Ratio:Feeder

Series J Pro Injector Controller and Monitor

Unpacking

Please open and inspect your package upon receipt.
Your package was packed with great care and all the necessary packing materials to arrive to you undamaged. If you do find an item that is broken or damaged, you must contact the delivering carrier to report the claim.

Getting Technical Assistance

The H.E. Anderson Company is dedicated to assisting our customers with installation and use of our products. Our technical staff are available each weekday from 8:30am to 4:30pm central time. You may call us toll free at 1-800-331-9620 from anywhere in the U.S.A.. and Canada. If no one is available, we will promptly return your call.
Before you call, we suggest that you review this manual. You may find the answer to your question here. But even if you do not, reviewing the manual will help us to help you.
There is some information you should have available when you call. You should know the software version and serial number of your control unit. Also, you should note the number of pumpers of each type, and their model numbers. We may not need all this information, but having it available at the start can some times save a lot of time and trouble for you. You may record the information on the information page below for convenient reference.
If you need an additional owners manual for any H.E. Anderson Company product, please visit our website at https://heanderson.com/resources/#user-manuals

Table of Contents

Information Summary

Summary of installation steps:

1. Decide where to place all system components. Consult component specific HEA manuals for individual components (J Controller, Water Meter, Manifold, Pump Heads Blend Tank).

2. Install and leak check all plumbing including the manifold supply, water meter, injection point fittings and blend tank.

3. Install the manifold and pump heads.

4. Mount controller and make connections between the controller, water meter and manifold(s).

5. Power on and configure J controller.

This manual covers steps 4 and 5 and assumes steps 1-3 are complete. Consult the J Series Installation Guidelines (https://heanderson.com/wp-content/uploads/Install-Guidelines.pdf) and individual component manuals for prior steps.

Do all wiring before connecting power. Use a surge suppressor on the incoming AC power line. Plug in the power cord and watch the LCD display. If it does not come on, unplug the power and check the wiring.

This unit was ordered with the following capacities or settings:

MODEL NO. _____ SERIAL NO. _____

Customer Requested _____ Default _____

Software Version _____

K Factor [Pulses per Gallon]_____

Maximum Flow _____

Pumper Models:		GPS=Gallons Per Stroke	
PUMPER #1_____	PUMPER #5_____	GPS #1_____	GPS #5_____
PUMPER #2_____	PUMPER #6_____	GPS #2_____	GPS #6_____
PUMPER #3_____	PUMPER #7_____	GPS #3_____	GPS #7_____
PUMPER #4_____	PUMPER #8_____	GPS #4_____	GPS #8_____

Once settings have been properly entered into the controller, the ratios for each output can be viewed on the controller's display. To manually calculate the injection ratio for each pumper use the formulas below. With the above settings, pumpers will have the following chemical to water feed ratio capacities (At dial setting 10).

BASE #1 = (GPS #1 x N) ÷ 80 = _____ **N=3785(gal.)**

H8	1:_____ (BASE #1)	H4, P4	1:_____ (BASE #1 x 2)
H2, P2	1:_____ (BASE #1 x 4)	H1, P1, A10	1:_____ (BASE #1 x 8)
A3	1:_____ (BASE #1 x 26.7)		

BASE #2 = (GPS #2 x N) ÷ 80 = _____

H8	1:_____ (BASE #1)	H4, P4	1:_____ (BASE #1 x 2)
H2, P2	1:_____ (BASE #1 x 4)	H1, P1, A10	1:_____ (BASE #1 x 8)
A3	1:_____ (BASE #1 x 26.7)		

BASE #3 = (GPS #3 x N) ÷ 80 = _____

H8	1:_____ (BASE #1)	H4, P4	1:_____ (BASE #1 x 2)
H2, P2	1:_____ (BASE #1 x 4)	H1, P1, A10	1:_____ (BASE #1 x 8)
A3	1:_____ (BASE #1 x 26.7)		

BASE #4 = (GPS #4 x N) ÷ 80 = _____

H8	1:_____ (BASE #1)	H4, P4	1:_____ (BASE #1 x 2)
H2, P2	1:_____ (BASE #1 x 4)	H1, P1, A10	1:_____ (BASE #1 x 8)
A3	1:_____ (BASE #1 x 26.7)		

If more than one pumper is used to pump the same chemical, divide the ratio (BASE) by the number of pumpers used for that chemical. The J+ Advanced can operate up to 8 manifolds. Repeat the above formulas for BASE #5,6,7 and 8 if in use.

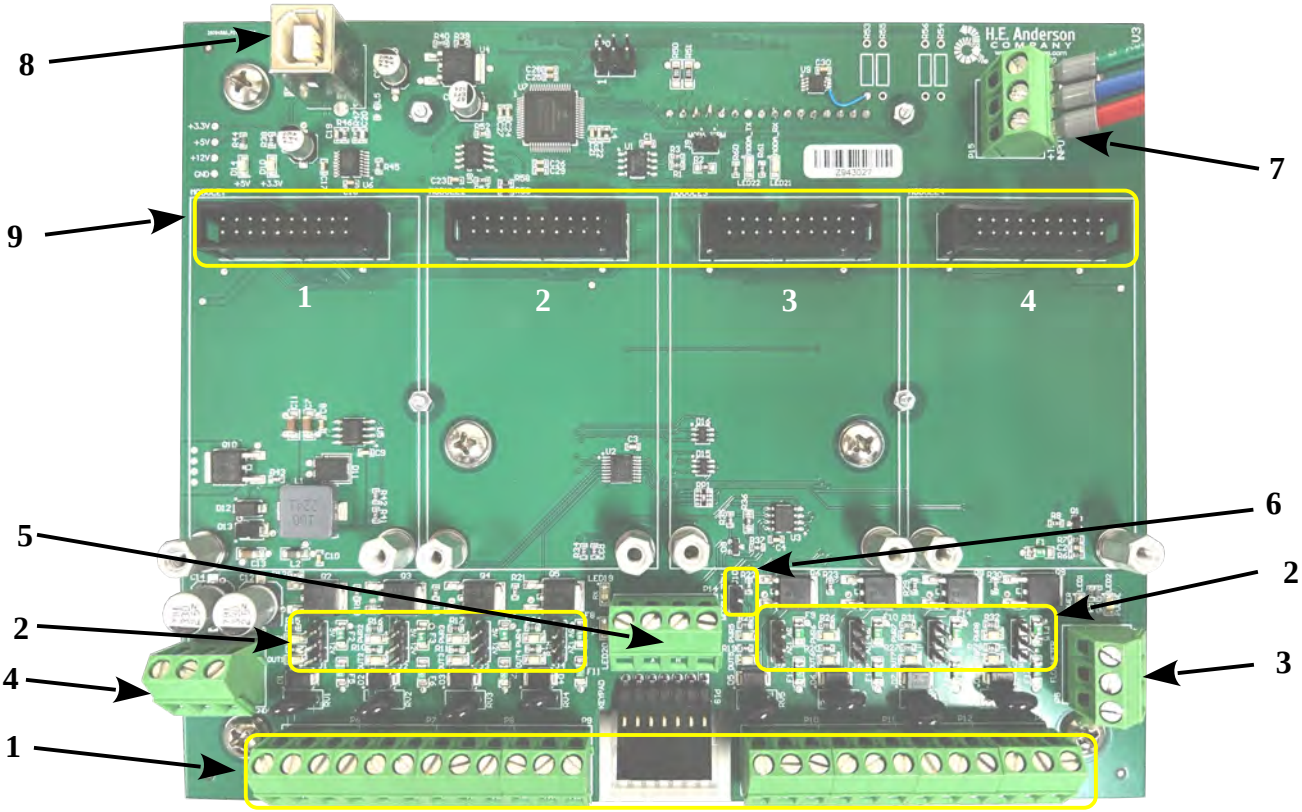
Mounting

Ensure the installation location has all the following:

- Allows easy access to front panel.
- Must have access to 120 VAC power outlet.
- Close proximity to other injector components.
- Protected from direct spray or moisture.
- Indoors or protected from outside elements, sun, rain, etc.

Mount the controller using the 4 metal tabs on the back of the enclosure. Modification to the control enclosure that allows moisture to enter the enclosure will void the warranty.

J Pro Main Board Components and Landing Terminals:

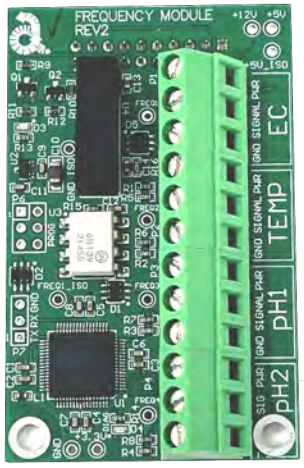


1. Output / Pilot Valve (1-8)
2. Output Type Selector (Jumper 1-8) **Can damage equipment if set incorrectly**
3. Flow Meter (#3 Top=Power, #2 Middle=Flow Signal In, #1 Bottom=Ground)*
4. Grounding (Solenoid Pump)
5. External Communications (see Modbus manual)
6. Modbus Terminator (Jumper 10) (see Modbus manual)
7. Power Input
8. USB (factory use only)
9. Expansion Card Slot 1-4

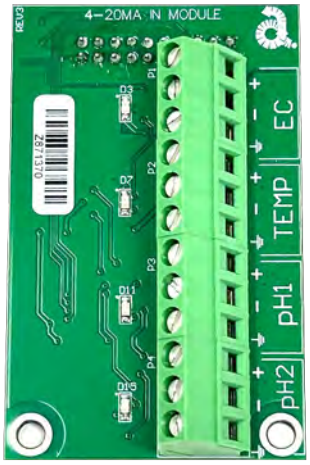
*Wire colors may vary. Call customer support if unsure of connection. Damage may occur if wired incorrectly.

Expansion Module Types, and Landing Terminals:

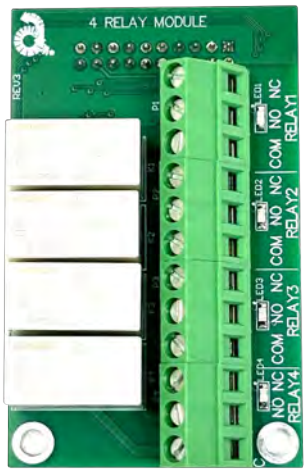
Only one of each type can be used per control.



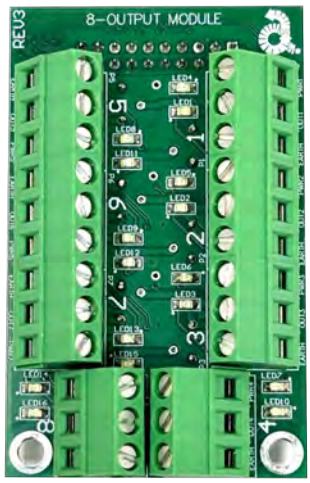
Frequency Module (Digital EC, pH, Temp)
- Preferred Slot #4
- Black wire for “GND”
- White wire for “ Signal”
- Red wire for “PWR”



4-20MA Module (Analog EC, pH, Temp)
- Preferred Slot #3
- Black wire for “ ⏚ ”
- White wire for “ - “
- Red wire for “ + “



Relay Module
- Type C , NO and NC Connections
- 240V @ 10 Amp Max
- Any alarm will trigger all 4 Relays



8 Output Expansion Module (Pilot Valve <u>ONLY</u>)
- Green Wire for “Earth”
- Black wires for “PWR” & “OUT”

WARNING!!! The J-Pro Control must be powered off when installing or removing modules. Damage will occur otherwise.

Power Supply and Fuse:

Complete the following steps to connect the control box to the required components:

1. Ensure the J Pro Controller is **NOT** connected to electricity.

2. Open the Enclosure by releasing the two latches on the right of the door.

3. Connect the water meter by running the water meter cable through the rubber grommet. Connect the wires following the terminal markings, Black wire for ‘Ground’, White wire for ‘Flow’, Red wire for ‘PWR’. Use a small screw driver to tighten the connections on the terminal block. If you need a longer cable, use the color coding to be sure that these connections are correct.

