Wave II Help

ElectraElite, VectraElite, VectraES and VectraES 2

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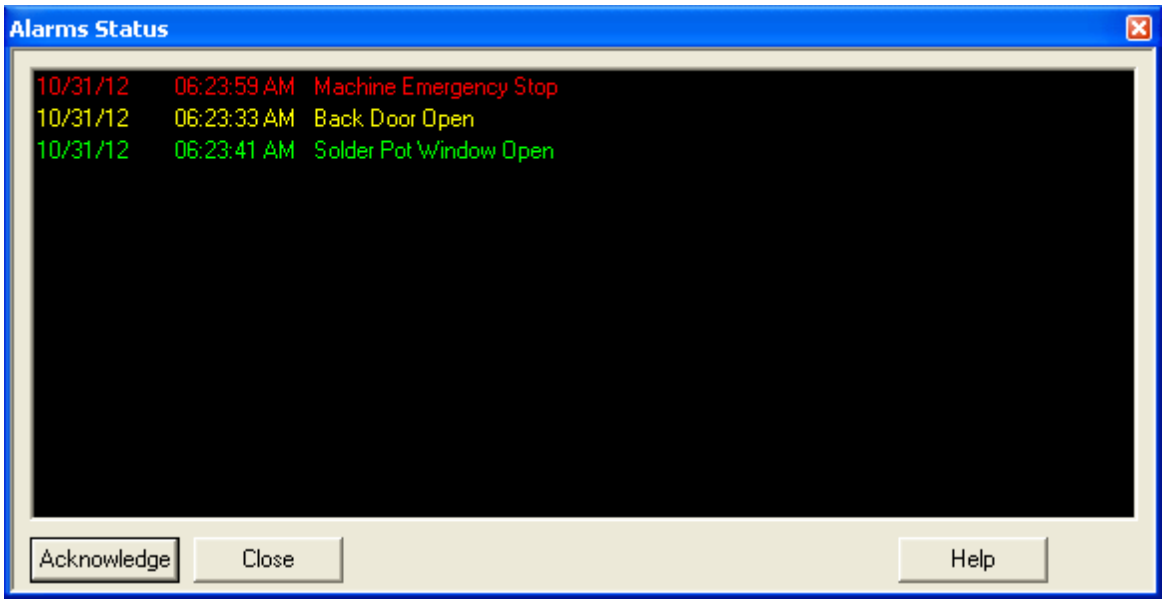
1 Wave Solder Help

1.1 Alarms

1.1.1 Alarm Status

The **Alarm Status** window displays the current state of all machine alarms.



The **Alarm Status** window may be accessed via:

Menu:	**View | Alarms**
Toolbar:	
Function Key:	**F5**
Button Indicator:	

If the button indicator at the bottom of the **Button View** is present.

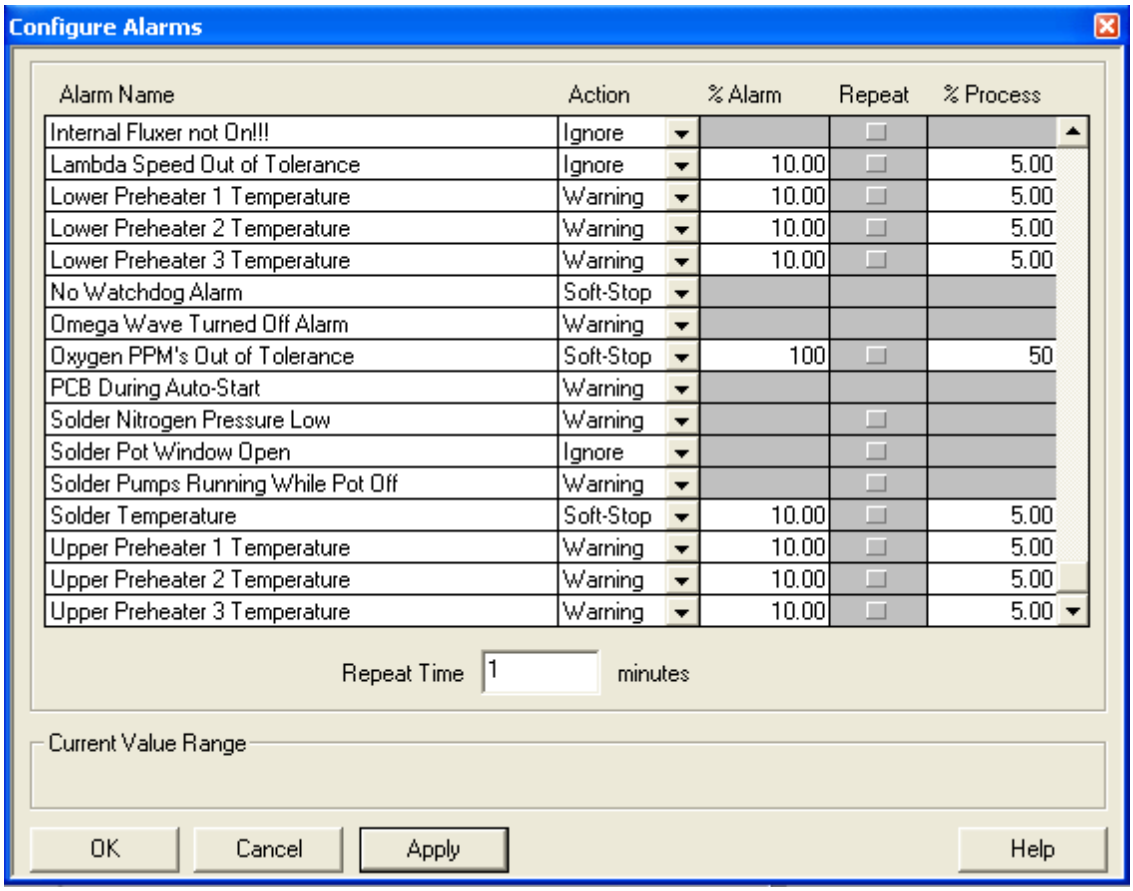
Each alarm is data/time stamped and color coded to easily identify the current state of the alarm.

Red:	Indicates the alarm is still active and has not been acknowledged by the user.
Yellow:	Indicates the alarm is still active and has been acknowledged by the user.
Green:	Indicates the alarm is no longer active and has not been acknowledged by the user.

To remove a cleared (green) alarm or acknowledge an active alarm, press the ***Acknowledge*** button.

1.1.2 Alarm Configuration

The **Alarm Configuration** page is used to configure each of the machine's user configurable alarms. The user can specify each alarm's action, alarm band, repeat and process band. The list of available alarms is dependent upon the machine's configuration.



The **Alarm Configuration Page** may be accessed via:

Menu: **Configuration | Alarms**

The **Alarm Configuration** parameter descriptions are listed below.

Alarm Name: This is the alarm name and what is displayed in the **Alarm Status** window and the **Event Log**.

Action: Specifies the machine's action when the alarm condition occurs. Click on the drop down box to select from the following options:

Ignore: When the alarm condition occurs, the machine will take no action however, the event will be recorded in the **Event Log**.

Warning: When the alarm condition occurs, the machine will set an alarm, turn on the buzzer and record the alarm in the **Event Log**.

Soft-Stop: When the alarm condition occurs, the machine will shut down, set the alarm, turn on the buzzer and record the alarm in the **Event Log**.

Alarm Band: Some alarms are based on a tolerance of their respective set point and others are based on a threshold. If the alarm is based on a tolerance, the alarm band is the deviation from set point where an alarm will be set on both the low and high side. If the alarm is based

on a specific value, the alarm band is the threshold in which either the low or high alarm will be set as indicated in the alarm name.

Repeat: Place a check mark in the box for the alarm to repeat based on the **Repeat Time** until the alarm condition is cleared. If the repeat field is blank, the alarm will only sound when the alarm condition is first set.

Process Band: The process band is only used for alarms based on a tolerance. This is usually set to a smaller band than the alarm band. When a parameter's actual value falls below the process band the actual value will be displayed in blue. When the value is above the process band, it will be displayed in red. The process band is also used for the Auto-Start sequence to signify when a device is close enough to it's set point to be complete.

Repeat Time: This is the time the alarm will resound if the alarm condition has not been cleared, even if the user has already acknowledge and silenced the alarm.

1.2 Backup / Restore

1.2.1 Backup/Restore

The **Backup/Restore Files** allows the user to backup or restore the machine's recipes and/or system files. The user can select which types of files to backup or restore.

The **Backup/Restore Files** section descriptions are listed below.

Options: Select the types of machine files to backup or restore.

System Files: Backup/Restore the machine's configuration, calibration and serial number files.

Recipe Files: Backup/Restore all of the recipe and process notes files in the current recipe folder. Note, this does not backup/restore recipe or process notes files from sub directories. The active recipe folder is the folder where the current recipe is stored.

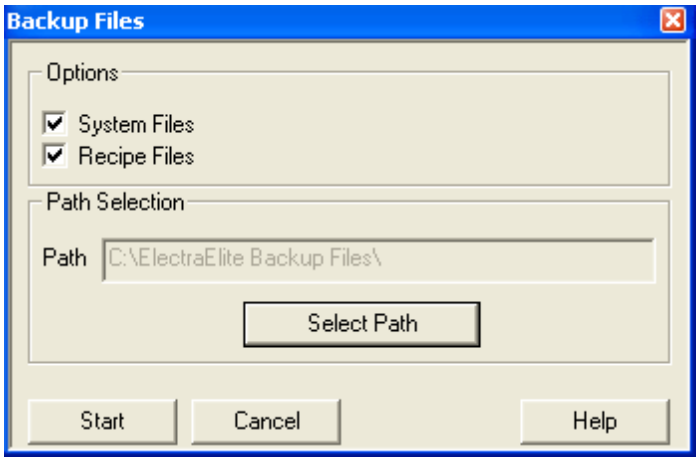
Path Selection The folder where the backup files are to be copied to, or where the restore files are to be copies from. When a backup operation is performed, two folders are created under the specified path: **system** for the system files and **recipes** for the recipe and process notes files. When selecting the path for the restore operation, select the parent folder, not the **system** or **recipe** folder.

Path: This is a read only field displaying the current backup/restore path.

Select Path: Pressing this button opens a standard **Browse for Folder** window, which allows the user to select any existing folder on any available drive. The drive may be the local hard drive, a network drive or a removable drive. Make sure the folder selected has the proper read/write privileges.

Start: Starts the backup or restore operation.

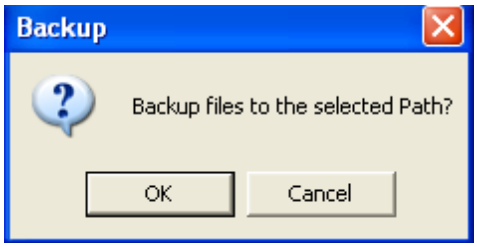
Backup Files Operation:



The **Backup Files** window may be accessed via:

Menu: **File | Backup Files**

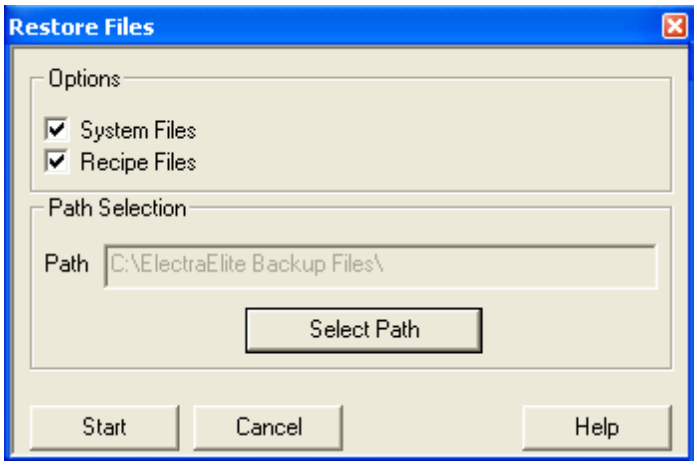
- Requires **Save/Delete/Rename Recipe** security access on the **Configure Security** page.
- Confirm the backup path under **Path Selection** or press the ***Select Path*** button to select a new backup path.
- Press the ***Start*** button, this will prompt to confirm the backup operation.



- Press the ***OK*** button to confirm the selected backup path and start copying the files.
- If the backup path is not found the following warning message is displayed. No files were transferred. Press the ***OK*** button to return to the **Backup Files** window.

- If the backup completes successfully, the following confirmation window is displayed. Press the ***OK*** button to close the confirmation and **Backup Files** windows.

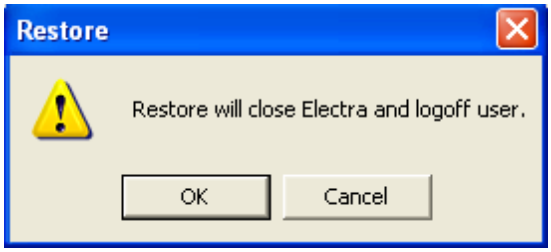
Restore Files Operation:



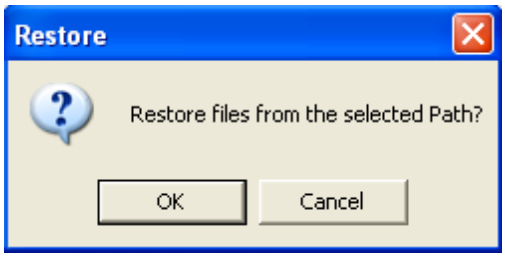
The **Restore Files** window may be accessed via:

Menu: **File | Restore Files**

- Requires **Save/Delete/Rename Recipe** and **Quit Program** security access on the **Configure Security** page.
- Confirm the restore path under **Path Selection** or press the ***Select Path*** button to select a new restore path.
- Press the ***Start*** button. The following window will be displayed informing the user that they will be logged off (if logged on) and the machine application will be shut down. After the restore operation is complete the machine application will have to be restarted.

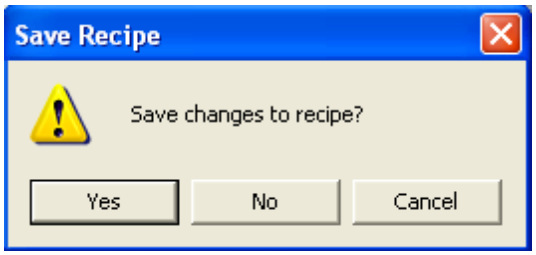


- Press the ***OK*** button, this will prompt to confirm the restore operation.



- **Press the *OK*** button to confirm the selected restore path. This will then display the confirmation to exit the machine application software.

- Press ***Yes*** button to exit the machine application software.
- If any of the recipe parameters have been changed the following window will be displayed allowing the user to save or discard the recipe changes.



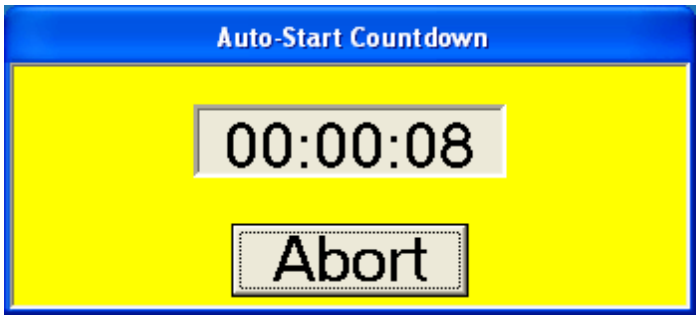
- Press the ***Yes*** button to save the recipe changes, ***No*** button to discard the changes. Pressing either the ***Yes*** or ***No*** button will close the application software and start transferring the files.
- If the restore path does not exist, the application software will not close and the **Restore Files** window will still be displayed.
- After the machine application shuts down, the restore operation is complete. Restart the application software.

1.3 Barcode

1.3.1 Auto Start Countdown Dialog

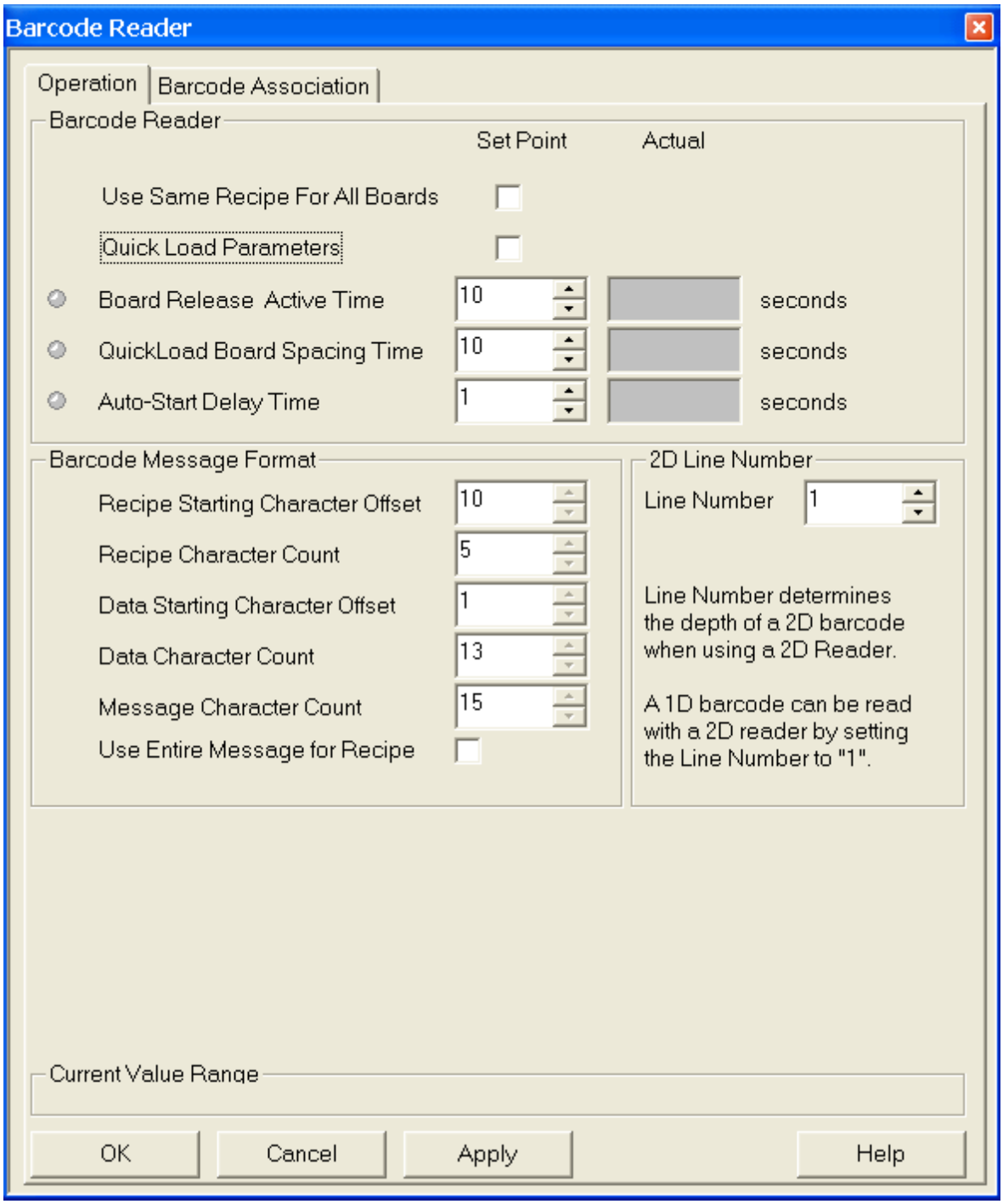
The **Auto-Start Countdown** is displayed when a new Barcode is scanned and the conveyor is clear of all boards from the current recipe. This occurs when the Machine is stopped and the new recipe is about to be loaded. The **Auto-Start Countdown** allows the Operator to abort the Auto-Start sequence under the new Recipe. Once the Timer Reaches 00:00:00 and the box is cleared, the Auto-Start

process begins with the new recipe.



1.3.2 Operation

The barcode **Operation** page displays the barcode's recipe parameters and devices. This page is used to update recipe set points and view the status of each device. The recipe parameters / devices listed are based on the machine's configuration and may not appear on all machines.



The Barcode Reader **Operations** tab may be accessed via:

Menu: **Modules | Barcode Reader**

Barcode Reader

Use Same Recipe For All Boards
Click on the box to place a check mark in the box, this enables Use Same Recipe For All Boards. Clicking on the box again removes the check mark, disables it.
When enabled, all boards will be processed with the active recipe values. Recipe information contained in a scanned barcode will be ignored.

Quick Load Parameters
Click on the box to place a check mark in the box, this enables Use Same Recipe For All Boards except setpoint parameters listed below will be Quick Loaded.
Clicking on the box again removes the check mark, disables it.
If this box is checked on a recipe being ran. All other barcodes scanned after this will use the Quick Load option whether the Quick Load box is checked for that recipe or not. To stop the Quick Load a recipe must be manually loaded with checkbox unchecked
The Quick Load feature will bypass the auto-setup process, and change the following setpoints upon reaching the windows of the parameters listed below:

Selecta Spray Fluxer:
Spray Duration
Spray Head(s) 1-6
Spray on Time
Spray off Time

Sono-Tek Spray Fluxer:
Spray Duration
Nozzle Position
Spray Pressure
Flow Rate
Nozzle Power

Opti 2 Fluxer
Spray Duration
Traverse
Spray Pressure
Pallet Offset
Use Conveyor Width Check Box
Flux Tank
Flux Base
Flux Concentration
Flux Deposition
Auto Configure Check Box
Selective Fluxing
Board Width

Note: Flux Concentration and Flux Deposition are only available when the Auto Configure check box is checked.

Performa Fluxer
Spray Duration
Traverse
Pallet Offset
Flow Rate
Use Conveyor Width Check Box
Board Width

ServoJet Fluxer
Spray Duration
Pallet Offset Fixed Rail
Pallet Offset Lead Edge
Use Conveyor Width Check Box
Valve Factor
Stroke Factor
Use Air Knife Check Box
Use Selective Fluxing Check Box
Flux Tank
Board Width

Note: With Dual Head and Dual Tank options Flux Tank is a Quick Load parameter for the ServoJet

Optima and Performa 2 Fluxers
Spray Duration
Traverse
Spray Pressure
Spray Width
Flux Tank
Pallet Offset Fixed Rail
Pallet Offset Lead Edge
Use Conveyor Width Check Box
Board Width

ServoSpray Fluxer
Spray Duration
Spray Pressure
Traverse
Pallet Offset Fixed Rail
Pallet Offset Lead Edge
Use Conveyor Width Check Box
Board Width

ServoSonic Fluxer
Spray Duration
Spray Pressure
Traverse
Pallet Offset Fixed Rail
Pallet Offset Lead Edge
Use Conveyor Width Check Box
Ultrasonic power
Board Width

Note: Internal and External fluxer locations are set on the Fluxer Configuration Page and sets a 7 inch window of +/- 3.5 inches from configured distance. This distance typically would be the measured from the incoming machine board detect to the Spray head of the fluxer. External Fluxer values will only be quick loaded on the Vectra.

Chip and Rotary RPM – Uses initial Recipe's Chip Standby Window.

Lambda RPM – Uses initial Recipe's Lambda Standby Window.

Omega	– Uses initial Recipe's Lambda Standby Window.
Wave Height	– Uses initial Recipe's Lambda Standby Window.
Hot Knife Pressure	– Uses initial Recipe's Hot Knife Standby Window.
Hot Knife Heater Temp	– Uses initial Recipe's Hot Knife Standby Window.

Note: The Quick Load setpoints are changed when the PCB reaches the beginning of the Window as long as the previous board is not in the Window. All other recipe parameters are ignored.

Note: Although these setpoints are changed the machine does not load a new recipe so it is important to be careful what you save to the current recipe. The Board Spacing Timer must be set long enough to allow each board to leave a window before the next one arrives or the setpoints for that particular module will remain the same as the previous Recipe scanned.

Feed Stop Active Time
This time parameter is 1 to 240 seconds. The time is used by the computer to turn 'on' the I/O for the specified time. The I/O will prevent a board from entering the machine
without being scanned. The I/O activates a feed conveyor's stop device. When activated the scanned board is allowed to enter the machine by activating the stop device for the amount of time specified.

Note: Barcode Scanned Recipe not Found Alarm - When a Barcode is scanned and the Recipe is not found, the choice is given to select correct Recipe from menu, Allow the board to enter under current recipe, or Ignore Board (Board Stop remains activated if present).

Quick Load Board Spacing Time
This time parameter is 1 to 240 seconds, (At Conveyor Speed of 5 ft a min., this amounts to 1 inch of interval per second). This time period is the minimum amount of time the board stop should be active or up between PCB's. This is to allow for previous boards to be clear from Waves etc… before changing to new setpoint for current PCB. For example the Waves are probably going to have the largest windows, so these should be taken into account when setting the Board Spacing Time. If the previous PCB is still in a window when the next board reaches, the new setpoints will not be loaded and the values for that particular module of the previous recipe will be used.

Auto Start Delay Time
This is the amount of time that the automatic setup function will delay. During this time a box is displayed to allow the user to cancel (abort) this function.

Barcode Message Format

Recipe Starting Character Offset:	Indicate the position of the recipe name first character.
Recipe Character Count:	Number of characters forming the recipe name.
Data Starting Character Offset:	Indicate the position of the data string first character.
Data Character Count:	Number of characters forming the data string.
Message	Number of characters used for the whole message string.

Character Count:

Use Entire Message for Recipe:	When this box is checked, above Character Offsets and Counts are grayed and values ignored and entire Barcode scanned is used to select the Recipe and used as the Data String for Board Based Data Logging.

2D Line Number

This section appears when the barcode type **Symbol 1D / 2D** is configured. It allows one to choose which line of the first 5 lines in a multi line barcode is the line which has the barcode recipe and data information in it. An Example of the 2D Line Number is given in the **Barcode Example**.

See Also **Barcode Configuration**

1.3.3 Barcode Example

When a barcode is scanned by a reader, an ASCII string representing the text of the barcode is parsed by the Machine Software. Below is an example of a Barcode Scanned and how the information is extracted from the Barcode.

Barcode Message Format

On the Barcode Reader Operations Page within the Barcode Message Format section, the Format of the information within the Barcode is configured.

Note: Spaces and characters such as '-' as shown in the example below are counted as characters.

Use Entire Message for Recipe

When this item is checked, the entire barcode scanned must match a recipe stored in the current recipe folder or if Barcode Association is configured, the entire Barcode is used to Associate the Barcode to a Recipe. In this configuration, the rest of the parameters are grayed and ignored in the Barcode Message Format section.

Recipe Starting Character Offset

Represents the location of the first Character of the Recipe within the Barcode String. In the example below, the first character of the Recipe is in position 1 of the string, so the offset is1.

Note: The Recipe stored in the Barcode String recipe section should match an actual Recipe name stored in the current Recipe Folder or if Barcode Association is configured, the Barcode recipe section is used to Associate the Barcode to a Recipe. This would be recipe Test1.rcp for this example.

Recipe Character Count

Represents the length of the Recipe within barcode string. In the example below the Recipe Character Count is 5.

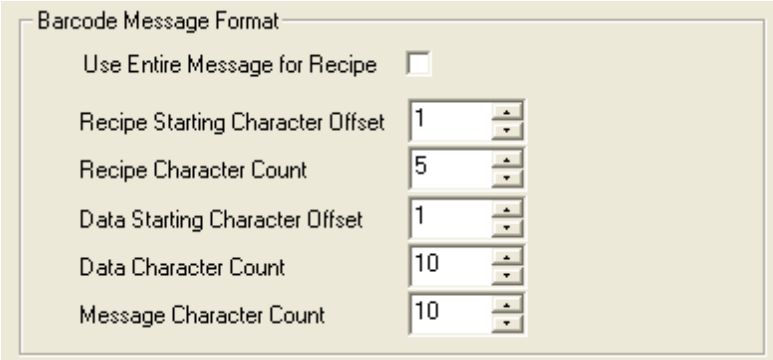
Data Starting Character Offset

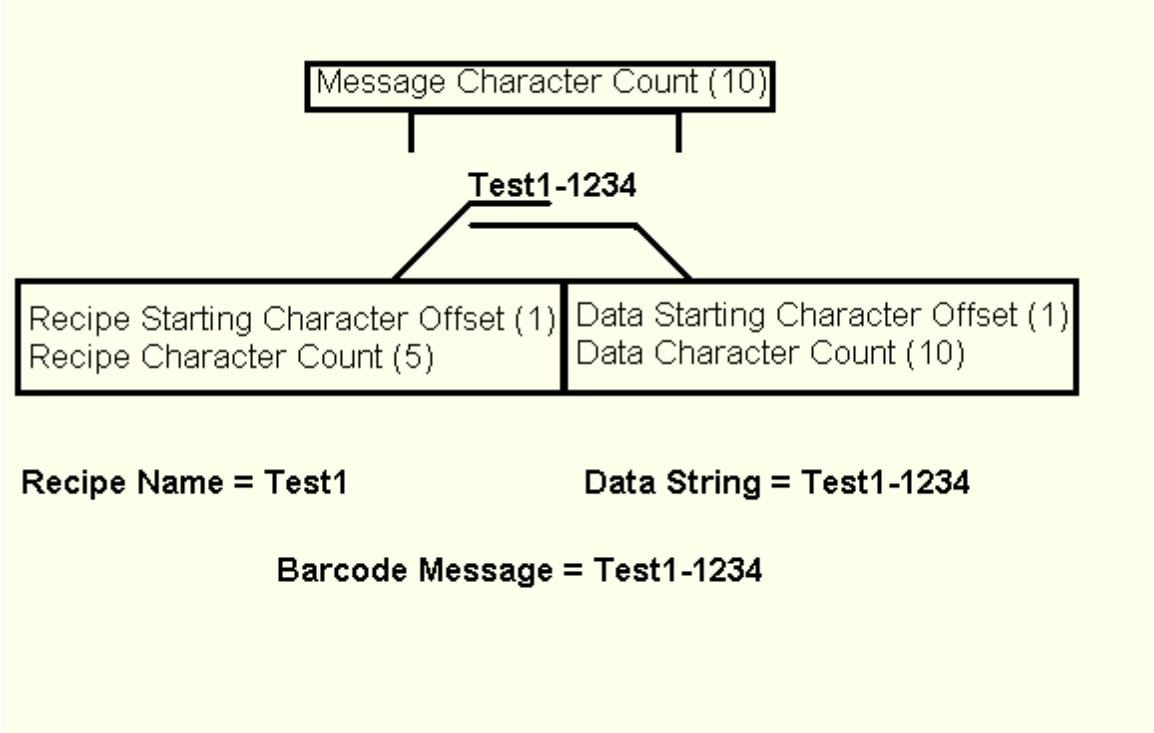
Represents the location of the first Character of the Data designation within the Barcode String. In the example below, the first character of the Data is in position 1 of the string, so the offset is 1.

Note: The Data Characters stored within the barcode string are used for Data Logging. In the example below the information used for the Datalog File is Test1-1234.

Data Character Count
Represents the length of the Data designation (Board ID) within the barcode string. In the example below the Data Character Count is 10.

Message Character Count
Represents the entire length of the barcode string. In the example below the Message Character Count is 10.



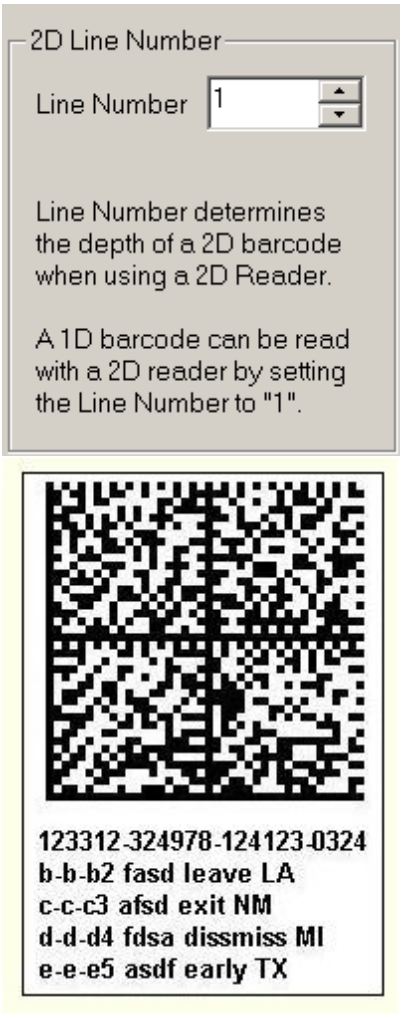


2D Line Number
The **2D Line Number** can be chosen from lines 1-5. The following are the restrictions placed on the 2D Barcode use.

1. Any Barcodes with more than 5 lines will cause an error.
2. If the **Line Number**, where the recipe and data are located, is larger than the current scanned barcodes total number of lines, an error will occur.
3. These lines must have less than or equal to 32 bits of data or there will be an error.
4. The over all number of bits in the data in the 5 lines cannot go over 172 bits or there will be an error.

Example 1

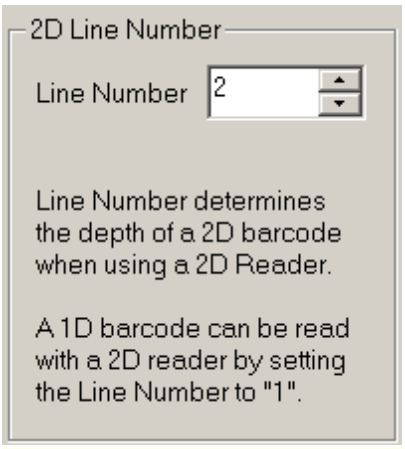
The **Line Number** equals 1 in this example. The recipe and data are located in Line 1 and together they equal 123312-324978-124123-0324.



Note: When using 1D barcodes with the 1D / 2D barcode reader this should always be set to a **Line Number** equal to 1.

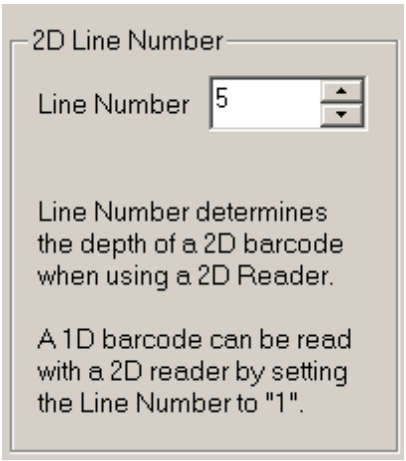
Example 2

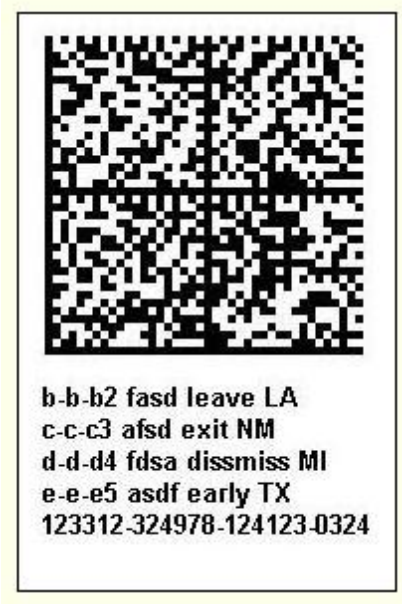
The **Line Number** equals 2 in this example. The recipe and data are located in Line 2 and together they equal 123312-324978-124123-0324.



Example 3

The **Line Number** equals 5 in this example. The recipe and data are located in Line 5 and together they equal 123312-324978-124123-0324.

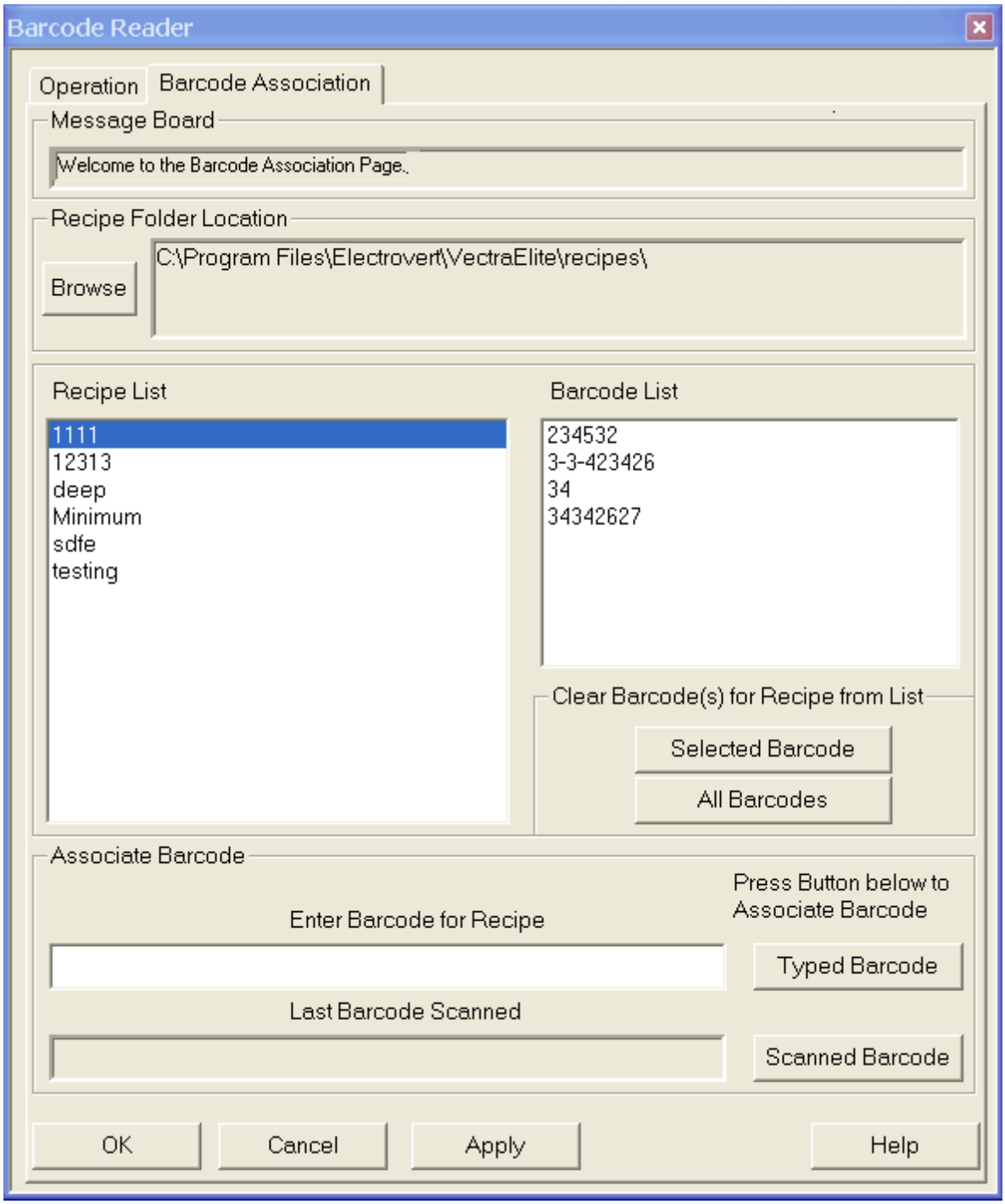




1.3.4 Barcode Association

The **Barcode Association** page allows the user to link scanned or typed barcodes to saved recipes.

Note: The machine must be in the STOP mode to make any barcode associations.



The Barcode Reader **Barcode Association** tab may be accessed via:

Menu: **Modules | Barcode Reader | Barcode Association** tab

Message Board
The message board shows the most recent action that has taken place on the barcode association

page.

Recipe Folder Location
Displays the folder directory which contains the recipes that are currently loaded in the Recipe List. The Browse button can be used to pick new recipe directory. If changes were made to the currently selected recipe a Message Box pop up to with a query to keep the changes made.

Recipe List
Displays recipes that are in the current recipe directory. Click on a recipe name to begin linking barcodes to that recipe. Click on a different recipe than the one that is currently selected after changes were made to the currently selected recipe and a Message Box will pop up to with a query to keep the changes made.

Barcode List
Displays barcodes that are associated to the currently selected recipe.

Clear Barcode(s) for Recipe from List
The All Barcodes button clears all of the barcode links from the Barcode List that are linked to the current recipe. A Message Box will query to clear all of the barcode links.
The Selected Barcode button clears the currently selected barcode from the Barcode List for the current recipe. A Message Box will query to clear the barcode link.

Associate Barcode
Scan or type a new barcode and add a link to a currently selected recipe. The Scanned Barcode button will add a scanned barcode to the Barcode List.
The Typed Barcode button will add the barcode that has been typed in the Enter Barcode for Recipe box to the Barcode List.

Enter Barcode for Recipe
Note: When a barcode is added by typing it, it must typed as the whole barcode.
Example: Barcode message manipulation can be found on the Barcode Operation page.
Case 1
Barcode = 123456
Use Entire Message for Recipe is not checked.
Recipe Starting Character Offset = 2
Recipe Character Count = 4
Data Starting Character Offset = 1
Data Character Count = 6
Message Character Count = 6
Enter Barcode for Recipe box in this case would be 123456.
Case 2
Barcode = 123456
If Use Entire Message for Recipe is checked.
Enter Barcode for Recipe box in this case is 123456.

Last Barcode Scanned
Displays the barcode that was just scanned.
Case 1
Barcode = 123456
Use Entire Message for Recipe is not checked.
Recipe Starting Character Offset = 2
Recipe Character Count = 4
Data Starting Character Offset = 1

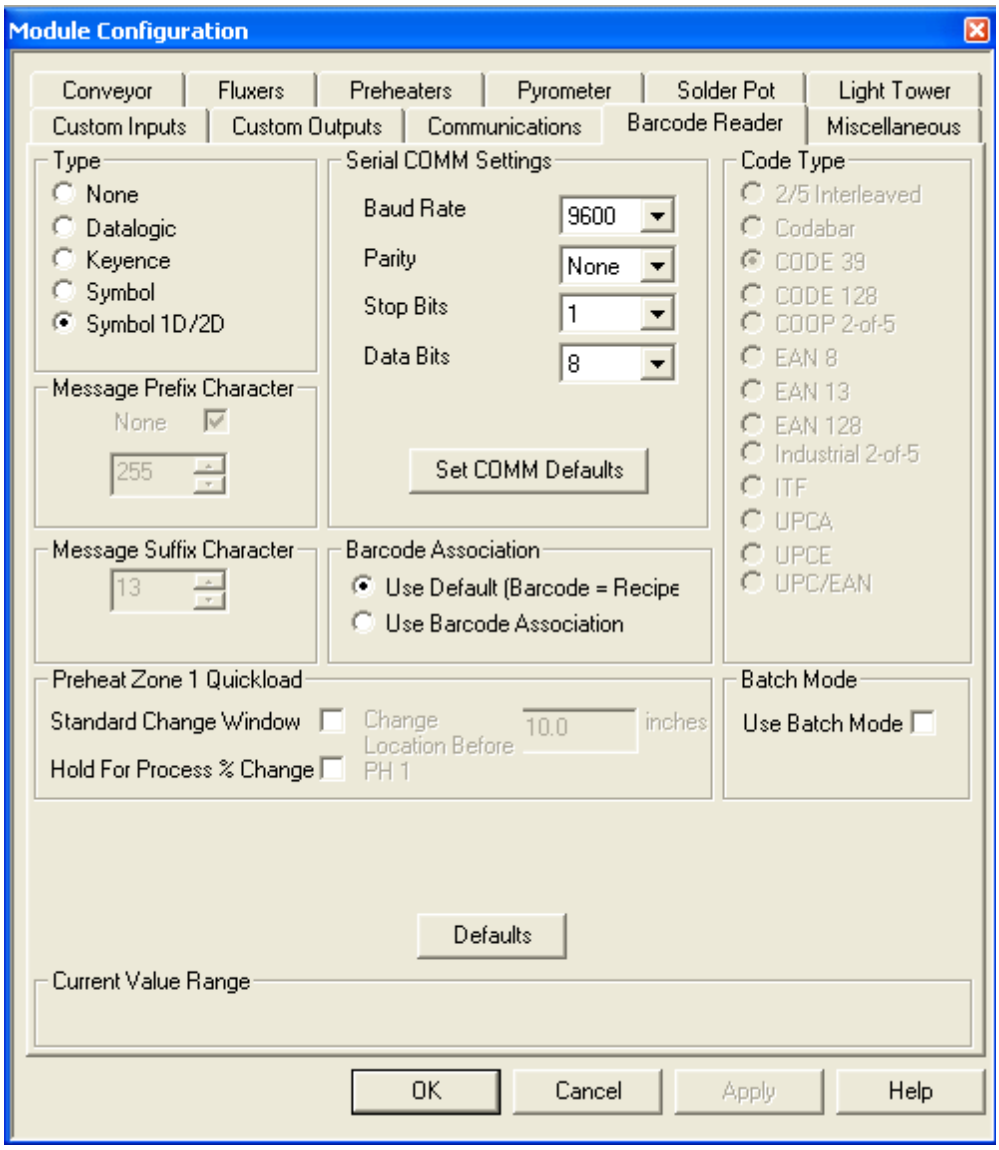
Data Character Count = 6
Message Character Count = 6
Last Barcode Scanned for this case is 234.
Case 2
Barcode = 123456
If Use Entire Message for Recipe is checked.
Enter Barcode for Last Barcode Scanned in this case is 123456.

1.3.5 Barcode Reader Configuration

The **Barcode Configuration** page is used to configure the barcode option and each of it's parameters. The barcode reader option allows the user to quickly load the appropriate recipe by scanning a barcode on the PCB or pallet being cleaned. This helps eliminate errors associated with running the incorrect recipe. The barcode information is also recorded in the active **Data Log** file.

NOTE: The machine must be in Stopped mode to enable access to the machine's Module Configuration function.

CAUTION: Do not attempt to add, remove, or change any selections within the Barcode Reader tab that has not first been physically installed, removed or changed on the machine. This could result in unnecessary alarms and/or unexpected behavior.



Click on a section of the Barcode Reader Configuration tab above to get a more detailed description of the parameters in that section.

The **Barcode Reader** Configuration tab may be accessed via:

Menu: **Configuration | Modules | Barcode Reader** tab

The 'Defaults' button is used to restore all barcode configuration parameters back to their default values. This will disable all barcode operations!

1.3.5.1 Type

Selection of only one (1) item is permitted within this category.

This configuration item is used to select type or brand of barcode scanner that is connected to the machine.

None - No barcode scanner is connected to the machine. All barcode operations are disabled.

Keyence - A Keyence BL series or compatible scanner is connected to the machine.

Datalogic - Datalogic DS6100 series scanner is connected to the machine..

Symbol - A Symbol LS3000 series or compatible scanner is connected to the machine.

Symbol 1D/ 2D - A Symbol MS4404 series or compatible scanner is connected to the machine.

Note: When the barcode type **Symbol 1D/ 2D** is configured and reading Symbol barcodes such as Data Matrix or other multi line capable Barcodes make sure that the Barcode was made using ASCII (data mainly contains ASCII characters 0-127) Encoding.

1.3.5.2 Prefix Character

This configuration item is used to select if a prefix character will be used to signal the beginning of the data to be extracted from the scanned barcode message. The Barcode Reader should be setup to add this Prefix Value.
The default value is set to None.

None - If this is selected, no prefix character will be used and the data will start with the first byte in the scanned barcode message. If this box is empty (not selected), the data will start with the first byte following the first occurrence of the prefix character as specified in the edit box below. To select this option, click on the small box. A check mark will appear in the box.

Use the edit box to type in the ASCII number of the prefix character to be used. The spin controls on the right of the edit box may also be used to cycle up or down to the correct number. Refer to an ASCII chart for the code associated for the specified character.

Note: When the barcode type **Symbol 1D/ 2D** is configured Barcode Prefix and Suffix are set and can not be altered.

1.3.5.3 Suffix Character

This configuration item is used to select the suffix character used to signal the end of the data to be extracted from the scanned barcode message. The Barcode Reader should be setup to add this Suffix Value. The default suffix is 13.

Use the edit box to type in the ASCII number of the suffix character to be used. The spin controls on the right of the edit box may also be used to cycle up or down to the correct number. Refer to an ASCII chart for the code associated for the specified character.

Note: When the barcode type **Symbol 1D/ 2D** is configured Barcode Prefix and Suffix are set and can not be altered.

1.3.5.4 Serial COMM Settings

This configuration item is used to select and view the Serial COMM Settings. Depending on the Barcode Reader used shown in the section **Type**, these values should change. If **Type** is **None** then this section is grayed out.

If **Type** is **Datalogic** the settings are:
Baud Rate = 9600
Parity = Even
Stop Bits = 1
Data Bits = 8

Also, with **Datalogic** this section is grayed out.

If **Type** is **Keyence** the settings are:
Baud Rate = 9600
Parity = Even
Stop Bits = 1
Data Bits = 7
Also, with **Keyence** this section is grayed out.

If **Type** is **Symbol** the default settings are:
Baud Rate = 9600
Parity = Even
Stop Bits = 2
Data Bits = 7
With **Symbol** this section can be changed to allow for other Barcode Readers to be configured. The settings that can be changed and their ranges are listed below.

If **Type** is **Symbol 1D/2D** the default settings are:
Baud Rate = 9600
Parity = None
Stop Bits = 1
Data Bits = 8
With **Symbol 1D/2D** this section can be changed to allow for other Barcode Readers to be configured. The settings that can be changed and their ranges are listed below.

Use the drag down edit box to select the Settings of a Barcode Reader that is not pre configured. This can only be done if the **Type** is either **Symbol** or **Symbol 1D/2D**.

Note: If using the **Type** **Symbol 1D/2D** Barcode Reader that is not pre configured, the reader must be set up for Data first, 1st Suffix = 13 and 2nd Suffix = 12 (Data, Suffix 1, Suffix 2).

Baud Rate
300, 600, 1200, 2400, 4800, default = 9600, 19200, 38400, 57600, 115200

Parity
None, Odd, Even

Stop Bits
1, 2

Data Bits
7, 8

1.3.5.5 Barcode Association

Use Default Recipe Association
Selecting this option requires that the barcode or a portion of the barcode must be stored in the Current Recipe folder as the recipe name.

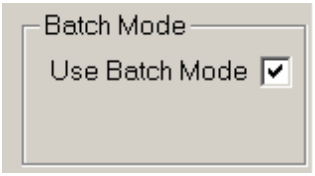
Use Barcode Association
Selecting this option allows using the Barcode scanned or a portion of the Barcode to be used to run a recipe with a different Name. The recipe name does not need to be a portion of the Barcode

1.3.5.6 Batch Mode

By checking "Use Batch Mode", a barcode can be scanned and all the boards that follow after this initial scan will use the recipe and barcode of this scan. This will continue until a new scan is made which will change the barcode and recipe for the boards to follow.

Data Logging will capture the information for each board as normal, except for the recipe and barcode, which will be based on the current scanned barcode.

Note: The "Barcode: Incoming Board Was Not Scanned" Alarm will not trigger during this Mode.



1.3.5.7 Code Type

Selection of only one (1) item is permitted within this category.

This configuration item is used to select the barcode code type. Available selection vary by type of barcode scanner configured. This configuration option is not available for the Symbol Technologies scanners. These scanners are programmed by scanning various barcode from their manual

The following is a list of barcode code types.

-2/5 Interleaved
-Codebar
-CODE 39
-CODE 128
-COOP 2-of-5
-EAN 8
-EAN 13
-EAN 128
-Industrial 2-of-5

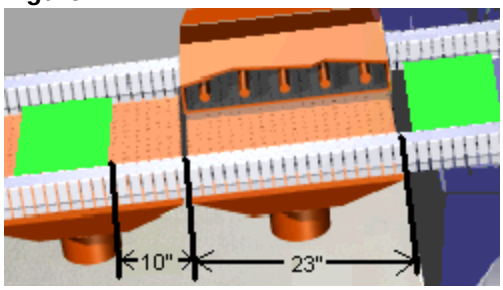
-ITF
-UPCA
-UPCE
-UPC/EAN

1.3.5.8 Preheate Zone 1 Quickload

Preheat Zone 1 Quickload

Standard Change Window
This item is accessible if a Barcode Type other then None is chosen, there is at least one Preheater configured and the **Hold for Process % Change** Box is not checked. This option incorporates the same Setup and features as any of the other Quickload Parameters. When a PCB enters a Pre-Configured Zone or Window, the Setpoint is changed for that particular Function as long as no other boards are currently in that same zone or window. The Preheat Start of Window is configured on the Barcode Configuration Page. See **Change Location before PH1** below. This Value is the distance before the Location of the Start of the Preheat #1 Zone in which the Setpoint for Lower and Upper #1 Preheat Temperatures are changed. The End of the Zone is not configurable and is set to correspond with the end of the Preheat Section or 23.0" (584.2mm) after the beginning of Preheat #1. In the example below (Figure 1), the Start Window is set to 10.0" (254 mm) before Preheat #1. Since no other Boards are within the Zone, the Temperature Setpoints will change for Lower and Upper Preheat #1. If a board is already in the Window, the Setpoints would remain the same and not change.

Figure 1



When using this feature, the **Quickload Board Spacing Time** should be set to account for the entire zone to prevent having multiple boards within the window.
In this example the full width of the zone would be 33 " or 838.2 mm. At 5 feet per minute (1.52 meters per minute) the Spacing Time would be at least 33 Seconds. This can easily be calculated. See **Calculations** below using above example:

ChLoc - Change Location before Preheat #1 set on the Barcode Configuration page (10" in this example).

EndLoc - End Distance from start of Preheat #1, by default = 23.0" or 584.2 mm.

WL - Window Length = **ChLoc + EndLoc**

Imperial Units Calculations:

WL = (10" + 23") = 33"

Quickload Spacing Time = (WL / (Conveyor Speed*0.2))

Quickload Spacing Time = 33.0 / (5 * 0.2) = 33 Seconds

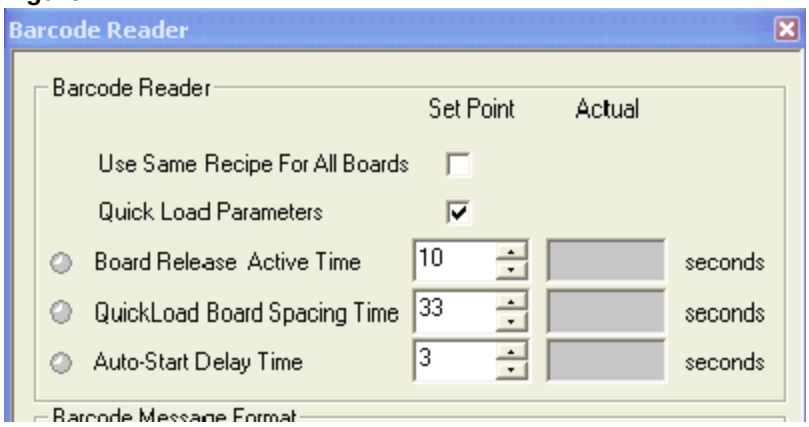
Metric Units Calculations:

WL = (254 mm + 584.2 mm) = 838.2 mm

Quickload Spacing Time = (WL / (Conveyor Speed*16.6667)

Quickload Spacing Time = 838.2 / (1.52 * 16.667) = 33 Seconds

Figure 2



Change Location Before PH 1

This is the value used in conjunction with the Preheat Zone 1 Change window. This setting can only be changed if the **Standard Change Window** is selected. This sets the distance before Preheat Zone #1 in which the Preheat Setpoints are changed. Please note that the Distance to the start of the Preheater Zone 1 is configurable and set on the Conveyor Configuration Page.

Hold for Process % Change

This item is accessible if a Barcode Type other then None is chosen, there is at least one Preheater configured and the **Standard Change Window** Box is not checked. When this is selected, the Quickload checkbox on the Barcode Operations Page will need to be checked, see Figure 2 above. When a Barcode is scanned on a new Board or Pallet, the Temperature Setpoints of Preheat Zone 1 from the newly scanned board are compared with the Current Setpoints. If they are within the Process Tolerance as set on the alarm configuration Page, then the Board is allowed to enter the machine under the previous setpoints. Otherwise the board is held until all boards in the machine pass Preheat Zone 1. When the last board passes Preheat 1, the Setpoint(s) for Preheat Zone 1 are changed to the newly scanned Recipe and the board is allowed to enter when the Temperature(s) are within the previous mentioned Process Tolerance. The new Temperature Setpoints are then used for comparison when scanning the next Barcode. See Example Below:

Recipe A	Recipe B	Recipe C
Lower Preheat 1 -	Lower Preheat 1 -	Lower Preheat 1 - 220 °F

200 °F	**210 °F**	
Upper Preheat 1 - 300 °F	**Upper Preheat 1 - 290 °F**	**Upper Preheat 1 - 281 °F**

Alarm Configuration Process % = 5.00
Recipe A is scanned and enters the Machine, The board is well within the Preheat Zone.

Recipe B is scanned; the Temperatures are compared with the Current Setpoints. Since +/- 5% of 200 = 190 to 210, Lower Preheat 1 is OK. Upper Preheat 1 at 300 and 5% tolerance has an accepted range of 285 to 315. So Upper Preheat 1 is acceptable. The Board is allowed to enter the Machine, leaving the Preheat Setpoints at Recipe A Settings.

Recipe C is scanned. Lower Preheat 1 setpoint of 220 °F is not within the acceptable range and Upper Preheat 1 with a Setpoint of 281 °F is also out of Tolerance. The Board is held. Once the current boards of Recipe A and Recipe B clear the Preheat Zone, the Setpoints for Preheat Zone 1 are changed to match Recipe C. When the Temperatures are within the 5% Tolerance the board is released and allowed to enter the Machine.

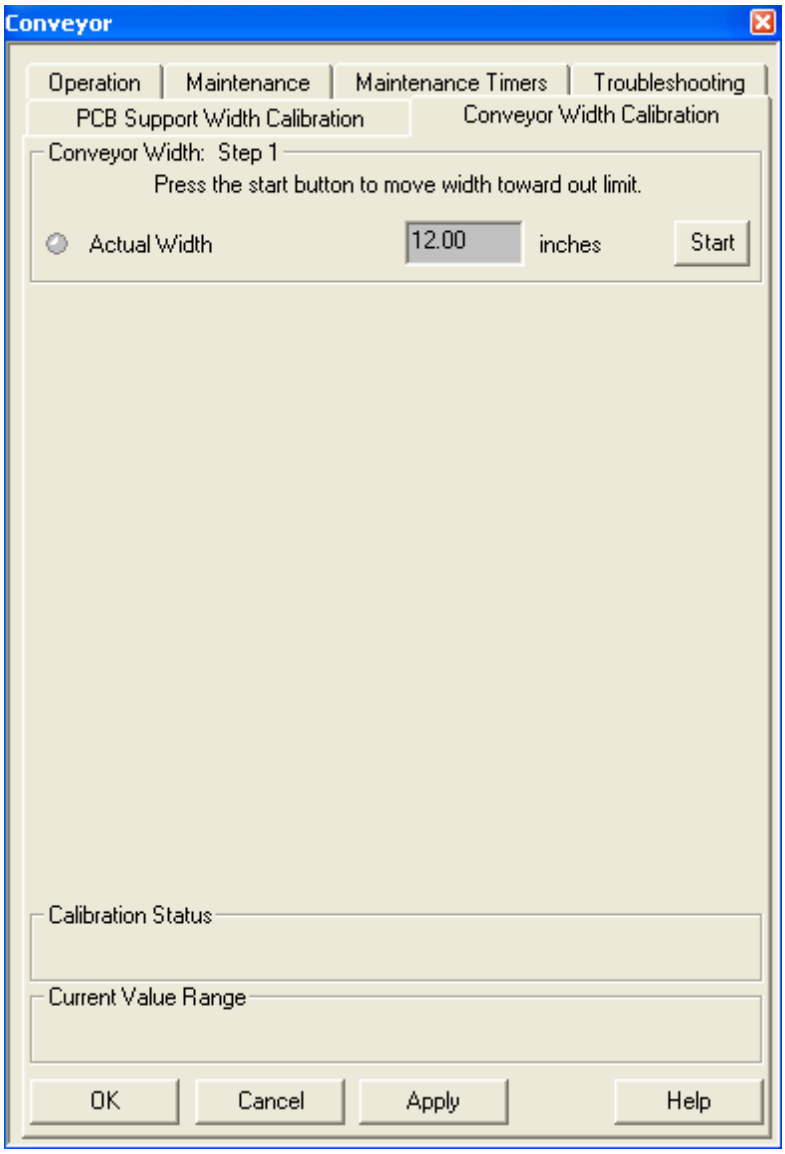
Defaults
To reset the default values, click on the Restore Defaults button.

1.4 Calibration

1.4.1 Conveyor Width

1. At the operator console, click on the MAN button icon at the top center of the screen to place the machine in the Manual Mode.
2. Click anywhere on the conveyor module on the graphic screen to open the Conveyor dialog box.
3. Click on the Conveyor Width Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.
The Calibration tab contains a single Step when initialized



The **Conveyor Width Calibration** tab may be accessed via:

Menu: **Modules | Conveyor | Conveyor Width Calibration** tab

Conveyor Width: Step 1.

Actual Width

- Click on the Step 1 Start button, the conveyor width will move toward the out limit.
- The LED to the left of Actual Width illuminates green while the conveyor moves to the outer limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box increases until the conveyor width reaches its maximum setting.
- Once the conveyor width reaches its limit, the green LED turns off, the Start button becomes non-available, and an additional step appears in the Calibration tab

Conveyor Width: Step 2.
Measured Out Width
- Physically measure the width of the conveyor adjustment performed by the machine in Conveyor Width: Step 1.
- Enter the measured conveyor width in the text box next to Measured Out Width, then press the Enter key on the keyboard or click on the Apply button.

Conveyor Width: Step 3 appears in the dialog box.
- Click on the Start button to move the conveyor width toward the in limit.
- The LED for Conveyor Width: Step 3 illuminates green while the conveyor width moves to the 'in' limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box in Conveyor Width: Step 1 decreases until the conveyor width reaches its 'in' limit.

Conveyor Width: Step 4 appears in the dialog box.
Measured In Width
- Physically measure the width of the conveyor adjustment performed by the machine in Conveyor Width: Step 3.
- Enter the measured conveyor width in the text box next to Measured In Width in Conveyor Width: Step 4, then press the Enter key on the keyboard or click on the Apply button.

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the conveyor width system, and repeat calibration.

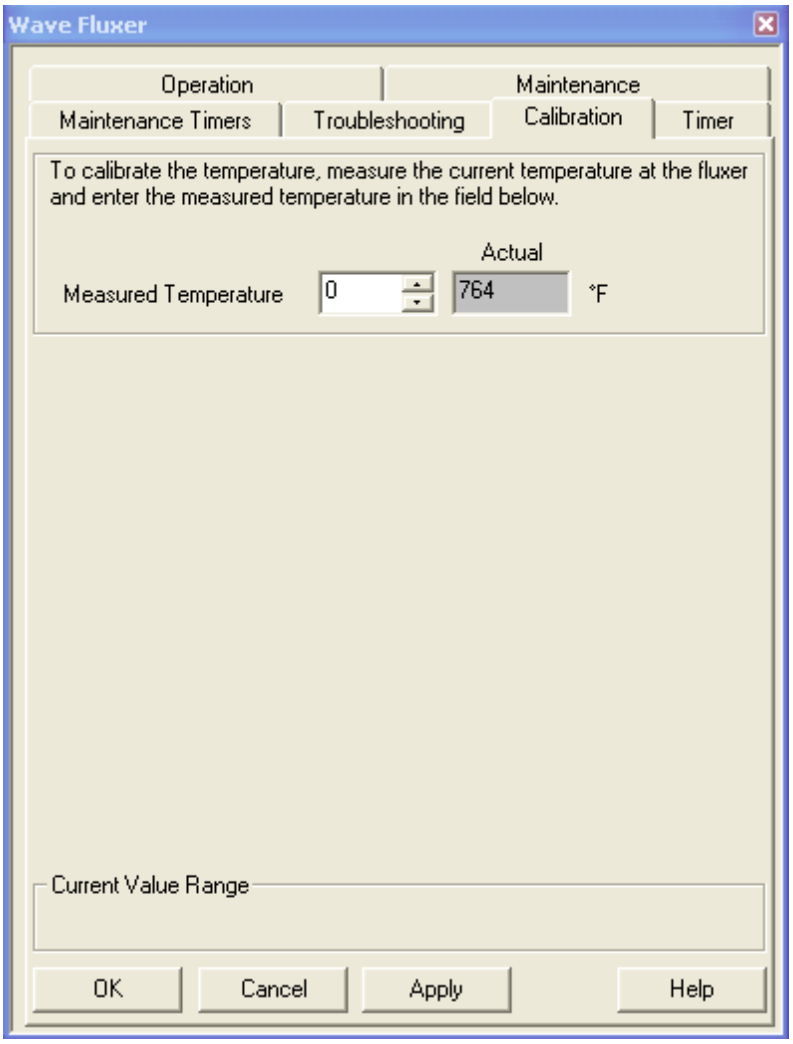
1.4.2 Foam/Wave Fluxer

Measured Temperature

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the fluxer module on the graphic screen to open the Foam or Wave Fluxer dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

4. Follow the instructions as they appear in the Calibration tab.
"To calibrate the temperature, measure the current temperature at the fluxer and enter the measured temperature in the field below." Using an accurate hand held thermometer, take a temperature reading of the flux as directed. Then, enter the value in the field next to Measured Temperature. Click on the Apply or OK button to accept the value.
This completes calibration of the flux temperature.



The Foam/Wave Fluxer **Calibration** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Calibration** tab
Modules | External Fluxer | Calibration tab

1.4.3 Hot Knife Pressure

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the Hot Air Knife module on the graphic screen to open the Hot Knife dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

Hot Knife Pressure

Pressure
Follow the instructions as they appear in the Calibration tab for Hot Knife Pressure.
"To calibrate the hot knife pressure, press the start button to zero the pressure. "The Hot Knife must be off to perform the zeroing calibration.

The following procedures require the use of the Thermocouple Test and Calibration Cable assembly, p/n 3-0954-077-01-6. This item is included in the Equipment tool kit. In addition, the use of a Thermocouple Simulator is required. This item is NOT included in the Equipment tool kit.

1.4.4 Hot Knife Heater Temperature

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the Hot Air Knife module on the graphic screen to open the Hot Knife dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

Hot Knife Heater Temperature
Measured Temperature
Follow the instructions as they appear in the Calibration tab for Hot Knife Heater Temperature Calibration "To calibrate the heater temperature, measure the current temperature at the nozzle and enter the measured temperature in the field below."
There are two (2) methods to performing this calibration.

Method 1(Preferred)
The first method utilizes connectors P1, P5.

Method 2(Alternate)
The second method utilizes connectors P1, P2.

1.4.5 Hot Knife Nozzle Temperature

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the Hot Air Knife module on the graphic screen to open the Hot Knife dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

Hot Knife Nozzle Temperature
Measured Temperature
Follow the instructions as they appear in the Calibration tab for Hot Knife Nozzle Temperature. "To calibrate the nozzle temperature, measure the current temperature at the nozzle and enter the measured temperature in the field below.
There are two (2) methods to performing this calibration.

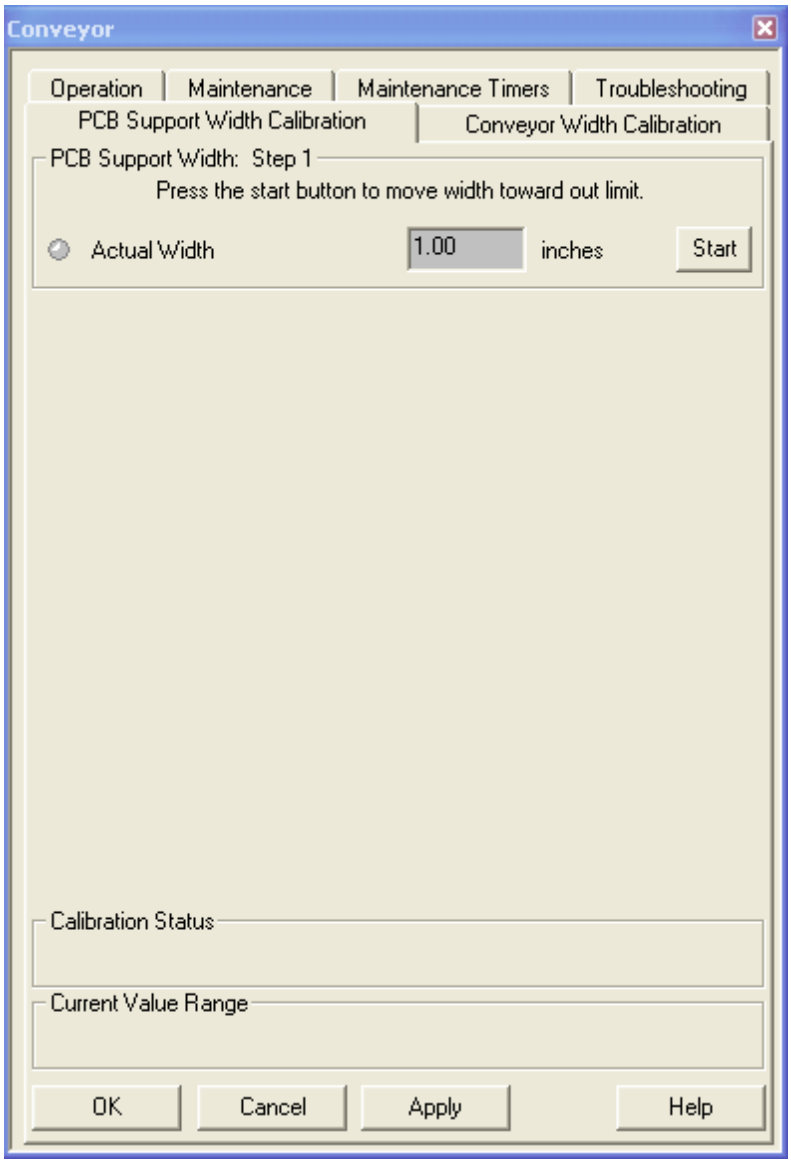
Method 1(Preferred)
The first method utilizes connectors P1, P5.

Method 2(Alternate)
The second method utilizes connectors P1, P2.
After completing the calibration be sure to re-connect the thermocouple plugs back into their respective receptacles at either the nozzle or the I/O interface board.

1.4.6 PCB Support Width

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine™ in the Manual Mode.
2. Click anywhere on the conveyor module on the graphic screen to open the Conveyor dialog box.
3. Click on the PCB Support Width Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.
The Calibration tab contains a single Step when initialized.



The **PCB Support Width Calibration** tab may be accessed via:

Menu: **Modules | Conveyor | PCB Support Width Calibration** tab

PCB Support Width: Step 1.

Actual Width

- Click on the Step 1 Start button, the PCB support will move toward the out limit.
- The LED to the left of Actual Width illuminates green while the PCB support moves to the outer limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box increases until the PCB support reaches its maximum setting.
- Once the PCB support reaches its limit, the green LED turns off, the Start button becomes non-available, and an additional step appears in the Calibration tab.

PCB Support Width: Step 2.
Measured Out Width
- Physically measure the width of the PCB support adjustment performed by the machine in PCB Support Width: Step 1.
- Enter the measured PCB support width in the text box next to Measured Out Width, then press the Enter key on the keyboard or click on the Apply button.

PCB Support Width: Step 3 appears in the dialog box.
- Click on the Start button to move the PCB support toward the in limit.
- The LED for PCB Support Width: Step 3 illuminates green while the PCB support moves to the 'in' limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box in PCB Support Width: Step 1 decreases until the PCB support reaches its 'in' limit.

PCB Support Width: Step 4 appears in the dialog box.
Measured In Width
- Physically measure the width of the PCB support adjustment performed by the machine in PCB Support Width: Step 3.
- Enter the measured PCB support width in the text box next to Measured In Width in PCB Support Width: Step 4, then press the Enter key on the keyboard or click on the Apply button.

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the PCB Support system, and repeat calibration.

1.4.7 PID

STEP 1: Adjust integral to minimum (0.0) and derivative to minimum (0.0). Adjust proportional band to the minimum.

STEP 2: Bring the process to the approximate desired setpoint. The process should oscillate. If the temperature is not oscillating then this is the proportional band setting, proceed to step 3. If the process does oscillate, slowly increase the proportional band setting in small increments until a minimal oscillation is achieved. Then double the proportional gain setting. The proportional band is now set.

STEP 3: If derivative term is ***not used*** proceed to step 5.

STEP 4: Increase the derivative setting by a small increment. Change the setpoint by -5% and observe the process response. The desired response is a compromise between overshooting the new setpoint and the speed at which the process reaches the new setpoint. Increase the rate setting by another small increment and change the setpoint by +5% (the original setpoint) and observe the process response. Keep doing this until the desired response is achieved.

STEP 5: Slowly increase the integral in small increments until an oscillation is observed, then divide by 2 the integral setting. This is now the correct integral setting and the set-up is done.

See Also: **PROPORTIONAL (TIME PROPORTIONING)**

INTEGRAL (AUTOMATIC RESET)
DERIVATIVE (RATE)

1.4.7.1 Proportional

Time proportioning control is required for a more precise control of the process temperature. A time proportioning control operates in the same way as an "on/off" control when a process temperature is far enough away from the set point to be outside the proportional band. When the process temperature approaches set point and enters the proportional band, the output device is switched on and off at the established cycle time. At the lower limit of the band the "on" time is considerably greater than the "off" time. As the process temperature more closely approaches set point the ratio of "on" to "off" time changes; the amount of "on" time decreases as the "off" time increases. This change in effective power delivered to the workload provides a throttling-back effect that results in less process overshoot compared to on/off control. The "on" and "off" action continues until a relationship of equal "on" and "off" times is achieved. At that time, the system will be stabilized such that the process temperature is controlled at a point just above the set point.

The process temperature does stabilize with the resultant offset. This condition will remain providing there are no work load changes in the system. The overshoot is typical of proportional control systems on initial temperature rise or when there is a change in the workload.

If the temperature offset cannot be tolerated, there are ways to compensate for it. There is manual reset or automatic reset (integral).

See Also: INTEGRAL (AUTOMATIC RESET)
DERIVATIVE (RATE)
PID CALIBRATION

1.4.7.2 Integral

Integral is an automatic adjustment that is made by the control to compensate for an offset condition before it exists. An integration takes place automatically compensating for the difference between set point and actual process temperature. This integration automatically drives the process temperature up to the set point.

The integral action is prevented until the process temperature enters the proportional band. If it were allowed to take place at any point in the span of control, a condition of extreme overshoot would occur. This function of eliminating the integral is referred to as anti-reset.

In all process temperature controls, overshoot occurs when any control mentioned so far is utilized. This condition may be hazardous to certain processes and therefore cannot be tolerated. It is preventable with a control function known as derivative.

See Also: PROPORTIONAL (TIME PROPORTIONING)
DERIVATIVE (RATE)
PID CALIBRATION

1.4.7.3 Derivative

Derivative is an anticipatory function in a temperature control that measures the rate of process temperature increase and forces the control into a proportioning action on an accelerated basis to slow that increase. This action prevents a large degree of overshoot on start-up and also functions to prevent

overshoot when system disturbances would tend to drive the process temperature up or down.

A proportioning control with the integral and derivative functions (pid control) provide the type of control that is required for difficult processes which result in frequent system disturbance, and applications where precise temperature is required.

See Also: **PROPORTIONAL (TIME PROPORTIONING)**
INTEGRAL (AUTOMATIC RESET)
PID CALIBRATION

1.4.8 Preheater

This procedure requires the use of the Thermocouple Test and Calibration Cable assembly, p/n 3-0954-077-01-6. This item is included in the Equipment tool kit. In addition, the use of a Thermocouple Simulator is required. This item is NOT included in the Equipment tool kit.

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on one of the preheaters on the graphic screen to open the Preheater dialog box associated with that particular preheater.
3. Click on the Calibration tab.

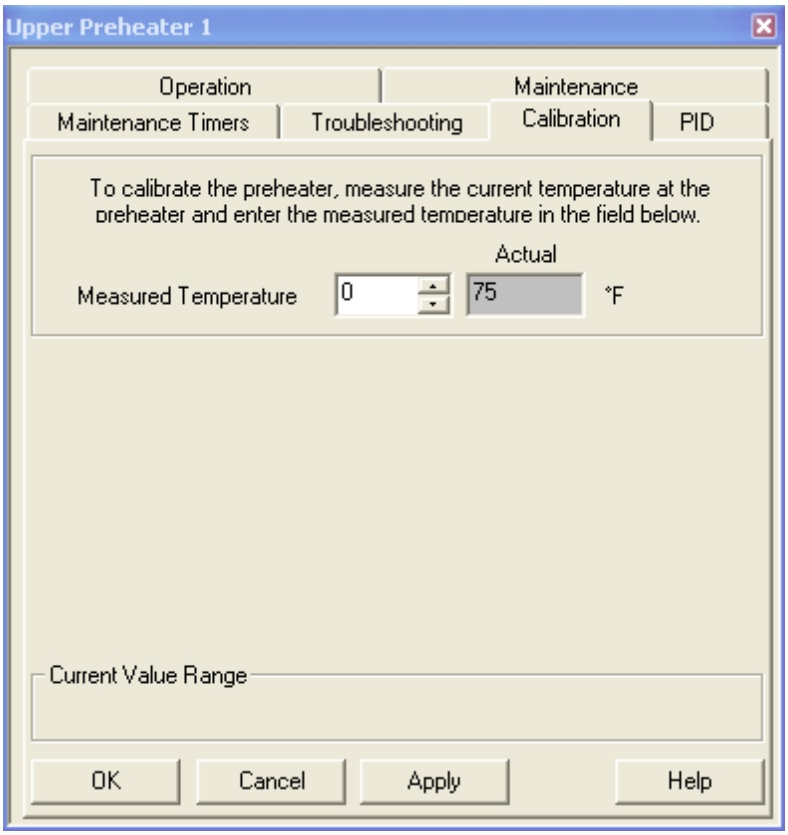
NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

4. Follow the instructions as they appear in the Calibration tab. "To calibrate the preheater, measure the current temperature at the preheater and enter the measured temperature in the field below.
5. There are two (2) methods to performing this calibration.

Method 1(Preferred)
The first method utilizes connectors P1, P5.

Method 2(Alternate)
The second method utilizes connectors P1, P2.

6. After completing the calibration be sure to re-connect the thermocouple plugs back into their respective receptacles at either the heater or the I/O interface board.

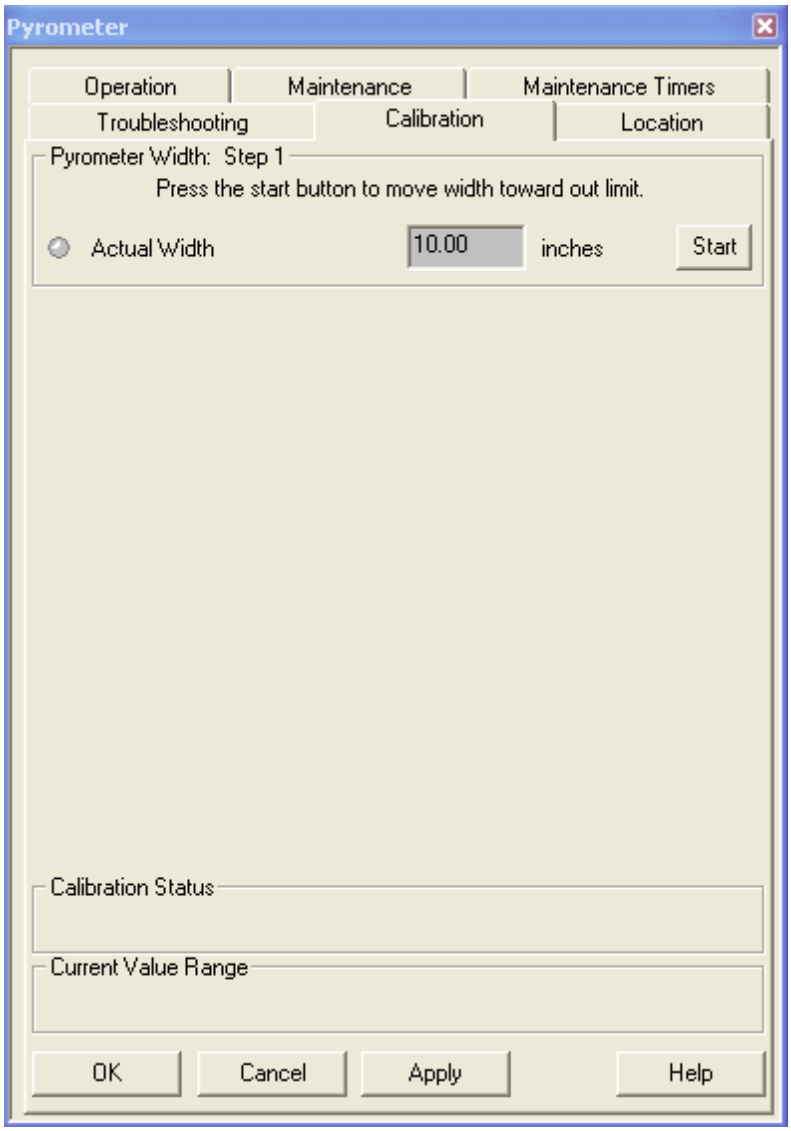


The Preheaters **Calibration** tab may be accessed via:

Menu:
Modules | Lower Preheater 1 | Calibration tab
Modules | Lower Preheater 2 | Calibration tab
Modules | Lower Preheater 3 | Calibration tab
Modules | Lower Preheater 4 | Calibration tab
Modules | Upper Preheater 1 | Calibration tab
Modules | Upper Preheater 2 | Calibration tab
Modules | Upper Preheater 3 | Calibration tab

1.4.9 Pyrometer

1. At the operator console, click on the MAN button icon at the top center of the screen to place this Machine in the Manual Mode.
2. Click on the pyrometer module on the graphic screen to open the Pyrometer dialog box.
3. Click on the **Calibration** tab.



The Pyrometer **Calibration** tab may be accessed via:

Menu: **Modules | Pyrometer | Calibration** tab

NOTE: The **Calibration** tab contains features that should be limited to use by maintenance personnel only.

4. Follow the instructions as they appear in the Calibration tab.

Pyrometer Width: Step 1
"Press the Start button to move width toward out limit." The LED to the left illuminates green while the pyrometer adjusts the width to the out limit.

Pyrometer Width: Step 2
"Enter the measured pyrometer width." Physically measure the width from the top bend on the finger of the fixed (front rail) where it connects to the chain, to the center of the pyrometer. Enter the measured width into the field in Pyrometer Width: Step 2, next to Measured Width, then press the Enter key on the keyboard.

Pyrometer Width: Step 3
"Press the Start button to move width toward in limit."
The LED to the left illuminates green while the pyrometer adjusts the width to the in limit.

Pyrometer Width: Step 4
"Enter the measured pyrometer width." Again, physically measure the width from the top bend on the finger of the fixed rail where it connects to the chain, to the center of the pyrometer. Enter the measured width into the field in Pyrometer Width: Step 4, next to Measured Width, then press the Enter key on the keyboard.

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the conveyor width system, and repeat calibration.

1.4.10 Solder Pot Lead Clearance

Lead Clearance: Step 1
Actual Height
Click on the button next to Actual Height to move the solder pot toward the up limit.
As the adjustment takes place, the LED illuminates green, and the Start button changes to a Stop button to cancel the operation.
When the up limit for the Lead Clearance has completed positioning, the LED turns off and a Lead Clearance: Step 2 category is displayed in the Calibration tab.

Lead Clearance: Step 2
Measured Height
Follow the on-screen instruction under the Lead Clearance: Step 2 category, Measured Height.
"Enter the measured solder pot height".
This is calculated by physically measuring the solder pot height distance from the bottom of a PCB to the top of the incoming curved plate on the main wave.
Enter the measured height in the text box next to Measured Height, then press the Enter key on the keyboard or click on the apply button to accept the value entered.
Lead Clearance: Step 3 appears in the Calibration tab.

Lead Clearance: Step 3
Step 3 prompts the user to click on the button to move the solder pot toward the down limit.
When clicked, the Actual Height in the Lead Clearance: Step1 section changes to the down limit, and the LED in Step 3 illuminates green while the calibration of the down limit takes place, and the button changes to a Stop button to cancel the operation.

Lead Clearance: Step 4 appears in the dialog box.

Lead Clearance: Step 4

Measured Height

Follow the instructions under Lead Clearance: Step 4, " Enter the measured solder pot height".
This value is calculated by physically measuring the solder pot height adjustment performed by the machine in Lead Clearance: Step 3.
Enter the measured distance in the text box next to Measured Height, then press the Enter key on the keyboard or click on the apply button to accept the value entered.
Step 4 completes the calibration for the solder pot.

Calibration Status

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the lead clearance system, and repeat calibration.

