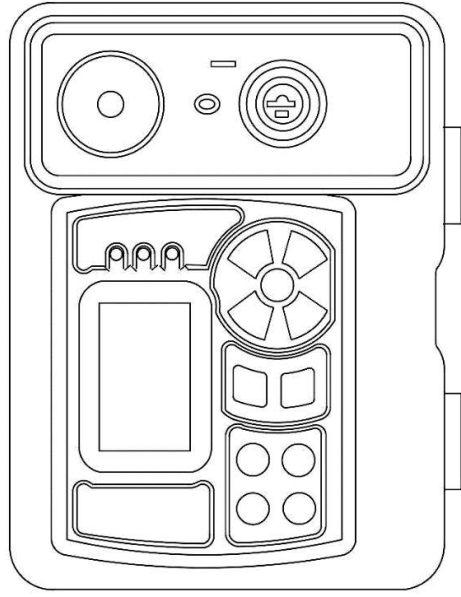




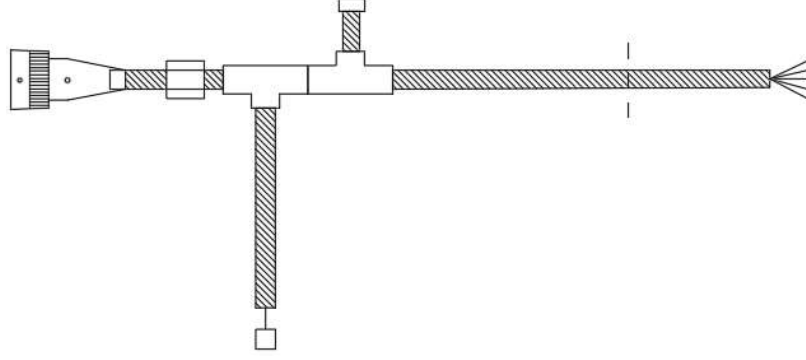
## TEC-10 QUICK START GUIDE

A guide to connecting harnesses, senders and accessories to your Tec-10 Engine controller

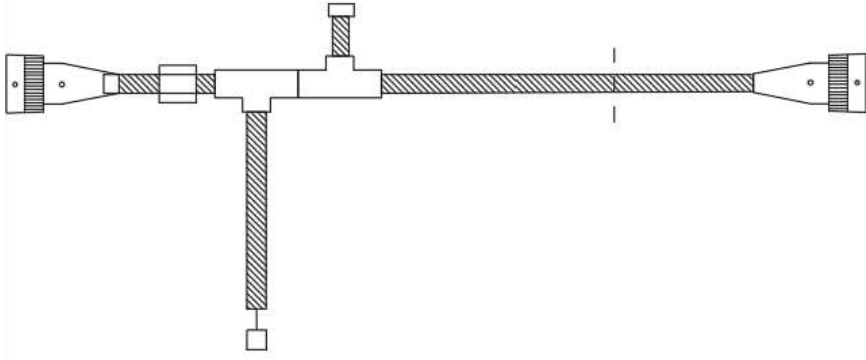
KEY HARNESSING COMPONENTS



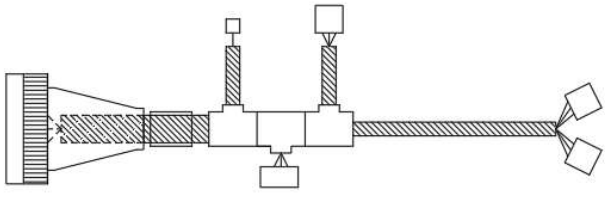
**TEC-10 ENGINE CONTROLLER**



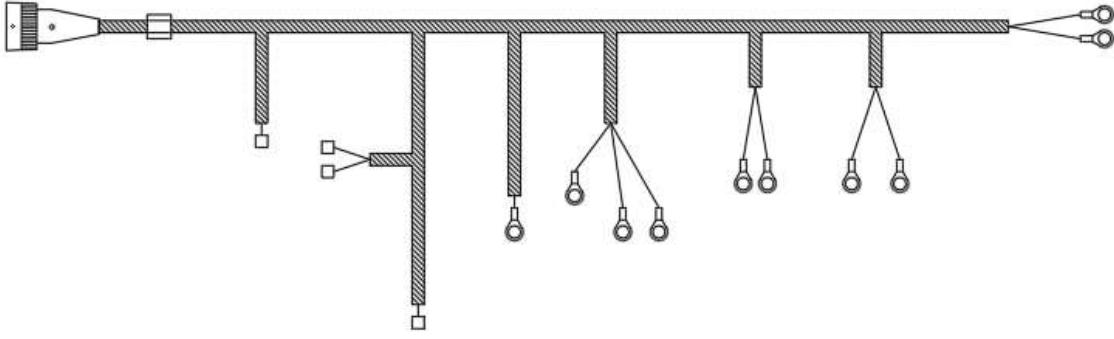
**TYPE A - MACQUARRIE STANDARD INTERCONNECTING HARNESS (21-PIN PANEL CONNECTOR TO BARE ENDS)**