⚠ **DAMAGE CAN OCCUR IF THE WIRES ARE NOT PROPERLY CONNECTED OR MATCHED**

4. The valve output cables should already be connected to the output terminals. If they are not or more output cables are being added, feed the cables through the appropriate position in the grommet bushing on the bottom of the box, then connect the wires to the proper output terminal number.

   - **For Anderson Pilot Valve Manifolds**, use the Green wire for ‘Earth’, Black wires for ‘PWR’ & ‘OUT’.

   - **For Solenoid Pumps**, use the RED wire on the solenoid pump for ‘OUT’ on the output terminal block and connect the BLACK wire to one of the 3 positions on the ‘GND’ terminal block.

⚠ **NOTE: The jumper on each output that is used on SP series solenoid pumps must be set to the TOP position**

   - **For existing Anderson pilot valve output cables with only 2 conductors**, connect one wire to “OUT” of an output connector and connect the other wire to “PWR” of the same output connector. The order does not matter.

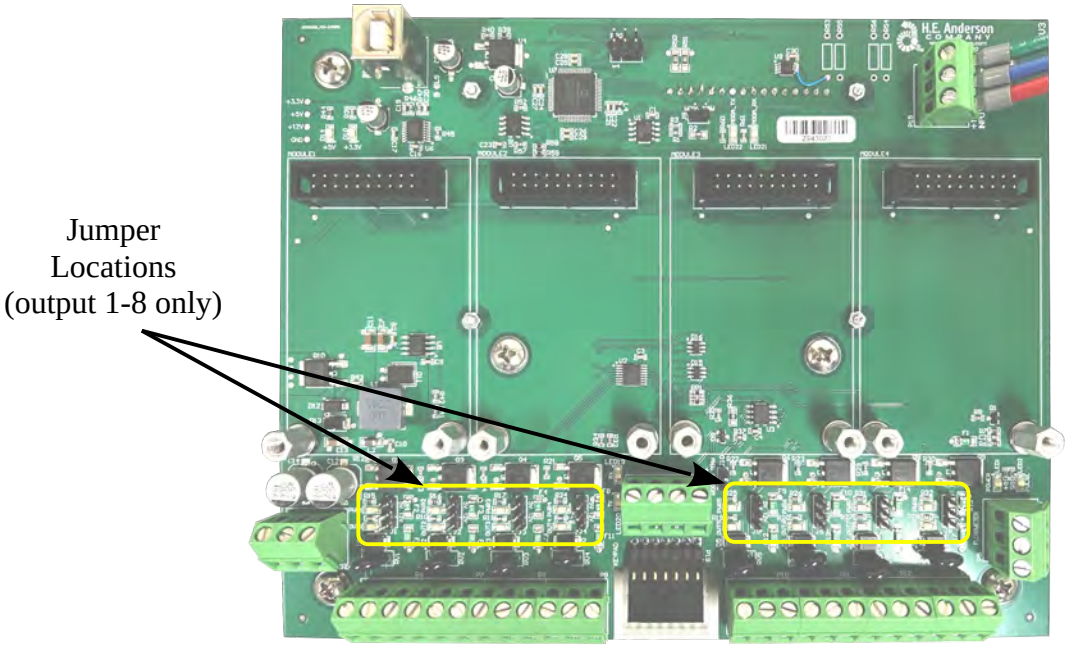
NOTE: The J Pro controller is only compatible with 12VDC coils on pilot valves and manifolds. If the J Pro is being used with an existing pilot valve or manifold, ensure the coil is 12VDC or purchase a 12VDC coil (Part #18332) to convert the pilot valve.

5. Each output can be set using the jumpers to control either a traditional Anderson manifold pilot valve or Anderson SP series solenoid pump.
    - Lower position for Anderson Pilot Valve Manifolds.
    - Upper position for Anderson SP Series Solenoid Pumps

Ensure the jumper positions are set properly. Check each output jumper to make sure the position matches the type of device connected to the output.

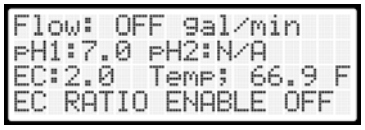
Anderson Pilot Valve

SP Series Solenoid Pump



Starting the Control

Plug the controller into a surge suppressor/uninterrupted power supply should be used to power the controller. When power is applied to the unit, the display will show:



Initial Settings and Configuration

The controller must be configured in order to work properly. Controllers ordered with a meter from the factory should be properly configured on delivery. However, settings should be double checked for correct configuration.

Make sure the following parameters have been programmed correctly into the controller:

- K Factor
- Number of Active Manifolds
- Gallons per Stroke for Each output
- Mode for each output
- Feed is enabled for each output

Refer to the included quick start guide below to confirm and change controller settings.

J Pro Start-Up Guide (Version R1.1-6-gb968a23)

This guide will lead you through the menus used to display and set system parameters.

If you have ordered your J Pro controller as part of a system which includes a water meter, one or more manifolds, or solenoid pumps, some of the parameters may already be properly set.

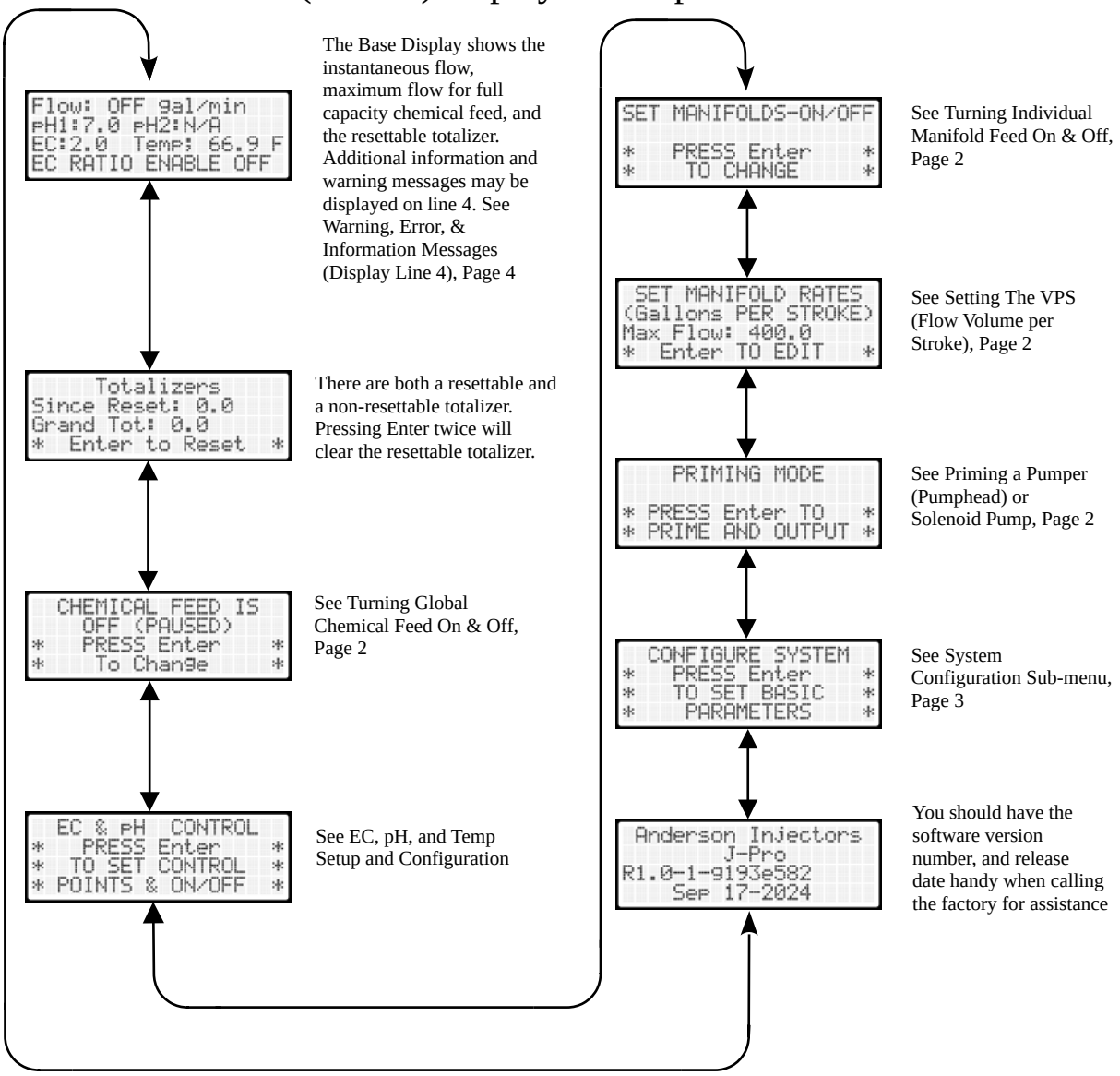
You can use the ▼ and ▲ keys to navigate the top level menus in normal or reverse order. During this period you can move forward or reverse through the menu sequence. Pressing the Cancel/Exit key will return to the home display.

Any top level menu item with 'Q' characters at the margins allows operator to press Enter to enter or change a value or perform the currently displayed function. Pressing Cancel/Exit will exit the screen will return to the base display.

All numeric entries are right justified as they are entered. Decimal places are fixed, and when entering values with decimal positions, trailing zeros must be entered.

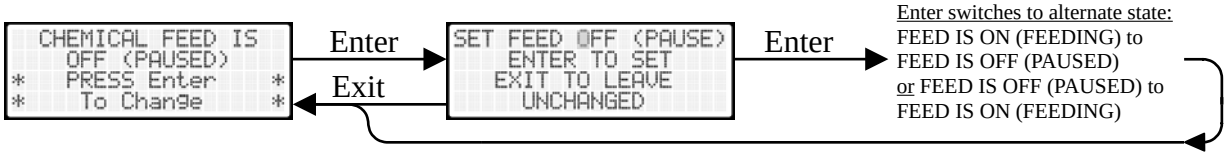
Numeric values are for illustrative purposes only

Base (default) display and Top Level menu rotation

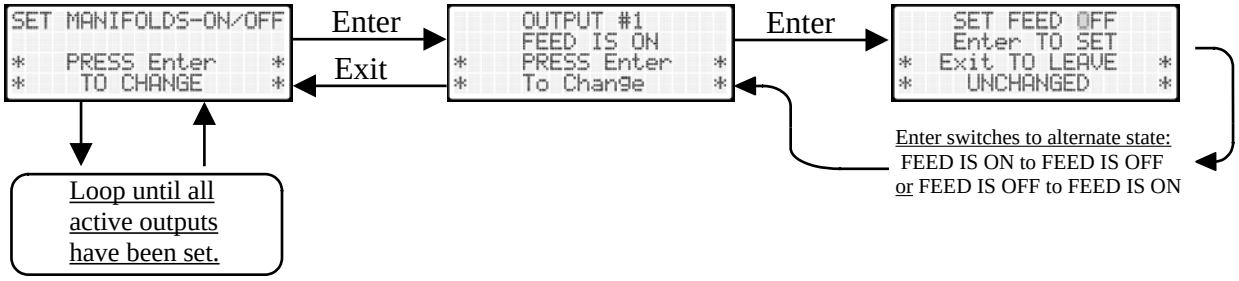


J Pro Start-Up Guide Top Level Menu

1. Turning Global Chemical Feed On or Off

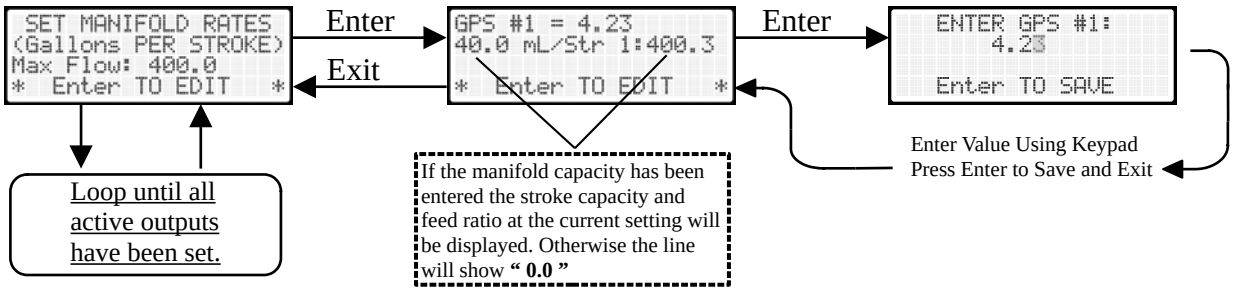


2. Turning Individual Manifold Feed On or Off

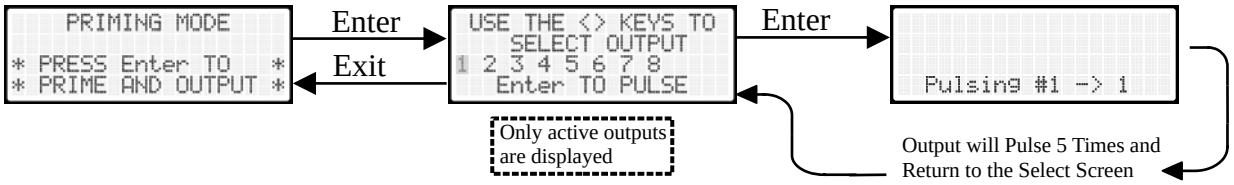


3. Setting the Manifold Stroke Rate (GPS or LPS)

The Stroke Rate will be displayed as either Gallons per Stroke or Liters per Stroke according to the setting of the K Factor Unit (See Page 3)Both decimal places must be entered, even if zero.