1.4.11 Solder Pot Temperature

Measured Temperature

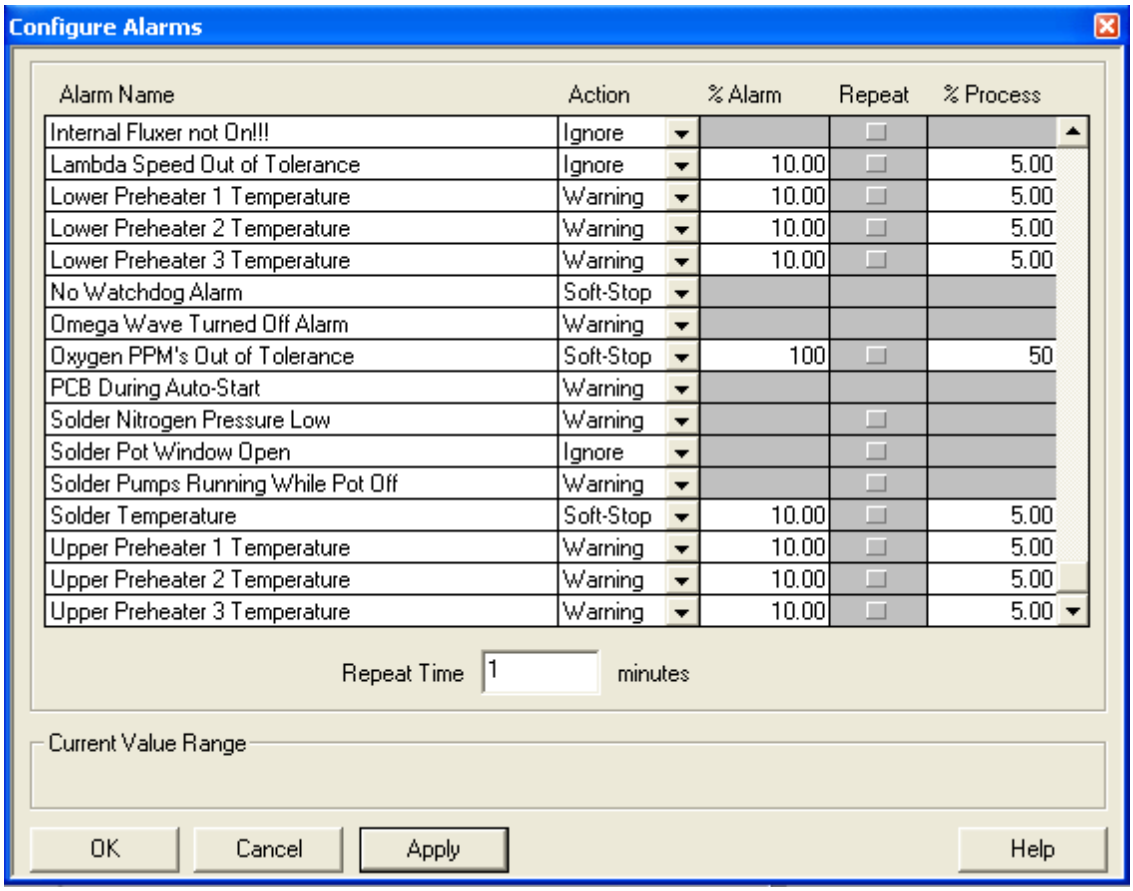
Allow the actual solder pot temperature to stabilize or reach set point temperature. Refer to the Operation tab for the Set Point temperature.
Follow the on-screen instructions under the Solder Temperature category,
Measured Temperature.

"To calibrate the solder pot temperature, measure the current temperature at the solder pot and enter the measured temperature in the field below".
This is calculated by using a hand held, accurate thermometer, and submerging the probe into the solder near the solder pot thermocouple, or 1" (25mm) into the solder wave.
Click on the button at the bottom of the dialog box to accept the value entered.

1.5 Configuration

1.5.1 Alarms

The **Alarm Configuration** page is used to configure each of the machine's user configurable alarms. The user can specify each alarm's action, alarm band, repeat and process band. The list of available alarms is dependent upon the machine's configuration.



The **Alarm Configuration Page** may be accessed via:

Menu: **Configuration | Alarms**

The **Alarm Configuration** parameter descriptions are listed below.

Alarm Name: This is the alarm name and what is displayed in the **Alarm Status** window and the **Event Log**.

Action: Specifies the machine's action when the alarm condition occurs. Click on the drop down box to select from the following options:

Ignore: When the alarm condition occurs, the machine will take no action however, the event will be recorded in the **Event Log**.

Warning: When the alarm condition occurs, the machine will set an alarm, turn on the buzzer and record the alarm in the **Event Log**.

Soft-Stop: When the alarm condition occurs, the machine will shut down, set the alarm, turn on the buzzer and record the alarm in the **Event Log**.

Alarm Band: Some alarms are based on a tolerance of their respective set point and others are based on a threshold. If the alarm is based on a tolerance, the alarm band is the deviation from set point where an alarm will be set on both the low and high side. If the alarm is based

on a specific value, the alarm band is the threshold in which either the low or high alarm will be set as indicated in the alarm name.

Repeat: Place a check mark in the box for the alarm to repeat based on the **Repeat Time** until the alarm condition is cleared. If the repeat field is blank, the alarm will only sound when the alarm condition is first set.

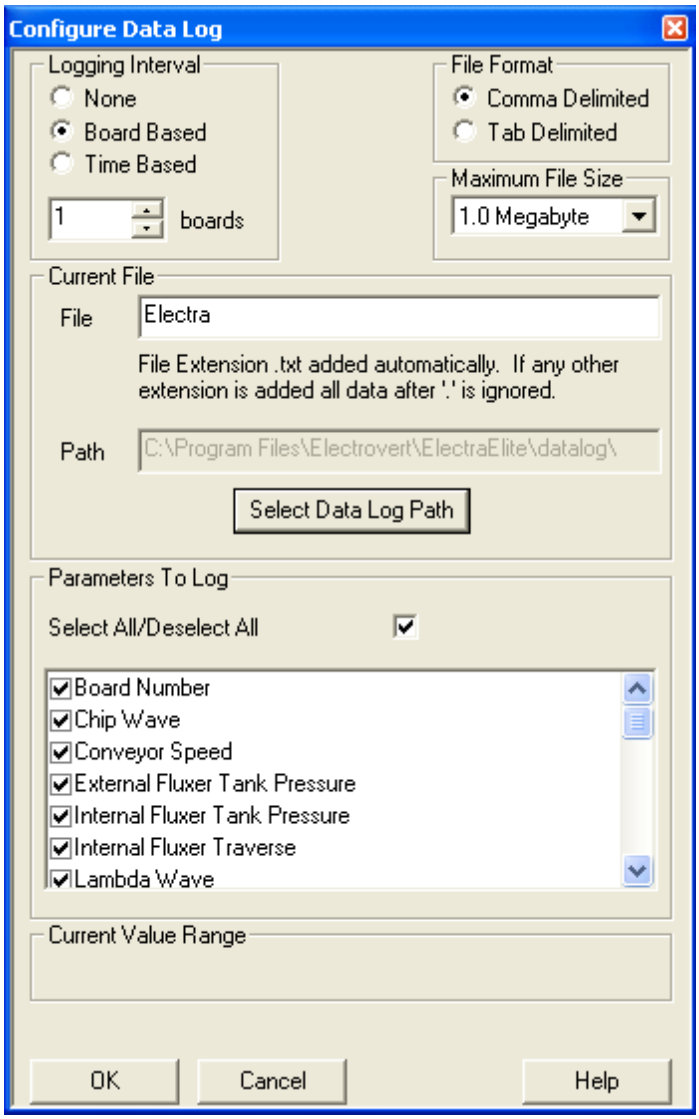
Process Band: The process band is only used for alarms based on a tolerance. This is usually set to a smaller band than the alarm band. When a parameter's actual value falls below the process band the actual value will be displayed in blue. When the value is above the process band, it will be displayed in red. The process band is also used for the Auto-Start sequence to signify when a device is close enough to it's set point to be complete.

Repeat Time: This is the time the alarm will resound if the alarm condition has not been cleared, even if the user has already acknowledge and silenced the alarm.

1.5.2 Datalog

The **Data Log Configuration** page is used to configure which machine parameters are written to the data log file and the time interval. This feature allows the user to record selected parameter values to a text file which can be easily imported into a spreadsheet for further analysis and graphing. The data log file is time based and will record each of the selected parameters based on the logging interval. The date, time, machine state, active recipe cycle, barcode, machine recipe and user name are automatically recorded for each entry.

NOTE: Machine must be in manual or auto mode to record data.



The **Data Log Configuration Page** may be accessed via:

Menu: **Configuration | Data Log**

The **Data Log Configuration** parameter descriptions are listed below.

Logging Interval: To enable the data logging feature, select **Time Based** or **Board Based** and set the interval in the edit box below. To disable data logging, select **None**. Data logging is only active when the machine is in **Starting**, **Running** or **Manual** mode.

None: no DataLog in Action.

Board Based: Depending on the parameter to log selected, the data will be collected for the selected parameter(s) each time the system has

processed this many boards.

Time Based: Data will be collected for the selected parameter(s) every X seconds.

File Format: Specifies the delimiter character used to separate the data values.

Comma Delimited: A comma is used to separate the data fields.

Tab Delimited: A tab is used to separate the data fields.

Maximum File Size: Sets the maximum file size. When the file reaches the specified size, the file will be renamed with the data and time appended to the end of the file name and a new file with the original file name will be started. Used the drop down box to select either **1.0 Megabytes** or **10.0 Megabytes.**

Current File: Specifies the data log file name and path.

File: Use the edit box to enter the name of the data log file.

Path: This is a read only box displaying the full path for the data log file.

Select Data Log Path: Pressing this button will open a standard **Browse for Folder** window, allowing the user to select the folder where the data log file is to be stored.

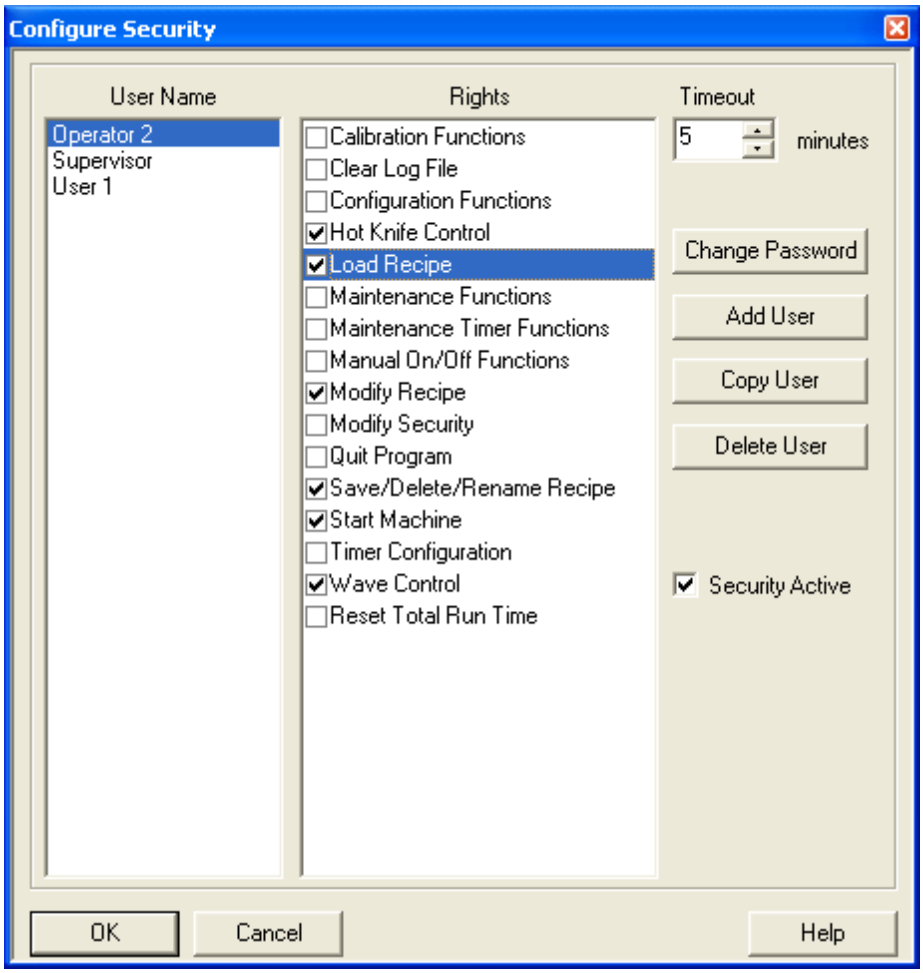
Parameters To Log: This is a list of all of the machine parameters that can be written to the data log file. To log a specific parameter, place a check mark to the left of the parameter name. To stop data logging a parameter, remove the check mark.

Select/ Deselect All: This check box allows the user to quickly select or deselect all parameters in the list. If some, but not all of the parameters are selected, the check mark will appear grayed out.

1.5.3 Security

NOTE: Prior to setting up parameters for the machine, the Process Administrator must set the security limits of of this machine's software features to ensure restricted access to specific functions.

NOTE: You must be Logged on as Supervisor or a user with " Configuration Security" Rights before you can access security.



Click on the zones above to find out more about the different parts of Security.

The **Security Configuration Page** may be accessed via:

Menu: **Configuration | Security**

When configuring security, it is important to take into account the users and their responsibilities, to determine which functions or features the users will access.

Configure Security is a Configuration dialog box.

The Configure Security dialog box is designed to permit the Process Administrator to set up security rights for specific users.

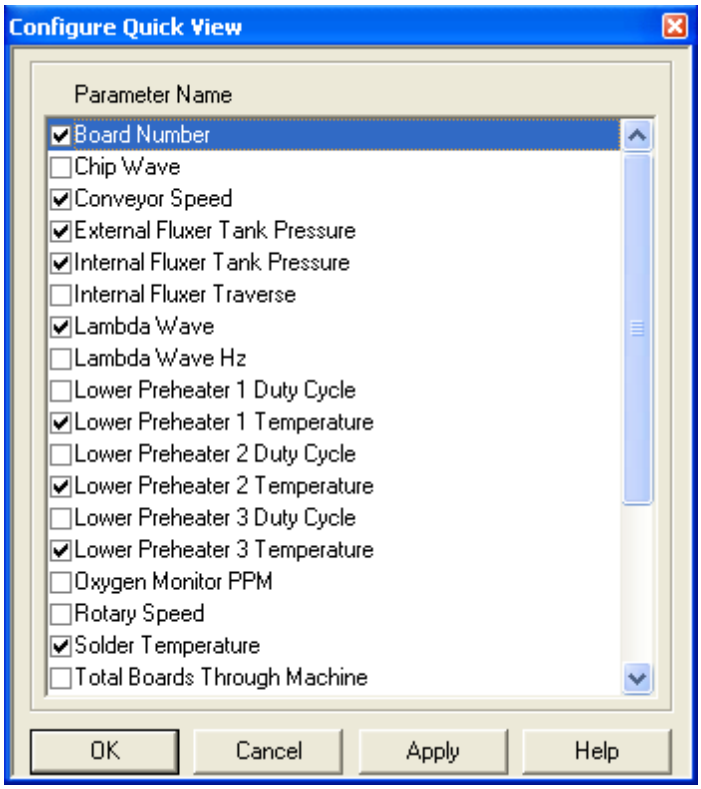
1.5.4 Quick View

The **Configure Quick View** dialog box lists all machine parameter names, and allows the user to select or deselect which items will be displayed when utilizing the Quick View utility.

Click on the check box next to the item or items to be included for display in the Quick View utility.

Clicking on the check box places a check mark in the check box. Clicking on the check box again removes the check mark from the box.

To view additional selections within the Configure Quick View dialog box, use the pointing device and click on the down arrow of the scroll bar at the right side of the dialog box.



The **Quick View Configuration Page** may be accessed via:

Menu: **Configuration | Quick View**

See Also: **Quick View**

1.5.5 Units

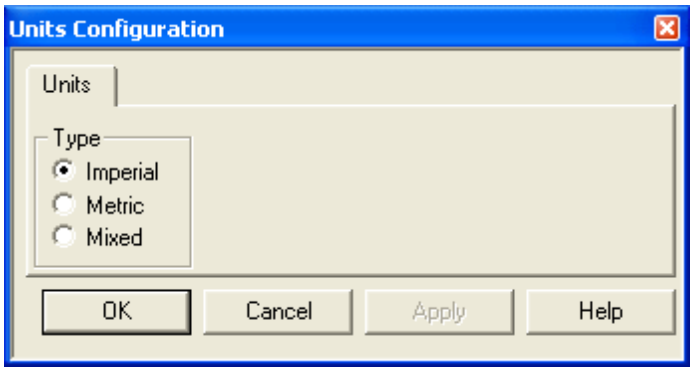
Click on the Units name under the Configuration menu to access its features.

There are three (3) possible selections for Units within the Type field.

Type
Imperial - Select this unit of measurement to display all parameters in Imperial format (inches, °F, PSI, inches/second, and feet/ minute).

Metric - Select this unit of measurement to display all parameters in Metric format (millimeters, °C, kPa, meters/second, and meters/minute).

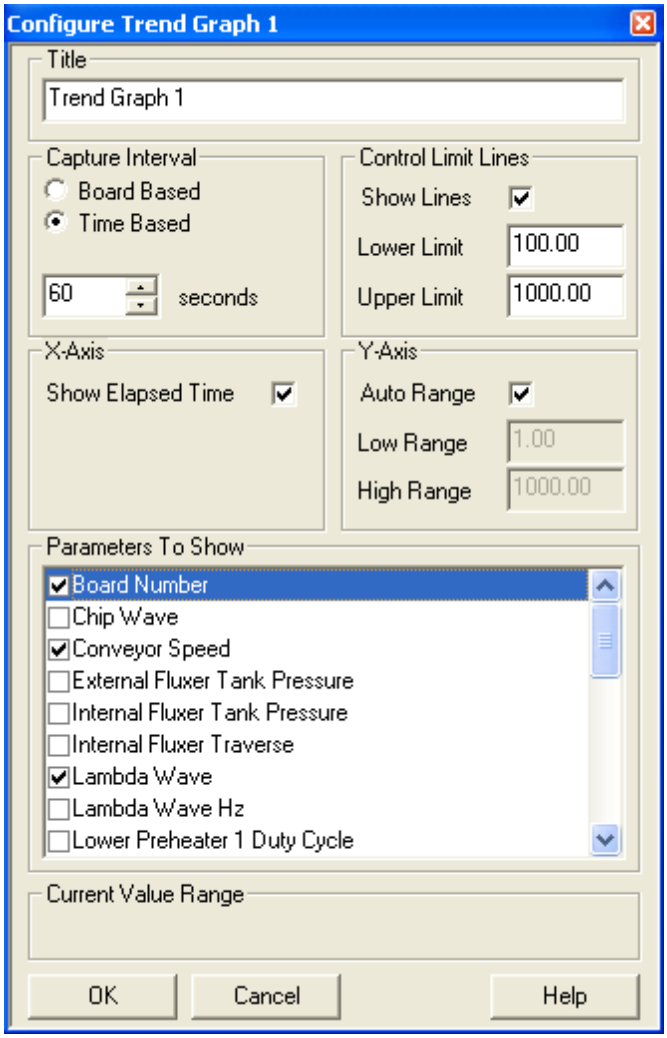
Mixed - Select this unit of measurement to display all parameters in Mixed format — all temperatures displayed in Metric and all other units of measurement in Imperial.



The **Units Configuration Page** may be accessed via:

Menu: **Configuration | Units**

1.5.6 Trending



The **Trend Configuration Page** may be accessed via:

Menu: **View | Trending | Trend Graph 1-6 | Options | Configure**

Toolbar:  **| Options | Configure**

Title
Enter the name you wish to use for this window.

Capture Interval
Board Based
Data will be collected for the selected parameters each time the system has processed this many boards.

Time Based
Data will be collected for the selected parameters every X amount of time.

Control Limit Lines
Show Lines
When selected Lower Limit and Upper Limit lines will appears in graph.

Lower Limit
If Show Lines is selected, put a dashed blue line at selected value. Cannot be higher than the Upper Limit value.

Upper Limit
If Show Lines is selected, put a dashed red line at selected value. Cannot be lower than the Lower Limit value.

X-Axis
Show Elapsed Time
When selected display in X-Axis the time elapsed since Trend was started.
If not selected, will display actual time in X-Axis

Y-Axis Range
Auto Range
When selected Y axis automatically range from minimum to maximum of the data accumulated.

Low Range
If Auto Range is not selected then a minimum value can be entered for Y Axis.

High Range
If Auto Range is not selected then a maximum value can be entered for Y Axis.

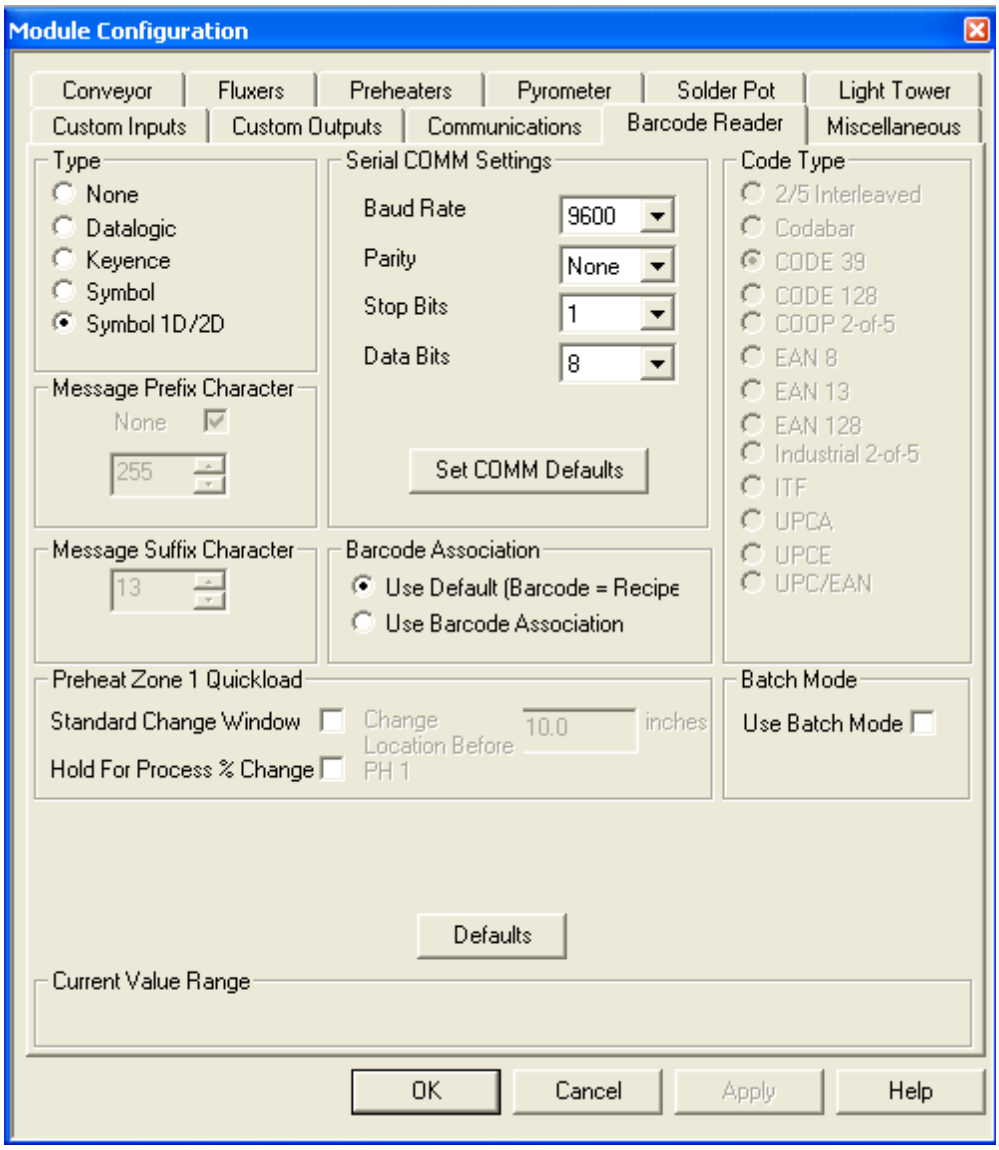
Parameters To Show
Make a selection of all items to be trend (Maximum 3).

1.5.7 Barcode Reader Configuration

The **Barcode Configuration** page is used to configure the barcode option and each of it's parameters. The barcode reader option allows the user to quickly load the appropriate recipe by scanning a barcode on the PCB or pallet being cleaned. This helps eliminate errors associated with running the incorrect recipe. The barcode information is also recorded in the active **Data Log** file.

NOTE: The machine must be in Stopped mode to enable access to the machine's Module Configuration function.

CAUTION: Do not attempt to add, remove, or change any selections within the Barcode Reader tab that has not first been physically installed, removed or changed on the machine. This could result in unnecessary alarms and/or unexpected behavior.



Click on a section of the **Barcode Reader** Configuration tab above to get a more detailed description of the parameters in that section.

The **Barcode Reader** Configuration tab may be accessed via:

Menu: **Configuration | Modules | Barcode Reader** tab

The 'Defaults' button is used to restore all barcode configuration parameters back to their default values. This will disable all barcode operations!

1.5.7.1 Type

Selection of only one (1) item is permitted within this category.

This configuration item is used to select type or brand of barcode scanner that is connected to the

machine.

None - No barcode scanner is connected to the machine. All barcode operations are disabled.

Keyence - A Keyence BL series or compatible scanner is connected to the machine.

Datalogic - Datalogic DS6100 series scanner is connected to the machine..

Symbol - A Symbol LS3000 series or compatible scanner is connected to the machine.

Symbol 1D/ 2D - A Symbol MS4404 series or compatible scanner is connected to the machine.

Note: When the barcode type **Symbol 1D/ 2D** is configured and reading Symbol barcodes such as Data Matrix or other multi line capable Barcodes make sure that the Barcode was made using ASCII (data mainly contains ASCII characters 0-127) Encoding.

1.5.7.2 Prefix Character

This configuration item is used to select if a prefix character will be used to signal the beginning of the data to be extracted from the scanned barcode message. The Barcode Reader should be setup to add this Prefix Value.
The default value is set to None.

None - If this is selected, no prefix character will be used and the data will start with the first byte in the scanned barcode message. If this box is empty (not selected), the data will start with the first byte following the first occurrence of the prefix character as specified in the edit box below. To select this option, click on the small box. A check mark will appear in the box.

Use the edit box to type in the ASCII number of the prefix character to be used. The spin controls on the right of the edit box may also be used to cycle up or down to the correct number. Refer to an ASCII chart for the code associated for the specified character.

Note: When the barcode type **Symbol 1D/ 2D** is configured Barcode Prefix and Suffix are set and can not be altered.

1.5.7.3 Suffix Character

This configuration item is used to select the suffix character used to signal the end of the data to be extracted from the scanned barcode message. The Barcode Reader should be setup to add this Suffix Value. The default suffix is 13.

Use the edit box to type in the ASCII number of the suffix character to be used. The spin controls on the right of the edit box may also be used to cycle up or down to the correct number. Refer to an ASCII chart for the code associated for the specified character.

Note: When the barcode type **Symbol 1D/ 2D** is configured Barcode Prefix and Suffix are set and can not be altered.

1.5.7.4 Serial COMM Settings

This configuration item is used to select and view the Serial COMM Settings. Depending on the Barcode Reader used shown in the section **Type**, these values should change. If **Type** is **None** then this section is grayed out.

If **Type** is **Datalogic** the settings are:
Baud Rate = 9600
Parity = Even
Stop Bits = 1
Data Bits = 8

Also, with **Datalogic** this section is grayed out.

If **Type** is **Keyence** the settings are:
Baud Rate = 9600
Parity = Even
Stop Bits = 1
Data Bits = 7
Also, with **Keyence** this section is grayed out.

If **Type** is **Symbol** the default settings are:
Baud Rate = 9600
Parity = Even
Stop Bits = 2
Data Bits = 7
With **Symbol** this section can be changed to allow for other Barcode Readers to be configured. The settings that can be changed and their ranges are listed below.

If **Type** is **Symbol 1D/2D** the default settings are:
Baud Rate = 9600
Parity = None
Stop Bits = 1
Data Bits = 8
With **Symbol 1D/2D** this section can be changed to allow for other Barcode Readers to be configured. The settings that can be changed and their ranges are listed below.

Use the drag down edit box to select the Settings of a Barcode Reader that is not pre configured. This can only be done if the **Type** is either **Symbol** or **Symbol 1D/2D**.

Note: If using the **Type** **Symbol 1D/2D** Barcode Reader that is not pre configured, the reader must be set up for Data first, 1st Suffix = 13 and 2nd Suffix = 12 (Data, Suffix 1, Suffix 2).

Baud Rate
300, 600, 1200, 2400, 4800, default = 9600, 19200, 38400, 57600, 115200

Parity
None, Odd, Even

Stop Bits
1, 2

Data Bits
7, 8

1.5.7.5 Barcode Association

Use Default Recipe Association
Selecting this option requires that the barcode or a portion of the barcode must be stored in the Current Recipe folder as the recipe name.

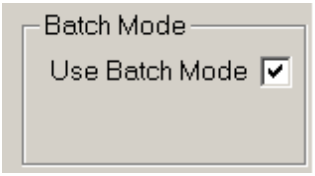
Use Barcode Association
Selecting this option allows using the Barcode scanned or a portion of the Barcode to be used to run a recipe with a different Name. The recipe name does not need to be a portion of the Barcode

1.5.7.6 Batch Mode

By checking "Use Batch Mode", a barcode can be scanned and all the boards that follow after this initial scan will use the recipe and barcode of this scan. This will continue until a new scan is made which will change the barcode and recipe for the boards to follow.

Data Logging will capture the information for each board as normal, except for the recipe and barcode, which will be based on the current scanned barcode.

Note: The "Barcode: Incoming Board Was Not Scanned" Alarm will not trigger during this Mode.



1.5.7.7 Code Type

Selection of only one (1) item is permitted within this category.

This configuration item is used to select the barcode code type. Available selection vary by type of barcode scanner configured. This configuration option is not available for the Symbol Technologies scanners. These scanners are programmed by scanning various barcode from their manual

The following is a list of barcode code types.

-2/5 Interleaved
-Codebar
-CODE 39
-CODE 128
-COOP 2-of-5
-EAN 8
-EAN 13
-EAN 128
-Industrial 2-of-5

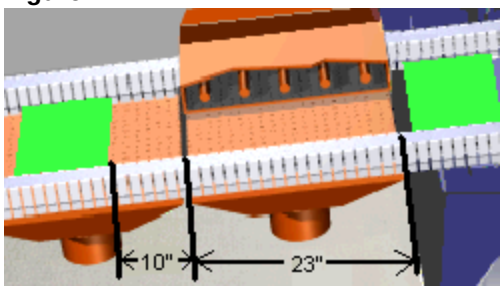
-ITF
-UPCA
-UPCE
-UPC/EAN

1.5.7.8 Preheater Zone 1 Quickload

Preheat Zone 1 Quickload

Standard Change Window
This item is accessible if a Barcode Type other then None is chosen, there is at least one Preheater configured and the **Hold for Process % Change** Box is not checked. This option incorporates the same Setup and features as any of the other Quickload Parameters. When a PCB enters a Pre-Configured Zone or Window, the Setpoint is changed for that particular Function as long as no other boards are currently in that same zone or window. The Preheat Start of Window is configured on the Barcode Configuration Page. See **Change Location before PH1** below. This Value is the distance before the Location of the Start of the Preheat #1 Zone in which the Setpoint for Lower and Upper #1 Preheat Temperatures are changed. The End of the Zone is not configurable and is set to correspond with the end of the Preheat Section or 23.0" (584.2mm) after the beginning of Preheat #1. In the example below (Figure 1), the Start Window is set to 10.0" (254 mm) before Preheat #1. Since no other Boards are within the Zone, the Temperature Setpoints will change for Lower and Upper Preheat #1. If a board is already in the Window, the Setpoints would remain the same and not change.

Figure 1



When using this feature, the **Quickload Board Spacing Time** should be set to account for the entire zone to prevent having multiple boards within the window.
In this example the full width of the zone would be 33 " or 838.2 mm. At 5 feet per minute (1.52 meters per minute) the Spacing Time would be at least 33 Seconds. This can easily be calculated. See **Calculations** below using above example:

ChLoc - Change Location before Preheat #1 set on the Barcode Configuration page (10" in this example).

EndLoc - End Distance from start of Preheat #1, by default = 23.0" or 584.2 mm.

WL - Window Length = **ChLoc + EndLoc**

Imperial Units Calculations:

WL = (10" + 23") = 33"

Quickload Spacing Time = (WL / (Conveyor Speed*0.2))

Quickload Spacing Time = 33.0 / (5 * 0.2) = 33 Seconds

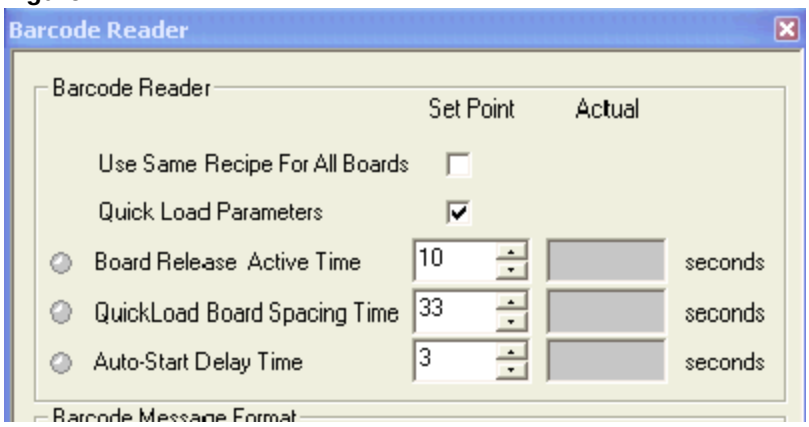
Metric Units Calculations:

WL = (254 mm + 584.2 mm) = 838.2 mm

Quickload Spacing Time = (WL / (Conveyor Speed*16.6667)

Quickload Spacing Time = 838.2 / (1.52 * 16.667) = 33 Seconds

Figure 2



Change Location Before PH 1

This is the value used in conjunction with the Preheat Zone 1 Change window. This setting can only be changed if the **Standard Change Window** is selected. This sets the distance before Preheat Zone #1 in which the Preheat Setpoints are changed. Please note that the Distance to the start of the Preheater Zone 1 is configurable and set on the Conveyor Configuration Page.

Hold for Process % Change

This item is accessible if a Barcode Type other then None is chosen, there is at least one Preheater configured and the **Standard Change Window** Box is not checked. When this is selected, the Quickload checkbox on the Barcode Operations Page will need to be checked, see Figure 2 above. When a Barcode is scanned on a new Board or Pallet, the Temperature Setpoints of Preheat Zone 1 from the newly scanned board are compared with the Current Setpoints. If they are within the Process Tolerance as set on the alarm configuration Page, then the Board is allowed to enter the machine under the previous setpoints. Otherwise the board is held until all boards in the machine pass Preheat Zone 1. When the last board passes Preheat 1, the Setpoint(s) for Preheat Zone 1 are changed to the newly scanned Recipe and the board is allowed to enter when the Temperature(s) are within the previous mentioned Process Tolerance. The new Temperature Setpoints are then used for comparison when scanning the next Barcode. See Example Below:

Recipe A	Recipe B	Recipe C
Lower Preheat 1 -	Lower Preheat 1 -	Lower Preheat 1 - 220 °F

200 °F	**210 °F**	
Upper Preheat 1 - 300 °F	**Upper Preheat 1 - 290 °F**	**Upper Preheat 1 - 281 °F**

Alarm Configuration Process % = 5.00
Recipe A is scanned and enters the Machine, The board is well within the Preheat Zone.

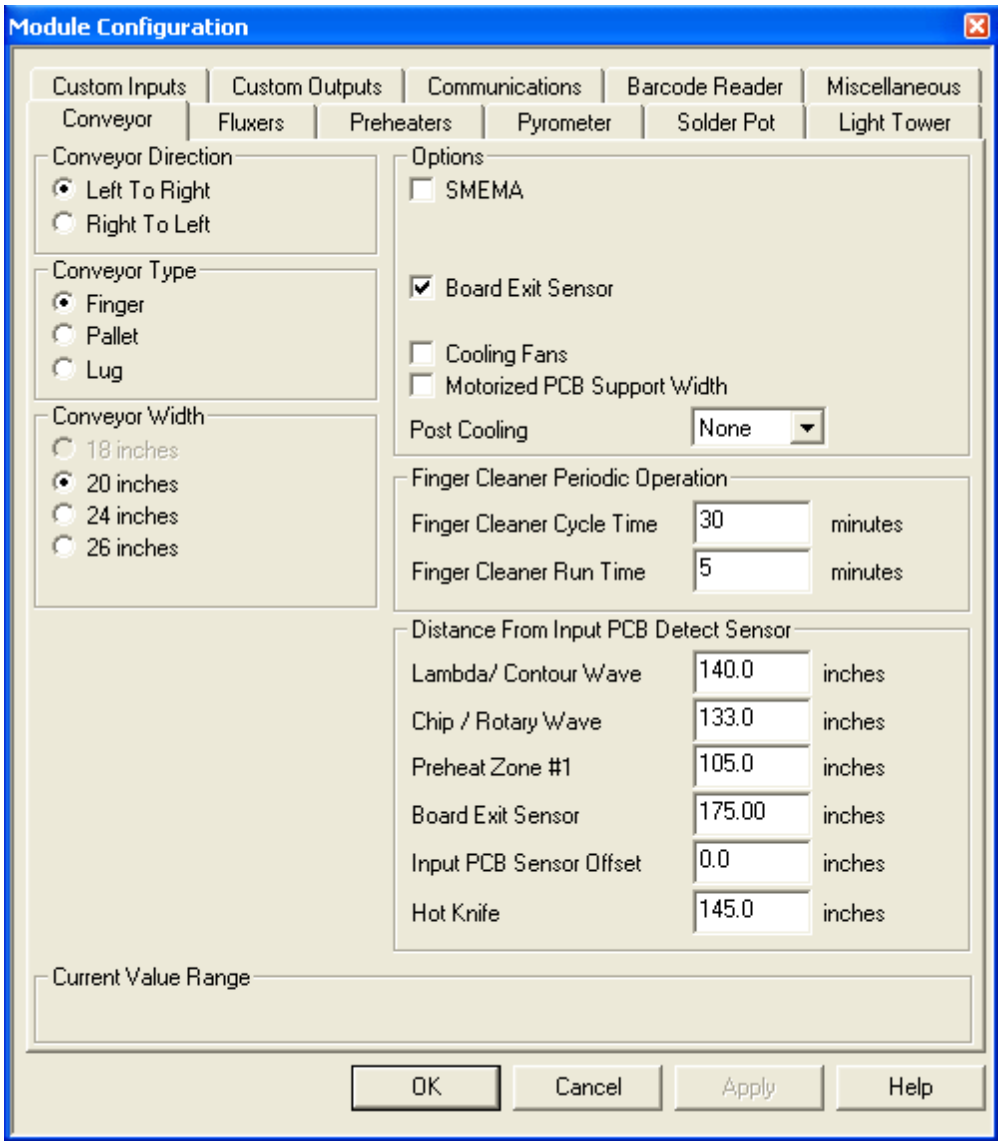
Recipe B is scanned; the Temperatures are compared with the Current Setpoints. Since +/- 5% of 200 = 190 to 210, Lower Preheat 1 is OK. Upper Preheat 1 at 300 and 5% tolerance has an accepted range of 285 to 315. So Upper Preheat 1 is acceptable. The Board is allowed to enter the Machine, leaving the Preheat Setpoints at Recipe A Settings.

Recipe C is scanned. Lower Preheat 1 setpoint of 220 °F is not within the acceptable range and Upper Preheat 1 with a Setpoint of 281 °F is also out of Tolerance. The Board is held. Once the current boards of Recipe A and Recipe B clear the Preheat Zone, the Setpoints for Preheat Zone 1 are changed to match Recipe C. When the Temperatures are within the 5% Tolerance the board is released and allowed to enter the Machine.

Defaults
To reset the default values, click on the Restore Defaults button.

1.5.8 Conveyor Configuration

The **Conveyor Configuration** page is used to input the varied parameter configuration settings associated with the Conveyor.



Click on a section of the Conveyor Configuration tab above to get a more detailed description of the parameters in that section.

The **Conveyor** Configuration may be accessed via:

Menu: **Configuration | Modules**

1.5.8.1 Conveyor Direction

Selection of only one (1) item is permitted within this category.

To select features within the Conveyor Direction and Conveyor Type categories, use the pointing device and click on the bullet box that it is associated with. A bullet present in the bullet box indicates it is selected.

Left To Right - Select this conveyor direction if the conveyor installed in your machine transports PCBs at an incline from left to right.

Right To Left - Select this conveyor direction if the conveyor installed in your machine transports PCBs at an incline from right to left.

1.5.8.2 Conveyor Options

Selection of the following options is made using the pointing device and clicking on the check box associated with it. A check mark present in the box indicates it is selected.

Cooling Fans - Selection of this option indicates that Cooling Fans are installed at the exit end of the conveyor system.

Motorized PCB Support - This selection indicates the presence of a motorized board support system on the conveyor. Ensure this feature is installed prior to selecting it. Selection of this item is indicated by a check mark in the box associated with this feature.

SMEMA
Click to enable SMEMA.

Finger Cleaner (with Pump)
Click to enable Finger Cleaner Option with Pump (VectraElite and VectraES Only).

Fixed Rear Rail
Click to enable Rear Fixed Rail Option if an Opti or Performa, Fixed Rear Rail Fluxer is installed.

Note: If the above mentioned Fluxers are installed, but are not the Fixed Rear Rail Type, selecting this can cause Communication failures with the Fluxer.

Board Exit Sensor
Click on the check box to the left of this option to place or remove a check mark in the box. A check mark in the check box indicates that it is selected. The exit sensor is located at the unload end of the machine.

Topside / Bottom side Cooling
Select Topside or Bottom side Cooling Option.

1.5.8.3 Distance from Input Sensor

Lambda / Contour Wave
Distance from incoming photocell to First Contact Point of the Lambda / Contour Wave. This value will change if an External Fluxer is added or removed.

Chip / Rotary Chip Wave
Distance from incoming photocell to First Contact Point of the Chip Wave. If the Chip Wave Option is not selected, this value will be inaccessible. This value will change if an External Fluxer is added or removed.

Hot Knife (HAK)
Distance from incoming photocell to the Hot Knife. If the Hot Knife Option is not selected, this value will be inaccessible. This value will change if an External Fluxer is added or removed.

Preheat Zone #1
Distance from incoming photocell to Preheat Zone #1. Since this setpoint is used for the Barcode Quickload Option, it is inaccessible if the Barcode Reader Type is set to None. Also, if there are no Preheat configured, the setting will be inaccessible. This value will change if an External Fluxer is added or removed.

Board Exit Sensor
Distance from incoming photocell to the Exit Photocell. If the Board Exit Option is not selected, this value will be inaccessible. This value will change if an External Fluxer is added or removed.

Input PCB Sensor Offset
The Distance from the standard location of the incoming photocell to the new revised location. The Standard Location is Just outside the Machine, unless an External Fluxer is Mounted and then just outside the fluxer. This value by default is 0. If the sensor is moved before the standard location towards the Feed Conveyor at the Load end this value will be negative and if it is positioned closer to the Exit Conveyor or Unload End it will be positive. A Value of +/- 50" (1270mm) is allowed. This value will be reset to 0 if an External Fluxer is added or removed.

Note: When the Input PCB Sensor Offset is changed, the other distance values are also effected including the Lambda/ Contour and Chip Wave, HAK and Board Exit Sensor Locations. Also the visual board tracking view is updated.

1.5.8.4 Finger Cleaner

Finger Cleaner Cycle Time
If the desired operation of the finger cleaner requires that it run periodically while the conveyor is running, input the period of operation, in minutes, in this box. This number is used only if the finger cleaner setpoint is set to Timing

Finger Cleaner Run Time
If it is desired that the finger cleaner run only for a short period of time during conveyor operation, enter the amount of time that the cleaner is to run, in minutes, in this box. This number is used only if the finger cleaner setpoint is set to Timing

1.5.8.5 Conveyor Type

Selection of only one (1) item is permitted within this category.

Finger - This selection indicates the presence of a Finger type conveyor.

Pallet - This selection indicates the presence of a Pallet type conveyor.

Lug - This selection indicates the presence of a Lug type conveyor. The maximum conveyor width is decreased by 4.00 inches with this option.

1.5.8.6 Conveyor Width

Selection of only one (1) item is permitted within this category.

18 inches - This selection indicates the presence of an 18 Inch width conveyor. (VectraElite only)

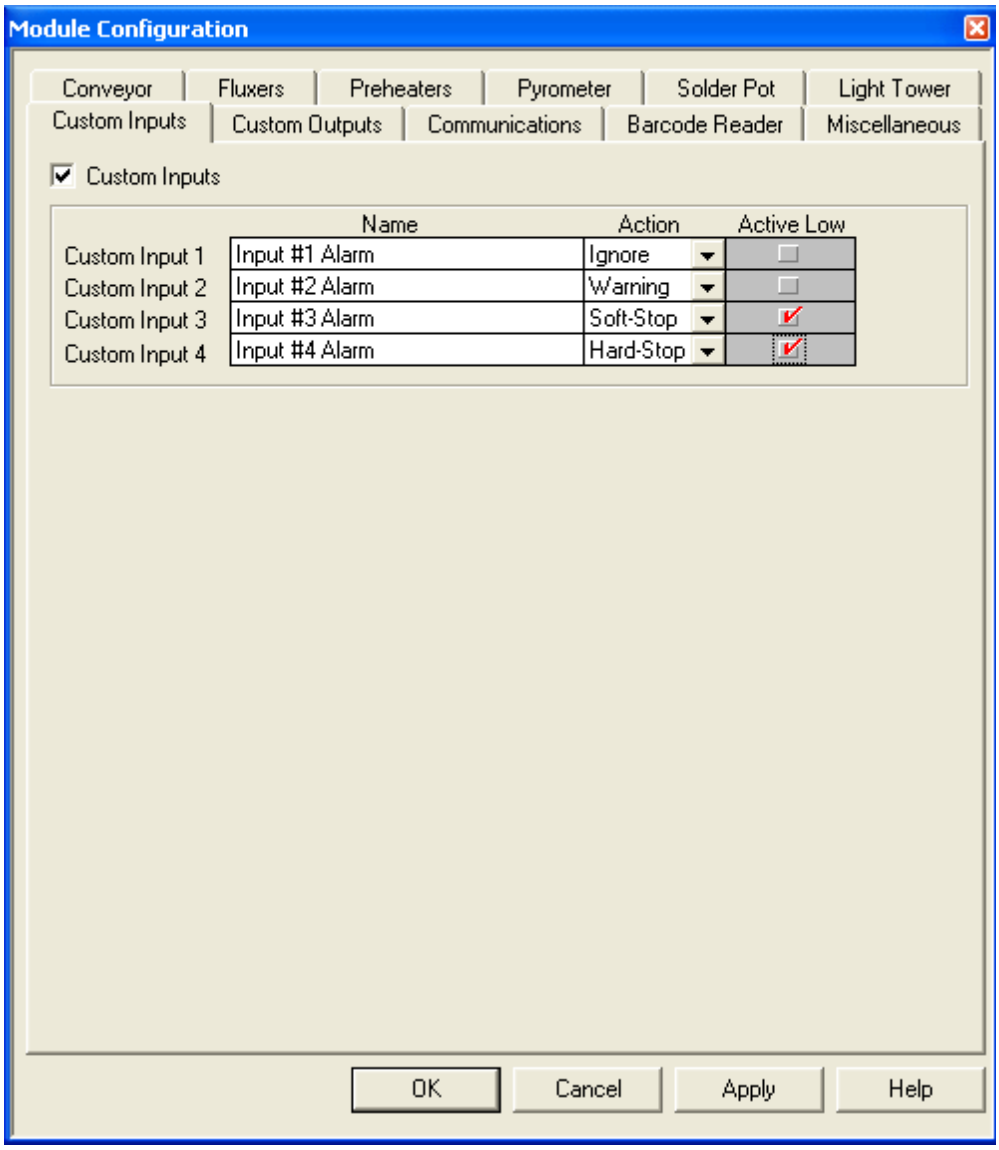
20 inches - This selection indicates the presence of a 20 Inch width conveyor.

24 inches - This selection indicates the presence of a 24 Inch width conveyor. (Electra only)

26 inches - This selection indicates the presence of a 26 Inch width conveyor. (Electra only)

1.5.9 Custom Inputs

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Custom Inputs** Configuration may be accessed via:

Menu: **Configuration | Modules | Custom Inputs** tab

Click on the Custom Inputs tab within the System Configuration dialog box to access its features.
If your machine is configured with the SMEMA Option, Inputs 1 & 2 are utilized for SMEMA; otherwise the Four (4) User Programmable Inputs can be used. The Custom Inputs feature must be selected to utilize its functions.

Custom Inputs
Click on the check box to the left of this option to place or remove a check mark in the box. A check mark in the check box indicates that it is selected.
Custom Inputs utilize signals, from an external piece of equipment, entering the The signal is processed via software through a selected input channel, for a specific alarm indication. By communicating this

signal, the external equipment utilizes the selected Machine alarm.

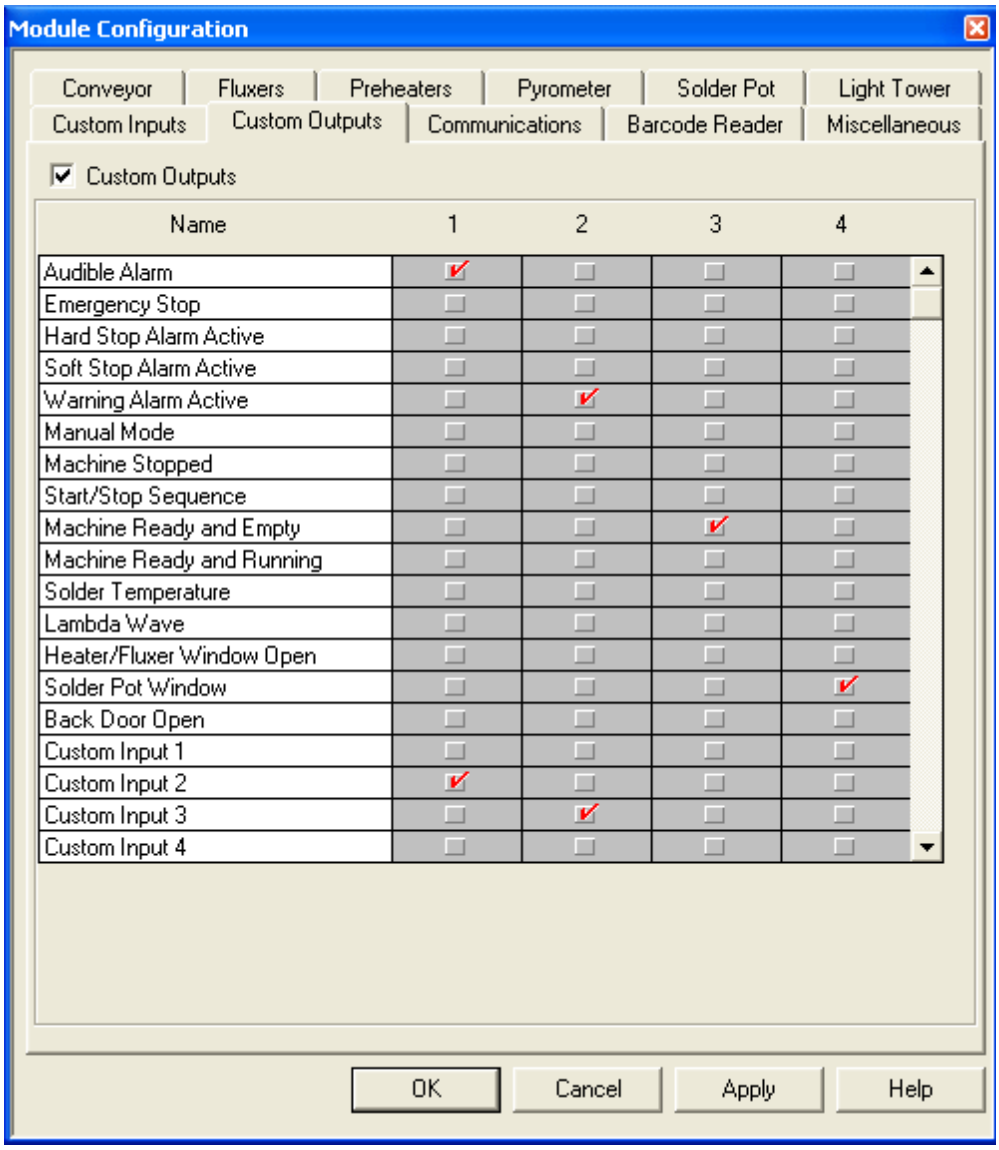
There are three (3) fields
Name
You can enter the name you want for the input. This is the text that will display when its alarm occurs.

Action
Ignore - ignores all alarm conditions.
Warning - sounds an audible alarm and displays a message on the screen.
Soft Stop - stops all modules of the machine except the conveyor. After all remaining PCBs have exited the machine, the conveyor will shut down.
Hard stop - Same as an Emergency Stop switch being activated.

Active Low
A check mark in the box indicates that this entry is active low otherwise this entry is active high.

1.5.10 Custom Outputs

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Custom Outputs** Configuration may be accessed via:

Menu: **Configuration | Modules | Custom Outputs** tab

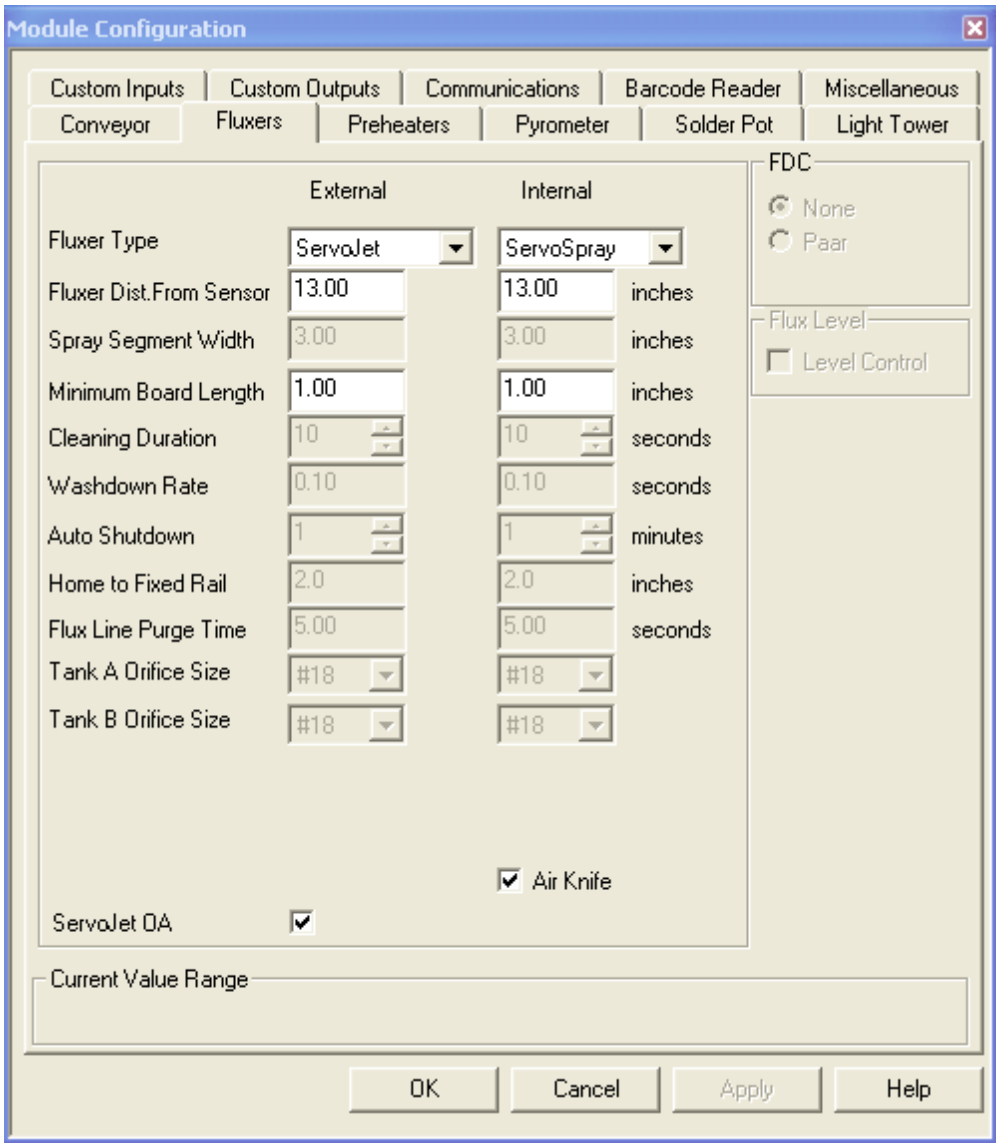
If your machine is configured with the SMEMA Option, outputs 1 & 2 are utilized for SMEMA. If your machine is configured with a barcode scanner and without the SMEMA Option, Programmable Output #1 is used to communicate upstream when the machine is ready to process boards, otherwise the Four (4) User Programmable Outputs can be used. The Custom Outputs feature must be selected to utilize its functions.

Custom Outputs
Click on the check box to the left of this option to place or remove a check mark in the box. A check mark in the check box indicates that it is selected.
Custom Outputs utilize signals from this machine to an external piece of equipment. Signals are

processed through the machine software via selected output channels for specific machine conditions. The output signal is then generated and sent to the external equipment.
Outputs can be customized by choosing the output number associated with the machine condition to be triggered — the machine condition listed in the Name column. It is possible to have several machine conditions trigger the same output number or the same machine condition to trigger more than one output number.
To select an output number for the machine condition listed under Name, click on the check box under the output number associated with the name. A red check mark appears in the check box when it is selected.

1.5.11 Fluxer Configuration

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



Click on the Fluxer tab within the Module Configuration dialog box to access its features.

The **Fluxers** Configuration may be accessed via:

Menu: **Configuration | Modules | Fluxers**

CAUTION: Do not attempt to add, remove, or change any selections within the Fluxer module tab that has not first been physically installed, removed or changed on the machine. This could result in software lockups.
The following describes each of the optional selections listed within the Fluxer tab:

1.5.11.1 External Fluxer Type

None - when selected indicates that NO fluxer is installed on the outside of the main machine cabinet.

Foam - indicates the presence of an external Foam fluxer. The External Foam Fluxer cannot be selected if an Internal Foam or Wave Fluxer is present.

Opti II - indicates the presence of an external ultrasonic, reciprocating spray head fluxer with dual Flux Tanks.

SelectaSpray - indicates the presence of an external fixed head(s) spray fluxer.

Sono-Tek - indicates the presence of an external adjustable nozzle position and spray width, fixed head spray fluxer.

Performa - indicates the presence of an external traversing head spray fluxer.

Optima - indicates the presence of an external Traversing spray head fluxer.

ServoJet - indicates the presence of an external Jet Spray fluxer.

ServoSpray - indicates the presence of an external traversing head spray fluxer.

ServoSonic - indicates the presence of an external traversing Ultrasonic spray fluxer.

Non-Integrated - indicates the presence of a Non-Integrated type fluxer. On the Electra this item is not selectable and will default to "None" when it is attempted.

Selection of an option is made using the pointing device and clicking on the Pull-down Menu Under the External Selection Menu. Items that are not available will by default return to "None" and not allow the selection.
Only one (1) selection may be made within the external "Fluxer Type" field.

On a Vectra only, The incoming board detect Photocell should be moved to a position before the Fluxer, when an external fluxer is configured.

1.5.11.2 Internal Fluxer Type

None - when selected indicates that NO fluxer is installed in the machine.

Foam - indicates the presence of an internal Foam fluxer.

Wave - indicates the presence of an internal Wave fluxer.

Opti II - indicates the presence of an internal ultrasonic, reciprocating spray head fluxer with dual Flux Tanks.

SelectaSpray - indicates the presence of an internal fixed head(s) spray fluxer.

Sono-Tek - indicates the presence of an internal adjustable nozzle position and spray width, fixed head spray fluxer.

Performa - indicates the presence of an internal traversing head spray fluxer.

Optima - indicates the presence of an internal Traversing spray head fluxer.

ServoJet - indicates the presence of an internal Jet Spray fluxer.

ServoSpray - indicates the presence of an internal traversing head spray fluxer.

ServoSonic - indicates the presence of an internal traversing Ultrasonic spray fluxer.

Selection of an option is made using the pointing device and clicking on the Pull-down Menu Under the Internal Selection Menu. Items that are not available will by default return to "None" and not allow the selection.

Only one (1) selection may be made within the internal "Fluxer Type" field.

When selecting Foam or Wave as the type of fluxer, the following selections associated with this type of fluxer are also available. If any of these options are installed, they should be selected.

FDC

Options

1.5.11.3 Flux Density Controller

None - select this item if there is not an FDC (Flux Density Control) installed.

Paar - selection of this option indicates the presence of an FDC with the Foam or Wave fluxer.

1.5.11.4 Fluxer Options

Level Control
Select this item if the Flux Level Control feature of the Wave or Foam Fluxer is installed.

Selection of this item is indicated by a check mark in the box associated with this feature. Clicking on

the box using the pointing device will either place or remove the check mark in the box.

Note: This Option is not allowed when a PAAR FDC is configured.

Fluxer Flow Meter (Performa Fluxer)
Select this item if Flux Flow Meter is installed.

Selection of this item is indicated by a check mark in the box associated with this feature. Clicking on the box using the pointing device will either place or remove the check mark in the box.

1.5.11.5 Fluxer Parameters

NOTE: This section will appear only if an Opti, Opti II, Supa, Performa or AccuSpray fluxer is selected.

Spray Segment Width – Opti, Opti II, Supa, Performa and AccuSpray.
Must be set to the actual spray width produced by the spray head(s).

Deceleration Sensor Distance – Opti, Supa, and AccuSpray.
Sets the distance in inches between the fixed rail proximity sensor and the deceleration sensor.

Minimum Board Length – Opti, Opti II, Supa, Performa and AccuSpray.
Sets the minimum board length in inches, acceptable by the photocell. Any board passing by the photocell that is equal to or less than the minimum value will be ignored by the system, and will not have flux applied to it.

Cleaning Duration – Opti, Opti II, Performa and Supa Only.
Sets the amount of time in seconds for the duration of the self-cleaning cycle of the spray head.
Note: On the Performa Fluxer, a setting of 0 is used if the Wash-down Option is not present or not used.

Wash-down Rate – Opti, Opti II, Performa and Supa Only.
Sets the pulse rate in tenths (.10) of seconds, that solvent is sprayed onto the external surfaces of the spray head during the cleaning cycle.

Auto Shutdown – Opti, Opti II and Performa Only.
The amount of time after the last board before the system performs cleaning operation and put the fluxer in idle mode.

Home to Fixed Rail – Opti II and Performa Only.
The distance from Spray Head at Home Position to Fixed Rail Position.

Flux Line Purge Time – Opti II Only.
The amount of time required to purge the flux lines.

Fluxer Distance From Sensor – All Spray Fluxers.
The distance from incoming Board Detect Sensor to Spray Head.

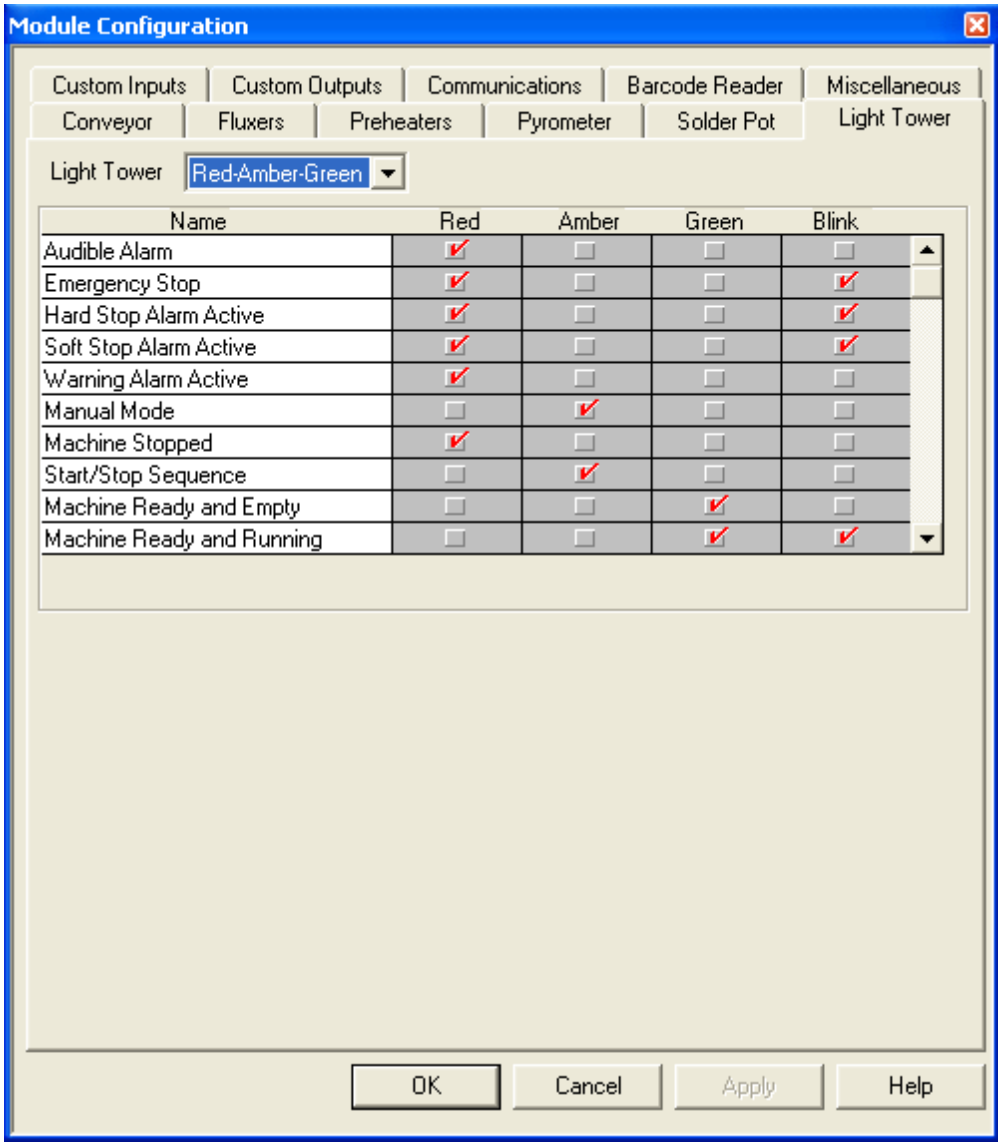
Tank A Orifice Size – Opti II Only.
Select between a #28 and #18 size orifice for Tank A. This value is used when the "Auto Configure" box has been checked on the Fluxer Operations Module.

Tank B Orifice Size – Opti II Only.

Select between a #28 and #18 size orifice for Tank B. This value is used when the "Auto Configure" box has been checked on the Fluxer Operations Module.

1.5.12 Light Tower

NOTE The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Light Tower** Configuration may be accessed via:

Menu: **Configuration | Modules | Light Tower** tab

The Light Tower may be configured as one of three (3) choices:

None - When selected indicates NO Light Tower is installed.

Red-Amber-Green - When selected, indicates a Light Tower with this color combination for machine status, is installed on the external cabinet of this machine.

Red-Amber-Blue - When selected, indicates a Light Tower with this color combination for machine status, is installed on the external cabinet of this machine.

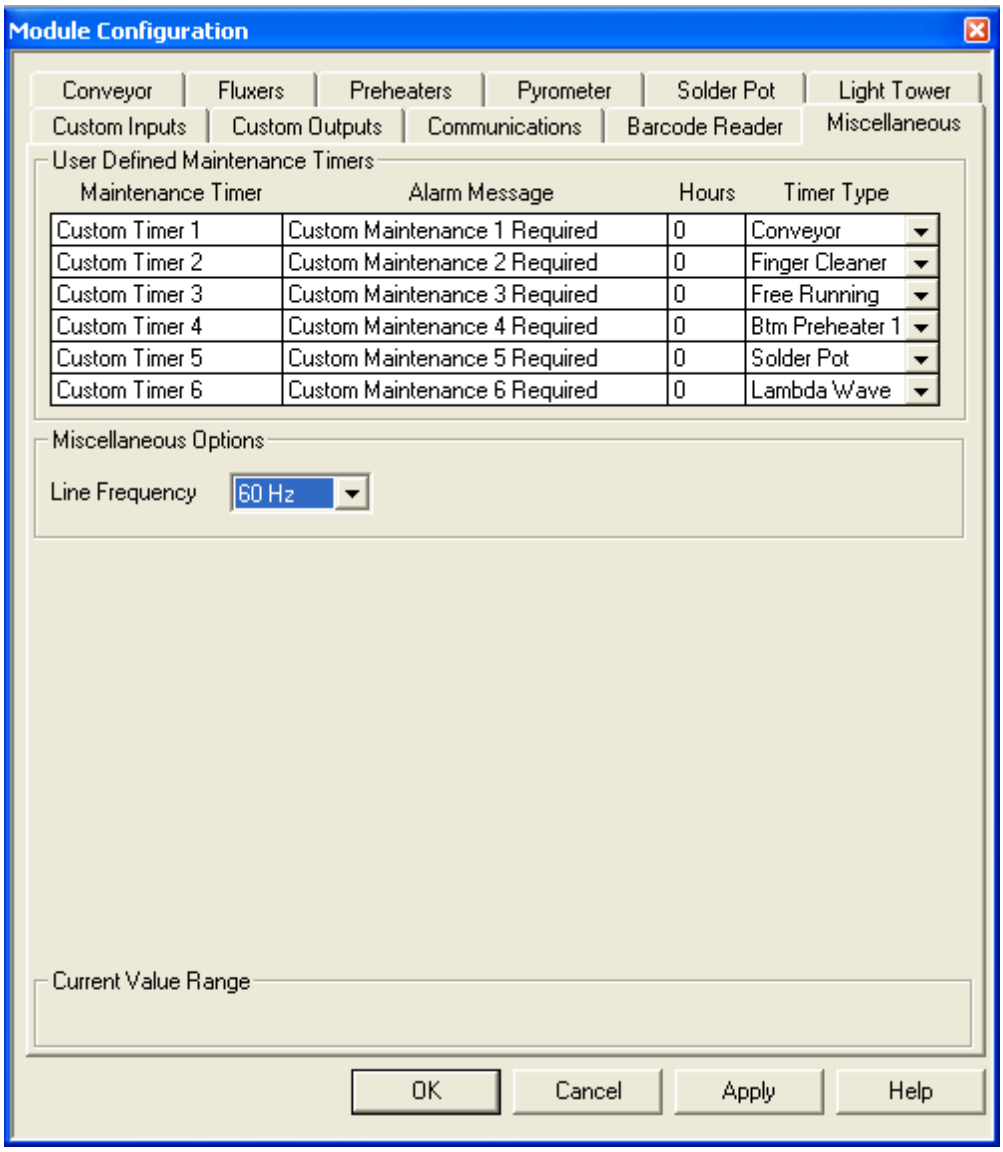
Name
A list of specific machine conditions that can be configured for Light Tower indication, is displayed under the field heading Name.

Color Indication
Across from the Name field are four (4) fields, of which one (1) or two (2) selections may be made to represent the machine condition. It is possible that no selection may be made for specific machine condition names.
For Example: The user wants to know when the machine is in Manual Mode. Find the machine condition Manual Mode under the name field. Across from Manual Mode, a red check mark is in the Green and Blink check boxes. This indicates that when the machine is in Manual Mode, the Light Tower will Blink on Green.
Make the appropriate selections for light tower configuration to represent the machine conditions required by clicking on the check box in the color field or blink field desired. Clicking on the check box places a red check mark in it. Clicking on the box again will remove the check mark from the check box. A red check mark in the box indicates it is selected.

1.5.13 Miscellaneous

The **Miscellaneous Configuration** page is used to configure the Custom Maintenance Timers and the machine's incoming line frequency.

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Miscellaneous** Configuration may be accessed via:

Menu: **Configuration | Modules | Miscellaneous** tab

Custom Maintenance Timers

Set of six user definable maintenance timers. The user can specify the timer's name, alarm message, interval, and whether the timer is based on time, machine cycles, or the amount of time a specific device is on.

Maintenance Timer: Specifies the name of the maintenance timer. This will be the name of the timer in the **Maintenance Timer** view.

Alarm Message: Specifies the text that will appear in the **Alarm Status** window and the **Event Log**. The **Alarm Status** window can display approximately 45 characters.

Interval: Specifies the time or number of machine cycles before activating the maintenance timer.

Timer Type: Specifies whether the timer is based on time, completed machine cycles or the time a specific device is on. Use the drop down box to select the appropriate timer type from the list below:

Free Running: Based on clock time.

Conveyor: Based on the amount of time the Conveyor is on.

Finger Cleaner: Based on the amount of time the Finger Cleaner is on.

Btm Preheater 1: Based on the amount of time the Btm Preheater 1 is on.

Solder Pot: Based on the amount of time the Solder Pot is on.

Lambda Wave: Based on the amount of time the Lambda Wave is on.

Miscellaneous Options

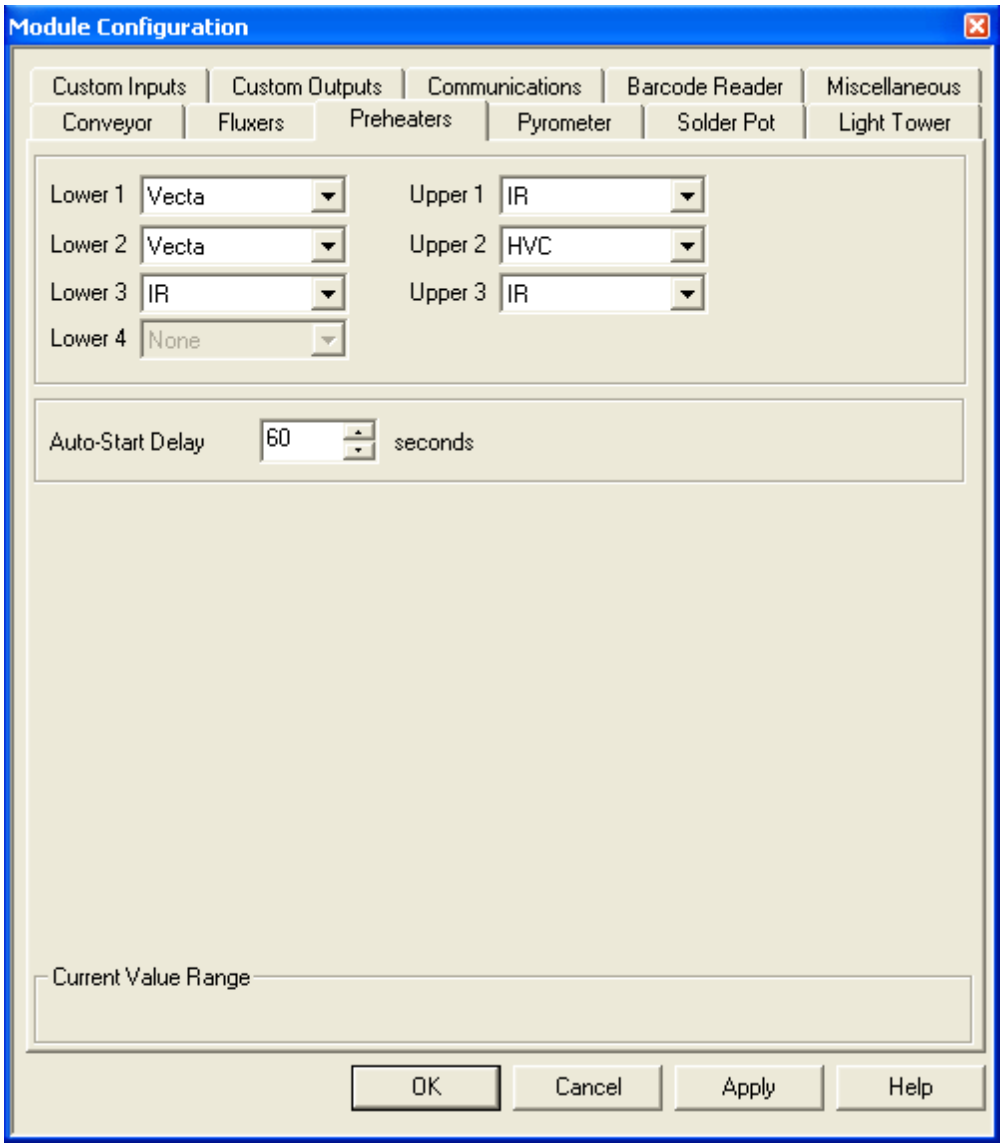
Line Frequency - Select either 50 Hz or 60 Hz from the drop down box to match the machine's incoming line frequency.

The **Miscellaneous Configuration Page** may be accessed via:

Menu: **Configuration | Modules => Miscellaneous tab**

1.5.14 Preheater

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Preheaters** Configuration tab may be accessed via:

Menu: **Configuration | Modules | Preheaters** tab

CAUTION: Do not attempt to add, remove, or change any selections within the Preheaters module tab that has not first been physically installed, removed or changed on the machine. This could result in software lockups.

The following describes each of the optional selections listed within the Preheaters tab:

Lower 1
Lower 2
Lower 3
Lower 4 (ElectraElite only)

VectraElite Selections
Each may be configured as one of four choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
Vecta - when selected indicates a Vectaheat™ type preheater is installed in the designated location.
Vecta Plus - when selected indicates a Vectaheat™ type preheater is installed in the designated location with the addition of Blower Speed Control.

VectraES Selections
Each may be configured as one of three choices:
None - when selected indicates NO preheater installed in the designated preheater location.
Calrod IR - when selected indicates Low Mass Radiant type of preheater is installed in the designated preheater location.
LMFC - when selected indicates a Low Mass Forced Convection type Calrod preheater is installed in the designated location. Includes Blower Speed Control.

ElectraElite Selections
Each may be configured as one of four choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
Vecta - when selected indicates a Vectaheat™ type preheater is installed in the designated location.
Vecta Plus - when selected indicates a Vectaheat™ type preheater is installed in the designated location with the addition of Blower Speed Control.

Upper 1
Upper 2
Upper 3

VectraElite Selections
Each may be configured as one of three choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
HVC - when selected indicates a Low Mass Convection type preheater is installed in the designated location. Includes Blower Speed Control.

VectraES Selections
Each may be configured as one of two choices:
None - when selected indicates NO preheater installed in the designated preheater location.
Calrod IR - when selected indicates Low Mass Radiant type of preheater is installed in the designated preheater location.

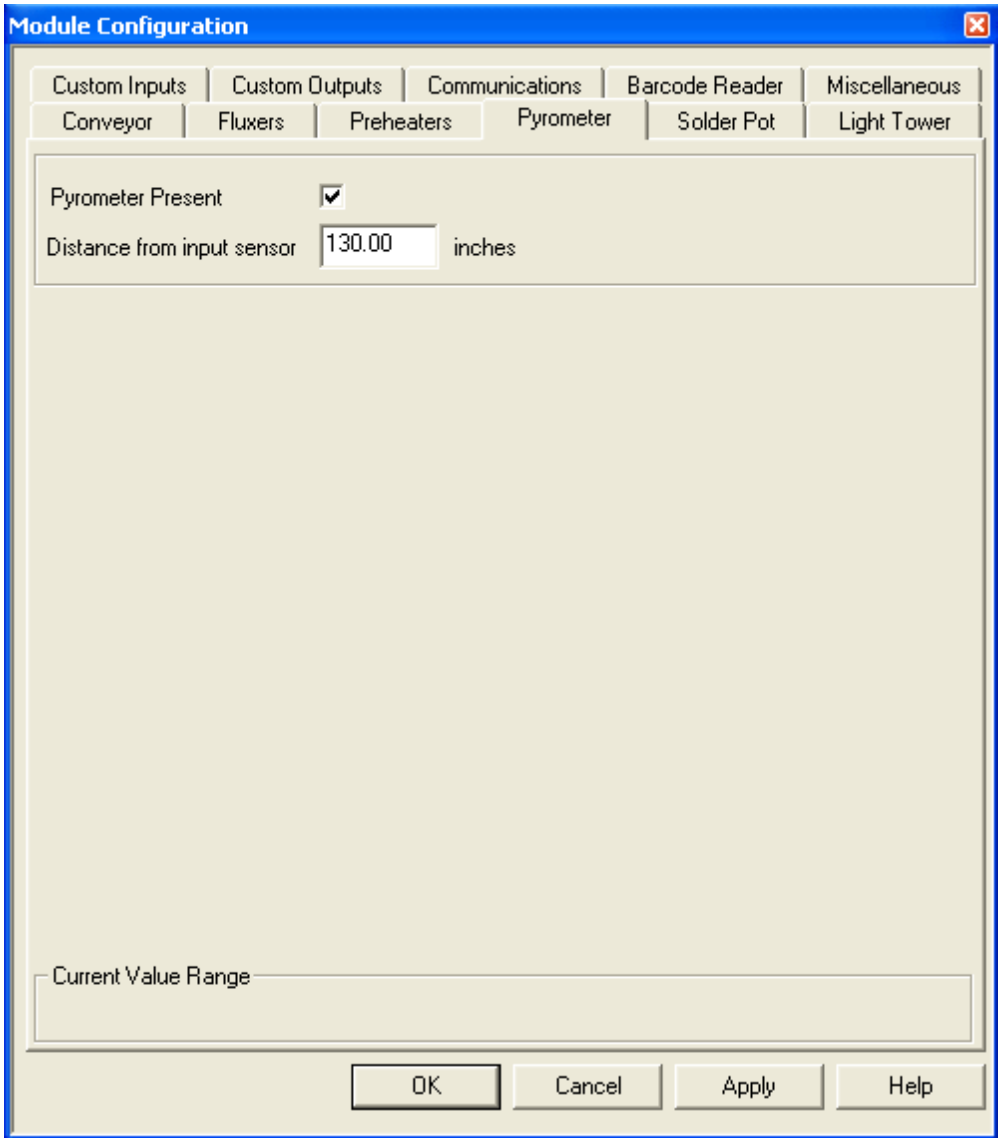
ElectraElite Selections
Each may be configured as one of three choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
HVC - when selected indicates a Low Mass Convection type preheater is installed in the designated location. Includes Blower Speed Control.

Selection of an option is made using the pointing device and clicking on the arrow in the scroll bar of the drop-down list box and highlighting the option. The selected option appears in the drop-down list box when releasing the pointing device.

Auto Start Delay
This is the amount of time the software will delay going to Ready after the preheat has reached setpoint. This is to give the pre-heaters time to stabilize the machine's internal temperature before starting the process.

1.5.15 Pyrometer

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Pyrometer** Configuration tab may be accessed via:

Menu: **Configuration | Modules | Pyrometer** tab

CAUTION: Do not attempt to add, remove, or change any selections within the Pyrometer module tab that has not first been physically installed, removed or changed on the machine. This could result in software lockups.

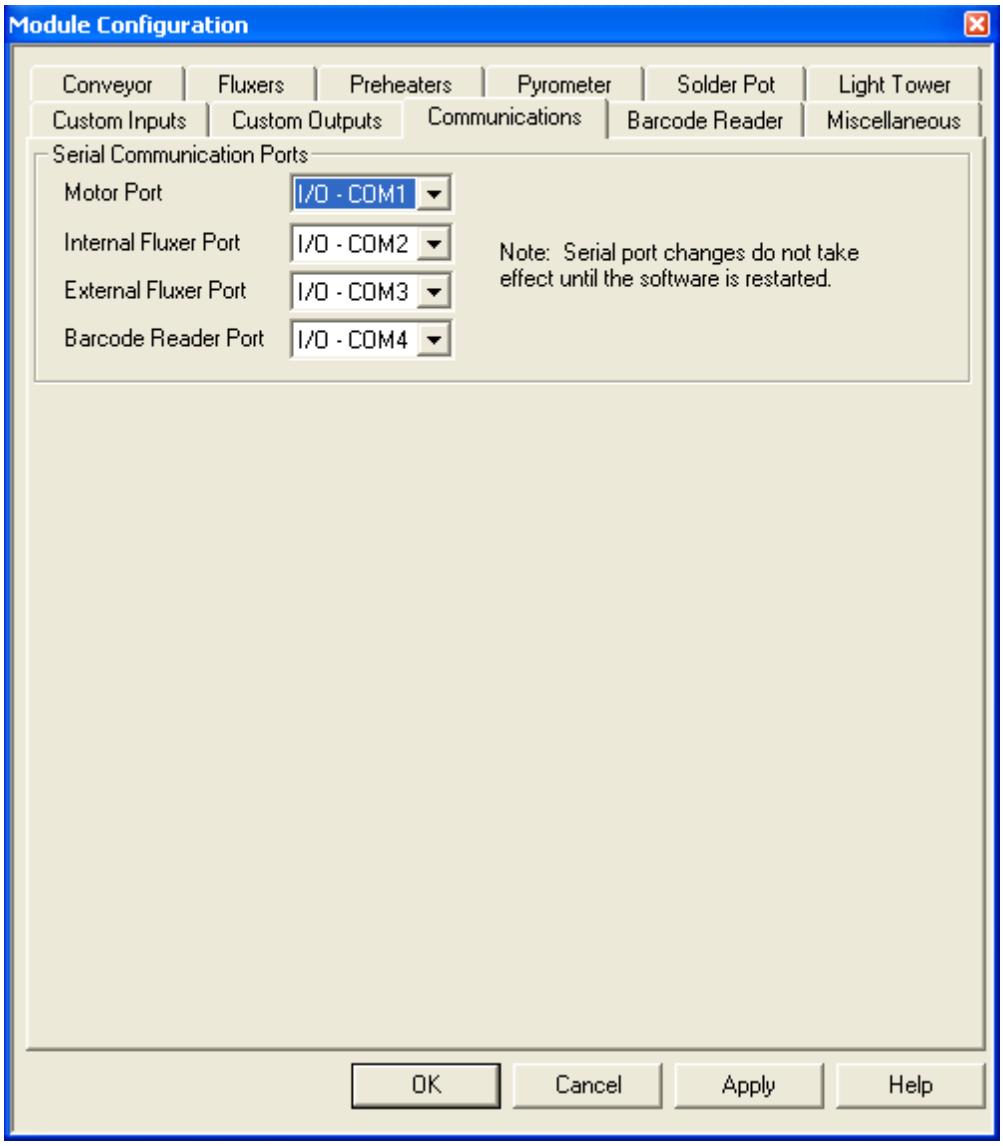
The following describes each of the optional selections listed within the Pyrometer tab:

Pyrometer Present
- Click on the check box to the right of this option to place or remove a check mark in the box. A check mark in the box indicates a Pyrometer is installed in the machine. An empty check box indicates a Pyrometer is not installed or is not being utilized.