**TYPE B - MACQUARRIE STANDARD INTERCONNECTING HARNESS (21 PIN PANEL CONNECTOR TO 21-PIN ENGINE HARNESS CONNECTOR)**



**MACQUARRIE STANDARD AUXILIARY HARNESS -- (31-PIN PANEL CONNECTOR)**

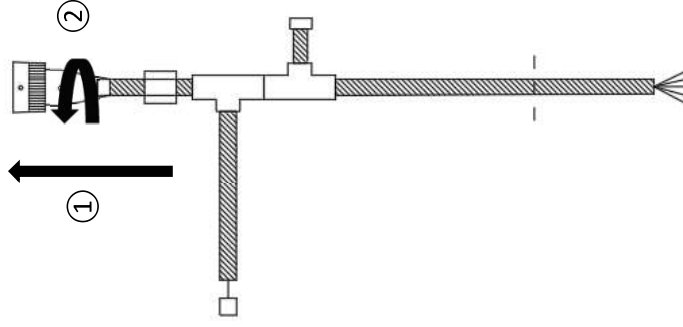
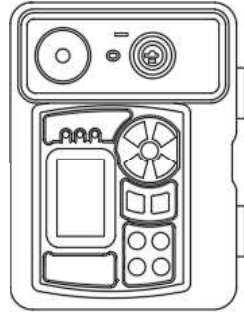


**ENGINE HARNESS – LAYOUTS WILL VARY FOR EACH ENGINE MODEL (21-PIN  
INTERCONNECTING HARNESS CONNECTOR – TERMINATED TO SUIT  
APPLICABLE SENDERS/SWITCHES, ETC)**

## CONNECTING YOUR HARNESES

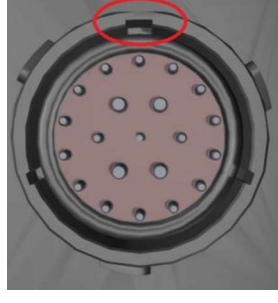
Connecting your harnesses up to your Tec-10 is a simple task. You will typically find a variation of an interconnecting harness included in your kit – Either a 21-pin and terminated to bare ends (Type A) or a 21-pin to 21-pin (Type B). You may also find an auxiliary harness which is a 31-pin connector and terminated to auxiliary components such as pump pressure transducers, float switches, flow switches, telemetry units, linear actuators, etc. If you have been provided with a 21 pin to 21 pin type interconnecting harness, it is likely that you have also been provided an engine harness that is tailored specifically for your engine model. See the following instructions that depict how your separate harnessing components mate to one another as well as to your Tec-10 Engine Controller.

When you are supplied with a [Macquarrie Standard Interconnecting Harness – Type A](#):

