-buried, to prevent the infiltration of water into the splice box. The number of wires required depends on the control panel and the number of floats and pumps used. This can be determined by consulting the Splice Box Wiring diagram appropriate for the control panel and float arrangement being used.

Wire should be sized at 14 AWG for the float. Refer to Figure 1 to determine the proper size for the pump wires. When calculating wire size, you need to take the length and size of your branch circuit wires from the service entrance panel to the pump control

panel into account. Wire that's too small can cause an excessive voltage drop and poor pump performance.

Wires should be color coded or otherwise marked to aid in wiring the control panel. Colors may refer to either the color of the wire's insulation, the color of a tag, or the color of an electrical tape marker.

9. All splices made in the splice box should use waterproof wire nuts or butt connectors and heat shrink tubing. The splices must be waterproof! Splices that are not waterproof may cause a malfunction of the pump controls if water should leak into the splice box.

### **Connect Control Panel**

10. Connect the wires coming from floats to the terminals in the control panel.

11. Connect the wires coming from the pump(s) to the pump terminals.

12. Connect the incoming power to the panel. Power to the panel must be appropriate to the control panel and pump motor (i.e. 120VAC, single phase for a 120 VAC motor, 240 VAC single phase for a 240 VAC motor, etc.) Insure that the panel is properly grounded and that the fuse or breaker and wire size, from the main power panel and to the pump, are sized correctly. Separate circuits for the pump controls and each of the pump motors is recommended. Note: Voltage for the controls in the panel is always 120VAC, although the pump voltage may be 120VAC or 240 VAC.

13. Use 60° CU conductors only. Torque the terminal blocks to 7.1 LB-IN. Torque the circuit breaker and ground lugs to 45 LB-IN.

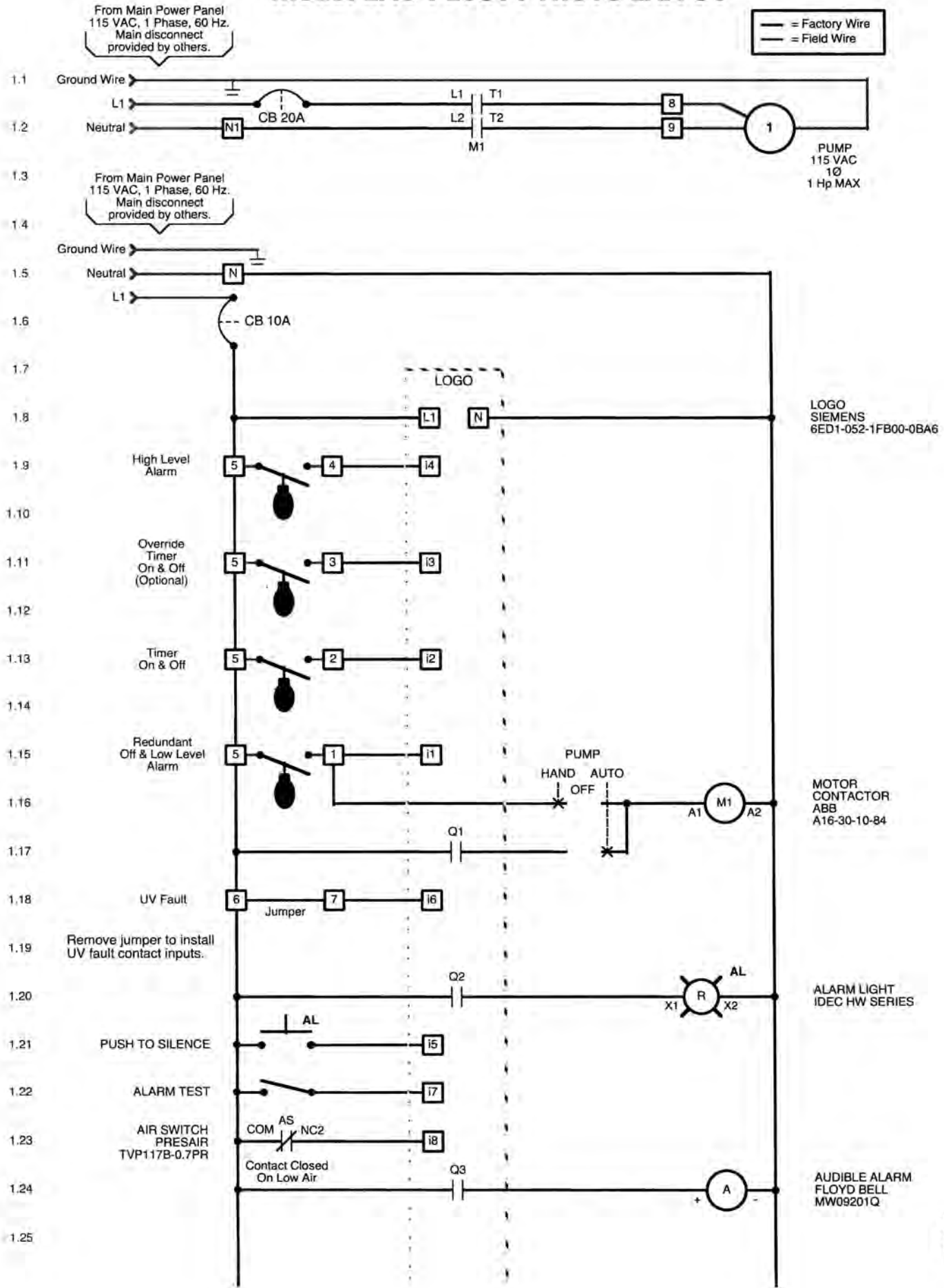
14. When power is applied to the control panel, the wires to the pump may be energized. Do not service the pump or any electrical wiring in the pump vault without disconnecting the power at the circuit breaker and the fuse. The pump vault area is a hazardous area, and may contain explosive gases. Take appropriate precautions before working in the pump vault.