Distance from Input sensor
The Starting Position refers to the distance from the photocell to the leading edge of the pyrometer, where it actually begins reading when a board approaches.

1.5.16 Serial Ports

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Communications** Configuration may be accessed via:

Menu: **Configuration | Modules | Communications**

This feature is utilized strictly in the event that communications via serial port is terminated and a secondary configuration can be assigned. This configuration utility should be limited to access by personnel knowledgeable in troubleshooting this type of conflict.

The following are the Communications default configuration:

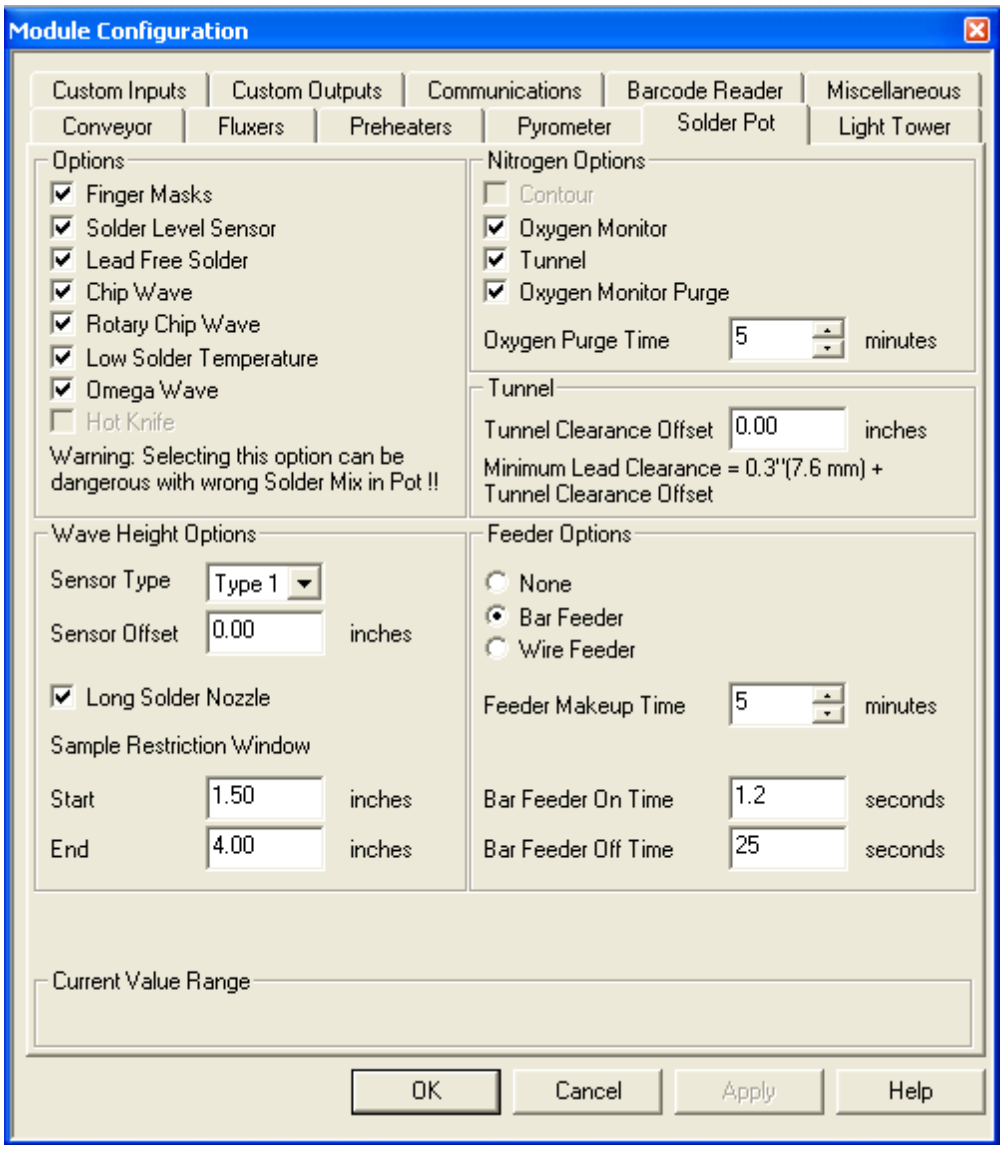
Serial Device	Comm Port	Baud Rate	Data Length	Parity	Stop Bits
Motor Controllers	5	19200	8	Even	1
Internal Fluxer	6	9600	7	Even	1

External Fluxer	7	9600	7	Even	1
Barcode Reader	8	9600	7	Even	1

NOTE: When the machine is configured with both an internal and external fluxer (Opti or Supa), the external fluxer's COM port is set to COM8 otherwise it is set to COM6.

1.5.17 Solder Pot Configuration

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



Click on a section of the **Solder Pot** Configuration tab above to get a more detailed description of the

parameters in that section.

The **Solder Pot** Configuration may be accessed via:

Menu: **Configuration | Modules | Solder Pot**

CAUTION: Do not attempt to add, remove, or change any selections within the Solder Pot module tab that has not first been physically installed, removed or changed on the machine.

1.5.17.1 Lead Free

Low Solder Temperature - Select this option if Solder with a lower Melting / Process temperature is loaded in the Solder Pot.

Warning: - Only select this option when the correct solder type is loaded in the Pot. Otherwise, the Equipment and Possibly Personnel may be harmed.

1.5.17.2 Nitrogen Options

Tunnel - Selection of this option indicates that a complete nitrogen tunnel, for inerting the pre-heater and solder pot sections, is installed on the machine. This option is not available if the contour or Hot-Knife options are selected.

Contour - Selection of this option indicates the presence of an "A" Wave nozzle in lieu of the Lambda™ nozzle, with an inert boundary system. If the Chip Wave option is selected, it too is inerted. If the Hot-Knife option is selected, hot nitrogen is used for debridging. This Option is not available if the Tunnel is selected.

Oxygen Monitor - Select this item if the Oxygen Monitor feature for Nitrogen Options is installed. This feature is only available if the Tunnel Option is selected. The oxygen monitor measures the PPM of Oxygen within the Tunnel.

Oxygen Monitor Purge - Select this item if the Auto-Purge Solenoid is installed on this Machine. This feature is only available if the Oxygen Monitor is configured.

Oxygen Monitor Purge Time - Sets the time for the Nitrogen Purge in minutes before the Oxygen Monitor is allowed to be turned on. This feature is only available if the Oxygen Monitor is configured.

Tunnel Clearance Offset - Adjusts the minimum Lead Clearance with a Tunnel. This Offset is added to the standard 0.30" minimum Lead Clearance on a Tunnel. Also used to adjust the maximum Lead Clearance allowed and still have Nitrogen on, typically 0.71".
The default value is 0.00" and maximum allowable value is 0.30".

Note: This value should not be modified unless Nitrogen Shroud and Tunnel Seals are lowered for larger required lead clearance.

1.5.17.3 Solder Pot Options

Omega Wave - Selection of this option indicates the presence of a Lambda™ nozzle and Omega vibrator.

Chip Wave - Selection of this option indicates a Chip Wave nozzle is installed in the solder pot.

Rotary Chip Wave - This option is only available if the Chip Wave has been selected. Selection of this option indicates that the Rotary Chip Wave feature for the Chip Wave is installed.

Finger Masks - Selection of this option indicates that Finger Masks are installed on the fixed or moveable rail at the fluxer and solder pot.

Solder Level Sensor - Selection of this option indicates the presence of a Solder Level sensor used to detect the level of solder in the pot. The sensor is used with a solder feeder, to maintain solder level in the pot.

Hot Knife - Selection of the Hot Knife option indicates that a Hot Knife debridging system is installed immediately after the solder waves.

Manual Wave Control - Special option to allow the user to turn on/off solder waves from the rear of the machine, it is used for maintenance & setup only.

Lead Free Solder – This option modifies the solder pot temperature parameters for use with no lead solder. When this option is selected the solder pot temperature range is 480°F to 575°F (249°C – 302° C). The minimum solder temperature for the pumps to run is changed to 470°F (243°C). If using the standard Tin-Lead solder, this option should not be selected. In this mode the solder pot temperature range is 430°F to 550°F (221°C – 288°C), with the minimum temperature for the pumps to run set at 425°F (218°C).

Solder Dross Skimmer – Selection of this option indicates the presence of the Dross Skimmer option to automatically remove dross from the pot.

Motorized Roll-out and Jacking (Vectra Only) - Selection of this option indicates that the motorized roll-out and jacking system is installed.

1.5.17.4 Solder Wire/Bar Feeder

Only one (1) selection in this category is permitted.

None - Select this option if no solder feeder options are installed.

Bar Feeder - Selection of the Bar Feeder option indicates that a solder Bar Feeder for automatic loading of solder, is installed on the solder pot.

Wire Feeder - Selection of the Wire Feeder option indicates that a wire type solder feeder for automatic loading of solder, is installed on the solder pot.

1.5.17.5 Wave Height

Only one (1) selection in this category is permitted.

None - Select this option if no Wave Height Sensor options are installed.

Gordon - Capacitance - Selection of this Wave Height Sensor option indicates that a Gordon Type Wave Height Detect Sensor is mounted on the machine. This sensor is the original Style sensor which is flat and rectangular in shape and mounted beneath the moveable rail.

u Epsilon – Eddy Current - Selection of this Wave Height Sensor option indicates that a Micro Epsilon Type Wave Height Detect Sensor is mounted on the machine. This sensor is round in shape and is mounted beneath the movable rail.

Long Solder Nozzle – This box should be checked if a Longer than Standard Width Nozzle is used. This allows for Wave Height Control at Full Conveyor Width. **Note:** This box should not be checked if a Long Nozzle is not present as this could cause errant Wave Height Readings and unstable wave control at full width.

Wave Height Restriction Window – This Sets the distance from the center of the wave in which a board travels to restrict Wave Height Samples.
Note: These Values should not be changed unless a Wide Throat Nozzle and or Modified Nozzle is present.

Start – The distance before the center of the Wave to Start Restriction of Wave Height Samples.
End – The distance after the center of the Wave to End Restriction of Wave Height Samples.

Sensor Offset – This value is used to allow Wave Height Control with a larger Lead Clearance than 0.52". The default value, "0.00", limits Control to a 0.52" lead clearance and below. Increasing this offset increases the allowable Lead Clearance for Control.

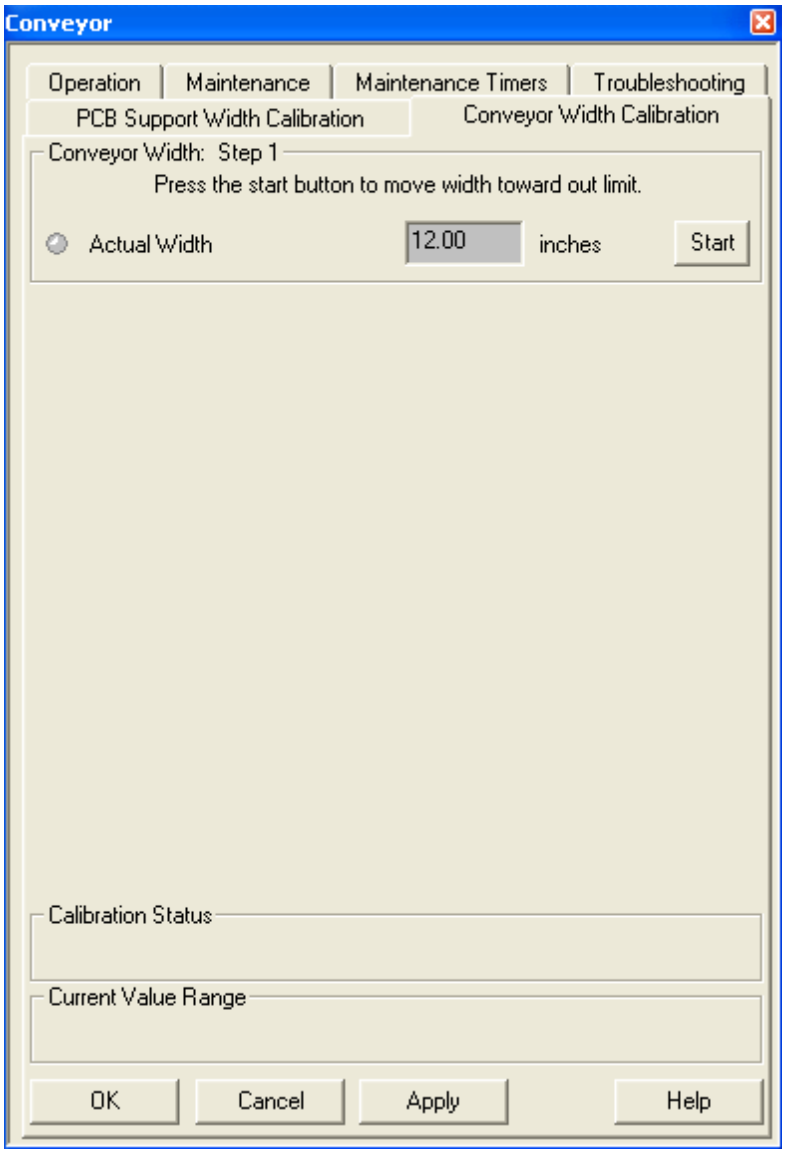
Note: The Wave Height Sensors are used to maintain a constant wave height when conditions such as solder level, consistency, etc may change during normal operation.

1.6 Conveyor Module

1.6.1 Conveyor Width Calibration

1. At the operator console, click on the MAN button icon at the top center of the screen to place the machine in the Manual Mode.
2. Click anywhere on the conveyor module on the graphic screen to open the Conveyor dialog box.
3. Click on the Conveyor Width Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.
The Calibration tab contains a single Step when initialized



The **Conveyor Width Calibration** tab may be accessed via:

Menu: **Modules | Conveyor | Conveyor Width Calibration** tab

Conveyor Width: Step 1.

Actual Width

- Click on the Step 1 Start button, the conveyor width will move toward the out limit.
- The LED to the left of Actual Width illuminates green while the conveyor moves to the outer limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box increases until the conveyor width reaches its maximum setting.
- Once the conveyor width reaches its limit, the green LED turns off, the Start button becomes non-available, and an additional step appears in the Calibration tab

Conveyor Width: Step 2.
Measured Out Width
- Physically measure the width of the conveyor adjustment performed by the machine in Conveyor Width: Step 1.
- Enter the measured conveyor width in the text box next to Measured Out Width, then press the Enter key on the keyboard or click on the Apply button.

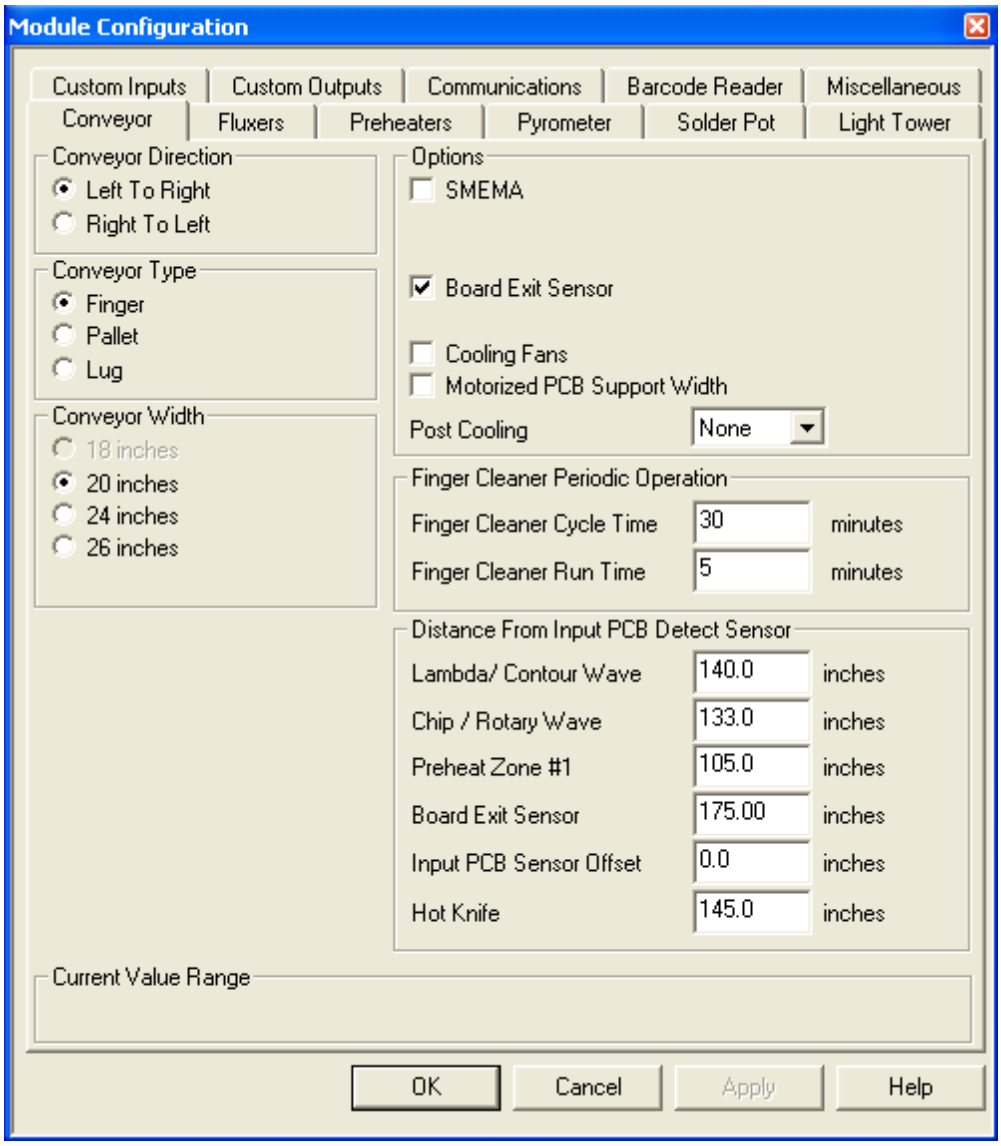
Conveyor Width: Step 3 appears in the dialog box.
- Click on the Start button to move the conveyor width toward the in limit.
- The LED for Conveyor Width: Step 3 illuminates green while the conveyor width moves to the 'in' limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box in Conveyor Width: Step 1 decreases until the conveyor width reaches its 'in' limit.

Conveyor Width: Step 4 appears in the dialog box.
Measured In Width
- Physically measure the width of the conveyor adjustment performed by the machine in Conveyor Width: Step 3.
- Enter the measured conveyor width in the text box next to Measured In Width in Conveyor Width: Step 4, then press the Enter key on the keyboard or click on the Apply button.

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the conveyor width system, and repeat calibration.

1.6.2 Configuration

The **Conveyor Configuration** page is used to input the varied parameter configuration settings associated with the Conveyor.



Click on a section of the **Conveyor** Configuration tab above to get a more detailed description of the parameters in that section.

The **Conveyor** Configuration may be accessed via:

Menu: **Configuration | Modules**

1.6.2.1 Distance from Input PCB Sensor

Lambda / Contour Wave
Distance from incoming photocell to First Contact Point of the Lambda / Contour Wave. This value will change if an External Fluxer is added or removed.

Chip / Rotary Chip Wave

Distance from incoming photocell to First Contact Point of the Chip Wave. If the Chip Wave Option is not selected, this value will be inaccessible. This value will change if an External Fluxer is added or removed.

Hot Knife (HAK)
Distance from incoming photocell to the Hot Knife. If the Hot Knife Option is not selected, this value will be inaccessible. This value will change if an External Fluxer is added or removed.

Preheat Zone #1
Distance from incoming photocell to Preheat Zone #1. Since this setpoint is used for the Barcode Quickload Option, it is inaccessible if the Barcode Reader Type is set to None. Also, if there are no Preheat configured, the setting will be inaccessible. This value will change if an External Fluxer is added or removed.

Board Exit Sensor
Distance from incoming photocell to the Exit Photocell. If the Board Exit Option is not selected, this value will be inaccessible. This value will change if an External Fluxer is added or removed.

Input PCB Sensor Offset
The Distance from the standard location of the incoming photocell to the new revised location. The Standard Location is Just outside the Machine, unless an External Fluxer is Mounted and then just outside the fluxer. This value by default is 0. If the sensor is moved before the standard location towards the Feed Conveyor at the Load end this value will be negative and if it is positioned closer to the Exit Conveyor or Unload End it will be positive. A Value of +/- 50" (1270mm) is allowed. This value will be reset to 0 if an External Fluxer is added or removed.

Note: When the Input PCB Sensor Offset is changed, the other distance values are also effected including the Lambda/ Contour and Chip Wave, HAK and Board Exit Sensor Locations. Also the visual board tracking view is updated.

1.6.2.2 Conveyor Direction

Selection of only one (1) item is permitted within this category.

To select features within the Conveyor Direction and Conveyor Type categories, use the pointing device and click on the bullet box that it is associated with. A bullet present in the bullet box indicates it is selected.

Left To Right - Select this conveyor direction if the conveyor installed in your machine transports PCBs at an incline from left to right.

Right To Left - Select this conveyor direction if the conveyor installed in your machine transports PCBs at an incline from right to left.

1.6.2.3 Conveyor Options

Selection of the following options is made using the pointing device and clicking on the check box associated with it. A check mark present in the box indicates it is selected.

Cooling Fans - Selection of this option indicates that Cooling Fans are installed at the exit end of the

conveyor system.

Motorized PCB Support - This selection indicates the presence of a motorized board support system on the conveyor. Ensure this feature is installed prior to selecting it. Selection of this item is indicated by a check mark in the box associated with this feature.

SMEMA
Click to enable SMEMA.

Finger Cleaner (with Pump)
Click to enable Finger Cleaner Option with Pump (VectraElite and VectraES Only).

Fixed Rear Rail
Click to enable Rear Fixed Rail Option if an Opti or Performa, Fixed Rear Rail Fluxer is installed.

Note: If the above mentioned Fluxers are installed, but are not the Fixed Rear Rail Type, selecting this can cause Communication failures with the Fluxer.

Board Exit Sensor
Click on the check box to the left of this option to place or remove a check mark in the box. A check mark in the check box indicates that it is selected. The exit sensor is located at the unload end of the machine.

Topside / Bottom side Cooling
Select Topside or Bottom side Cooling Option.

1.6.2.4 Conveyor Type

Selection of only one (1) item is permitted within this category.

Finger - This selection indicates the presence of a Finger type conveyor.

Pallet - This selection indicates the presence of a Pallet type conveyor.

Lug - This selection indicates the presence of a Lug type conveyor. The maximum conveyor width is decreased by 4.00 inches with this option.

1.6.2.5 Conveyor Width

Selection of only one (1) item is permitted within this category.

18 inches - This selection indicates the presence of an 18 Inch width conveyor. (VectraElite only)

20 inches - This selection indicates the presence of a 20 Inch width conveyor.

24 inches - This selection indicates the presence of a 24 Inch width conveyor. (Electra only)

26 inches - This selection indicates the presence of a 26 Inch width conveyor. (Electra only)

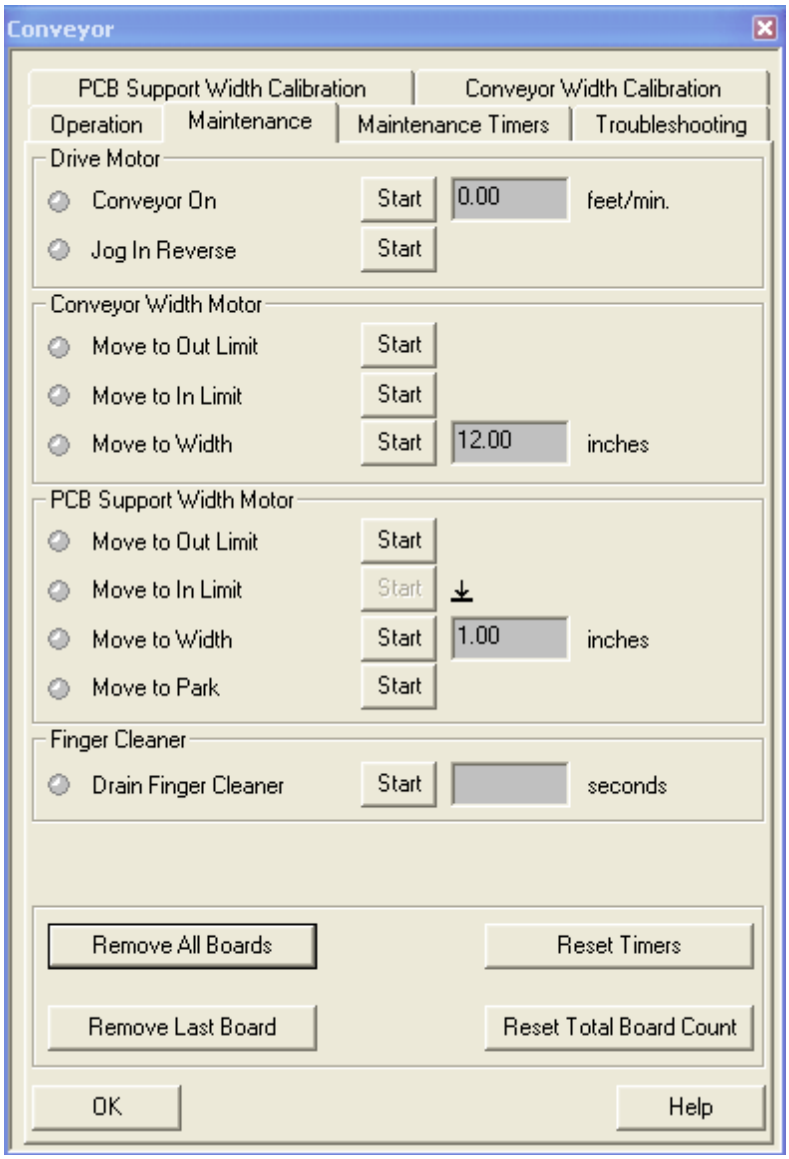
1.6.2.6 Finger Cleaner

Finger Cleaner Cycle Time
If the desired operation of the finger cleaner requires that it run periodically while the conveyor is running, input the period of operation, in minutes, in this box. This number is used only if the finger cleaner setpoint is set to Timing

Finger Cleaner Run Time
If it is desired that the finger cleaner run only for a short period of time during conveyor operation, enter the amount of time that the cleaner is to run, in minutes, in this box. This number is used only if the finger cleaner setpoint is set to Timing

1.6.3 Maintenance

The Maintenance tab contains manual Start buttons, specifically for maintenance functions. However, the machine must first be in the Manual mode.



Click on a section of the Conveyor **Maintenance** tab above to get a more detailed description of the parameters in that section.

The Conveyor **Maintenance** tab may be accessed via:

Menu: **Modules | Conveyor | Maintenance** tab

Remove All Boards
Remove all boards from tracking setting the "PCB's in Machine" count to zero (0).

Remove Last Board
Removes the last board seen by tracking and decrements the "PCB's in Machine" count by one.

Reset Timers

Resets the finger cleaner cycle and run timers back to their original setpoints and re-enables. If these timers are running when the reset button is pressed, they will continue to run once their values have been reset.

Reset Total Board Count
Resets the "Total Boards" to zero (0). This is displayed on the Operation Page for the Conveyor. This requires Configuration Access when security is active.

1.6.3.1 Conveyor Drive Motor

Conveyor Speed
When the Start button is clicked, the LED to the left illuminates green and the Start button changes to Stop.
All Start buttons except Conveyor On & Drain Finger Cleaner become non-available.
The Conveyor On function allows the user to run the conveyor at the set point designated in the operation tab.
Click on the Stop button to stop the Conveyor operation.

Jog In Reverse
When the Start button is clicked, the LED to the left illuminates green, the Conveyor Speed LED illuminates green, and the Start buttons change to Stop buttons to cancel the operation.
The conveyor operates in reverse direction for approximately three (3) seconds.

When the reverse cycle is completed, both the Jog In Reverse and Conveyor On Stop buttons change back to Start, as the next mode of available operation.

1.6.3.2 Conveyor With Motor

Move to Out Limit
Click on the Conveyor Width Move To Out Limit Start button to enable it.
The LED to the left of Move To Out Limit illuminates green.
The Start button changes to Stop, to cancel the operation.
The dimensions in the text box next to Move To Out Limit increase to the maximum conveyor width setting.
When the conveyor width reaches its maximum width, a symbol appears next to the Move To Out Limit Start button —indicating the conveyor width is at its limit.
Move To In Limit and Move To Width Start buttons are available when the conveyor width is at its widest position.

Move to In Limit
Click on the Conveyor Width Move To In Limit Start button to enable it.
The LED to the left of Move To In Limit illuminates green.
The Start button changes to Stop, to cancel the operation.
The dimensions in the text box next to Move To In Limit decrease to the minimum conveyor width setting.
When the conveyor width reaches its minimum width, a symbol appears next to the Move To In Limit Start button — indicating the conveyor width is at its limit.
The LED for Move To In Limit turns off, indicating this function has completed.
Move To Out Limit and Move To Width Start buttons are available when the conveyor width is at its narrowest position.

Move to Width
Click on the Conveyor Move To Width Start button to enable it.
The LED to the left of Move To Width illuminates green until the conveyor width is adjusted to the set point.
The Conveyor Width set point is based on the Conveyor Width Set Point under the Operation tab.
The LED next to Move To Out Limit or Move To In Limit also illuminates, depending on which direction the conveyor needs to move.
The Start button changes to a Stop button during the conveyor width adjustment, to cancel the operation.
When the conveyor width reaches its set point, the Move To Width Stop button changes back to the Start button and the green LED turns off.

1.6.3.3 Finger Cleaner Drain

When Start is pressed a window pop up.
"Fingers Cleaner Draining has Begun"
<<<Open drain valve>>>
Press OK to Confirm.

When Stop is pressed a window pop up
"Finger Cleaner Draining has Completed"
<<<Close drain valve>>>
Press OK to Confirm.

1.6.3.4 PCB Support With Motor

Move to Out Limit
Click on the PCB Support Width Move To Out Limit Start button to enable it.
The LED to the left of Move To Out Limit illuminates green.
The Start button changes to Stop, to cancel the operation.
The dimensions in the text box next to Move To Out Limit increase to the maximum PCB support width setting.
When the PCB support width reaches its maximum width, a symbol appears next to the Move To Out Limit Start button —indicating the PCB support width is at its limit.
Move To In, Move To Width, and Move To Park Start buttons are available when the PCB support width is at its widest position.

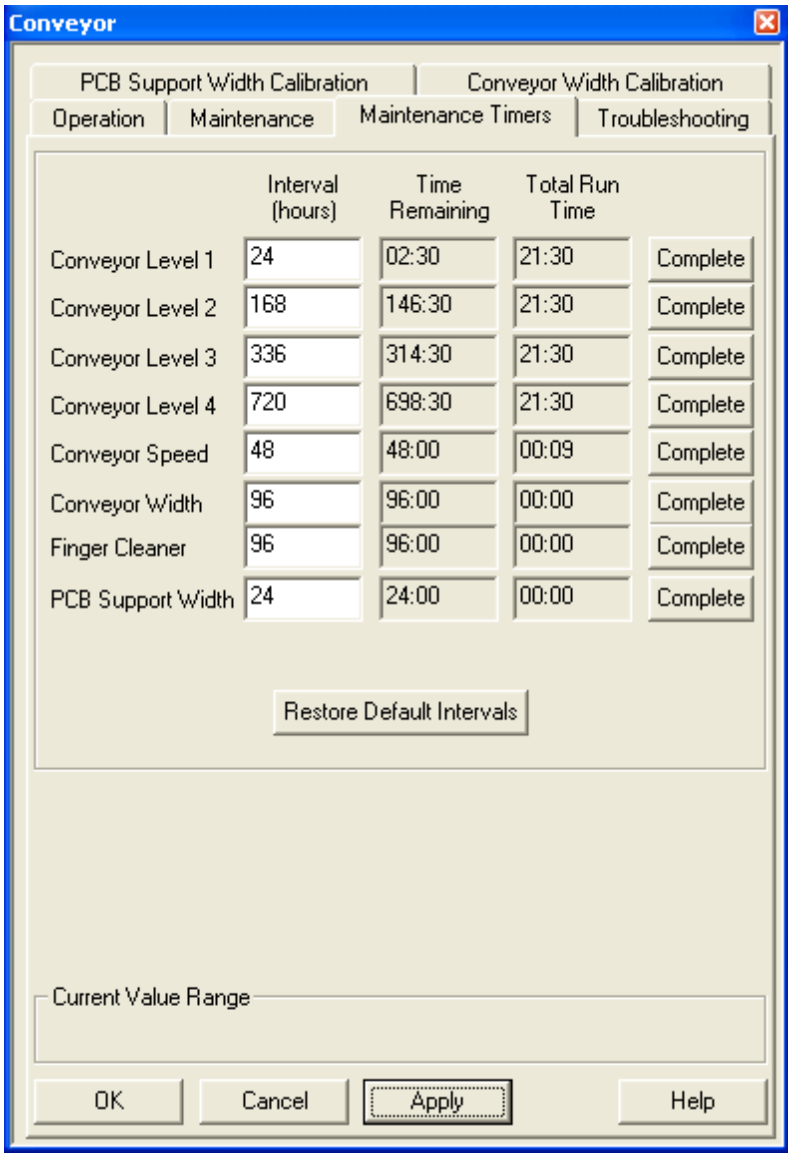
Move to In Limit
Click on the PCB Support Width Move To In Limit Start button to enable it.
The LED to the left of Move To In Limit illuminates green.
The Start button changes to Stop, to cancel the operation.
The dimensions in the text box next to Move To In Limit decrease to the minimum PCB support width setting.
When the PCB support width reaches its minimum width, a symbol appears next to the Move To In Limit Start button — indicating the PCB support width is at its limit.
The LED for Move To In Limit turns off, indicating this function has completed.
Move To Out Limit and Move To Width Start buttons are available when the PCB support width is at its narrowest position.

Move to Width
Click on the PCB Support Move To Width Start button to enable it.
The LED to the left of Move To Width illuminates green until the PCB support width is adjusted to the set point.
The PCB Support Width set point is based on the PCB Support Width Set Point under the Operation tab.
The LED next to Move To Out Limit or Move To In Limit also illuminates, depending on which direction the PCB Support needs to move.
The Start button changes to a Stop button during the PCB support width adjustment, to cancel the operation.
When the PCB support width reaches its set point, the Move To Width Stop button changes back to the Start button and the green LED turns off.

Move to Park
Click on the PCB Support Width Move To Park Start button to enable it.
The LED to the left of Move To Park illuminates green.
The Start button changes to Stop, to cancel the operation.
When the PCB support width reaches the parked position, a symbol appears next to the Move To Park Start button — indicating the PCB support width is at the parked position.
The LED for Move To Park turns off, indicating this function has completed.
Move To Out Limit, Move To In Limit, and Move To Width Start buttons are available when the PCB support width is at its parked position.

1.6.4 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.



The Conveyor **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Conveyor | Maintenance Timers** tab

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.

NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

Total Run Time

Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3 and 4 are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, Monthly, or quarterly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule

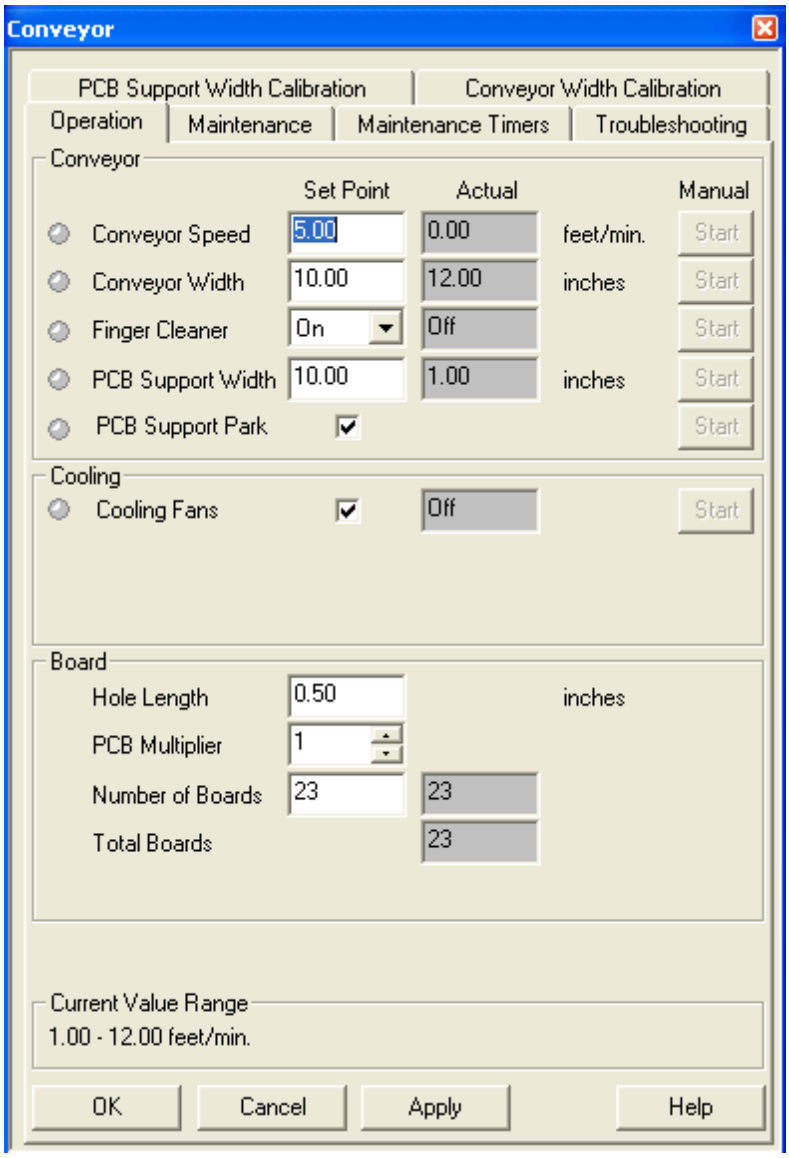
1.6.4.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Inspect conveyor for smooth operation & cleanliness. **2.** Inspect finger masks for flux residue & solder deposits. **3.** Check for bent, dirty, or missing fingers. **4.** Clean the board detect photocell.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Clean finger cleaner screen. **2.** Clean finger cleaner reservoir. **3.** Clean and inspect finger cleaner brushes, nozzles & trays. **4.** Clean board detection photocell.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Lube width adjustment shafts & chain (at fittings provided). **2.** Lube drive chain fittings.		**xxx**			**xxx**	

Level 4 Examples of use: **1.** Check tension of conveyor width adjustment chain. **2.** Lube bearing blocks at ends of all cross shafts & width adjustment shafts. **3.** Lube the conveyor drive Tol-o-matic grease fittings & cross-shafts. **4.** Clean finger chains & conveyor rails.		**xxx**				**xxx**

1.6.5 Operation

Within the Operation tab, specific parameters related to the conveyor module and the board characteristics, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



Click on a section of the Conveyor **Operation** tab above to get a more detailed description of the parameters in that section.

The Conveyor Operation tab may be accessed via:

Menu: **Modules | Conveyor**

1.6.5.1 Board

Hole Length
This parameter instructs the system to ignore a hole smaller than this value in a board that is inline with the photocell. This prevents the system from counting multiple boards instead of one.

PCB Multiplier

If using panels or pallets and there is more than one board, enter the number of boards in each panel or pallet. This will increment the 'Number of Boards' by this value for each 'board' that the machine detects.

Number Of Boards
'Actual' represents the number of boards processed through the system for the active recipe. The setpoint is used to change the starting number for the 'Number of Boards' processed.

Total Boards
The total number of boards processed through the system for all recipes. This value can be reset to zero (0) on the Maintenance page. If security is active the user must have Configuration Access to reset this value.

1.6.5.2 Conveyor

Conveyor Speed
In the Set Point text box, enter the speed at which the conveyor is to operate, either in imperial or metric units, whichever is applicable for your system configuration.

Actual represents the present speed at which the conveyor is operating.
While in the Manual mode the Start button is available for a manual start of the conveyor.
When the conveyor is started, the LED to the left of Conveyor Speed illuminates green.
The Start button then changes to a Stop button to cancel the operation.
Auto mode will also start the conveyor after all other machine parameters have been satisfied for the Auto-Start sequence.

Conveyor Width
In the Set Point text box, enter the width at which the conveyor is to operate, either in imperial or metric units, whichever is applicable for your system configuration.
Actual represents the present width at which the conveyor is set.

While in the Manual mode the Start button is available for manual start of the conveyor width adjustment. When conveyor width is started, the LED to the left of Conveyor Width illuminates green. The Start button then changes to a Stop button to cancel the operation.
Auto mode will also start and set the conveyor width after the necessary machine parameters have been satisfied for the Auto-Start sequence.

Note: When an Ultrasonic Board Detect Sensor is mounted on the Machine with L type fingers, the minimum useable conveyor width is 3.00" (76.2 mm). This is now the standard type Incoming Board Detect sensor with the Wave Height Control option.

Cooling Fans
To enable the Cooling Fans for Auto Start click on the box to the right — places a check mark in the box. Clicking on the box again removes the check mark. While the Cooling Fans are not operating, the text box under the Actual column displays Off and the LED to the left of Cooling Fans remains off. While in the Manual mode the Start button is available for manual start of the cooling fans. When the cooling fans are started, the LED to the left of Cooling Fans On illuminates green. The Start button then changes to a Stop button to cancel the operation.
Auto mode will also start the cooling fans after the necessary machine parameters have been satisfied for the Auto-Start sequence.

Finger Cleaner
The Finger Cleaner has three possible values for its setpoint, Off, On and Timing. To set the finger

cleaner to run continuously while the conveyor is running in Auto mode, select On as the setpoint. If the finger cleaner is to remain off while running the conveyor in Auto mode, select Off as the setpoint. Selecting Timing as the setpoint allows the finger cleaner to run periodically as defined by the **Cycle Timer** and the **Run Timer**. These timers run any time the conveyor is running and the setpoint is set to Timing. This means that the finger cleaner will run periodically in both the Manual and Auto modes. The text box in the Actual column indicates whether the finger cleaner is On, Off or Timing. If the Actual indicates Timing, this means that the finger cleaner is awaiting the count down of the Cycle Timer. Once the Cycle Timer reaches zero, the Run Timer will begin counting down while the finger cleaner runs. Once the Run Timer reaches zero, the finger cleaner will turn off and the actual will return to Timing.. While in the Manual mode the Start button is available for manual start of the finger cleaner after the conveyor speed is 'On'. When the finger cleaner is started, the LED to the left of Finger Cleaner On illuminates green. The Start button then changes to a Stop button to cancel the operation. Using the manual Start button will not change the timing operation of the finger cleaner.
Auto mode will also start the finger cleaner, if the setpoint is On or Timing, after the necessary machine parameters have been satisfied for the Auto-Start sequence.

PCB Support Width
In the Set Point text box, enter the width at which the support is to operate, either in imperial or metric units, whichever is applicable for your system configuration.

NOTE: The PCB Support Width set point should be equal to the width where support is required. Actual represents the present width at which the support is set.

While in the Manual mode the Start button is available for manual start of the PCB support width adjustment. When PCB support width is started, the LED to the left of PCB Support Width illuminates green. The Start button then changes to a Stop button to cancel the operation.
Auto mode will also start and set the PCB support width after the necessary machine parameters have been satisfied for the Auto-Start sequence.

PCB Support Park
Check this box to park the PCB Support underneath the fixed rail during Auto mode setup. The setpoint entered in PCB Support Width will be ignored.

While in the Manual mode the Start button is available for manual start of the PCB support park adjustment. When PCB support park is started, the LED to the left of PCB Support Park illuminates green. The Start button then changes to a Stop button to cancel the operation.

Cooling Chiller
This is part of Topside / Bottom Side Cooling option. To enable the Cooling Chiller for Auto Start click on the box to the right — places a check mark in the box. Clicking on the box again removes the check mark. While the Chiller is not operating, the text box under the Actual column displays Off and the LED to the left of Chiller remains off. While in the Manual mode the Start button is available for manual start of the Chiller. When the Chiller is started, the LED to the left of Chiller illuminates green. The Start button then changes to a Stop button to cancel the operation.
Auto mode will also start the Chiller after the necessary machine parameters have been satisfied for the Auto-Start sequence.

Cooling Chiller Fan
This is part of Topside Cooling option. In the Set Point text box, enter the speed in percentage at which the fan is to operate. The set point range is 0 – 100 %. The set point of 0% will keep the fan Off. Actual represents the present speed at which the fan is set.

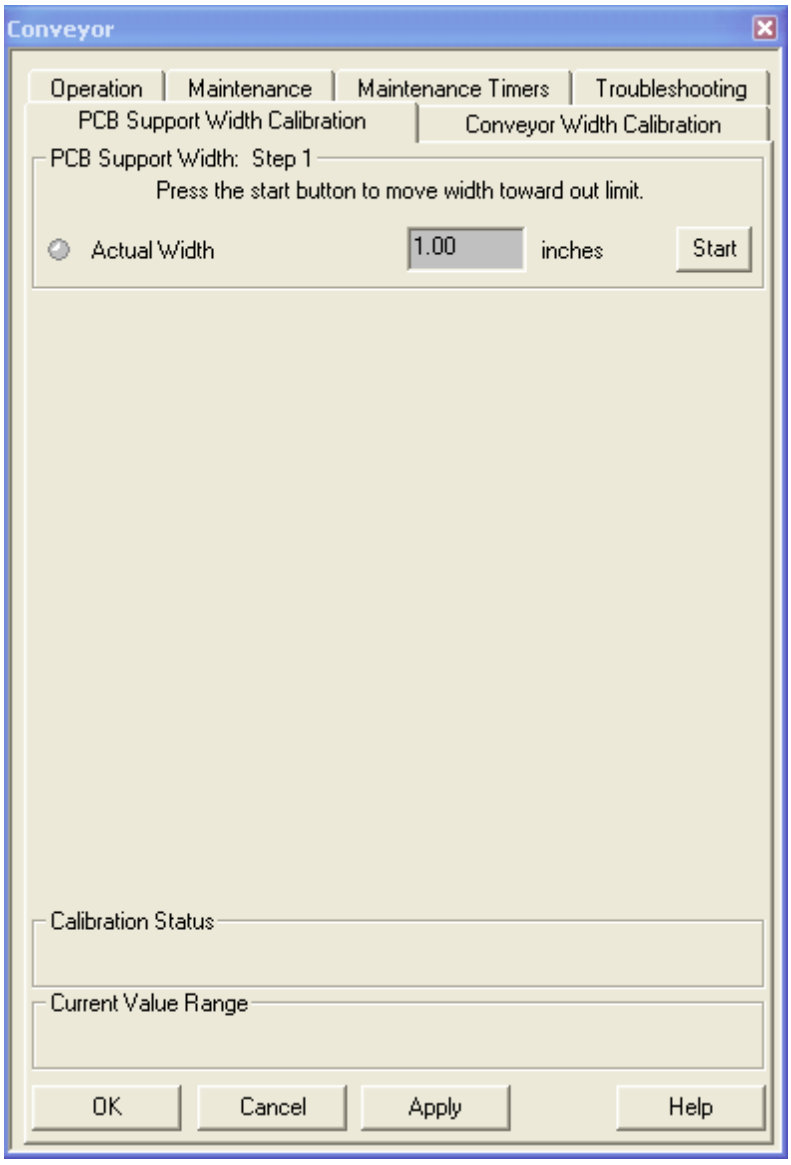
While in the Manual mode the Start button is available for manual start of the fan. When fan is started,

the LED to the left of fan illuminates green. The Start button then changes to a Stop button to cancel the operation.
Auto mode will also start and set the fan after the necessary machine parameters have been satisfied for the Auto-Start sequence.

1.6.6 PCB Support Width Calibration

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine™ in the Manual Mode.
2. Click anywhere on the conveyor module on the graphic screen to open the Conveyor dialog box.
3. Click on the PCB Support Width Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.
The Calibration tab contains a single Step when initialized.



The **PCB Support Width Calibration** tab may be accessed via:

Menu: **Modules | Conveyor | PCB Support Width Calibration** tab

PCB Support Width: Step 1.

Actual Width

- Click on the Step 1 Start button, the PCB support will move toward the out limit.
- The LED to the left of Actual Width illuminates green while the PCB support moves to the outer limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box increases until the PCB support reaches its maximum setting.
- Once the PCB support reaches its limit, the green LED turns off, the Start button becomes non-available, and an additional step appears in the Calibration tab.

PCB Support Width: Step 2.
Measured Out Width
- Physically measure the width of the PCB support adjustment performed by the machine in PCB Support Width: Step 1.
- Enter the measured PCB support width in the text box next to Measured Out Width, then press the Enter key on the keyboard or click on the Apply button.

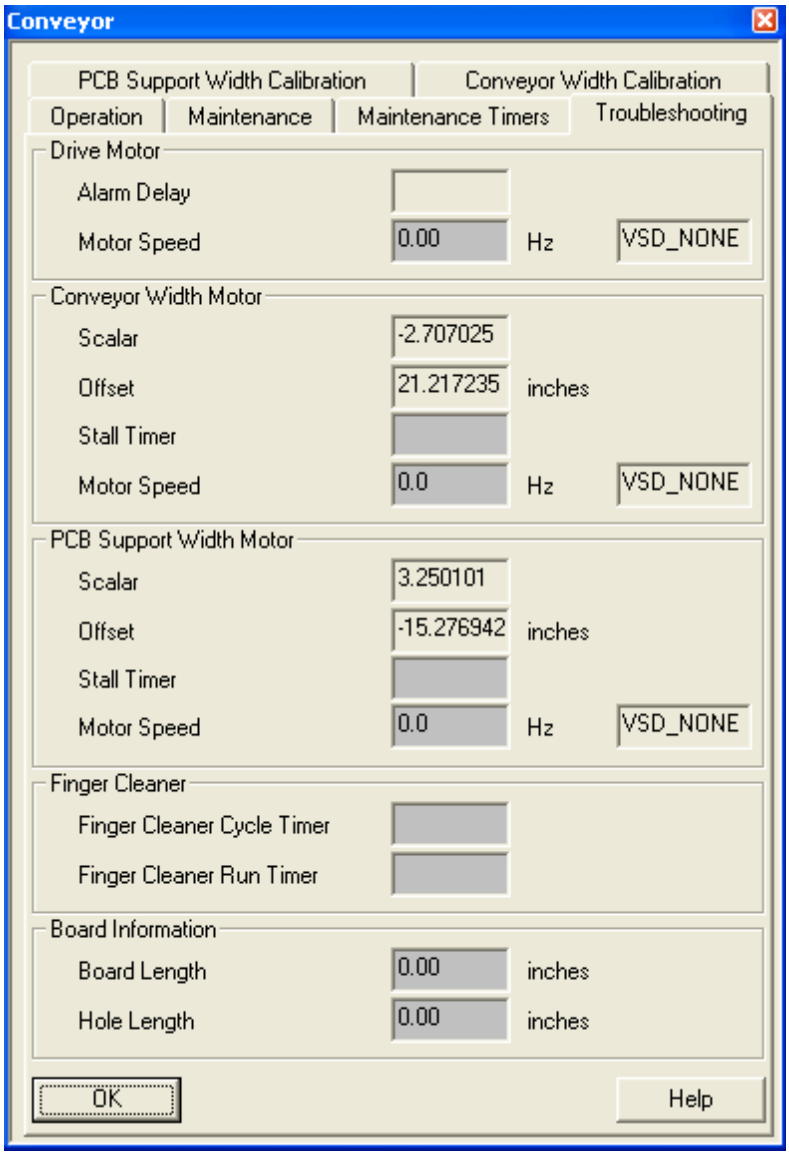
PCB Support Width: Step 3 appears in the dialog box.
- Click on the Start button to move the PCB support toward the in limit.
- The LED for PCB Support Width: Step 3 illuminates green while the PCB support moves to the 'in' limit, and the Start button changes to a Stop button to cancel the operation.
- The value in the Actual Width text box in PCB Support Width: Step 1 decreases until the PCB support reaches its 'in' limit.

PCB Support Width: Step 4 appears in the dialog box.
Measured In Width
- Physically measure the width of the PCB support adjustment performed by the machine in PCB Support Width: Step 3.
- Enter the measured PCB support width in the text box next to Measured In Width in PCB Support Width: Step 4, then press the Enter key on the keyboard or click on the Apply button.

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the PCB Support system, and repeat calibration.

1.6.7 Troubleshooting

The Troubleshooting tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Conveyor, the values provided here may give the user some indication as to what may be causing the problem.



The Conveyor **Troubleshooting** tab may be accessed via:

Menu: **Modules | Conveyor | Troubleshooting** tab

Drive Motor

Alarm Delay

The time before the alarm is enabled. The timer counts down to zero when the conveyor speed is started.

Motor Speed

The current actual speed, in Hz, of the conveyor motor drive.

Motor Speed - Drive Type

A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is

listed.

Conveyor Width Motor

Scalar
The correction value determined during calibration.

Offset
The correction value determined during calibration.

Stall Timer
The time remaining for the conveyor to reach it's programmed width or limits before a stall alarm occurs.

Motor Speed
The current actual speed, in Hz, of the conveyor width motor drive.

Width - Drive Type
A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is listed.

PCB Support Width Motor

Scalar
The correction value determined during calibration.

Offset
The correction value determined during calibration.

Stall Timer
The time remaining for the PCB support to reach it's programmed width or limits before a stall alarm occurs.

Motor Speed
The current actual speed, in Hz, of the PCB support width motor drive.

CBS - Drive Type
A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is listed.

Finger Cleaner

Finger Cleaner Cycle Timer
The current value of the finger cleaner cycle timer. If there is no value shown, the timer is not running.

Finger Cleaner Run Timer
The current value of the finger cleaner run timer. If there is no value shown, the timer is not running.

Board Information

Board Length
The length of the board as determined by the incoming photocell.

Hole Length

The length of any hole in the board as determined by the incoming photocell.

1.6.8 Standby

This feature is available with the Topside Cooling Option. The Standby tab contains features to be used specifically for operation. Standby allows the machine to decide when a board is or is not present within a defined process parameter (window) — based on whether or not a board is present, Standby will activate and deactivate Topside Cooling

Standby Mode On
Click on the box to the right of Standby Mode On to place a check mark in, or remove a check mark from the box.
Placing a check mark in the box enables Standby Mode On for activation.
When a check mark is placed in the Standby Mode On check box, the Topside Cooling Fan LED's in the Conveyor's Operation tab features, illuminate yellow. This indicates that the Fan is presently operating at Standby until a board is sensed within the defined window then the speed operates at the Set Point speed defined in the Operation tab.
No check mark in the box indicates that standby mode is not used and the speed will operate at the set point defined in the operation tab.

Use Entire Conveyor
Click on the box to the right of Use Entire Conveyor to place a check mark in, or remove a check mark from the box.
Placing a check mark in the box enables use of the entire conveyor as the window in Standby Mode On, rather than a specific Start and End of window.
No check mark in the box indicates a specific window range will be defined rather than using the entire conveyor as the window.

Start of Window
Enter in inches (or millimeters), the distance to engage the operations set point from the center of Topside Cooling Fan. A negative number engages the set point prior to the center and a positive number engages the set point after the center.

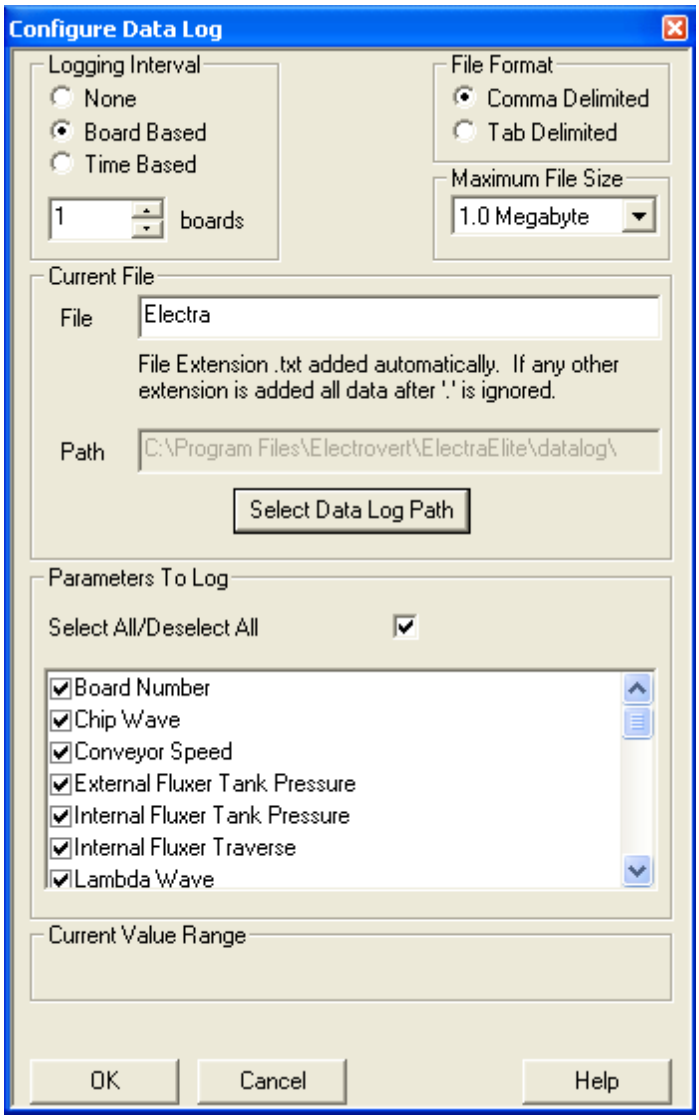
End of Window
Enter in inches (or millimeters), the distance to dis-engage the operations set point from the center of Topside Cooling Fan. A negative number dis-engages the set point prior to the center and a positive number dis-engages the set point after the center.

1.7 Datalog

1.7.1 Configuration

The **Data Log Configuration** page is used to configure which machine parameters are written to the data log file and the time interval. This feature allows the user to record selected parameter values to a text file which can be easily imported into a spreadsheet for further analysis and graphing. The data log file is time based and will record each of the selected parameters based on the logging interval. The date, time, machine state, active recipe cycle, barcode, machine recipe and user name are automatically recorded for each entry.

NOTE: Machine must be in manual or auto mode to record data.



The **Data Log Configuration Page** may be accessed via:

Menu: **Configuration | Data Log**

The **Data Log Configuration** parameter descriptions are listed below.

Logging Interval: To enable the data logging feature, select **Time Based** or **Board Based** and set the interval in the edit box below. To disable data logging, select **None**. Data logging is only active when the machine is in **Starting**, **Running** or **Manual** mode.

None: no DataLog in Action.

Board Based: Depending on the parameter to log selected, the data will be

collected for the selected parameter(s) each time the system has processed this many boards.

Time Based: Data will be collected for the selected parameter(s) every X seconds.

File Format: Specifies the delimiter character used to separate the data values.

Comma Delimited: A comma is used to separate the data fields.

Tab Delimited: A tab is used to separate the data fields.

Maximum File Size: Sets the maximum file size. When the file reaches the specified size, the file will be renamed with the data and time appended to the end of the file name and a new file with the original file name will be started. Used the drop down box to select either **1.0 Megabytes** or **10.0 Megabytes.**

Current File: Specifies the data log file name and path.

File: Use the edit box to enter the name of the data log file.

Path: This is a read only box displaying the full path for the data log file.

Select Data Log Path: Pressing this button will open a standard **Browse for Folder** window, allowing the user to select the folder where the data log file is to be stored.

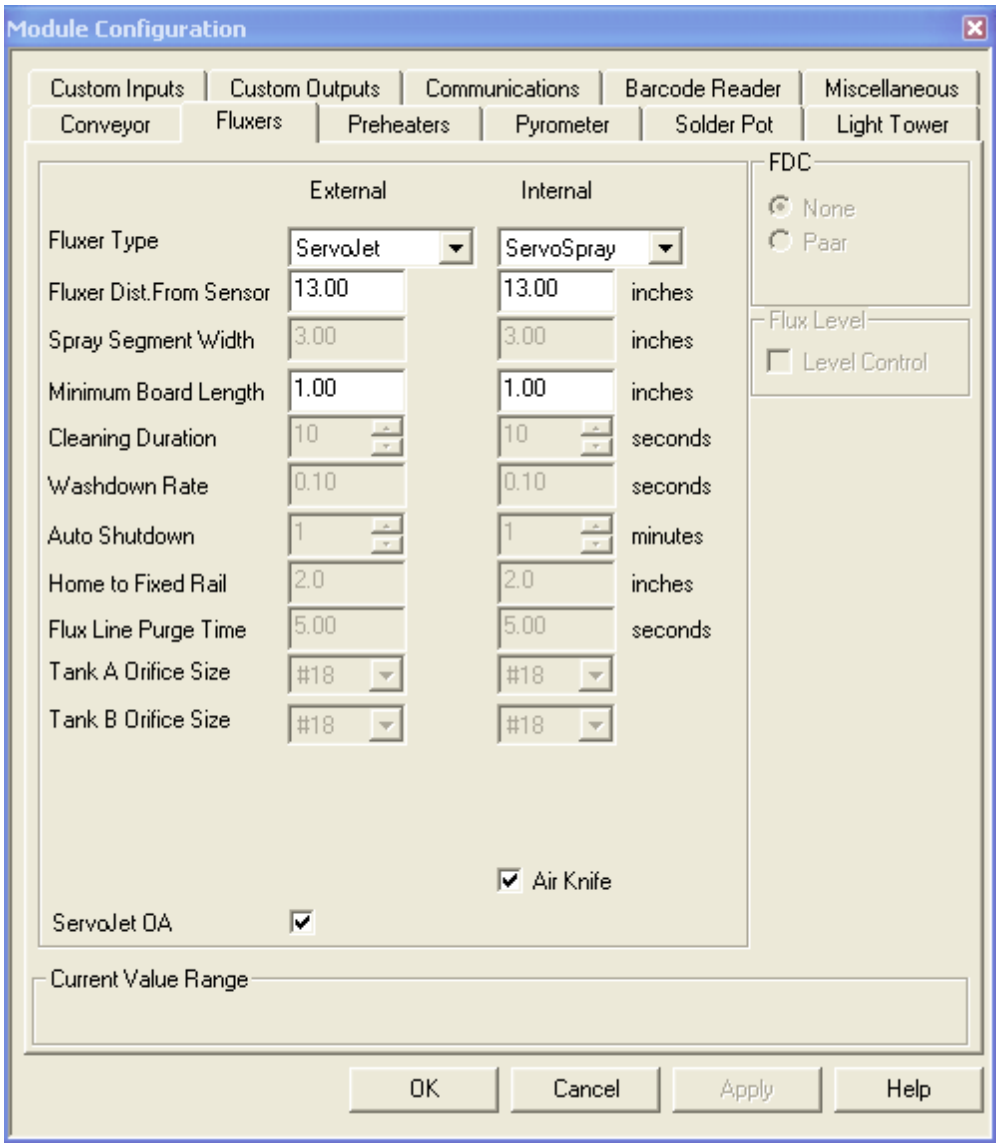
Parameters To Log: This is a list of all of the machine parameters that can be written to the data log file. To log a specific parameter, place a check mark to the left of the parameter name. To stop data logging a parameter, remove the check mark.

Select/ Deselect All: This check box allows the user to quickly select or deselect all parameters in the list. If some, but not all of the parameters are selected, the check mark will appear grayed out.

1.8 Fluxer Module

1.8.1 Configuration

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



Click on a section of the **Fluxers** Configuration tab above to get a more detailed description of the parameters in that section.

The **Fluxers** Configuration may be accessed via:

Menu: Configuration | Modules | Fluxers

CAUTION: Do not attempt to add, remove, or change any selections within the Fluxer module tab that has not first been physically installed, removed or changed on the machine. This could result in software lockups.
The following describes each of the optional selections listed within the Fluxer tab:

1.8.1.1 External Fluxer Type

None - when selected indicates that NO fluxer is installed on the outside of the main machine cabinet.

Foam - indicates the presence of an external Foam fluxer. The External Foam Fluxer cannot be selected if an Internal Foam or Wave Fluxer is present.

Opti II - indicates the presence of an external ultrasonic, reciprocating spray head fluxer with dual Flux Tanks.

SelectaSpray - indicates the presence of an external fixed head(s) spray fluxer.

Sono-Tek - indicates the presence of an external adjustable nozzle position and spray width, fixed head spray fluxer.

Performa - indicates the presence of an external traversing head spray fluxer.

Optima - indicates the presence of an external Traversing spray head fluxer.

ServoJet - indicates the presence of an external Jet Spray fluxer.

ServoSpray - indicates the presence of an external traversing head spray fluxer.

ServoSonic - indicates the presence of an external traversing Ultrasonic spray fluxer.

Non-Integrated - indicates the presence of a Non-Integrated type fluxer. On the Electra this item is not selectable and will default to "None" when it is attempted.

Selection of an option is made using the pointing device and clicking on the Pull-down Menu Under the External Selection Menu. Items that are not available will by default return to "None" and not allow the selection.
Only one (1) selection may be made within the external "Fluxer Type" field.

On a Vectra only, The incoming board detect Photocell should be moved to a position before the Fluxer, when an external fluxer is configured.

1.8.1.2 Internal Fluxer Type

None - when selected indicates that NO fluxer is installed in the machine.

Foam - indicates the presence of an internal Foam fluxer.

Wave - indicates the presence of an internal Wave fluxer.

Opti II - indicates the presence of an internal ultrasonic, reciprocating spray head fluxer with dual Flux Tanks.

SelectaSpray - indicates the presence of an internal fixed head(s) spray fluxer.

Sono-Tek - indicates the presence of an internal adjustable nozzle position and spray width, fixed head spray fluxer.

Performa - indicates the presence of an internal traversing head spray fluxer.

Optima - indicates the presence of an internal Traversing spray head fluxer.

ServoJet - indicates the presence of an internal Jet Spray fluxer.

ServoSpray - indicates the presence of an internal traversing head spray fluxer.

ServoSonic - indicates the presence of an internal traversing Ultrasonic spray fluxer.

Selection of an option is made using the pointing device and clicking on the Pull-down Menu Under the Internal Selection Menu. Items that are not available will by default return to "None" and not allow the selection.

Only one (1) selection may be made within the internal "Fluxer Type" field.

When selecting Foam or Wave as the type of fluxer, the following selections associated with this type of fluxer are also available. If any of these options are installed, they should be selected.

FDC

Options

1.8.1.3 Flux Density Controller

None - select this item if there is not an FDC (Flux Density Control) installed.

Paar - selection of this option indicates the presence of an FDC with the Foam or Wave fluxer.

1.8.1.4 Fluxer Options

Level Control
Select this item if the Flux Level Control feature of the Wave or Foam Fluxer is installed.

Selection of this item is indicated by a check mark in the box associated with this feature. Clicking on the box using the pointing device will either place or remove the check mark in the box.

Note: This Option is not allowed when a PAAR FDC is configured.

Fluxer Flow Meter (Performa Fluxer)
Select this item if Flux Flow Meter is installed.

Selection of this item is indicated by a check mark in the box associated with this feature. Clicking on the box using the pointing device will either place or remove the check mark in the box.

1.8.1.5 Fluxer Parameters

NOTE: This section will appear only if an Opti, Opti II, Supa, Performa or AccuSpray fluxer is selected.

Spray Segment Width – Opti, Opti II, Supa, Performa and AccuSpray.
Must be set to the actual spray width produced by the spray head(s).

Deceleration Sensor Distance – Opti, Supa, and AccuSpray.
Sets the distance in inches between the fixed rail proximity sensor and the deceleration sensor.

Minimum Board Length – Opti, Opti II, Supa, Performa and AccuSpray.
Sets the minimum board length in inches, acceptable by the photocell. Any board passing by the photocell that is equal to or less than the minimum value will be ignored by the system, and will not have flux applied to it.

Cleaning Duration – Opti, Opti II, Performa and Supa Only.
Sets the amount of time in seconds for the duration of the self-cleaning cycle of the spray head.
Note: On the Performa Fluxer, a setting of 0 is used if the Wash-down Option is not present or not used.

Wash-down Rate – Opti, Opti II, Performa and Supa Only.
Sets the pulse rate in tenths (.10) of seconds, that solvent is sprayed onto the external surfaces of the spray head during the cleaning cycle.

Auto Shutdown – Opti, Opti II and Performa Only.
The amount of time after the last board before the system performs cleaning operation and put the fluxer in idle mode.

Home to Fixed Rail – Opti II and Performa Only.
The distance from Spray Head at Home Position to Fixed Rail Position.

Flux Line Purge Time – Opti II Only.
The amount of time required to purge the flux lines.

Fluxer Distance From Sensor – All Spray Fluxers.
The distance from incoming Board Detect Sensor to Spray Head.

Tank A Orifice Size – Opti II Only.
Select between a #28 and #18 size orifice for Tank A. This value is used when the "Auto Configure" box has been checked on the Fluxer Operations Module.

Tank B Orifice Size – Opti II Only.
Select between a #28 and #18 size orifice for Tank B. This value is used when the "Auto Configure" box has been checked on the Fluxer Operations Module.

1.8.2 Foam/Wave Fluxer

1.8.2.1 Calibration

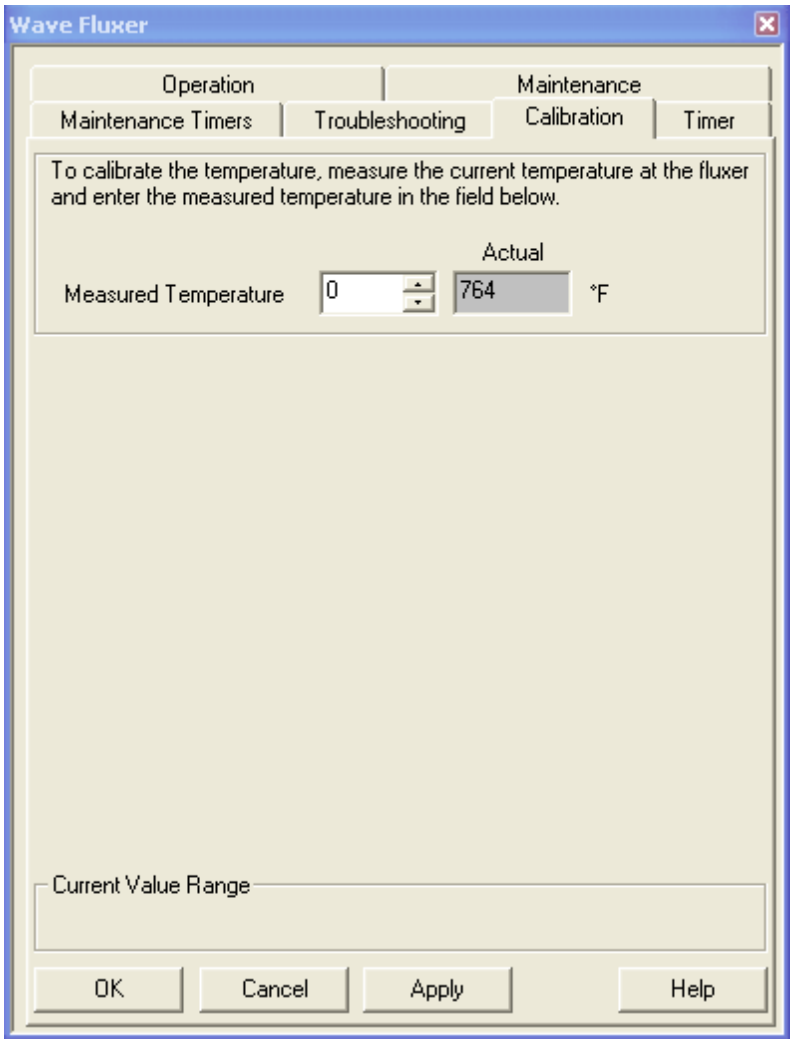
Measured Temperature

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the fluxer module on the graphic screen to open the Foam or Wave Fluxer dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel

only.

4. Follow the instructions as they appear in the Calibration tab.
"To calibrate the temperature, measure the current temperature at the fluxer and enter the measured temperature in the field below." Using an accurate hand held thermometer, take a temperature reading of the flux as directed. Then, enter the value in the field next to Measured Temperature. Click on the Apply or OK button to accept the value.
This completes calibration of the flux temperature.



The Foam/Wave Fluxer **Calibration** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Calibration** tab
Modules | External Fluxer | Calibration tab

1.8.2.2 Foam Operation

Fluxer

Fluxer
Click in box to have foam fluxer operational in Auto Mode.
Start button: starts or stops fluxer operation in Manual Mode.

Auto Start Delay
Amount of time the system waits before going ready after turning on the fluxer.

Flux Level Control

High Level Drain Period
Amount of time to run drain pump when High level occurs. Should be set to lower flux level to the midpoint between low and high level floats.

Low Level Fill Hysteresis
Amount of time the Add pump continues to run after low level float is satisfied. This is to prevent cycling of the Add pump.

Flux Density Control

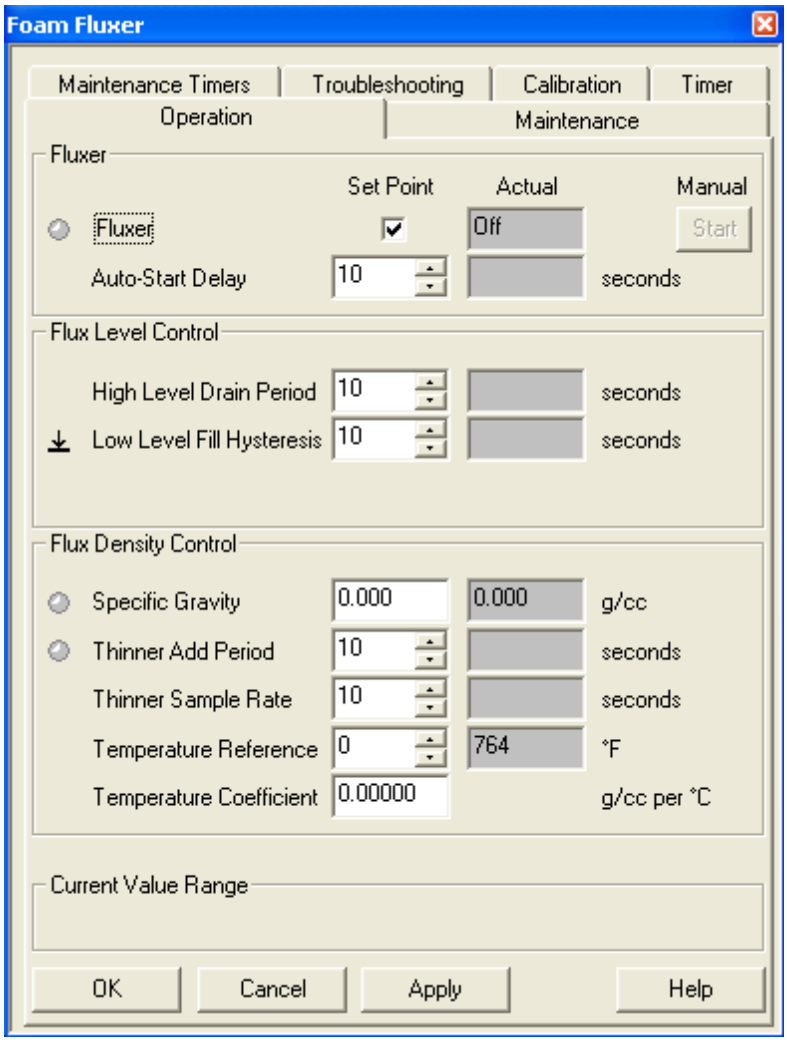
Specific Gravity
See manufacturer's data sheet, this is the setpoint that the specific gravity will be controlled to.

Thinner Add Period
Amount of time the thinner is to be added to correct specific gravity. Set so that 1 add period changes the specific gravity only 0.001.

Thinner Sample Rate
Amount of time the system will wait after adding thinner to check the specific gravity. This should be along enough time to allow the thinner to completely mix with the flux. Typical setting is 120 seconds.

Temperature Reference
See manufacturer's data sheet, this is base temperature for the manufacturer's flux specific gravity specification.

Temperature Coefficient
See manufacturer's data sheet. This is a correction factor for the specific gravity if the actual temperature is different than the reference temperature.



The Foam/Wave Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

1.8.2.3 Maintenance

Must be in Manual Mode to access Start button.

Manual
Can turn On or Off any of these functions.
Air
Circulating Pump*
Drain Pump*
Add Pump*
Thinner Pump*

* These functions can't be turned on or off if the timer is enabled.

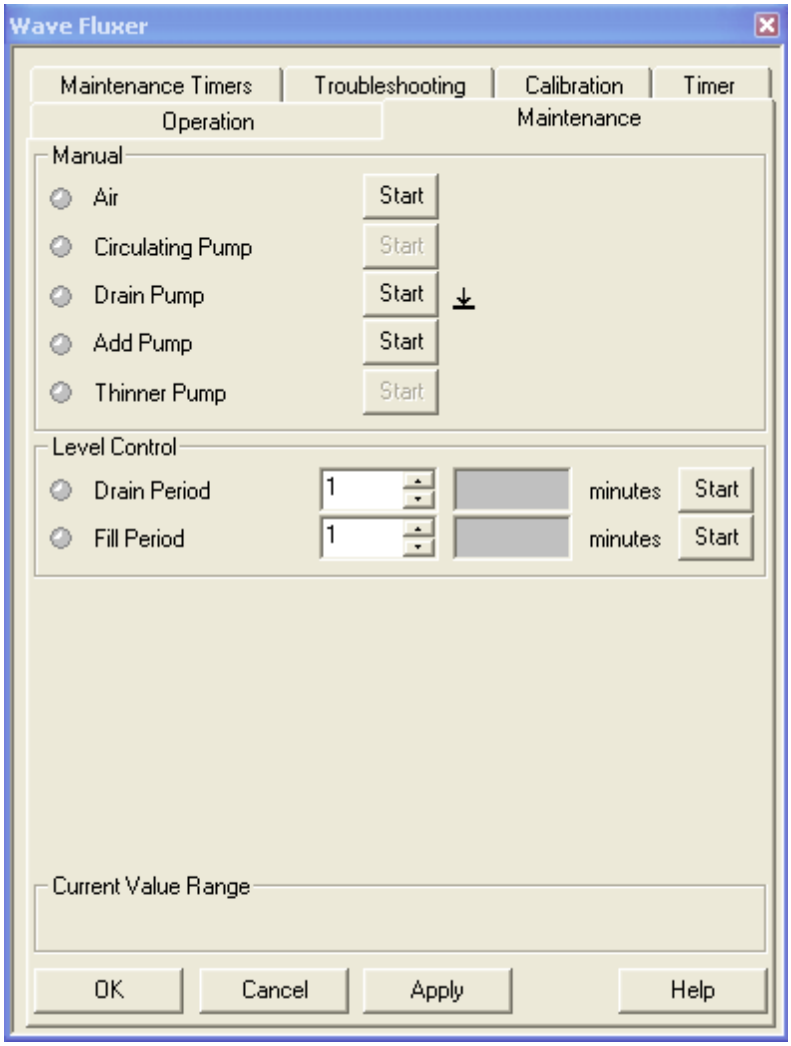
Level Control

Drain Period

Time in minutes to drain fluxer, after this time expires, the drain pump is stopped.

Fill Period

Time in minutes to fill fluxer, after this time expires, the low liquid level alarm is armed.



The Foam/Wave Fluxer **Maintenance** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

1.8.2.4 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

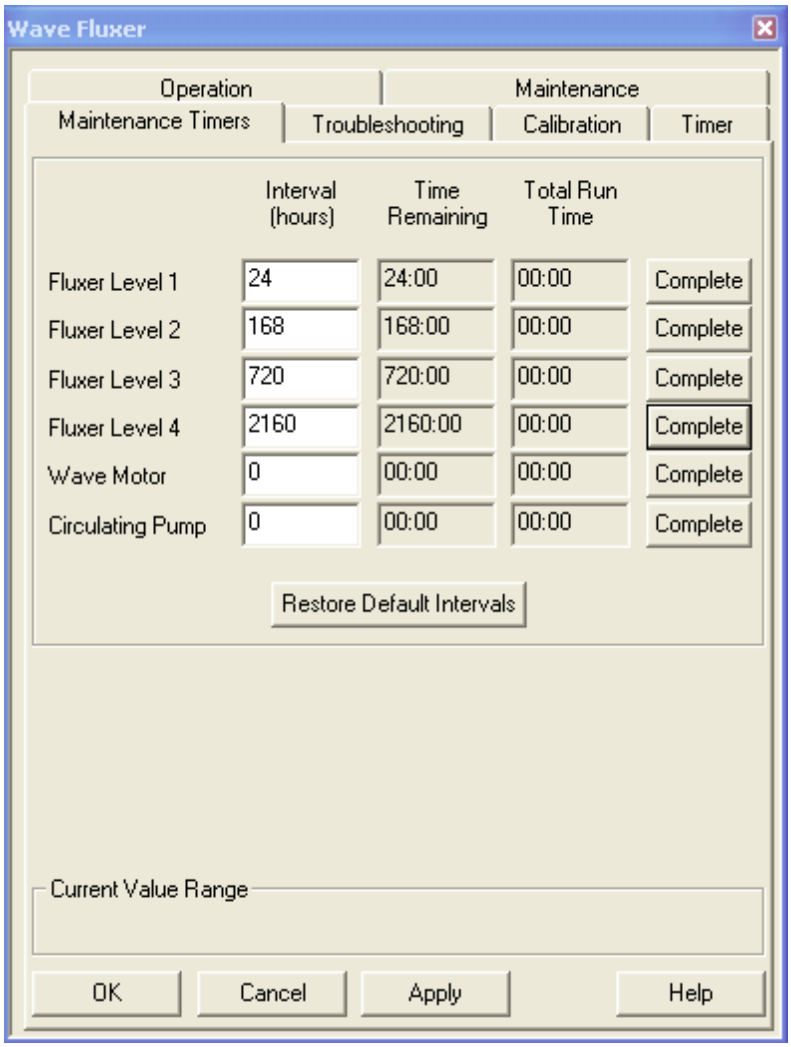
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Foam/Wave Maintenance Schedule



The Foam/Wave Fluxer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

1.8.2.4.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces.	**xxx**		**xxx**			

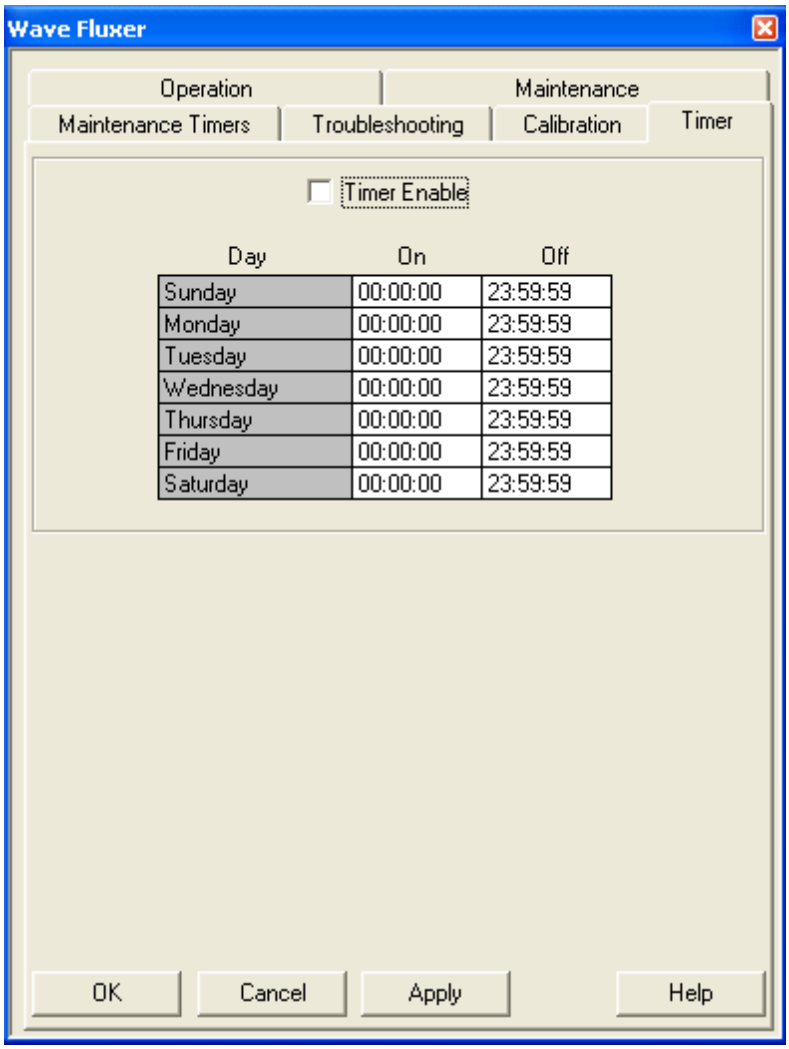
2. Check for proper operation.						
Level 2 Examples of use: **1.** Drain and clean flux tank on foam and wave fluxer. **2.** Clean aerators on foam fluxer. **3.** Clean filters in electrical enclosure fans **4.** Clean flux residue build-up from exhaust sensor line. **5.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Check calibration of FDC on foam and wave fluxers. **2.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.2.5 Timer

Timer Enable
Click in box to enable Timer.

Set for the seven days of the week starting time (On) and stopping time (Off).

The timer only affects the operation of the FDC and Level Control.