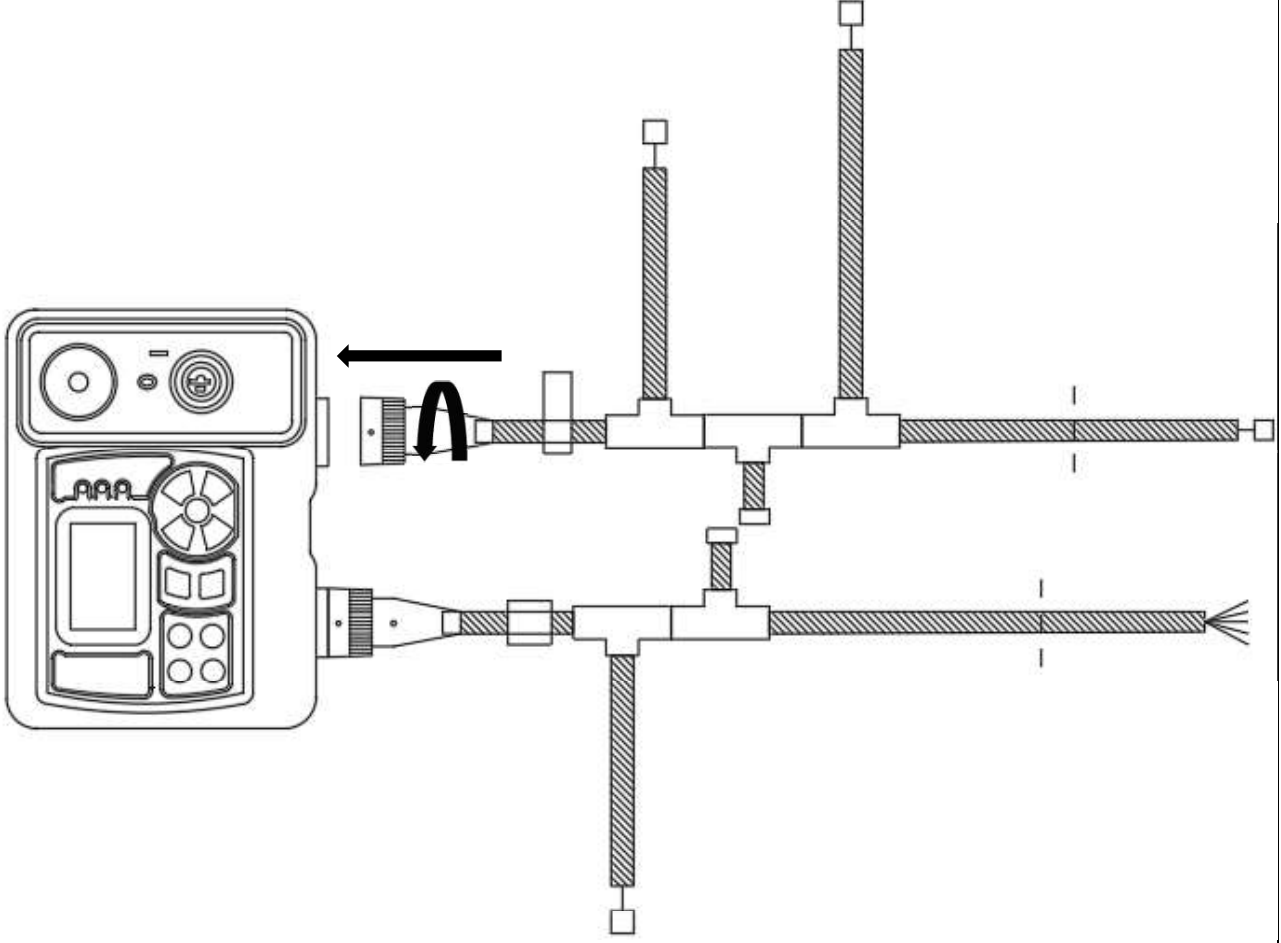


1. Line up the interconnecting harness to the 21-pin connector of the Tec-10 Engine Controller. The 21-pin connector is located on the bottom of the controller on the left-hand side. There is a key on the 21-pin connector of the interconnecting harness and this ensures that the harness can only be fitted one way. When the key is lined up to the keyway, rotate the collar of the 21-pin connector clockwise and this will secure the interconnecting harness to the Tec-10.

**Note: Do not force the connectors in as you may damage the pins on the moulded connectors of the Tec-10 and this may result in some functions to not function correctly.**