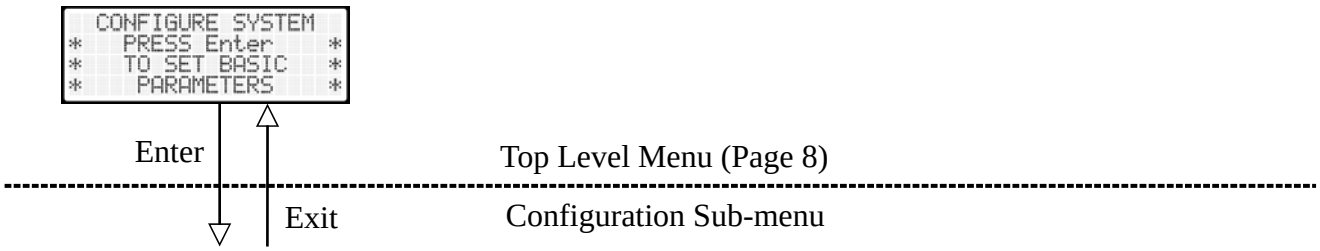


4. Priming an Output (Injector) or (Solenoid Pump)

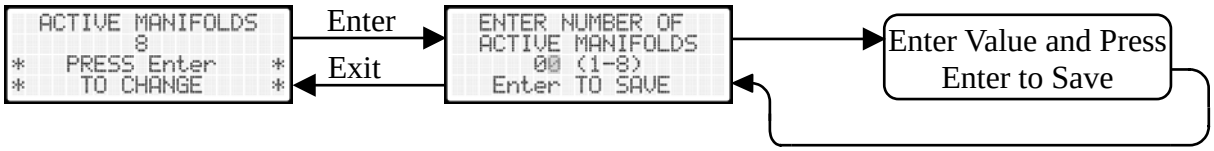


Priming sends a sequence of six (5) pulses to the selected manifold. If you have more than one pumper on a manifold and you do not want to prime them all, you will need to turn off some pumpers with the shut-off valves located on the manifold. Cancel/Exit will abort the priming sequence after the current stroke. You can press Cancel/Exit to return to the selection screen and select another output.

J Pro Configuration Sub-Menu

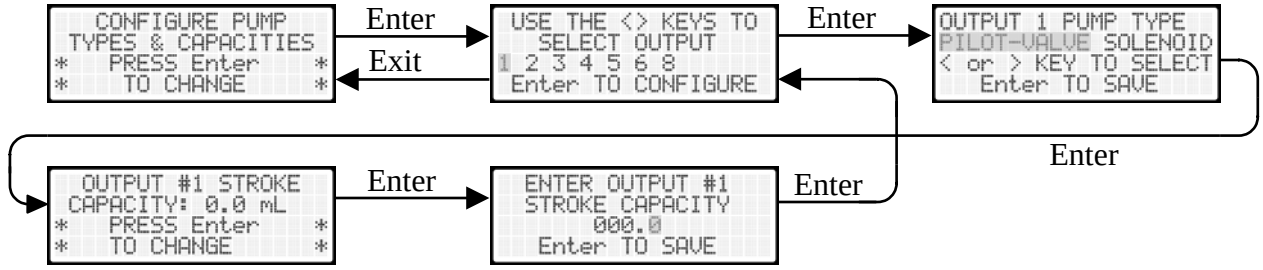


1. Setting Number of Active Manifolds



If you are using fewer than eight outputs setting this value to the maximum number used will speed navigation through the MANIFOLDS ON/OFF and MANIFOLD RATES screens.

2. Configure Pump Types and Capacities

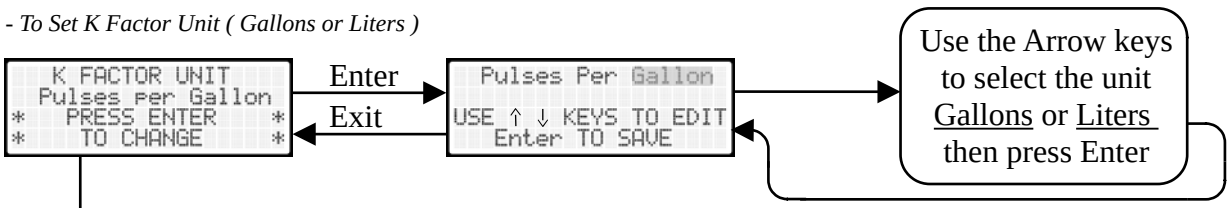


To configure a manifold is a two step process. You must first set the pump type and then enter the chemical capacity per stroke. Each output must be selected and configured separately.
1) Press Enter to choose the output number to configure.
2) Follow the screen instructions to set the pump type and Press Enter to set and display the Capacity per Stroke.
3) Press Enter again to set the stroke capacity using the numeric keypad. You must enter the decimal place, even if zero. This capacity should be the total combined capacity of all pumpers attached to that output which are pumping a single chemical and for which you want to display the combined feed ratio when setting the VPS.
4) After setting the values you will be returned to the Output selection screen where you can configure another output.

3. Setting the K Factor

The K Factor value is critical to accurate operation of the system. The K Factor is usually shown somewhere on the water meter. Enter the K Factor (Pulses Per Gallon/Liter) value.

- To Set K Factor Unit (Gallons or Liters)



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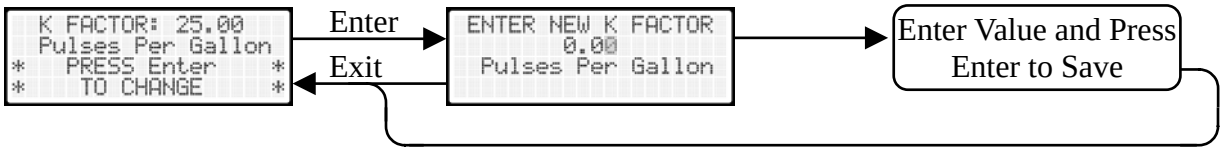
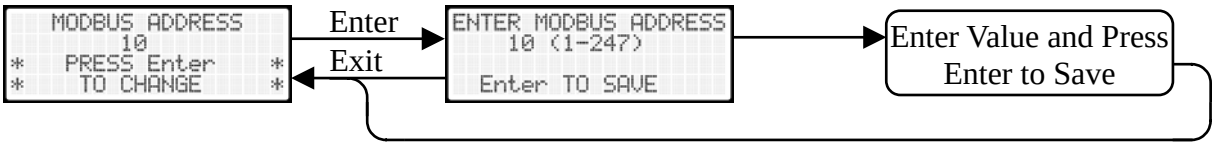
Setting the K Factor Continued

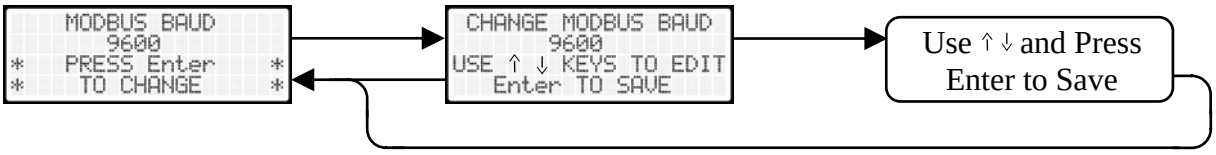
- To set K Factor Value (Supplied with Flow Meter)



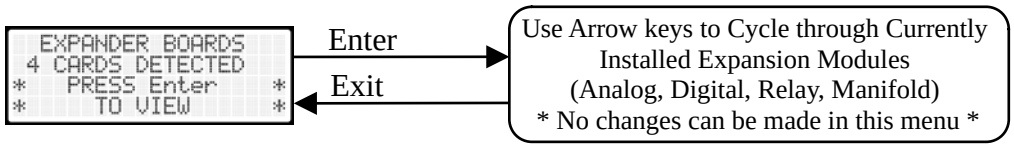
4. Setting Modbus Link (for third party control integration)

This setting is used only when remotely communicating with the controller over a Modbus link (RTU mode). Otherwise it can be ignored. The device operates as a slave. Communications are via RS-485 serial connection.



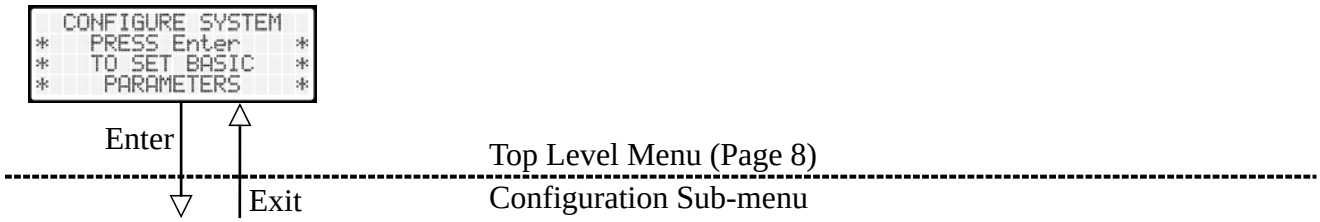


5. Displaying Current Expander Cards

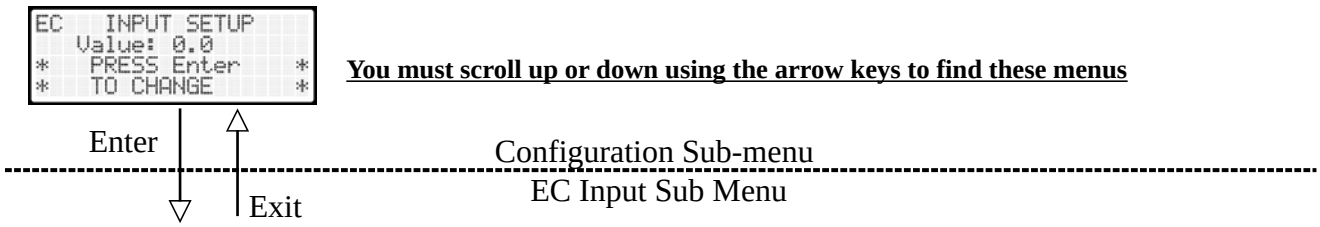


J Pro pH, EC, and Temp Sensor Input Setup and Calibration

The following menus and configuration are only accessible when an Analog or Digital Expansion Card is installed. If you do not know which expansion card your system has, please contact Technical Support at 1-800-331-9620, or support@heanderson.com. Proper setup and sensor calibration is required to use “feedback” mode.