The Foam/Wave Fluxer **Timer** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Timer** tab
Modules | External Fluxer | Timer tab

1.8.2.6 Troubleshooting

The Troubleshooting tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.

Flux Level Control
High Level Delay Timer
The length of time that the high level must remain high before the drain pump is started.

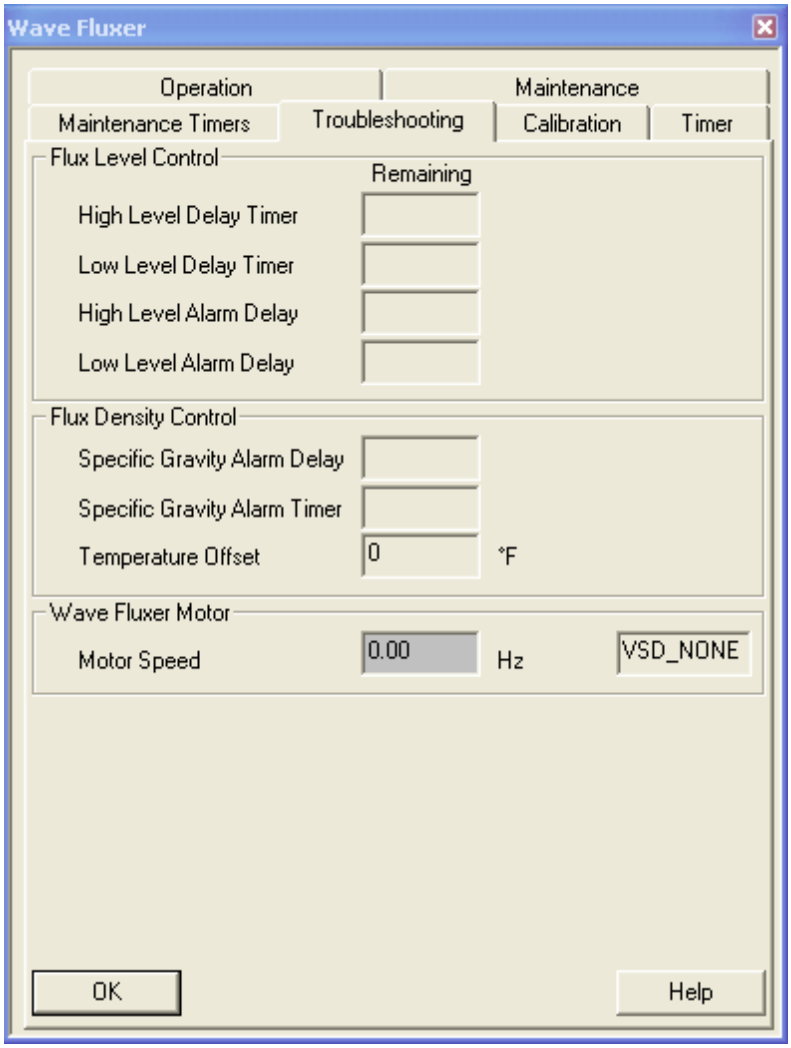
Low Level Delay Timer
The length of time that is allowed, determined by the fill period, before arming the low level alarm.

High Level Alarm Delay
The time before the alarm is enabled, prevents false alarms.

Low Level Alarm Delay
The time before the alarm is enabled, prevents false alarms.

Flux Density Control
Specific Gravity Alarm Delay
The time before the alarm is enabled, prevents false alarms.

Temperature Offset
The correction value determined during calibration.



The Foam/Wave Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

1.8.2.7 Wave Operation

Fluxer

Wave Fluxer
Must be in Manual Mode to access Start button.
This is the speed of the pump and will set the height of the wave.
Click in box to have wave fluxer operational in Auto Mode.
Start button: starts or stops fluxer operation in Manual Mode.

Auto Start Delay
Amount of time the system waits before going ready after turning on the fluxer.

Flux Add Pump
Uses Low Level sensor to add flux in conjunction with the Low Level Fill Hysteresis Timer. (see below) The High Flux Level Sensor is used for Alarm Purposes. If a High Level is reached while in the Hysteresis Period, the Flux Add Pump will be turned off. The Alarm will sound after 60-seconds with a Flux High Level.

Note: Available with Level Control Option

Flux Level Control - FDC

High Level Drain Period
Amount of time to run drain pump when High level occurs. Should be set to lower flux level to the midpoint between low and high level floats.

Low Level Fill Hysteresis
Amount of time the Add pump continues to run after low level float is satisfied. This is to prevent cycling of the Add pump.

Flux Density Control

Specific Gravity
See manufacturer's data sheet, this is the setpoint that the specific gravity will be controlled to.

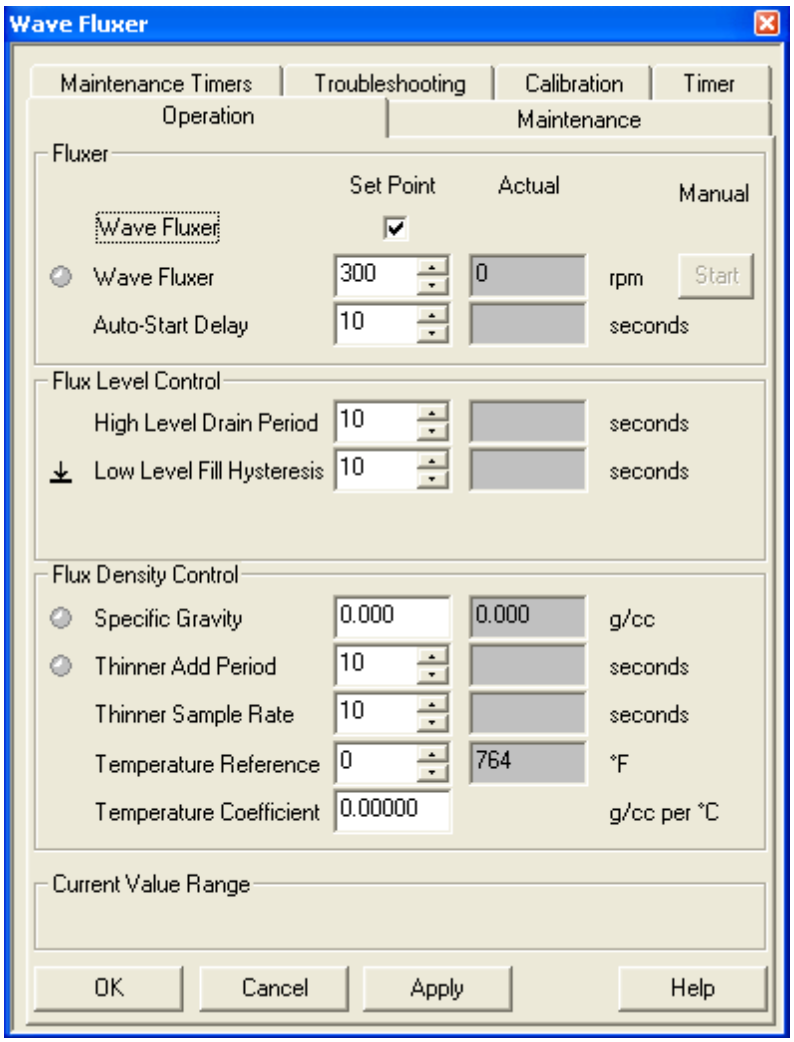
Thinner Add Period
Amount of time the thinner is to be added to correct specific gravity. Set so that 1 add period changes the specific gravity only 0.001.

Thinner Sample Rate
Amount of time the system will wait after adding thinner to check the specific gravity. This should be along enough time to allow the thinner to completely mix with the flux. Typical setting is 120 seconds.

Temperature Reference
See manufacturer's data sheet, this is base temperature for the manufacturer's flux specific gravity specification.

Temperature Coefficient

See manufacturer's data sheet. This is a correction factor for the specific gravity if the actual temperature is different than the reference temperature.



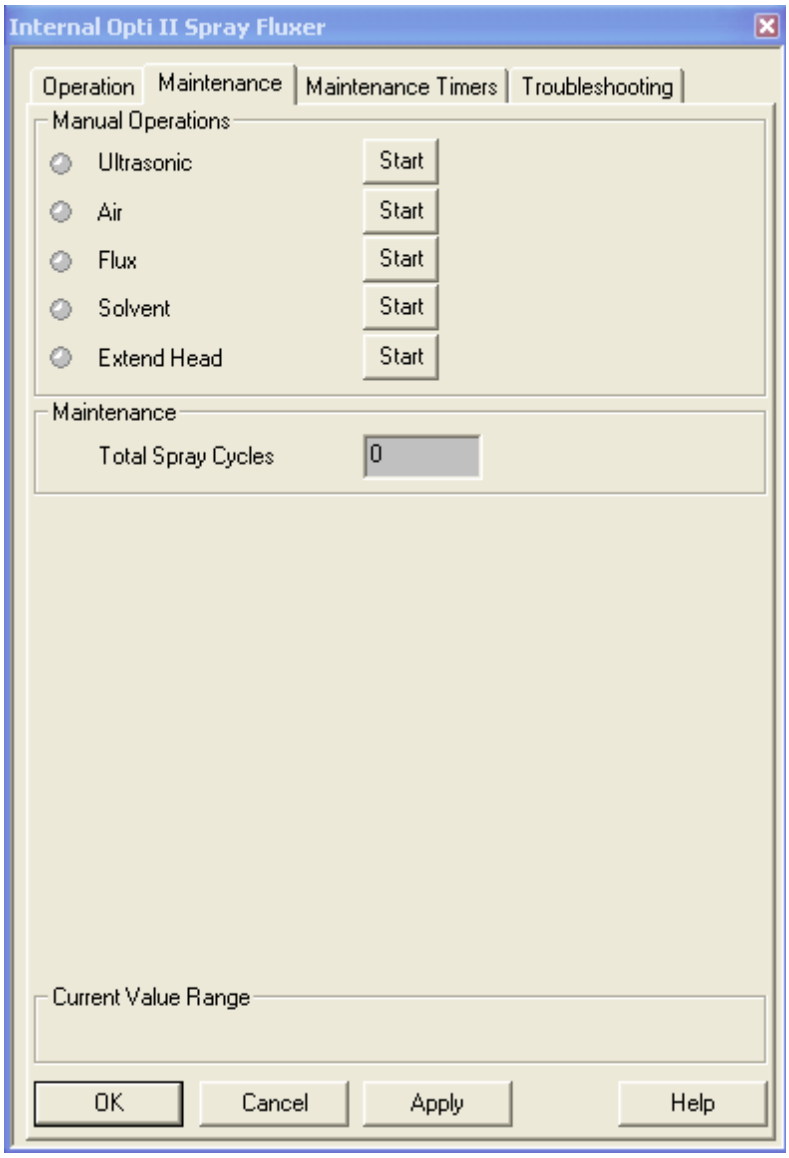
The Foam/Wave Fluxer **Calibration** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

1.8.3 Opti II

1.8.3.1 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the Manual mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The Opti II Fluxer **Maintenace** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

Manual Operations
Must be in Manual Mode and Fluxer must be inactive (not "ON") to access Start button.
Each Item when started will cause the Spray Head to extend to center of rails and can be activated in any combination with the other maintenance items.
Ultrasonic – Activates the Ultrasonic head.
Air – Causes the air to spray through head.
Flux – Causes the flux to spray through the head.
Solvent – Causes the solvent to spray through the head.
Extend Head – Center Spray Head between rails for Maintenance.

Note: When other maintenance items are pressed the head will automatically center.
Allow enough time for the nozzle to extend or retract before pressing a Stop/Start Button of any of these
functions.

Maintenance
Total Spray Cycles
Number of spray cycles that the fluxer has gone through.

1.8.3.2 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

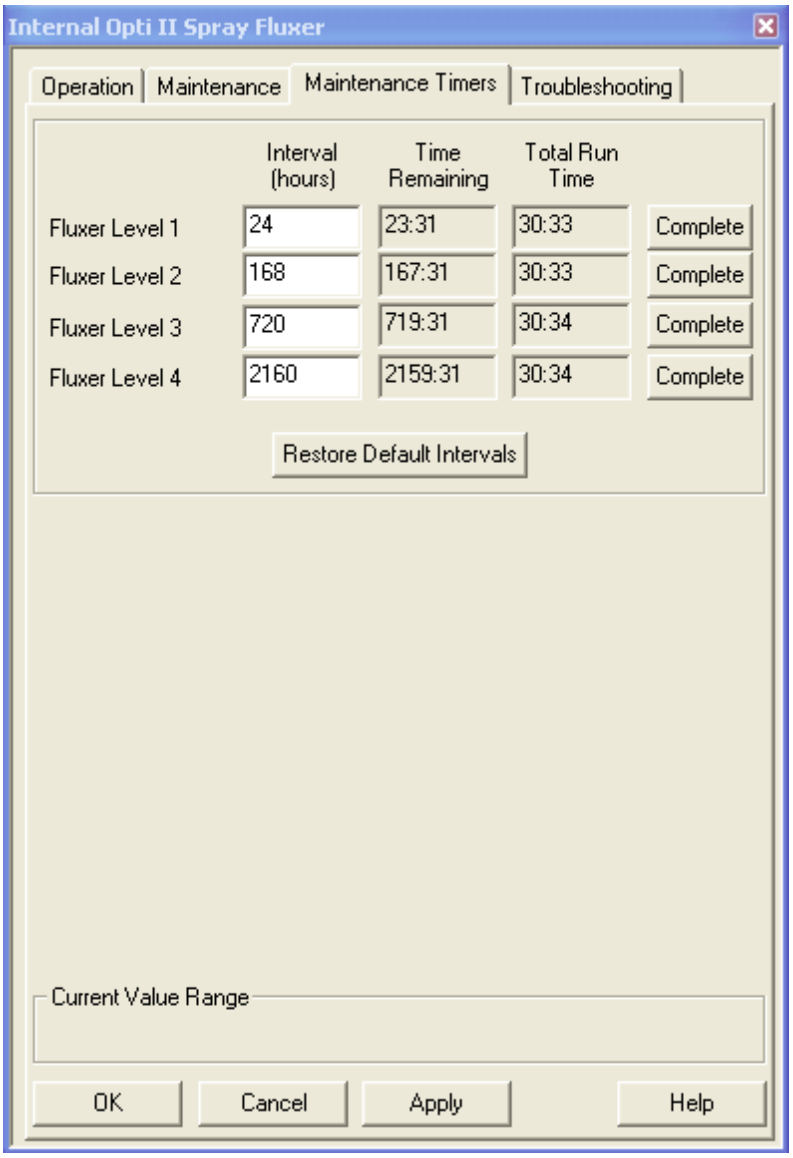
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, Monthly or Quarterly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The Opti II Fluxer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

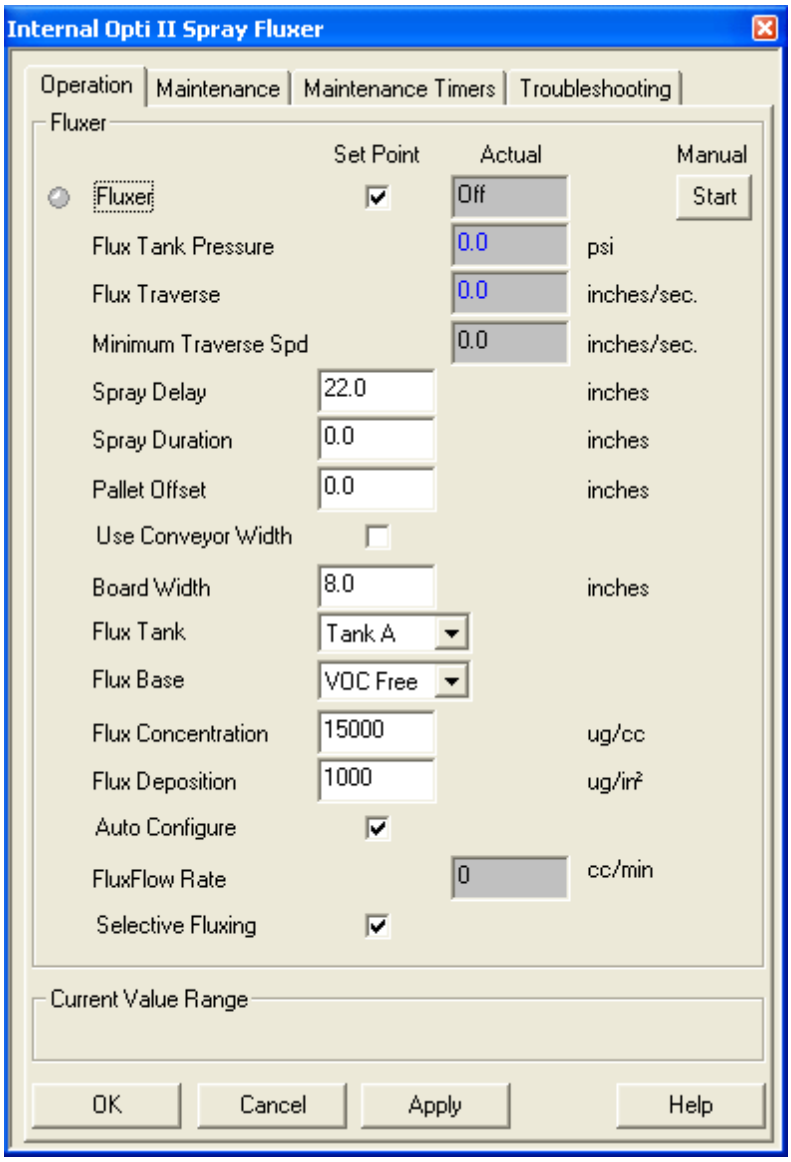
1.8.3.2.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly

Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.3.3 Operation

Within the **Operation** tab, specific parameters related to the Opti Fluxer module, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The Opti II Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Note: Tank Pressure cannot be changed while the Fluxer is in Run Mode. The setpoint change will be ignored and may cause the Fluxer to become unstable. When making changes, especially Tank Pressure (manual mode), allow enough time for the changes to take effect in the fluxer before trying to process a board.

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start

operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box are dependent on the machine configuration. Imperial units are referenced.

Flux Tank Pressure
Controls the pressure of the flux tank, which affects the flow rate to the spray head. The text box in the Set Point column allows the user to adjust the pressure of the flux tank. If the "Auto Configure" box is checked, the fluxer will ignore this setpoint and will utilize the "Auto Configure" parameters to adjust this setting. In this case the setpoint will not be visible.
Actual pressure is indicated in the text box under the Actual column.

Flux Traverse
Sets the Traversing Speed of the Spray Head. Actual speed is displayed in the text box under the Actual column. If the "Auto Configure" box is checked, the fluxer will ignore this setpoint and will utilize the "Auto Configure" parameters to adjust this setting. In this case the setpoint will not be visible.
The actual traverse speed is indicated in the text box under the Actual column.

Minimum Traverse Speed
Displays the minimum calculated Traverse speed that the fluxer will be able to maintain with the current configuration settings under the Actual column. This item is sent directly from the fluxer. Under "Auto Configure" mode this will display the traverse speed that has been calculated using the Auto Configure parameters.

Spray Delay
Sets the distance the printed circuit board must travel after passing the photocell to the center of the spray head. The spray delay should be set to a distance slightly less than the actual distance to ensure that the spray sequence is activated just prior to the board entering the spray head zone.

Spray Duration
Sets the distance the spray head is activated. If this is set to zero the fluxer sprays for the length of the printed circuit board. If this is set to some other value, the spray head will spray for that distance of board travel.

Pallet Offset (Pallet Mode)
Sets the distance between the fixed rail proximity sensor and the point at which the spray head begins to spray the board, as the spray head begins to traverse.

Use Conveyor Width
Selection of this checkbox automatically sets the board width of the fluxer to the current conveyor width actual.

Board Width (Pallet Mode)
Sets the process width of the circuit board. This value is used if the "Use Conveyor Width" box is not checked.

Flux Tank
Selects the Flux Tank being used for the current recipe. Select Tank A or B.

Auto Configure Parameters
NOTE: The following Three settings, along with the Orifice Size on the Fluxer Configuration Page, are utilized in setting the Tank Pressure and Traverse Speed.

Flux Base
Selects the Flux Base type being used for the current recipe. Select Alcohol or VOC Free (Water).

Flux Concentration
Should be set per current flux properties.

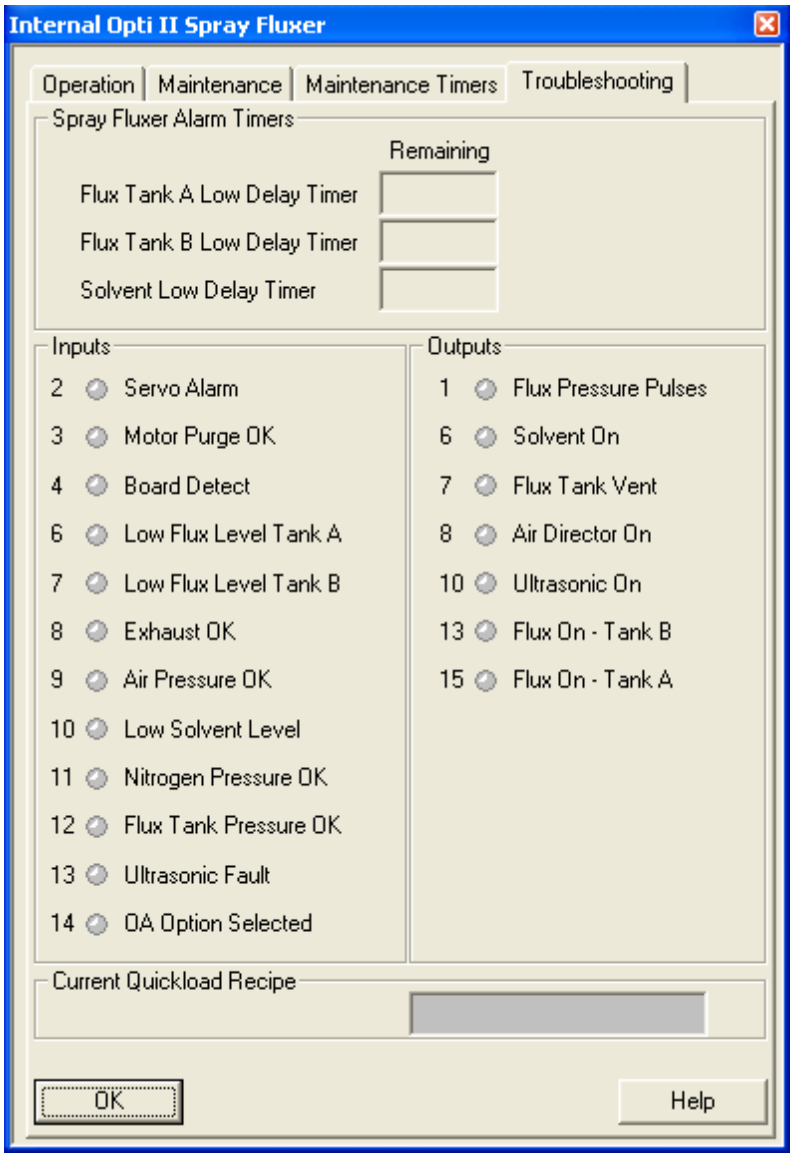
Flux Deposition
Should be set per current flux properties.

Auto Configure
This box is checked when using the "Flux Deposition", "Flux Concentration", "Flux Base", and the "Orifice Size" to automatically calculate the Traverse Speed and Flux Tank Pressure Setpoints. The Recipe setpoints for these two items will be ignored in Auto Configure Mode. The Orifice Size is modified on the Fluxer Configuration Page. These four Auto Configure Parameters are ignored if this box is not checked.

Flux Flow Rate
Displays the Calculated Flux Flow Rate from the PLC of the Fluxer. This value is only valid and thus displayed when in Auto Configure Mode.

1.8.3.4 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The Opti II Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Spray Fluxer

Tank Pressure Alarm Delay
The time before the alarm is triggered once armed and the actual pressure is the alarm band , prevents false alarms.

Tank Pressure Delay Timer
The length of time that is allowed, before arming the tank pressure alarm.

Flux Tank A Low Delay Timer

The time before the alarm is triggered after the Low Level of Flux Tank A is detected.

Flux Tank B Low Delay Timer
The time before the alarm is triggered after the Low Level of Flux Tank B is detected.

Solvent Low Delay Timer
The time before the alarm is triggered after the Solvent Low Level is detected.

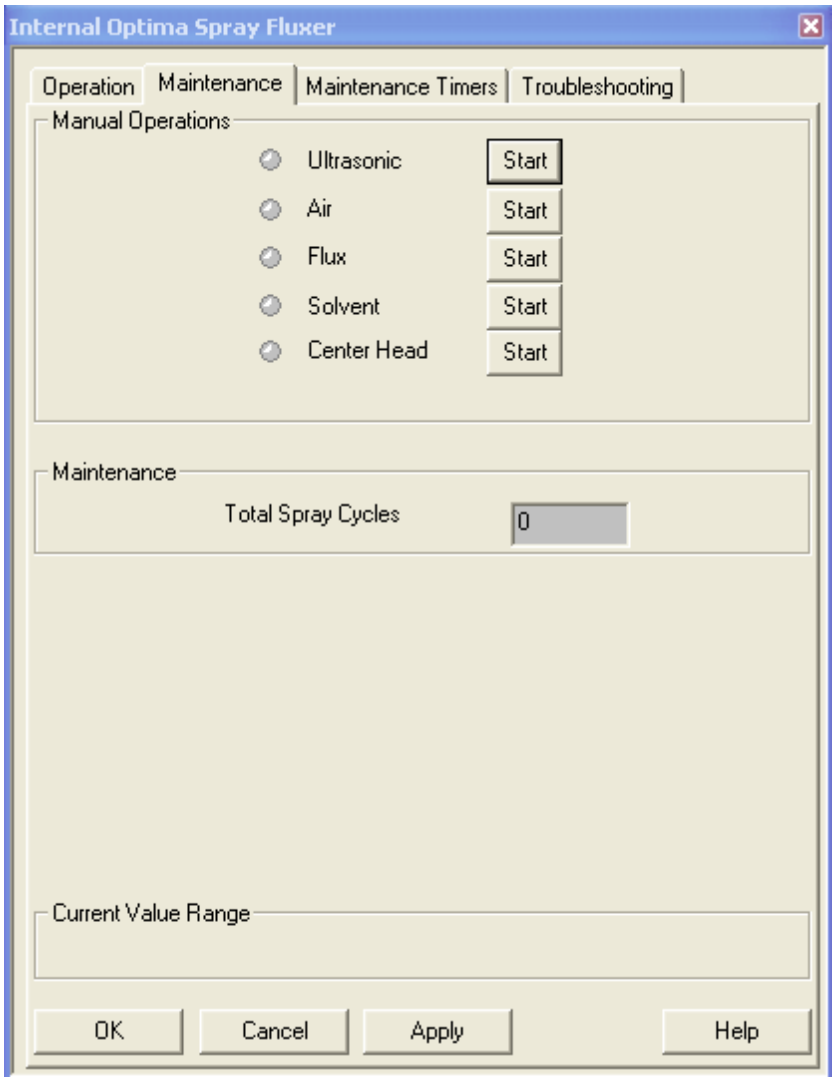
Inputs / Outputs
The Inputs and Outputs of Fluxer with Fluxer I/O designation and Title. The LED is Green when active, otherwise it is Gray.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.

1.8.4 Optima

1.8.4.1 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the Manual mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The Optima Fluxer **Maintenance** tab may be accessed via:

Menu:	**Modules	Internal Fluxer	Maintenance** tab
	**Modules	External Fluxer	Maintenance** tab

Manual Operations
Must be in Manual Mode and Fluxer must be inactive (not “ON”) to access Start button.
Each Item when started will cause the Spray Head to extend to center of rails and can be activated in any combination with the other maintenance items.

Ultrasonic
Activates the Ultrasonic head.

Air
Activates the air to spray through head.

Flux
Activates the flux to spray through the head.

Solvent
Activates the solvent to spray through the head.

Extend Head
Center Spray Head between rails for Maintenance.

Note: When other maintenance items are pressed the head will automatically center. Allow enough time for the nozzle to extend or retract before pressing a Stop/Start Button of any of these functions.

Total Spray Cycles
Number of spray cycles that the fluxer has gone through.

1.8.4.2 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

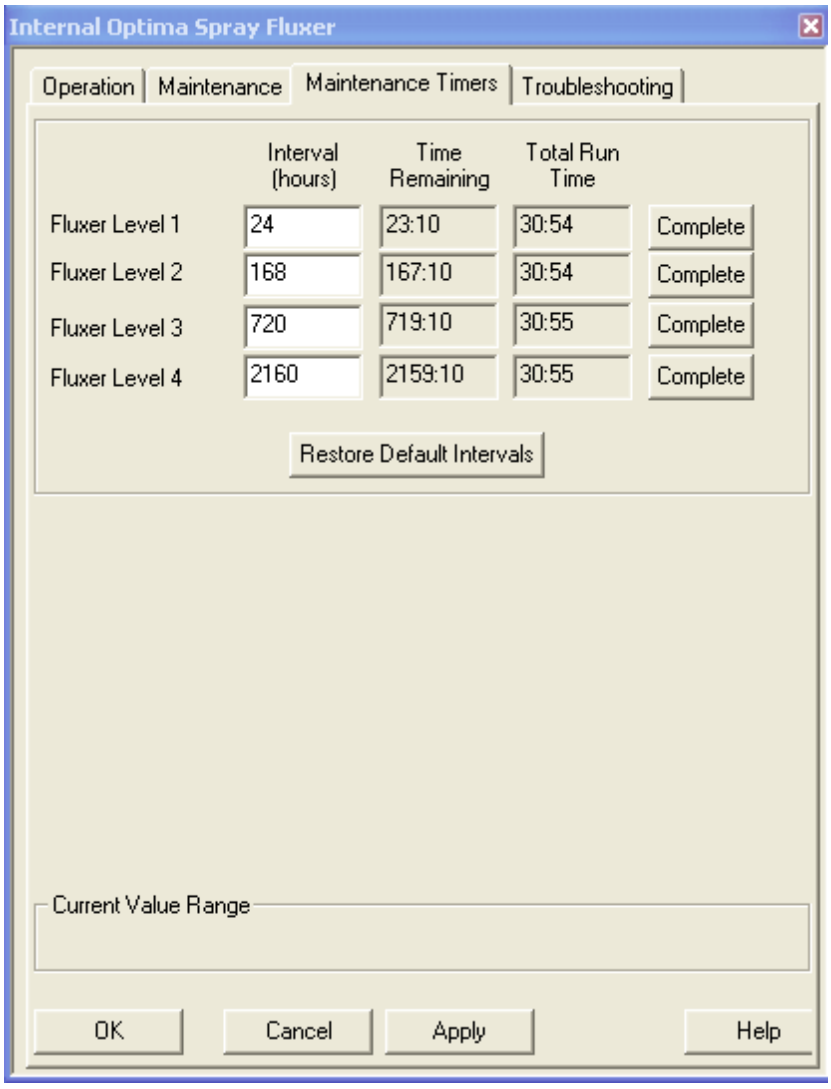
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window Maintenance Note will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The Optima Fluxer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

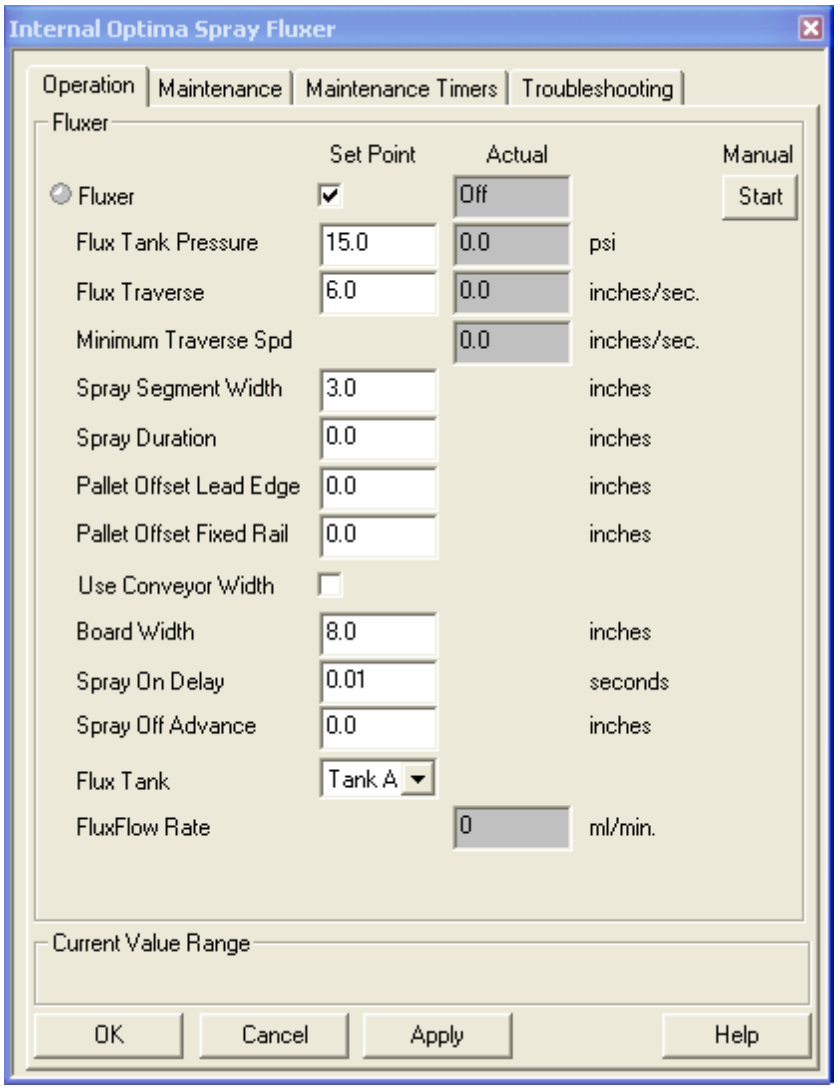
1.8.4.2.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly

Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.4.3 Operation

Within the **Operation** tab, specific parameters related to the Optima Fluxer module, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The Optima Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box are dependent on the machine configuration. Imperial units are referenced.

Flux Tank Pressure
Controls the pressure of the flux tank, which affects the flow rate to the spray head. The text box in the

Set Point column allows the user to adjust the pressure of the flux tank. If the “Auto Configure” box is checked, the fluxer will ignore this setpoint and will utilize the “Auto Configure” parameters to adjust this setting. In this case the setpoint will not be visible.
Actual pressure is indicated in the text box under the Actual column.

Flux Traverse
Sets the Traversing Speed of the Spray Head. Actual speed is displayed in the text box under the Actual column.

Spray Segment Width
Sets the distance of board Travel between Spray Passes. This value represents the width of the Spray Pattern that sufficiently covers the board for the Current Recipe.

Spray Duration
Sets the distance the spray head is activated from the starting point as set by the Spray Delay distance. If this value is set to zero, the Fluxer sprays for the length of the printed circuit board. Otherwise, the spray head will spray for the Duration Setpoint.

Pallet Offset (Fixed Rail)
Sets the distance between the fixed rail proximity sensor and the point at which the spray head begins to spray the board, as the spray head begins to traverse.

Pallet Offset (Leading Edge)
Sets the distance the Leading Edge of the Pallet/ Board printed circuit board must travel past the Beginning of the Spray Head before the Fluxer Begins to Spray.

Use Conveyor Width
Selection of this checkbox automatically sets the board width of the Fluxer to the current conveyor width actual.

Board Width (Pallet Mode)
Sets the process width of the circuit board. This value is used if the “Use Conveyor Width” box is not checked.

Spray On Delay
Sets the time in seconds to start spraying before the extend stroke begins.

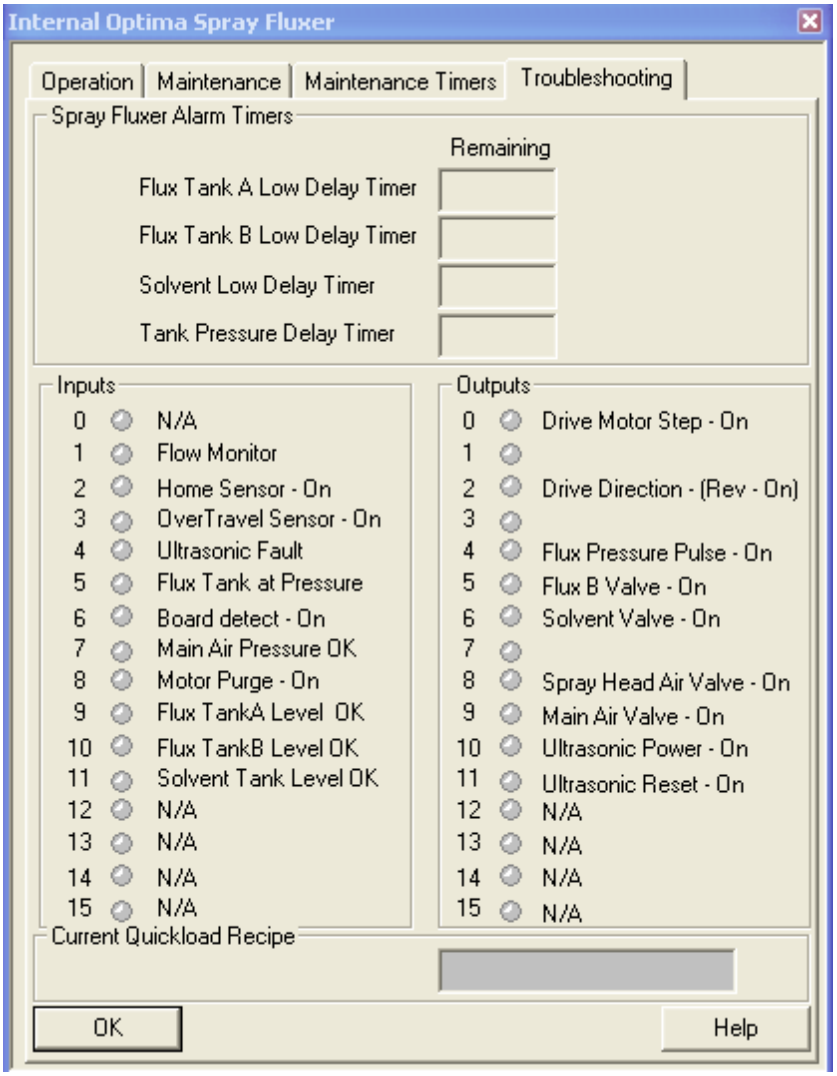
Spray Off Advance
Sets the distance before the end of the Extend Stroke before turning off the Spray of Flux. This helps prevent Over-Spray at the end of the stroke.

Flux Tank
Selects the Flux Tank being used for the current recipe. Select Tank A or B.
Note: Fluxer Must be Off for this to take effect. When On the Fluxer will continue to use the same Tank in which the Fluxer was started.

Flux Flow Rate
Displays the actual Flux Flow Rate.
Note: This is only displayed if the Flow Meter Option is installed.

1.8.4.4 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The Optima Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Flux Tank A Low Delay Timer
The time before the alarm is triggered after the Low Level of Flux Tank A is detected.

Flux Tank B Low Delay Timer

The time before the alarm is triggered after the Low Level of Flux Tank B is detected.

Solvent Low Delay Timer
The time before the alarm is triggered after the Solvent Low Level is detected.

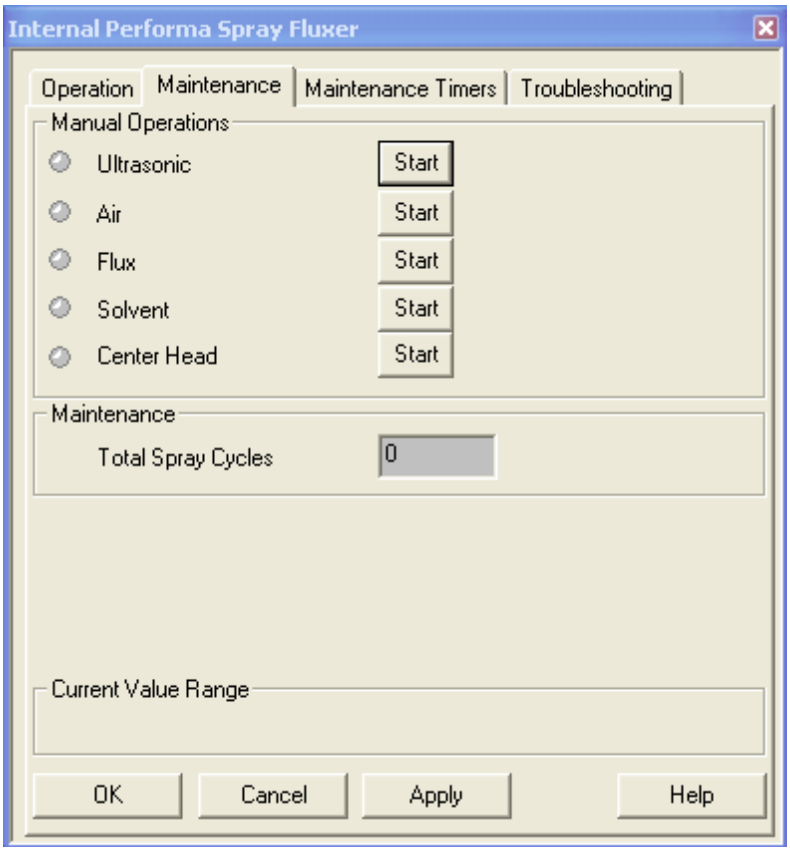
Inputs / Outputs
The Inputs and Outputs of Fluxer with Fluxer I/O designation and Title. The LED is Green when active, otherwise it is Gray.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.

1.8.5 Performa

1.8.5.1 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the Manual mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The Performa Fluxer **Maintenance** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

Manual Operations
Must be in Manual Mode to access Start button.
Ultrasonic
Air
Flux
Solvent Is not active unless Spray Head is at Home Position.
Center Head In the middle of the Conveyor or Board Width Setting.

Maintenance
Total Spray Cycles
Number of spray cycles that the Fluxer has completed.

1.8.5.2 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

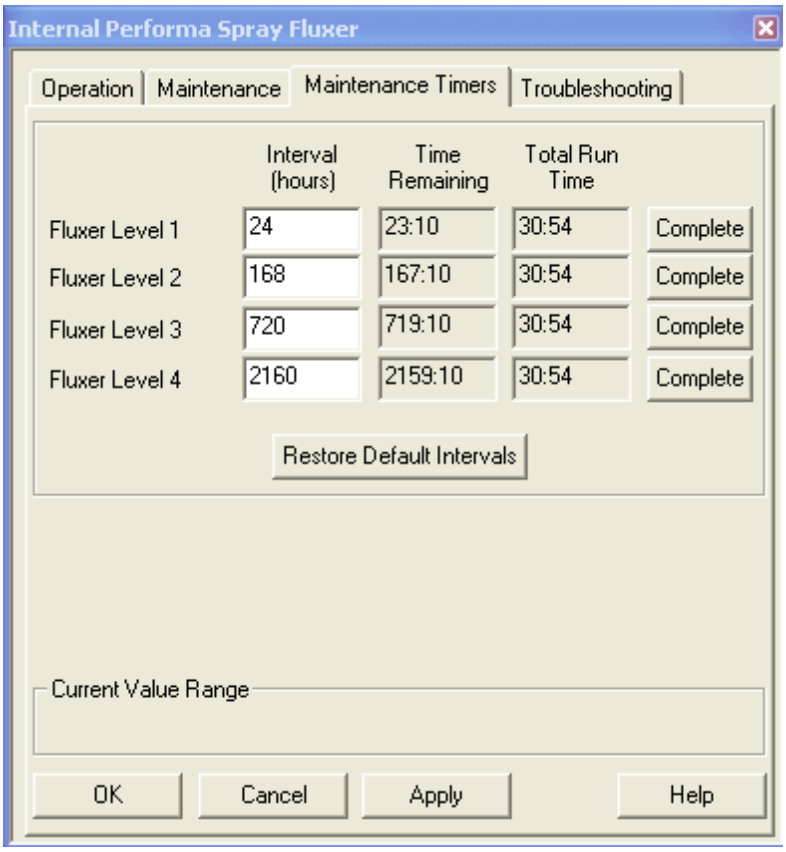
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The Performa Fluxer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

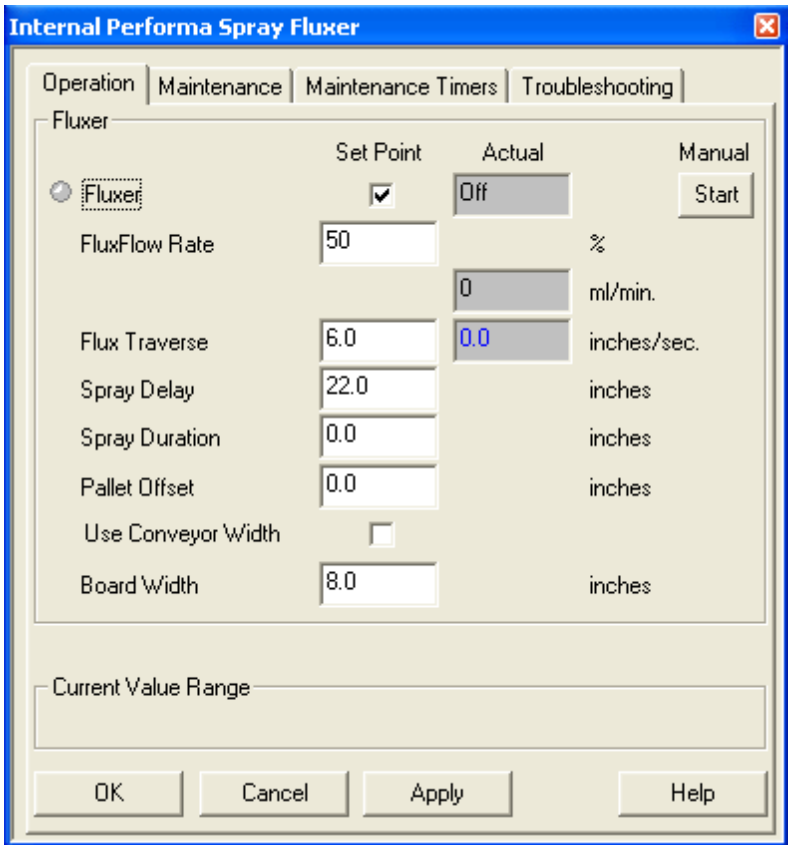
1.8.5.2.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			

Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.5.3 Operation

Within the **Operation** tab, specific parameters related to the Opti Fluxer module can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The Performa Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box is dependent on machine configuration. Imperial units are referenced.

Flux Flow Rate
Controls the Flux flow rate to the spray head. The text box in the Set Point column allows the user to adjust the Flow Rate.

Flux Traverse
This is only a reference set point for the alarm. Setting of the actual traverse speed must be set by adjusting the needle valve in the control box.
Actual speed is displayed in the text box under the Actual column.

Spray Delay

Sets the distance the printed circuit board must travel after passing the photocell to the center of the spray head. The spray delay should be set to a distance slightly less than the actual distance to ensure that the spray sequence is activated just prior to the board entering the spray head zone.

Spray Duration
Sets the distance the spray head is activated. If this is set to zero the fluxer sprays for the length of the printed circuit board. If this is set to some other value, the spray head will spray for that distance of board travel.

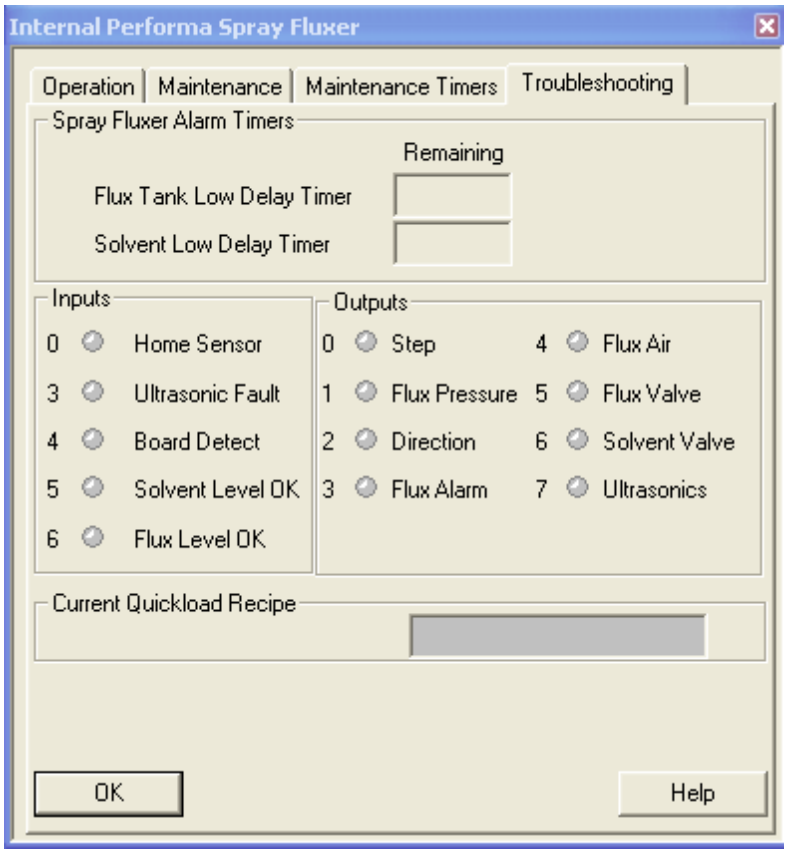
Pallet Offset (Pallet Mode)
Sets the distance between the fixed rail proximity sensor and the point at which the spray head begins to spray the board, as the spray head begins to traverse.

Use Conveyor Width
Selection of this checkbox automatically sets the board width of the fluxer to the current conveyor width actual.

Board Width (Pallet Mode)
Sets the process width of the circuit board.

1.8.5.4 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The Performa Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Spray Fluxer

Flux Tank Low Delay Timer
The time before the alarm is triggered after the Low Level of Flux Tank is detected.

Solvent Low Delay Timer
The time before the alarm is triggered after the Solvent Low Level is detected.

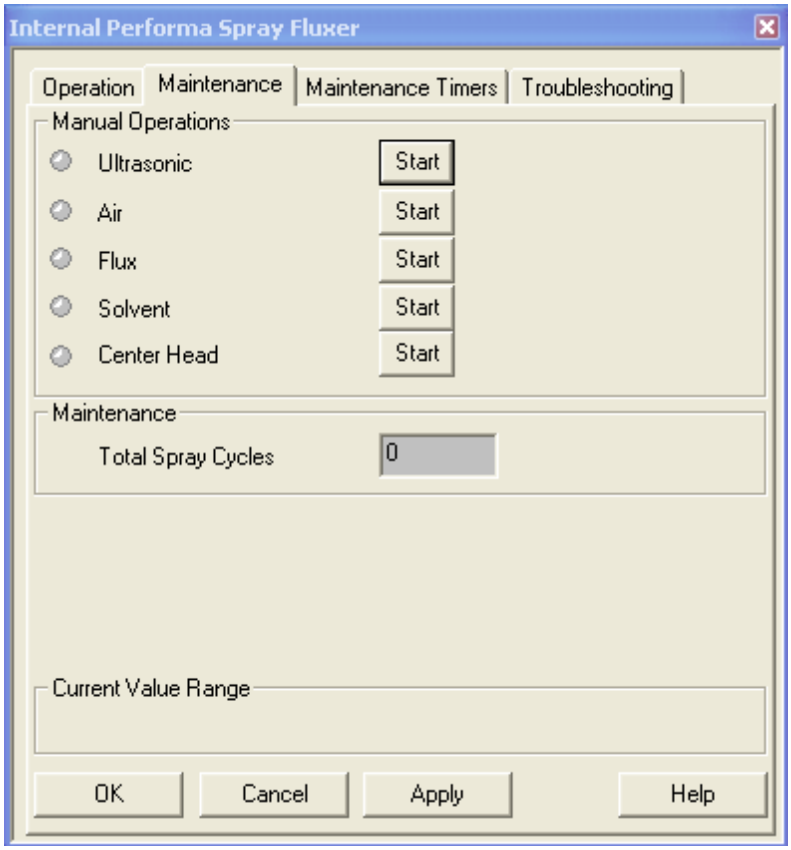
Inputs / Outputs
The Inputs and Outputs of Fluxer with Fluxer I/O designation and Title. The LED is Green when active and is Gray when not active.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.

1.8.6 Performa II

1.8.6.1 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the Manual mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The Performa II Fluxer **Maintenance** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

Manual Operations
Must be in Manual Mode and Fluxer must be inactive (not “ON”) to access Start button.
Each Item when started will cause the Spray Head to extend to center of rails and can be activated in any combination with the other maintenance items.

Ultrasonic
Activates the Ultrasonic head.

Air
Activates the air to spray through head.

Flux
Activates the flux to spray through the head.

Solvent
Activates the solvent to spray through the head.

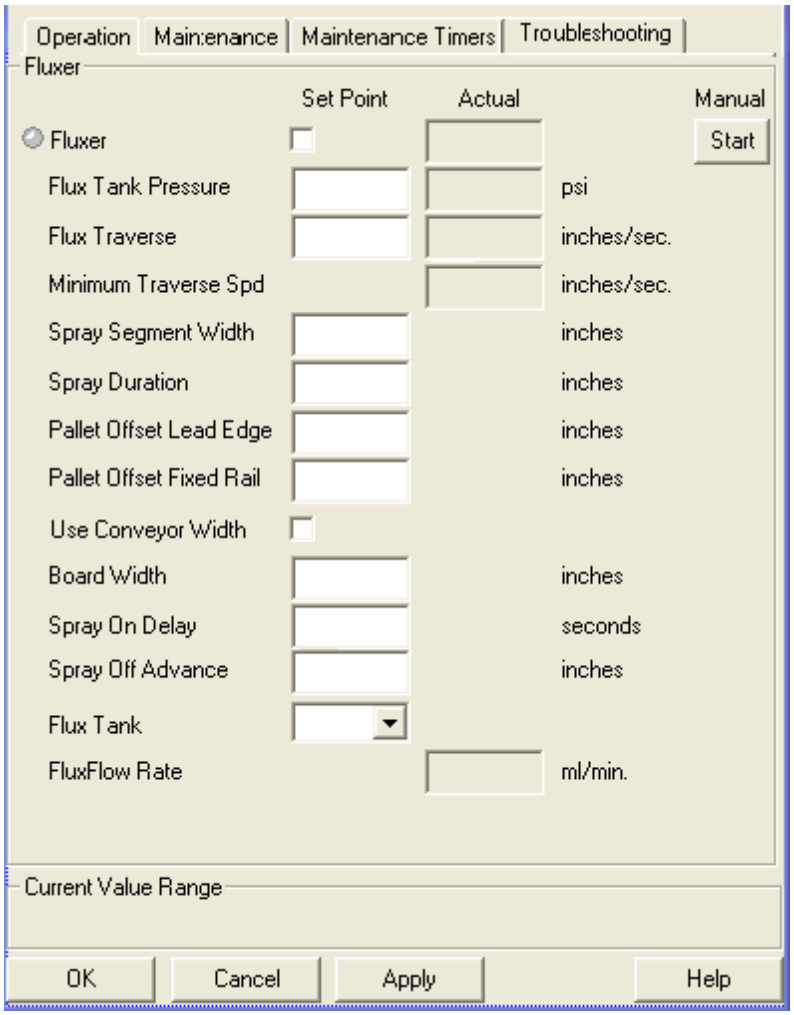
Extend Head
Center Spray Head between rails for Maintenance.

Note: When other maintenance items are pressed the head will automatically center. Allow enough time for the nozzle to extend or retract before pressing a Stop/Start Button of any of these functions.

Total Spray Cycles
Number of spray cycles that the fluxer has gone through.

1.8.6.2 Operation

Within the **Operation** tab, specific parameters related to the Optima Fluxer module, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The Performa II Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box are dependent on the machine configuration. Imperial units are referenced.

Flux Tank Pressure
Controls the pressure of the flux tank, which affects the flow rate to the spray head. The text box in the Set Point column allows the user to adjust the pressure of the flux tank. If the “Auto Configure” box is checked, the fluxer will ignore this setpoint and will utilize the “Auto Configure” parameters to adjust this

setting. In this case the setpoint will not be visible.
Actual pressure is indicated in the text box under the Actual column.

Flux Traverse
Sets the Traversing Speed of the Spray Head. Actual speed is displayed in the text box under the Actual column.

Spray Segment Width
Sets the distance of board Travel between Spray Passes. This value represents the width of the Spray Pattern that sufficiently covers the board for the Current Recipe.

Spray Duration
Sets the distance the spray head is activated from the starting point as set by the Spray Delay distance. If this value is set to zero, the Fluxer sprays for the length of the printed circuit board. Otherwise, the spray head will spray for the Duration Setpoint.

Pallet Offset (Fixed Rail)
Sets the distance between the fixed rail proximity sensor and the point at which the spray head begins to spray the board, as the spray head begins to traverse.

Pallet Offset (Leading Edge)
Sets the distance the Leading Edge of the Pallet/ Board printed circuit board must travel past the Beginning of the Spray Head before the Fluxer Begins to Spray.

Use Conveyor Width
Selection of this checkbox automatically sets the board width of the Fluxer to the current conveyor width actual.

Board Width (Pallet Mode)
Sets the process width of the circuit board. This value is used if the “Use Conveyor Width” box is not checked.

Spray On Delay
Sets the time in seconds to start spraying before the extend stroke begins.

Spray Off Advance
Sets the distance before the end of the Extend Stroke before turning off the Spray of Flux. This helps prevent Over-Spray at the end of the stroke.

Flux Tank
Selects the Flux Tank being used for the current recipe. Select Tank A or B.

Flux Flow Rate
Displays the actual Flux Flow Rate.

Note: This is only displayed if the Flow Meter Option is installed.

1.8.6.3 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)

Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

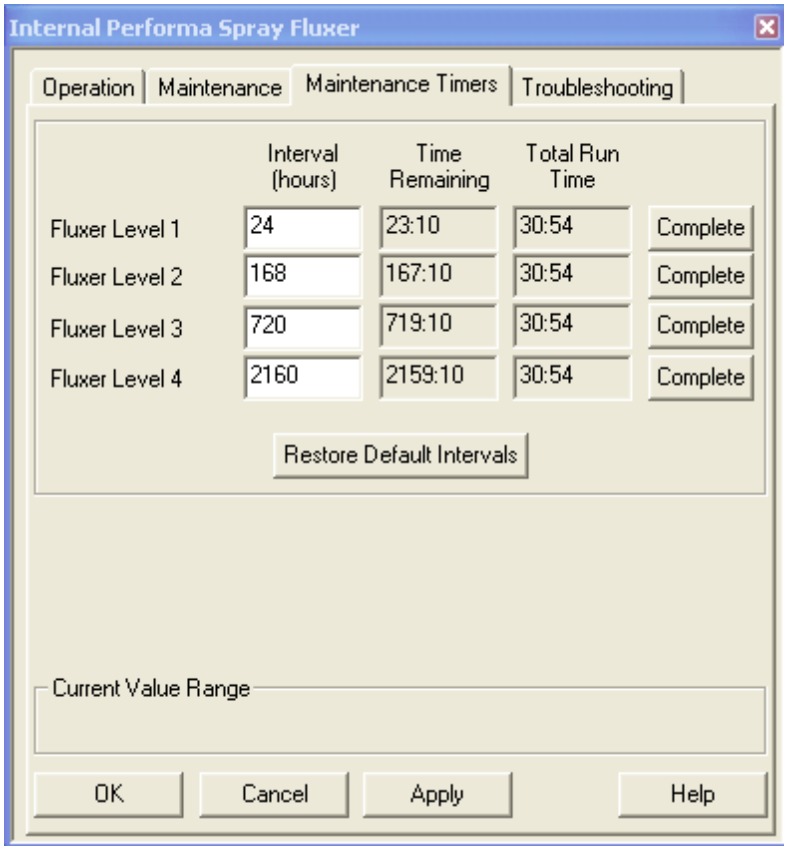
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The Performa II Fluxer **Maintenance Timers** tab may be accessed via:

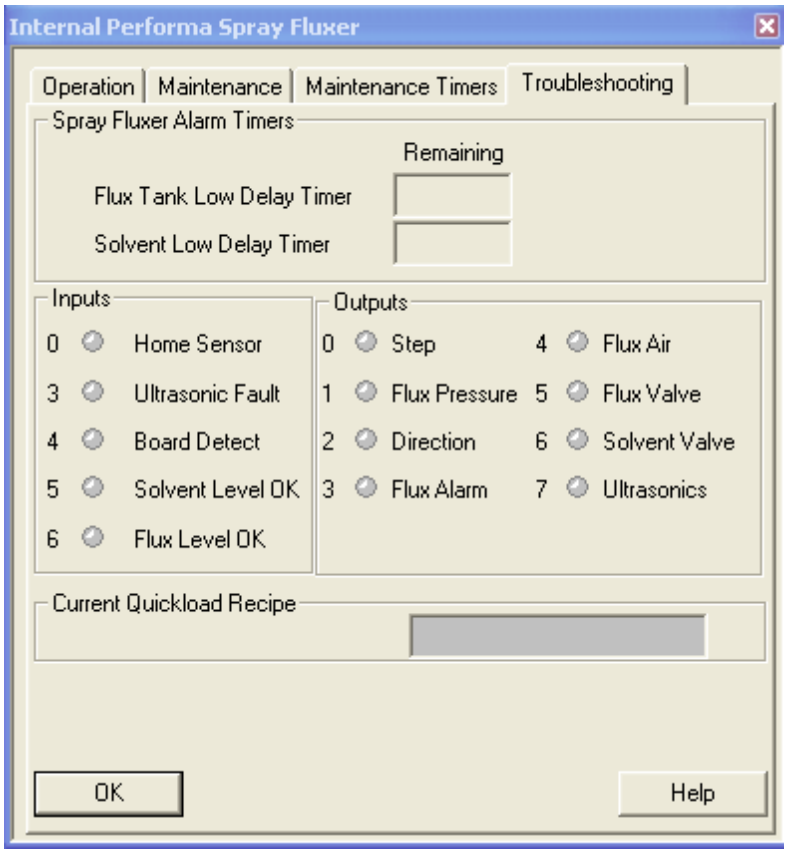
Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

1.8.6.3.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.6.4 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The Performa II Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Flux Tank A Low Delay Timer
The time before the alarm is triggered after the Low Level of Flux Tank A is detected.

Flux Tank B Low Delay Timer
The time before the alarm is triggered after the Low Level of Flux Tank B is detected.

Solvent Low Delay Timer
The time before the alarm is triggered after the Solvent Low Level is detected.

Inputs / Outputs
The Inputs and Outputs of Fluxer with Fluxer I/O designation and Title. The LED is Green when active, otherwise it is Gray.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.

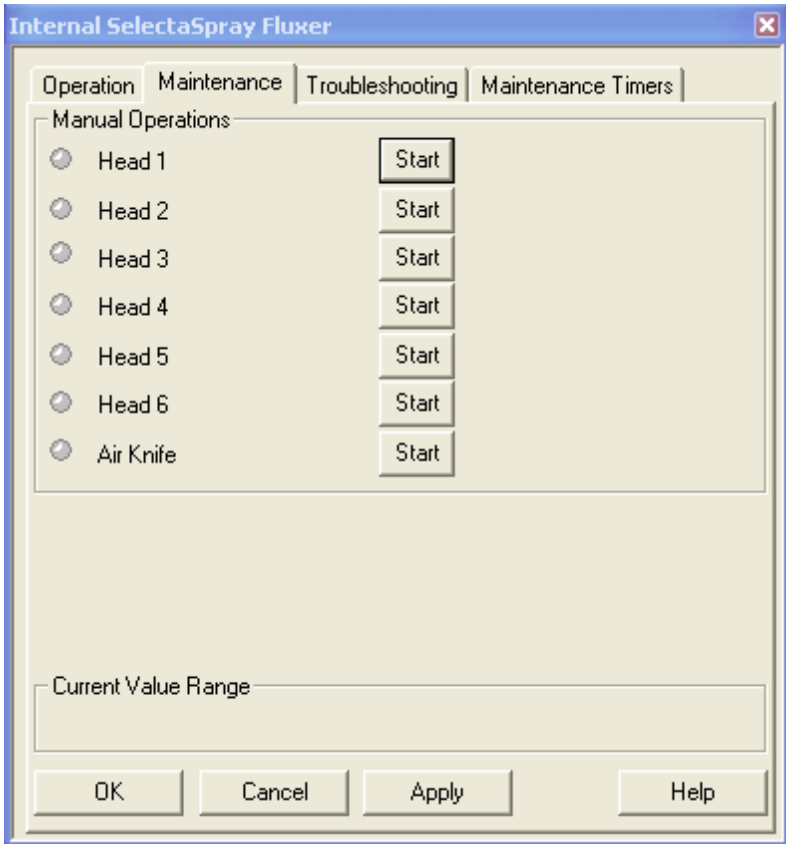
1.8.7 SelectaSpray

1.8.7.1 Maintenance

Manual Operations

Head1 - Head6 and Air Knife

Using these buttons turns the respective function on in the SelectaFluxer. The LED will indicate the status of the function. These buttons are disabled if the fluxer is turned on.



The SelectaSpray Fluxer **Maintenace** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

1.8.7.2 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until

maintenance is performed.

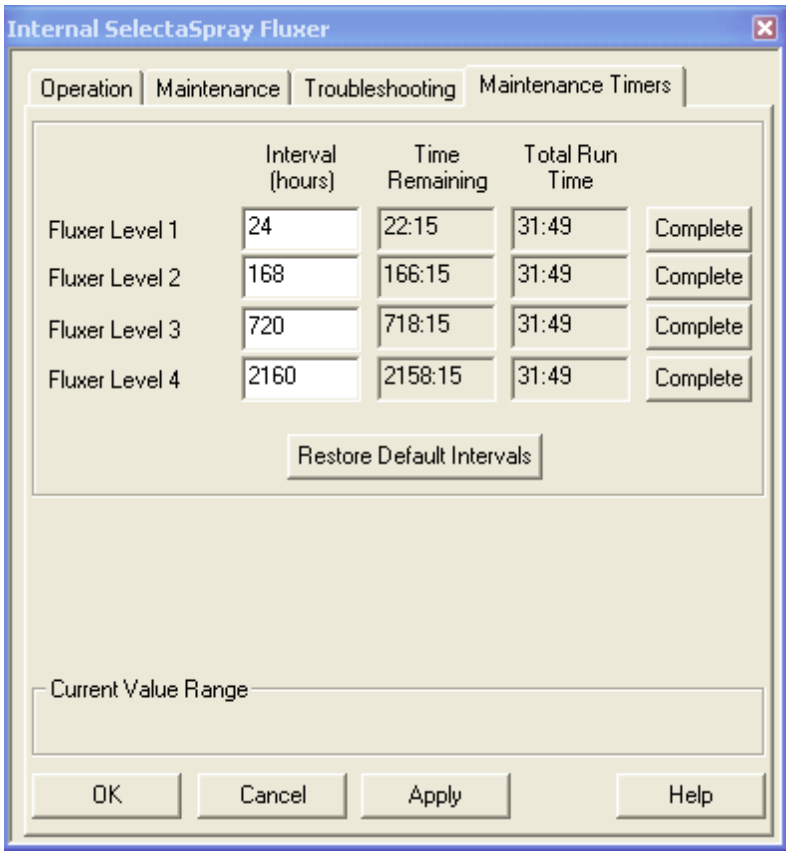
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The SelectaSpray Fluxer **Maintenace Timers** tab may be accessed via:

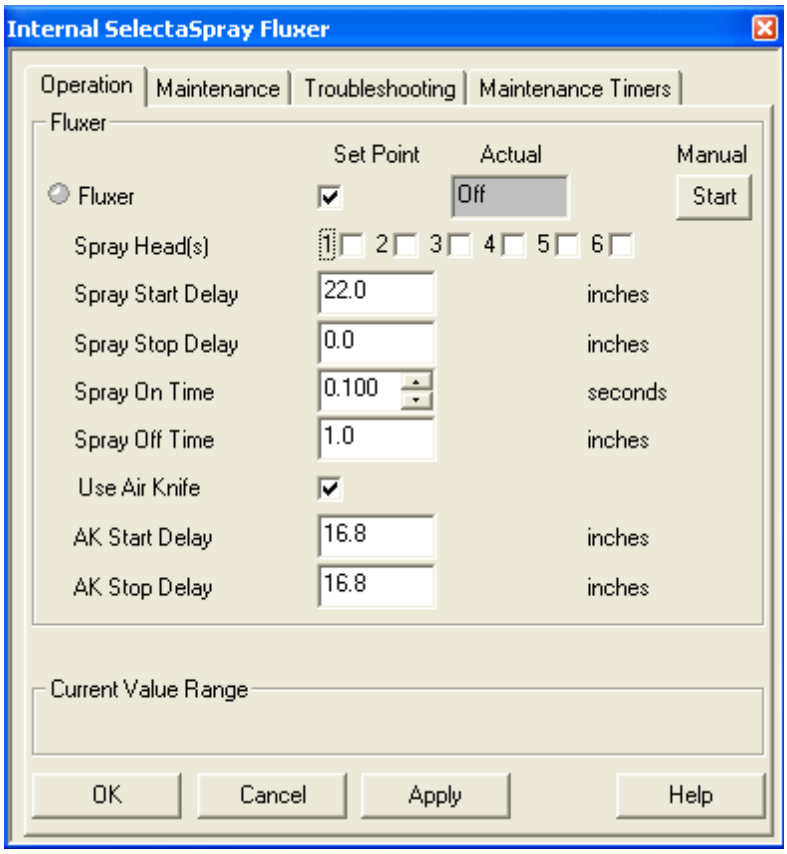
Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

1.8.7.2.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.7.3 Operation

Within the **Operation** tab, specific parameters related to the SelectaSpray module can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The SelectaSpray Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer

Fluxer

Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.

Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing for each box depend on machine configuration. Imperial units are referenced.

Spray Heads

The check boxes are used to choose which spray heads will be used during the processing of boards. Any combination of spray heads may be chosen regardless of conveyor width. In general, use only the spray head(s) needed to cover the board completely without excess overspray. Spray head 1 is the head closest to the front of the machine.

Spray Start Delay

Sets the distance the leading edge of the printed circuit board must travel after passing the photocell before the spray heads begin spraying.

Spray Stop Delay
Sets the distance the printed circuit board must travel after passing the photocell before the spray heads stop spraying.

Spray On Time
Sets the length of time the spray head is activated. The Spray On Time setpoint must be entered in intervals of 25 milliseconds (0.025 seconds). Any number entered into this field that does not meet this requirement will be rounded to the nearest 25 millisecond interval.

Spray Off Time
Sets the distance the printed circuit board must travel between sprays.

Use Air Knife
Selection of this checkbox determines whether the SelectaSpray airknife is used during the processing of a printed circuit board.

AK Start Delay
Sets the distance the leading edge of the printed circuit board must travel after passing the photocell before the air knife begins operating. This box is not visible if the Use Air Knife checkbox is not selected.

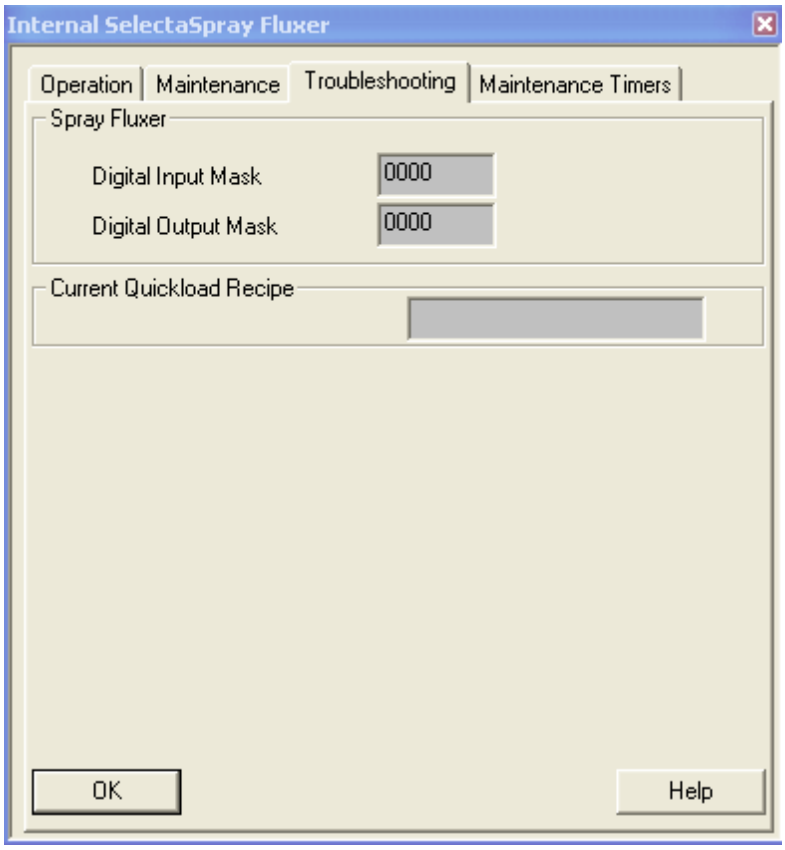
AK Stop Delay
Sets the distance the trailing edge of the printed circuit board must travel after passing the photocell before the air knife stops operating. This box is not visible if the Use Air Knife checkbox is not selected.

1.8.7.4 Troubleshooting

Spray Fluxer
Digital Input Mask
This value is the hexadecimal representation of the current state of the fluxer inputs.

Digital Output Mask
This value is the hexadecimal representation of the current state of the fluxer outputs.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.



The SelectaSpray Fluxer **Troubleshooting** tab may be accessed via:

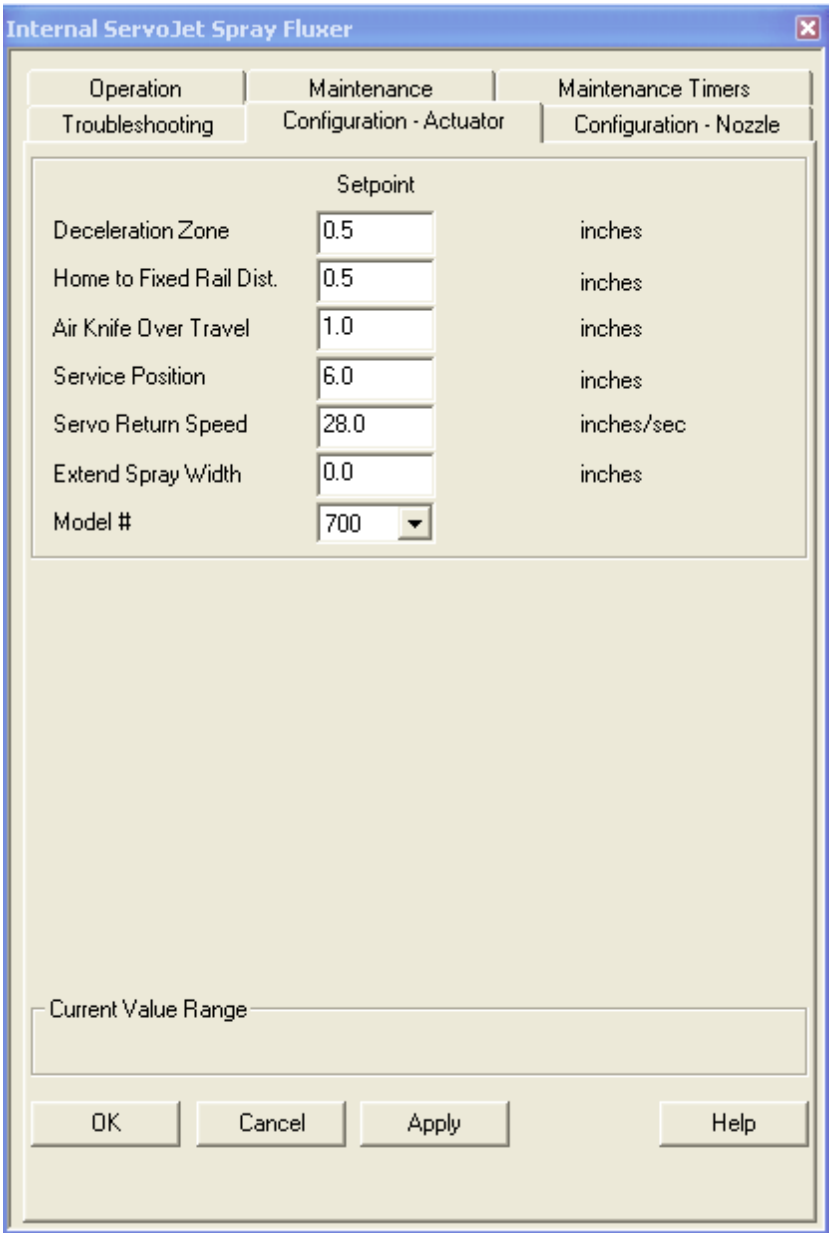
Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

1.8.8 Servo Jet

1.8.8.1 Configuration

1.8.8.1.1 Actuator Configuration

The **Actuator Configuration** Page contains settings that are specific to the Fluxer and not individual Board Recipes. Once a setting is changed, the OK Button should be pressed from this page to save the new changes.



The ServoJet Fluxer **Configuration - Actuator** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Configuration - Actuator** tab
Modules | External Fluxer | Configuration - Actuator tab

Deceleration Zone
Sets the distance from the end of the Extend and return stroke in which the Actuator performs the Deceleration process after the Spray Stroke has been performed.

Home to Fixed Rail distance
Sets the distance from the Home position to the inner edge of the fingers of the fixed Rail or the location

of the start of the Flux Zone.

Air Knife Over Travel
Sets the additional distance of Travel required to the Decel Zone to allow the Air knife to fully Contact the Board.

Service Position
Sets the distance from Home in which the spray head moves when the Move to Maintenance Location button is pressed on the Maintenance page.

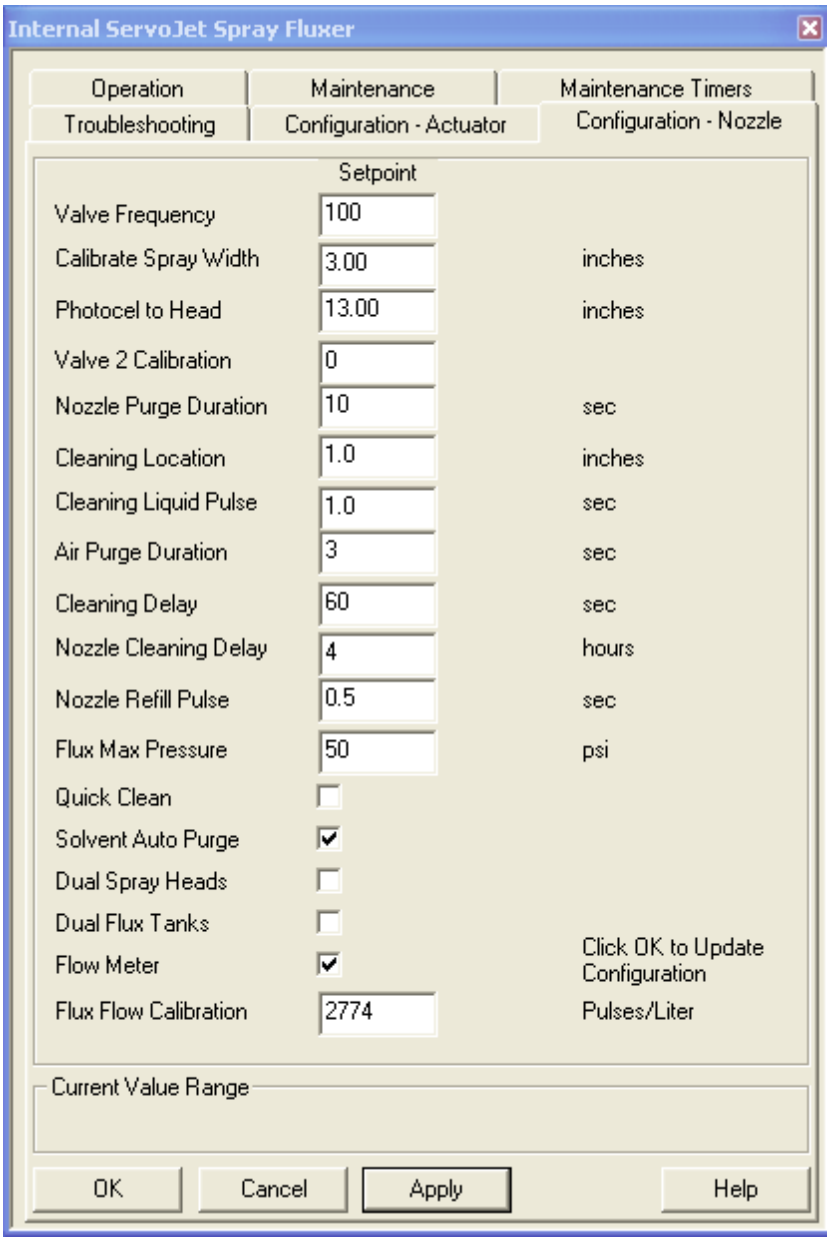
Extend Spray Width
Calibration Distance added to the Board Width/ Conveyor Width Setpoint as set on the Operations page to extend the proper Spray distance to cover the full width of the board or pallet.

Servo Return Speed
Sets the Return speed after a Spray Stroke.

Model #
Choose between the 500 mm and 700 mm Spray Stroke Length models.

1.8.8.1.2 Nozzle Configuration

The **Nozzle Configuration** Page contains settings that are specific to the Fluxer and not individual Board Recipes. Once a setting is changed, the OK Button should be pressed from this page to save the new changes.



The ServoJet Fluxer **Configuration - Nozzle** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Configuration - Nozzle** tab
Modules | External Fluxer | Configuration - Nozzle tab

Valve Frequency

Sets the Time in 10^{th}'s of a milliseconds, (100, the recommended value = 10.0 ms), that represents the Full Period of a Spray Cycle. The Valve Factor, as set on the Operations Page, is the % of time of this Value.
For Example, if the Valve Frequency is 80 and the Valve Factor is set to 50, the Period of the Flux Spray is 8ms and the Spray on Pulse would be 50% of 8ms or 4ms.

Calibrate Spray Width
Sets the distance of Board Travel on the Conveyor between the Start of each Spray Stroke. The Default Value is 3.0" or 76mm. Setting a narrow Spray Width will cause more overlap but may also provide the need for a faster Traverse Speed or slower Conveyor Speed Setting. Having a too large a Spray Width can cause skips on the board.

Photocell to Head
Sets the distance from the Fluxer Board Detect Sensor to the Spray Head on the Fluxer. Should be calibrated to Cover the leading edge of the board with flux with 0.0 for a Leading Edge Offset and as little over-spray as possible.

Valve 2 Calibration
Creates and Offset for Valve 2 compared to Valve 1 using the Valve Factor setting. For example if the Valve Factor Setting is 50 and Valve 2 is spraying a little heavier then Valve 1 then a (–) Offset Value may be used for Valve 2 to compensate. Likewise if it is not as thick as Valve 1 then a (+) offset value may be required.

Nozzle Purge Duration
Sets the Period of Time that a Flux and Solvent Purge runs after being started from the Maintenance Page, or when Automatically performed when the Solvent Auto Purge is selected below.

Cleaning Location
The location the head travels from home in which the Self-Clean or Purge is performed. 1" to 2" (25mm to 51mm) is typical

Cleaning Liquid Pulse
Sets the time that the Cleaning Liquid Valve is Opened to push Cleaning Fluid (Solvent) through the Atomization Air Line during a Clean Air Line Function. The Solvent is then purged from the system with Air.

Air Purge Duration
Sets the Period of Time that a Clean Air Line Function runs after being started from the Maintenance Page or when performed after the Cleaning Delay period expires. Note: When Quick Clean is selected and a Quick Clean is performed this value is not used. A much faster cycle is performed.

Cleaning Delay
Sets the period between each cleaning cycle. The process will not occur if there are boards in the Fluxer. If time expires but there are boards in the Fluxer, cleaning will delay 10 seconds after the board count is 0. If Quick Clean is selected, a Quick Clean will be performed until the Boards are clear from the Fluxer at which time the Standard Clean Air Line Function will occur.

Nozzle Cleaning Delay
Sets the interval in hours before Setting an alarm to perform the Solvent Purge of the Nozzle. This only occurs if the Solvent Auto Purge is not selected.

Nozzle Refill Pulse
Used when a purge cycle is performed. This sets the time that Flux is refilled into the Flux line when the Fluxer is first turned on Solvent Auto Purge is configured.

Flux Max Pressure
Sets the value required for automatic flux pressure control. This value is found on the flux pressure controller located in the pneumatic box.

Quick Clean
When Checked, a Short Periodic Self Clean will be performed in place of the standard Clean Air Line Function until such time as the spacing allows for the standard Cleaning Cycle. This application is designed for large Process Batches with little Board spacing.

Solvent Auto Purge
When Checked, a Solvent Purge will Occur whenever the Fluxer is turned from On to Off. The Fluxer will perform a Flux Purge the next time the Fluxer is turned from Off to On after the Solvent Purge is performed. If this is selected the Solvent Purge alarm will not activate and the Nozzle Cleaning Delay will be inactive.