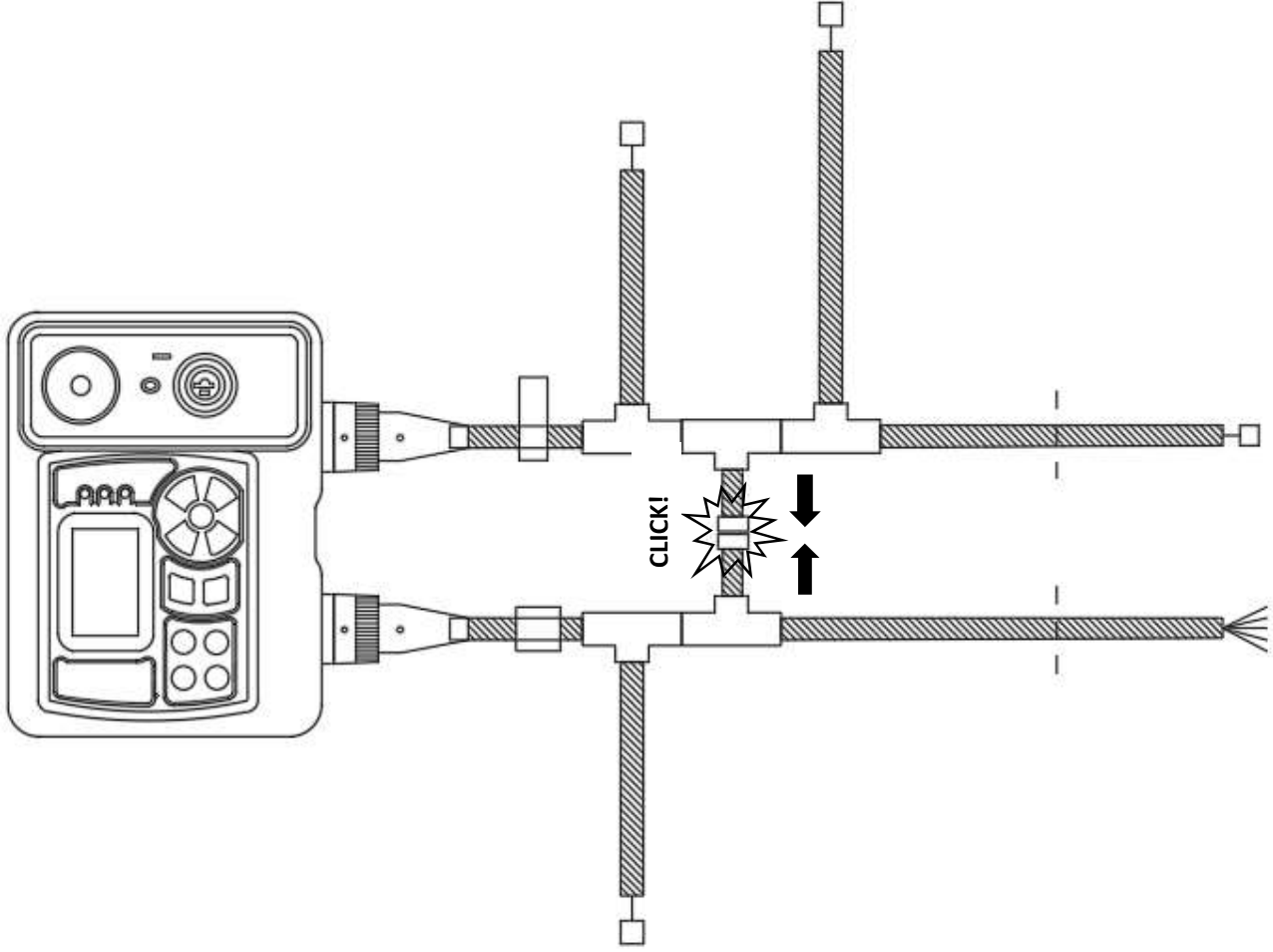


Shown on the left is the moulded connector on the base of the Tec-10. Circled is the keyway. Shown on the right is the 21-pin connector on the interconnecting harness. Circled is the key that needs to mate with the keyway on the Tec-10.



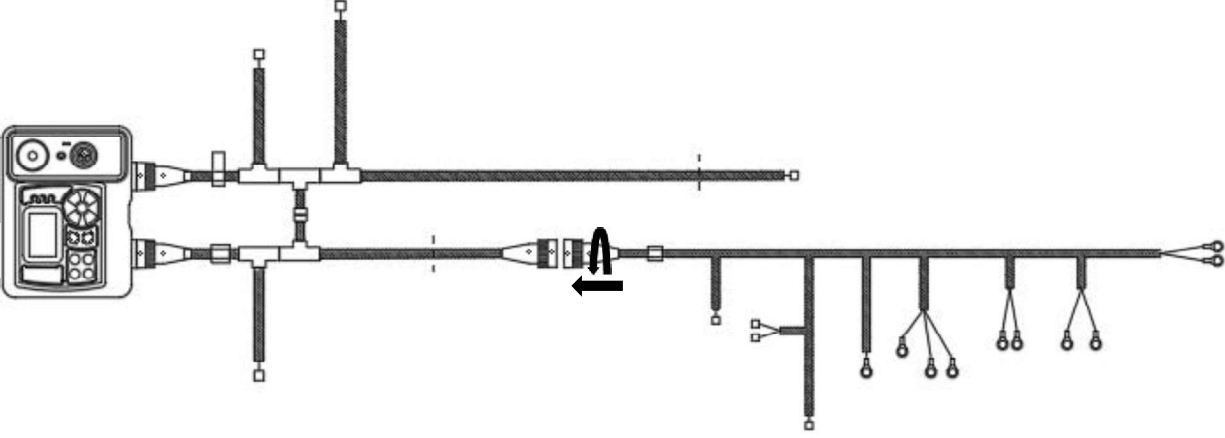
2. Repeat the process of connecting the interconnecting harness to the Tec-10 for the Auxiliary harness. Line up the key on the 31-pin connector of the Auxiliary harness to the keyway on the Auxiliary connector of the Tec-10 Engine controller. Once lined up, rotate clockwise to secure this connection.

**Note: Do not force the connectors in as you may damage the pins on the moulded connectors of the Tec-10 and this may result in some functions to not function correctly.**



3. Mate the interconnecting harness to the Auxiliary harness by connecting the 6-Way connectors together. They should click into place once secured. You are now ready to fit up the interconnecting harness to the engine and connect any auxiliary components via mating connectors to the auxiliary harness.