**Figure 1. Recommended Breaker & Wire Size**

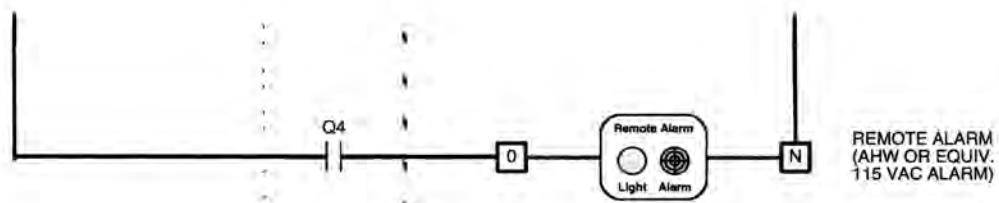
<u>Pump Motor Size</u>	<u>Breaker size</u>	<u>Wire Size</u>	<u>Max Distance*</u>
115 VAC 1/3 hp	20 amp	12 AWG	210 ft
1/2 hp	20 amp	12 AWG	160 ft
230 VAC 1/2 hp	15 amp	14 AWG	400 ft
1 hp	20 amp	12 AWG	400 ft
1 1/2 hp	20 amp	12 AWG	310 ft

\* This is the maximum distance from the main power panel to the pump motor for the recommended wire size. If actual distance is greater than the listed maximum, or more than one pump is on the circuit, then a larger gauge of wire must be used. If the actual distance is close to the maximum distance, then it is recommended that the next larger gauge wire be used.

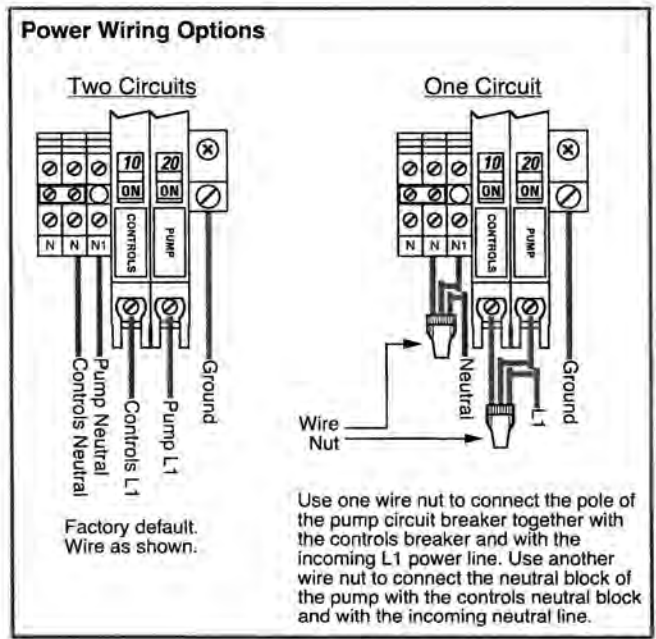
# Control Panel Wiring Diagram Model EAS-PLCS1 PTROTS LAA UV