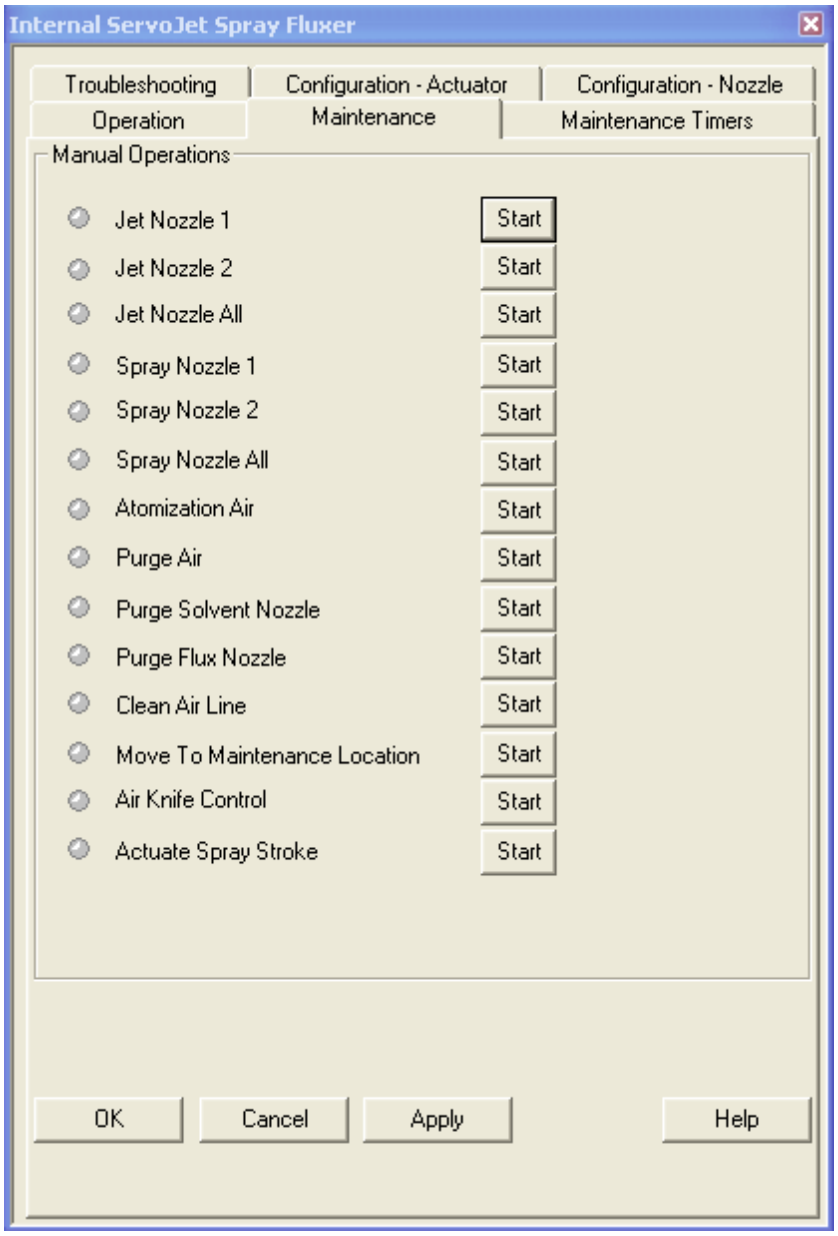
Dual Flux Tank
When Checked, The Operator is allowed to Select between Two Flux Tanks. Flux Level alarms are Active for the Flux Tank selected in the Recipe.
Flow Meter
When checked, the Fluxer Flow Meter Option is installed on the Fluxer.

Flux Flow Calibration (With Flow Meter checked)
Calibration Value found on the outside of the Flow Meter. Value marked similar to following: **Kfactor: 2774 pulses per liter.** Default value is 2774.

Note: The OK Button must be pressed when Configuration changes are made to allow updates of new features.

1.8.8.2 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the MAN mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The ServoJet Fluxer **Maintenance** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

Manual Operations

Must be in Manual Mode and Fluxer must be inactive (not "ON") to access Start button. Certain items, such as Purge Solvent and Purge Flux are set by Timers and disable other items while the Timers are Active The Status for these items will automatically show off after this delay. The Spray Stroke is set on a worse case, 10 second timer, that disables other Maintenance items until the timer has expired.

Jet Nozzle 1 Turn on 4 Flux nozzles controlled by Valve 1.

Jet Nozzle 2 Turn on 4 Flux nozzles controlled by Valve 2.

Jet Nozzle ALL Turn on Flux Nozzles controlled by Valve 1 and 2.

Spray Nozzle 1 Turn on Flux Nozzles controlled by Valve 1 along with Atomizing Air.

Spray Nozzle 2 Turn on Flux Nozzles controlled by Valve 2 along with Atomizing Air.

Spray Nozzle All Turn on Flux Nozzles controlled by Valve 1 and 2 along with Atomizing Air)

Atomization Air Turn On/Off atomizing air.

Purge Air Turn On/Off purge air.

Purge Solvent Nozzle Turn On Solvent Purge to nozzle for period of time as set on the Nozzle Configuration Page. (See Nozzle Purge Duration)

Purge Flux Nozzle Turn On Flux Purge to nozzle for period of time as set on the Nozzle Configuration Page. (See Nozzle Purge Duration)

Clean Air Line Force a cleaning cycle to the air line for a period of time as set on the Nozzle Configuration Page. (See Air Purge Duration + Cleaning Liquid Pulse)

Move to Maintenance Location Move to desired maintenance position as defined on the Configuration-Actuator page. (See Service Position)

Air Knife Control Turn On/Off Air knife.

Actuate Spray Stroke Initiate a single flux Spray Stroke.

Flux Volume Test Initiate Flux Volume Test. This value is stored in the file FluxFlow.log. This log can also be viewed, by selecting Menu item **View->Logs** and selecting **Flux Monitor** tab. (Flux Monitor option only)

1.8.8.3 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.

NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

Total Run Time
Actual time that this module has been "on" since installation.

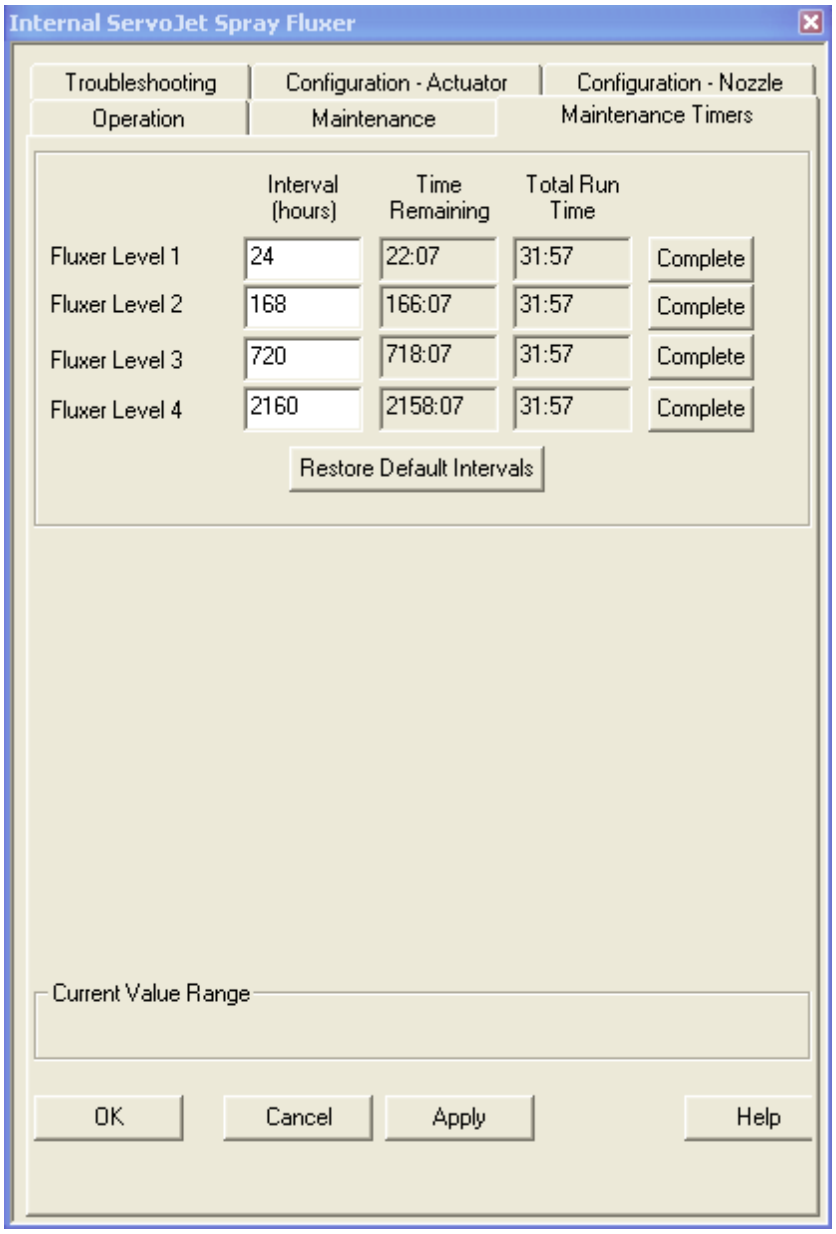
Complete

When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The ServoJet Fluxer **Maintenance Timers** tab may be accessed via:

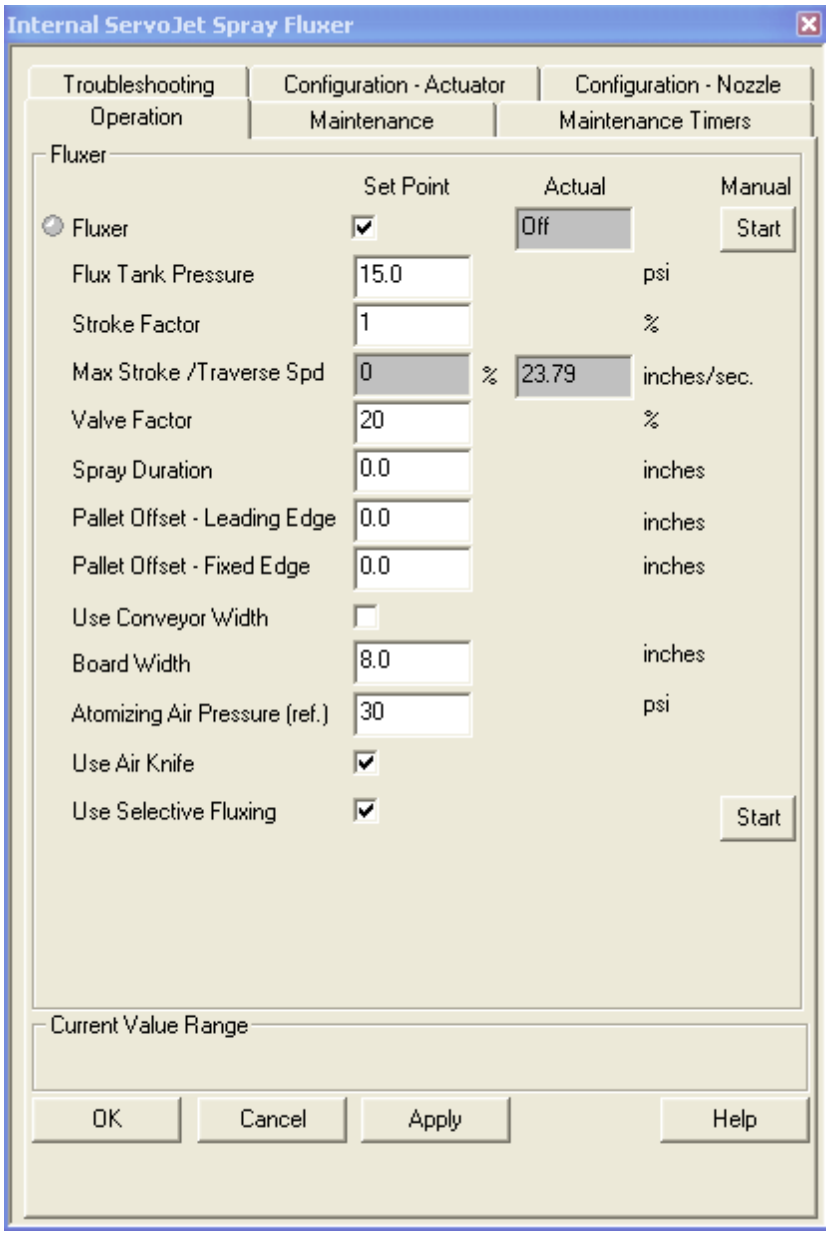
Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

1.8.8.3.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.8.4 Operation

Within the **Operation** tab, specific parameters related to the ServoJet Fluxer module, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The ServoJet Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box are dependent on the machine configuration. Imperial units are

referenced.

Tank Pressure
Controls the pressure of the flux tank, which affects the flow rate to the spray head. The text box in the Set Point column allows the user to adjust the pressure of the flux tank.

Stroke Factor
Sets the Traversing Speed of the Spray Head. A Stroke Factor of 1 to 100 is allowed with 100 being the slowest speed and 1 being the fastest. The Maximum allowable Stroke Factor and Calculated Actual Traverse Speed are displayed below this setting.

Max Stroke Factor
Displays the Maximum allowable Stroke factor as determined by the Current Conveyor Speed, Spray Width and Conveyor Width Setpoints etc…

Traverse Speed
Displays calculated Traverse speed that the Fluxer will run with the Current Stroke Factor Setting.

Valve Factor
Pulse Width Modulation On-time used to create individual flux droplets. A valid entry of 10 – 80 % is allowed. This represents the Amount of Flux Deposition on the board with 80% representing a thicker layer and 10% a thin coat.

Spray Duration/ Board Length
Sets the length of the Board to Spray, which helps the Fluxer determine how many passes to make using this Value and the Spray Width. If a value of 0 is used, the Flux Board Detect Sensor is used to determine the length of board and number of Spray passes to perform.

Pallet Offset – Leading Edge
Sets the distance after the Leading edge of the Board in which the Fluxer begins to spray the board.

Pallet Offset – Fixed Edge
Sets the distance between the fixed rail edge of the board and the point at which the spray head begins to spray the board, as the spray head begins to traverse.

Use Conveyor Width
Selection of this checkbox automatically sets the board width of the fluxer to the current conveyor width setpoint. Only available when a Motorized Conveyor Width is Configured on the Machine.

Board Width
Sets the process width of the circuit board. This value is used if the “Use Conveyor Width” box is not checked.

Atomizing Air Pressure
Used for Reference Only – Displays Pressure as set Manually on the Fluxer Control Box.

Use Air Knife
When checked, the Air knife is used when the Fluxer is in Operation Mode.

Use Selective
When checked, the Selective program is used disabling Duration, Conveyor / Board Width and Pallet Offsets. The Selective Program is Created using the ServoJet Selective Program. This can be accessed by pressing the Start Button next to the Selective Checkbox. See Below.

Start Selective
The Selective Start Button is available when in Manual Mode with Proper Security Access. Pressing the Start Button Opens the Selective Program with the Current Selective Board Recipe (if created). The values displayed in this program are always in Metric Units. The Spray Width Setpoint is passed from the Calibrate Spray Width setting from the Nozzle Configuration Page.

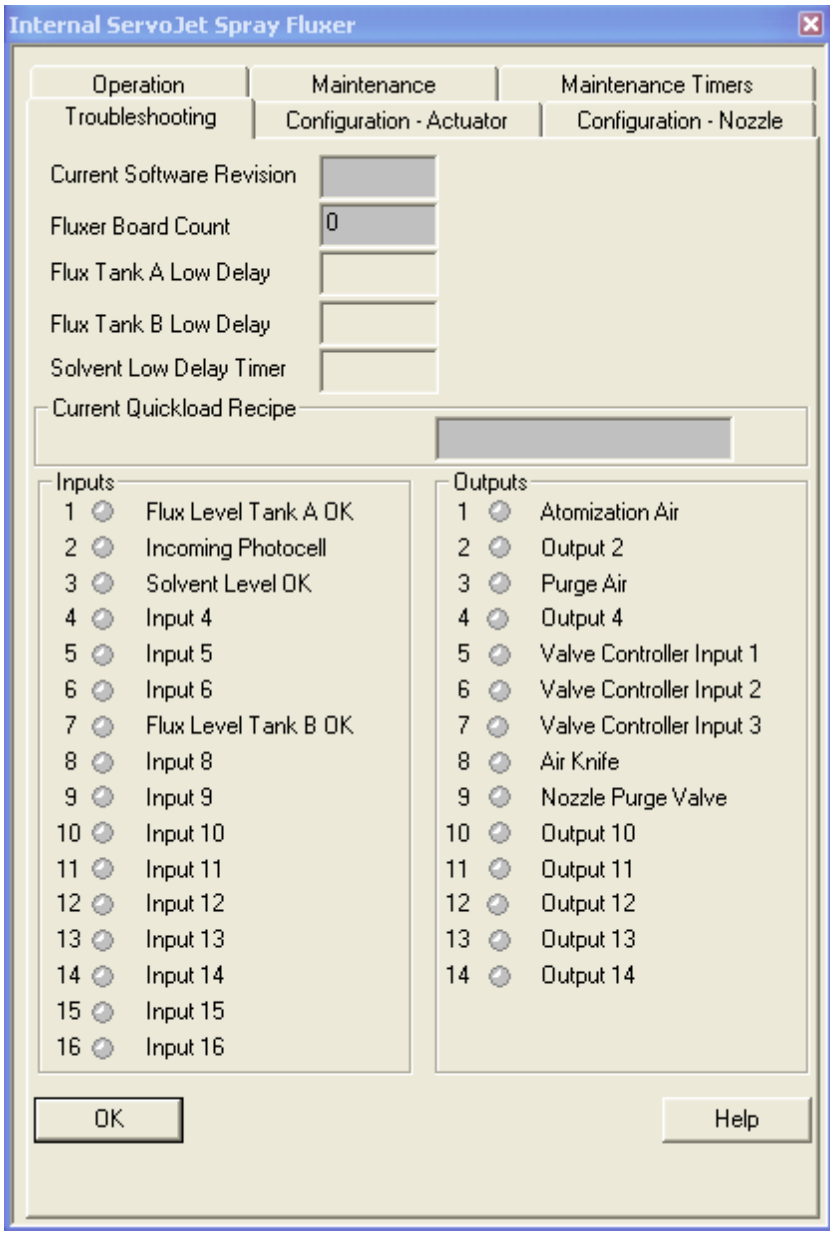
Flux Tank (Selected Only when Fluxer is Off)
Choose between Flux Tank A and Tank B for each Recipe. A Single Flux Tank System should always have Tank A Selected.

Flow Rate (Flux Monitor Option)
Used for Reference Only – Displays current Flow Rate from previous PCB Sprayed. This value can be increased by increasing the Flux Tank Pressure and Valve Factor.

Flux Volume (Flux Monitor Option)
Used for Reference Only – Displays current Flux volume from previous PCB Sprayed. This value can be increased by increasing the Flux Tank Pressure, Valve Factor, or Stroke Factor or decreasing Conveyor speed, Spray Segment Width etc.

1.8.8.5 Troubleshooting

The **Troubleshooting** tab contains features specifically troubleshooting purposes. This tab displays internal machine parameters and Fluxer Debug information. If there is a functionality issue with the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The ServoJet Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Current Software Revision
Displays the Current Fluxer Controller Software.

Board Count
Displays the Current number of Boards that the Fluxer is Tracking.

Flux / Solvent Low Level Delay Timers

When first receiving a Low Flux Tank or Low Solvent Level Alarm from the Fluxer, a delay timer is displayed for 30 seconds before setting the Actual Alarm. This allows for Tank changes and debounce of the signal before setting a false alarm.

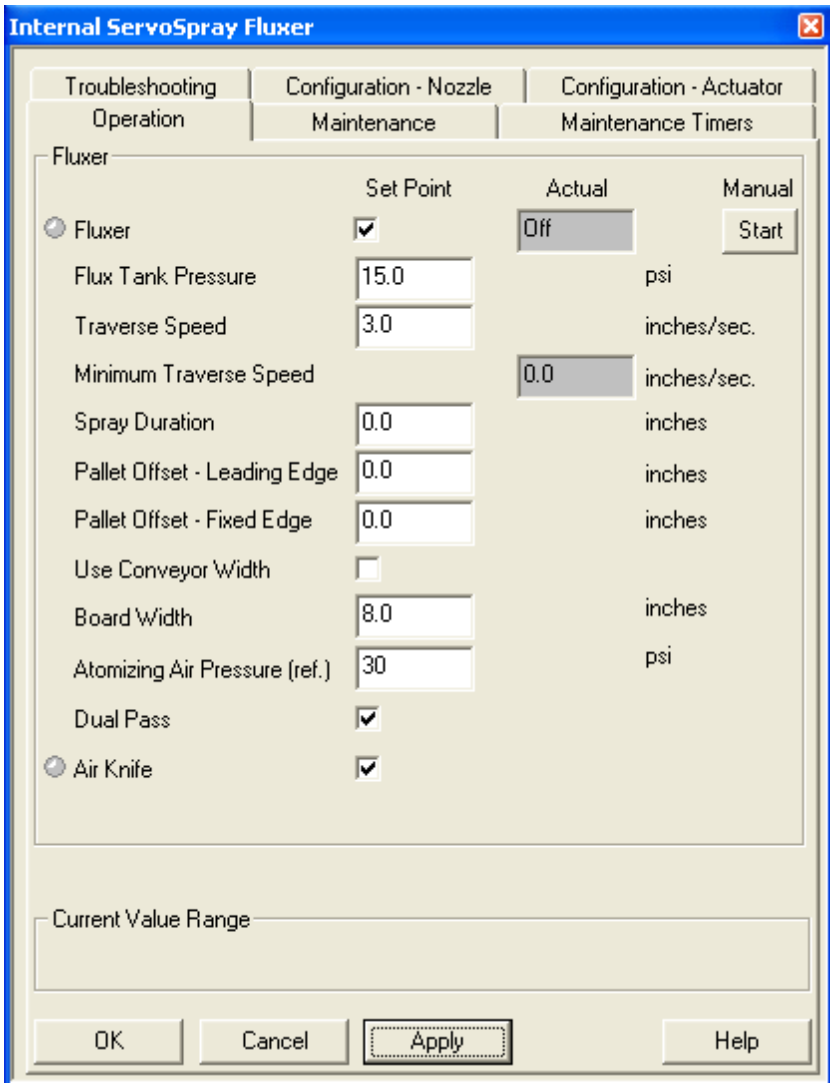
Inputs / Outputs
The Inputs and Outputs of Fluxer with Fluxer I/O designation and Title. The LED is Green when active, otherwise it is Gray.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.

1.8.9 ServoSpray

1.8.9.1 Operation

Within the **Operation** tab, specific parameters related to the ServoSpray Fluxer module, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The ServoSpray Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box are dependent on the machine configuration. Imperial units are referenced.

Tank Pressure
Controls the pressure of the flux tank, which affects the flow rate to the spray head. The text box in the

Set Point column allows the user to adjust the pressure of the flux tank.

Traverse Speed
Sets the speed of the Flux Nozzle as it Extends and Retracts during the Spray Cycle.

Minimum Traverse speed
Displays the Minimum allowable Traverse Speed Setpoint as determined by the Current Conveyor Speed, Spray Width and Conveyor Width Setpoints etc…

Spray Duration
Sets the length of the Board to Spray, which helps the Fluxer determine how many passes to make using this Value and the Spray Segment Width.

Pallet Offset – Leading Edge
Sets the distance between the Leading edge of the Board and the position that Fluxer begins to spray the board.

Pallet Offset – Fixed Edge
Sets the distance between the fixed rail proximity sensor and the point at which the spray head begins to spray the board, as the spray head begins to traverse.

Use Conveyor Width
Selection of this checkbox automatically sets the board width of the fluxer to the current conveyor width actual.

Board Width
Sets the process width of the circuit board. This value is used if the “Use Conveyor Width” box is not checked.

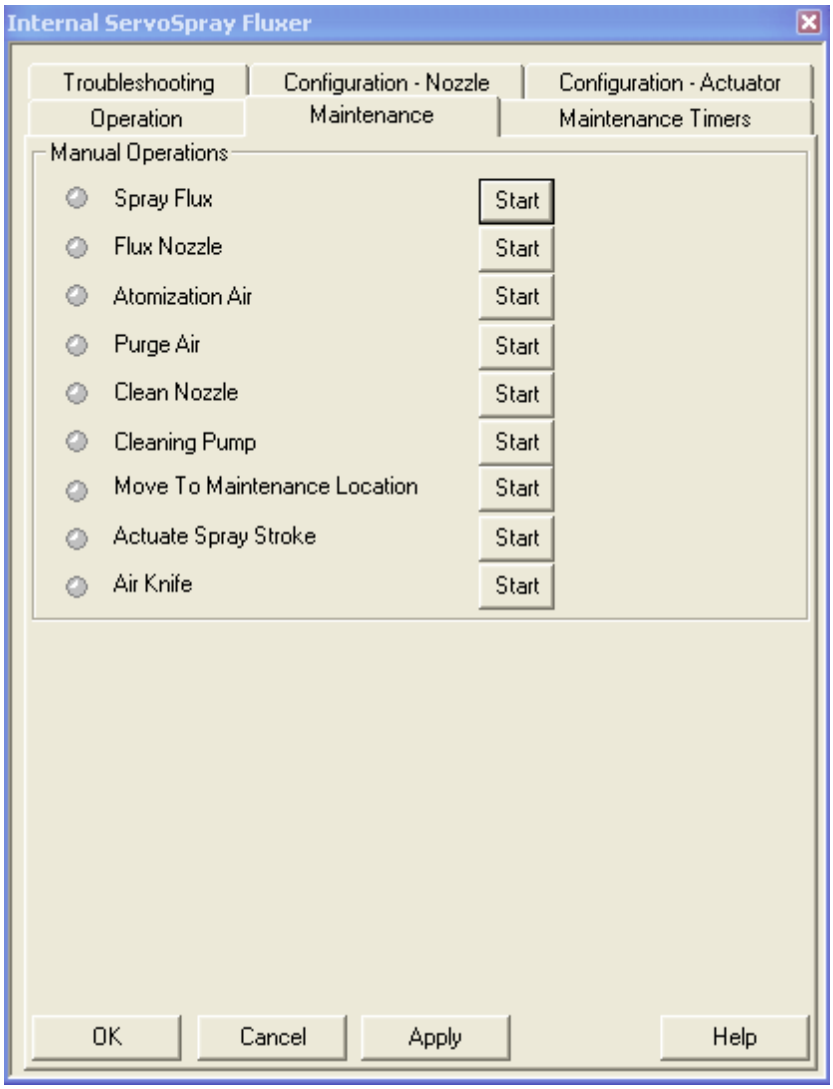
Atomizing Air Pressure
Used for Reference Only – Displays Pressure as set Manually on the Fluxer Control Box.

Dual Pass
When Checked The Fluxer Sprays on the Extend and Retract of the Spray Stroke. Otherwise, The Fluxer only sprays on the Extend Spray Stroke.

Flux Tank (Selected Only when Fluxer is Off)
Choose between Flux Tank A and Tank B for each Recipe. For Dual Spray Heads, Selection A sets the First Spray Head Active.

1.8.9.2 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the MAN mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The ServoSpray Fluxer **Maintenance** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

Manual Operations
Must be in Manual Mode and Fluxer must be inactive (not "ON") to access Start button.

Spray Flux Turn On/Off the Flux and Atomizing Air.

Flux Nozzle Turn On/Off the Flux without Atomizing Air.

Atomization Air Turn On/Off atomizing air.

Purge Air Turn On/Off purge air.

Clean Nozzle Force a cleaning cycle to the air line. This function will time out after 30 seconds.

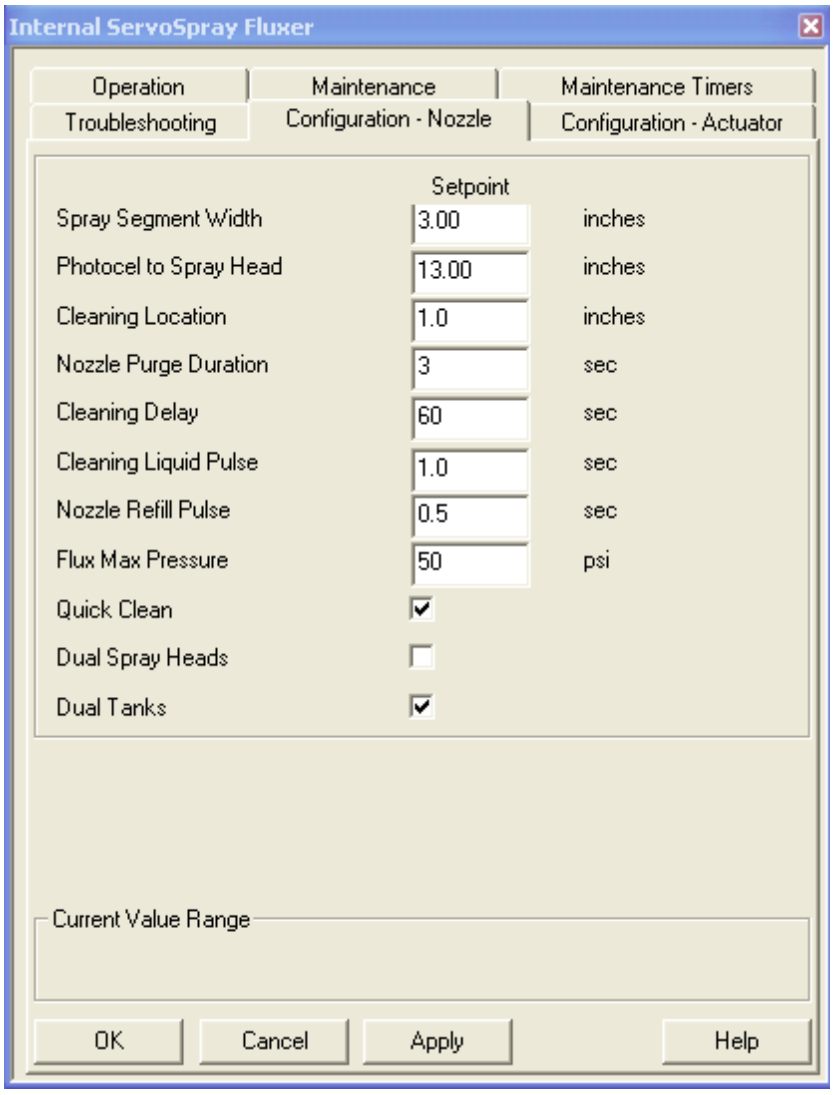
Cleaning Pump Turns On/Off the Solvent Pump. This function will time out after 30 seconds.

Move to Maintenance Location Move to desired Service Location (defined in Configuration Page)

Actuate Spray Stroke Initiate a single flux Spray Stroke.

1.8.9.3 Nozzle Configuration

The ServoSpray **Nozzle Configuration** Page contains settings that are specific to the Fluxer and not individual Board Recipes. Once a setting is changed, the OK Button should be pressed from this page to save the new changes.



The ServoSpray Fluxer **Configuration - Nozzle** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Configuration - Nozzle** tab
Modules | External Fluxer | Configuration - Nozzle tab

Spray Segment Width
Sets the distance of Board Travel on the Conveyor between the Start of each Spray Stroke.

Photocell to Head
Sets the distance from the Fluxer Board Detect Sensor to the Spray Head on the Fluxer.

Cleaning Location
The location the head travels from home in which the Self-Clean is performed.

Nozzle Purge Duration
Sets the Period of Time that a Flux and Solvent Purge runs after being started from the Maintenance Page, or when Automatically performed when the Fluxer is in Auto Mode.

Cleaning Delay
Sets the period between each cleaning cycle. The process will not occur if there are boards in the Fluxer. If time expires but there are boards in the Fluxer, cleaning will delay 10 seconds after the board count is 0

Cleaning Liquid Pulse
Sets the time that the Cleaning Liquid Valve is Opened to push Cleaning Fluid (Solvent) through the Atomization Air Line. The Solvent is then purged from the system with Air.

Nozzle Refill Pulse
Used when a purge cycle is performed. This sets the time that Flux is refilled into the Flux line when a new board is scanned and a Solvent Purge was previously performed.

Flux Max Pressure
Sets the value required for automatic flux pressure control. This value is found on the flux pressure controller located in the pneumatic box.

Quick Clean
When Checked, a Short Periodic Self Clean will be performed. This application is designed for large Process Batches with little Board spacing.

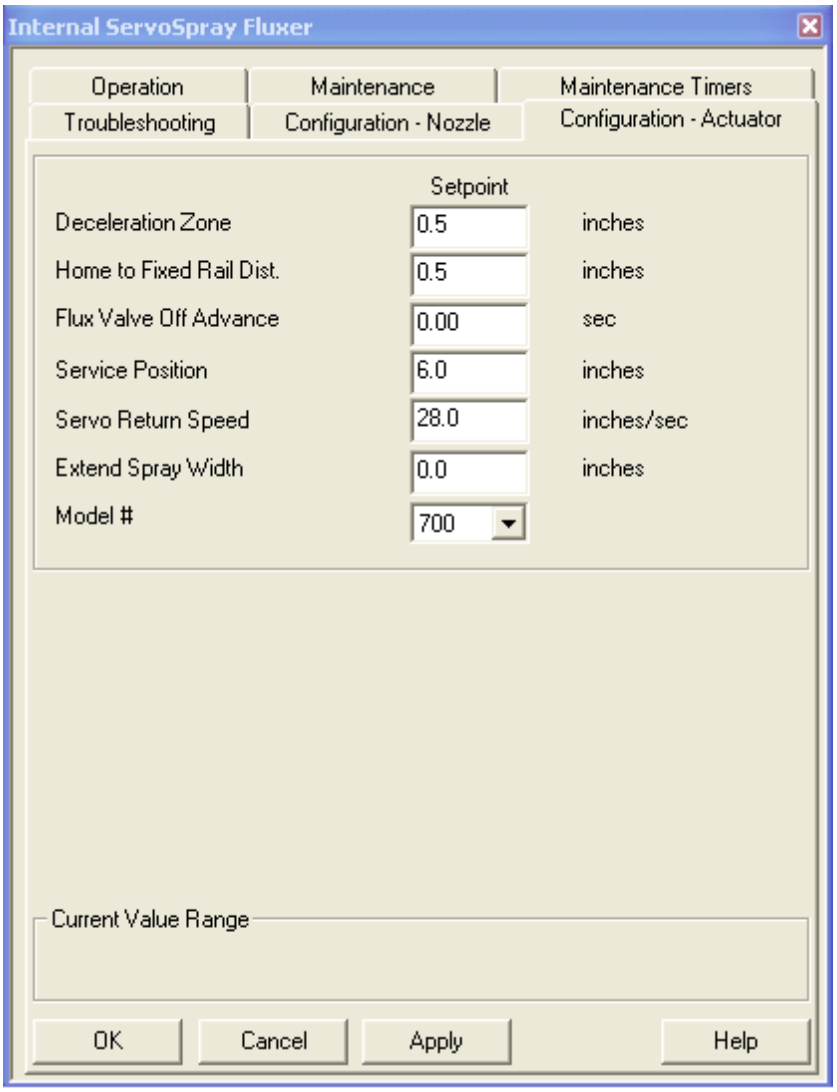
Dual Spray Heads
When Checked, The Dual Tank Option is automatically selected, see below. With the Dual Spray Heads, the Flux and solvent Tanks are separate for Each Head. When Tank A is selected in the Recipe, the First Spray Head will be Active.

Dual Flux Tank
When Checked, The Operator is allowed to Select between Two Flux Tanks. Flux Level alarms are Active for the Flux Tank selected in the Recipe. This option is automatically selected if the Dual Heads option is checked.

1.8.9.4 Actuator Configuration

The ServoSpray **Actuator Configuration** Page contains settings that are specific to the Fluxer and not individual Board Recipes. Once a setting is changed, the OK Button should be pressed from this page

to save the new changes.



The ServoSpray Fluxer **Configuration - Actuator** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Configuration - Actuator** tab
Modules | External Fluxer | Configuration - Actuator tab

Deceleration Zone
Sets the distance from the end of the Extend and return stroke in which the Actuator begins the Deceleration process.

Home to Fixed Rail distance
Sets the distance from the Home position to the inner edge of the fingers of the fixed Rail or the location of the start of the Flux Zone.

Flux Valve Off Advance

Sets the time in 10ths of a second in which the Flux Valve will shut off before the end of the spray stroke to help prevent Over-spray.

Service Position
Sets the distance from Home in which the spray head moves when the Move to Maintenance Location button is pressed on the Maintenance page.

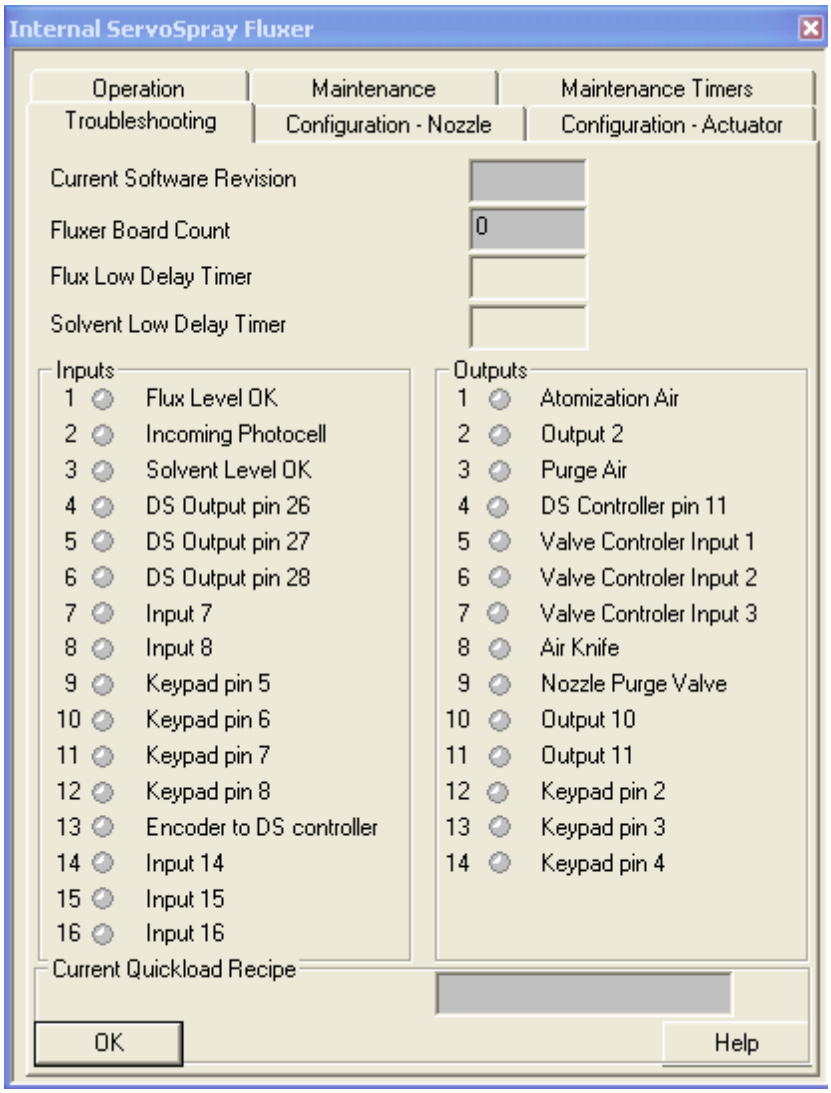
Extend Spray Width
Adds this value to the Board Width sent to the Fluxer.

Servo Return Speed
Sets the Return speed after a Spray Stroke.

Model #
Choose between the 500 mm and 700 mm Spray Stroke Length models.

1.8.9.5 Troubleshooting

The **Troubleshooting** tab contains features specifically troubleshooting purposes. This tab displays internal machine parameters and Fluxer Debug information. If there is a functionality issue with the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The ServoSpray Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Current Software Revision
Displays the Current Fluxer Controller Software.

Board Count
Displays the Current number of Boards that the Fluxer is Tracking.

Inputs / Outputs
The Inputs and Outputs of Fluxer with Fluxer I/O designation and Title. The LED is Green when active, otherwise it is Gray.

Current Quick Load Recipe

Displays the recipe name that the Fluxer is currently on in Quick Load.

1.8.9.6 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

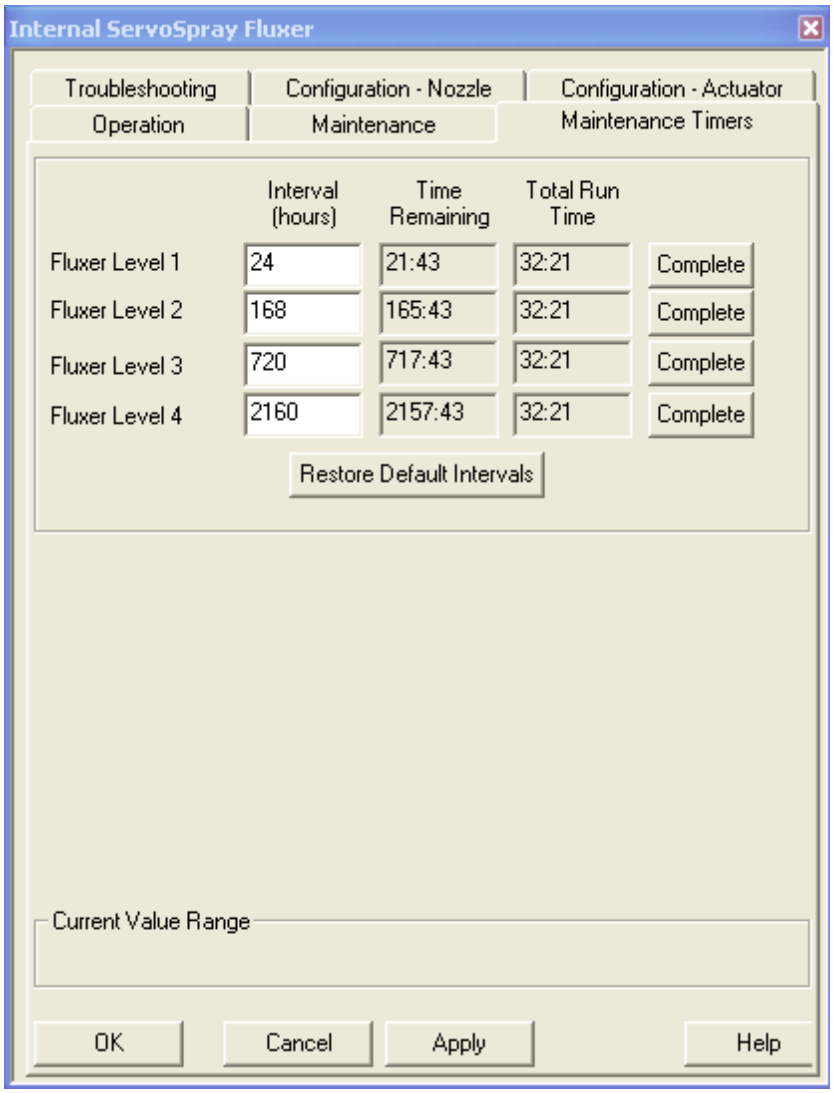
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The ServoSpray Fluxer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

1.8.9.6.1 Maintenance Schedule

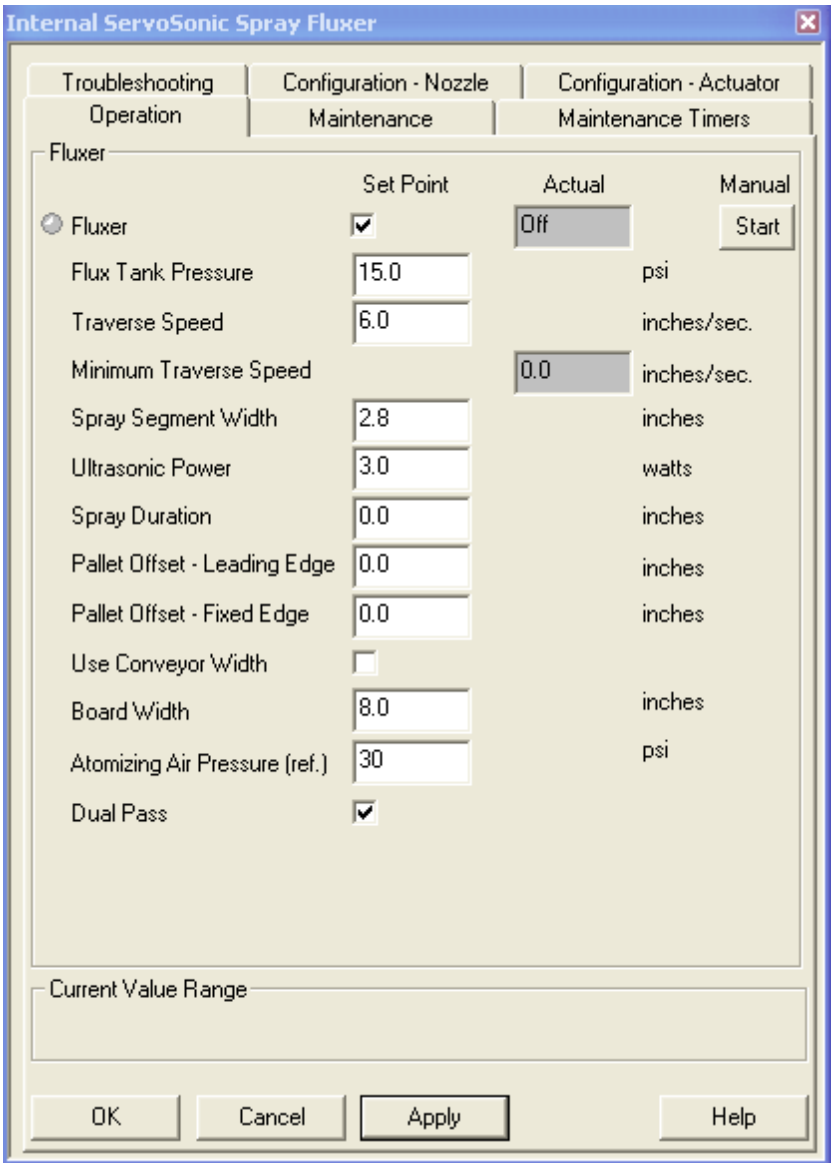
ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly

Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.10 ServoSonic

1.8.10.1 Operation

Within the **Operation** tab, specific parameters related to the ServoSonic Fluxer module, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The ServoSonic Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box are dependent on the machine configuration. Imperial units are referenced.

Tank Pressure
Controls the pressure of the flux tank, which affects the flow rate to the spray head. The text box in the Set Point column allows the user to adjust the pressure of the flux tank.

Traverse Speed
Sets the speed of the Flux Nozzle as it Extends and Retracts during the Spray Cycle.

Minimum Traverse speed
Displays the Minimum allowable Traverse Speed Setpoint as determined by the Current Conveyor Speed, Spray Width and Conveyor Width Setpoints etc…

Spray Segment Width
Sets the distance of Board Travel on the Conveyor between the Start of each Spray Stroke.

Ultrasonic Nozzle Power
Sets the Output power to the Ultrasonic Nozzle. The text box in the Set Point column allows the user to adjust the Output Power.

Spray Duration
Sets the length of the Board to Spray, which helps the Fluxer determine how many passes to make using this Value and the Spray Segment Width.

Pallet Offset – Leading Edge
Sets the distance between the Leading edge of the Board and the position that Fluxer begins to spray the board.

Pallet Offset – Fixed Edge
Sets the distance between the fixed rail proximity sensor and the point at which the spray head begins to spray the board, as the spray head begins to traverse.

Use Conveyor Width
Selection of this checkbox automatically sets the board width of the fluxer to the current conveyor width actual.

Board Width
Sets the process width of the circuit board. This value is used if the “Use Conveyor Width” box is not checked.

Atomizing Air Pressure
Used for Reference Only – Displays Pressure as set Manually on the Fluxer Control Box.

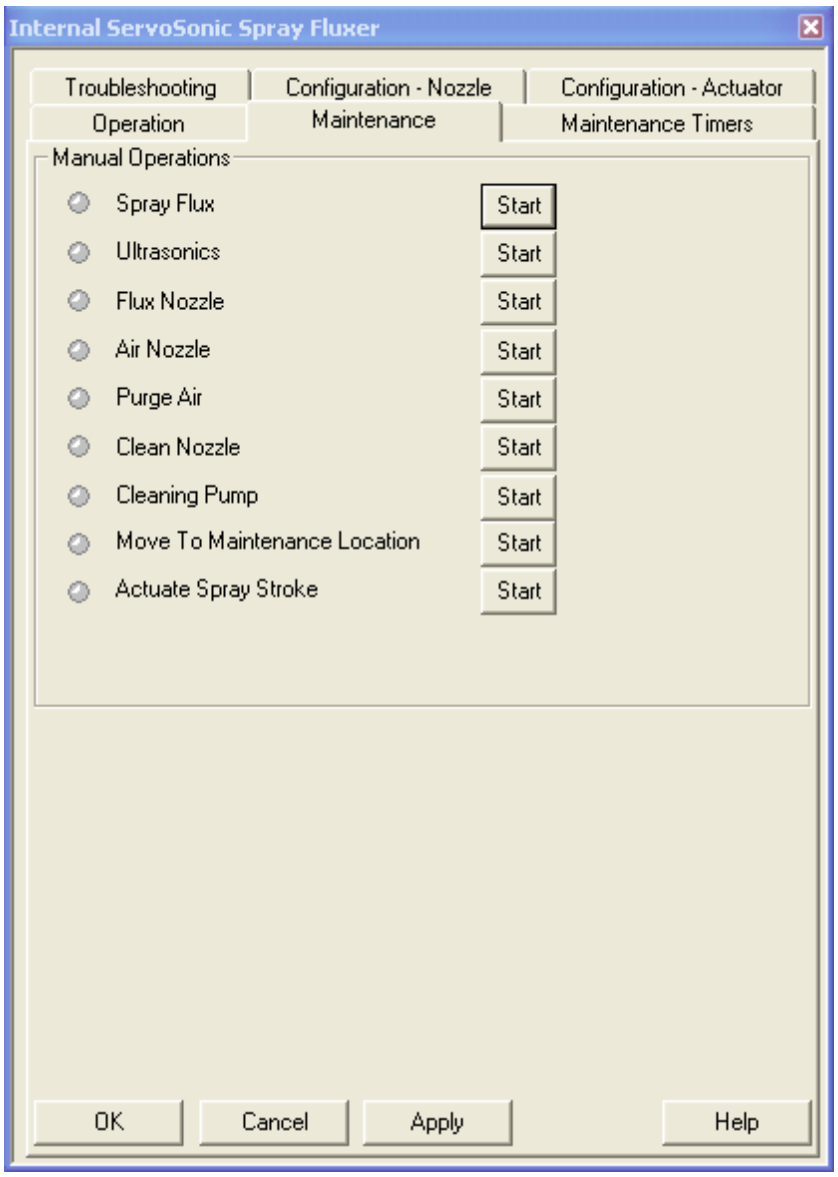
Dual Pass
When Checked The Fluxer Sprays on the Extend and Retract of the Spray Stroke. Otherwise, The Fluxer only sprays on the Extend Spray Stroke.

Flux Tank (Selected Only when Fluxer is Off)
Choose between Flux Tank A and Tank B for each Recipe. (When Option is configured)

1.8.10.2 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.

The machine must first be in the MANUAL mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The ServoSonic Fluxer **Maintenace** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

Manual Operations
Must be in Manual Mode and Fluxer must be inactive (not “ON”) to access Start button.

Spray Flux Turn On/Off the Flux and Ultrasonics.

Ultrasonics Turn On/Off the Ultrasonics.

Flux Nozzle Turn On/Off the Flux without Ultrasonics.

Air Nozzle Turn On/Off the air nozzle.

Purge Air Turn On/Off purge air.

Clean Nozzle Force a cleaning cycle to the air line. This function will time out after 30 seconds.

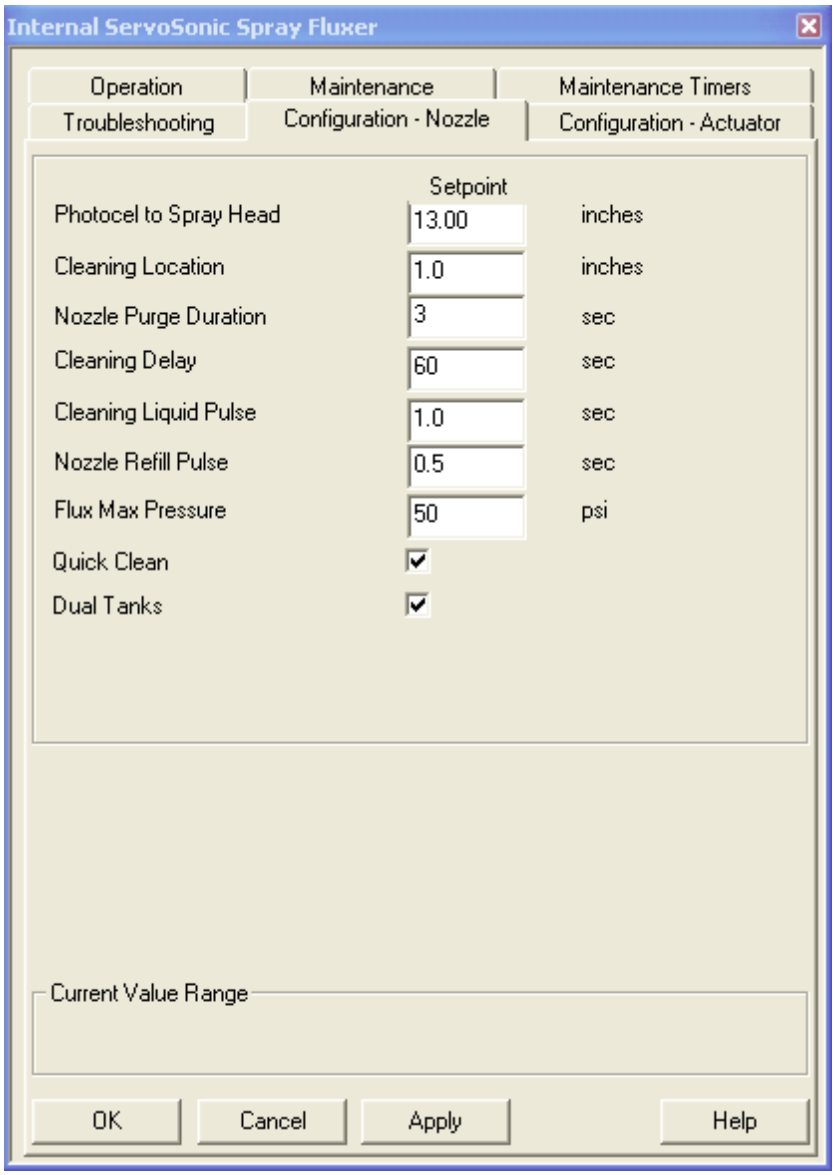
Cleaning Pump Turns On/Off the Solvent Pump. This function will time out after 30 seconds.

Move to Maintenance Location Move to desired Service Location (defined in Configuration Page)

Actuate Spray Stroke Initiate a single flux Spray Stroke.

1.8.10.3 Nozzle Configuration

The ServoSonic **Nozzle Configuration** Page contains settings that are specific to the Fluxer and not individual Board Recipes. Once a setting is changed, the OK Button should be pressed from this page to save the new changes.



The ServoSonic Fluxer **Configuration - Nozzle** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Configuration - Nozzle** tab
Modules | External Fluxer | Configuration - Nozzle tab

Photocell to Head
Sets the distance from the Fluxer Board Detect Sensor to the Spray Head on the Fluxer.

Cleaning Location
The location the head travels from home in which the Self-Clean is performed.

Nozzle Purge Duration
Sets the Period of Time that a Flux and Solvent Purge runs after being started from the Maintenance

Page, or when Automatically performed when the Fluxer is in Auto Mode.

Cleaning Delay
Sets the period between each cleaning cycle. The process will not occur if there are boards in the Fluxer. If time expires but there are boards in the Fluxer, cleaning will delay 10 seconds after the board count is 0

Cleaning Liquid Pulse
Sets the time that the Cleaning Liquid Valve is Opened to push Cleaning Fluid (Solvent) through the Atomization Air Line. The Solvent is then purged from the system with Air.

Nozzle Refill Pulse
Used when a purge cycle is performed. This sets the time that Flux is refilled into the Flux line when a new board is scanned and a Solvent Purge was previously performed.

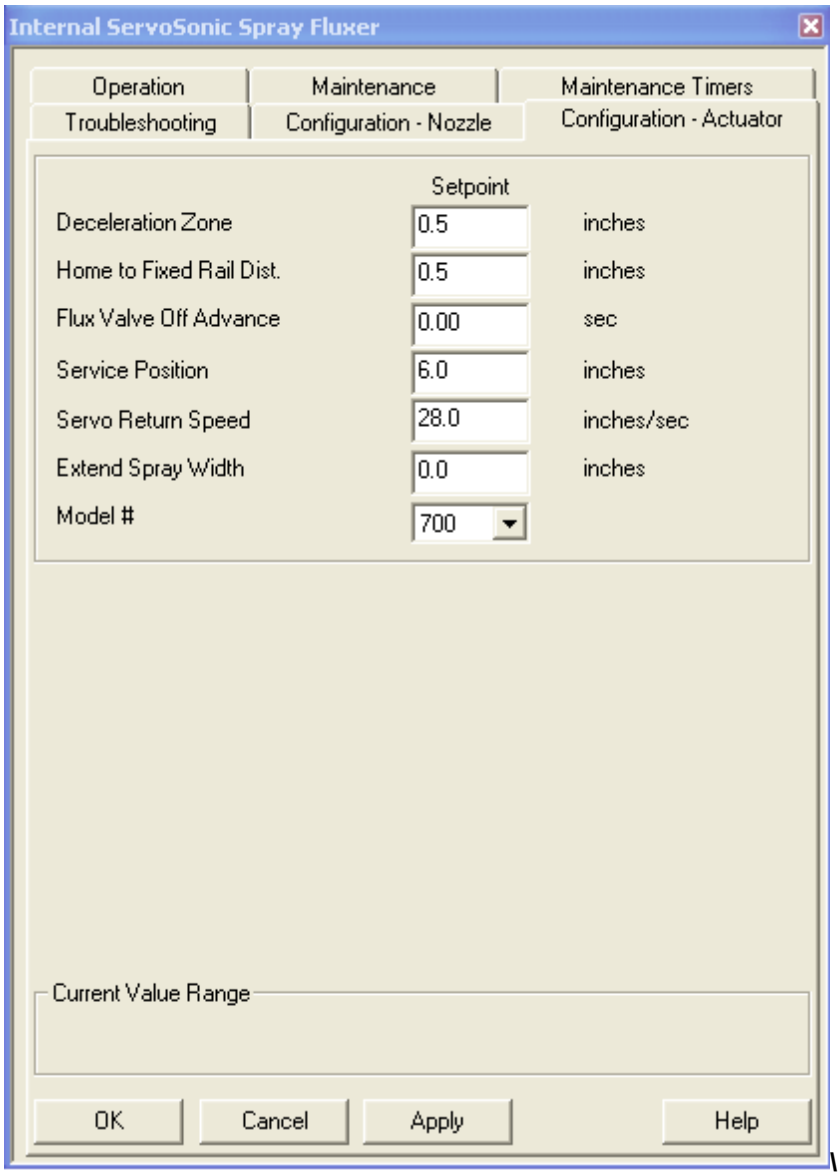
Flux Max Pressure
Sets the value required for automatic flux pressure control. This value is found on the flux pressure controller located in the pneumatic box.

Quick Clean
When Checked, a Short Periodic Self Clean will be performed. This application is designed for large Process Batches with little Board spacing.

Dual Flux Tank
When Checked, The Operator is allowed to Select between Two Flux Tanks. Flux Level alarms are Active for the Flux Tank selected in the Recipe.

1.8.10.4 Actuator Configuration

The ServoSonic **Actuator Configuration** Page contains settings that are specific to the Fluxer and not individual Board Recipes. Once a setting is changed, the OK Button should be pressed from this page to save the new changes.



The ServoSonic Fluxer **Configuration - Actuator** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Configuration - Actuator** tab
Modules | External Fluxer | Configuration - Actuator tab

Deceleration Zone
Sets the distance from the end of the Extend and return stroke in which the Actuator begins the Deceleration process.

Home to Fixed Rail distance
Sets the distance from the Home position to the inner edge of the fingers of the fixed Rail or the location of the start of the Flux Zone.

Flux Valve Off Advance
Sets the time in 10ths of a second in which the Flux Valve will shut off before the end of the spray stroke to help prevent Over-spray.

Service Position
Sets the distance from Home in which the spray head moves when the Move to Maintenance Location button is pressed on the Maintenance page.

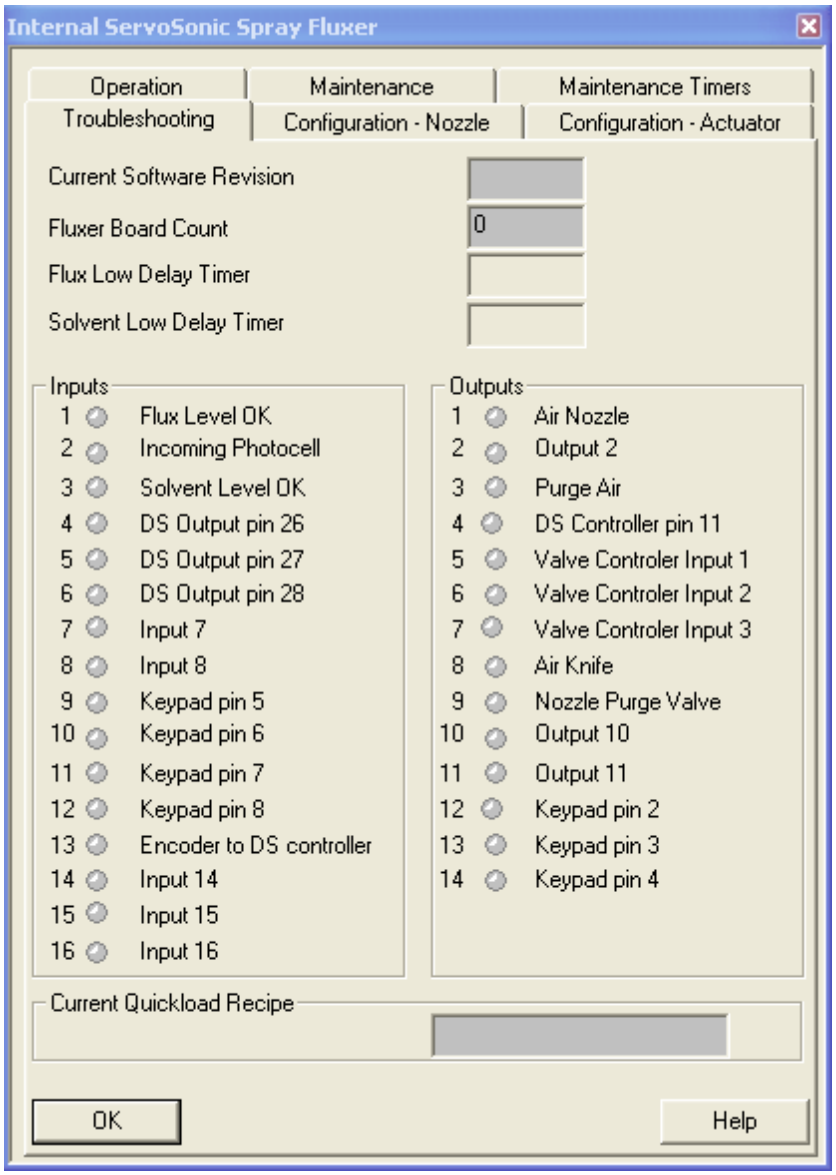
Extend Spray Width
Adds this value to the Board Width sent to the Fluxer.

Servo Return Speed
Sets the Return speed after a Spray Stroke.

Model #
Choose between the 500 mm and 700 mm Spray Stroke Length models.

1.8.10.5 Troubleshooting

The **Troubleshooting** tab contains features specifically troubleshooting purposes. This tab displays internal machine parameters and Fluxer Debug information. If there is a functionality issue with the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The ServoSonic Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Current Software Revision
Displays the Current Fluxer Controller Software.

Board Count
Displays the Current number of Boards that the Fluxer is Tracking.

Flux / Solvent Low Level Delay Timers
When first receiving a Low Flux Tank or Low Solvent Level Alarm from the Fluxer, a delay timer is

displayed for 30 seconds before setting the Actual Alarm. This allows for Tank changes and debounce of the signal before setting a false alarm.

Inputs / Outputs
The Inputs and Outputs of Fluxer with Fluxer I/O designation and Title. The LED is Green when active, otherwise it is Gray.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.

1.8.10.6 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

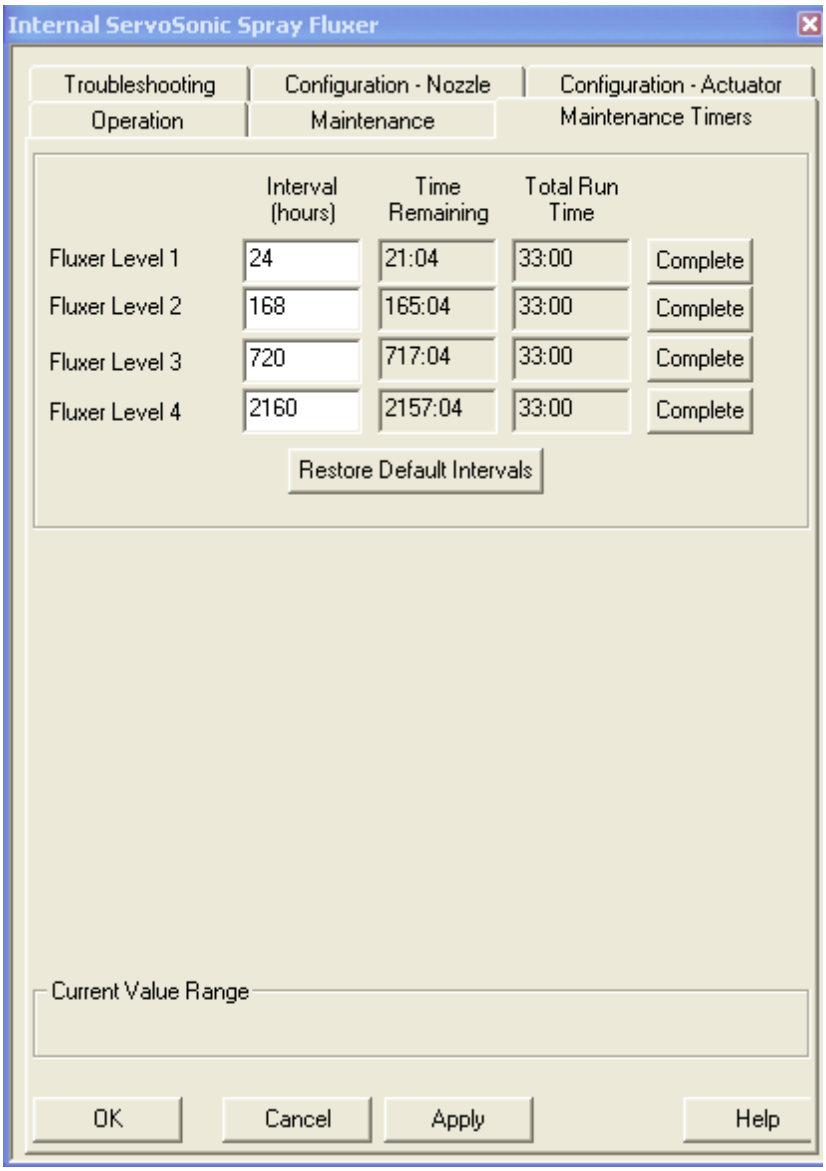
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The ServoSonic Fluxer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

1.8.10.6.1 Maintenance Schedule

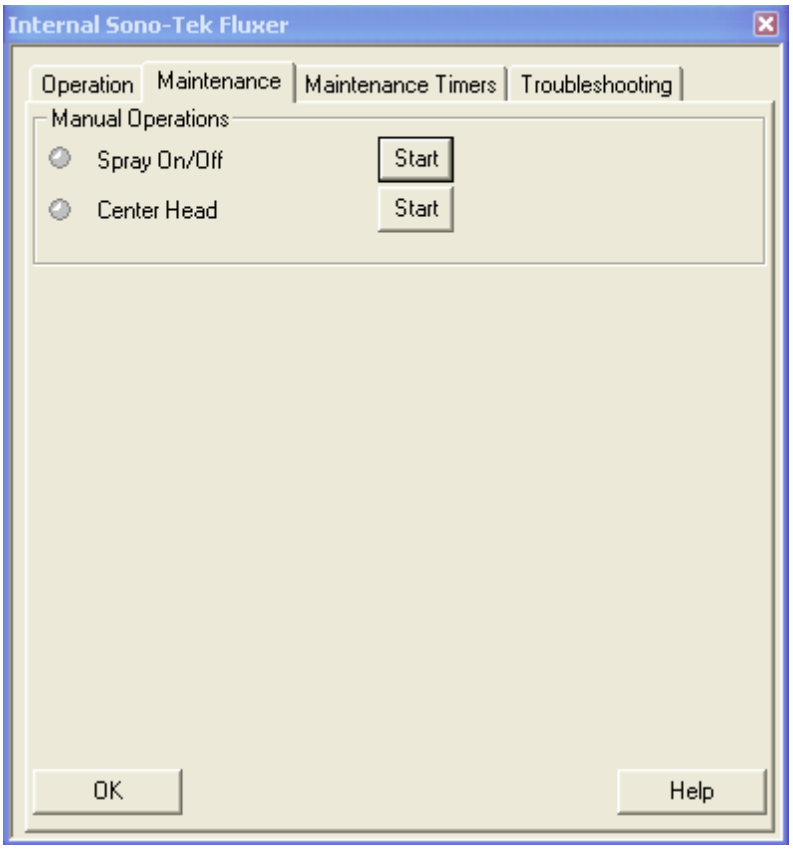
ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly

Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.11 SonoTek

1.8.11.1 Maintenance

The **Maintenance** tab contains manual override buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the MANUAL mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



The SonoTek Fluxer **Maintenance** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance** tab
Modules | External Fluxer | Maintenance tab

Manual Operations
Must be in Manual Mode to access Start button.

Spray On/Off - Activates spray atomization.
Center Head – Centers the spray head for maintenance purposes.

Calibration Procedures
The calibration program for the Sono-Tek is separate from the Wave-Soldering Software. To begin Calibration perform the following steps:

1. Exit out of the Wave Soldering Software.
2. Click on **Start->Programs->SonoTools** and perform calibration using Sono-Tek Calibration Help instructions.
3. Once Calibration is completed, exit SonoTools Calibration and Re-Start Wave Soldering Software.

1.8.11.2 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

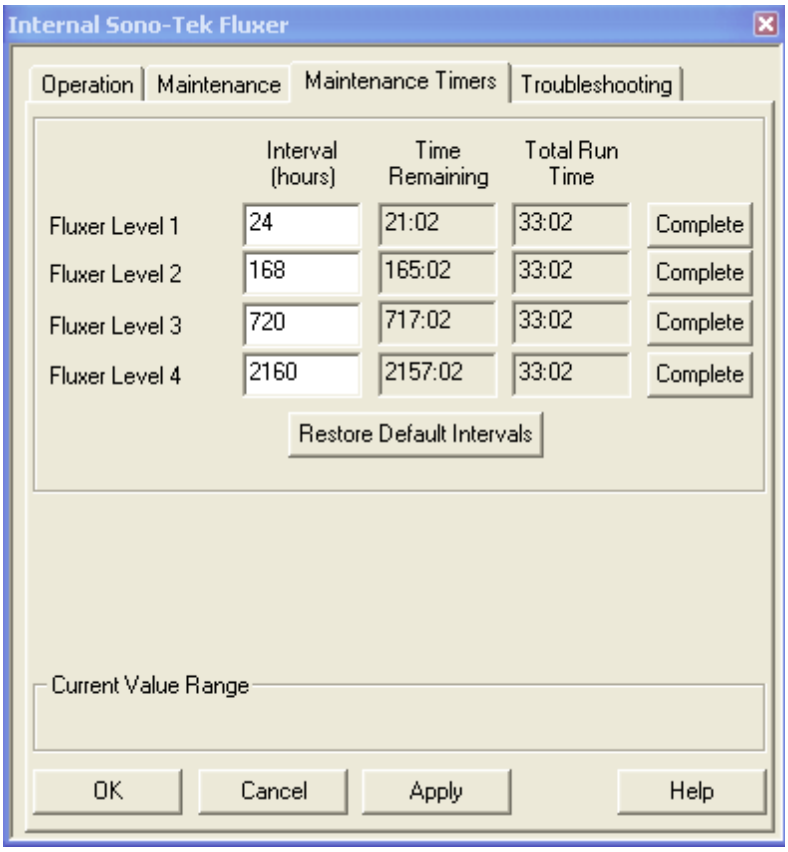
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The SonoTek Fluxer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Maintenance Timers** tab
Modules | External Fluxer | Maintenance Timers tab

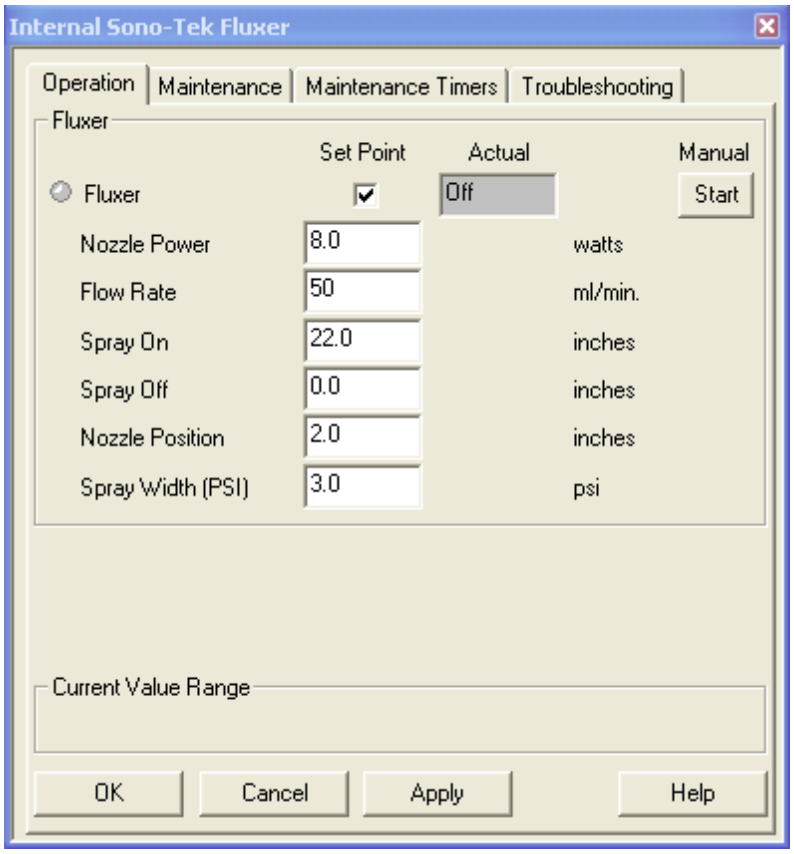
1.8.11.2.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces. **2.** Check for proper operation.	**xxx**		**xxx**			

Level 2 Examples of use: **1.** Drain and clean flux overflow tank. **2.** Clean filters in electrical enclosure fans **3.** Clean flux residue build-up from exhaust sensor line. **4.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.8.11.3 Fluxer SonoTek Operation

Within the **Operation** tab, specific parameters related to the Sono-Tek Spray Fluxer module can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The SonoTek Fluxer **Operation** tab may be accessed via:

Menu: **Modules | Internal Fluxer**
Modules | External Fluxer

Fluxer
Start/Stop button used to operate fluxer in Manual mode. The text box will indicate if the fluxer is on or off.
Click on the box to the right of Fluxer, under the Set Point column to enable the fluxer for Auto Start operation. Clicking on the box places a check mark in the box.

NOTE: The units appearing in each box is dependent on machine configuration. Imperial units are referenced.

Nozzle Power
Sets the atomization intensity of the spray nozzle. Units are in watts.

Flow Rate
This is the Flux flow rate in ml per minutes.

Spray On
Sets the distance the leading edge of the printed circuit board (PCB) must travel after passing the photocell before the Spray Nozzle begins to spray.

Spray Off
Sets the distance the trailing edge of the PCB must travel before the spray nozzle stops spraying.

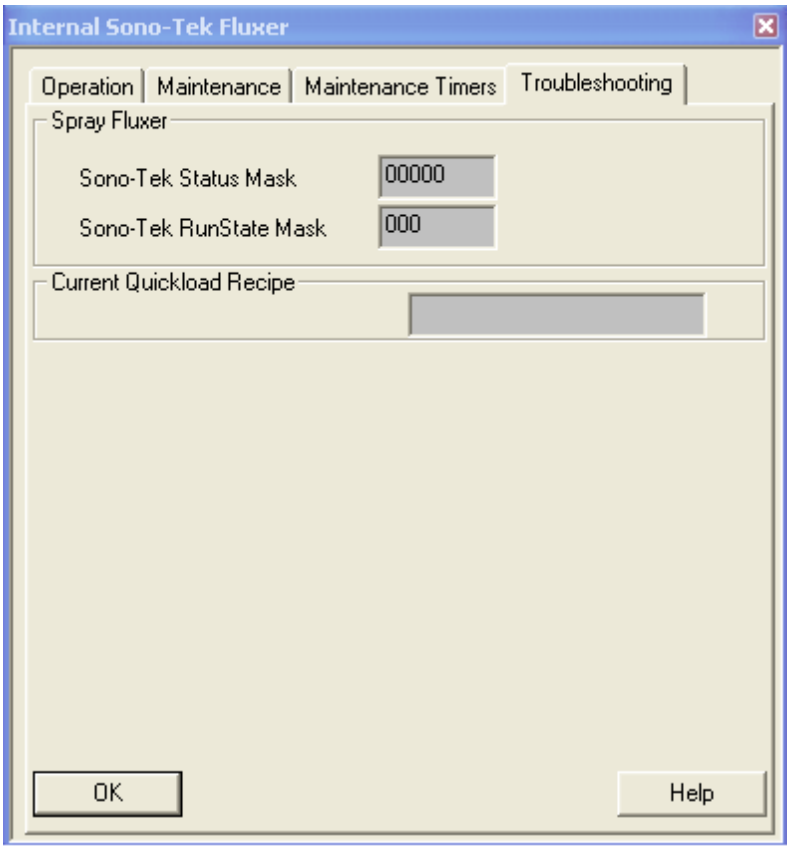
Hint: If spraying the entire PCB. The Spray On Distance should be slightly less than the distance from the incoming photocell to the spray nozzle. The Spray Off Distance should be slightly more than this distance. For example, if the distance from incoming photocell to nozzle is 13.0 inches, you may want to set the Spray On to 12.0 and Spray Off to 14.0 inches.

Nozzle Position
Sets the nozzle to a distance from fluxer home position to the center of the desired spray width.
To spray an entire board the nozzle position should be centered between the rails. To spray partial boards see example below:
Example: A pallet is 16.0 inches wide. The board to be fluxed is 2" from fixed rail edge of board and 3" from the other edge of board. This gives us a desired spray width of 11 inches. We divide this spray width by 2 to give us center of Spray nozzle, in this case 5.5 inches. We add this to our Offset from fixed Rail Edge, 2 inches, to get our nozzle position, 7.5 inches.

Spray Width (PSI)
Sets the Spray width by decreasing or increasing the pressure to the nozzle in units of PSI.

1.8.11.4 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Fluxer, the values provided here may give the user some indication as to what may be causing the problem.



The SonoTek Fluxer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Internal Fluxer | Troubleshooting** tab
Modules | External Fluxer | Troubleshooting tab

Spray Fluxer

Sono-Tek Status Mask

This value is the hexadecimal representation of the current fluxer Alarm Status. See example below:

00000 – No Status
00004 – Fluxer Nozzle Locate Failure
00008 – Fluxer Pump Failure
00010 – Flux Fluid Low
00080 – Fluxer Jet Pressure Failure
00100 – Fluxer Nozzle Failure

Sono-Tek Run State Mask

This value is the hexadecimal representation of the current Run State of the fluxer. See example below:

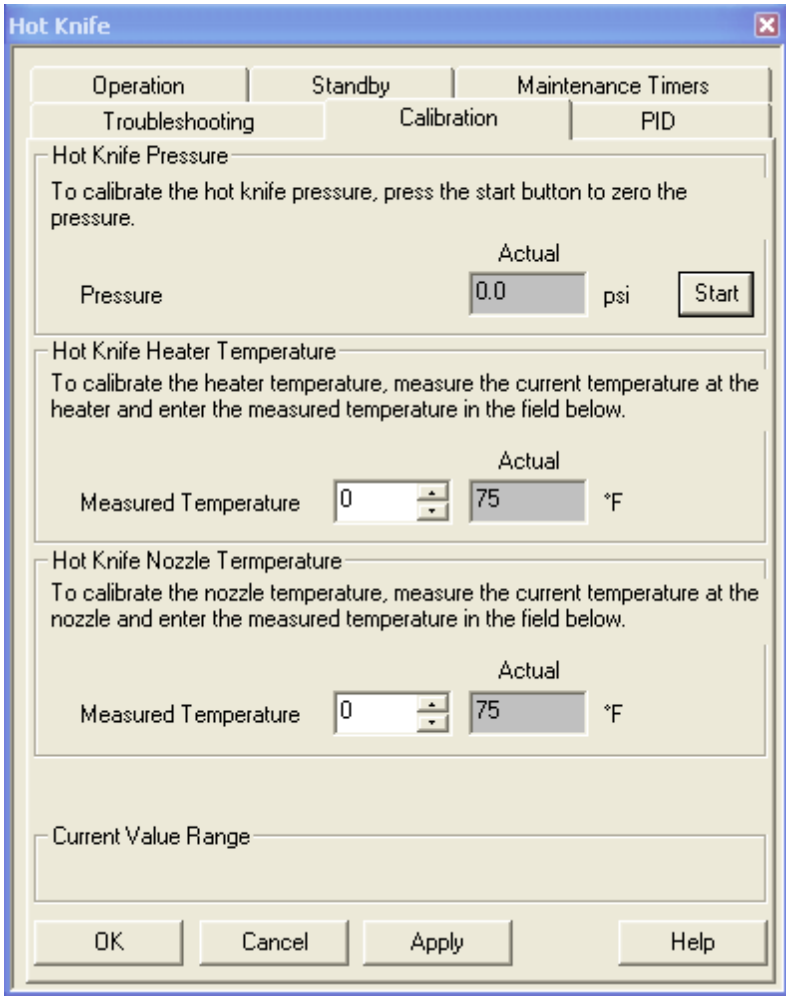
000 – Fluxer is stopped
001 – Fluxer is started but not yet ready.
008 – Fluxer is started and ready.

NOTE: There is a possibility that more than one item may be set causing a value other than one of those listed. For instance if you have **00104** in the Status Mask, this would indicate a Nozzle Locate failure and Nozzle failure.

Current Quick Load Recipe
Displays the recipe name that the Fluxer is currently on in Quick Load.

1.9 Hot Knife Module

1.9.1 Calibration



Click on a section of the Hot Knife **Calibration** tab above to get a more detailed description of the parameters in that section.

The Hot Knife **Calibration** tab may be accessed via:

Menu: **Modules | Hot Knife | Calibration** tab

1.9.1.1 Pressure

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the Hot Air Knife module on the graphic screen to open the Hot Knife dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

Hot Knife Pressure
Pressure
Follow the instructions as they appear in the Calibration tab for Hot Knife Pressure.
"To calibrate the hot knife pressure, press the start button to zero the pressure. "The Hot Knife must be off to perform the zeroing calibration.

The following procedures require the use of the Thermocouple Test and Calibration Cable assembly, p/n 3-0954-077-01-6. This item is included in the Equipment tool kit. In addition, the use of a Thermocouple Simulator is required. This item is NOT included in the Equipment tool kit.

1.9.1.2 Heater Temperature

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the Hot Air Knife module on the graphic screen to open the Hot Knife dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

Hot Knife Heater Temperature
Measured Temperature
Follow the instructions as they appear in the Calibration tab for Hot Knife Heater Temperature Calibration
"To calibrate the heater temperature, measure the current temperature at the nozzle and enter the measured temperature in the field below."
There are two (2) methods to performing this calibration.

Method 1(Preferred)
The first method utilizes connectors P1, P5.

Method 2(Alternate)
The second method utilizes connectors P1, P2.

1.9.1.3 Nozzle Temperature

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on the Hot Air Knife module on the graphic screen to open the Hot Knife dialog box.
3. Click on the Calibration tab.

NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

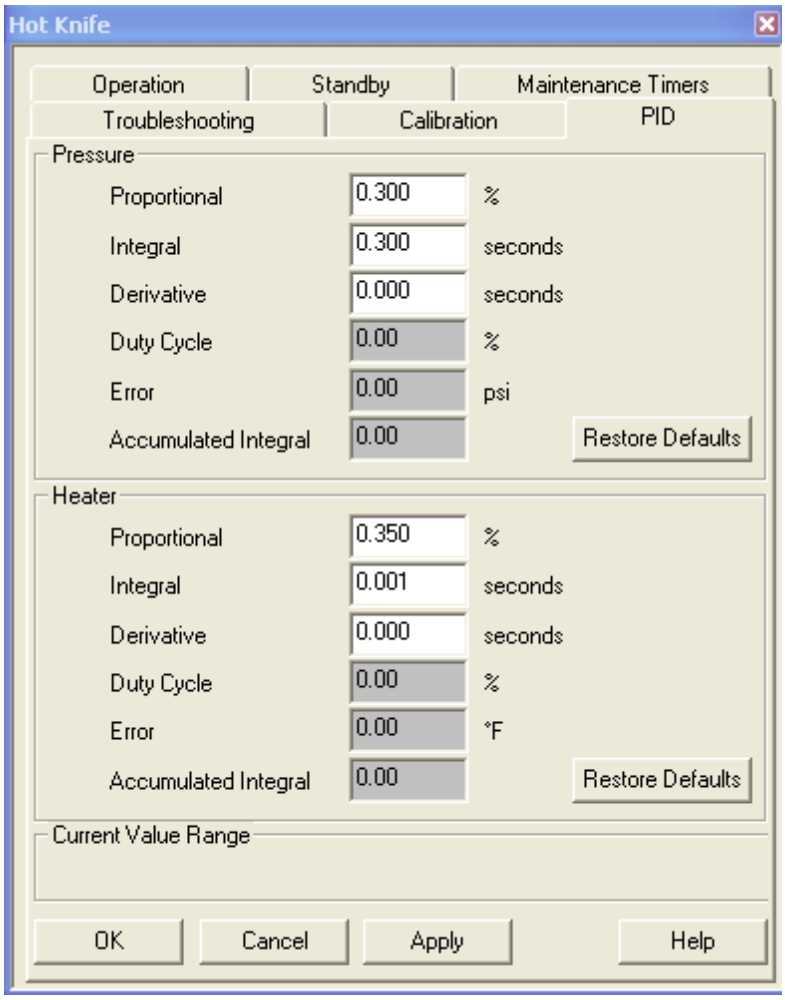
Hot Knife Nozzle Temperature
Measured Temperature
Follow the instructions as they appear in the Calibration tab for Hot Knife Nozzle Temperature. "To calibrate the nozzle temperature, measure the current temperature at the nozzle and enter the measured temperature in the field below.
There are two (2) methods to performing this calibration.