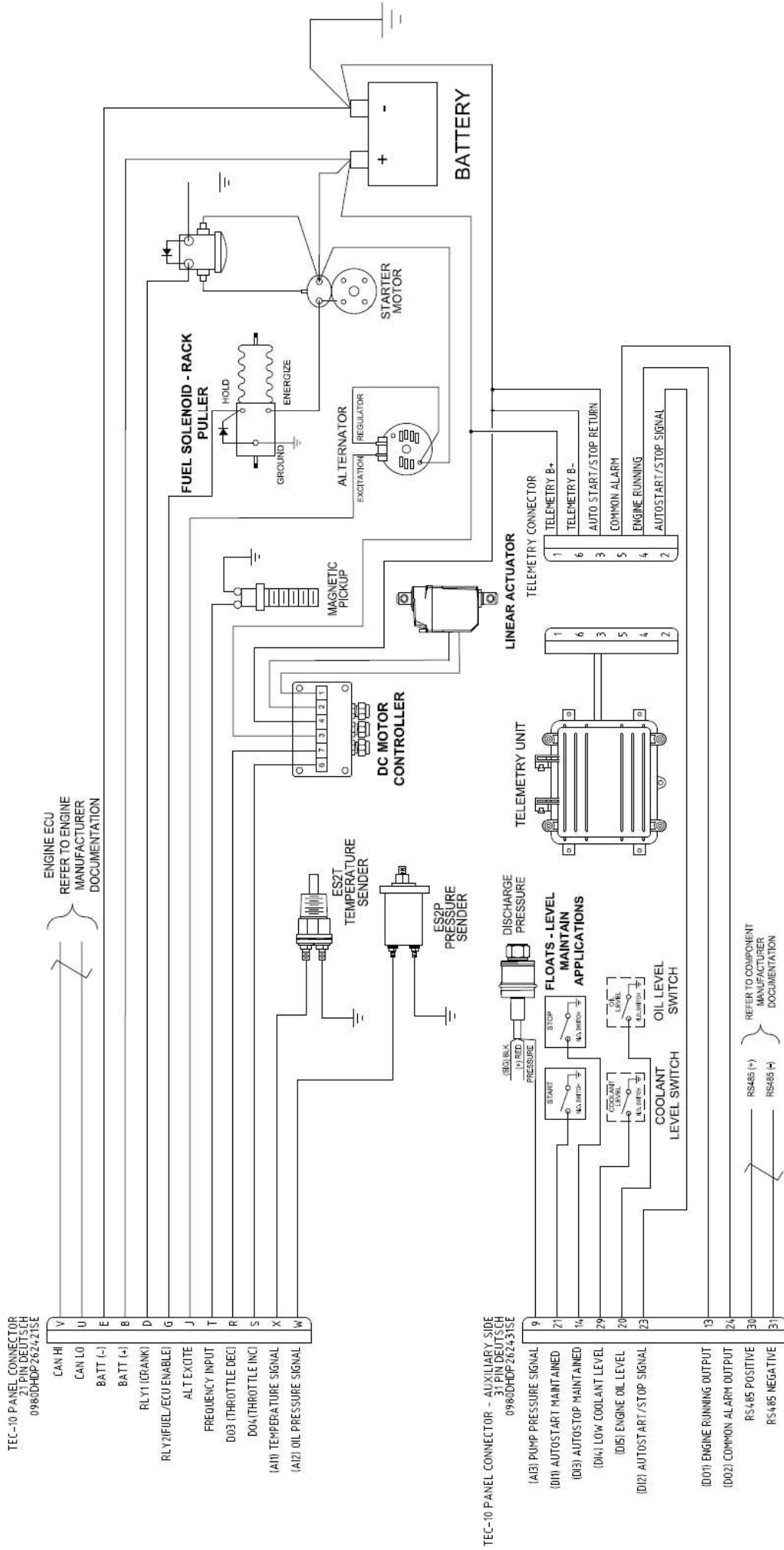
When you are supplied with a Macquarrie Standard Interconnecting Harness – Type B:



1. Refer to the above instructions – “When you are supplied with a Macquarrie Standard Interconnecting Harness – Type A” and complete steps 1-3. The only additional step required is to mate the supplied engine harness to the interconnecting harness – Type B. This is done in a similar way to connecting the interconnecting harness to the Tec-10 Engine Controller. Lining up the key to the keyway and then rotating the collar clockwise to secure the connection.














# TEC-10 TYPICAL APPLICATION DRAWING



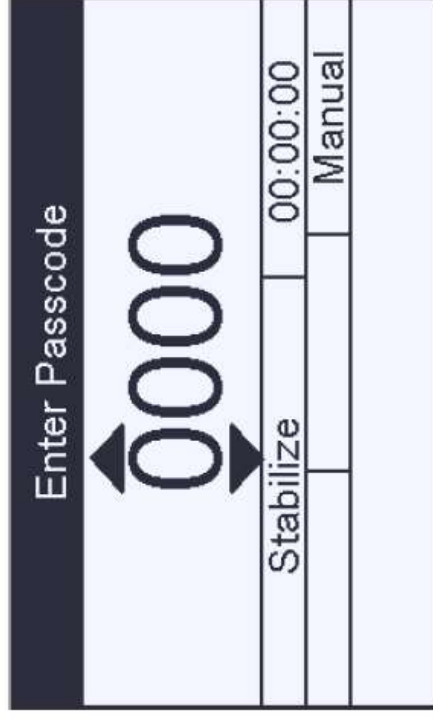
## USER INTERFACE



	<b>START KEY</b>	Allows the operator to start sequence in Manual Mode or initiate an auto start sequence when in Auto Mode
	<b>STOP KEY</b>	Allows the operator to initiate the stop sequence in either mode of operation. As a safety feature, when the stop button is pressed twice in auto mode the controller will skip the cool-down state place itself in manual mode.
	<b>AUTO KEY</b>	Allows the operator to change from Auto to Manual or Manual to Auto Mode when held down for 3 seconds.
	<b>UP KEY</b>	Allows the operator to navigate to the quick view gauge page, and select which analog input to view on the quick view page.
	<b>DOWN KEY</b>	Allows the operator to navigate through the main gauge pages.
	<b>MENU KEY</b>	Allows the operator to get into and out of the menus.
	<b>ENTER KEY</b>	Allows the operator to enter a value in the menu when selected and is used to acknowledge internal and external alarms.
	<b>BACK KEY</b>	Allows the operator to move back one step while in the menu.
	<b>INC KEY</b>	Allows the operator to manually increase the engine throttle in Manual Mode.
	<b>DEC KEY</b>	Allows the operator to manually decrease the engine throttle in Manual Mode.
	<b>SILENCE KEY</b>	Allows the operator to silence the internal siren when an alarm or shutdown is present on the controller.

## Accessing the Menu

To access the menu, simply press the menu key while viewing any gauge screen:



Increase number



Decrease number



Confirm Each Unit / Submit



Exit Menu (Back to Gauges)

Figure 2: Password Screen

Utilise the Up and Down arrows to increase or decrease each number, and press the Enter button to move onto the next. Pressing Enter on the fourth number will submit the password.