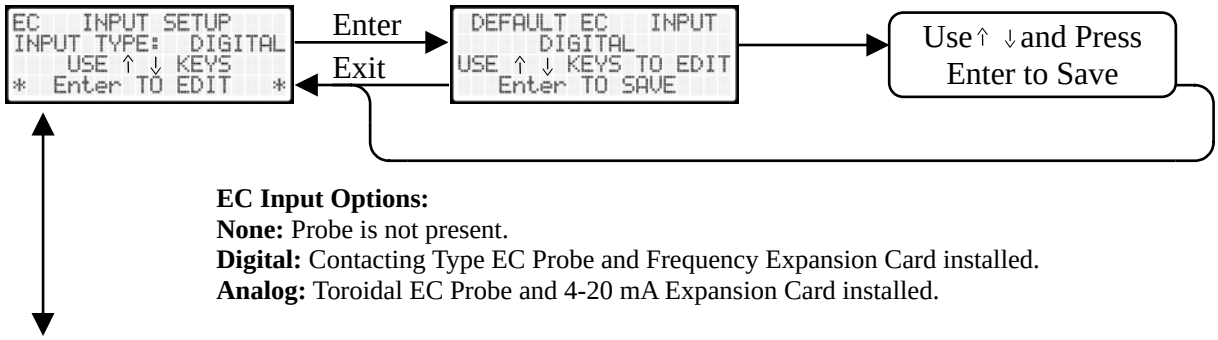


1. EC Input Setup, Alarms, and Calibration



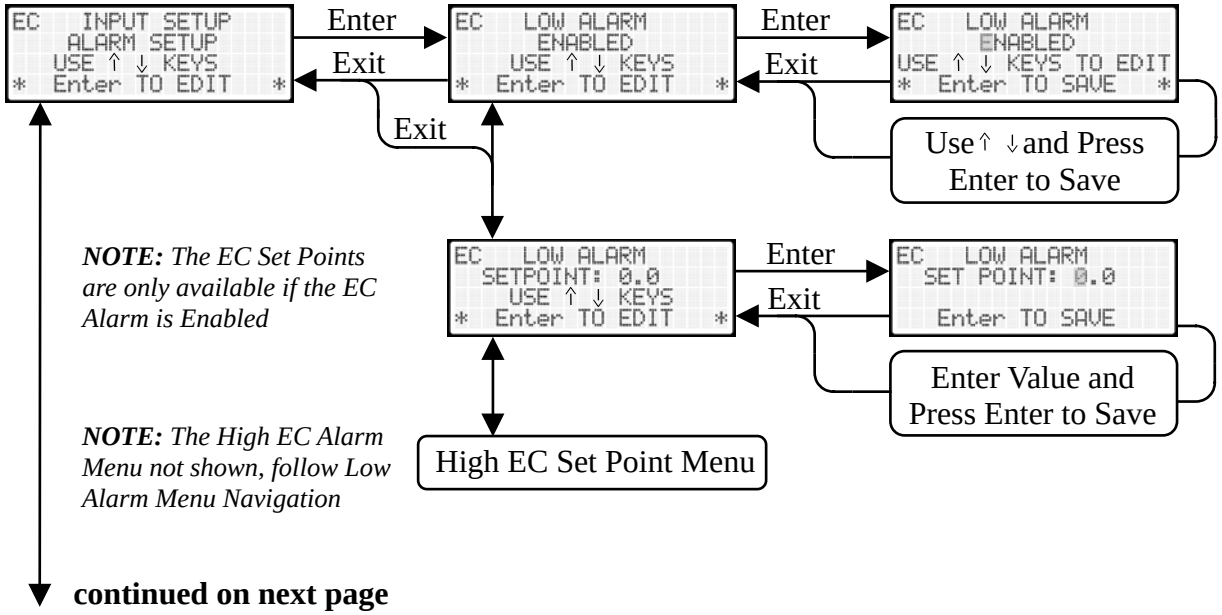
You must scroll up or down using the arrow keys to find these menus

1a. EC Input Type



EC Input Options:
None: Probe is not present.
Digital: Contacting Type EC Probe and Frequency Expansion Card installed.
Analog: Toroidal EC Probe and 4-20 mA Expansion Card installed.

1b. EC Alarm Setup (High or Low Alarm)



***NOTE:** The EC Set Points are only available if the EC Alarm is Enabled*

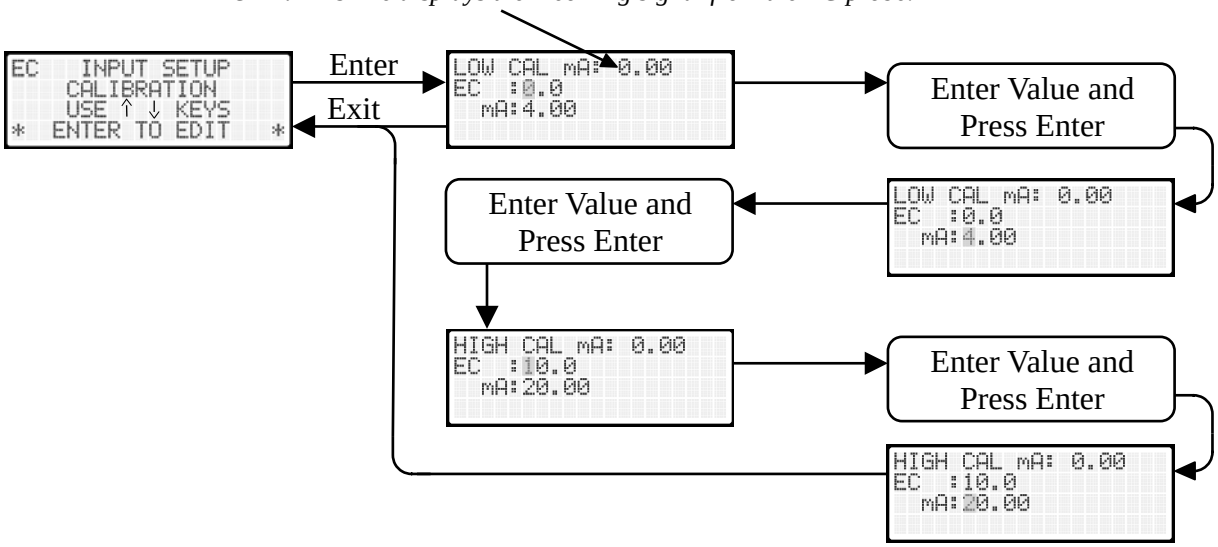
***NOTE:** The High EC Alarm Menu not shown, follow Low Alarm Menu Navigation*

continued on next page

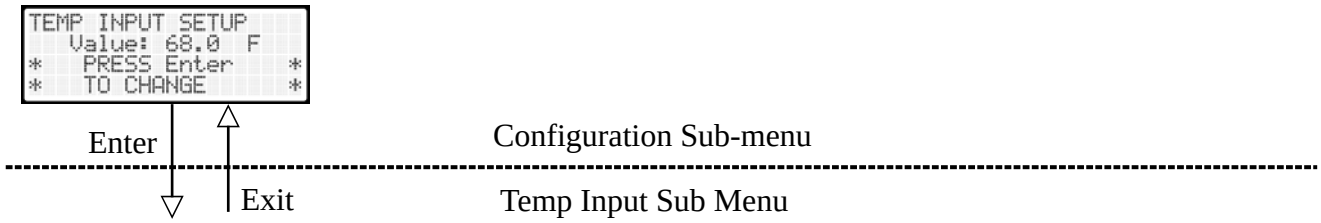
1c. EC Calibration (Toroidal EC Only)

This menu is only available when using *Analog* input type and Toroidal EC Probe. The settings in the J-Pro should be defaulted to the following values. (Low EC:0.0 / mA:4.00) (High EC: 10 / mA:20)
For further help please call or email Technical Support at 1-800-331-9620 support@heanderson.com.

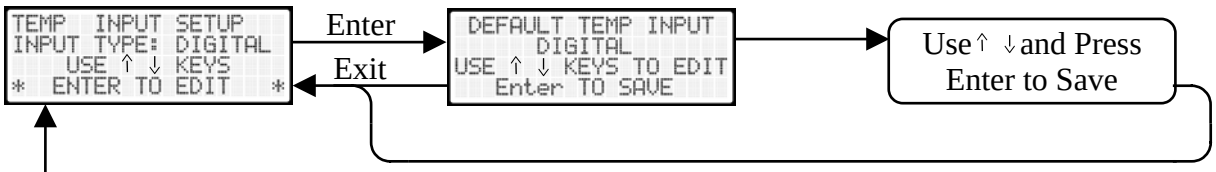
NOTE: *This line displays the incoming signal from the EC probe.*



2. <u>Temp Input Setup, Alarms, and Calibration</u>



2a. Temp Input Type



Temp Input Options:
None: Probe is not present.
Digital: Digital Temp Probe and Frequency Expansion Card installed.
Analog: Analog Temp Probe and 4-20 mA Expansion Card installed.

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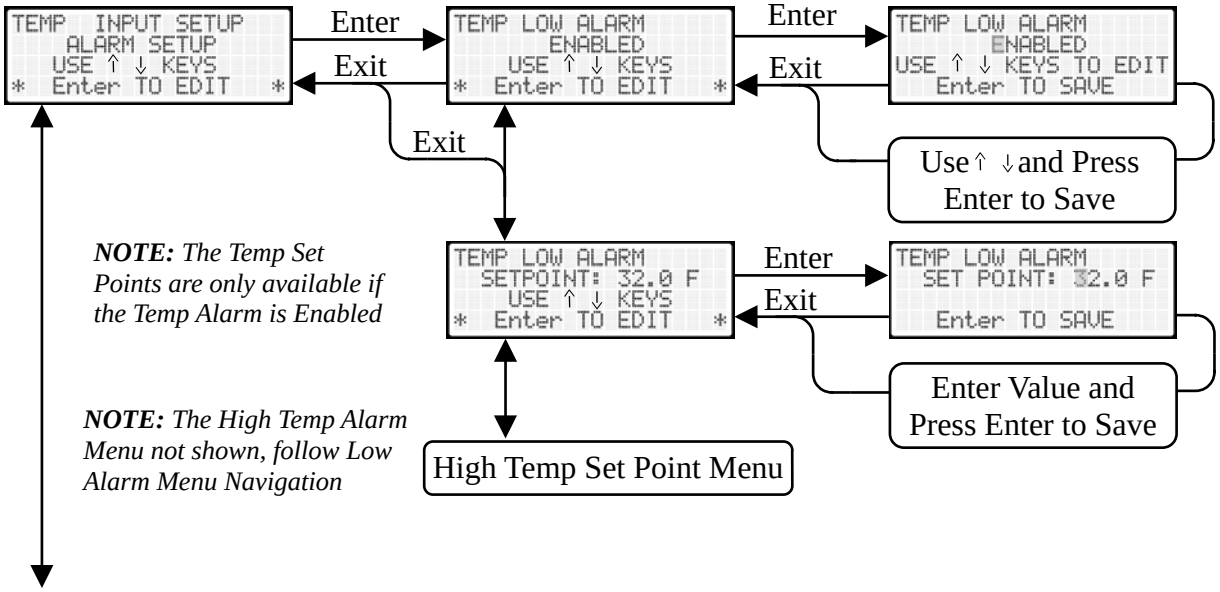
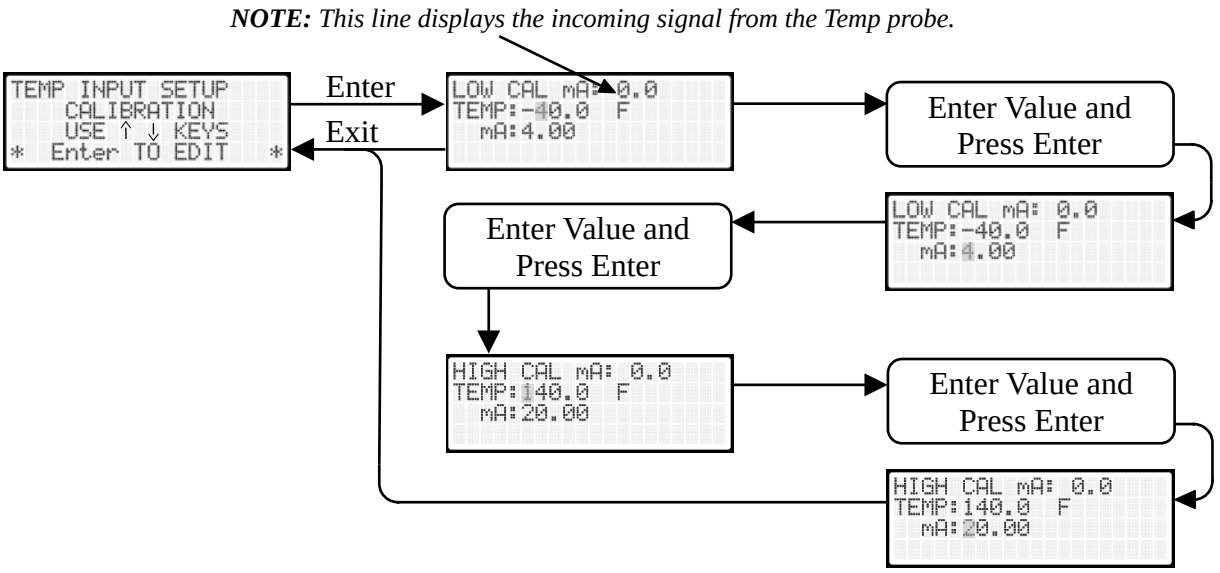
2b. Temp Alarm Setup (High or Low Alarm)