Method 1(Preferred)
The first method utilizes connectors P1, P5.

Method 2(Alternate)
The second method utilizes connectors P1, P2.
After completing the calibration be sure to re-connect the thermocouple plugs back into their respective receptacles at either the nozzle or the I/O interface board.

1.9.2 PID

The **PID** features are designed for use specifically by Process Engineers or personnel experienced in PID calculations. In an attempt to improve heater performance for unusual load conditions, experienced personnel may modify parameters using the PID features.



Click on a section of the Hot Knife **PID** tab above to get a more detailed description of the parameters in that section.

The Hot Knife **PID** tab may be accessed via:

Menu: **Modules | Hot Knife | PID** tab

1.9.2.1 Heater PID

The PID features are designed for use specifically by Process Engineers or personnel experienced in PID calculations.
In an attempt to improve heater performance for unusual load conditions, experienced personnel may modify parameters using the PID features.

Proportional
Set proportional band in %.

Integral

Enter in seconds time to calculate Error for integral purpose.

Derivative
Enter in seconds time to calculate rate or slope for derivative purpose.

Duty Cycle
Display the value of output in %, may vary from 0 to 100%.

Error
Display the difference between set point and actual temperature.

Accumulated Integral
Display the integral or reset value to compensate for an offset condition.

Derivative Change
Display the derivative or rate value, used to prevent any fast change in system condition.

Restore Defaults
To reset the default values for the PID features, click on the Restore Defaults button.

See Also: **PROPORTIONAL (TIME PROPORTIONING)**
INTEGRAL (AUTOMATIC RESET)
DERIVATIVE (RATE)
PID CALIBRATION

1.9.2.2 Pressure PID

The Setting features are designed for use specifically by Process Engineers or personnel experienced in SETTING calculations.
In an attempt to improve pressure performance for unusual load conditions, experienced personnel may modify parameters using the SETTING features.

High Output (20 PSI)
Set pressure at 20 PSI, wait until stabilized, enter the value from Duty Cycle in this box.

Low Output (5 PSI)
Set pressure at 5 PSI, wait until stabilized, enter the value from Duty Cycle in this box.

Error Gain
Parameter used to automatically compensate for the difference between set point and actual process pressure. If the response is too slow then increase this value, if it is too fast and oscillates then decrease this value.

Duty Cycle
Display the value of output in %, may vary from 0 to 100%.

Error
Display the difference between set point and actual temperature.

Restore Defaults
To reset the default values for the PID features, click on the Restore Defaults button.

1.9.3 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

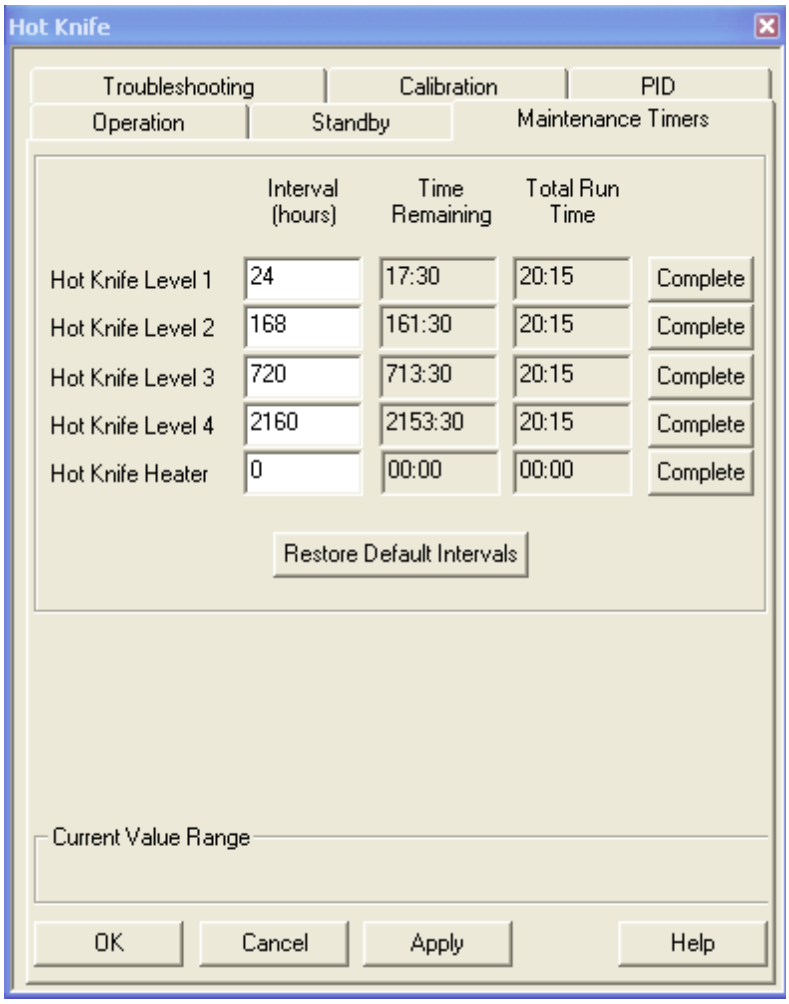
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The Hot Knife **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Hot Knife | Maintenance Timers** tab

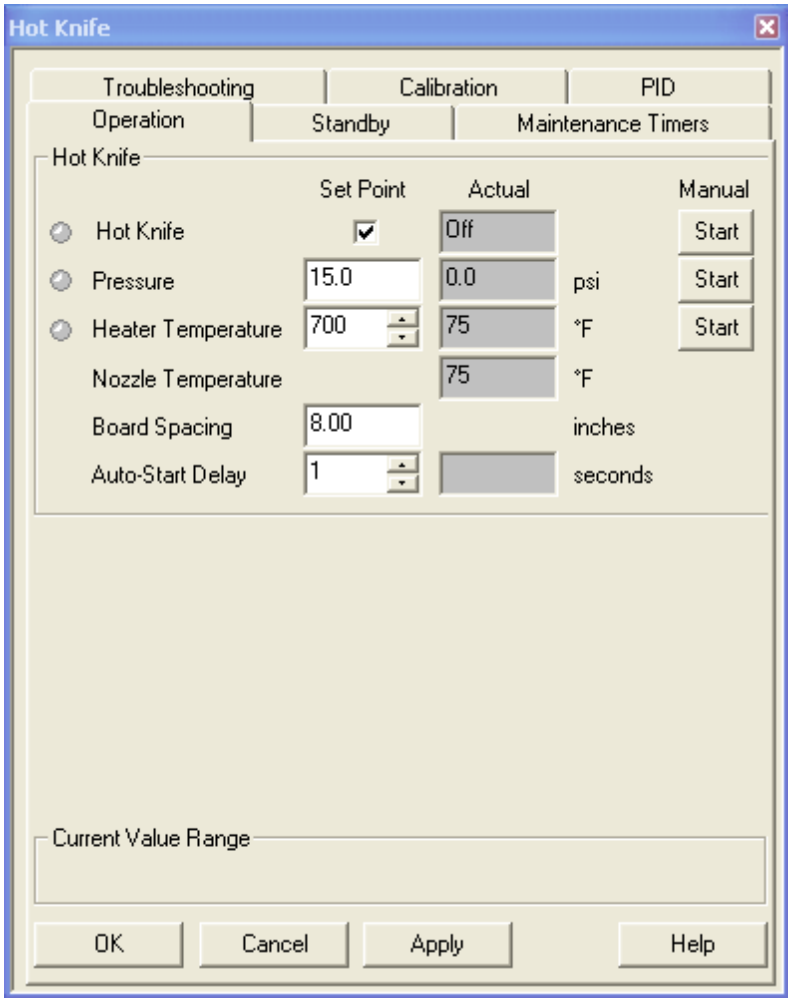
1.9.3.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use:	**xxx**		**xxx**			
Level 2 Examples of use:		**xxx**		**xxx**		

Level 3 Examples of use:		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.9.4 Operation

Within the **Operation** tab, specific parameters related to the Hot Knife module and its components, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The Hot Knife **Operation** tab may be accessed via:

Menu: **Modules | Hot Knife**

Hot Knife

Hot Knife

To enable the Hot Knife, click on the box to the right — places a check mark in the box. Clicking on the box again removes the check mark. A check mark in the box indicates the Hot Knife will be included in the Auto-Start Machine mode. No check mark in the box indicates that the Hot Knife will not be included in the Auto-Start Machine mode. The text box under Actual displays Off when the Hot Knife is off.
Auto-Start Machine mode will start the Hot Knife after the necessary machine parameters have been satisfied for Auto Start.
The Start Button to the right of Hot Knife Actual will start and stop sequentially the pressure and heater functions while in Auto or Manual Modes.

Pressure

NOTE: While in the Auto mode, pressure and heater temperature are available. While in the Manual mode, the Pressure Start button is available — Heater Temperature eventually becomes operational after the Pressure Set Point has been satisfied.
When Pressure is off (Stop), the value in the text box under Actual displays 0.00 psi.
Click on the Start button to turn on Pressure.
The LED illuminates green, the value in the Actual text box increases to Set Point, and the Start button changes to a Stop button to cancel the operation.
The Start button for Heater Temperature becomes operational when Pressure reaches Set Point.

Heater Temperature

Set the operating temperature of the Hot Knife. Values may be entered in imperial or metric units, whichever is applicable for your system configuration.
When Heater Temperature is off (Stop), the value in the text box under Actual displays the ambient temperature of the heater. As the temperature increases, the value under Actual gradually increases — as the temperature decreases, so does the value under Actual. - Pressure must be started and the Heater Temperature Start button must be selected before it can be started. - Click on the Heater Temperature Start button when it is operational to turn on the Hot Knife heater.
The LED illuminates green, the value in the Actual text box increases to Set Point, and the Start button changes to a Stop button to cancel the operation.

Nozzle Temperature

As the Actual temperature increases for Heater Temperature, so does the Actual temperature for Nozzle Temperature.
The value for Actual Nozzle Temperature represents the actual air temperature of the hot gas feeding the Hot Knife's nozzle. This value can not be set. It is read only. The Nozzle Temperature will always be lower than Heater Temperature.
For Example: If the Heater Temperature's Set Point is 1000 °F, the Actual Temperature for Nozzle Temperature will go to approximately 890 °F.

Board Spacing

The value for Board Spacing represents the actual spacing required between the boards loaded onto the conveyor to prevent an alarm from occurring.

Auto Start Delay

Amount of time before the system will go ready in Auto Start after the Hot Knife is turned on.

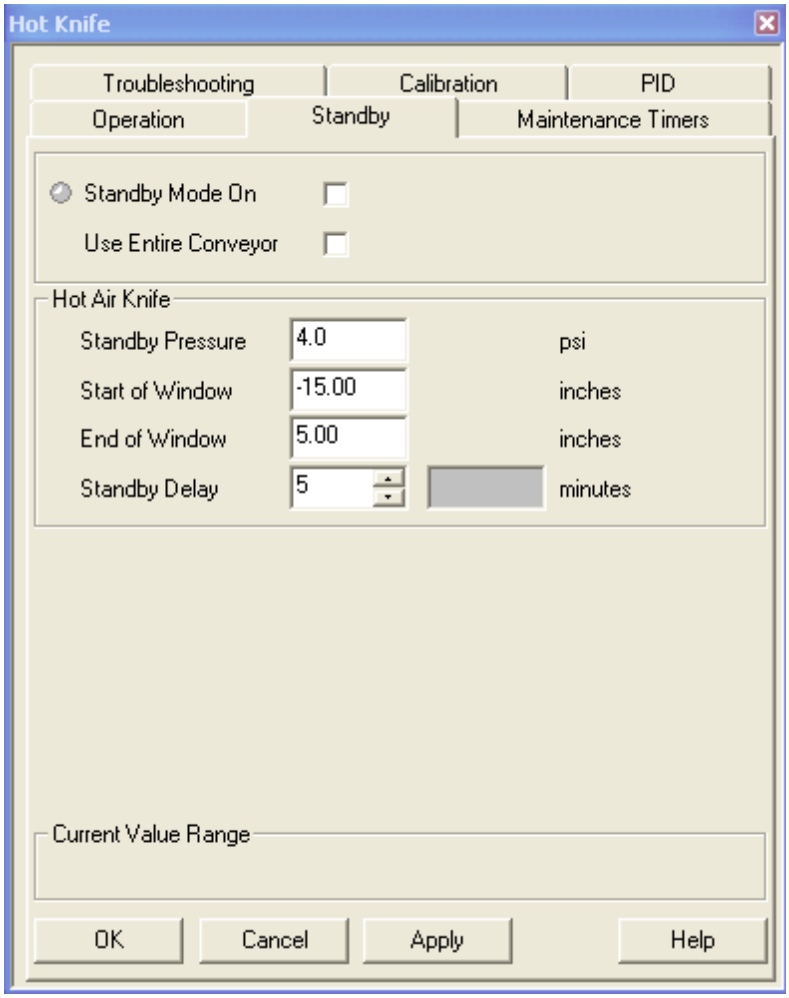
Standby Mode

Click on the box to the right of Standby Mode to place a check mark in, or remove a check mark from the box.
Placing a check mark in the box enables Standby Mode On for activation with boards entering into the

machine and idling back down when no boards are in the machine.

1.9.5 Standby

The **Standb**y tab contains features to be used specifically for operation. Standby allows the machine to decide when a board is or is not present within a defined process parameter (window) — based on whether or not a board is present, Standby will activate and deactivate Hot Knife Pressure



The Hot Knife **Standby** tab may be accessed via:

Menu: **Modules | Hot Knife | Standby** tab

Standby Mode On
Click on the box to the right of Standby Mode On to place a check mark in, or remove a check mark from the box.
Placing a check mark in the box enables Standby Mode On for activation.
When a check mark is placed in the Standby Mode On check box, the Hot Knife Pressure LED's in the

Hot Knife dialog box's Operation tab features, illuminate yellow. This indicates that the pressure is presently operating at Standby Pressure until a board is sensed within the defined window then the pressure operates at the Set Point pressure defined in the Operation tab.
No check mark in the box indicates that standby mode is not used and the pressure will operate at the set point defined in the operation tab.

Use Entire Conveyor
Click on the box to the right of Use Entire Conveyor to place a check mark in, or remove a check mark from the box.
Placing a check mark in the box enables use of the entire conveyor as the window in Standby Mode On, rather than a specific Start and End of window.
No check mark in the box indicates a specific window range will be defined rather than using the entire conveyor as the window.

Standby Pressure
The value entered here will be the pressure at which the Hot Knife Pressure will operate until a board enters the defined window — the Hot Knife then operates at the pressure set in the Operation tab.

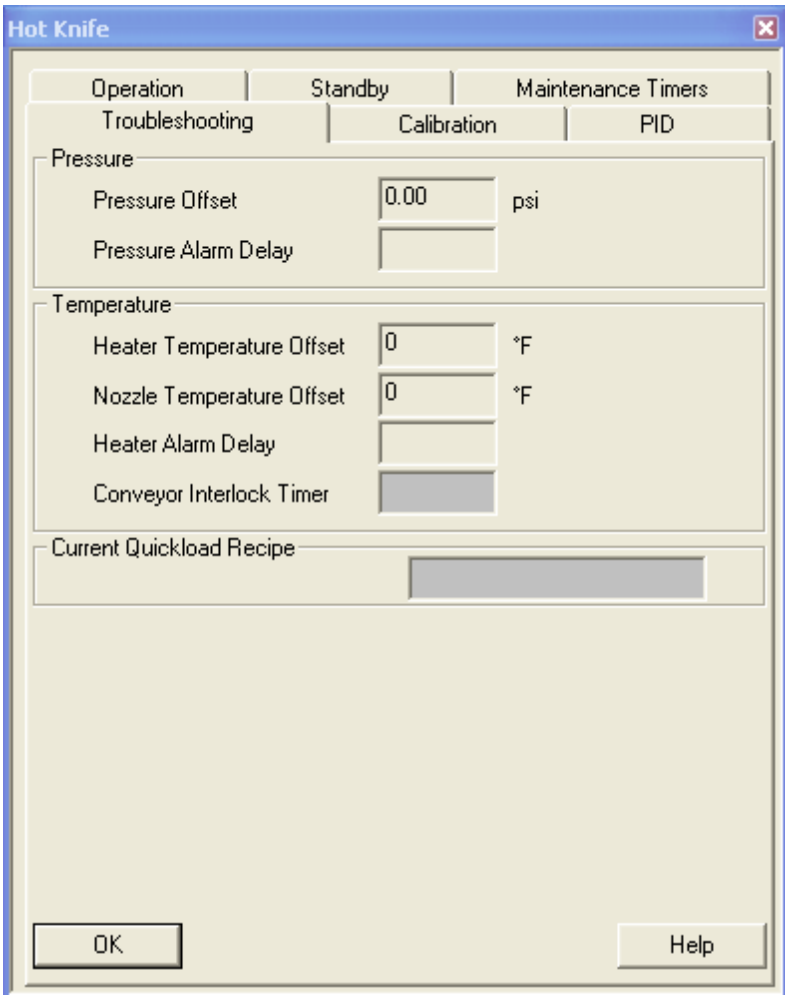
Start of Window
Enter in inches (or millimeters), the distance to engage the operations set point from the center of the hot Knife. A negative number engages the set point prior to the center and a positive number engages the set point after the center.

End of Window
Enter in inches (or millimeters), the distance to dis-engage the operations set point from the center of the hot Knife. A negative number dis-engages the set point prior to the center and a positive number dis-engages the set point after the center.

Standby Delay
This delay will force the hot knife to be turned off of it has been in standby for the setpoint number of minutes without a board in the machine. After the timeout expires the hot knife will turn off until another board enters the machine, then it will resume operation normally.

1.9.6 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Hot Knife, the values provided here may give the user some indication as to what may be causing the problem.



The Hot Knife **Troubleshooting** tab may be accessed via:

Menu: **Modules | Hot Knife | Troubleshooting** tab

Pressure

Pressure Offset
The correction value determined during calibration.

Pressure Alarm Delay
The time before the alarm is enabled.

Temperature

Heater Temperature Offset
The correction value determined during calibration.

Nozzle Temperature Offset
The correction value determined during calibration.

Heater Alarm Delay
The time before the alarm is enabled.

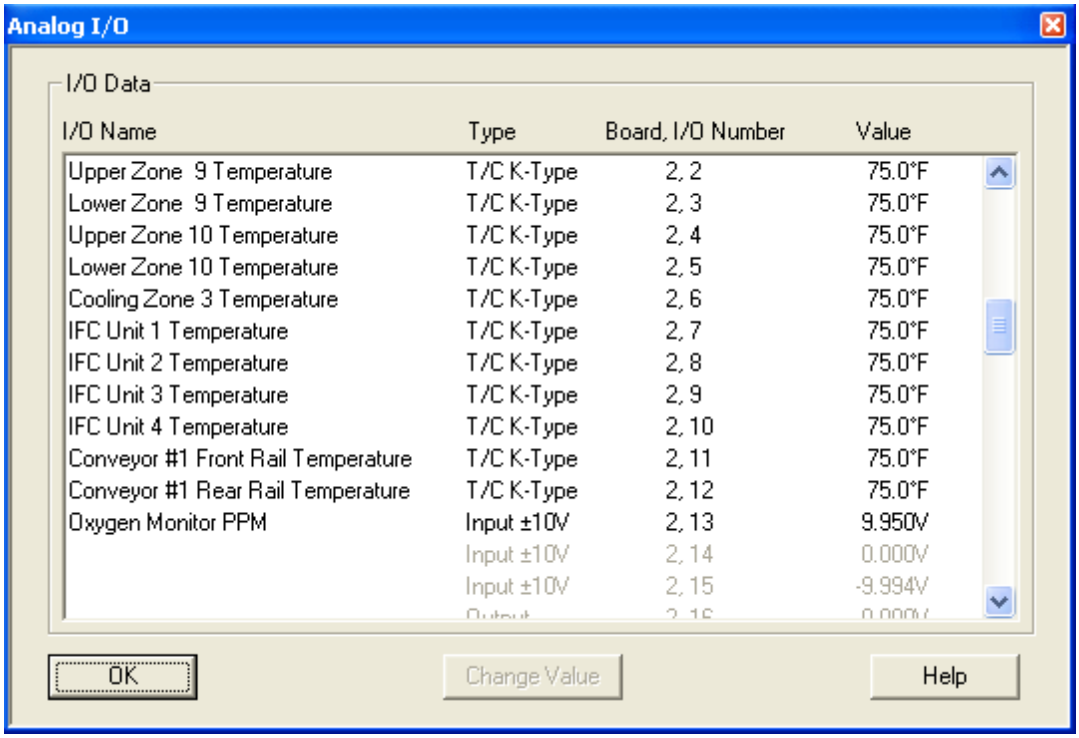
Conveyor Interlock Timer
The time before the Hot Knife will be turned off if the conveyor is not running.

Current Quick Load Recipe
Displays the recipe name that the Hot Knife is currently on in Quick Load.

1.10 I/O System

1.10.1 Analog/Digital I/O

The **I/O Status** is used to display both the **Analog I/O** and the **Digital I/O** status windows. Each line represents a separate I/O point including it's description, type, board/channel number, and current state. If the line is grayed out, that particular I/O point is not used for this machine's configuration.



The **Analog I/O** window may be accessed via:

Menu: **Modules | Analog I/O**

The **Analog I/O** window displays the current state for each analog signal on the machine.

I/O Name: Description of I/O point.

Type: Type of analog I/O point.

T/C J-Type: Thermocouple input.

Input±10V: Analog input (range -10.000 to 10.000V)

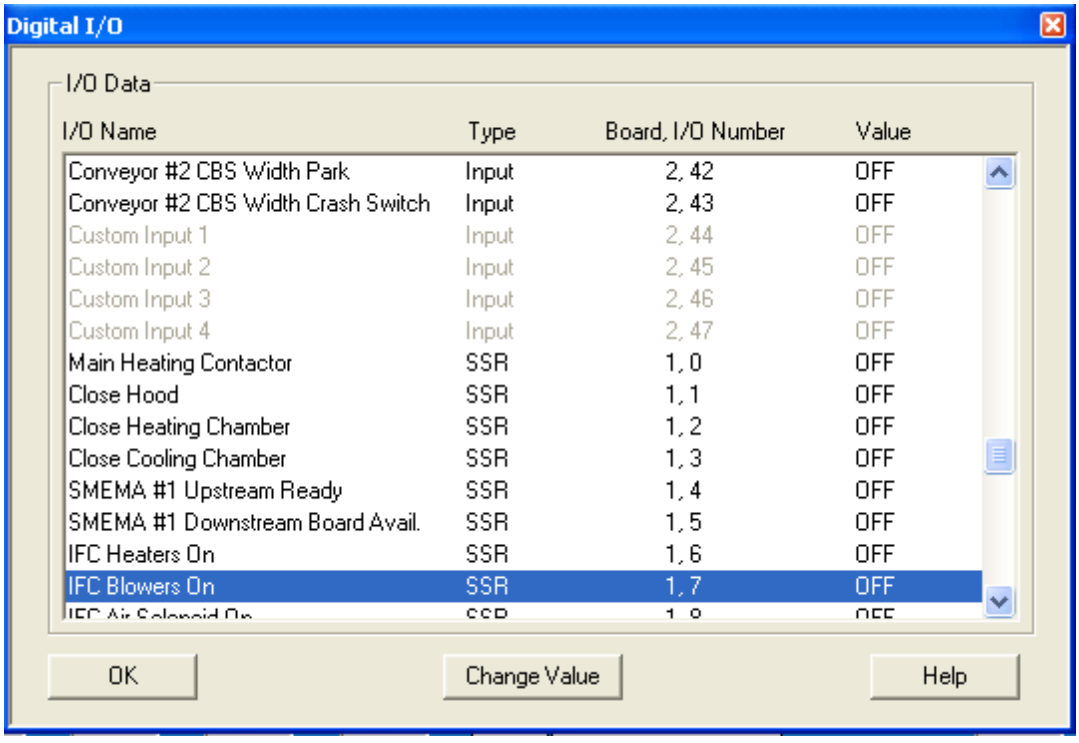
Output: Analog output (range 0.000 to 10.000V)

Board: Analog board number. Some machines will have more than one analog board based on the machine's configuration. The number of analog boards is displayed at the top of the **Splash Screen** if the software application detects real hardware.

I/O Number: Channel number on respective board. Analog input channels are 0 thru 15, analog output channels are 16 thru 23.

Value: Current analog channel's value and respective units.

Change Value: Opens the **Analog I/O Change** window, which allows the user to change a particular I/O point's value. This should only be used when the application software is running in **Simulation Mode** as this could produce unpredictable results. In **Simulation Mode**, this allows the user to control specific analog input and output values to simulate the machine hardware.



The **Digital I/O** window may be accessed via:

Menu: **Modules | Digital I/O**

The **Digital I/O** window displays the current state for each digital signal on the machine.

I/O Name: Description of I/O point.

Type: Type of digital I/O point.

- **Input:** Digital input, active low (maximum 24VDC)
- **Output:** Digital output (24VDC)
- **PWM Output:** Pulse Width Modulated digital output (range 0 to 100%)
- **SSR:** Solid State Relay output. Solid State Relays are used for higher current AC and DC outputs. Black SSR modules are for AC loads and red SSR modules are for DC loads.

Board: Digital board number. Some machines will have more than one digital or SSR board based on the machine's configuration. The number of digital and SSR boards are displayed at the top of the **Splash Screen** if the software application detects real hardware.

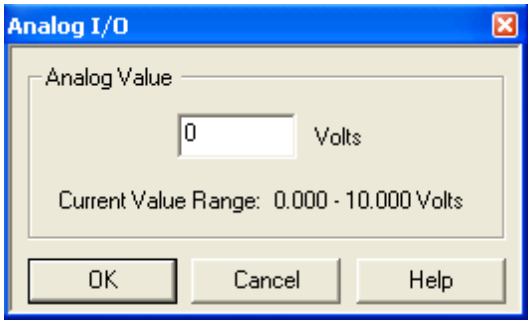
I/O Number: Channel number on respective board. Digital input channels are 0 thru 47, SSR output channels are 0 thru 15.

Value: Current digital channel's value.

Change Value: Toggles the respective I/O point on or off. This button is disabled for all PWM Output channels. This should only be used when the application software is running in **Simulation Mode** as this could produce unpredictable results. In **Simulation Mode**, this allows the user to control specific digital inputs and outputs to simulate the machine hardware.

1.10.2 Analog I/O Value Change

The **Analog I/O Change** window allows the user to change an analog input or analog output value. This should only be used when the application software is running in **Simulation Mode** as this could produce unpredictable results. In **Simulation Mode**, this allows the user to control specific analog input and output values to simulate the machine hardware.



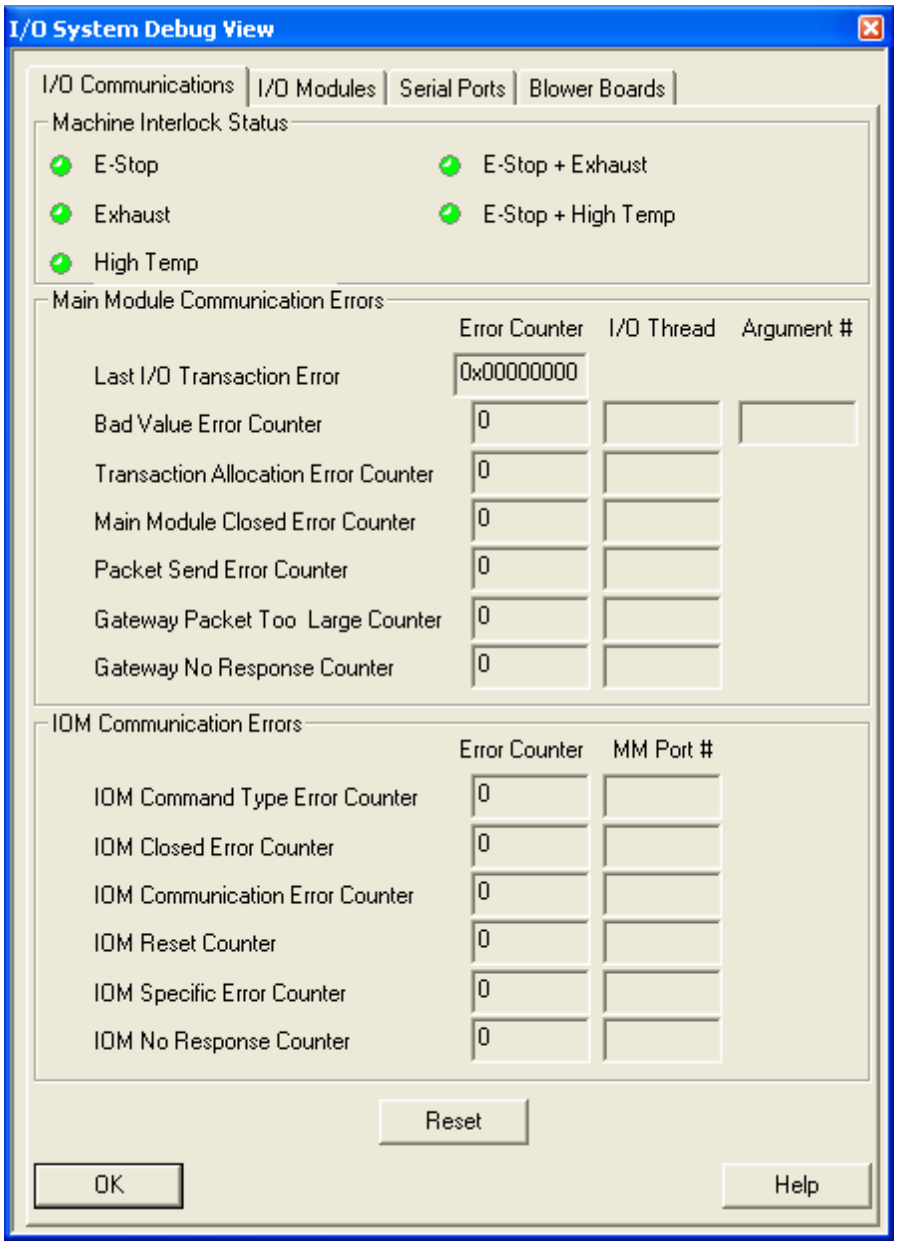
Analog Value: Enter the new analog input/output value. This value must be between the input/output's range as displayed by **Current Value Range**.

The **Analog I/O Change** window may be accessed pressing the ***Change Value*** button or double

tapping the analog I/O description on the **Analog I/O** window.

1.10.3 I/O Communications

The **I/O Communications** window is one of three windows used to display information about the I/O system on the machine. **I/O System Hardware** describes the I/O system used on the machine. This window displays information about the communications between the computer and the Main Module, the Main Module and each IOM module and the hardware interlocks.



The **I/O Communications Status** window may be accessed via:

Menu: **View | I/O System**

The **I/O Communications Status** parameter descriptions are listed below.

Machine Interlock State: This section displays the status for each of the machine's three hardware interlock circuits. If the interlock is OK and the circuit is energized, the LED indicator will be green. If the interlock is tripped and the circuit is de-energized the LED indicator will be red.

- **E-Stop:** Emergency stop circuit. When the LED indicator is red, one of the emergency stop buttons is depressed.
- **Exhaust:** Exhaust safety circuit. If the LED indicator is red, the exhaust may not be turned on or there might be something wrong with it.
- **High Temp:** High temperature safety circuit. If the LED indicator is red, check the Preheaters and Solder thermocouples and cable connections.
- **E-Stop &** This indicator is green only if both the E-Stop and Exhaust interlocks are energized.
- **E-Stop & High** This indicator is green only if both the E-Stop and High Temp interlocks are energized.

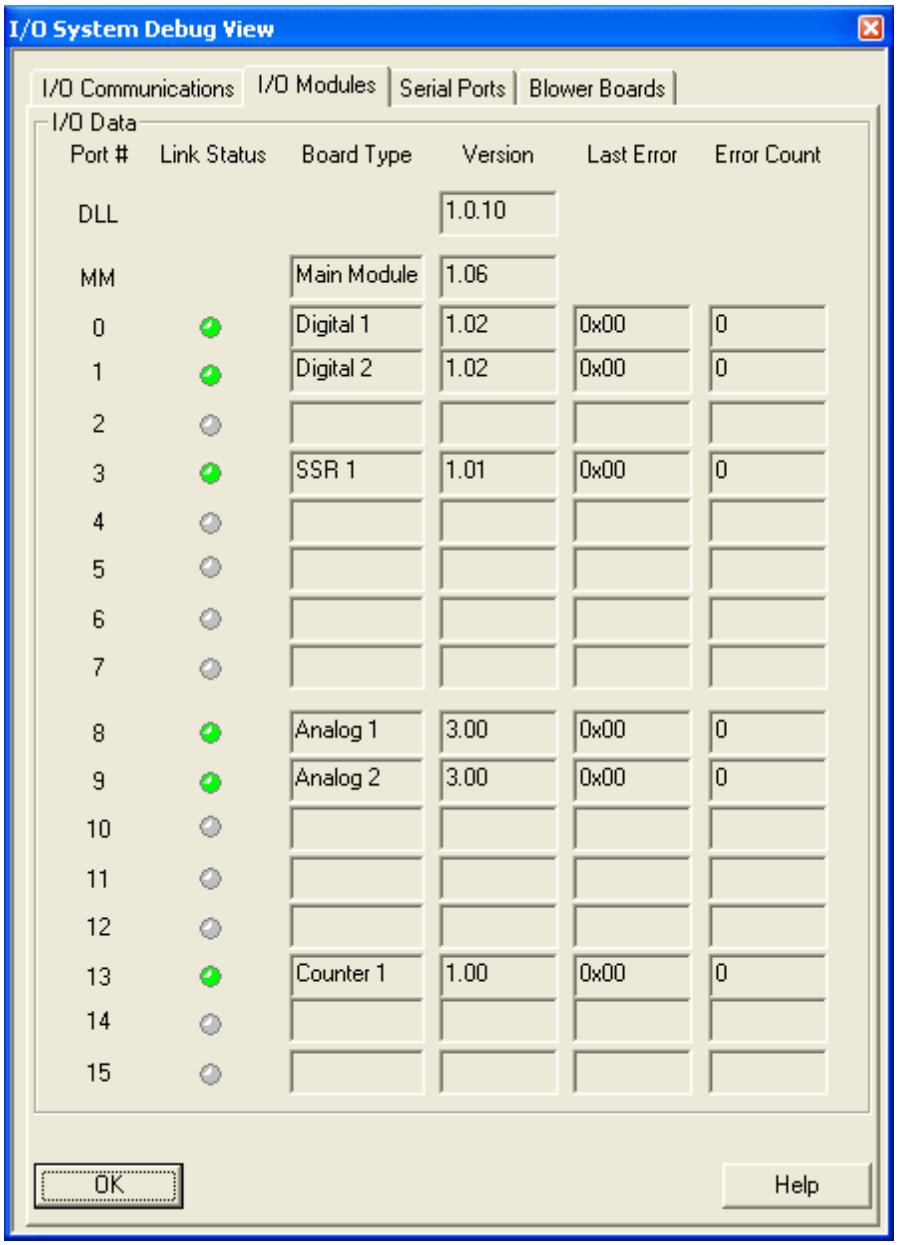
Main Module Communications Errors: This section displays information about communication errors between the computer and the Main Module.

IOM Communication Errors: This section displays information about communication errors between the Main Module and the IOM modules.

NOTE: The Main Module Communications Errors & IOM Communications Errors section are for informational purposes only and may be requested from the factory during troubleshooting.

1.10.4 I/O Modules

The **I/O Modules Status** window is one of three windows used to display information about the I/O system on the machine. **I/O System Hardware** describes the I/O system used on the machine. This window displays information about the IOM Modules, their connection to the Main Module and any communication errors.



The **I/O Modules Status** window may be accessed via:

Menu: **View | I/O System => I/O Modules tab**

The **I/O Modules Status** parameter descriptions are listed below.

Port #: This column displays the 16 ports on the Main Module. The first row displays information about the Main Module.

Link This LED indicator displays the current link status between the Main Module port and

Status: any IOM module. The LED indicator will be green if an IOM module is connected to the port and has established a communication link, otherwise it will be gray.

Board Type: Displays the type of board and board number connected to the port.

Version: Displays the I/O board's firmware revision number.

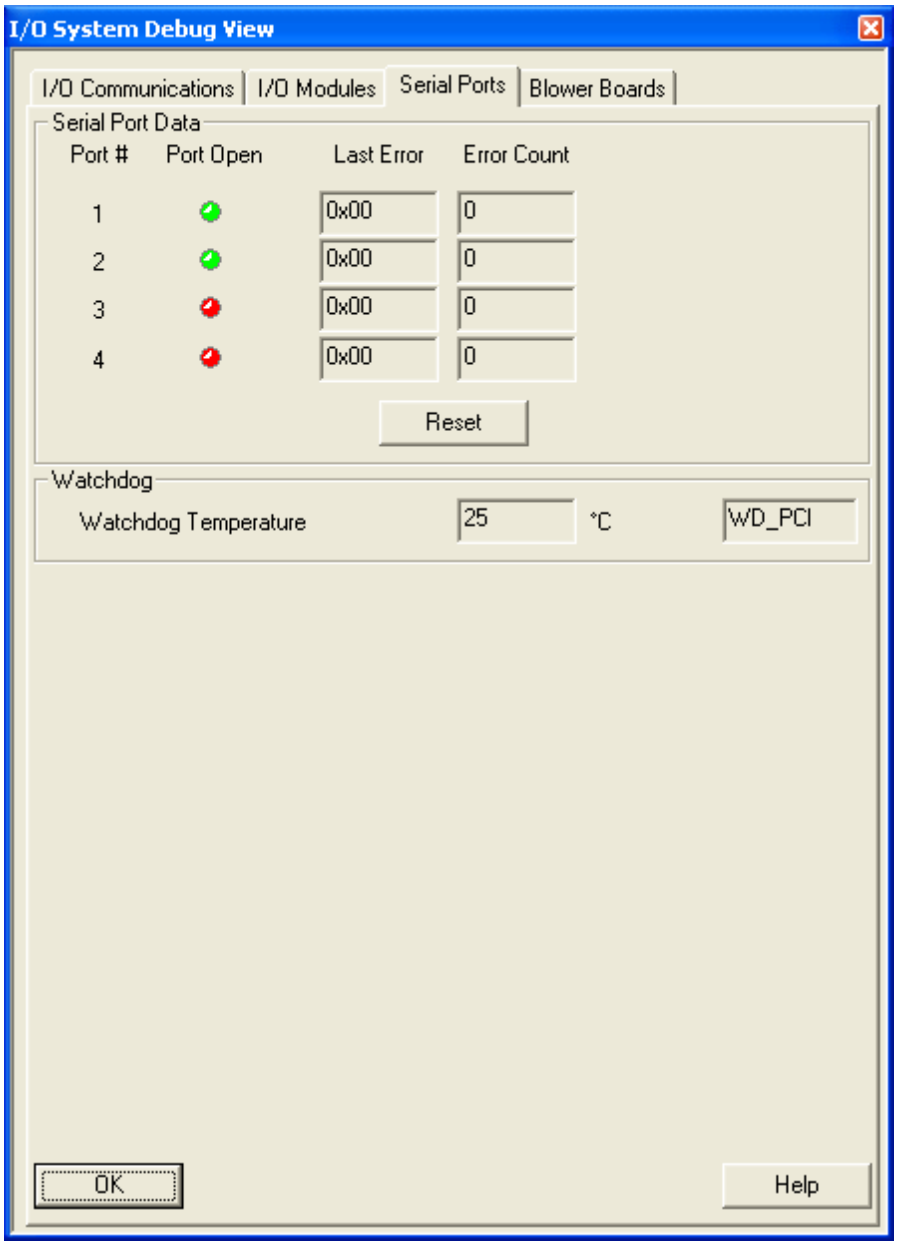
Last Error: Displays the last error code for the IOM module.

Error Count: Displays the number of errors for the particular IOM module since the last time the machine application software was started.

DLL Version: Displays the I/O system's DLL revision number.

1.10.5 I/O Serial Ports

The **I/O Serial Ports Status** window is one of three windows used to display information about the I/O system on the machine. **I/O System Hardware** describes the I/O system used on the machine. This window displays information about the status and any errors for the serial ports on the Main Module.



The **I/O Serial Ports Status** window may be accessed via:

Menu: **View | I/O System => Serial Ports tab**

The **I/O Serial Ports Status** parameter descriptions are listed below.

Port #: This column displays the four serial ports on the Main Module.

Port Open: This LED indicator displays whether the serial port is open or closed. The indicator will be green if the port is open or in use and red if the port is closed.

Last Displays the last error code for the serial port.

Error:

Error Count: Displays the number of errors for the particular serial port since the last time the machine application software was started.

***Reset*:** This button resets the **Last Error** and **Error Count** for each serial port.

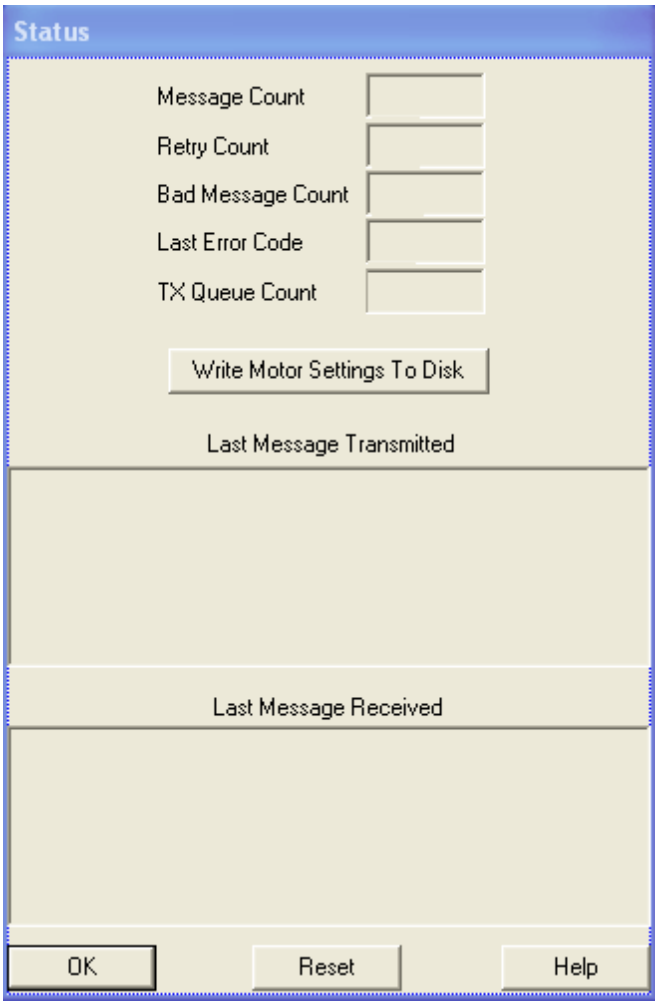
Watchdog: The Watchdog Temperature is also displayed taken from the Watchdog card within the PC. The Type of Watchdog card, displayed next to the temperature, signifies what type of Watchdog card is detected. There are three possibilities:

WD_NONE: No card detected.

WD_PCI: PCI type card detected.

WD_USB: USB type card detected.

1.10.6 Serial Ports



The **Serial Ports** window may be accessed via:

Menu: **Modules | Motor Serial Port**
Modules | External Fluxer Serial Port
Modules | Internal Fluxer Serial Port
Modules | Barcode Serial Port

The **I/O Serial Ports Status** parameter descriptions are listed below.

Message Count
Number of messages since machine was turned on or reset.

Retry Count
In case of transmission error, number of retries before message went through.

Bad Message Count
Number of bad messages since machine was turned on or reset.

Last Error Code
Code of the last transmission error.

TX Queue Count
Number of messages waiting in queue to be transmitted.

Write Motor Settings to Disk
Write the motor settings to file for engineering use.

Last Message Transmitted
In Hex format, message currently transmitted.

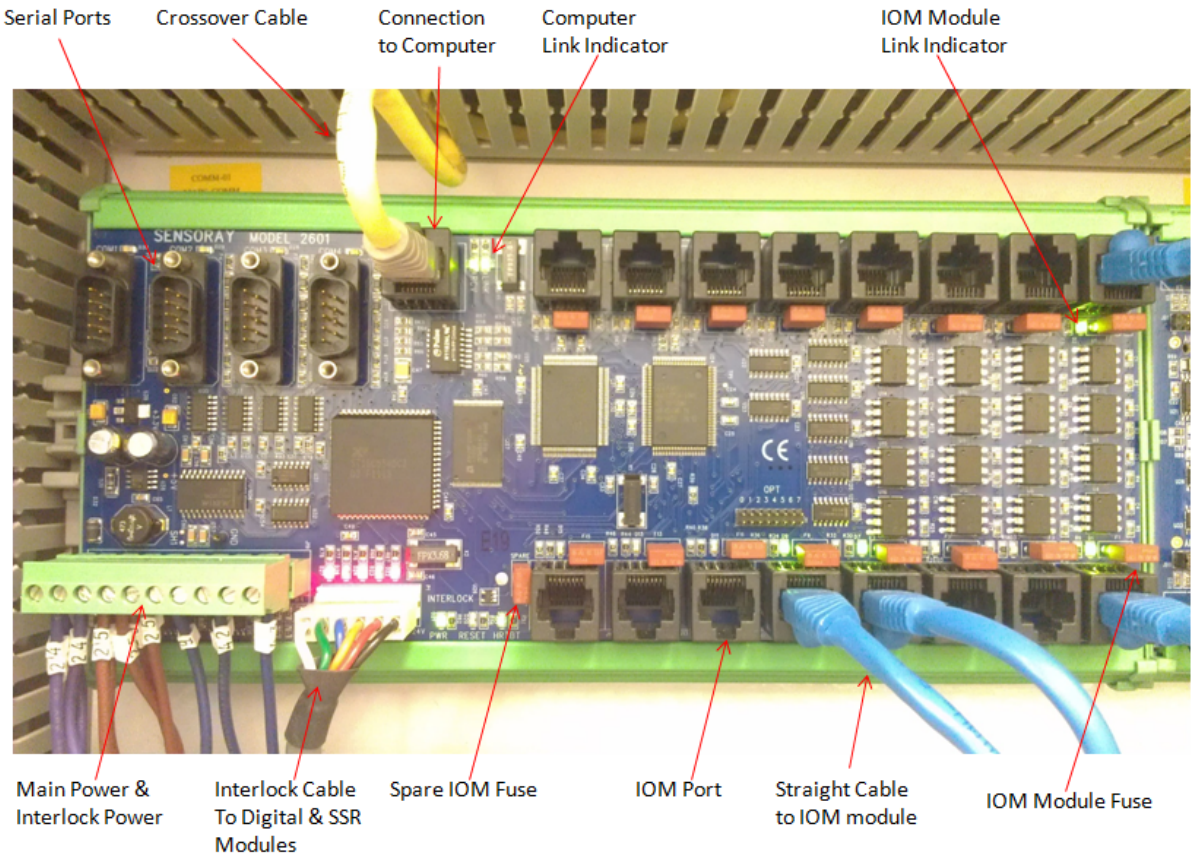
Last Message Received
In Hex format, message currently received.

Reset Button
Clear all Boxes, and if no drives are running, reset the serial communication and reinitialize the drives.

1.10.7 I/O System Hardware

The **I/O system** is comprised of a Main Module and multiple IOM modules. Each IOM module is designed for a specific type of signal, digital, analog, or counter/timer.

Main Module



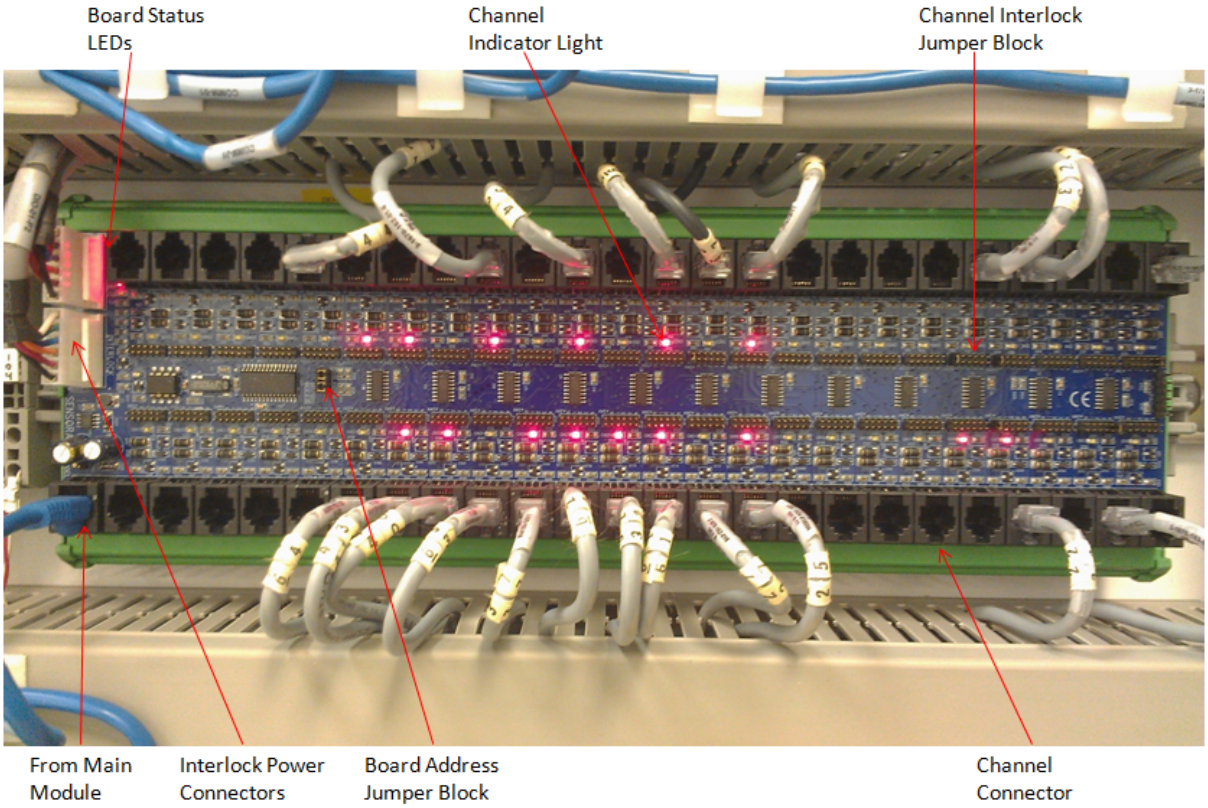
The Main Module is connected to the machine's computer via a crossover cable and acts as a hub for each of the IOM modules. To the right of the computer's connection are two LEDs, LINK & RCV. The LINK LED is on steady when the Main Module has established a link with the computer. The RCV LED flashes when the board receives data from the computer.

Each of the IOM modules (digital, SSR, analog or counter/timer) are connected to one of the 16 ports on the Main Module. The Main Module supplies power and communications to each IOM module via a straight Ethernet cable. Each IOM module is protected by a replaceable fuse. Each of the 16 ports has an LINK LED next to it's connector that is on when an IOM module is connected and has established a communication link. IOM modules may be plugged into any port, however, the machine application software must be restarted to detect the new port locations for each IOM module.

On the lower left corner of the board is the main power connector that supplies the 24VDC to the board and also the interlock power to each of the five hardware interlocks. Each of the interlock power and the main 24VDC power are passed thru to each of the digital and SSR modules via a six conductor cable. Above the interlock connector there are five LEDs, one for each hardware interlock. These LEDs will be on when the hardware interlock circuit is energized.

The Main Module has four COM ports for serial communications. Above each of the COM port's connector there is an LED that blinks when a message is transmitted or received.

Digital IOM Module



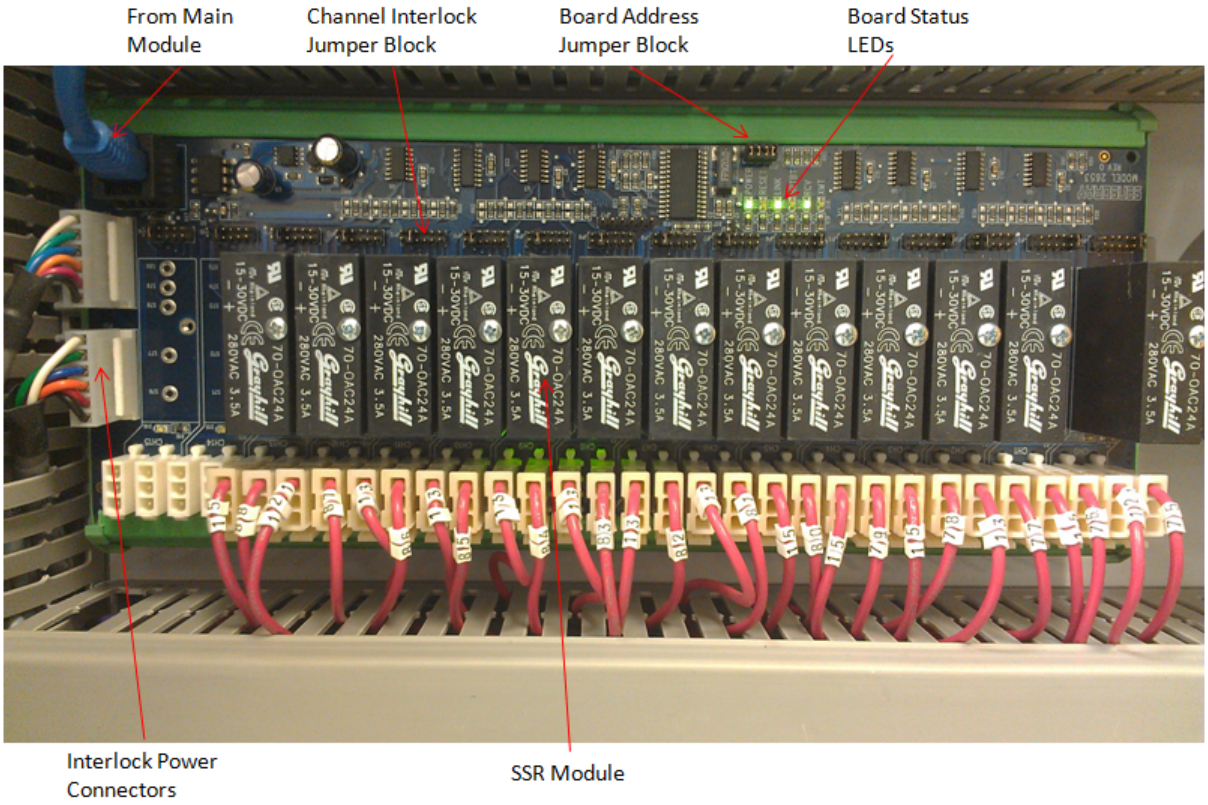
The digital I/O board has 48 channels that can be setup for either input or output. Each channel has a six pin connector, status LED and an interlock jumper block. The status LED is on when an input channel is pulled low or an output channel is on. The interlock jumper block is only used for output channels, and routes the correct interlock power supply to the channel's output. Refer to the machine's schematics for proper jumper configuration. The interlock power and the constant 24VDC are used to drive the outputs and are daisy chained from the Main Module to all of the digital and SSR IOM modules.

Each channel's connector has it's I/O pin plus the I/O pins for the next two channels (except channels 46 & 47). This means a cable in channel 0 can also be wired to channels 1 & 2, or a cable in channel 35 can also be connected to channels 36 & 37. This reduces the number of cables required when wiring nearby components or things such as the Light Tower. This also means that some channels without cables plugged into a connector are still in use. For the channel's status, always refer to the status LED above or below the connector, even if empty. Refer to the machine's schematics for more details.

The digital IOM module uses a four position jumper block to assign the board's address. This is used by the machine application software to determine each digital IOM module. If this board is ever replaced, the address and each channel's interlock jumper blocks must be carefully configured per the machine's schematics.

The board has several status LEDs that indicate power, link and activity from the Main Module.

Solid State Relay (SSR) IOM Module

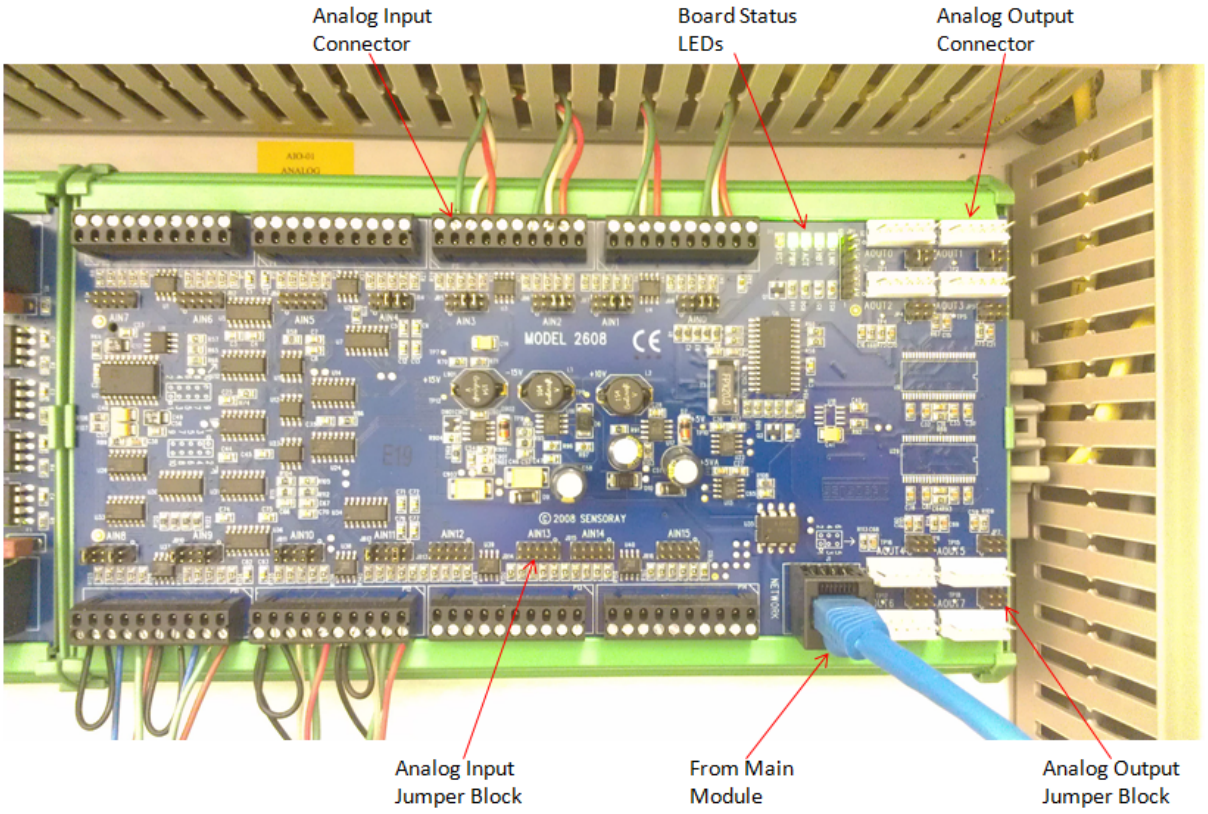


The Solid State Relay (SSR) I/O board has 16 channels that can be used for higher current AC or DC loads. The black SSRs are for AC loads and the red SSRs are for DC loads. Each channel consists of two connectors (supply and load), a SSR module, an interlock jumper block and a status LED. The status LED is on when the channel is on. The interlock jumper block is used to route the correct interlock power supply to the control side of the channel's SSR. Refer to the machine's schematics for proper jumper configuration. The interlock power and the constant 24VDC are daisy chained from the Main Module to all of the digital and SSR IOM modules.

The SSR IOM module uses a four position jumper block to assign the board's address. This is used by the machine application software to determine each SSR IOM module. If this board is ever replaced, the address and each channel's interlock jumper blocks must be carefully configured per the machine's schematics.

The board has several status LEDs that indicate power, link and activity from the Main Module.

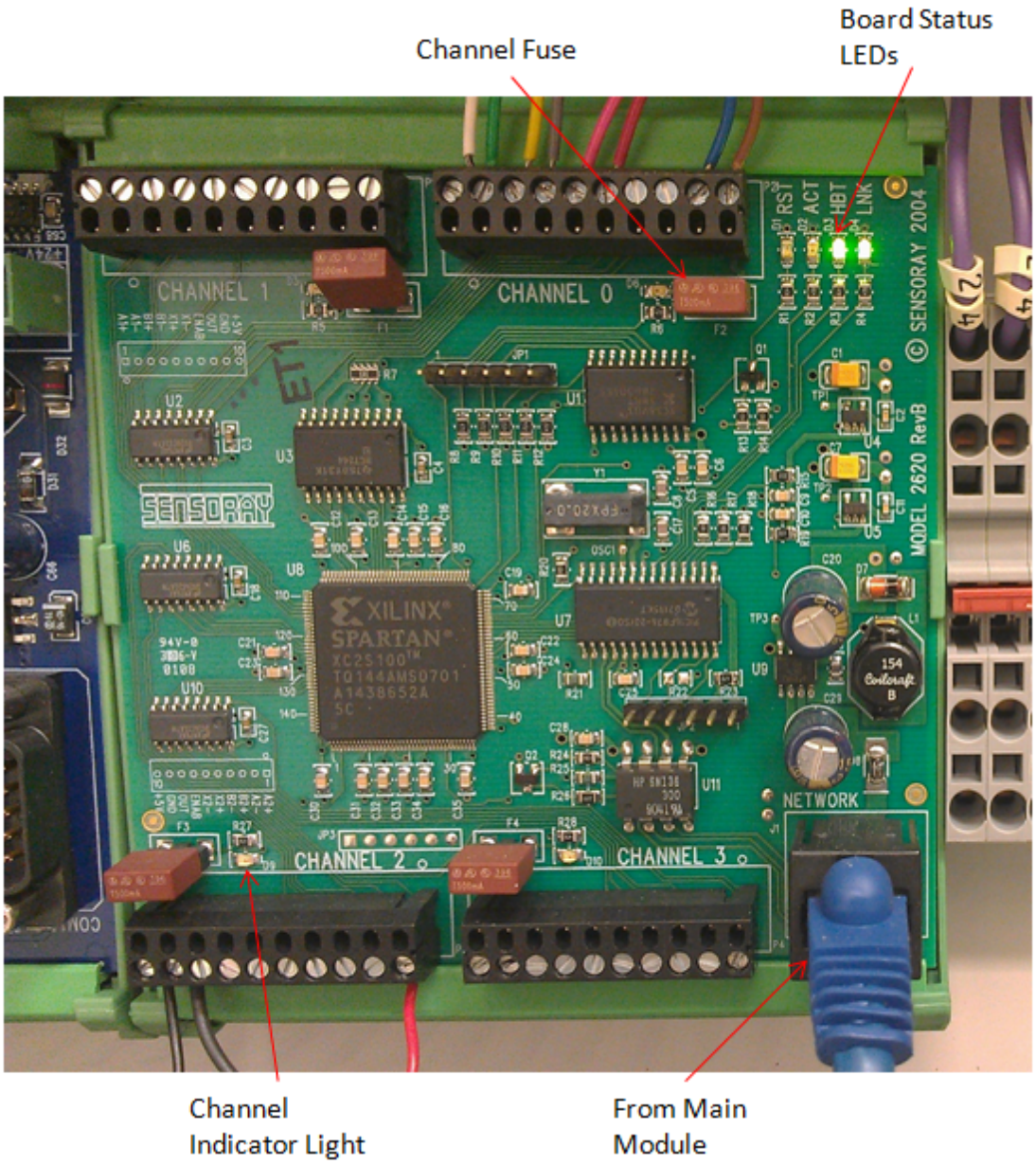
Analog IOM Module



The Analog IOM module is used to interface with all analog signals. It has 16 input channels and up to 8 output channels depending upon the machine's configuration. The board has several status LEDs that indicate power, link and activity from the Main Module.

The 16 input channels can be used for current loop (4-20mA), voltage (-10.00 to 10.00 VDC) or thermocouple signals. Each input and output channel has a configuration jumper block, refer to the machine's schematics for proper jumper placement.

Counter/Timer I/O Module



The Counter/Timer I/O board has four channels that can be used with encoders. Each channel can supply 5VDC to the encoder or load and is protected by a replaceable fuse. The channels also have a status LED which blinks at a fixed rate when the channel is receiving a pulse signal.

The board has several status LEDs that indicate power, link and activity from the Main Module.

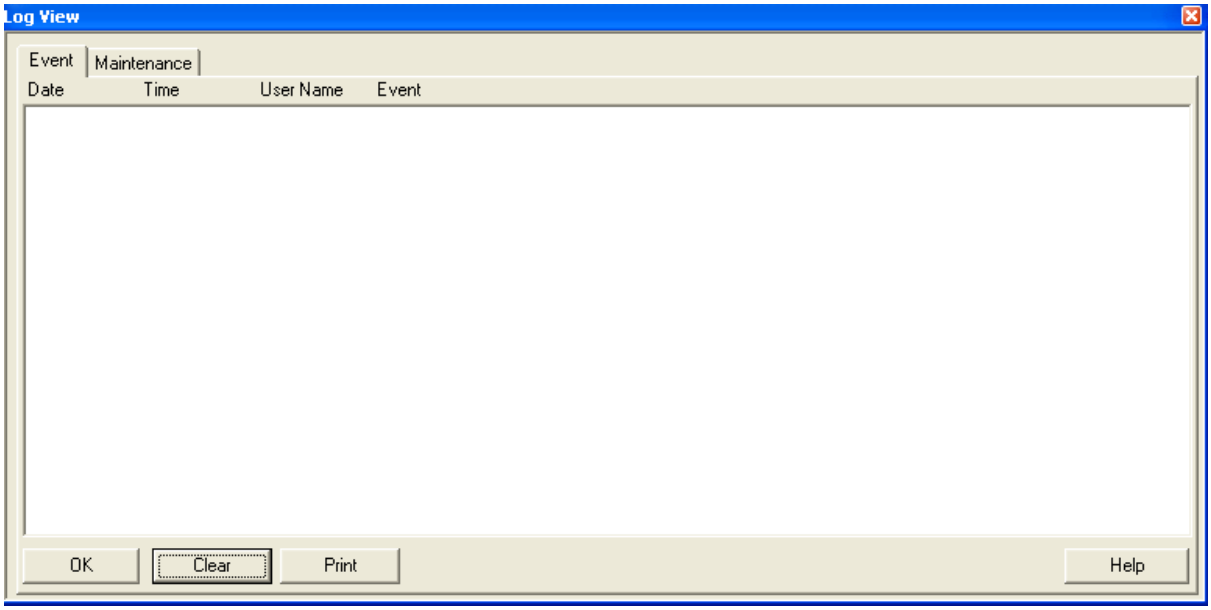
1.11 Machine Logs

1.11.1 Logs

The Logs is basically a viewing utility.
Displays a log file when clicked on.

Select Logs by clicking on View on the Menu Bar, then clicking on Logs in the drop-down list box.

Event Log
The Event Log file chronicles changes and events that have occurred in the machine program.

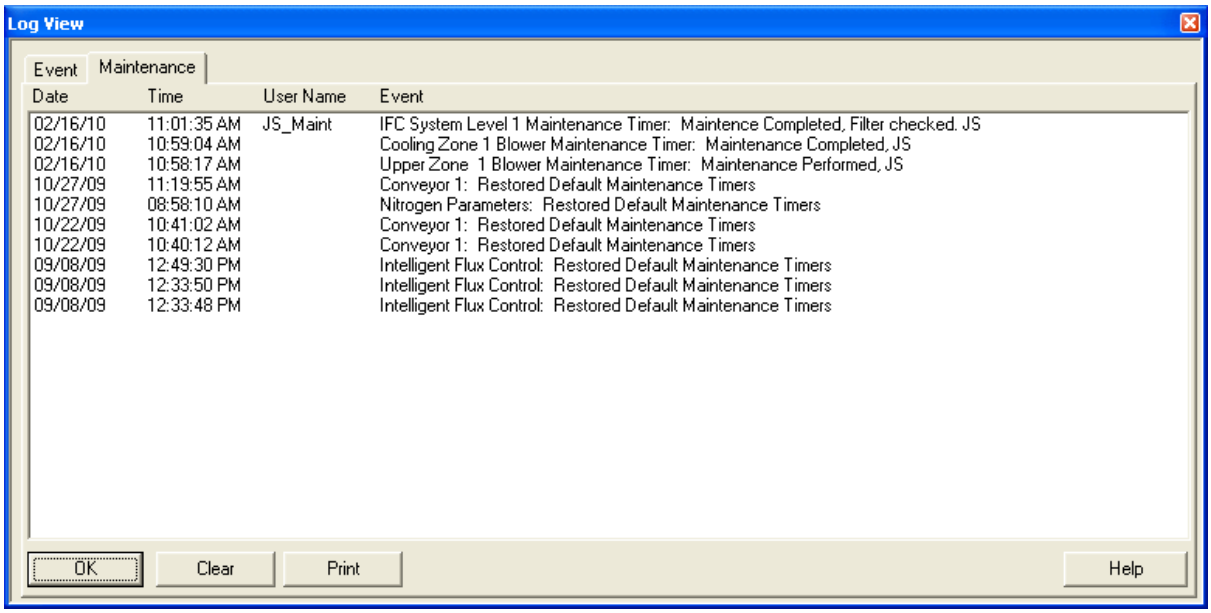


The **Event Log** tab may be accessed via:

Menu: **View | Logs...**

Toolbar:

Maintenance Log
The Maintenance Log file chronicles changes and events that have occurred in the Maintenance Timers Screen



The **Event Log** tab may be accessed via:

Menu: **View | Logs... | Maintenance** tab

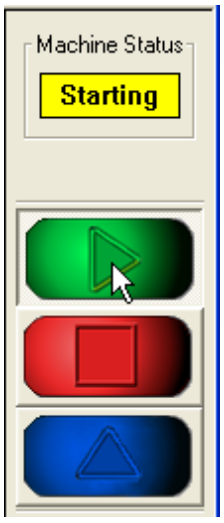
Toolbar:  **| Maintenance** tab

1.12 Machine Modes

1.12.1 Auto Start

The Auto Start function allows automatic enabling of all modules or functions within a module, that have been selected within Machine Configuration (See Configuration), and that have an "On" set point.
Select the Auto Start mode by any one of the following methods:
Click on the START button icon.
Press the F2 function key on the keyboard.
Click on View on the Menu Bar, then click on Auto Startup Status.

The mode is also displayed on the window Status Bar in the lower right area of this Display window.
The Auto Stop icon button no longer appears depressed. The AUTO icon button appears depressed.



1.12.2 Auto Start Status

The Auto-Startup Status is a viewing utility, allowing the user to see the status, at any time, of the modules or their features configured for Auto-Startup.
Select Auto-Startup Status by clicking on View on the Menu Bar, then clicking on Auto-Startup Status in the drop-down list box.

The Auto-Startup Status Screen Contains five Columns. Each are described below:

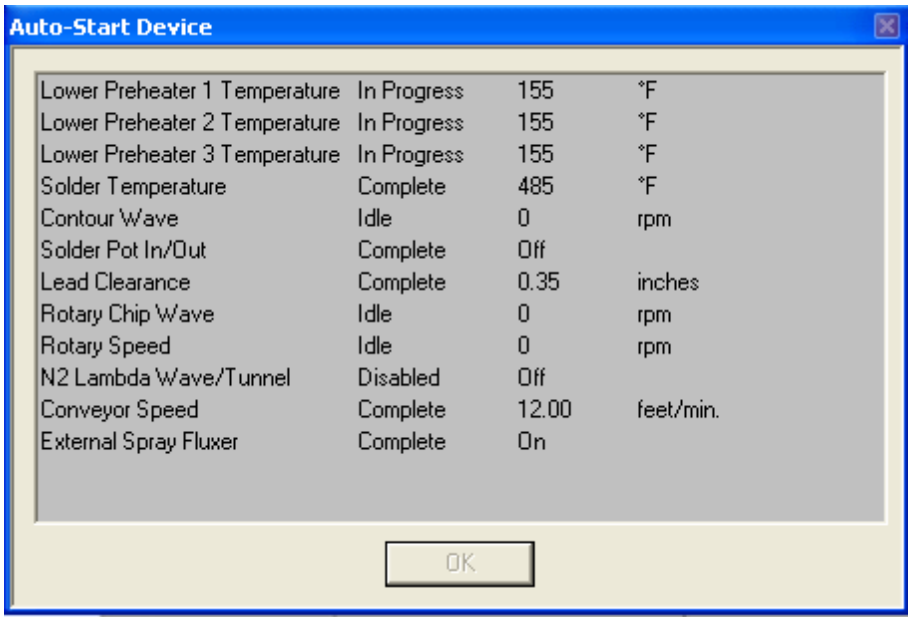
Device
The Auto-Start Device.

Status
There are six possible Auto-Start States:
- **Idle** - The Device has not yet been activated.
- **Disabled** - The Device is not active for the Recipe.
- **In Progress** - The Device has been started but is not Ready for Process
- **Stable** - The Device is within Process Band, Countdown Timer is Active.
- **Complete** - The Device is Ready to Process.
- **Aborted** - The Device was started but failed due to Alarm condition or interlock.

Actual
This could be Actual Temperature, Width, Speed, or whether the device is On or Off.

Unit of Measure
The Unit of Measure of the Actual, if applicable.

Countdown
If a Stability Timer is required for the Device, the Countdown Timer is displayed. As soon as the timer reaches 0, the Device Status would be Complete.



The **Auto-Start Device** window may be accessed via:

Menu: **View | Auto-Startup Status...**

1.12.3 Auto Stop

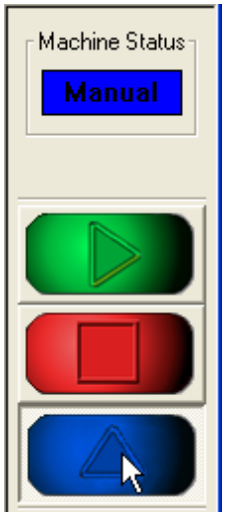
This machine always comes up in the Auto Stop mode. The STOP button icon appears depressed. The Stop button remains depressed until either the MAN or GO buttons are clicked. While in either the MAN or GO mode, and the STOP button is clicked, Auto Stop immediately and sequentially turns off (STOP) all functions of this machine with the exception of the solder pot heaters. Unless the heaters are manually shut off, or an alarm condition arises in the solder pot heater circuit, the heaters will remain enabled. Use Auto Stop whenever shutting the machine down.
Select the Auto Stop mode by any one of the following methods:
Click on the STOP button icon.
Press the F3 function key on the keyboard.
Select Machine on the Menu Bar, then click on Auto Stop in the drop-down list box.
a check mark appears next to Auto Stop when in the Auto Stop mode.

The mode is also displayed on the window Status Bar in the lower right area of this Display window. The STOP button appears depressed. The MAN or GO button icons no longer appear depressed.

1.12.4 Manual

When the system software starts up, the machine is in the Auto Stop mode — the STOP icon button appears depressed.
To switch to Manual mode select one of the following methods:
Click on the Manual icon button.
Select Machine on the Menu Bar, then click on Manual a check mark appears next to Manual when in the manual mode.
Press the F4 function key on the keyboard.

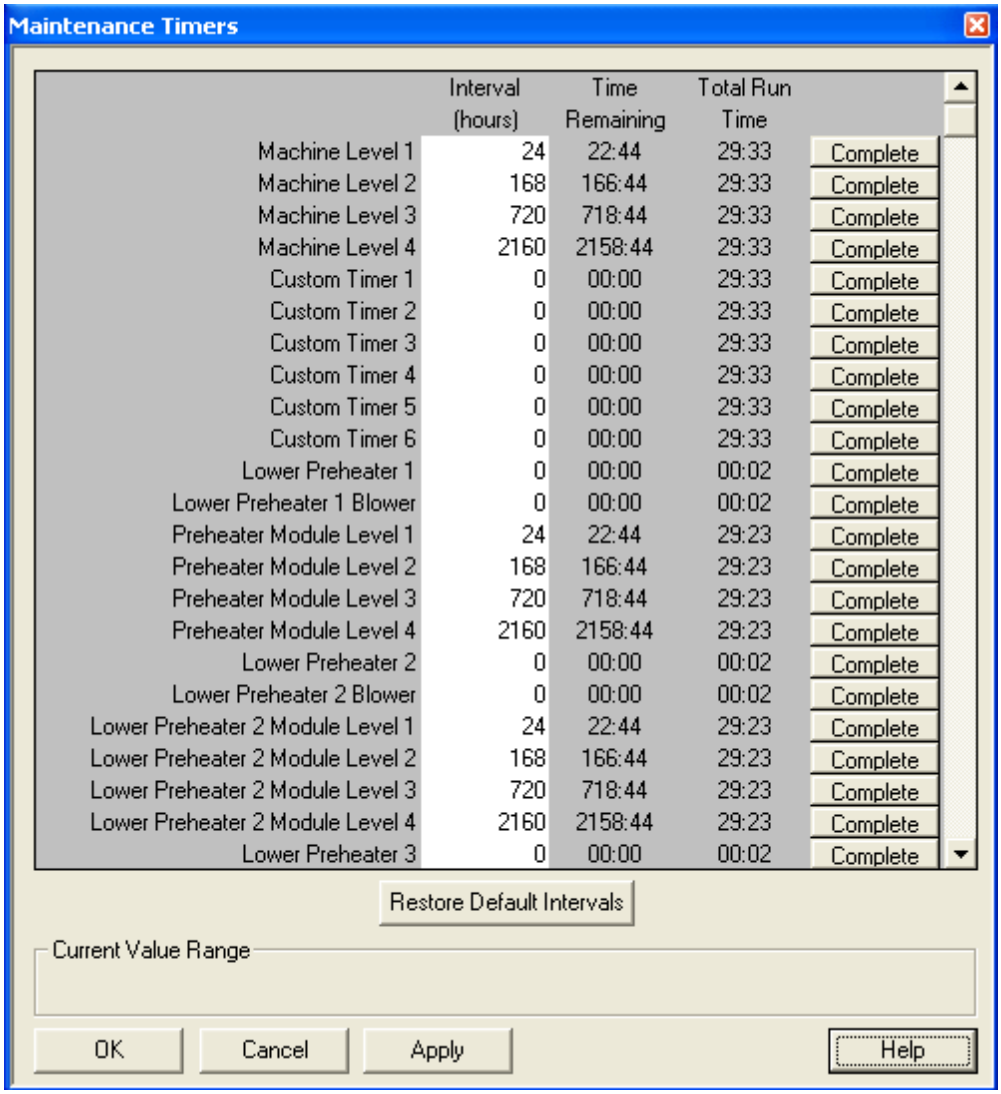
The mode is also displayed on the window Status Bar in the lower right area of this display window.
The Auto Stop icon button no longer appears depressed. The MAN icon button appears depressed.
In the Manual mode, each function or subsystem must be manually activated.



1.13 Maintenance Timers

The **Maintenance Timers** window displays all of the machine's maintenance timers. Module specific maintenance timers can be found on the module's **Maintenance Timers** tab. There are two types of maintenance timers, level timers and device specific timers. Level timers are associated with a specific

machine module such as the Preheater Module Level 1, Fluxer Level 1 etc. These timers are based on clock time and are usually set for daily, weekly, monthly or quarterly maintenance intervals. Device specific timers such as Lower Preheater 1 or Solder Pot are based on actual run time for the specific device.



The **Maintenance Timers** window may be accessed via:

Menu: **View | Maintenance Timers**

The **Maintenance Timers** parameter descriptions are listed below.

Maintenance Timer: Maintenance timer name. This is also the name that will appear in the **Event Log**, **Maintenance Log** and the **Alarm Status** window.

Interval: Specifies the time or number of machine cycles between maintenance intervals.

Entering a 0 for the interval, disables the maintenance timer alarm. This field is disabled unless the user has security access to **Maintenance Timer Functions** on the **Configure Security** page.

Time Remaining: Specifies the time or number of machine cycles remaining before the next required maintenance. A negative number indicates that the maintenance interval has already expired and how long ago or the number of cycles.

Total Run Time: Total run time for the specific timer. This can be reset on the **Maintenance Note** window by placing a check mark next to **Reset Total Run Time** when completing maintenance.

Complete*:** Press the ***Complete button to signify that the maintenance has been performed for the specific maintenance timer. This will open the **Maintenance Note** window. This button is disabled unless the user has security access to **Maintenance Timer Functions** on the **Configure Security** page.

***Restore Default Intervals*:** Restores all maintenance timer intervals back to factory defaults. This does not reset the **Total Run Time**. This button is disabled unless the user has security access to **Maintenance Timer Functions** on the **Configure Security** page.

1.13.1 General Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean cabinet windows. **2.** Clean external cabinet surfaces & exposed internal surfaces.	**xxx**		**xxx**			
Level 2 Examples of use: **1.** Clean filters in electrical enclosure fans **2.** Clean flux residue build-up from exhaust sensor line. **3.** Perform weekly maintenance and checks per the manual.		**xxx**		**xxx**		
Level 3 Examples of use: **1.** Clean dust from card cage.		**xxx**			**xxx**	

Level 4 Examples of use:		**xxx**				**xxx**

1.13.2 Maintenance Note

Enter a Maintenance Note:
Note entered in this window will be stored and can be viewed in the Log View Maintenance Screen

Reset Total run Time:
Selecting this check box will set the total run time for the device to zero.

1.14 Preheater Module

1.14.1 Calibration

This procedure requires the use of the Thermocouple Test and Calibration Cable assembly, p/n 3-0954-077-01-6. This item is included in the Equipment tool kit. In addition, the use of a Thermocouple Simulator is required. This item is NOT included in the Equipment tool kit.

1. At the operator console, click on the MAN button icon at the top center of the screen to place the Machine in the Manual Mode.
2. Click on one of the preheaters on the graphic screen to open the Preheater dialog box associated with that particular preheater.
3. Click on the Calibration tab.

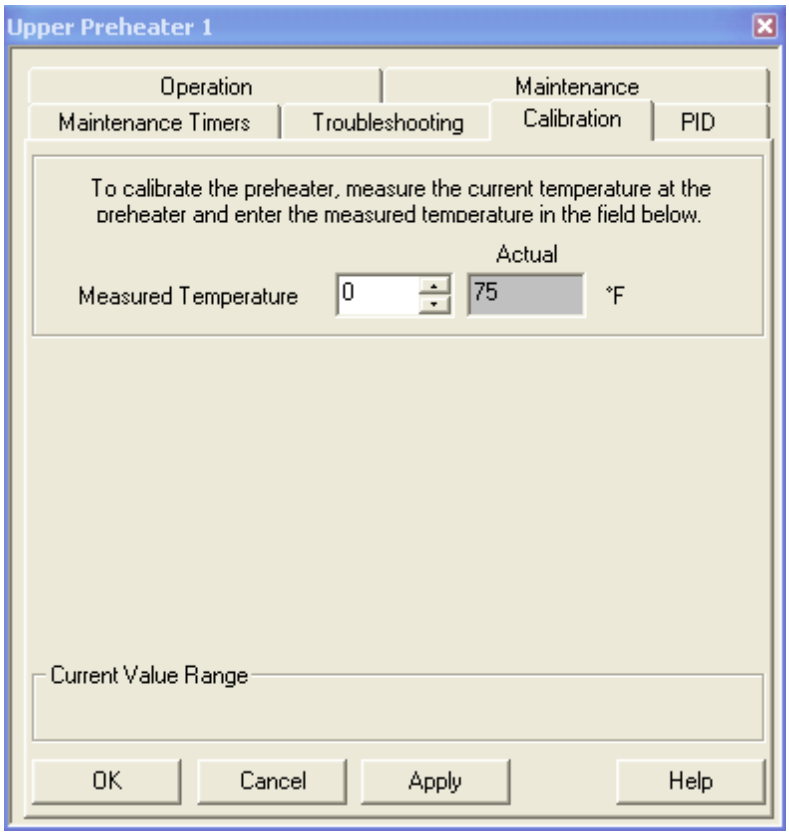
NOTE: The Calibration tab contains features that should be limited to use by maintenance personnel only.

4. Follow the instructions as they appear in the Calibration tab. "To calibrate the preheater, measure the current temperature at the preheater and enter the measured temperature in the field below.
5. There are two (2) methods to performing this calibration.

Method 1(Preferred)
The first method utilizes connectors P1, P5.

Method 2(Alternate)
The second method utilizes connectors P1, P2.

6. After completing the calibration be sure to re-connect the thermocouple plugs back into their respective receptacles at either the heater or the I/O interface board.