Entering the correct password will allow access to the menu. If you enter the wrong password, it will reset the display to 0000, allowing you to restart the entering process.

**PLEASE NOTE:** The standard password is **3482**



## Navigating the Menu

The menu provides the user with the ability to modify all set points within the controller via the front face. It is important to note that the controller has to be in its *Stopped* state in order to change a setting in the menu. Described below are the main sections of the controller's menu.

**Cycling power to the controller is recommended after making changes to set points.**

Navigating through the menu is simple: Press Up and Down to move the selector (the dark highlight) and then press the Enter Key to select that menu item.

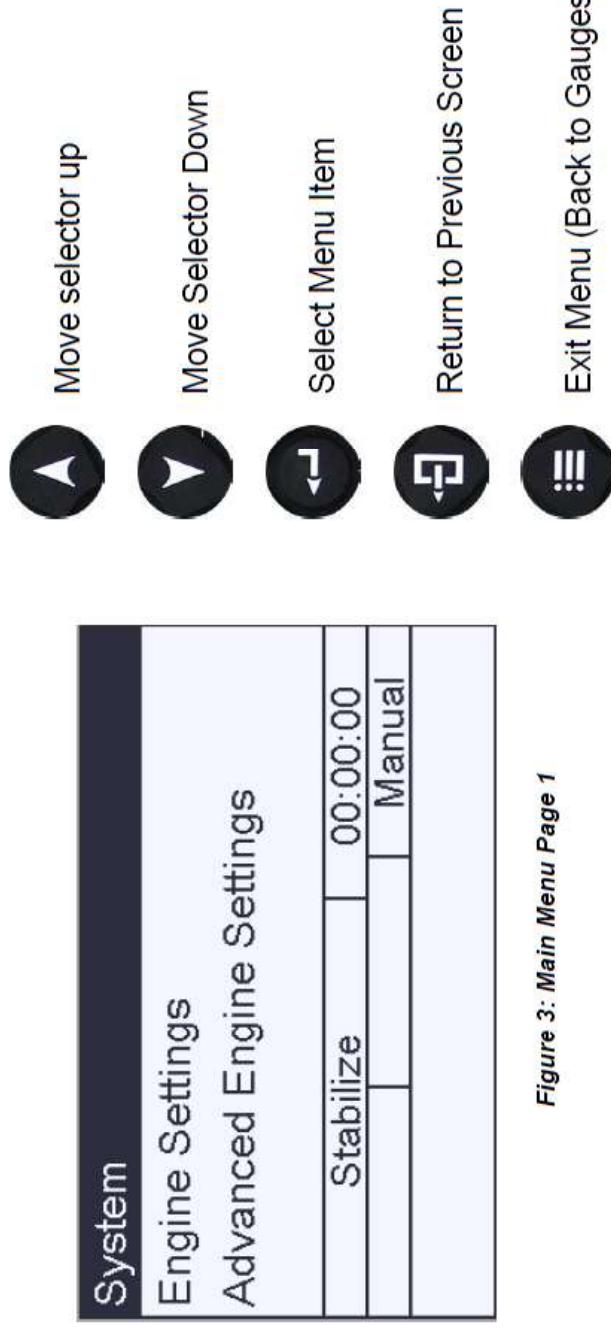


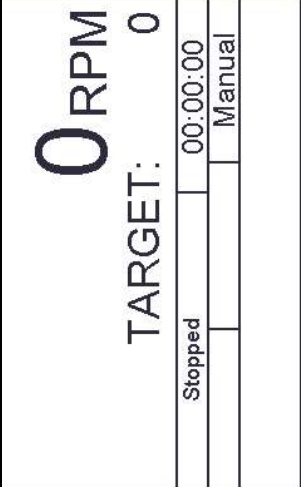
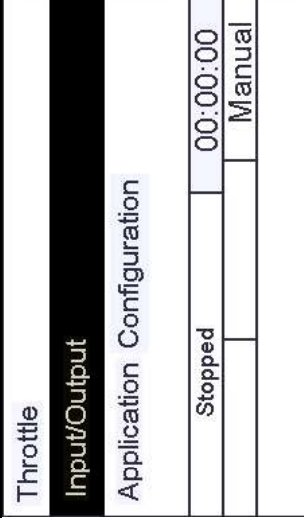
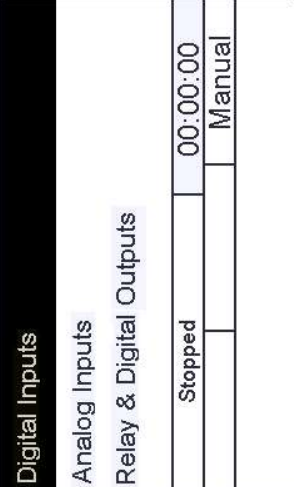
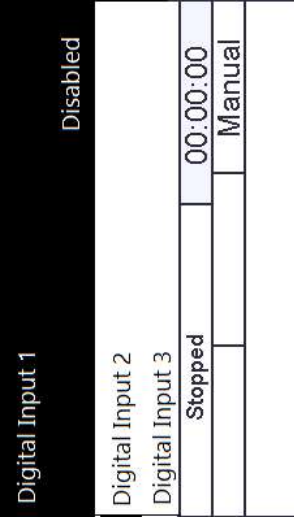
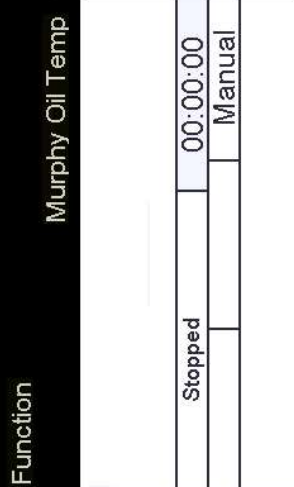
Figure 3: Main Menu Page 1