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REMOTE ALARM  
(AHW OR EQUIV.  
115 VAC ALARM)



# PLC-S1PTROTS LAA UV Operation

This control panel includes an easy-to-use programmable logic unit that incorporates many timing and logic functions. This panel is designed to be used with timed dose systems. This document describes the operation of the panel.

## Alarm and Data Screens:

Alarm and data screens have been included with the panel to assist with panel monitoring and troubleshooting. The following alarm and data screens have been included in your panel. Navigation between the screens is accomplished by using the up and down arrow keys. See “Screen Navigation” section for more details.

Screen	Description	Data Type*
<b>Alarm Screens†</b>		
1	Low level alarm	
2	High level alarm	
<b>Data Screens</b>		
3	Float status and timer mode (default screen, see fig 1)	
4	Pump cycles at top of screen and pump run time beneath	T
5	High level alarms	T
6	Override cycles at top of screen and timer float events beneath	T
7	Power faults at top of screen and hours in service beneath	T
8	Pump cycles at top of screen and pump run time beneath	R
9	High level alarms	R
10	Override cycles at top of screen and timer float events beneath	R
11	Power faults at top of screen and time since last reset beneath	R

† Alarm screens will only be displayed when alarms are active and include a date and time stamp of when the alarm started.

\* Screens with “T” in the lower right corner have totaled values for the data. Screens with “R” in the lower right corner have resettable data and display the accumulated values since the last reset. To reset the accumulated values, hold the silence button on the panel for 10 seconds.

## Float Status and Timer Mode Screen:

This default screen will display the condition of the floats. If the floats are lifted out of sequence, this screen will display “Float Error” while showing the float status.



Figure 1. Float Status and Timer Mode Screen

**Digital Input and Digital Output Screens:**

The unit will activate various inputs and outputs as it operates (see Figure 2).

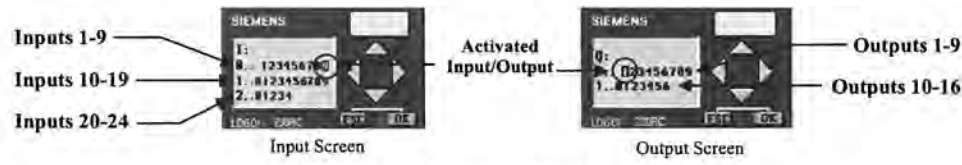


Figure 2. Input & Output Screens

Knowing what conditions cause the inputs and outputs to activate can be a helpful installation and troubleshooting tool. The input functions will vary based on the mode of operation of the panel. The following inputs and outputs have been used with your panel:

#	Functions:	Activation Conditions:
<b>Inputs</b>		
1	Redundant Off & Low Level Alarm Float	Float in up position
2	Timer On & Off Float	Float in up position
3	Override Timer Function/High Level Alarm	Input 4 active and jumper in place
4	High Level Alarm Float	Float in up position
5	Push To Silence	Pushbutton is pressed
6	UV Fault	UV unit not in fault
7	Alarm Test	Switch in test position
8	Low Air Switch	Low air condition
<b>Outputs</b>		
1	Pump	Pump is called to run
2	Alarm Light	Alarm Light is activated
3	Audible Alarm	Audible Alarm is activated
4	General Alarm	Alarm condition exists

**Screen Navigation:**

The screens are arranged in the order shown in Figure 3 below. To move between screens, use the four arrow keys. The screens of interest are shown in bold. Additional built-in screens will be present, but do not contain useful information.