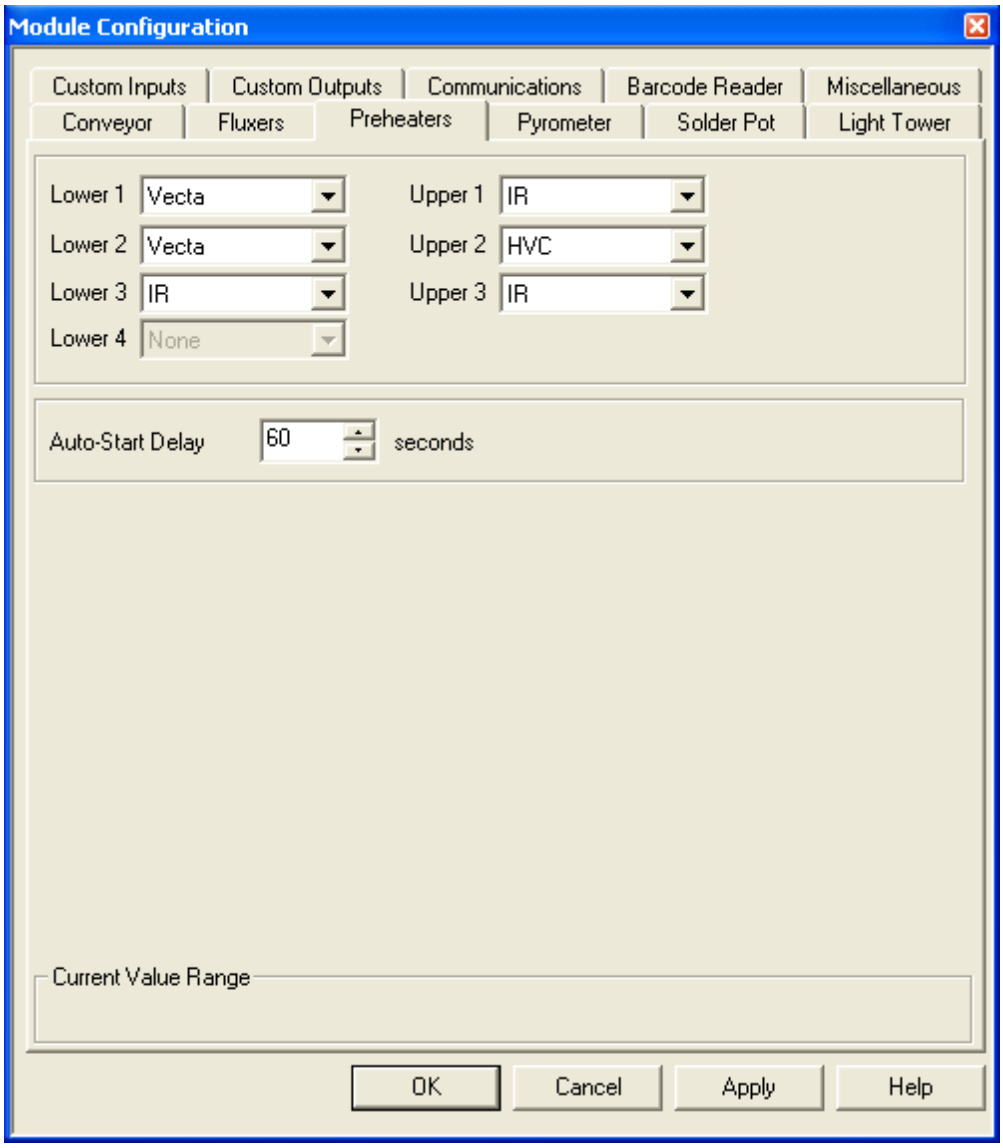


The Preheaters **Calibration** tab may be accessed via:

Menu: **Modules | Lower Preheater 1 | Calibration** tab
Modules | Lower Preheater 2 | Calibration tab
Modules | Lower Preheater 3 | Calibration tab
Modules | Lower Preheater 4 | Calibration tab
Modules | Upper Preheater 1 | Calibration tab
Modules | Upper Preheater 2 | Calibration tab
Modules | Upper Preheater 3 | Calibration tab

1.14.2 Configuration

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Preheaters** Configuration tab may be accessed via:

Menu: **Configuration | Modules | Preheaters** tab

CAUTION: Do not attempt to add, remove, or change any selections within the Preheaters module tab that has not first been physically installed, removed or changed on the machine. This could result in software lockups.

The following describes each of the optional selections listed within the Preheaters tab:

Lower 1
Lower 2
Lower 3
Lower 4 (ElectraElite only)

VectraElite Selections
Each may be configured as one of four choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
Vecta - when selected indicates a Vectaheat™ type preheater is installed in the designated location.
Vecta Plus - when selected indicates a Vectaheat™ type preheater is installed in the designated location with the addition of Blower Speed Control.

VectraES Selections
Each may be configured as one of three choices:
None - when selected indicates NO preheater installed in the designated preheater location.
Calrod IR - when selected indicates Low Mass Radiant type of preheater is installed in the designated preheater location.
LMFC - when selected indicates a Low Mass Forced Convection type Calrod preheater is installed in the designated location. Includes Blower Speed Control.

ElectraElite Selections
Each may be configured as one of four choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
Vecta - when selected indicates a Vectaheat™ type preheater is installed in the designated location.
Vecta Plus - when selected indicates a Vectaheat™ type preheater is installed in the designated location with the addition of Blower Speed Control.

Upper 1
Upper 2
Upper 3

VectraElite Selections
Each may be configured as one of three choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
HVC - when selected indicates a Low Mass Convection type preheater is installed in the designated location. Includes Blower Speed Control.

VectraES Selections
Each may be configured as one of two choices:
None - when selected indicates NO preheater installed in the designated preheater location.
Calrod IR - when selected indicates Low Mass Radiant type of preheater is installed in the designated preheater location.

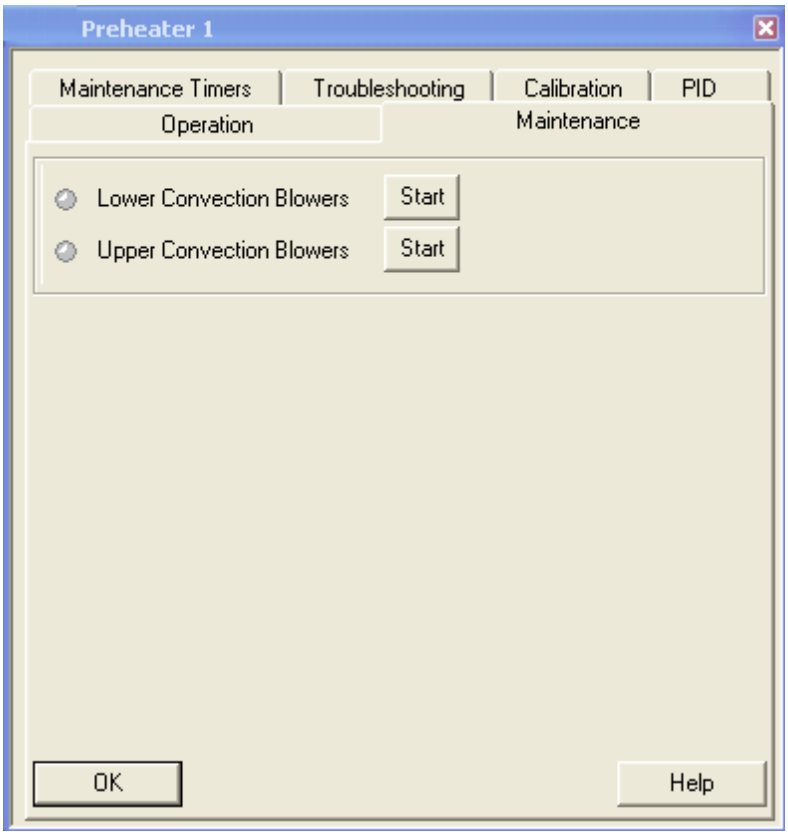
ElectraElite Selections
Each may be configured as one of three choices:
None - when selected indicates NO preheater installed in the designated preheater location.
IR - when selected indicates the Infrared (Radiant) type of preheater is installed in the designated preheater location.
HVC - when selected indicates a Low Mass Convection type preheater is installed in the designated location. Includes Blower Speed Control.

Selection of an option is made using the pointing device and clicking on the arrow in the scroll bar of the drop-down list box and highlighting the option. The selected option appears in the drop-down list box when releasing the pointing device.

Auto Start Delay
This is the amount of time the software will delay going to Ready after the preheat has reached setpoint. This is to give the pre-heaters time to stabilize the machine's internal temperature before starting the process.

1.14.3 Maintenance

The **Maintenance** tab contains a manual override Start button for Convection Blower, to be used only by maintenance personnel.
The machine must be in the MANUAL mode.



The Preheaters **Maintenance** tab may be accessed via:

Menu:
Modules | Lower Preheater 1 | Maintenance tab
Modules | Lower Preheater 2 | Maintenance tab
Modules | Lower Preheater 3 | Maintenance tab
Modules | Lower Preheater 4 | Maintenance tab
Modules | Upper Preheater 1 | Maintenance tab
Modules | Upper Preheater 2 | Maintenance tab
Modules | Upper Preheater 3 | Maintenance tab

Convection Blowers
Click on the Convection Blowers Start button to activate.
The LED illuminates green and the Start button changes to a Stop button to cancel the operation.
If the preheater is presently On, the LED for Convection Blowers in the Maintenance tab will already be illuminated green, indicating that the blower is already operating. The Convection Blowers must remain on while the preheater is operating to prevent overheating. The blower cannot be stopped until the preheater is turned off.

1.14.4 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.

NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

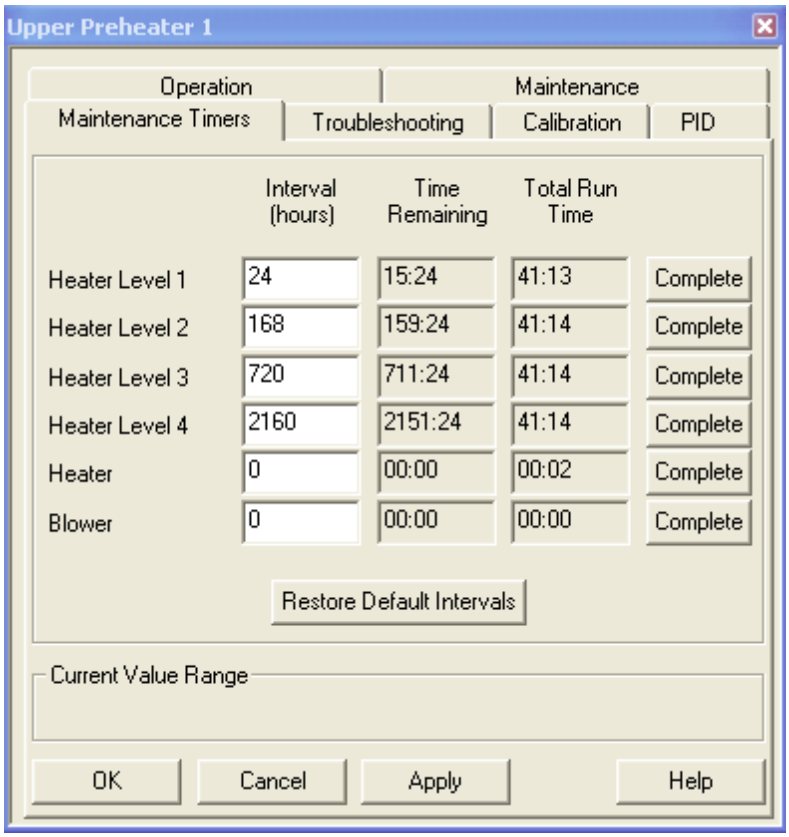
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The Preheaters **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Lower Preheater 1 | Maintenance Timers** tab
Modules | Lower Preheater 2 | Maintenance Timers tab
Modules | Lower Preheater 3 | Maintenance Timers tab
Modules | Lower Preheater 4 | Maintenance Timers tab
Modules | Upper Preheater 1 | Maintenance Timers tab
Modules | Upper Preheater 2 | Maintenance Timers tab
Modules | Upper Preheater 3 | Maintenance Timers tab

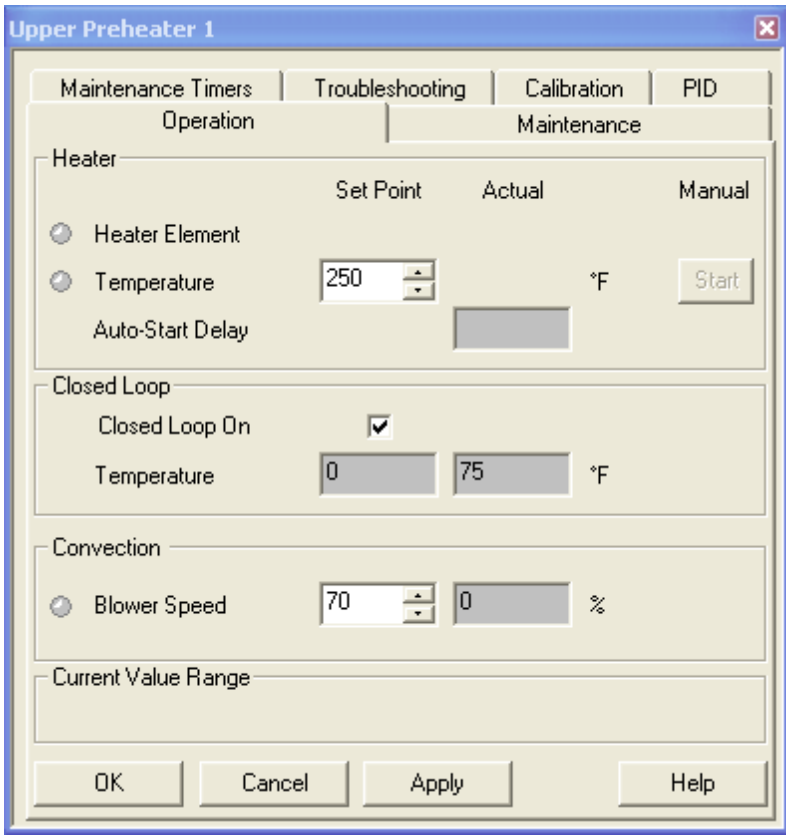
1.14.4.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Clean flux & other residues from exposed surfaces.	**xxx**		**xxx**			

2. Check for proper operation.						
Level 2 Examples of use: **1.** Lube pyrometer cross shaft. **2.** Clean pyrometer lens. **3.** Inspect pyrometer pneumatic parts. **4.** Check heater elements on preheaters. **5.** Lube preheat drawer slides.		**xxx**		**xxx**		
Level 3 Examples of use:		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.14.5 Operation

Within the **Operation** tab, specific parameters related to the Preheater module and its components, can be entered or changed to meet the requirements of a specific recipe.
These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



The Preheaters **Operation** tab may be accessed via:

Menu: **Modules | Lower Preheater 1**
Modules | Lower Preheater 2
Modules | Lower Preheater 3
Modules | Lower Preheater 4
Modules | Upper Preheater 1
Modules | Upper Preheater 2
Modules | Upper Preheater 3

Heater

Heater Element

Indicates when power is applied to the heater element.

Temperature

While in the Auto or Manual mode, and the preheaters are automatically or manually activated, the Heater Temperature indicator (LED) illuminates green. Whenever the preheater is turned off, the LED next to Temperature turns off.

In the Set Point text box, enter the temperature the Preheater will control to, either in imperial or metric units, whichever is applicable for your system configuration, then click on the Apply button or Enter key.

Displays the actual temperature, when Closed Loop Control is NOT activated.

Note While in Auto mode, no Start buttons are available. While in the Manual mode, the Temperature Start button is available.

Click on the Start button while in Manual mode to activate the preheater.

The LED illuminates green, the Start button changes to a Stop button to cancel the operation, the temperature starts increasing to the Set Point, and the Heater Element indicator illuminates green. As temperature increases, approaching Set Point, the Heater Element indicator will cycle 'off' and 'on' as the temperature of the preheater fluctuates up and down. As the preheater cools between fluctuations the LED turns 'on', indicating it is heating again. As the temperature nears Set Point again the heaters will cycle 'off' again.

Auto Start
Displays the time remaining before preheats will display as complete in Auto-Startup Status screen. This value is set in **Preheater Configuration**

Closed Loop
Closed Loop On
Click in box to enable the Close Loop control.

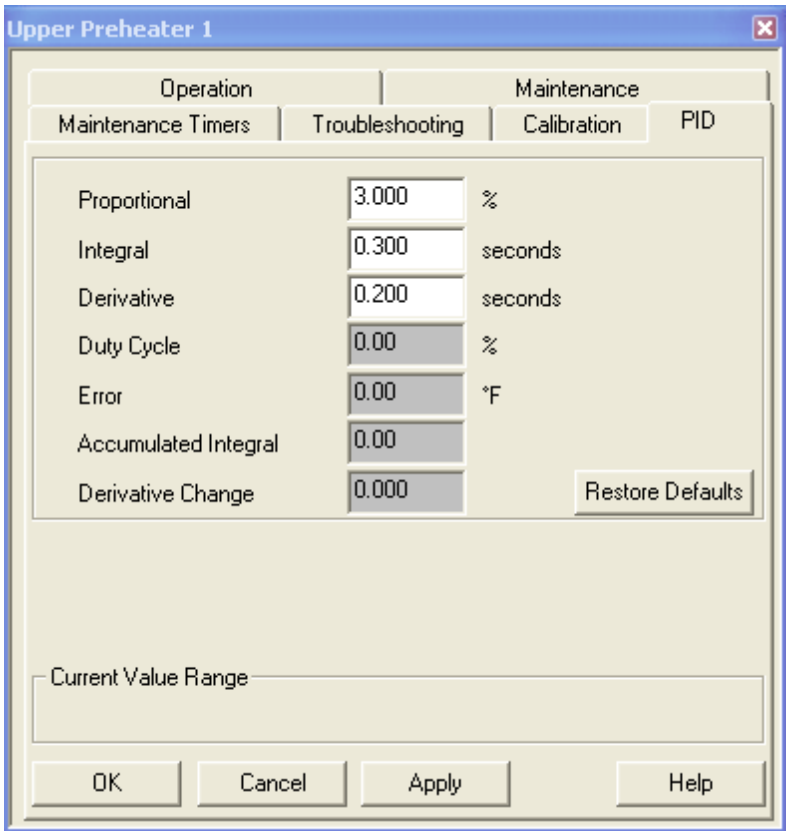
Temperature
Displays the Setpoint corrected by Closed Loop Control as setup in the Pyrometer Module.
Displays the Actual temperature, when Closed Loop Control is activated.

Convection Blower Speed
The Setpoint is the desired % of Full Blower speed desired. A minimum of 70% and a maximum of 100% provide the range of allowed input values. The Actual displays the current speed of the blower. The % is in reference to Voltage Control and not RPM's.

Note: This is available on the Upper High Velocity Convection Upper and the Convection Plus Lower Type Heaters.

1.14.6 PID

The **PID** features are designed for use specifically by Process Engineers or personnel experienced in PID calculations.
In an attempt to improve heater performance for unusual load conditions, experienced personnel may modify parameters using the PID features.



The Preheaters **PID** tab may be accessed via:

Menu: **Modules | Lower Preheater 1 | PID** tab
Modules | Lower Preheater 2 | PID tab
Modules | Lower Preheater 3 | PID tab
Modules | Lower Preheater 4 | PID tab
Modules | Upper Preheater 1 | PID tab
Modules | Upper Preheater 2 | PID tab
Modules | Upper Preheater 3 | PID tab

Proportional
Set proportional band in %.

Integral
Enter in seconds time to calculate Error for integral purpose.

Derivative
Enter in seconds time to calculate rate or slope for derivative purpose.

Duty Cycle
Display the value of output in %, may vary from 0 to 100%.

Error
Display the difference between setpoint and actual temperature.

Accumulated Integral
Display the integral or reset value to compensate for an offset condition.

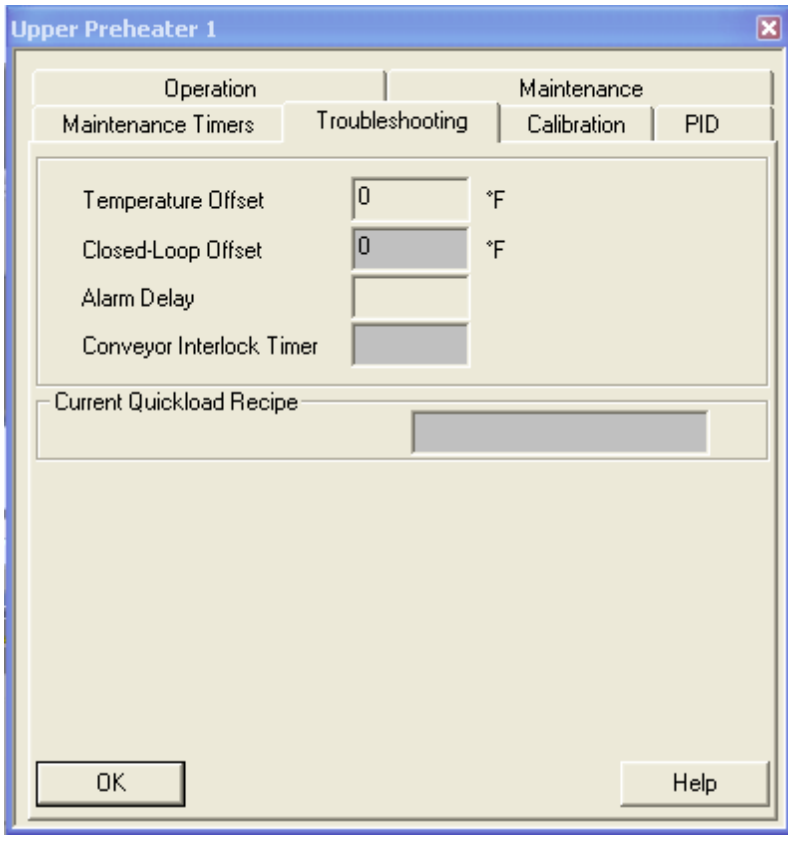
Derivative Change
Display the derivative or rate value, used to prevent any fast change in system condition.

Restore Defaults
To reset the default values for the PID features, click on the Restore Defaults buttons.

See Also: **PROPORTIONAL (TIME PROPORTIONING)**
INTEGRAL (AUTOMATIC RESET)
DERIVATIVE (RATE)
PID CALIBRATION

1.14.7 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only.
This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to Preheater, the values provided here may give the user some indication as to what may be causing the problem.



The Preheaters **Troubleshooting** tab may be accessed via:

Menu: **Modules | Lower Preheater 1 | Troubleshooting** tab
Modules | Lower Preheater 2 | Troubleshooting tab
Modules | Lower Preheater 3 | Troubleshooting tab
Modules | Lower Preheater 4 | Troubleshooting tab
Modules | Upper Preheater 1 | Troubleshooting tab
Modules | Upper Preheater 2 | Troubleshooting tab
Modules | Upper Preheater 3 | Troubleshooting tab

Temperature Offset
The correction value determined during calibration.

Closed-Loop Offset
The correction value determined by the closed loop mode for correction.

Alarm Delay
The time before the alarm is enabled, allows for stabilizing the temperature.

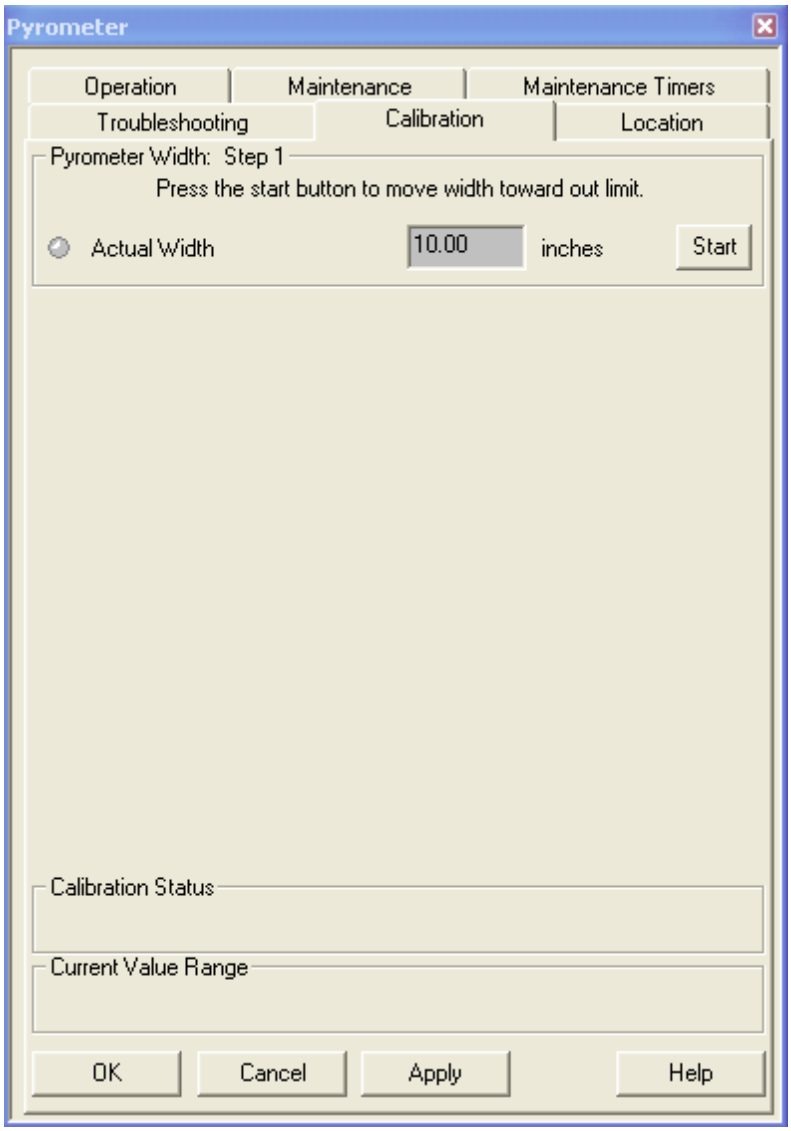
Conveyor Interlock Timer
The time before the Preheater will be turned off if the conveyor is not running.

Current Quick Load Recipe
Displays the recipe name that the Preheater is currently on in Quick Load.

1.15 Pyrometer Module

1.15.1 Calibration

1. At the operator console, click on the MAN button icon at the top center of the screen to place this Machine in the Manual Mode.
2. Click on the pyrometer module on the graphic screen to open the Pyrometer dialog box.
3. Click on the **Calibration** tab.



The Pyrometer **Calibration** tab may be accessed via:

Menu: **Modules | Pyrometer | Calibration** tab

NOTE: The **Calibration** tab contains features that should be limited to use by maintenance personnel only.

4. Follow the instructions as they appear in the Calibration tab.

Pyrometer Width: Step 1
"Press the Start button to move width toward out limit." The LED to the left illuminates green while the pyrometer adjusts the width to the out limit.

Pyrometer Width: Step 2
"Enter the measured pyrometer width." Physically measure the width from the top bend on the finger of the fixed (front rail) where it connects to the chain, to the center of the pyrometer. Enter the measured width into the field in Pyrometer Width: Step 2, next to Measured Width, then press the Enter key on the keyboard.

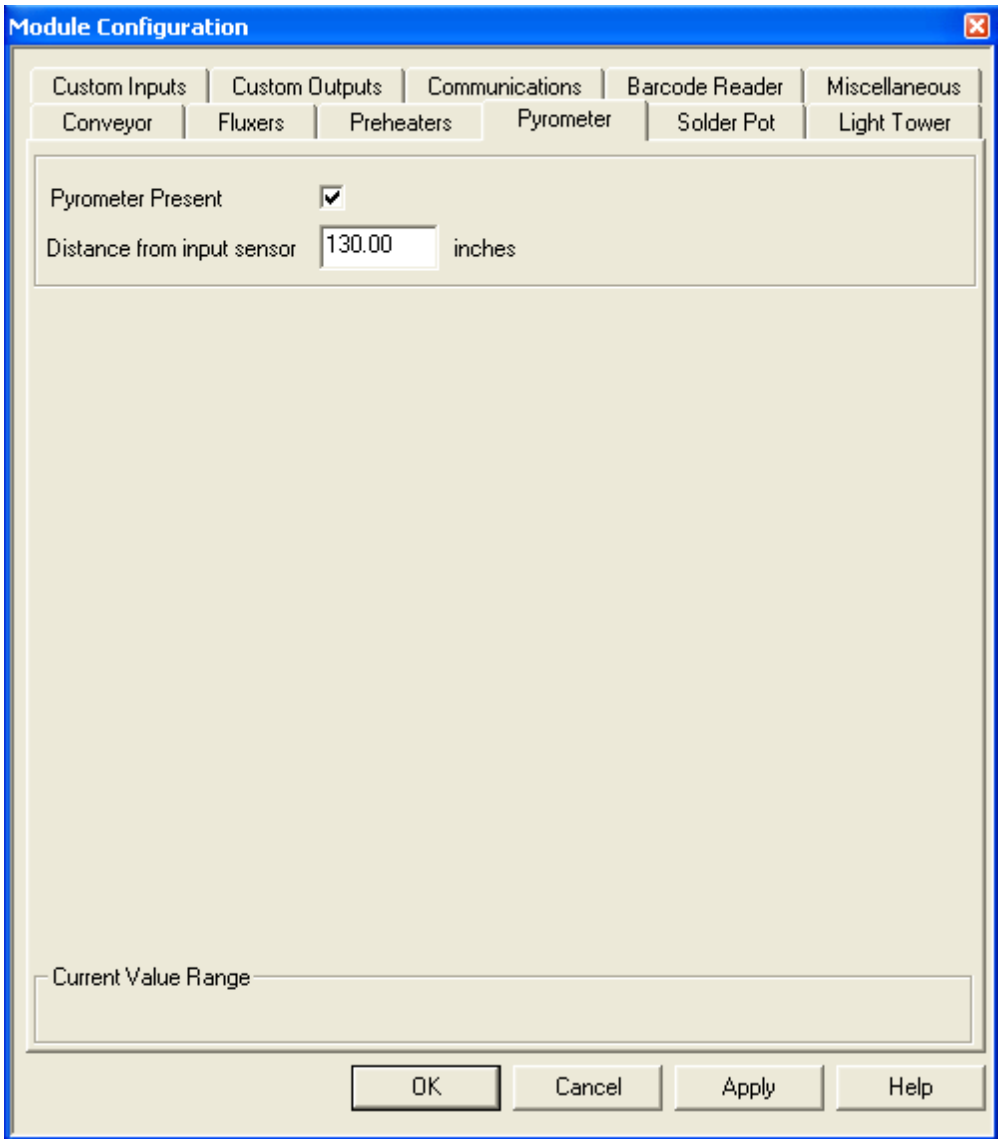
Pyrometer Width: Step 3
"Press the Start button to move width toward in limit."
The LED to the left illuminates green while the pyrometer adjusts the width to the in limit.

Pyrometer Width: Step 4
"Enter the measured pyrometer width." Again, physically measure the width from the top bend on the finger of the fixed rail where it connects to the chain, to the center of the pyrometer. Enter the measured width into the field in Pyrometer Width: Step 4, next to Measured Width, then press the Enter key on the keyboard.

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the conveyor width system, and repeat calibration.

1.15.2 Configuration

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



The **Pyrometer** Configuration tab may be accessed via:

Menu: **Configuration | Modules | Pyrometer** tab

CAUTION: Do not attempt to add, remove, or change any selections within the Pyrometer module tab that has not first been physically installed, removed or changed on the machine. This could result in software lockups.

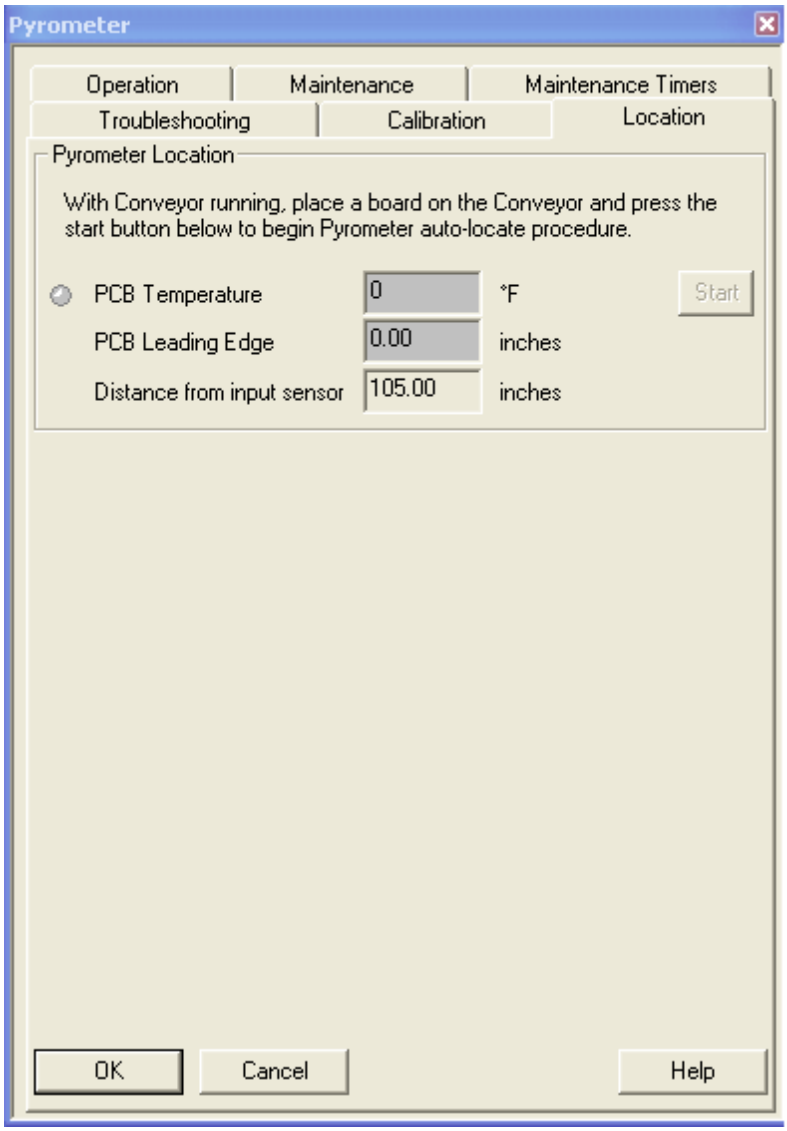
The following describes each of the optional selections listed within the Pyrometer tab:

Pyrometer Present
- Click on the check box to the right of this option to place or remove a check mark in the box. A check mark in the box indicates a Pyrometer is installed in the machine. An empty check box indicates a Pyrometer is not installed or is not being utilized.

Distance from Input sensor
The Starting Position refers to the distance from the photocell to the leading edge of the pyrometer, where it actually begins reading when a board approaches.

1.15.3 Location

The **Location** tab contains features that should be limited to use by maintenance personnel only. The machine must first be in the MANUAL mode.



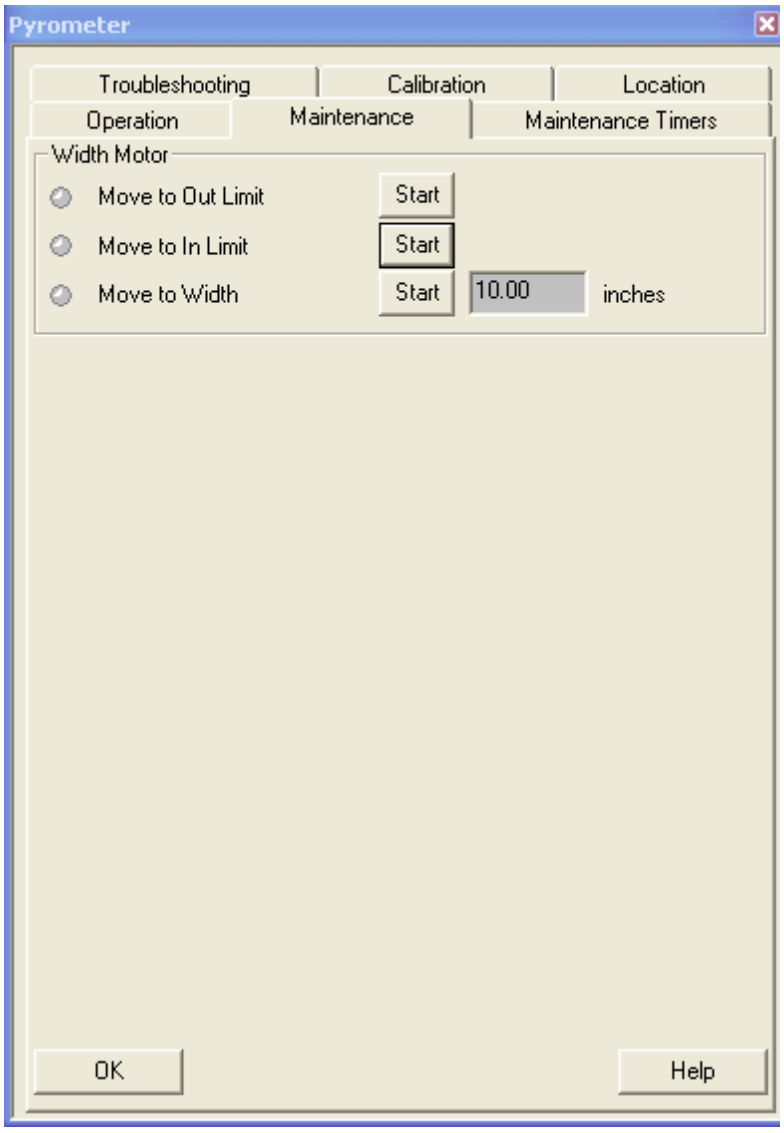
The Pyrometer **Location** tab may be accessed via:

Menu: **Modules | Pyrometer | Location** tab

Pyrometer Location
"With Conveyor running, press the start button to begin Pyrometer auto-locate procedure". Then place a board on the Conveyor.
The PCB Temperature LED illuminates yellow and the temperature in the text box field for PCB Temperature, fluctuates until the pyrometer senses the PCB.
As the board initially passes by the photocell and approaches the pyrometer, the value associated with PCB Leading Edge increases until the board reaches the pyrometer.
When the PCB completely passes under the pyrometer, the PCB's actual temperature is displayed next to PCB Temperature, and the distance from photocell field will be updated.

1.15.4 Maintenance

The machine must be in the MANUAL mode in order to access the **Maintenance** features.



The Pyrometer **Maintenance** tab may be accessed via:

Menu: **Modules | Pyrometer | Maintenance** tab

Width Motor

Move to Out Limit

Click on the Pyrometer Width Move To Out Limit Start button to enable it.
The LED to the left of Move To Out Limit illuminates green.
The Start button changes to Stop, to cancel the operation.
The dimensions in the text box next to Move To Out Limit increase to the maximum Pyrometer width setting.
When the Pyrometer width reaches its maximum width, a symbol appears next to the Move To Out Limit Start button —indicating the pyrometer width is at its limit.
Move To In and Move To Width Start buttons are available when the Pyrometer width is at its widest position.

Move to In Limit

Click on the Pyrometer Width Move To In Limit Start button to enable it.
The LED to the left of Move To In Limit illuminates green.
The Start button changes to Stop, to cancel the operation.
The dimensions in the text box next to Move To In Limit decrease to the minimum Pyrometer width setting.
When the Pyrometer width reaches its minimum width, a symbol appears next to the Move To In Limit Start button — indicating the Pyrometer width is at its limit.
The LED for Move To In Limit turns off, indicating this function has completed.
Move To Out Limit and Move To Width Start buttons are available when the Pyrometer width is at its narrowest position.

Move to Width

Click on the Pyrometer Move To Width Start button to enable it.
The LED to the left of Move To Width illuminates green until the Pyrometer width is adjusted to the set point.
The Pyrometer Width set point is based on the Pyrometer Width Set Point under the Operation tab.
The LED next to Move To Out Limit or Move To In Limit also illuminates, depending on which direction the Pyrometer needs to move.
The Start button changes to a Stop button during the Pyrometer width adjustment, to cancel the operation.
When the Pyrometer width reaches its set point, the Move To Width Stop button changes back to the Start button and the green LED turns off.

1.15.5 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)

Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining

Time left before maintenance is due for this module.

NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

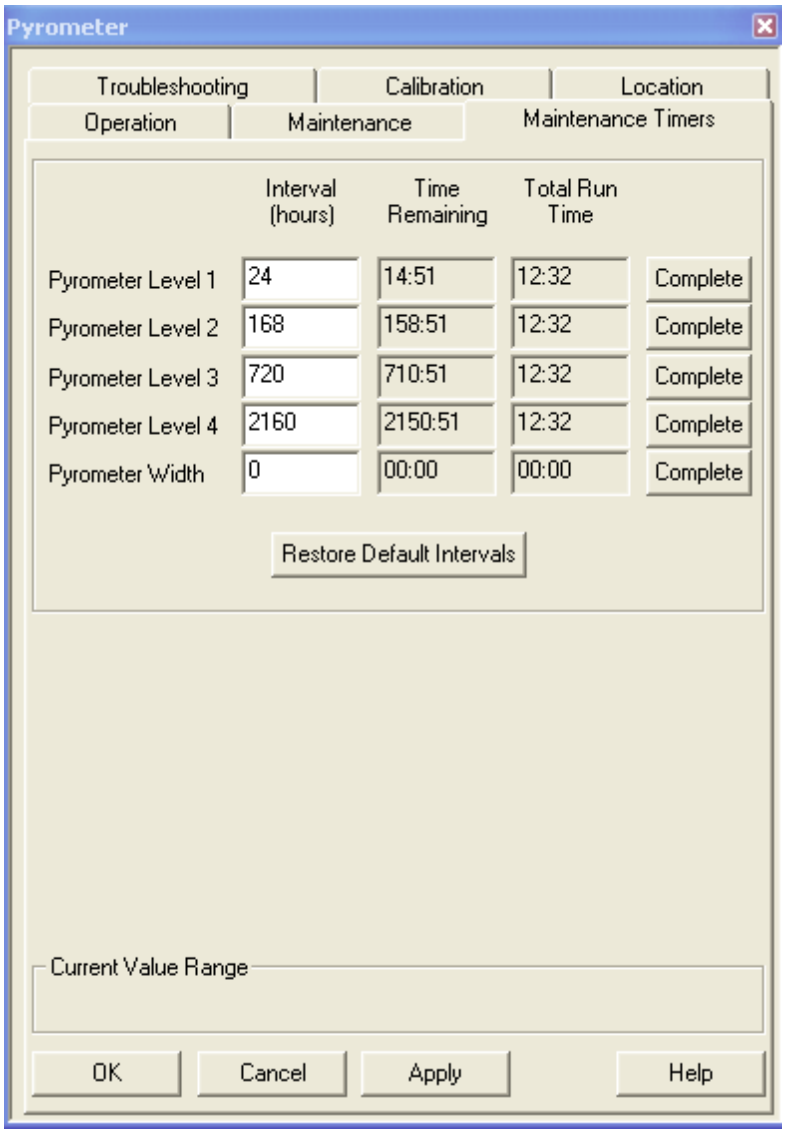
Total Run Time
Actual time that this module has been "on" since installation.

Complete
When a maintenance operation is performed for this module, click on Complete. Then the window **Maintenance Note** will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Maintenance Schedule



The Pyrometer **Maintenance Timers** tab may be accessed via:

Menu: **Modules | Pyrometer | Maintenance Timers** tab

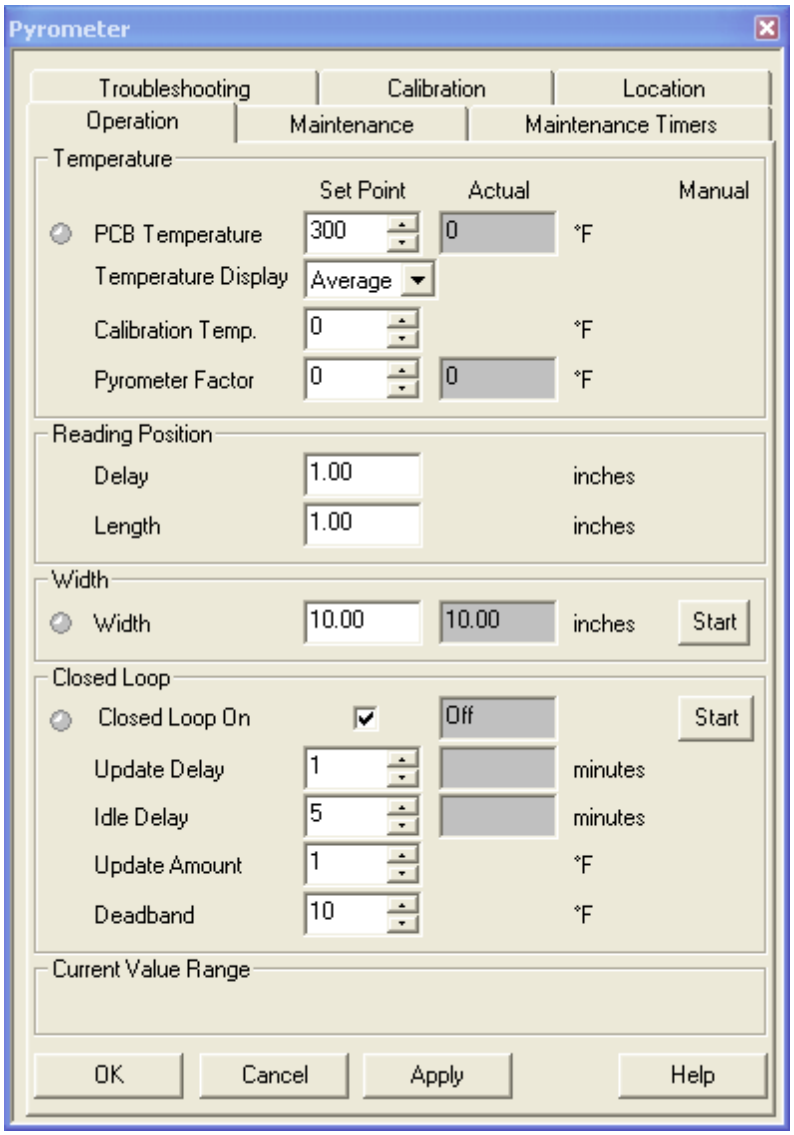
1.15.5.1 Maintenance Schedule

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use:	**xxx**		**xxx**			

Level 2 Examples of use:		**xxx**		**xxx**		
Level 3 Examples of use:		**xxx**			**xxx**	
Level 4 Examples of use:		**xxx**				**xxx**

1.15.6 Operation

Within the **Operation** tab, specific parameters related to the Pyrometer module and its components, can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe, or even applied to a specific board without being saved.



Click on a section of the Pyrometer **Operation** tab above to get a more detailed description of the parameters in that section.

The Pyrometer **Operation** tab may be accessed via:

Menu: **Modules | Pyrometer**

1.15.6.1 Closed Loop

The Closed Loop features of the Pyrometer allow the machine software to communicate data pertinent to the PCB Temperature, Set Point, and Preheater temperatures so that if necessary, preheater temperatures may be automatically increased or decreased to compensate for temperatures of each individual PCB processed.

Closed Loop On
Without Closed Loop On enabled, adjustment to preheat temperatures must be performed manually for PCBs being processed.
Click on the box next to Closed Loop On to place a check mark in the box, this enables Closed Loop. Clicking on the box again removes the check mark, disables Closed Loop On.
When enabled, the text box in the Actual field displays On. When disabled, the text box displays Off.

Update Delay
The value entered represents the time between updates for the Closed Loop system to make automatic adjustments to preheater temperatures.

Idle Delay
How long the machine must be idle before the preheat temperatures start returning to the original setpoint.

Update Amount
The amount the preheater temperature will be changed when an update or idle delay is required.

Deadband
The Deadband represents a tolerance range for the positive and negative values that the user is allowing the machine to deviate above or below Set Point while in the Closed Loop mode when the board temperature is outside of this value an update occurs, if the update delay time has expired.

1.15.6.2 Reading Position

Delay
PCBs that have large components or component densities at the default reading location, may result in misleading data. The Delay defines the pyrometer scanning zones on the PCB by changing the location on the PCB where the readings are to be taken. The value entered in the Delay text box represents the new location, preferably where the most exposed laminate surface is located, to begin taking readings.

Length
This is the length the pyrometer will take readings for, after the delay.

1.15.6.3 Temperature

While in the Auto or Manual mode, and the Pyrometer calculations detect a board present (based upon incoming photocell being triggered properly and conveyor speed input), the PCB Temperature indicator illuminates green. When a board is no longer detected, the LED next to PCB Temperature turns off.

PCB Temperature
Enter the temperature value in the Set Point text box at which the Pyrometer needs to have the PCB's top side board temperature sensed.
Actual represents the actual top side board temperature detected as the PCB passes under the pyrometer.

Temperature Display
The pyrometer takes temperature readings every 0.1 seconds. The temperature readings taken by the Pyrometer can be displayed under Actual, one (1) of three (3) ways:

1. Highest - the highest of all readings taken is displayed.
2. Lowest - the lowest of all readings taken is displayed.
3. Average - an average of all the readings taken is displayed.

Calibration Temp.
Measure and enter the board temperature while under pyrometer to calibrate the pyrometer.

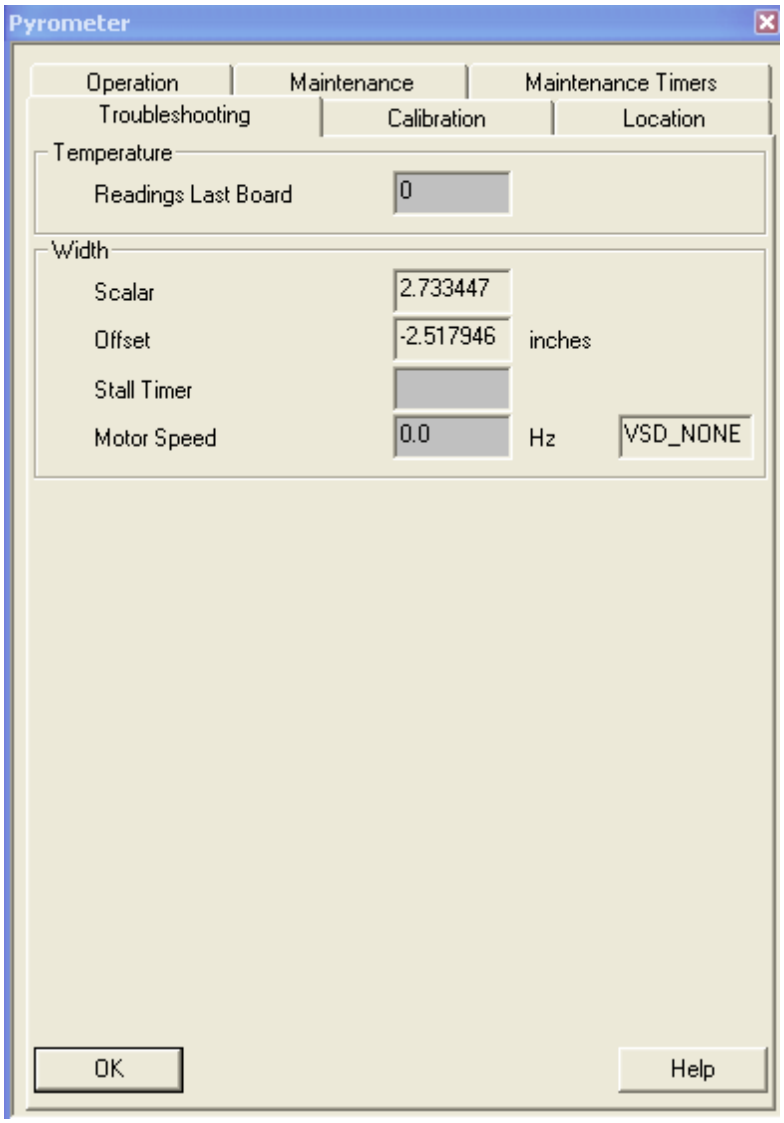
Pyrometer Factor
This is to either increase or decrease the outcome in the Actual PCB Temperature field by a predetermined variable, the pyrometer factor is determined when entering values into calibration temp.

1.15.6.4 Width

Width
This value represents the width setting from the fixed rail side of the PCB to the point on the PCB where the pyrometer will take its readings.
In the Auto-Start Machine mode this adjustment will occur automatically, based on the value entered in the Width text box field.
In the Manual mode, click on the Start button after entering a value to perform the Width positioning function.
The LED illuminates green in either mode when this function occurs.
The Start button changes to a Stop button to cancel the operation. The Stop button may be clicked at any time during the positioning sequence to stop the operation.

1.15.7 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the Pyrometer, the values provided here may give the user some indication to the cause of the problem.



The Pyrometer **Troubleshooting** tab may be accessed via:

Menu: **Modules | Pyrometer | Troubleshooting** tab

Temperature

Readings Last Board

The number of readings taken by the pyrometer for the last board that passed under the pyrometer.

Width

Scalar

The correction value determined during calibration,

Offset

The correction value determined during calibration,

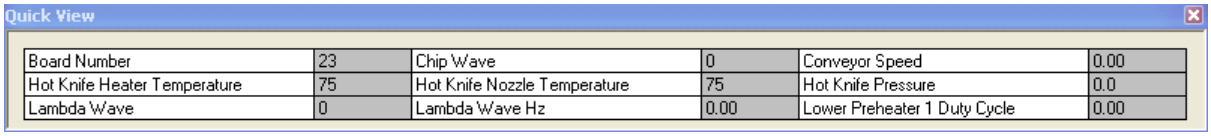
Stall Timer
The time remaining for the pyrometer to reach it's programmed width before a stall alarm occurs.

Motor Speed
The current actual speed, in Hz, of the pyrometer width motor drive.

Motor Speed - Drive Type
A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is listed.

1.16 Quick View

Quick View is a viewing utility. It provides the user a dialog box that displays only module parameters pertinent to the process that the user has configured. Parameter values represent actual.



The **Quick View** Window may be accessed via:

Menu: **View | Quick View**
Mouse: **Right-Click**

See Also: **QuickView Configuration**

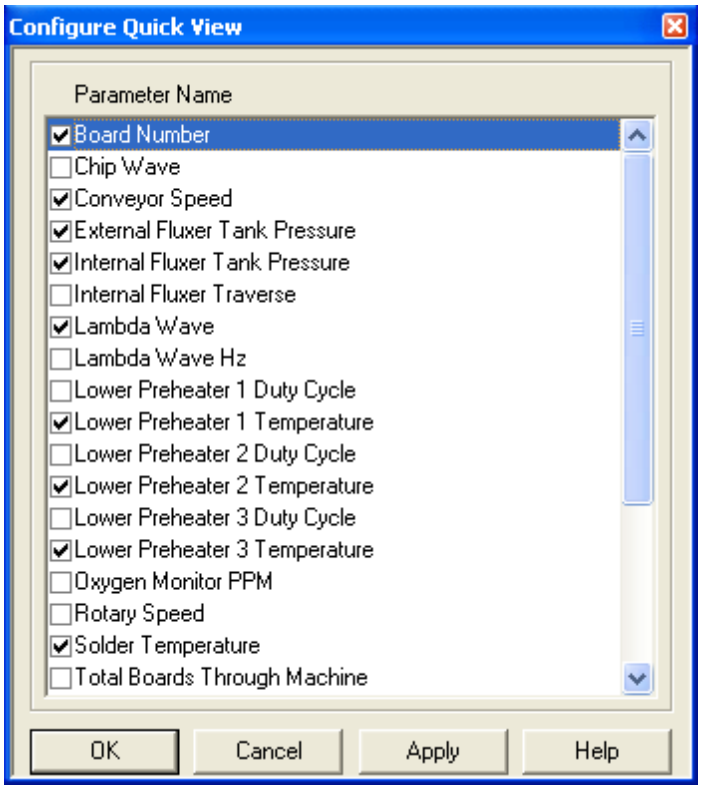
1.16.1 Configuration

The **Configure Quick View** dialog box lists all machine parameter names, and allows the user to select or deselect which items will be displayed when utilizing the Quick View utility.

Click on the check box next to the item or items to be included for display in the Quick View utility.

Clicking on the check box places a check mark in the check box. Clicking on the check box again removes the check mark from the box.

To view additional selections within the Configure Quick View dialog box, use the pointing device and click on the down arrow of the scroll bar at the right side of the dialog box.



The **Quick View Configuration Page** may be accessed via:

Menu: **Configuration | Quick View**

See Also: **Quick View**

1.17 Recipe Functions

1.17.1 Global Recipe Edit

Recipes Displays all recipe names stored in the recipe directory.

NOTE: Double click on a recipe name to update the parameter list with that recipe's value.

NOTE: Click on a recipe name to select it.

All recipe names selected will be updated with the active values in the parameter list.

Select All Same as selecting all the recipes' names.

Clear All Deselect all recipes' names.

Parameters to Edit

Active Parameters that will be updated in selected recipe(s). A check in the box means active.

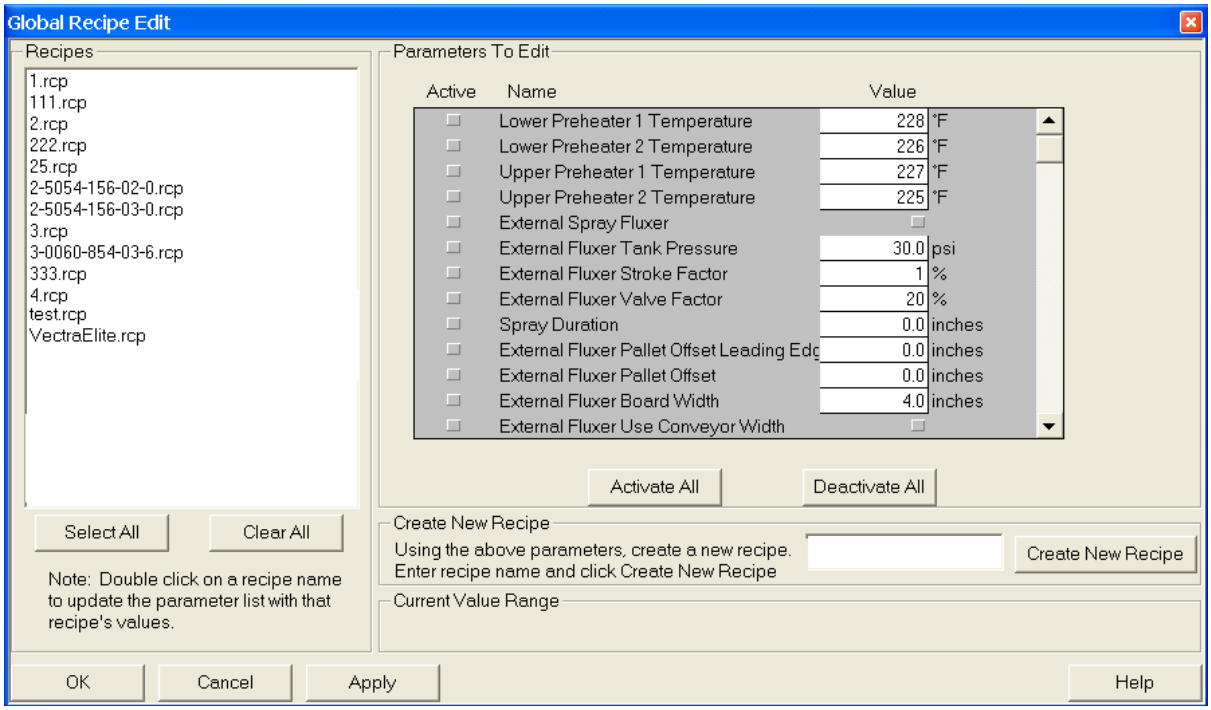
Name Parameters name. (As per Machine Configuration).

Value Parameters value that will be modified.

Activate All Put a check in the boxes for all existing parameters.

Deactivate All Remove the check in the boxes for all existing parameters.

Create New Recipe Using the current Values in the Parameter To edit box, regardless of whether the Active Box is Checked, a new Recipe will be created using the typed name in the edit box. A current Recipe name cannot be used. Characters such as " . , ; : cannot be used in the Recipe name. A space at the beginning and / or end of the Recipe Name is not allowed. A " - " is a valid character and is allowed in the Recipe name. Once the valid Recipe name is typed in the edit box, click on the the Create New Recipe Button to create the new Recipe. It will immediately be displayed in the Recipes List to the left of the Dialog. See **Create New Recipe** for more information.



The **Global Recipe Edit** Window may be accessed via:

Menu: **File | Global Recipe Edit**

1.17.2 Process Notes

Process notes are available to communicate recipe specific information to the machine operators. This information is stored in a separate file for each recipe in the recipe directory. When a new recipe is loaded, the process notes window will automatically open if notes for that recipe exist. Process notes

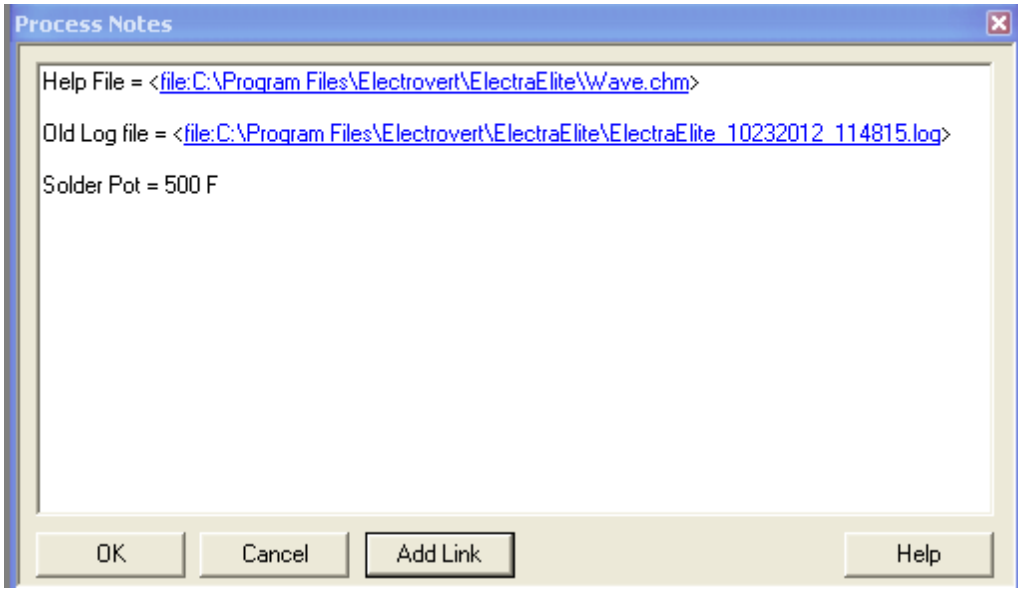
are stored when the user clicks the OK button provided that the operator has the security clearance to save recipes (if security is active). Process notes are limited to 32K bytes per file.

Process notes also has the ability to embed links to other files on the machine's or networked hard drives. To embed a link, click on the 'Add Link' button. This will open a standard Window's File Open dialog box. Navigate to the appropriate directory and select the file (only add one file at a time). After double clicking on the file (or single click on the file and then click the 'Open' button) the full path and file name will be added into the process notes at the current cursor location. This link will be displayed in blue and the cursor will change to a hand with a pointing finger when over a link. To activate the link, single click anywhere on the link.

All files embedded in the process notes must have access to, and be associated with an appropriate application to open them. For example, if a bitmap file (*.bmp) is used in process notes, the machine must also have a paint program installed to open this file. When this file is opened the user has full control of this document (read, write, modify) unless other precautions have been taken!

NOTE: White spaces are not allowed in the file or path names!
Example: 'c:\program files\my document.txt' is not valid.

For files that contain spaces in either their name or path that cannot be renamed or moved, first create a shortcut to the file and save with a path and file name without spaces. This shortcut link can then be added into the process notes.



The **Process Notes** Window may be accessed via:

Menu: **View | Process Notes...**

Toolbar: 

1.17.3 Create Recipe

Recipes/ Process Programs can be created by two different methods within the Machine Program.

Save Recipe as New
Open a Recipe and make required changes to Recipe Setpoints to meet the required process settings of the new Recipe. These changes can be made in Text View by clicking on the Toolbar button,  or selecting Menu Item View and clicking on Text View. Making the required setpoint changes in the individual Modules is another Alternative. When the required changes have been made, Click On Menu Item File and select Save Recipe As New... Type in the New File Name and click on the Save button. This will save these changes to the new recipe and automatically load the new recipe.

Create New Recipe
This option allows you to create a new Recipe while running a different Recipe, and is accomplished in the Global Recipe Edit Dialog. Open Global Recipe Edit by Selecting Menu item File and clicking on Global Recipe Edit. If a Recipe is already created that is similar to the new recipe to create, double click on this recipe in the Recipe List box to Load the settings from this recipe in the Parameters to Edit Box. Modify the Settings to match the new Recipe to be created. When Using the Create New Recipe option from this page, it is not necessary to select the Active box for those parameters that apply. All Parameters as modified will be used for the newly created Recipe. Type the New Recipe name in the Edit box provided below the Parameters to Edit list. Press the Create New Recipe Button to the right of the name. This Recipe should now appear in the Recipe list to the left. Press OK to Exit the Global Recipe Edit Dialog.

See **Global Recipe Edit** for more information.

1.17.4 Load Recipe

Click on the Open Folder Toolbar button to load a new Recipe. Select the required Recipe in the list and select Open. The New Recipe will be loaded. **Load Recipe** can also be accessed by Selecting Menu Item File and selecting Load Recipe or pressing F7 at any time. When Loading a new Recipe, while the Machine is in Manual Mode or Auto Mode, the Machine Status will be set to Stopped and the Machine Restarted under the new recipe.

1.17.5 Save Recipe

Click on the Floppy Disk Toolbar button to save changes to the current Recipe. Clicking on Menu item File and selecting Save Recipe, will also accomplish this task. To save setpoint changes to a new Recipe and not the current Recipe use **Save Recipe as New**.

1.18 Security

1.18.1 Active

CAUTION ATTENTION PROCESS ADMINISTRATOR
In order maintain system integrity, it is important to restrict access to the machine software configuration, and the accessibility to specific machine functions. Without Security Active enabled, access to machine configuration or other machine functions is not restricted.

Click on the check box next to Security Active to place a check mark in the box. A check mark in the box indicates that security for machine access is active.

1.18.2 Add User

Click on the Add User button. An Add User dialog box opens.
The minimum size for the User Name is one (1) character — maximum size is 32 characters. There is no restriction on the characters that can be used.
Enter the new user's name in the text box next to User Name, then press the tab key on the keyboard, or position the cursor in the New Password text box using the pointing device.

NOTE: To reduce the risk of violating security, it is recommended that each user is responsible for remembering their own password rather than making a written list. In the event that users forget their password, it will be necessary to delete that user's name, then re-enter a new User Name and password. - When adding a user, a New Password is optional.

For no password, leave the text box empty.
When selecting a password, up to eight (8) characters can be used.
Enter a password for the user in the text box next to New Password:, then press the tab key on the keyboard, or position the cursor in the Confirm New Password text box using the pointing device.

NOTE: It is important to remember when using upper or lower case characters in the User Name and Password text boxes, the program will only recognize characters exactly as they were originally entered.

Before the password will be accepted, the user must enter the New Password again in the text box next to Confirm New Password:. Remember that both the User Name and Password are case sensitive.

1.18.3 Change Password

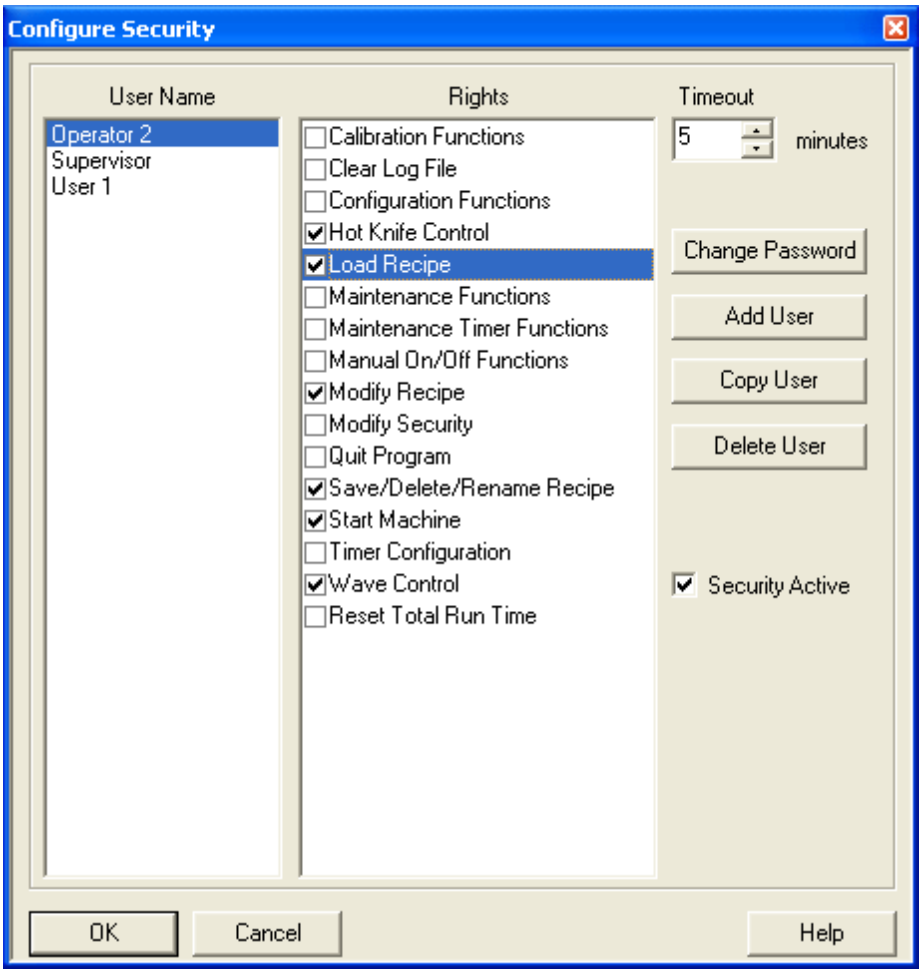
Click on the user's name requiring a password changed, so that it appears highlighted.
Click on the Change Password button. A Change Password dialog box is displayed with the selected user's name displayed.

NOTE: Refer to the password restrictions described under Adding a User.
Next to the heading "Old Password", enter the user's previous password exactly as it was originally. If no password was entered, leave this text box blank.
Enter the user's new password next to the heading "New Password".
Next to the heading "Confirm New Password", enter the password again, exactly as typed in the New Password text box, to confirm the password entry.

1.18.4 Configuration

NOTE: Prior to setting up parameters for the machine, the Process Administrator must set the security limits of of this machine's software features to ensure restricted access to specific functions.

NOTE: You must be Logged on as Supervisor or a user with " Configuration Security" Rights before you can access security.



Click on the zones above to find out more about the different parts of Security.

The **Security Configuration Page** may be accessed via:

Menu: **Configuration | Security**

When configuring security, it is important to take into account the users and their responsibilities, to determine which functions or features the users will access.

Configure Security is a Configuration dialog box.

The Configure Security dialog box is designed to permit the Process Administrator to set up security rights for specific users.

1.18.5 Delete User

Click on to highlight the user's name to be deleted.

CAUTION: Deleting a User Name from the list permanently removes all security related rights along with the user's name. Be sure the correct User Name is selected before clicking on the Delete User button.

Click on the Delete User button to remove the User Name from the list.
A Delete User dialog box appears, displaying "Continue to Delete User?"
Click on the Yes button to delete the selected user name — click on the No button to cancel the deletion.

1.18.6 Copy User

Click on to highlight the user's name to be copied.

Click on the Copy User button to add a new User Name to the list with identical rights to the selected user.
An Add User dialog box appears, allowing for the creation of a new name and password.
Click on the OK button to finish making the new copy.

1.18.7 Logon/Logoff

Any one of the following methods can be used to perform the Logon/Logoff function.

Click on the Logon or Logoff Icon just below the Menu Bar.

Click on File on the Menu Bar, then click on Logon or Logoff.

Press the F8 function key on the keyboard for Logon.

For Logon a Dialog Box pops up.

User Name
Type in your User Name.

Password
Type in your Password.

See Administrator to allocate you a User Name and a Password.

For Logoff, the function occurs invisibly, no Dialog Box pops up for this feature.

Logon/Logoff are used in conjunction with the security function.

1.18.8 Rights

Click on the user's name so that it appears highlighted prior to selecting Rights.
Under the field labeled "Rights", Click on each check box that the designated user is allowed to access.
Clicking on the check box places a check mark in the check box — clicking on the check box again removes the check mark from the box.

1.18.9 Time-Out

In the text box under Time-Out, enter the number of minutes allowed to pass before the user is required to log back onto the machine to perform any changes. A value range of 0 - 60 minutes may be entered for this value, "0" indicating that the security will always remain active.

1.19 Simulation

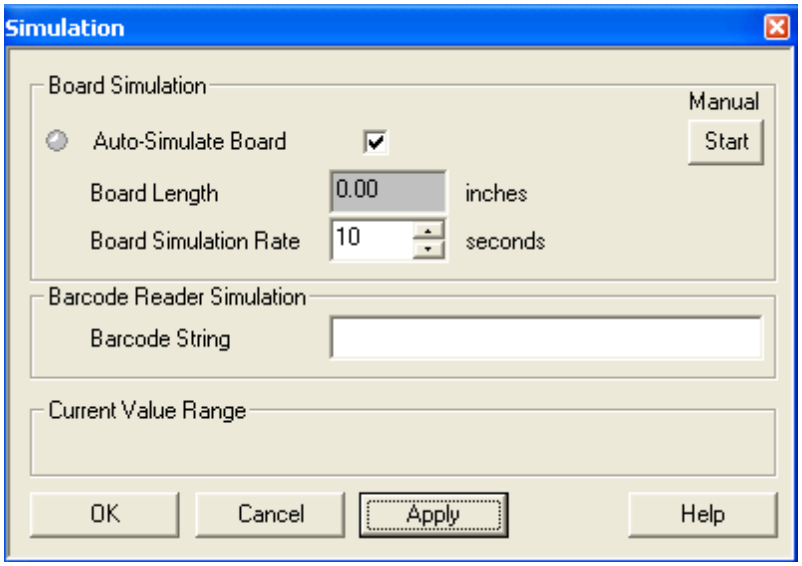
1.19.1 Operation

Board Simulation
Auto Simulate Board
Click in box to start simulation.

Board Length
Length of the board being simulated.

Board Simulation Rate
Frequency of board simulation in seconds.

Barcode Reader Simulation
Barcode String
Enter the board code string to be simulated.



The **Simulation** Window may be accessed via:

Menu: **Modules | Simulation**

Note: Simulation is only available in Hardware Simulation mode.

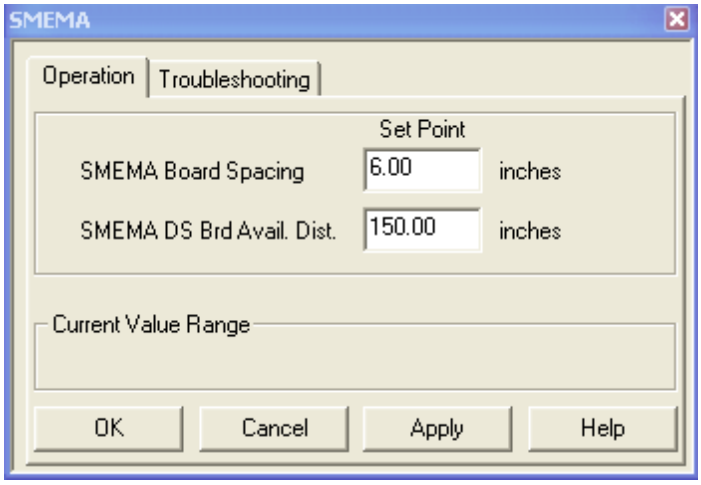
1.20 SMEMA

1.20.1 Operation

SMEMA Board Spacing
This will control when boards are released to the conveyor from upstream.

SMEMA Down Stream Board Available Signal Distance
This is the Distance traveled of a PCB from the incoming Board Detect Sensor to where the Board Available to Down Stream signal is given. The default value is approximately where the Exit Photocell is or would be located. This signal will stay activated until the board leaves the machine. If another board has already reached this area when the board exits the machine, the signal will be off for a minimum of 50 ms before going active.

See Also: **SMEMA Troubleshooting**

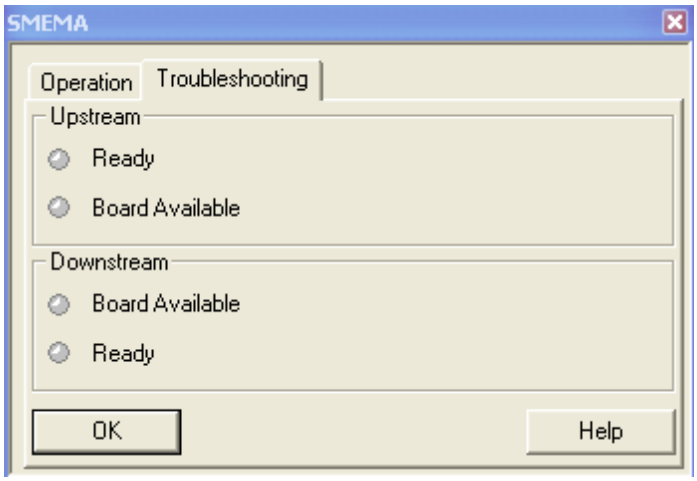


The SMEMA **Operation** tab may be accessed via:

Menu: **Modules | SMEMA**

1.20.2 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance purposes. These features should be limited to use by maintenance personnel only. This tab displays internal machine parameters that the computer is using, based on machine configuration and operation set points. If there is a functionality problem related to any parameter pertaining to the SMEMA, the values provided here may give the user some indication as to what may be causing the problem.



The SMEMA **Troubleshooting** tab may be accessed via:

Menu: **Modules | SMEMA | Troubleshooting**

Upstream
Ready
The status of the wave soldering machine SMEMA ready signal.

Board Available
The status of the upstream (load end) equipment SMEMA board available signal.

Downstream
Board Available
The status of the wave soldering machine SMEMA board available signal.

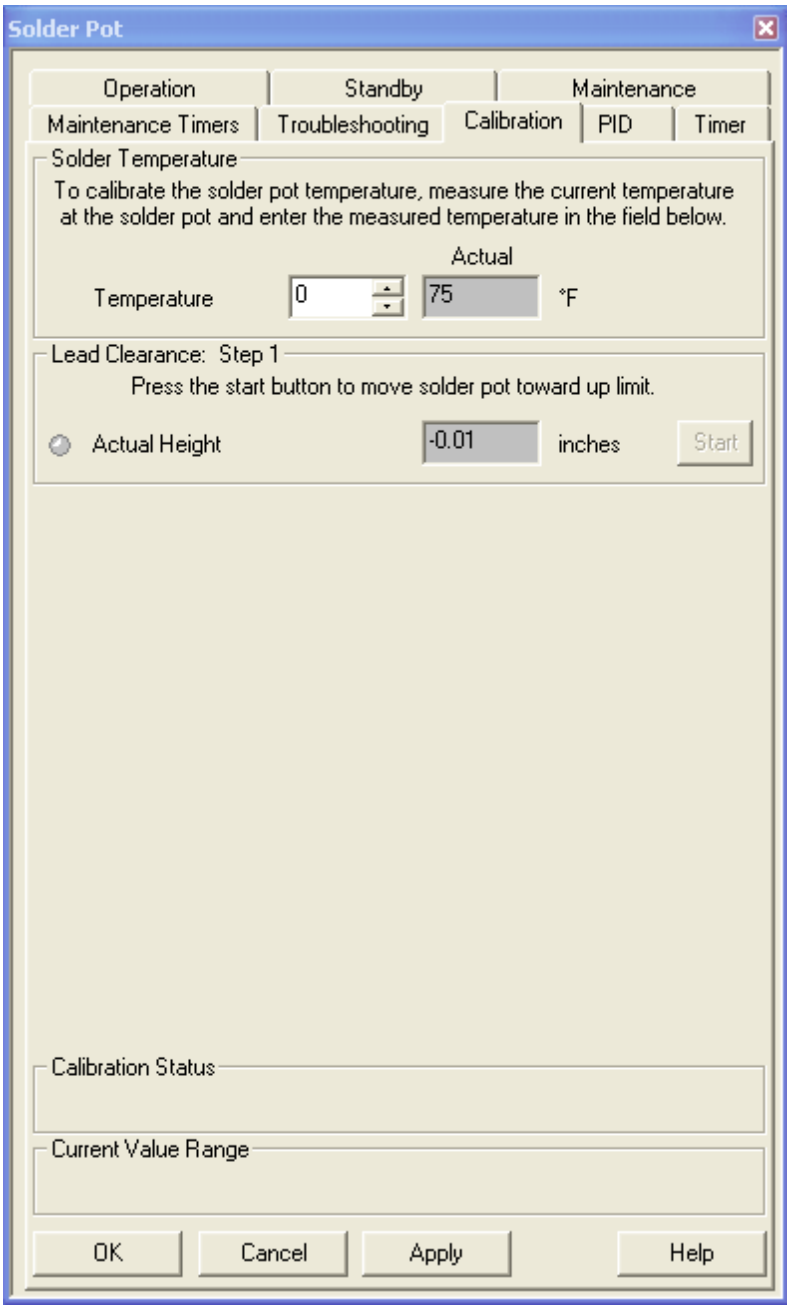
Ready
The status of the down stream (unload end) equipment SMEMA ready signal.

See Also: **SMEMA Operation**

1.21 Solder Pot Module

1.21.1 Calibration

The **Calibration** tab contains features that should be limited to use by maintenance personnel only.
The machine must first be in the MANUAL mode.
The Calibration tab displays two (2) separate categories when initialized
Solder Temperature and Lead Clearance:



Click on a section of the Solder Pot **Calibration** tab above to get a more detailed description of the parameters in that section.

The Solder Pot **Calibration** tab may be accessed via:

Menu: **Modules | Solder Pot | Calibration** tab

1.21.1.1 Lead Clearance

Lead Clearance: Step 1

Actual Height

Click on the button next to Actual Height to move the solder pot toward the up limit.
As the adjustment takes place, the LED illuminates green, and the Start button changes to a Stop button to cancel the operation.
When the up limit for the Lead Clearance has completed positioning, the LED turns off and a Lead Clearance: Step 2 category is displayed in the Calibration tab.

Lead Clearance: Step 2

Measured Height

Follow the on-screen instruction under the Lead Clearance: Step 2 category, Measured Height.
"Enter the measured solder pot height".
This is calculated by physically measuring the solder pot height distance from the bottom of a PCB to the top of the incoming curved plate on the main wave.
Enter the measured height in the text box next to Measured Height, then press the Enter key on the keyboard or click on the apply button to accept the value entered.
Lead Clearance: Step 3 appears in the Calibration tab.

Lead Clearance: Step 3

Step 3 prompts the user to click on the button to move the solder pot toward the down limit.
When clicked, the Actual Height in the Lead Clearance: Step1 section changes to the down limit, and the LED in Step 3 illuminates green while the calibration of the down limit takes place, and the button changes to a Stop button to cancel the operation.
Lead Clearance: Step 4 appears in the dialog box.

Lead Clearance: Step 4

Measured Height

Follow the instructions under Lead Clearance: Step 4, " Enter the measured solder pot height".
This value is calculated by physically measuring the solder pot height adjustment performed by the machine in Lead Clearance: Step 3.
Enter the measured distance in the text box next to Measured Height, then press the Enter key on the keyboard or click on the apply button to accept the value entered.
Step 4 completes the calibration for the solder pot.

Calibration Status

- When the last step of the calibration is completed, a message is displayed under the Calibration Status field.
"Calibration Successfully Completed" if everything is OK.
"Calibration Failed" is something went wrong. The calibration is ignored. Find the problem with the lead clearance system, and repeat calibration.