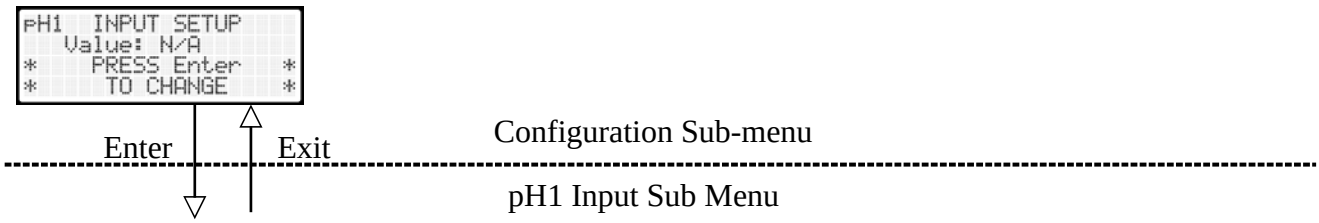


2c. Temp Calibration (Analog Temp Only)

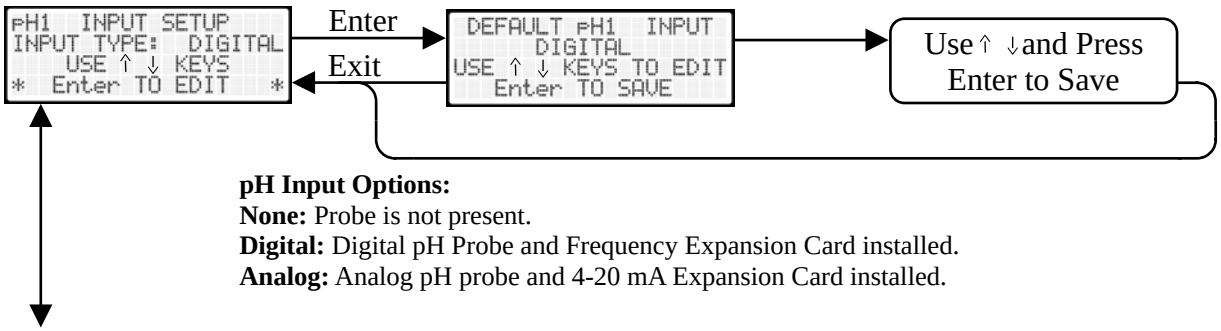
This menu is only available when using *Analog* input type and Analog Temp Probe. The settings in the J-Pro should be defaulted to the following values. (Low Temp:-40.0 / mA:4.00) (High Temp: 140.0 / mA:20)
For further help please call or email Technical Support at 1-800-331-9620 support@heanderson.com.



3. pH Input Setup, Alarms, and Calibration

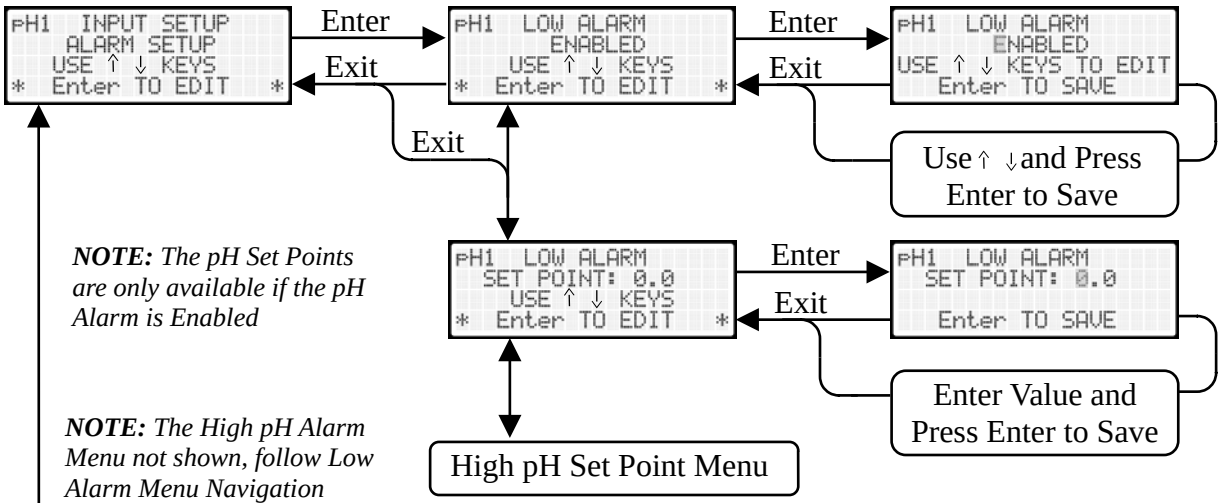


3a. pH Input Type



pH Input Options:
None: Probe is not present.
Digital: Digital pH Probe and Frequency Expansion Card installed.
Analog: Analog pH probe and 4-20 mA Expansion Card installed.

2b. pH Alarm Setup (High or Low Alarm)



NOTE: *The pH Set Points are only available if the pH Alarm is Enabled*

NOTE: *The High pH Alarm Menu not shown, follow Low Alarm Menu Navigation*

continued on next page

3c. pH Calibration (Digital)

Cleaning goes hand in hand with calibration; the electrode should always be cleaned before re-calibrating The flat surfaced electrode used with the J-Pro was selected for easy cleaning. Cleaning and calibration should be done regularly to keep your instrument operating accurately. You should clean and re-calibrate your electrode every 2-3 weeks or any time you suspect that the reading may not be correct. All pH electrodes eventually wear out. At some point, when the electrode will not calibrate, it will need to be replaced.

Mixing the Buffer Solutions

1. Rinse both plastic bottles with tap water and then with distilled water.
2. Fill each bottle about half way with distilled water.

NOTE: *You must use distilled or deionized water.*

3. Carefully open the yellow pillow and pour the powder into one of the calibration bottles.
4. Open the red pillow and pour it into the other bottle.
5. Fill both bottles to the 50 ml calibration line with distilled water.
6. Arrange the yellow and red buffer solutions and the tap water and distilled water containers so they are easily accessible during the calibration procedure.

Calibration Procedure

1. Turn OFF pH feedback control.
2. Close the bypass isolation valves.

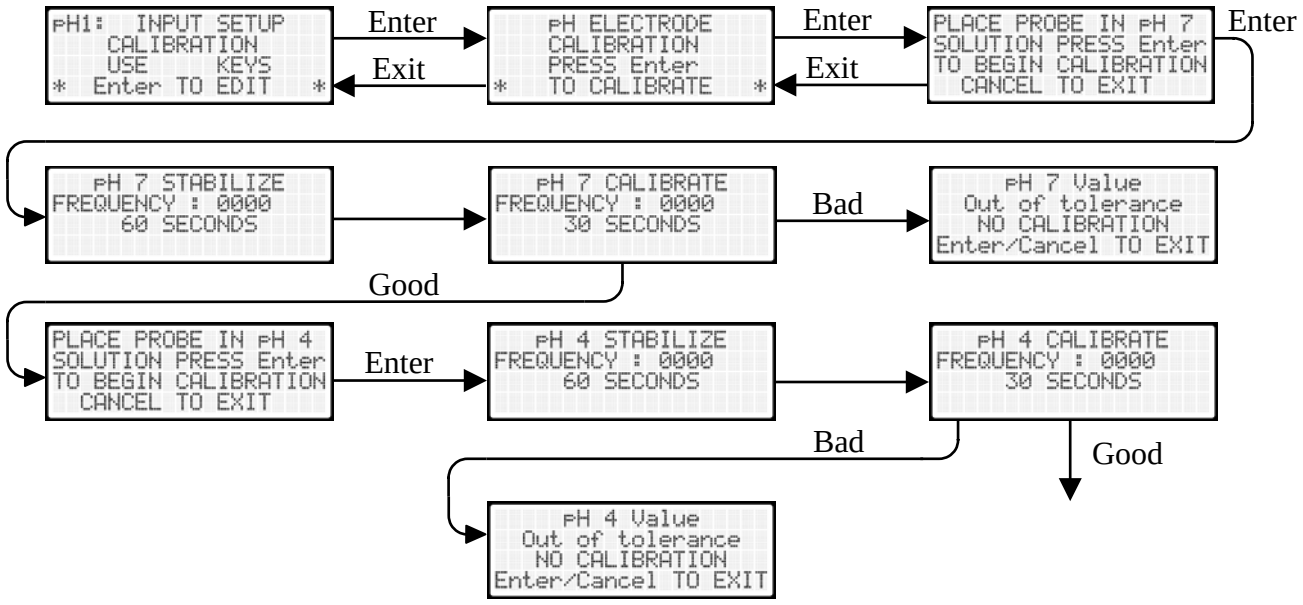
WARNING: *Removing the electrode from a closed water line can be difficult and can destroy the electrode. You should shut off the water and open the sample valve (if present). Place the electrode in tap water.* **DO NOT STORE THE pH ELECTRODE IN DISTILLED WATER**.

3. Carefully remove the electrode from the sensor fitting.
4. Clean the electrode if needed.
5. Rinse the electrode in distilled water.
6. Place the electrode in the pH 7 buffer.
7. Refer to the pH Calibration Sequence page of the J-Pro Set-UP guide.
8. Follow the screen prompts to calibrate the electrode at pH 7. When the process is complete the screen will prompt you to calibrate at pH 4.
9. Repeat steps 5 through 8 to complete pH 4 calibration.
10. Once calibration is complete, reinstall the probe into the sensor fitting.

Calibration Problems and Solutions: The monitor has some internal standards against which it checks the buffer solutions during calibration. If the values deviate too far from the standards, it will terminate the calibration process with an error message. Here are some possible causes of calibration problems, along with some suggested cures:

1. Contaminated reference solutions. Be sure to follow mixing procedures carefully.
2. Using the wrong solution for the calibration point.
3. Faulty, worn out, or dirty electrode. Check the electrode for contamination, dirt or scale. Clean the electrode if necessary. Inspect the electrode for cracks or breaks. Replace the electrode if necessary.
4. Faulty cable or connections. Check to see that all connections to the monitor and signal conditioner are secure. Check to see that the Electrode BNC connector is clean, dry, and securely attached.
5. Unit resumes normal operation during calibration. Too much time has elapsed between steps. See NOTE under Step 8. of the Calibatiion Procedure
6. Unit calibrates properly at pH 7, but not at pH 4. Contaminated pH 4 buffer solution or worn out pH electrode.