It is important to note that menus can have more than one page worth of menu items. Pressing Down with the last item selected will automatically cycle through to the next page or back to the top.

## HOW TO CONFIGURE SOFTWARE FOR ENGINE RUNNING OUTPUT

<p>1. Access the menu from any of the gauge screens. Ensure that the controller is in the "Stopped" state in order for any changes to be saved. Password is "3482"</p>	<div style="text-align: center;"> <h1 style="font-size: 2em;">0 RPM</h1> <p>TARGET: 0</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Stopped</td> <td style="width: 50%; text-align: center;">00:00:00</td> </tr> <tr> <td></td> <td style="text-align: center;">Manual</td> </tr> </table> </div>	Stopped	00:00:00		Manual	<p>2. Once in the main menu, navigate to using the Up and Down Keys "Input/Output" and press the enter key.</p>	<div style="text-align: center;"> <p>Throttle</p> <div style="background-color: black; color: white; padding: 5px; font-weight: bold;">Input/Output</div> <p>Application Configuration</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Stopped</td> <td style="width: 50%; text-align: center;">00:00:00</td> </tr> <tr> <td></td> <td style="text-align: center;">Manual</td> </tr> </table> </div>	Stopped	00:00:00		Manual
Stopped	00:00:00										
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Stopped	00:00:00										
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<p>3. Navigate to "Relay &amp; Digital Outputs" and press enter.</p>	<div style="text-align: center;"> <p>Digital Inputs Analog Inputs</p> <div style="background-color: black; color: white; padding: 5px; font-weight: bold;">Relay &amp; Digital Outputs</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Stopped</td> <td style="width: 50%; text-align: center;">00:00:00</td> </tr> <tr> <td></td> <td style="text-align: center;">Manual</td> </tr> </table> </div>	Stopped	00:00:00		Manual	<p>4. Choose one from any of the unassigned relays/digital outputs. For Eg: DO1 here. Press enter key to choose the desired output.</p>	<div style="text-align: center;"> <p>DO1 (B+, 1A)</p> <div style="background-color: black; color: white; padding: 5px; font-weight: bold;">Disabled</div> <p>DO2 (B+, 1A)</p> <p>DO3 (B-, 1A)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Stopped</td> <td style="width: 50%; text-align: center;">00:00:00</td> </tr> <tr> <td></td> <td style="text-align: center;">Manual</td> </tr> </table> </div>	Stopped	00:00:00		Manual
Stopped	00:00:00										
	Manual										
Stopped	00:00:00										
	Manual										
<p>5. Select "Engine Running" from the dropdown menu. Press enter key to accept the change.</p>	<div style="text-align: center;"> <p>Remote Alarm Not In Auto</p> <div style="background-color: black; color: white; padding: 5px; font-weight: bold;">Engine Running</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Stopped</td> <td style="width: 50%; text-align: center;">00:00:00</td> </tr> <tr> <td></td> <td style="text-align: center;">Manual</td> </tr> </table> </div>	Stopped	00:00:00		Manual	<p>6. You will see the new function assigned as shown. Power cycling the controller is recommended after any setpoints have been adjusted.</p>	<div style="text-align: center;"> <p>DO1 (B+, 1A)</p> <div style="background-color: black; color: white; padding: 5px; font-weight: bold;">Engine Running</div> <p>DO2 (B+, 1A)</p> <p>DO3 (B-, 1A)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Stopped</td> <td style="width: 50%; text-align: center;">00:00:00</td> </tr> <tr> <td></td> <td style="text-align: center;">Manual</td> </tr> </table> </div>	Stopped	00:00:00		Manual
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Stopped	00:00:00										
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**HOW TO CONFIGURE SOFTWARE FOR HIGH FLOAT SHDN WITH AN OPEN ON RISE(KCF) FLOAT**

<p>1. Access the menu from any of the gauge screens. Ensure that the controller is in the "Stopped" state in order for any changes to be saved.</p>		<p>2. Once in the main menu, navigate to "Input/Output" and press the enter key.</p>	
<p>3. You will be presented with each category of Input/Output available to be configured</p>		<p>4. For digital inputs, you are required to set the Function or sender, when the function is to be active and what action to take when that function is active. For example, No Flow &gt; B- &gt; Shutdown.</p>	
<p>5. Analog Inputs and Digital Outputs simply require for the function to be set. For example, Murphy Oil Temp for Analog Inputs or Common Alarm for Digital Outputs.</p>			