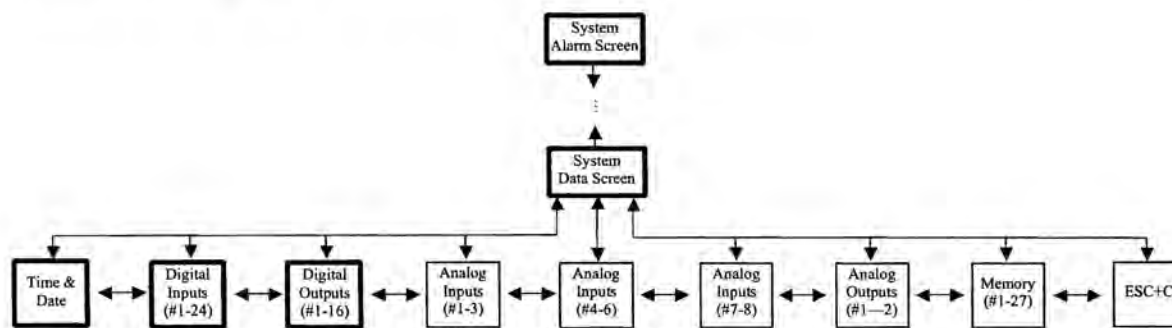


Figure 3. Screen Layout

**Panel Operation:**

Your control panel can perform the float functions listed below. Depending on the number of floats for your application, some functions may be omitted or combined. See the "Setting Instructions" for this panel for information on how to change the adjustable parameters.

**High Level Alarm:** This float activates the alarm light (steady) and audible alarm when lifted for longer than the high level alarm delay. The audible alarm may be silenced by pressing the illuminated PUSH TO SILENCE button on the front of the control panel. The alarm light (steady) will remain on until the float is lowered, and the audible alarm will reactivate in 12 hours if condition is not corrected.

**Override Timer On & Off:** The override timer function is activated when the High Level Alarm float is lifted more than two seconds and the Override Timer Function Jumper is in place. This timer function controls the pump cycles during high flow conditions. The override timer function will remain active until the High Level Alarm float (with the jumper in place) has lowered and the override timer minimum run time is completed. When the override timer function has been completed, normal timer operation will resume.

**Timer On & Off:** This float activates the timer function when lifted. The timer will be activated while the float is up and will be deactivated 30 seconds after the float is lowered. This timer function controls the pump cycles during normal flow conditions. Note: The timer will start with its off cycle.

**Redundant Off & Low Level Alarm:** This float turns off the pump when lowered for more than two seconds. This float is a secondary off float, which will operate if the Timer On & Off float fails. Pumping will be disabled in both the automatic and manual modes. This float also activates the alarm light (steady) and audible alarm. The audible alarm may be silenced by pressing the illuminated PUSH TO SILENCE button on the front of the control panel. The alarm light will remain on until the float is lifted, and the audible alarm will reactivate in 12 hours if condition is not corrected.

**UV Fault:** The contact input from a remote UV unit should maintain a closed contact. When the contact opens, it activates the alarm light (flashing) and audible alarm when lifted for longer than the high level alarm delay. The audible alarm may be silenced by pressing the illuminated PUSH TO SILENCE button on the front of the control panel. The alarm light will remain flashing until the condition is corrected.

**Low Air Alarm:** The air switch should maintain a closed contact when air flow is good. When a low air condition is detected, the switch activates the alarm light (flashing) and audible alarm when lifted for longer than the high level alarm delay. The audible alarm may be silenced by pressing the illuminated PUSH TO SILENCE button on the front of the control panel. The alarm light will remain flashing until the condition is corrected.



# EAS-PLCS1 PTROTS LAA UV Setting Inst.

This control panel includes an easy-to-use programmable logic unit that incorporates many timing and logic functions. Some operational parameters may need to be changed for your particular application.