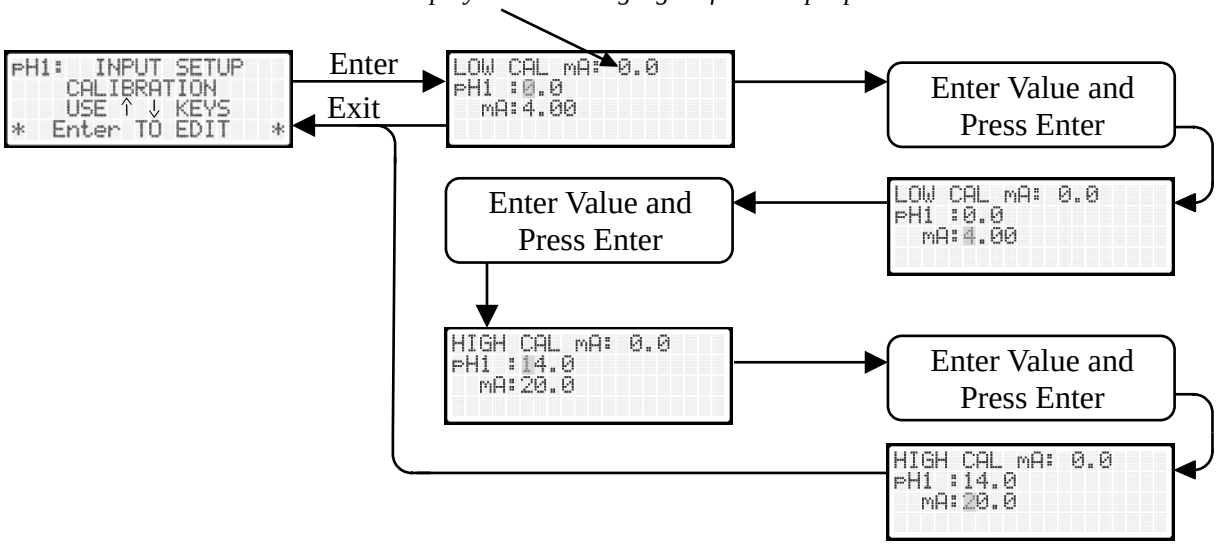
Digital pH Calibration Menu Path



3d. pH Calibration (Analog)

This menu is only available when using *Analog* input type and Analog pH Probe. The settings in the J-Pro should be defaulted to the following values. (Low pH:0.0 / mA:4.00) (High pH: 14 / mA:20)
For further help please call or email Technical Support at 1-800-331-9620 support@heanderson.com.

NOTE: *This line displays the incoming signal from the pH probe.*



We rarely replace pH transmitters, as most pH issues stem from calibration rather than transmitter failure. If the probes are more than two years old, they are typically the cause of the problem. Attempting to calibrate a damaged or out-of-tolerance probe to the transmitter repeatedly can lead to complications, requiring a reset and re-calibration of the transmitter to the probe.

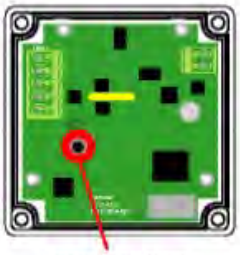
Probes are warranted against defects for six months and must be calibrated monthly. The likelihood of a transmitter-related issue is very low. If pH readings are inconsistent after calibration, behaving erratically, or new probes fail to calibrate, the first step is to reset the transmitters. While transmitter issues are uncommon, they have occasionally occurred over the years across various projects.

Below are the reset and calibration instructions.

Factory Reset Values	
pH Slope and Offset values reset to Ideal mV Slope and Offset values reset to Factory Calibrated Values pH Manual Offset reset to 0 mV Manual Offset reset to 0 Temperature Manual Offset reset to 0 Without TC, Default 25oC or 77oF	Range Mode [-] OFF Range Mode Lo mV reset to -999 mV Range Mode Hi mV reset to 999 mV Range Mode Lo pH reset to 0.00 Range Mode Hi pH reset to 13.99 Hold Mode HLd Lr Limit Mode O.r. OFF Clean Probe Timer C.P. OFF

Sensorex Smart Transmitter TX100
Factory Reset Sub Menu

Description: Performs Factory reset of all parameter to factory settings



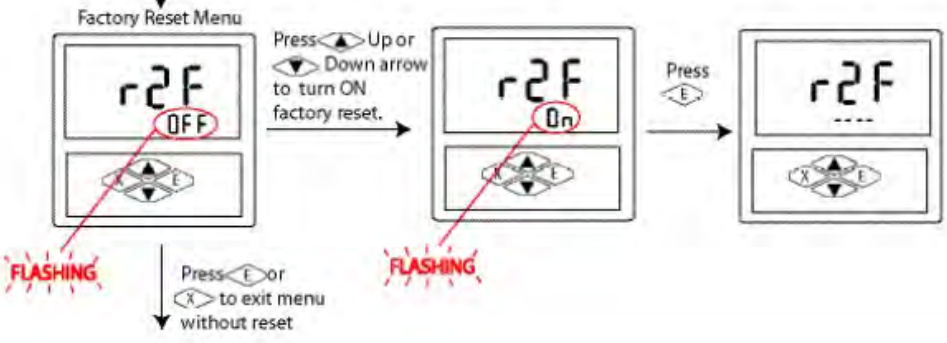
Step 1. Disconnect power. Press and hold "R2F" button on circuit board.

Step 2. Reconnect power and continue holding "R2F" button on circuit board.

Step 3. Release "R2F" button. Main display reads "r2F" and minor display flashes "OFF".

Step 4. Press ▲ Up or ▼ Down arrow to turn ON factory reset. Minor display flashes "ON".

Step 5. Press E to accept reset to "ON". Screen will show 4 dashes from left to right then return to normal operation.



Sensorex Smart Transmitter TX100
2 Point Calibration Sub Menu

Description: Performs 2 point calibration on Transmitter

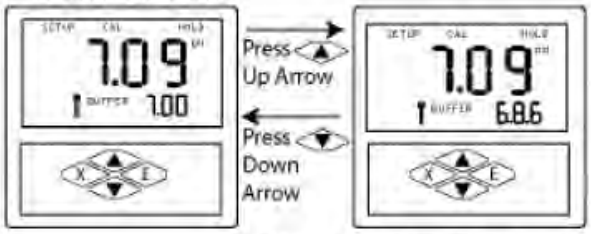
Cal Buffer Menu

Step 1. Press and hold (E) to Enter into Setup Menus
Step 2. Press (E) to enter into 2 Point Calibration Menu

Step 3. The Main Display will show the actual pH reading. The Small display will show the expected buffer (7.00 or 6.86) for the first point. Use the (▲) Up and (▼) Down Arrows to select the correct buffer used. Place electrode into the selected buffer.

Press and hold (E)

1st Point Calibration



Step 4. When the reading is stable Press (E) to Save First Point and move to the selection of the second buffer standard (4.01, 9.18, or 10.00). Use the (▲) Up and (▼) Down Arrows to select the appropriate buffer. Place electrode in select buffer when reading is stable.

Step 5. Press (E)

2nd Point Calibration

Press (E) Ent to complete Calibration and store new point slope info. "CON" will flash in the lower left corner of the display to confirm that the data has been accepted.

Press (X) at anytime to cancel out of 2 Point Calibration Setup.
2 Point Calibration Data will not be changed.

J Pro EC and pH Configuration Top Menu

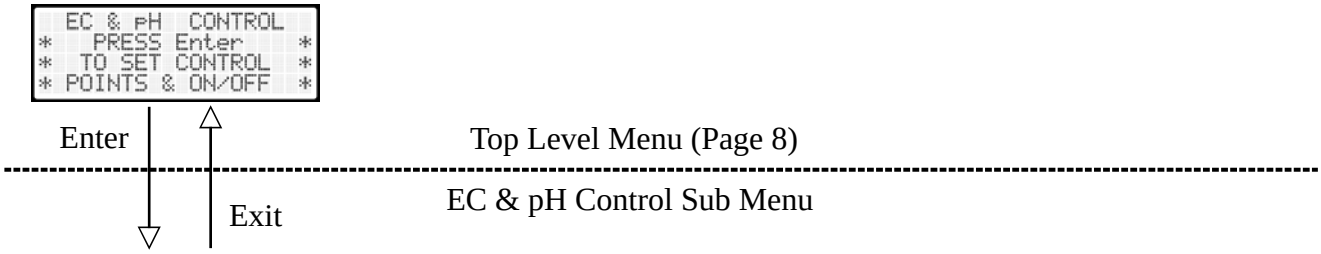
The following menus and configuration are only accessible when an Analog or Digital Expansion Card is installed. Proper setup and sensor calibration is required to use "Feedback" Mode. pH probes must be calibrated at least once per month to maintain accuracy. System must be monitored and maintained daily/hourly during automatic operation.

⚠ Warning ⚠

Feedback (Automatic) Operation:
Setting up feedback operation will vary based on a range of system-specific variables, including flow rate, injector settings, material properties, material strength, and system plumbing design. For assistance with feedback setup and operation, please contact our Technical Service Department by calling 1-800-331-9620 or emailing support@heanderson.com.

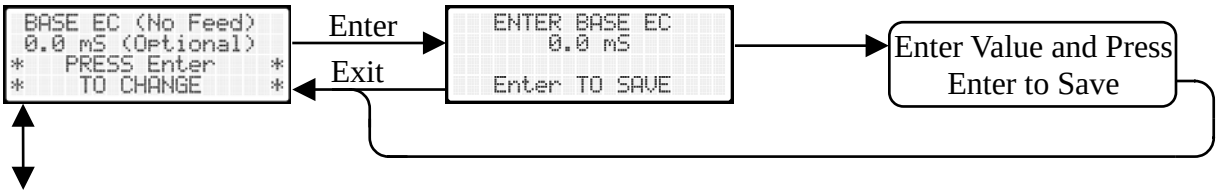
Important considerations:

1. Feedback mode is not recommended without the installation of a Toroidal EC probe and Dual pH probes.
2. Regular inspection, cleaning, and calibration of probes is essential to proper operation.
3. During feedback setup and operation, routinely check the system to verify proper functionality.



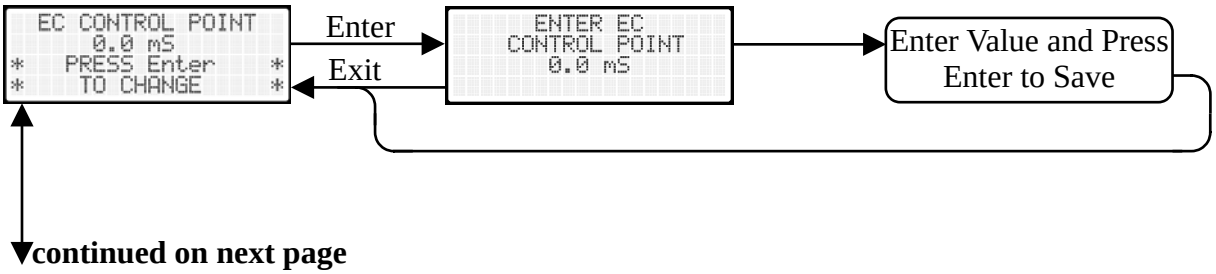
1. Setting the Base EC

Baseline (background) EC – Sets the measured EC value with no chemical feed Entering this value makes automatic adjustments more efficient.