## HOW TO ADJUST WARNING & SHUTDOWN SETPOINTS

1. Press the menu key **⏏** and enter the passcode (3482). Press the enter key **↵** after each number is input to move on to the next digit. Engine must be in “**Stopped**” state to save changes.
2. Use the Up/Down keys **⬆** **⬇** to scroll to “**Advanced Engine Settings**” and press the enter key **↵**.
3. Use the Up/Down keys **⬆** **⬇** to scroll “**Warnings and Shutdowns**” and press the enter key **↵**.
4. Use the Up/Down keys **⬆** **⬇** to scroll the parameter that you wish to adjust. Press the enter key **↵** once the Warning/Shutdown parameter is highlighted.
5. The current setpoint will be displayed. Use the Up/Down keys **⬆** **⬇** to adjust the setpoint and press the enter key **↵** to confirm the new warning/shutdown setpoint.
6. Power cycle the controller.

## HOW TO CONFIGURE A FLOW SWITCH

1. Press the menu key **⏏** and enter the passcode (3482). Press the enter key **↵** after each number is input to move on to the next digit. Engine must be in “**Stopped**” state to save changes.
2. Use the Up/Down keys **⬆** **⬇** to scroll to “**Input/Output**” and press the enter key **↵**.
3. Ensure Digital Inputs is highlighted and press the enter key **↵**.
4. For 09HMACM1607182, Digital Input 1 is pre-assigned for a flow switch – refer *MCO1730, Sheet 2*. As such, press the enter key **↵** twice and with the Up/Down keys **⬆** **⬇**, scroll to “**No Flow**” and press the enter key **↵**.
5. Now, scroll down to “**Active**” and press the enter key again **↵**. Scroll down to “**Open**” and press the enter key **↵** to make this change.
6. Finally, scroll down to “**Action**” and press the enter key **↵**. Depending on your application and how you would like your system to behave, scroll down to one of the options and select it using the enter key **↵** once it is highlighted.

### **Actions Available:**

**Not Used:** chosen when using digital input for anything except a fault)

**Warning:** chosen for an immediate warning to the operator when function is active)

**Shutdown:** chosen for an immediate shutdown of engine when function is active)













**Shutdown, Controlled:** chosen to allow the controller to shutdown through the normal sequence of operation including cooldown when function is active.  
User acknowledgement of the fault is required to restart in Auto after shutdown occurs)

**Relay Control:** chosen for control of one of the relay outputs when function is active)




















7. It is recommended that you set a bypass timer of some sort for this warning/shutdown - Refer to “*How to configure a bypass/lockout*” below.



## HOW TO CONFIGURE A PUMP PRESSURE TRANSDUCER

1. Press the menu key  and enter the passcode (3482). Press the enter key  after each number is input to move on to the next digit. Engine must be in “Stopped” state to save changes.
2. Use the Up/Down keys   to scroll to “Input/Output” and press the enter key .
3. Scroll down to “Analog Inputs” and press the enter key .
4. For 09HMACM1607182, Analog Input 3 is pre-assigned for a pump pressure transducer – refer *MC01730, Sheet 1*. As such, use the Up/Down keys   to scroll to “Analog Input 3” and press the enter key  twice.
5. A list of available senders will be shown. Use the Up/Down keys   to scroll to the type of sender that you have fitted to the Auxiliary Harness, i.e. 0-5V Discharge Pressure. Once you have navigated to the appropriate sender on the list, press the enter key  to set this as your Analog Input.
6. Power cycle the controller

## HOW TO CONFIGURE A BYPASS/LOCKOUT

1. Press the menu key  and enter the passcode (3482). Press the enter key  after each number is input to move on to the next digit. Engine must be in “Stopped” state to save changes.
  2. Use the Up/Down keys   to scroll to “Advanced Engine Settings” and press the enter key .
  3. Use the Up/Down keys   to scroll to “Timers/Delays” and press the enter key .
  4. Use the Up/Down keys   to scroll to the desired lockout/bypass type i.e. Post and press the enter key .
- Types of Lockouts Available:**
- Post Crank Lockout :** This is a setup for a delay that begins timing after crank disconnect at startup. During this delay, the selected functions are ignored. When this delay expires, the selected functions are armed. During the duration of this delay, the selected functions can cycle from active to not active and not reset the delay.
- Post Warm-Up Lockout:** This is a setup for a delay that begins timing when the warm-up delay expires. During this delay, the selected functions are ignored. When this delay expires, the selected functions are armed. During the duration of this delay, the selected functions can cycle from active to not active and not reset the delay.
- Bubble Lockout:** This is a setup for a delay that begins timing when the selected functions are active. If the selected functions are removed during this delay, the delay resets to zero. If the selected functions remain active throughout this delay, the selected action for the parameter will occur.
5. If you wish to adjust the default lockout time, press the enter key  and use the Up/Down keys to adjust the lockout time. Pressing the enter key  will advance from seconds to minutes to hours and finally submit the changes.
  6. Use the Up/Down keys   to scroll to a vacant lockout and press the enter key . A vacant lockout can be identified when it is shown as “Disabled”.
  7. Use the Up/Down keys   to scroll to the desired Warning/Shutdown that you want to bypass temporarily and press the enter key  to confirm.