The unit uses block names to identify the various parameters (please refer to the Liquid Crystal Display screen shown in Step #3). The following block types have been used with your control panel:

Block Names	Description	Factory Default	Time Range	Block Type
HLA Dly	High Level Alarm Delay	5 seconds	MM:SS	Timer
OffTime	Timer Off Time	60 minutes	MM:SS	Timer
OnTime	Timer On Time	40 seconds	MM:SS	Timer
Ovr Off	Override Timer Off Time	30 minutes	MM:SS	Timer
Ovr On	Override Timer On Time	40 seconds	MM:SS	Timer
MinOvrTm	Minimum Override Time	60 minutes	MM:SS	Timer
TmOffDly	Timer Float Off Delay	30 seconds	MM:SS	Timer

Timer blocks have three timebase units that can be used; s = seconds, m = minutes, h = hours. If an **h** appears after the timer setting then the time will be HH:MM (e.g. 01:55h = 1 hour and 55 minutes). If an **m** appears after the timer setting then the time will be MM:SS (e.g. 05:00m = 5 minutes and 0 seconds). If an **s** appears after the timer setting then the time will be SS.ss (e.g. 25:13s = 25.13 seconds).



## Changing Adjustable Timer Parameter Blocks:

Step 1: Press ▼ repeatedly until the display does not change. To begin the configuration process, press the “ESC” key.



Step 2: Press ▼ on the unit to select “Set Param.” Then press the “OK” key.

**Warning: Do not select “Stop.” Doing so may erase the panel programming, which can not be restored without the use of an EEPROM card, which is not included with the panel. If this is selected by accident, a confirmation screen will come up. Select “No” and press the “OK” key immediately.**



Step 3: Press **▲** or **▼** to view the parameter values. In this example, “**Off Time**” is being viewed.



Step 4: The first line indicates the set value for the parameter. In this example, the set time is 1 hour and 55 minutes, “**T=01:55h.**” To change the set value for the parameter, press the “**OK**” key.

The second line indicates, in real time, how much time has elapsed for the cycle that is currently in process. The current value of the parameter is 45 minutes, “**Ta=00:45.**”



Step 5: The cursor will appear in the set value. To select the digit to be changed, press **◀** or **▶**. To change the value of a digit, press **▲** or **▼**. In this example, the set value has been changed from 1 hour and 55 minutes to 58 minutes and 15 seconds. (The timebase can be changed from hours = h to minutes = m or seconds = s by moving the cursor to the far right and pressing **▲** or **▼**).



Step 6: When the desired time value has been entered, press the “**OK**” key. The new time value will now be in effect.



Step 7: To exit parameter mode, press the “**ESC**” key twice.

# Control Panel Instructions

## Contrast Adjustment and Time & Date Settings

This control panel includes an easy-to-use programmable logic unit that incorporates many timing and logic functions. The readability of the display may vary with temperature and ambient light. If the screen is difficult to read, adjusting the contrast is recommended. Instructions for adjusting the contrast are shown below. Setting the date and time is typically not necessary. However, if required, the time and date can be set by following instructions shown below.

To adjust the settings, use the four arrow keys located on the face of the unit (up, down, left, and right), along with the “ESC” key and the “OK” key. Follow the steps, below:



### Changing Settings:

Step 1: Press  $\blacktriangledown$  repeatedly until the display does not change. To begin the configuration process, press the “ESC” key.



Step 2: Select “Set...” (Press  $\blacktriangle$  or  $\blacktriangledown$ ), and then press the “OK” key.

**Warning: Do not select “Stop”.** Doing so may erase the panel programming, which can not be restored without the use of an EEPROM card, which is not included with the panel. If this is selected by accident, a confirmation screen will come up. Select “No” and press the “OK” key immediately.

If adjusting contrast, continue with the steps below. If adjusting time & date, skip to “Setting Time and Date:” on next page.



### Adjusting Contrast:

Step 3: Select “Contrast” (Press  $\blacktriangle$  or  $\blacktriangledown$ ), and then press the “OK” key.



Step 4: Select the desired contrast (Press  $\blacktriangleleft$  or  $\blacktriangleright$ ), and then press the “OK” key.



Step 5: To exit, press the “ESC” key once.

### Setting Time and Date:



Step 3: Select “Clock...” (Press ▲ or ▼), and then press the “OK” key.



Step 4: Select “Set Clock” (Press ▲ or ▼), and then press the “OK” key.



Step 5: Move the cursor to the desired position by pressing ◀ or ▶.

Step 6: Change the value by pressing ▲ or ▼.



Step 7: To confirm your entries press the “OK” key once. Then, press the “ESC” key twice.