2. Setting the EC Control Point

EC Control Point – Sets the EC control point (millisiemens) for automatic operation. This value must be within the J-Pro alarm limits.
Note: *This value is the sum of the background EC plus the added EC*



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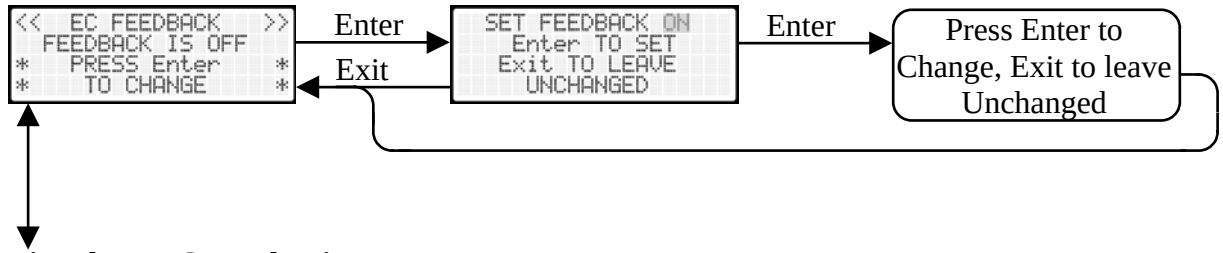
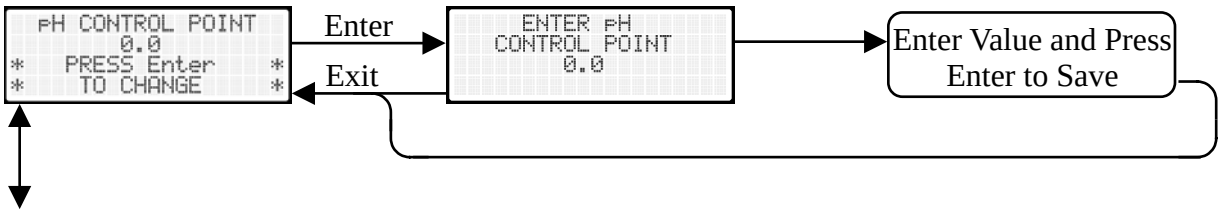
EC Feedback - Your system should be stable without feedback and near the desired EC value before turning feedback control ON. This will speed accurate automatic adjustment.
NOTE: *The monitor will save the feed (VPS) setting(s) when feedback is turned ON. If a high/low alarm occurs the control will automatically turn feedback OFF and switch back to the saved VPS values. Manually turning feedback OFF with no alarm condition does not affect the VPS settings.*
EC Feedback can only be turned on if: *the EC Feedback has been assigned to an output and the output has been turned on, and the EC Blend Delay and Cutoff values have been entered. See page 14*

3. Turning On or Off EC Feedback (automatic operation)



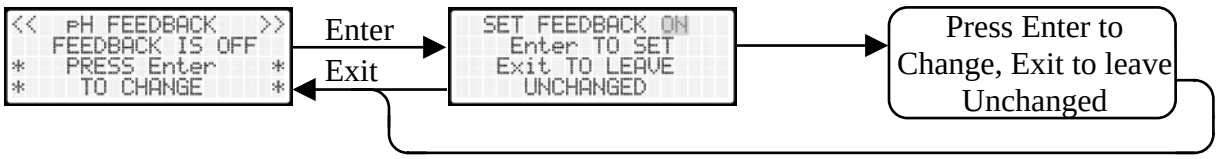
4. Setting the pH Control Point

pH Control Point – Sets the pH control point for automatic operation. This value must be within the J-Pro alarm limits.

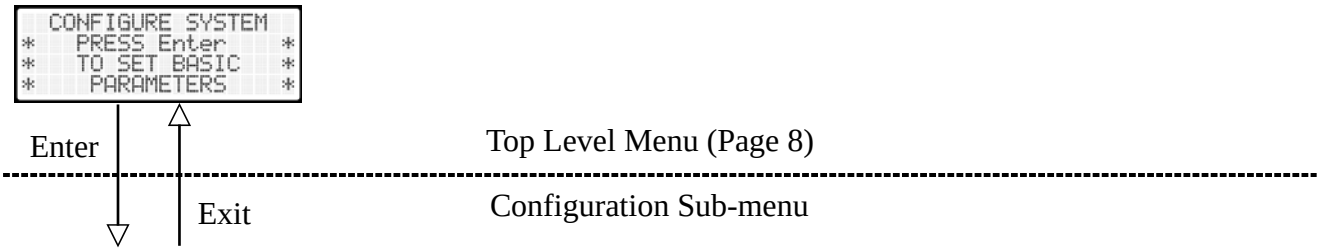


5. Turning On or Off pH Feedback (automatic operation)

pH Feedback - Your system should be stable without feedback and near the desired pH value before turning feedback control ON. This will speed accurate automatic adjustment.
NOTE: *The monitor will save the feed (VPS) setting(s) when feedback is turned ON. If a high/low (monitor) alarm occurs the control will automatically turn feedback OFF and switch back to the saved VPS values. Manually turning feedback OFF with no alarm condition does not affect the VPS settings.*
pH Feedback can only be turned on if: *the pH Feedback has been assigned to an output and the output has been turned on, and the pH Blend Delay and Cutoff values have been entered. See page 14*



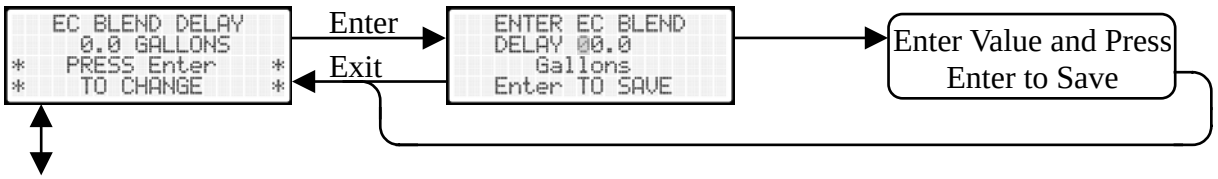
J Pro EC and pH Configuration Sub Menu



1. Setting EC Blend Delay

EC Blend Delay is the total volume of water that will pass through the system before the controller will make a change to the VPS for automatic operation.

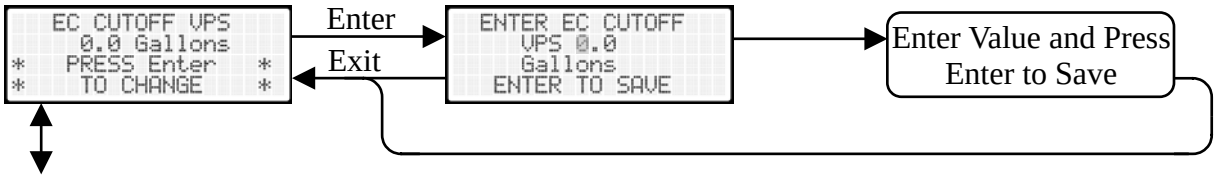
Note: *The volume is measured from the point of injection to the sensor loop and should include the blending tank.*



2. Setting EC Cutoff VPS

EC Cutoff VPS is the highest VPS adjustment allowed before turning off the assigned output. If the VPS is at or above this setting, the output will be shutoff and the control will wait for the EC to drop, after the EC drops the output will be turned back on.

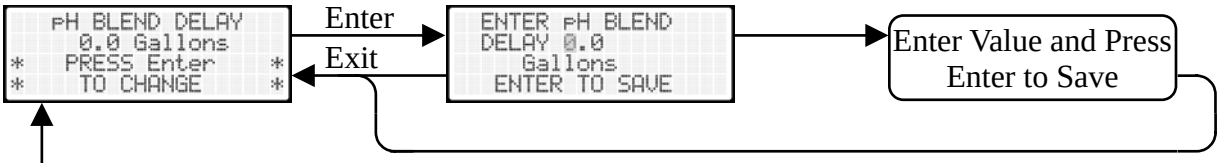
Note: *This setting is determined per system and should be discussed with your technical representative. As a default setting this should be the Blend Volume divided by 2.*



3. Setting pH Blend Delay

pH Blend Delay is the total volume of water that will pass through the system before the controller will make a change to the VPS for automatic operation.

Note: *The volume is measured from the point of injection to the sensor loop and should include the blending tank.*



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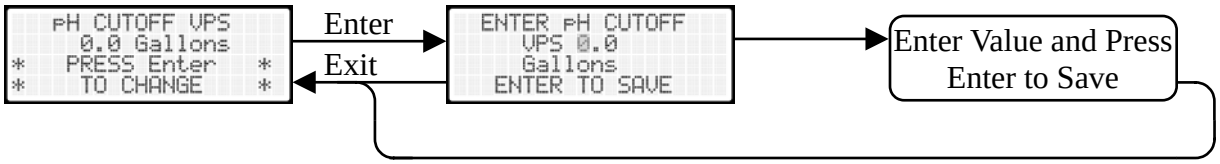
4. Setting pH Cutoff VPS

pH Cutoff VPS is based on the type of ph adjustment desired.
- **For pH up**, if the cutoff VPS is at or above this setting, the assigned output will be turned off and the control will wait for the pH to drop. After the pH drops the output will be turned on.
- **For pH down**, if the cutoff VPS is at or below this setting the assigned output will be turned off and the control will wait for the pH to rise. After the pH rises the output will be turned on.

Note: *This setting is determined per system and should be discussed with your technical representative.*



Trouble Shooting and Information

Factory Reset

The Factory Reset also known as a "hard reset" or "formatting," is a process that restores a device to its original, out-of-the-box settings. This process effectively erases all user data settings and returns the device to its initial state as it was when it was first purchased.

To perform a Factory Reset, navigate to the Configure System Menu and scroll to the Factory Reset screen. Enter the 4 digit code and press enter to complete the process.

Warning
The control will need to be reconfigured, write down all user settings before performing a factory reset. For help with control configuration call 1-800-332-9620 or email support@heanderson.com.

Alarm Conditions, Messages, Causes, and Fixes

Display	Cause	Notes and Solutions
GLOBAL FEED IS OFF!	CHEMICAL FEED menu item is off	Turn On CHEMICAL FEED
HI FLOW	Water flow is greater then injectors ability to keep the current mix ratio.	Adjust VPS to a larger value
EC < LOW	The EC reading is lower than EC Low Alarm Set Point	Check Chemical Tank and Solution Strength Prime Injectors Rebuild or Replace Injectors and Check Valves Adjust VPS and/or Dial Settings
EC > HIGH	The EC reading is higher than EC High Alarm Set Point	Check Chemical Tank and Solution Strength Adjust VPS and/or Dial Settings
Temp < LOW	The Temp reading is lower than Temp Low Alarm Set Point	Water is to cold Adjust Set Point
Temp > HIGH	The Temp reading is higher than Temp high Alarm Set Point	Water is to hot Adjust Set Point
pH1 < LOW	The pH reading is lower than pH1 Low Alarm Set Point	Adjust VPS and/or Dial settings Adjust Set Point
pH1 > HIGH	The pH reading is higher than pH1 High Alarm Set Point	Check Chemical Tank and Solution Strength Prime Injectors Rebuild or Replace Injectors and Check Valves Adjust VPS and/or Dial Settings
pH2 < LOW	The pH reading is lower than pH2 Low Alarm Set Point	Adjust VPS and/or Dial settings Adjust Set Point
pH2 > HIGH	The pH reading is higher than pH2 High Alarm Set Point	Check Chemical Tank and Solution Strength Prime Injectors Rebuild or Replace Injectors and Check Valves Adjust VPS and/or Dial Settings
EC AUTO	In this condition the pumps assigned to EC Feedback will have their VPS adjusted(up or down as needed) automatically to attempt to correct the current EC reading to the EC CONTROL POINT setting	This will only show if: 1. There is an expander card present that can provide auto feedback 2. The user has set the INPUT TYPE in the INPUT SETUP menu item to something other than NONE (ANALOG, DIGITAL, etc). 3. The user has set at least one (1) pump to EC feedback in the ASSIGN FEEDBACK TO OUTPUTS menu item 4. <<EC FEEDBACK>> menu item is set to ON 5. All EC feedback pump VPS are below EC CUTOFF VPS setting (slowest (highest ratio, highest VPS) feed rate
EC OFF IDLE	In this condition the pumps assigned to EC Feedback WILL NOT pump. Once the EC reading goes below the EC CONTROL POINT menu item setting the EC feedback pumps will begin pumping again at the EC CUTOFF VPS and will adjust as needed to maintain the EC CONTROL POINT. Once the EC is under active control (EC pumps input being adjusted to maintain output EC) the bottom display will advance to EC AUTO status. If this condition has not occurred the display state will advance to the EC AUTO status without showing anything in this state.	This will only show if: 1. There is an expander card present that can provide auto feedback 2. The user has set the INPUT TYPE in the INPUT SETUP menu item to something other than NONE (ANALOG, DIGITAL, etc). 3. The user has set at least one (1) pump to EC feedback in the ASSIGN FEEDBACK TO OUTPUTS menu item 4. <<EC FEEDBACK>> menu item is set to ON 5. One or more EC feedback pump VPS has been adjusted at or above the EC CUTOFF VPS setting (slowest (highest ratio, highest VPS) feed rate allowed) and the EC reading has remained above EC CONTROL POINT setting

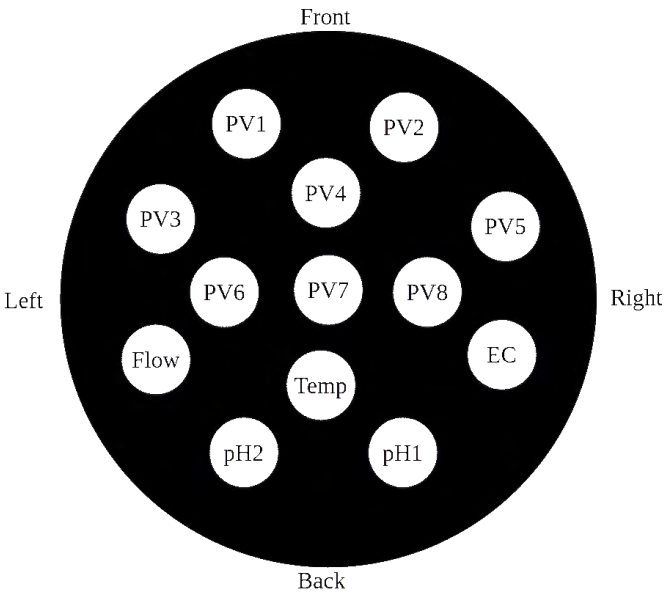
Display	Cause	Notes and Solutions
EC RATIO ENABLE OFF	<<EC FEEDBACK>> menu item set to OFF *In the conditions <u>below</u>, the pumps assigned to EC Feedback will pump at the ratio set in the VPS setting of the SET MANIFOLD RATES menu item*	This will only show if: 1. There is an expander card present that can provide auto feedback 2. The user has set the INPUT TYPE in the INPUT SETUP menu item to something other than NONE (ANALOG, DIGITAL, etc). 3. The user has set at least one (1) pump to EC feedback in the ASSIGN FEEDBACK TO OUTPUTS menu. 4. <<EC FEEDBACK>> menu item is set to OFF (this can be set by the user or by the EC algorithm without user interaction)
EC RATIO NO FB PUMPS	No pumps assigned to EC FEEDBACK in the ASSIGN FEEDBACK TO OUTPUTS menu item	Assign OUTPUT to EC FEEDBACK
EC RATIO NO EC INPUT	INPUT TYPE in the EC INPUT SETUP menu item has not been set	Set the Input Type (Digital, Analog, None)
EC RATIO EC READ ERR	EC readings are outside of normal range for (4) four consecutive blend volume delays. Broken wire, disconnected cable, etc.	Check Chemical Tank and Solution Strength Prime Injectors Rebuild or Replace Injectors and Check Valves
EC RATIO OVERSTROKE	One or more pumps assigned to EC feedback in the ASSIGN FEEDBACK TO OUTPUTS menu item have been auto adjusted to the overflow condition and the EC reading has remained below the EC alarm value.	Check Chemical Tank and Solution Strength Prime Injectors Rebuild or Replace Injectors and Check Valves
EC RATIO SP < BASE	The EC CONTROL POINT menu item is less than the BASE EC menu item.	Adjust Set Points
pH OFF ENABLE OFF	In this condition the pumps assigned to pH feedback WILL NOT PUMP. There are both pH up **AND** pH down pumps assigned by the user in the ASSIGN FEEDBACK menu. ---OR--- The auto pH state was IDLE when <<pH FEEDBACK>> was set to OFF.	This shows if: 1. There is an expander card present that can provide auto feedback 2. The user has set the INPUT TYPE in the pH1 INPUT SETUP menu item to something other than NONE (ANALOG, DIGITAL, etc). **NOTE: pH1 input is the only input to provide pH feedback** 3. The user has set at least one (1) pump to pH feedback (UP OR DOWN) in the ASSIGN FEEDBACK TO OUTPUTS menu item 4. <<pH FEEDBACK>> menu item is set to OFF (this can be set by the user or by the pH auto algorithm without user interaction)
pH OFF NO FB PUMPS	No feedback pumps have been assigned to pH up or ph down feedback in the ASSIGN FEEDBACK menu.	Assign a feedback pump to the pH Up **OR** pH Down
pH OFF OVERSTROKE	The pH auto algorithm is pumping in pH down mode and the pH reading from the pH1 input is above the pH1 HIGH ALARM setpoint and the pH Down pumps have been adjusted to overstroke condition (40 Strokes / minute). ---OR--- The pH auto algorithm is pumping in pH Up mode and the pH reading from the pH1 input is below the pH1 LOW ALARM setpoint and the pH Up pumps have been adjusted to overstroke condition (40 strokes / minute).	Check or Change Chemical Tank and Re-Prime the Injectors Rebuild or Replace Injectors and Check Valves Adjust Dial Setting Check pH Probe Calibration Note: The pH alarms must be set and enabled in the pH1 INPUT SETUP menu for either of the above to occur.

Display	Cause	Notes and Solutions
pH OFF OVERSTROKE	The pH auto algorithm is pumping in pH down mode and the pH reading from the pH1 input is above the pH1 HIGH ALARM set point and the pH Down pumps have been adjusted to overstroke condition (40 Strokes / minute). ---OR--- The pH auto algorithm is pumping in pH Up mode and the pH reading from the pH1 input is below the pH1 LOW ALARM set point and the pH Up pumps have been adjusted to overstroke condition (40 strokes / minute).	Check or Change Chemical Tank and Re-Prime the Injectors Rebuild or Replace Injectors and Check Valves Adjust Dial Setting Check pH Probe Calibration Note: The pH alarms must be set and enabled in the pH1 INPUT SETUP menu for either of the above to occur.
pH OFF pH1 READ ERR	pH input 1 reading has been outside of valid range for (4) four consecutive reads of the input. This could indicate a bad pH probe, broken wire, bad connection, etc.	Check pH Probe Calibration Replace pH Probe Check Probe connections and wire terminations
pH OFF pH1 NOT SET	pH input 1 has not had the INPUT TYPE set to something other than NONE in the pH1 INPUT SETUP menu	Set pH Input Type to (DIGITAL, ANALOG) and calibrate the probe.
pH RATIO ENABLE OFF	In this condition the pumps assigned to pH feedback will pump at the VPS set in the SET MANIFOLD RATES menu. There are pH up **OR** pH Down pumps only assigned by the user in the ASSIGN FEEDBACK menu ---OR--- The auto pH state was IDLE when the user set the <<pH FEEDBACK>> menu item to OFF	This shows if: 1. There is an expander card present that can provide auto feedback 2. The user has set the INPUT TYPE in the pH1 INPUT SETUP menu item to something other than NONE (ANALOG, DIGITAL, etc). **NOTE: pH1 input is the only input to provide pH feedback** 3. The user has set at least one (1) pump to pH feedback (UP OR DOWN) in the ASSIGN FEEDBACK TO OUTPUTS menu item 4. <<pH FEEDBACK>> menu item is set to OFF (this can be set by the user or by the pH auto algorithm without user interaction)
pH RATIO NO FB PUMPS	No feedback pumps have been assgined to pH up or ph down feedback in the ASSIGN FEEDBACK menu.	
pH RATIO OVERSTROKE	The user only set pH down pumps in the ASSIGN FEEDBACK TO OUTPUTS menu item and the pH reading from the pH1 input is above the pH1 HIGH ALARM set point and the pH Down pumps have been adjusted to overstroke condition (40 Strokes / minute). ---OR--- The user only set pH Up pumps in the ASSIGN FEEDBACK TO OUTPUTS menu item and the pH reading from the pH1 input is below the pH1 LOW ALARM set point and the pH Up pumps have been adjusted to overstroke condition (40 strokes / minute). Note: The pH alarms must be set and enabled in the pH1 INPUT SETUP menu for either of the above to occur.	Check or Change Chemical Tank and Re-Prime the Injectors Rebuild or Replace Injectors and Check Valves Adjust Dial Setting Check pH Probe Calibration Note: The pH alarms must be set and enabled in the pH1 INPUT SETUP menu for either of the above to occur.
pH RATIO pH1 READ ERR	pH input 1 reading has been outside of valid range for (4) four consecutive reads of the input. This could indicate a bad pH probe, broken wire, bad connection, etc.	Check pH Probe Calibration Replace pH Probe Check Probe connections and wire terminations
pH RATIO pH1 NOT SET	pH input 1 has not had the INPUT TYPE set to something other than NONE in the pH1 INPUT SETUP menu.	Set pH Input Type to (DIGITAL, ANALOG) and calibrate the probe.

Display	Cause	Notes and Solutions
pH AUTO	This shows if: 1. There is an expander card present that can provide auto feedback 2. The user has set the INPUT TYPE in the pH1 INPUT SETUP menu item to something other than NONE (ANALOG, DIGITAL, etc). NOTE: pH1 input is the only input to provide pH feedback 3. The user has set at least one (1) pump to a single pH feedback type (Up or Down) in the ASSIGN FEEDBACK TO OUTPUTS menu item 4. <<pH FEEDBACK>> menu item is set to ON by the user	Note: 1. Below the SP:xx.x is the setting from the pH CONTROL POINT menu item. 2. The pH1 input reading and any errors are checked every pH BLEND DELAY volume. No state changes or errors will happen until a pH BLEND DELAY volume has passed through the system. 3. If the unit is power cycled or <<pH FEEDBACK>> is turned off and then back on. The pH auto state will return to what it was before the power cycle or <<pH FEEDBACK>> was turned off

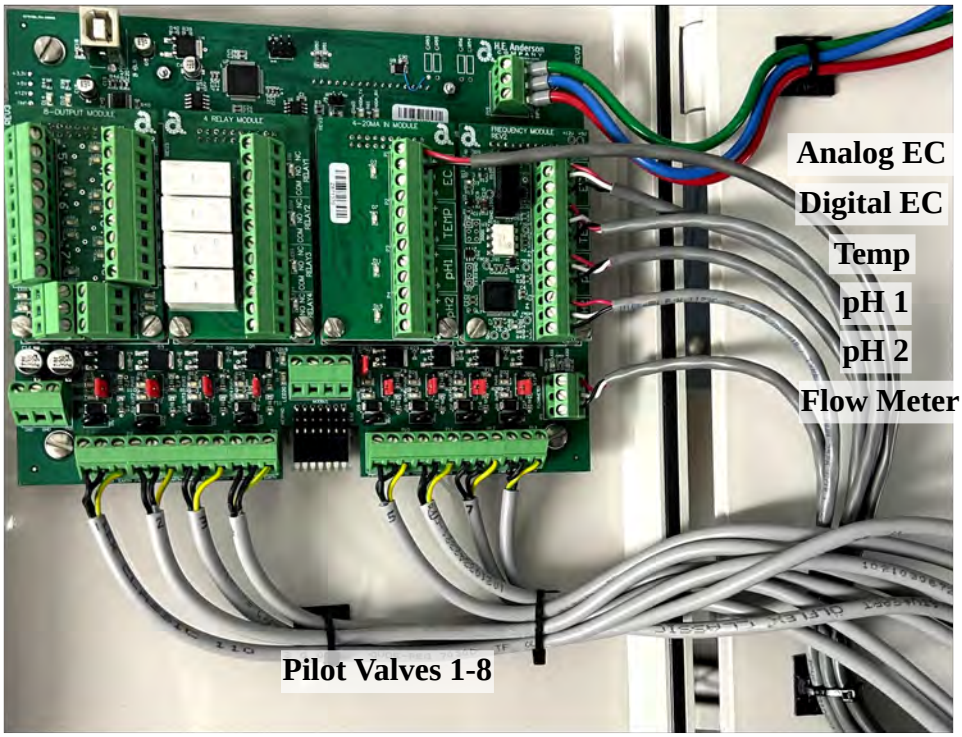
J Pro Wire Routing and Grommet Layout

Recommended Wire Grommet Layout



Note: When fishing wires through the grommet, it will be easier to puncture the grommet using a smaller screw driver or punch before attempting to fit the wire through the hole.

Recommended Wire Management



Note: Photo is for wire routing only and should be used only for wire organization. Some wires in the photo may not be available depending on options purchased at the time of sale. Expansion cards can be purchased and added at anytime.