1.21.1.2 Solder Pot Temperature

Measured Temperature

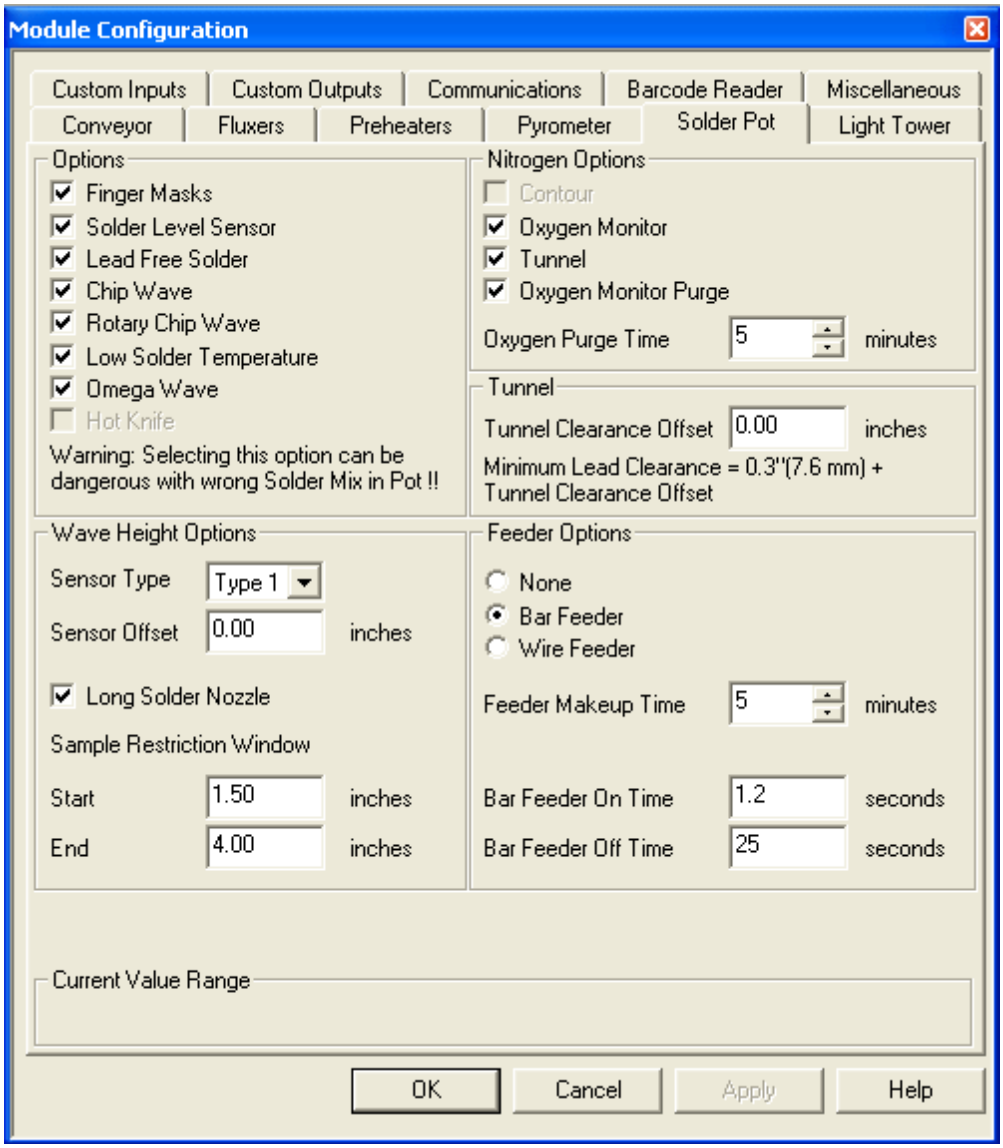
Allow the actual solder pot temperature to stabilize or reach set point temperature. Refer to the Operation tab for the Set Point temperature.
Follow the on-screen instructions under the Solder Temperature category,

Measured Temperature.

"To calibrate the solder pot temperature, measure the current temperature at the solder pot and enter the measured temperature in the field below".
This is calculated by using a hand held, accurate thermometer, and submerging the probe into the solder near the solder pot thermocouple, or 1" (25mm) into the solder wave.
Click on the button at the bottom of the dialog box to accept the value entered.

1.21.2 Configuration

NOTE: The machine must be in the AUTO-STOP mode to enable access to any machine Configuration function.



Click on the Solder Pot sections above to access definitions of the parameters within the section.

The **Solder Pot** Configuration tab may be accessed via:

Menu: **Configuration | Modules | Solder Pot**

CAUTION: Do not attempt to add, remove, or change any selections within the Solder Pot module tab that has not first been physically installed, removed or changed on the machine.

1.21.2.1 Lead Free

Low Solder Temperature - Select this option if Solder with a lower Melting / Process temperature is loaded in the Solder Pot.

Warning: - Only select this option when the correct solder type is loaded in the Pot. Otherwise, the Equipment and Possibly Personnel may be harmed.

1.21.2.2 Nitrogen Options

Tunnel - Selection of this option indicates that a complete nitrogen tunnel, for inerting the pre-heater and solder pot sections, is installed on the machine. This option is not available if the contour or Hot-Knife options are selected.

Contour - Selection of this option indicates the presence of an "A" Wave nozzle in lieu of the Lambda™ nozzle, with an inert boundary system. If the Chip Wave option is selected, it too is inerted. If the Hot-Knife option is selected, hot nitrogen is used for debridging. This Option is not available if the Tunnel is selected.

Oxygen Monitor - Select this item if the Oxygen Monitor feature for Nitrogen Options is installed. This feature is only available if the Tunnel Option is selected. The oxygen monitor measures the PPM of Oxygen within the Tunnel.

Oxygen Monitor Purge - Select this item if the Auto-Purge Solenoid is installed on this Machine. This feature is only available if the Oxygen Monitor is configured.

Oxygen Monitor Purge Time - Sets the time for the Nitrogen Purge in minutes before the Oxygen Monitor is allowed to be turned on. This feature is only available if the Oxygen Monitor is configured.

Tunnel Clearance Offset - Adjusts the minimum Lead Clearance with a Tunnel. This Offset is added to the standard 0.30" minimum Lead Clearance on a Tunnel. Also used to adjust the maximum Lead Clearance allowed and still have Nitrogen on, typically 0.71".
The default value is 0.00" and maximum allowable value is 0.30".

Note: This value should not be modified unless Nitrogen Shroud and Tunnel Seals are lowered for larger required lead clearance.

1.21.2.3 Solder Pot Options

Omega Wave - Selection of this option indicates the presence of a Lambda™ nozzle and Omega vibrator.

Chip Wave - Selection of this option indicates a Chip Wave nozzle is installed in the solder pot.

Rotary Chip Wave - This option is only available if the Chip Wave has been selected. Selection of this option indicates that the Rotary Chip Wave feature for the Chip Wave is installed.

Finger Masks - Selection of this option indicates that Finger Masks are installed on the fixed or moveable rail at the fluxer and solder pot.

Solder Level Sensor - Selection of this option indicates the presence of a Solder Level sensor used to detect the level of solder in the pot. The sensor is used with a solder feeder, to maintain solder level in the pot.

Hot Knife - Selection of the Hot Knife option indicates that a Hot Knife debridging system is installed immediately after the solder waves.

Manual Wave Control - Special option to allow the user to turn on/off solder waves from the rear of the machine, it is used for maintenance & setup only.

Lead Free Solder – This option modifies the solder pot temperature parameters for use with no lead solder. When this option is selected the solder pot temperature range is 480°F to 575°F (249°C – 302° C). The minimum solder temperature for the pumps to run is changed to 470°F (243°C). If using the standard Tin-Lead solder, this option should not be selected. In this mode the solder pot temperature range is 430°F to 550°F (221°C – 288°C), with the minimum temperature for the pumps to run set at 425°F (218°C).

Solder Dross Skimmer – Selection of this option indicates the presence of the Dross Skimmer option to automatically remove dross from the pot.

Motorized Roll-out and Jacking (Vectra Only) - Selection of this option indicates that the motorized roll-out and jacking system is installed.

1.21.2.4 Solder Wire/Bar Feeder

Only one (1) selection in this category is permitted.

None - Select this option if no solder feeder options are installed.

Bar Feeder - Selection of the Bar Feeder option indicates that a solder Bar Feeder for automatic loading of solder, is installed on the solder pot.

Wire Feeder - Selection of the Wire Feeder option indicates that a wire type solder feeder for automatic loading of solder, is installed on the solder pot.

1.21.2.5 Wave Height

Only one (1) selection in this category is permitted.

None - Select this option if no Wave Height Sensor options are installed.

Gordon - Capacitance - Selection of this Wave Height Sensor option indicates that a Gordon Type Wave Height Detect Sensor is mounted on the machine. This sensor is the original Style sensor which is flat and rectangular in shape and mounted beneath the moveable rail.

u Epsilon – Eddy Current - Selection of this Wave Height Sensor option indicates that a Micro Epsilon Type Wave Height Detect Sensor is mounted on the machine. This sensor is round in shape and is mounted beneath the movable rail.

Long Solder Nozzle – This box should be checked if a Longer than Standard Width Nozzle is used. This allows for Wave Height Control at Full Conveyor Width. **Note:** This box should not be checked if a Long Nozzle is not present as this could cause errant Wave Height Readings and unstable wave control at full width.

Wave Height Restriction Window – This Sets the distance from the center of the wave in which a board travels to restrict Wave Height Samples.
Note: These Values should not be changed unless a Wide Throat Nozzle and or Modified Nozzle is present.

Start – The distance before the center of the Wave to Start Restriction of Wave Height Samples.
End – The distance after the center of the Wave to End Restriction of Wave Height Samples.

Sensor Offset – This value is used to allow Wave Height Control with a larger Lead Clearance than 0.52". The default value, "0.00", limits Control to a 0.52" lead clearance and below. Increasing this offset increases the allowable Lead Clearance for Control.

Note: The Wave Height Sensors are used to maintain a constant wave height when conditions such as solder level, consistency, etc may change during normal operation.

1.21.3 Dross Removal

Dross Removal Enabled
This Checkbox is used to enable the Dross Removal System. This is a Recipe item that requires Modify Recipe Security Rights to change this setpoint. If left unchecked the Mini-Solder Pot and the Skimmer and Separator are disabled and remain off until re-checked or a recipe with this box checked is loaded. This setting is a Recipe item and therefore can be disabled for different Recipes. However, the Mini Pot may take several minutes to heat to temperature before the Dross Removal System will be able to run.

Mini Solder Pot
Heater Element
While power is applied to the heater elements, the Heater Element indicator illuminates green. Whenever the solder pot heaters are turned off, the LED next to Heater Element turns off.

Solder Temperature
In the Set Point text box, enter the temperature to which the solder pot is to heat, either in imperial or metric units, whichever is applicable for your system configuration. This Mini Solder Pot is turned on and off with the main solder pot, but the temperature is controlled Separately.

Warning - As with the Main Solder Pot, the Mini-Pot should initially be filled with new Solder. It should not run without solder.

Dross Skimmer
The Dross Skimmer has three possible values for its setpoint, Off, On and Timing. When the setpoint is set to 'On' the dross skimmer runs continuously while the Lambda wave is on. If the setpoint is set to 'Off', it remains off. When the setpoint is set to 'Timing' the dross skimmer runs periodically as defined by the Dross Skimmer Cycle Timer and the Dross Skimmer Run Timer. These timers run any time the Lambda wave is running and the setpoint is set to Timing. The text box in the Actual column indicates whether the dross skimmer is On, Off or Timing. If the Actual indicates Timing, the dross skimmer is awaiting the count down of the Cycle Timer or has reached one of the Limits and is in a Wait State before changing directions. Once the Cycle Timer reaches zero, the Run Timer will begin counting down while the dross skimmer runs. Once the Run Timer reaches zero, the dross skimmer will turn off and the actual will return to Timing. While in the Manual mode the Start button is available to manually start the dross skimmer after the Lambda wave is turned on. When the dross skimmer is started, the LED to the left of 'Dross Skimmer' illuminates green. The Start button then changes to a Stop button to cancel the operation. The Skimmer and Separator will run until turned off by the Start/ Stop Button.
Auto mode will also start the dross skimmer, if the setpoint is 'On' or 'Timing', after the necessary machine parameters have been satisfied for the Auto-Start sequence.

Note: The Skimmer delays 20 seconds at the beginning of each cycle or start to allow the Separator wheels to become heated.

Skimmer Extend / Skimmer Retract
The Skimmer Retract LED is on when the Skimmer is moving to the Home Position and the Extend LED is on when moving to the Extend Position. If the Skimmer is not at Home when started, it will go to Home and then proceed. The Skimmer will return to Home when stopped or at the end of each cycle.

Dross Separator
The Dross Separator runs when the Dross Skimmer is running. After the Skimmer stops, whether through Timing or being stopped manually, the Separator will run for an additional period. This is modified by the "Separator Off Delay" Setpoint. In Manual Mode the Separator can be started without the Skimmer Running by clicking on the Start button.

Separator off Delay
The Separator off Delay sets the period of time that the Separator remains on after the Skimmer is shut off. This allows the excess dross from the Skimmer to be processed before the Separator is shut off.

Dross Skimmer Timers
Dross Skimmer Cycle Time
This is the total time for one complete 'On' and 'Off' cycle of the dross skimmer. This timer is only active while the Lambda wave is on and the setpoint is set to 'Timing' while in Auto Mode. This timer retains it's value when the Lambda wave is turned off, and will restart from this value when the wave is turned

back on. The Setpoint is in minutes and can range from 2 to 60 minutes. Once the timer counts to zero, the Cycle and Run Timers re-start countdown at current setpoint.

Dross Skimmer Run Time
This is the amount of time per cycle that the dross skimmer is on. This timer is only active while the Lambda wave is on and the setpoint is set to 'Timing' while in Auto Mode. This timer also retains its value, like the Cycle timer. The Setpoint is in minutes and must be less than the Cycle Timer. Therefore, after entering a setpoint for the Cycle Timer the Apply button should be clicked or the Enter key pressed to change the new Maximum Allowable setting for the Run Timer. By default, if a value is entered in the Cycle Time Setpoint that is lower than the Run Time Setpoint, the Run Time Setpoint will be changed to a value of 1 minute less than the Cycle Time.

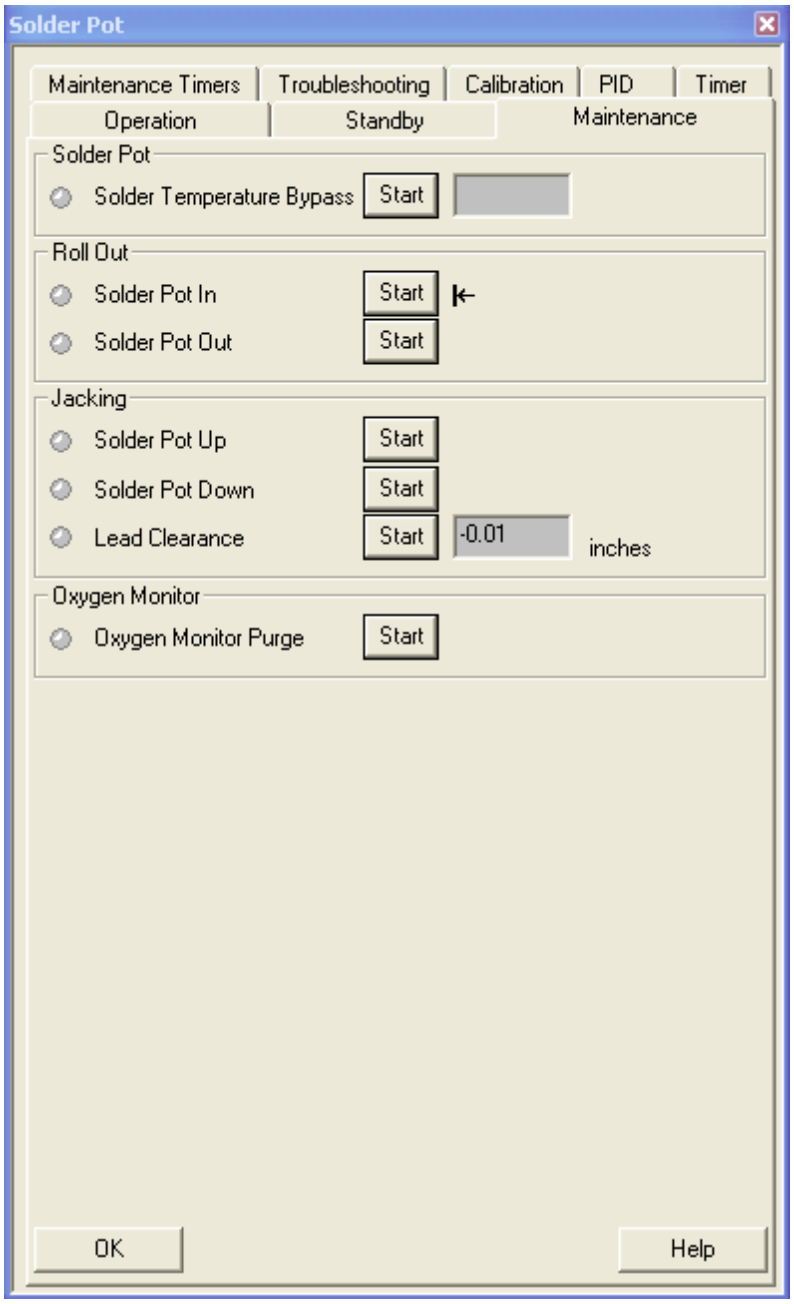
Solder Reclaim Pump
Two sensors that measure the Mini-Pot Solder Level control the Solder Reclaim Pump. A High Level Sensor Starts the Pump and the Low Level stops the Pump.

Solder Dross Container Full
Displays a Green LED when the Dross Container is full.

Note: The LED may flicker due to intermittent detection of solder. The Alarm will not sound until the LED is on for a period of 10 seconds.

1.21.4 Maintenance

The **Maintenance** tab contains manual override Start buttons, specifically for maintenance functions. These features should be limited to use by maintenance personnel only.
The machine must first be in the MANUAL mode. The Start buttons listed below allow maintenance personnel to perform what may normally be automated functions:



Click on a section of the Solder Pot **Maintenance** tab above to get a more detailed description of the parameters in that section.

The Solder Pot **Maintenance** tab may be accessed via:

Menu: **Modules | Solder Pot | Maintenance** tab

Dross Reclamation Only:
Solder Reclaim Pump

When the Start button is clicked, the LED illuminates green and the Solder Reclaim Pump runs to remove solder from the Mini-Pot.
Note: When Started Manually the Pump will run until stopped. The Level Sensors are ignored in this condition.

Reset Timers
Resets the dross skimmer's cycle and run timers back to their original setpoints and re-enables. If these timers are running when the reset button is pressed, they will continue to run once their values have been reset.

1.21.4.1 Solder Pot Roll Out

Solder Pot In
If the solder pot is already rolled in at its maximum position, the Start button is not available, and an in limit symbol is displayed next to the Start button.
Once the pot is rolled out to any position away from the in limit, the symbol disappears, indicating that the pot is not completely rolled in.
The Start button only becomes available when the pot has been rolled out, and the roll out function has stopped.
Click on the Start button to roll the pot back to its in limit.
The LED illuminates green. The Solder Pot In function automatically stops when the in limit is reached.
While the solder pot is rolled in, the Jacking features; Solder Pot Up, Solder Pot Down, and Lead Clearance are available.

Solder Pot Out
If the solder pot is already rolled out to its maximum position, the Start button is not available, and an out limit symbol is displayed next to the Start button.
If the solder pot is rolled in, click on the Solder pot Out Start button to roll the pot out.
The LED illuminates green, and the Start button changes to a Stop button to cancel the operation. The Solder Pot Out function automatically stops when the out limit is reached. The pot may be stopped at any out position by clicking on the Stop button any time while the pot is being rolled out.
While the solder pot is rolled out to any position, other than all the way out to limit, only the Solder Pot Down Jacking feature is available.

1.21.4.2 Solder Pot Jacking

Solder Pot Up
The Solder Pot Up Start button may not be selected while the pot is either rolling in or rolling out.
Once the pot is rolled all the way in or all the way out, the Solder Pot Up Start button may be selected.
When the Start button is clicked, the LED illuminates green.
The Lead Clearance text box displays the adjustment as it is being performed.
When the pot reaches the up limit, the function automatically stops and the green LED that was illuminated turns off, and an up limit symbol appears next to the solder pot up start button.

Solder Pot Down
The Solder Pot Down Start button may not be selected while the pot is either rolling in or rolling out.
The Solder Pot Down Start button is non-available if the pot is already at its down limit position.
The Solder Pot Down function can be applied to the pot while it is anywhere in the out or in position.
When the Solder Pot Down button is clicked, the Solder Pot Down LED illuminates green.
The Lead Clearance text box displays the adjustment as it is being performed.

When the solder pot reaches its down limit position, a down limit symbol appears next to the Solder Pot Down Start button.

Lead Clearance
Clicking on the Lead Clearance Start button manually forces the lead clearance adjustment to the setting in the Operation tab.
The LED illuminates green when the Start button is clicked, and the Start button changes to a Stop button to cancel the operation. The Solder Pot Up, Solder Pot In, Solder Pot Down LED illuminates green, dependent upon direction of travel required.
The adjustment is displayed in the text box associated with this feature.
When the adjustment is complete, the Stop button reverts back to Start and the LED's turn off.

1.21.4.3 Solder Temperature Bypass

Solder Temperature Bypass
When the Start button is clicked, the LED illuminates green and a timer starts counting down from 00:10:00 to 00:00:00 (10 minutes).
The Start button changes to a Stop button — if clicked, changes back to Start again. Starting again starts the timer over from 00:10:00.
This allows you to start the pump motors if the solder temperature is below (219 °C) 426 °F. Belts must be removed before turning on motors. CAUTION must be used when using this function.

1.21.4.4 Oxygen Monitor

Oxygen Monitor Purge - Available only in Manual Mode. The Start Button to turn on the Purge is only available when in Manual Mode and the Oxygen Monitor is Currently On. When the Monitor is turned to On, the Purge Switching Valve is energized, which switches the Oxygen Monitor to the Sample Port. Pressing this Start Button turns the Switching Valve to off and therefore opens the Purge Port. When the Oxygen Monitor is Off, the Valve is off and therefore the Monitor is already set to Purge.

This feature is only available if the Oxygen Monitor is configured.

1.21.5 Maintenance Timers

NOTE: This can be use as a guide to know when to perform maintenance on a specific module.

Interval (hours)
Enter here expected interval time in hours for maintenance to be done on this particular module.

Time Remaining
Time left before maintenance is due for this module.
NOTE: When time expired message "Maintenance Required" is displayed in Status Bar until maintenance is performed.

Total Run Time
Actual time that this module has been "on" since installation.

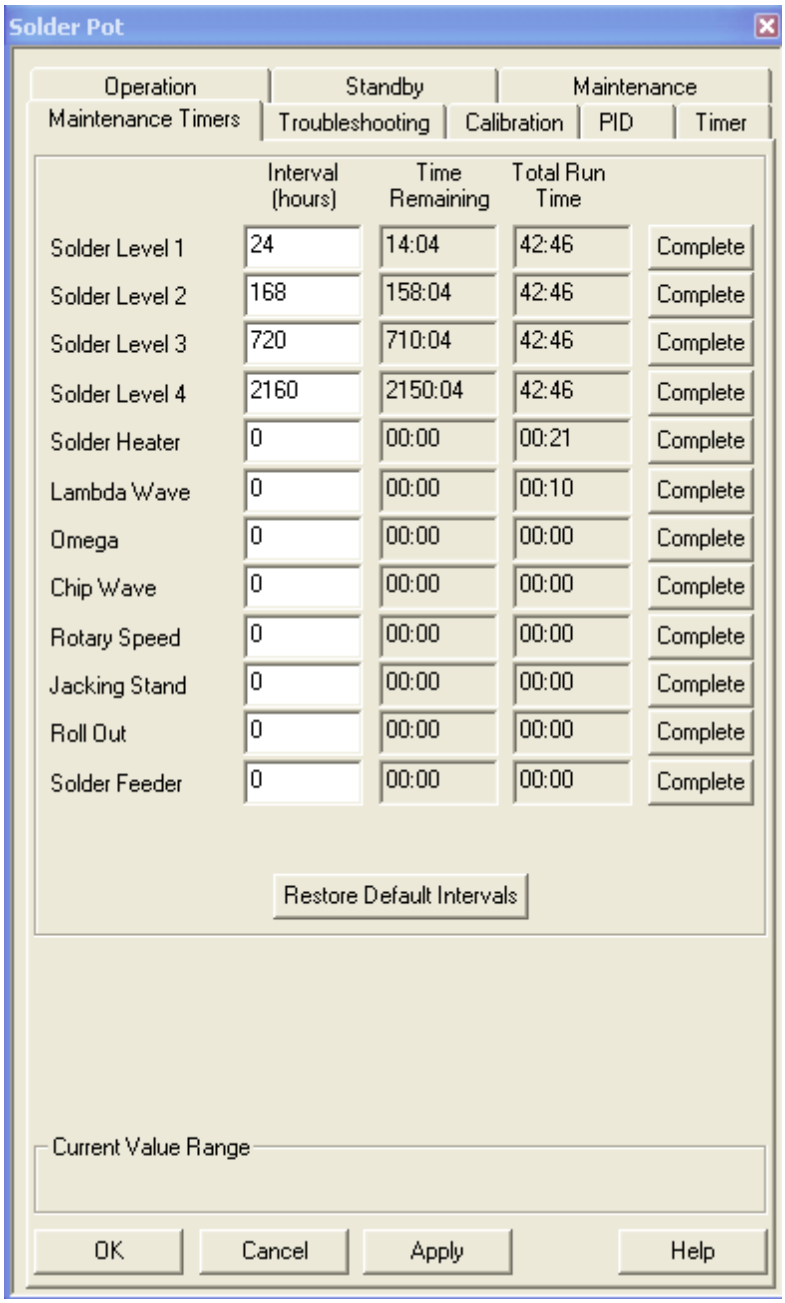
Complete
When a maintenance operation is performed for this module, click on Complete. Then the window

Maintenance Note will appear.

Restore Defaults Intervals
Click here to restore default interval values.

Each maintenance timer screen contains two different types of timers. The Maintenance Timer associated with a specific device only runs while the device is on. The Maintenance Timer Level 1, 2, 3... are free running timers and do not stop when the device is off. These timers are used for setting up a maintenance schedule such as Daily, Weekly, or Monthly. See the following for the recommended maintenance for each Maintenance Timer Level:

Scheduled Maintenance



The Solder Pot **Maintenance Timers** tab may be accessed via:

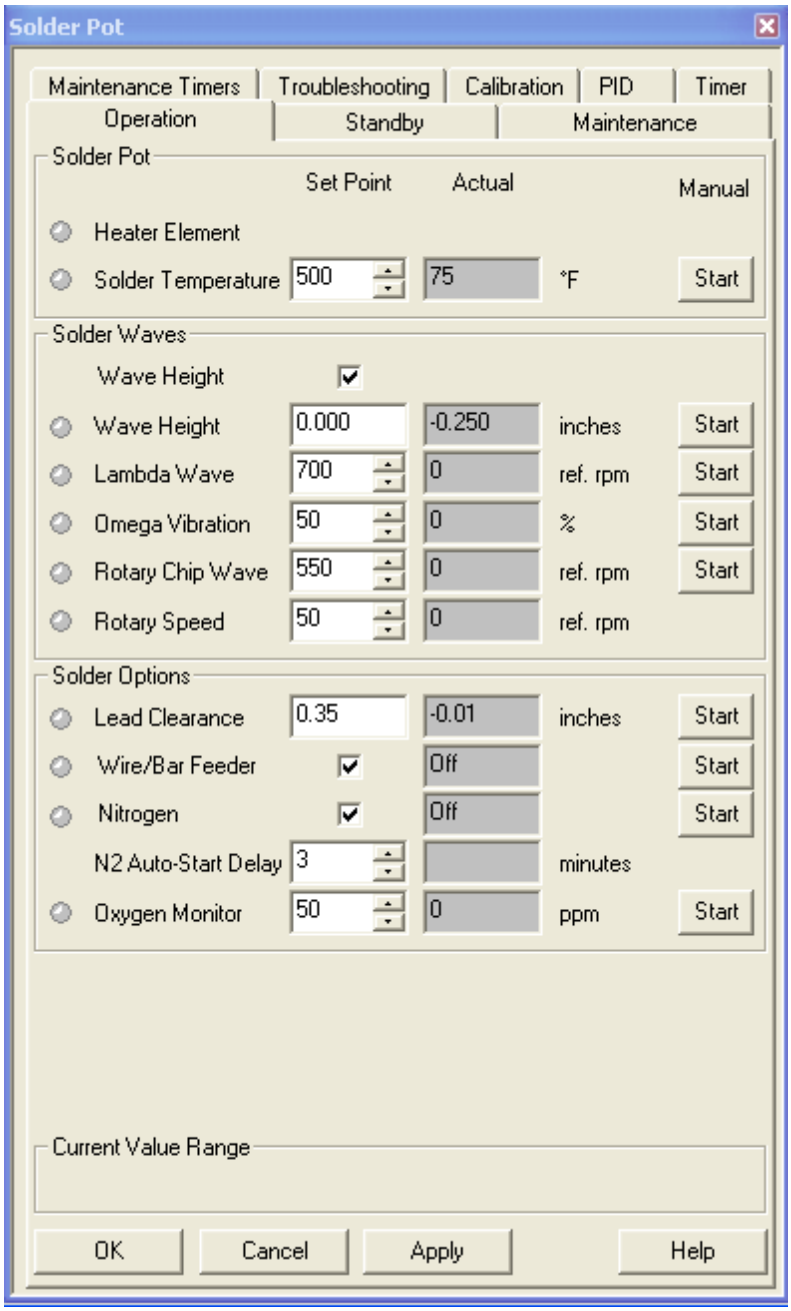
Menu: **Modules | Solder Pot | Maintenance Timers** tab

1.21.5.1 Scheduled Maintenance

ITEM	Operator	Maintenance	Daily	Weekly	Monthly	Quarterly
Level 1 Examples of use: **1.** Remove dross from solder nozzles, pump shaft and pot surface.	xxx		xxx			
Level 2 Examples of use: **1.** Clean solder level sensor. **2.** Clean solder feeder. **3.** Check pump belt tension. **4.** Remove nozzles and dedross pot surface.		xxx		xxx		
Level 3 Examples of use: **1.** Lube solderpot jacking stand tubes & chain drive assembly. **2.** Lube solderpot lead screw & drive assembly. **3.** Lube solderpot roll-out wheels.		xxx			xxx	
Level 4 Examples of use: **1.** Remove & clean solder nozzles, flow ducts, vane elements & solder pumps. **2.** Check contamination levels of solder.		xxx				xxx

1.21.6 Operation

Within the **Operation** tab, specific parameters related to the solder module and its components can be entered or changed to meet the requirements of a specific recipe. These entries may be saved in the existing recipe or to a new recipe — or even applied to a specific board without being saved.



Click on a parameter sub-section of the Solder Pot **Operation** tab above to get a more detailed description of the parameters in that sub-section.

The Solder Pot **Operation** tab may be accessed via:

Menu: **Modules | Solder Pot**

Solder Pot
Heater Element

While power is applied to the heater elements, the Heater Element indicator illuminates green. Whenever the solder pot heaters are turned off, the LED next to Heater Element turns off.

Solder Temperature
In the Set Point text box, enter the temperature to which the solder pot is to heat, either in imperial or metric units, whichever is applicable for your system configuration.

Actual represents the present temperature of the solder in the pot. As the temperature increases, the value under Actual gradually increases — as the temperature decreases, so does the value under Actual.
The LED next to Solder Temperature illuminates when the machine is controlling the temperature. Refer to Solder Pot Timer for more information.

NOTE: Refer to the section under Manual or Auto Start for more details on operations.

1.21.6.1 Contour/Nitrogen Tunnel

This optional feature is associated with the Contour Nitrogen or Nitrogen Tunnel.

When configured, the Contour/ Tunnel Nitrogen feature appears in the Solder Pot dialog box as an On or Off function.

To enable the Contour/ Tunnel Nitrogen for Auto Start, click on the box to the right this will places a check mark in the box. Clicking on the box again removes the check mark.

Under Actual, the text box displays Off when inactive and On when active.

While in the Manual mode the Start button is available for manual start of the Contour/ Tunnel Nitrogen. When the nitrogen is started, the LED to the left illuminates green. The Start button then changes to a Stop button to cancel the operation.

Auto mode will start the Contour/ Tunnel Nitrogen when the Contour/ Tunnel Nitrogen has a check mark in it.

With the Tunnel Option, the nitrogen will shut off when the Solder Pot hood is opened, and if in Auto Mode, will restart when the Hood is closed. If the Lead Clearance is greater than .6 inches the Tunnel Nitrogen will not flow.

1.21.6.2 Lambda Wave

Entering a zero (0) for the setpoint will keep the wave turned off in auto mode.

The Lambda or Contour Wave (Main Wave) can be started in either the Manual or Auto Start mode. First, the Set Point, in rpm's, must be entered in the text box for this feature.
NOTE: In order to enable the Omega Vibration feature, the minimum rpm speed for the Main Wave must be set to at least 675 rpm. The Main Wave can not be started until the solder temperature reaches the minimum operating temperature, (219 °C) 426 °F or 470 °F (243°C) for Lead-Free Solder. With Lead-Free Solder, the Solder Temperature must be at Setpoint or 500 °F for 20 minutes when the Solder Pot Heaters are first turned on (via Start Button or Timer) and the Temperature at the time is less then the 470 °F (243°C) Pump Protect Temperature. After achieving the Lead-Free Pump Protect Temperature, a

Tool Tip is displayed stating "Solder Pot Temperature Startup Delay Active". This will also be displayed in the Message box in the Side Bar. The 20 Minute Timer will not begin Countdown until reaching the Setpoint or 500 °F as mentioned above.
While the Start button is non-available, and the pointer device is positioned over the button, a pop-up display message appears stating "Solder Temperature Too Low". In Manual mode, the Start button becomes available when the solder temperature reaches (219 °C) 426 °F if not Lead-Free Solder. Again, with Lead-Free Solder, there is an additional Startup Delay as mentioned above.

Click on the button to start the Main Wave. Note that a graphic representation of the wave appears operating on the graphic screen. Actual rpm's are visible in the Actual text box across from Main Wave, and the LED associated with this feature illuminates green when the wave is active. When the start button is clicked, it immediately changes to a Stop button to cancel the operation. When starting the machine in the Auto Start mode, once all Startup parameters have been satisfied, the Main Wave and any other wave configured automatically start at the set points specified for that recipe.

NOTE: Nitrogen is automatically turned off when Main Wave is under 450 rpm. This is to conserve Nitrogen.

1.21.6.3 Lead Clearance

This feature allows product lead clearance to be set, based on the length of the board's components. Lead Clearance adjustment can be started in either the Manual or Auto Start mode. In the Set Point text box, enter the required lead clearance to which the pot should be adjusted, either in imperial or metric units, whichever is applicable for your machine configuration.
While in Manual mode Click on the Lead Clearance button to adjust the clearance. When clicked, the solder pot adjusts itself to the lead clearance designated in the Set Point text box. The Actual value either increases or decreases until the Set Point value is reached. While the adjustment takes place, the LED associated with Lead Clearance illuminates green, and the Start button changes to a Stop button to cancel the operation.
When the adjustment is complete, the green LED turns off and the Stop button reverts back to a Start button. When starting the machine in the Auto Start mode, the Lead Clearance function automatically adjusts to the parameter specified for the recipe loaded.

1.21.6.4 Nitrogen Auto-Start Delay

Displays the time remaining before N2 will display as complete in Auto-Startup Status screen.

1.21.6.5 Omega Vibration

Before the Omega Vibration can be activated, two (2) items must be satisfied.
1. A percentage (%) value must be entered in the Set Point text box next to Omega Vibration.
2. The Main Wave must be activated and above 675 RPM. Click on the button if the system is in the Manual mode, to activate the Omega Vibration. When the start button is clicked, it immediately changes to a stop button to cancel the operation.
The LED next to Omega Vibration illuminates green when activated, and the Actual % is visible in the text box associated with this feature.

See Also **Lambda/Contour Wave**

1.21.6.6 Oxygen Monitor

This optional feature is associated with the Tunnel Option.

When configured, the Oxygen Monitor feature appears in the Solder Pot dialog box with a Setpoint, which is for Alarm purposes only, and an Actual box which displays the PPM Level.

If the Setpoint is larger than **0**, the Oxygen Monitor will be allowed to start five minutes after Nitrogen has been started. This allows time to purge the Tunnel before the Monitor is allowed to take samples. If the setpoint is **0**, the Oxygen Monitor is disabled.

While in the Manual mode the Start button is available for manual start of the Oxygen Monitor after the five-minute delay. When the monitor is started, the LED to the left illuminates green. The Start button then changes to a Stop button to cancel the operation.

Auto mode will start the Oxygen Monitor if the setpoint is larger than **0** and the Nitrogen has been on for five minutes.

If the Nitrogen Low Pressure switch is set the Oxygen Monitor will be shut off.

1.21.6.7 Rotary Chip Wave

The Rotary/Chip wave can be started in either the Manual or Auto Start mode. First, the Set Point, in rpm's, must be entered in the text box for this feature.
Entering a zero (0) for the setpoint will keep the wave turned off in Auto or Manual Mode.

The Rotary/Chip wave can not be started until the solder temperature reaches the operating temperature, (219 °C) 426 °F or 470 °F (243°C) for Lead-Free Solder. With Lead- Free Solder, the Solder Temperature must be at Setpoint or 500 °F for 20 minutes when the Solder Pot Heaters are first turned on (via Start Button or Timer) and the Temperature at the time of Startup is less then the 470 °F (243°C) Pump Protect Temperature. After achieving the Lead-Free Pump Protect Temperature, a Tool Tip is displayed stating "Solder Pot Temperature Startup Delay Active". This will also be displayed in the Message box in the Side Bar. The 20 Minute Timer will not begin Countdown until reaching the Setpoint or 500 °F as mentioned above.
A pop-up display message appears stating "Solder Temperature Too Low" when placing the pointer device over the button, while the Start button is not available for selection. In Manual mode, the Start button becomes available when the solder temperature reaches (219 °C) 426 °F if not Lead-Free Solder. Again, with Lead-Free Solder, there is an additional Startup Delay as mentioned above.

Click on the button to start the Rotary/Chip wave. Note that a graphic representation of the wave appears operating on the graphic screen. Actual rpm's are visible in the Actual text box across from Rotary/Chip wave, and the LED associated with this feature illuminates green when the wave is active. When the start button is clicked, it immediately changes to a button Stop as the next selection for operation. When starting the machine in the Auto Start Mode, once the Startup parameters have been satisfied, the Rotary/Chip wave and any other wave configured automatically start at the set points specified for that recipe.

1.21.6.8 Rotary Speed

The Rotary Shaft (Rotary Speed) remains off until the Rotary Chip reaches a speed of 550 RPM. While the Rotary Chip Motor is on and below the 550 RPM's the Rotary Speed LED will be yellow in color. Once the Rotary Chip reaches 550 RPM's the Rotary shaft will will automatically Start and run at setpoint. In this State the LED will be green until the Rotary Chip is turned off or it falls below 545 RPM's.

1.21.6.9 Wave Height

Click in box to enable in automatic mode.
Operating by the wave height mode uses a special sensor to measure the height of the wave and provide feedback to the software control to maintain the wave height.

The Set point is in actual distance from the centerline of a PCB. Adjust the set point up or down to maintain the wave height lower or higher on the PCB. The actual reflects the wave height dimension.

To maximize the speed at which this control will reach the set point, the following should be utilized.

First- Set all machine parameters as needed to process the PCB, especially Lead Clearance.

Second- Turn wave height control off.

Third- Start the main wave and adjust its set point to an optimum setting.

Fourth- Save this setpoint with the recipe, and enable wave height.

Wave Height will now utilize the main wave set point as a referenced start position. As conditions change any further adjustments will be made to the motor speed to maintain the wave height at its set point.

NOTE: If the uEpsilon Sensor opens a Lambda Wave Height Sensor Failure alarm will be set, causing the Lambda Wave to be controlled by RPM Control. This alarm may also be set If the initial Lambda RPM setpoint is out of sensor range.

Wave Height Control is not allowed if the Lead Clearance is larger than
0.52" + **Sensor Offset**, which is set on the Solder Configuration page.

1.21.6.10 Wire/Bar Feeder

This optional feature is associated with the solder Bar Feeder or solder Wire Feeder.

When configured, the Wire/Bar Feeder feature appears in the Solder Pot dialog box as an On or Off function.

To enable the Wire/Bar Feeder for Auto Start, click on the box to the right this will places a check mark in the box. Clicking on the box again removes the check mark.

Under Actual, the text box displays Off when inactive and On when active.

While in the Manual mode the Start button is available for manual start of the solder feeder. When the

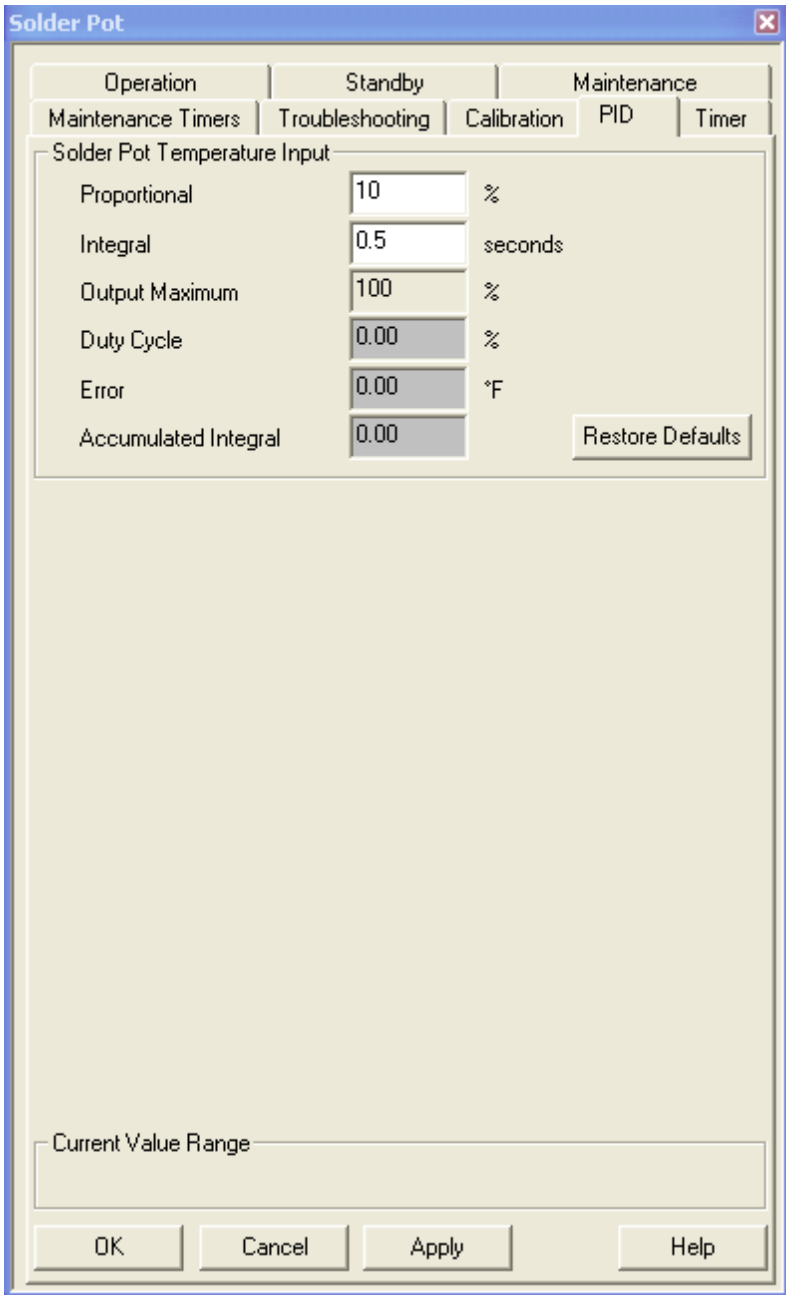
feeder is started, the LED to the left illuminates green. The Start button then changes to a Stop button to cancel the operation.

Auto mode will start the solder feeder when the level of the solder in the pot is detected as low level and the Wire/Bar Feeder bar has a check mark in it. The feeder then activates, adding solder until the proper level within the pot is achieved, then shuts off.

The solder pot must be at the pot in limit and the main wave "ON" and solder temperature is above 425 ° F (219 °C) and the solder level is low for 30 seconds or more before the solder wire/bar feeder will be operational.

1.21.7 PID

The **PID** features are designed for use specifically by Process Engineers or personnel experienced in PID calculations.
In an attempt to improve heater performance for unusual load conditions, experienced personnel may modify parameters using the PID features.



The Solder Pot **PID** tab may be accessed via:

Menu: **Modules | Solder Pot | PID** tab

Proportional
Set proportional band in %.

Integral
Enter in second's time to calculate Error for integral purpose.

Output Maximum
Limit Duty Cycle to prevent Eruption and stress on the Solder Pot.
Reducing the Output Maximum will reduce the occurrence of eruptions, but will increase the heat up time.

Duty Cycle
Display the value of output in %, may vary from 0 to Output Maximum.

Error
Display the difference between setpoint and actual temperature.

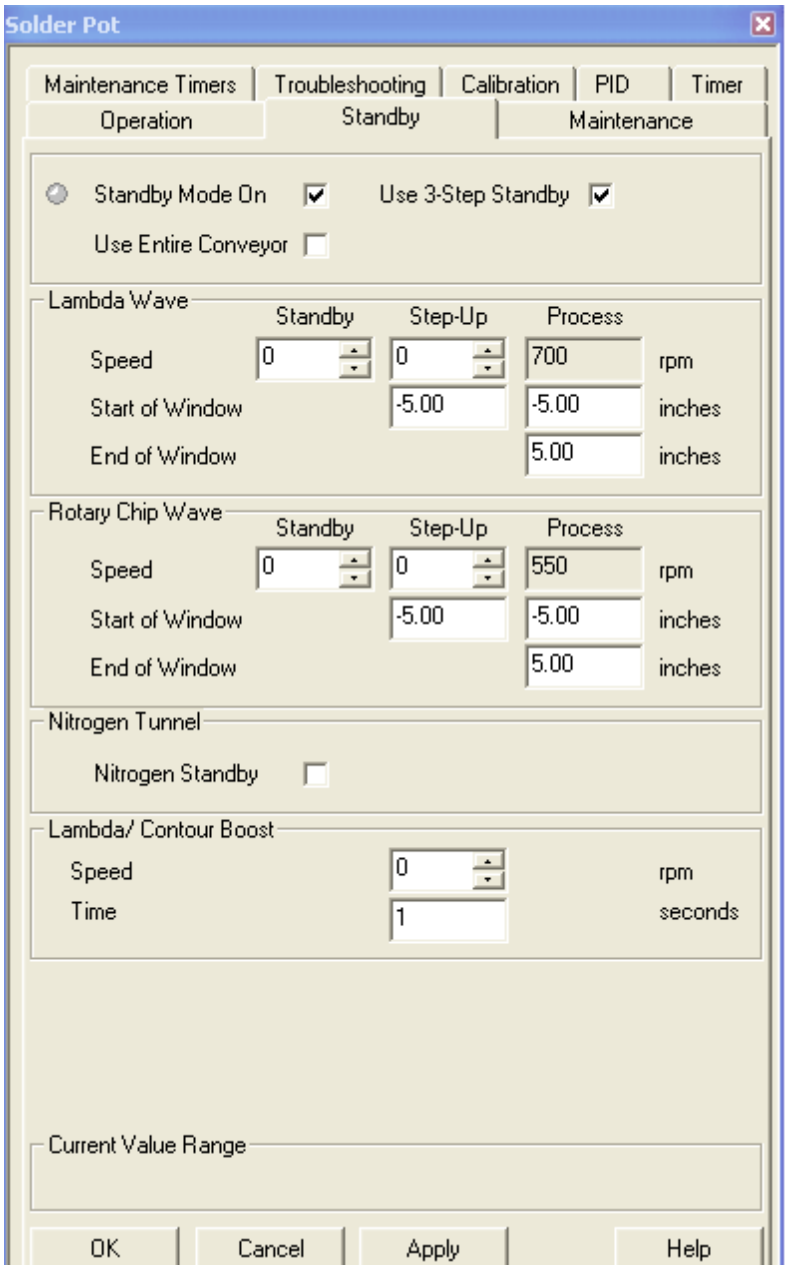
Accumulated Integral
Display the integral or reset value to compensate for an offset condition.

Restore Defaults
To restore the default values for the PID features, click on the Restore Defaults button.

See Also: **PROPORTIONAL (TIME PROPORTIONING)**
INTEGRAL (AUTOMATIC RESET)
PID CALIBRATION

1.21.8 Standby

The **Standby** tab contains features to be used specifically for operation. Standby allows the machine to decide when a board is or is not present within a defined process parameter (window) — based on whether or not a board is present, Standby will activate and deactivate both the Lambda/Contour and Rotary/Chip solder waves.



The Solder Pot **Standby** tab may be accessed via:

Menu: **Modules | Solder Pot | Standby** tab

Standby Mode On
Click on the box to the right of Standby Mode On to place a check mark in, or remove a check mark from the box.
Placing a check mark in the box enables Standby Mode On for activation.
When a check mark is placed in the Standby Mode On check box, the Lambda/Contour Wave, Rotary/ Chip Wave, and Rotary speed LED's in the Solder Pot dialog box's Operation tab features, illuminate

yellow. This indicates that the waves are presently operating at Standby Speed until a board is sensed within the defined window, then the waves operate at the Set Point speed defined in the Operation tab.
No check mark in the box indicates that standby mode is not used and the waves will operate at the set point speed defined in the operation tab.

Use Entire Conveyor
Click on the box to the right of Use Entire Conveyor to place a check mark in, or remove a check mark from the box.
Placing a check mark in the box enables use of the entire conveyor as the window in Standby Mode On, rather than a specific Start and End of window.
No check mark in the box indicates a specific window range will be defined rather than using the entire conveyor as the window.

Use 3-Step Standby
Click on the box to the right of Use 3-Step Standby to place a check mark in, or remove the check mark from the box.
This selection is available if the Standby Mode On box is checked and the Use Entire Conveyor is not checked. When the 3-Step Standby is used, a third step-up speed setting is provided between the Standby and Process Speeds.

Solder Pot Wave Standby

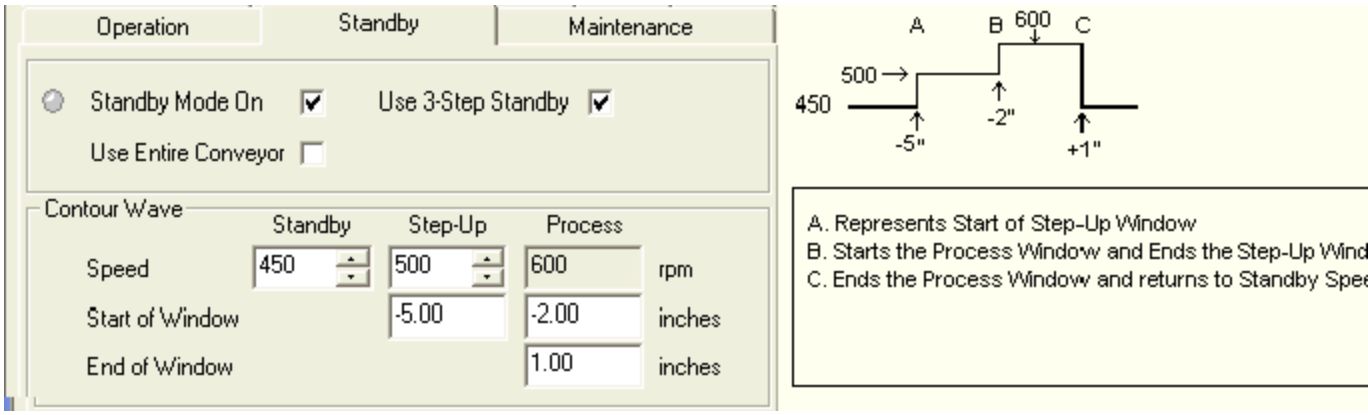
Wave Height Control Standby

3-Step Standby

1.21.8.1 3-Step Standby

This option allows for an additional Step-Up standby window in which the Waves can be adjusted to a third pump setting.
To select 3-Step Standby, The "Use 3-Step Standby" and "Standby Mode On" checkboxes must be checked and the "Use Entire Conveyor" must not be checked.

Looking at the example below, a PCB enters the machine with the Solder Pump Speeds at the Primary Standby Speed. For the Contour wave this would be 450 RPM's. When the Leading edge of the PCB reaches the Step-Up Start of Window at Point A, in this case 5.00 inches from the center of the wave, the pump speed switches to 500 RPM's. Once the Leading edge of the PCB reaches Point B or the Process Start of Window, at 2.00 inches before the center of the wave, the pump speed is changed to the Process setpoint of 600 RPM's. Next when the trailing edge of the PCB is 1.00 inches passed the center of the wave, at point C, the pump setting changes to the Standby Speed of 450 RPM's.
The Process Speed Setpoint is grayed out and cannot be modified on this page as this is changed on the Operation Tab.



In the drawing above and to the right, between Points B and C, is the Process window. If a board is within this window and another is within the Step-Up window, between Points A and B, the Process window takes precedence and the pump will run at the Process Setting.

This is just an example and the window settings can be adjusted to the process desired. If a Pallet is used, for example, it may be desirable to change to process speed after the Pallet is over the wave. In this case you may have the Process Start of Window set to a positive value such as 1.00 causing the Pump to go to process speed 1.00 inch after the leading edge of the Pallet reaches the wave. You may also want the Process End of Window to be set to 1 or 2 inches passed the Process Start of Window to allow for the next board to enter the wave under the Step-Up Standby Speed.

1.21.8.2 Solder Wave Standby

Standby Speed
The value entered here will be the speed at which the Rotary/Chip Wave will operate until a board enters the defined window — the wave then operates at the speed set for the recipe or set in the Operation tab.

Step-Up Speed
The value entered here will be the Step-Up speed at which the Wave will operate when the PCB enters the defined Step-Up Start of Window until it reaches the Process Start of Window. Depending on the Process and Step-Up End of Window settings, this is the speed at which the waves will run between these two settings.

Step-Up Start of Window
Enter in inches (or millimeters), the distance to engage the Step-Up set point from the center of the nozzle. A negative number engages the set point prior to the center and a positive number engages the set point after the center. The Step-Up Window is divided by the Process Window. Therefore, the Process Start of window setting will cause the waves to go to the Process Speed and Therefore sets the end of the Step-Up Window.

Process Speed
The value displayed here is the Process Setpoint of the Wave at which the pumps will run when the PCB is within the window as defined by the Process Start and End of Window. This value cannot be modified on this page as it is a Process Recipe Setpoint that is modified on the Solder Operations Page.

Process Start of Window
Enter in inches (or millimeters), the distance to engage the Operations Process set point from the center of the nozzle. A negative number engages the set point prior to the center and a positive number

engages the set point after the center.

Process End of Window
Enter in inches (or millimeters), the distance to disengage the Operations Process set point from the center of the nozzle. A negative number disengages the set point prior to the center and a positive number disengages the set point after the center.

Lambda/ Contour Wave Boost Speed and Time
Adjusts the speed of the wave as follows:

Standby Off: When Lambda Pump is started from the Off condition, the Pump starts at the Setpoint plus Boost RPM's for the set time. After this time expires, the speed of the pump goes to setpoint speed. For example: Setpoint RPM's = 500, Boost Speed = 45, Boost Time = 5 seconds. The Lambda Pump is started, the Actual Speed goes to 545 RPM's, 5 seconds after starting the speed returns to 500 RPM's.

Standby On, Full Conveyor and 3-Step Off: The Lambda Pump starts at Standby speed. As soon as a board enters the Process Window, the Pump goes to Setpoint plus the Boost speed until the Boost time expires. At this time the Pump will Run at Process Speed until it leaves the process window when it returns to Standby Speed. For Example: Setpoint RPM's = 500, Standby Speed = 450, Boost Speed = 45, Boost Time = 5 seconds. The Lambda Pump is started, the Actual Speed goes to 450 RPM's. As soon as the board reaches the Process Window the speed goes to 545 RPM's for 5 seconds at which point the speed returns to 500 RPM's. After the board leaves the Process Window the Pump returns to 450 RPM's, the Standby Speed.

Standby On, Full Conveyor On, 3-Step Off: The Lambda Pump starts at Standby speed. As soon as a board enters the Machine, the Pump goes to Setpoint plus the Boost speed until the Boost time expires. At this time the Pump will Run at Process Speed until it leaves the Machine when it returns to Standby Speed. For Example: Setpoint RPM's = 500, Standby Speed = 450, Boost Speed = 45, Boost Time = 5 seconds. The Lambda Pump is started, the Actual Speed goes to 450 RPM's. As soon as the board enters the Machine, the speed goes to 545 RPM's for 5 seconds at which point the speed returns to 500 RPM's. After the board leaves the Machine, the Pump returns to 450 RPM's, the Standby Speed.

Standby On, 3-Step On, Full Conveyor Off : The Lambda Pump starts at Standby speed. As soon as a board enters the Intermediate Standby Window, the Pump goes to Step-up RPM plus the Boost speed until the Boost time expires. At this time the Pump will Run at the Step-Up Speed Setpoint until the board enters the Process Window at which point the pump runs at process Speed. For Example: Setpoint RPM's = 500, Standby Speed = 450, Step-Up Speed = 480, Boost Speed = 45, Boost Time = 5 seconds. The Lambda Pump is started, the Actual Speed goes to 450 RPM's. As soon as the board enters the intermediate window, the speed goes to 525 RPM's for 5 seconds at which point the speed returns to 480 RPM's until the board enters the process window. The Pump will then go to Process speed or 500 RPM's. After the board leaves the Process Window the Pump returns to 450 RPM's, the Standby Speed.

1.21.8.3 Wave Height Standby

Standby Speed
The value entered here will be the speed at which the Lambda/Contour Wave will operate until a board enters the defined window — the wave then operates at the speed set for the recipe or set in the Operation tab.
See note at bottom of this page.

Start of Window
Enter in inches (or millimeters), the distance to engage the operations set point from the center of the nozzle. A negative number engages the set point prior to the center and a positive number engages the set point after the center. For Wave Height Control, depending on circumstances, it is recommended this be at most –15.00 inches (-381 mm) at 5 feet per minute (1.52 meters per minute) conveyor speed. This means turn Lambda Wave on Setpoint no sooner than 15.00 inches (381 mm) before the Lambda Wave.

End of Window
Enter in inches (or millimeters), the distance to dis-engage the operations set point from the center of the nozzle. A negative number dis-engages the set point prior to the center and a positive number dis-engages the set point after the center. For Wave height Control Standby this should be set to 0 or above depending on the circumstances.

Note: In Wave Height Control the Waves will come on full conveyor for the first PCB and thereafter use the Start of Window and End of Window. The First PCB condition is reset each time the waves are restarted or a new recipe is started.

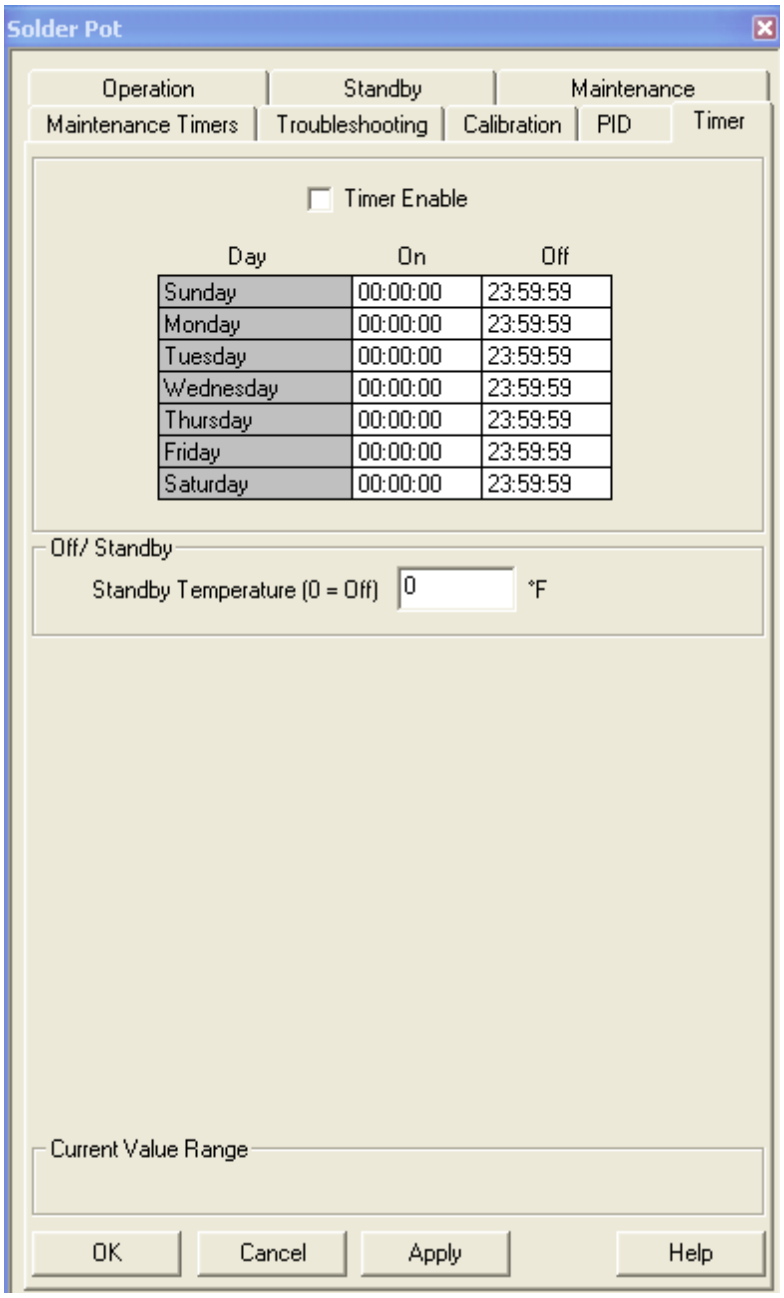
1.21.9 Timer

Timer Enable
Click in box to add a check mark, or to remove the check mark. A check mark in the box will enable the timer to control when the solder pot temperature will be controlled (ON) or not controlled (OFF).
Set for each day of the week the start time (On) and the stop time (Off)

While the timer is enabled the manual start/stop button for the operations solder temperature is not operational.

Solder Standby Temperature
The default Value 0.00 turns the Solder Pot Heaters Off when the Timer Enable is selected and the Time Period is during the Off Time.
Any other allowed value causes the Solder Pot Temperature to be controlled to the Standby Temperature during the Off Time.

Note: When the Timer is enabled and the current Time is within the Off Period, the Auto-Start will abort due to the Solder Temperature whether the Standby temperature is within Process range or not. For the Machine to be started while the Solder Timer is enabled, the current Time must be within the On Period.



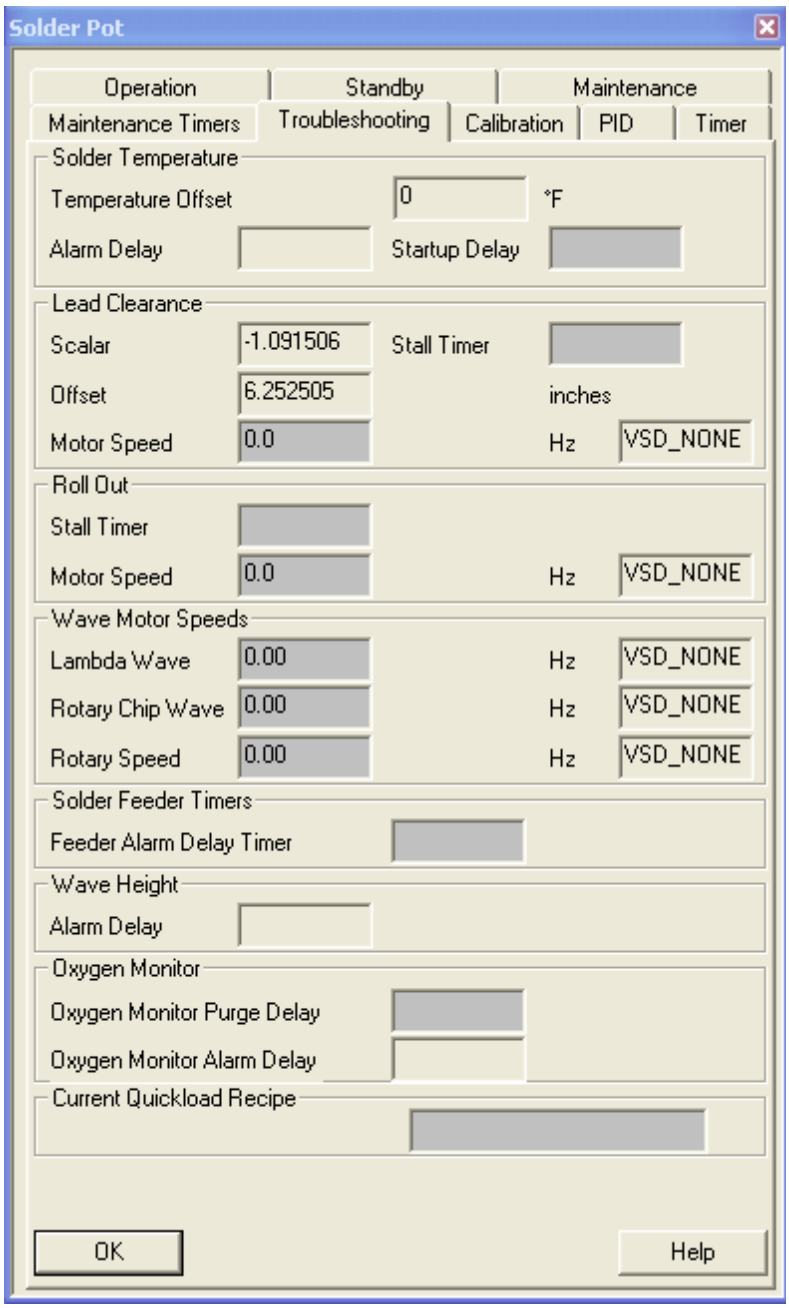
The Solder Pot **Timer** tab may be accessed via:

Menu: **Modules | Solder Pot | Timer** tab

1.21.10 Troubleshooting

The **Troubleshooting** tab contains features specifically for maintenance functions. These features should be limited to use by maintenance personnel only. This is a display of internal machine parameters that the computer is using, based on machine configuration and operation set points. If there

is a functionality problem related to any parameter pertaining to the Solder Pot, the values provided here might give the user some indication as to what may be causing the problem.



The Solder Pot **Troubleshooting** tab may be accessed via:

Menu: **Modules | Solder Pot | Troubeshooting** tab

Solder Temperature
Temperature Offset

The correction value determined during calibration

Alarm Delay
The time before alarm is enabled

Startup Delay (Lead-Free Solder Only)
20 minute Pump Protect Timer that begins Countdown as soon as Setpoint Temperature or 500°F (260° C) is achieved. Whichever happens to be lower. This timer will only operate when the Solder Pot Heaters are first turned on (via Start Button or Timer) and the Temperature at the time is less then the 470 °F (243°C) Pump Protect Temperature.

Lead Clearance
Scalar
The correction value determined during calibration

Offset
The correction value determined during calibration.

Stall Timer
The time remaining for the Solder pot to reach it's programmed Lead Clearance before a stall alarm occurs.

Motor Speed
The actual current speed, in Hz, of the Jacking motor drive.

Jacking - Drive Type
A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is listed.

Roll Out
Stall Timer
The time remaining for the Solder pot to reach it's limits of Roll Out or Roll In before a stall alarm occurs.

Motor Speed
The actual current speed, in Hz, of the Roll Out motor drive.

Wave Motor Speeds
Lambda/Contour Wave
The actual current speed, in Hz, of the Lambda/Contour Wave motor drive.

Lambda - Drive Type
A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is listed.

Rotary/Chip Wave
The actual current speed, in Hz, of the Rotary/Chip Wave motor drive.

Chip - Drive Type

A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is listed.

Rotary Speed
The actual current speed, in Hz, of the Rotary Speed motor drive.

Rotary - Drive Type
A display of VSD_NONE signifies no Variable Speed Drive Detected. Otherwise the Drive Detected is listed.

Lambda Wave Height
Scalar
The correction value determined during calibration.

Offset
The correction value determined during calibration.

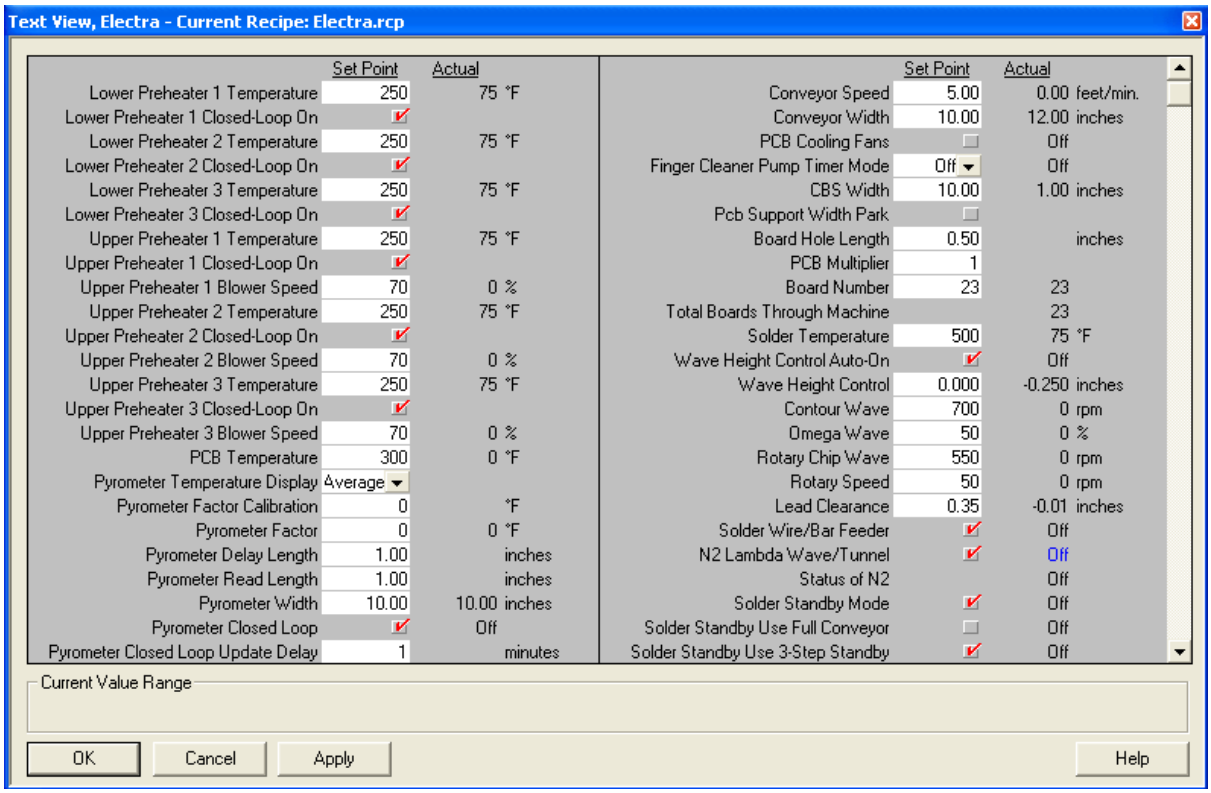
Oxygen Monitor
Oxygen Monitor Purge Delay
The five-minute Purge Delay Time, which counts down once the Nitrogen is started. Once This Delay expires the Oxygen Monitor is able to start.

Current Quick Load Recipe
Displays the recipe name that the Solder is currently on in Quick Load.

1.22 Text View

1.22.1 Text View

Text View is exactly as it is stated, a view of all machine modules with their present Set Points and parameter Actual in a text format.



The **Text View** Window may be accessed via:

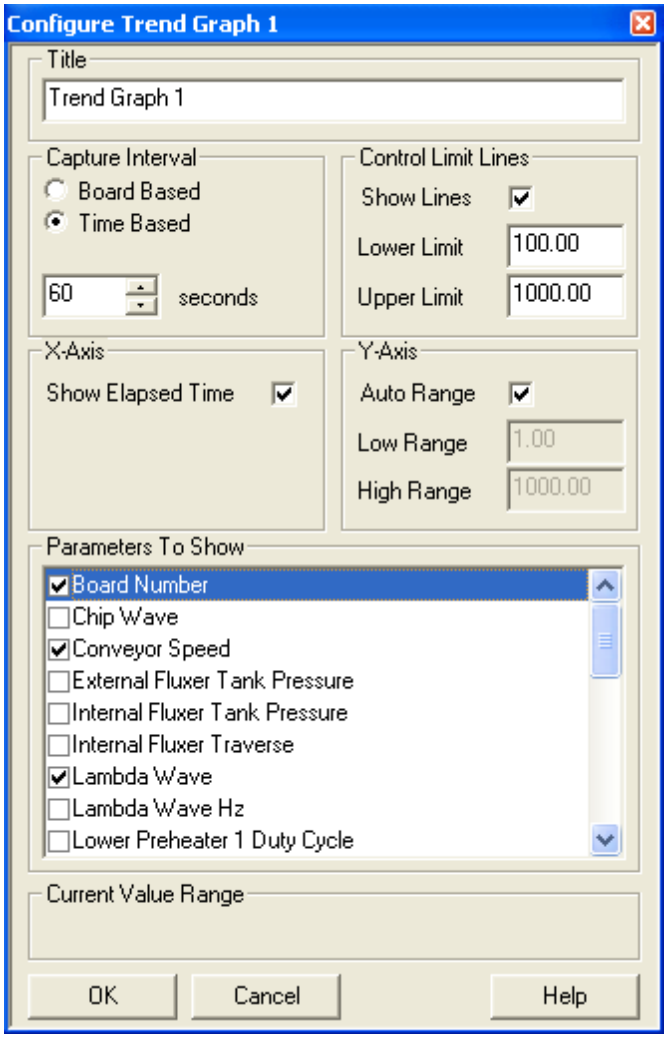
Menu: **View | Text View...**

Toolbar: 

Parameters may be monitored or changed.

1.23 Trending

1.23.1 Configuration



The **Trend Configuration Page** may be accessed via:

Menu: **View | Trending | Trend Graph 1-6 | Options | Configure**

Toolbar:  **| Options | Configure**

Title
Enter the name you wish to use for this window.

Capture Interval
Board Based
Data will be collected for the selected parameters each time the system has processed this many

boards.

Time Based
Data will be collected for the selected parameters every X amount of time.

Control Limit Lines
Show Lines
When selected Lower Limit and Upper Limit lines will appears in graph.

Lower Limit
If Show Lines is selected, put a dashed blue line at selected value. Cannot be higher than the Upper Limit value.

Upper Limit
If Show Lines is selected, put a dashed red line at selected value. Cannot be lower than the Lower Limit value.

X-Axis
Show Elapsed Time
When selected display in X-Axis the time elapsed since Trend was started.
If not selected, will display actual time in X-Axis

Y-Axis Range
Auto Range
When selected Y axis automatically range from minimum to maximum of the data accumulated.

Low Range
If Auto Range is not selected then a minimum value can be entered for Y Axis.

High Range
If Auto Range is not selected then a maximum value can be entered for Y Axis.

Parameters To Show
Make a selection of all items to be trend (Maximum 3).

1.23.2 Operation

Create New Trend
Up to six different windows can be created.
Available only if less than six windows have already been created.

Tile Open Trend Windows
Available only if one or more windows have already been opened.
Will tile all windows already opened. If clicked again it will close all trend windows if all active trends are opened.

Tile Existing Trend Windows
Available only if two or more windows have already been created.

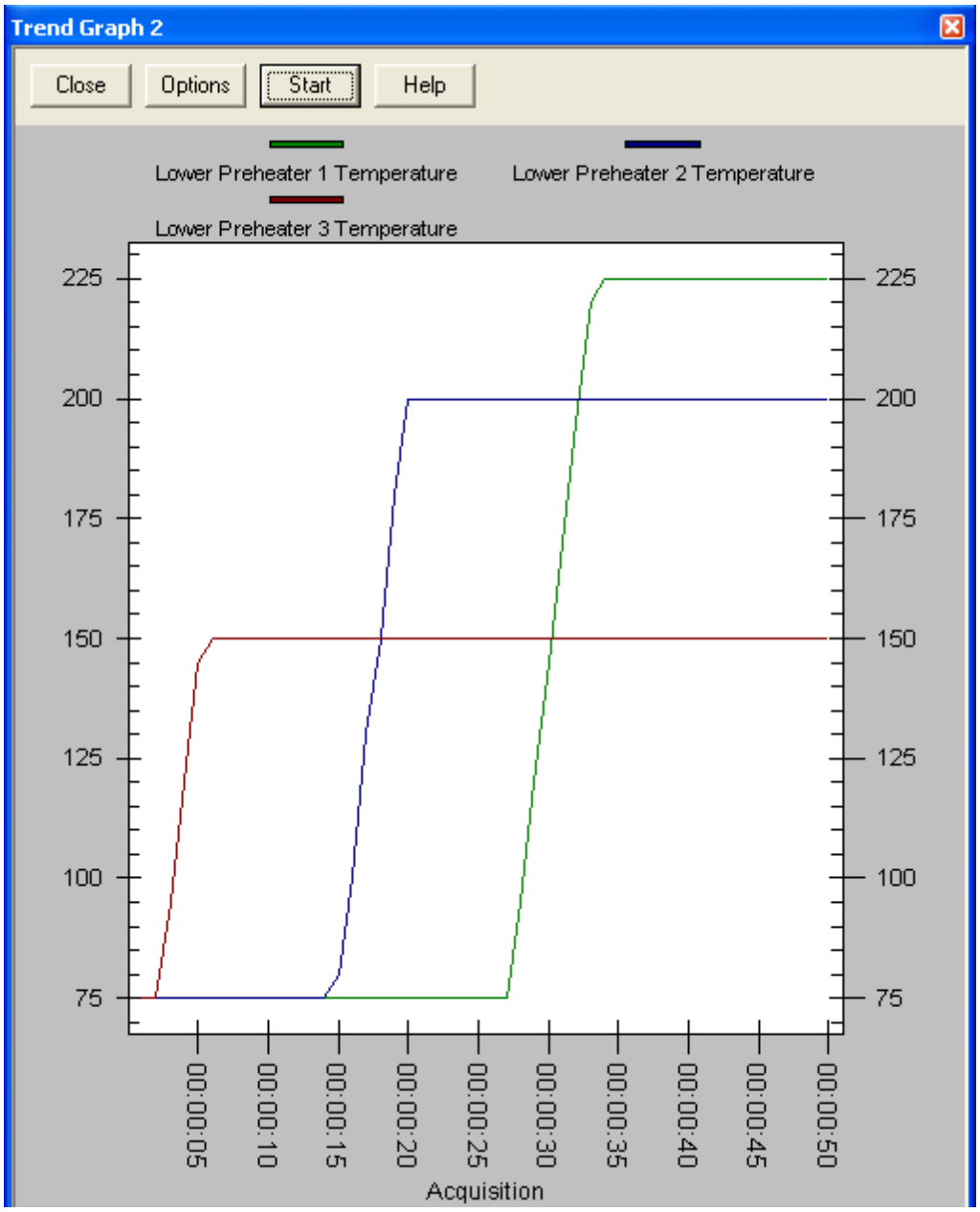
Will tile all windows already created.

***Trend Graph 1** open graph #1 if it already exists
***Trend Graph 2** open graph #2 if it already exists
***Trend Graph 3** open graph #3 if it already exists
***Trend Graph 4** open graph #4 if it already exists
***Trend Graph 5** open graph #5 if it already exists
***Trend Graph 6** open graph #6 if it already exists

***** Or the name enter in Title when configured.

NOTE: Double click on Title Bar for full view window.

NOTE: To Zoom, with mouse left button pressed, frame section to be zoom then release button. To UnZoom click right mouse button on graph.



1.24 User Interface

[Toolbar Buttons]

[Hot Keys]

[Main Screen]

1.24.1 Toolbar Buttons

 Load Recipe

 Save Recipe

 Alarms

 Process Notes

 Text View

 Logs

 Create New Trend Windows

 All Trend Windows

 Tile Trend Windows

 Logon

 Logoff

 About

 Help Topics

 Hood Lights

1.24.1.1 Hood Lights

Click on the light button to turn the machine's hood lights on and off.

1.24.1.2 About Box

The **About Box** is used to find pertinent information about the machine including the Software **Version** and Machine **Serial Number**.

Version
The version number is the Revision of Software that the machine has installed currently.

Note: It is important that the machine stays at the revision of software that the machine came with or newer. Any machines with newer options should have the revision of software required for those options to work. Older versions of software do not have these updates that may be needed for the current hardware on a machine to function properly.

Serial Number
This number distinguishes one machine from another.

1.24.1.3 Help Context

Lists Help topics.

Content
Displays Help topics organized be category. Double-click a book icon to see what topics are in that category. To see a topic, double-click it.
You can close a book by double-clicking it.

Index
Displays the Help Index. Type a topic you want to find, or scroll through the list of index entries. Click the index entry you want and the click Display.

Find
Provides a space for you to type the word(s) or phrase you want to find in the Help Topics. You can type a few characters and use the word list below to see if any words match what you type.
If you want to specify more than one word, separate them with a space. If you specify uppercase characters, then only words that are uppercase will be found. However, if you specify lowercase characters. Both upper and lowercase words will be found.
To change the search options, click Options.

1.24.2 Hot Keys

F1 Help Topics

F2 Auto Start

F3 Auto Stop

F4 Manual Mode

F5 Alarms Screen

F6 Save Recipe

F7 Load Recipe

F8 Logon

1.24.3 Main Screen

The Machine (Electra or Vectra) Icon appears at the upper left-hand corner of the window.

The Title Bar lists the name of the program, the current recipe and the user that is logged on, if any. If an asterisk follows the recipe name, the recipe has been modified but has not yet been saved. The Menu Bar is directly below the title bar. It contains menu headings with pull-down menus when clicked.

The **Icons** are used for frequent functions.

The **Manual** Button puts the system's machine modules into manual operation when clicked. When in Manual mode, each module must be manually activated via the software control panel for that module.

The **Auto Start** Button automatically starts the system when clicked. All modules with predetermined set points, start up automatically.

The **Auto Stop** Button automatically stops the system when pressed. All modules previously operating are turned off, except the conveyor. The conveyor will continue to run if there are circuit boards on the conveyor, based on the PCBs in Machine count. Once the boards are emptied the conveyor stops.

The **Hood Lights** Button turn Hood Lights On/Off

The **Minimize** Button removes the window from view but places the application on the Window's™ Task Bar as a button for multitasking. To bring the window back into view simply click the application button

on the task bar.

The **Close** Button closes the Machine software program when clicked.

NOTE: The Close Button may not be available if security is active and you have not had this function enabled.

The Status Bar (lower left hand area of the window) displays information about the program.

The Mode window displays the present mode the system is in.

The PCBs in Machine window displays the number of circuit boards presently being processed through the system.

The Alarm Window displays any alarm status

1.24.3.1 File Close

Closes the application and exit.

1.24.3.2 Minimize

To reduce an application or document window to an Icon, click  in the upper-right corner of the window, or click Minimize on the application or document Control menu. To restore the window to its previous size and location, double-click the title bar.

2 Software Revision

2.1 History

Version 3.01.0 - October 24, 2012
- "Invalid Recipe Path..." and "Active Recipe Not Found" Alarms added.
- All basic level Maintenance Timers now have four Levels.
- ServoJet OA changes made.
- Added security levels to the backup/restore operations.
- Add Omega wave, N2 tunnel, O2 analyzer and purge options to the VES and VES2.
- Help revisions made.
- Blocked Exit Sensor updates.

Version 3.00.0 - May 7, 2012
- Project VectraES 2 added to Wave II.

Version 2.14.0 - February 13, 2012
- Active Recipe Not Found, Loading Default Parameters Alarm updated.
- Chip Motors minimum speed was updated.
- Quickload was added for the Dual Head Fluxer switches tanks.
- Changes were added for the VectraES 2.

- Wide Screen added for the VectraES 2.
- The Flux Max Pressure Units Text has been fixed on the Nozzle Configuration page.
- Hood Lights moved on Toolbar.

Version 2.13.0 - November 16, 2011
- 1D/2D Barcode added.
- Added Barcode Association.
- Configurable Serial COMM Settings have been added
- New minimum speed for rotary chip wave is 550 RPM.
- Quickload Recipe Shown on the Troubleshooting Pages.
- Data Log Tri-state Check-Box added for the Parameters List.
- Create New Recipe function was added to Global Recipe Edit.
- Missing Active Recipe Path Alarm added.
- No Watchdog Alarm added.
- Machine State is now seen during Data Logging.
- Unit Range Text and Types updated.
- SMEMA Board Available Upstream not scanned Alarm added.
- Added two default solder pots with configurable settings.

Version 2.12.0 - November 02, 2011
- Revised Watchdog Driver installed to work with previous computers.
- Increase Delay of Watchdog Timeout.
- Changes to I/O Timing.
- Preliminary Dual Head ServoJet Option added.

Version 2.11.0 - November 3, 2010
- Corrects possible Communication issues with VS Drives, especially during communication timeouts.
- Corrections to UPS operations when Boards are in the machine.

Version 2.10.1 - August 17, 2010
- Added Nitrogen Tunnel Offset, which adjusts minimum Lead Clearance dependant on the Offset value.
- Adjust J1000 Drive Parameters for Jacking to incorporate a 24" Solder Pot.

Version 2.10.0 - July 24, 2010
- Adjusted J1000 Jacking Motor Parameters for ElectraEC3.
- Set Rotary Chip Frequency to 0.0 if Rotary is off.
- Changed Roll-out and Jacking Motor Parameters to correct installation of new J1000 Drives on the ElectraEC3.
- Changed Motor Parameter to prevent Coasting to a stop during an E-Stop operation.
- Modified Out of Range Error function to return parameter to previous Setpoint.
- Fixed software lockup when performing a Maintenance Timer task when event Log is already opened.
- Corrected an issue with Barcode PCB release in conjunction with SMEMA, using the SMEMA Board Spacing value.
- Stop all Motor Drive Communications except the Shared Motor Drive during a UPS Power Fail Alarm.

Version 2.09 - May 3, 2010
- Correction to Jacking and Rollout J1000 VSD motor parameters.
- Start Datalog immediately after Datalog configuration, even when Machine Status is not "Stopped".
- Display "Data Logging Active" in lower Status Bar when Data logging is configured and machine in any other state other than "Stopped".
- Added USB Watchdog Support and new Fluxer Hasp Drivers.

Version 2.08 - January 4, 2010

- Modified Heater High Temp Alarm Debounce.
- Corrected issue of displaying the third upper preheat animation.
- Added Machine State changes to the Event Log.
- Correction of an issue with the Datalog folder being deleted when the data is being saved. The Default Datalog folder under the Machine Program Folder is utilized and the file is recreated with new data.
- New J1000 Variable Speed Drive Motor controllers added to software.
- Correction to ElectraElite Solder Pot Jacking FLA Rating on J7 Variable Speed Drives.
- Add function to Remove Last Board on Conveyor Maintenance Page.
- Modified Time Based Data Logging to include correct Relative Board count and the Current Barcode Scanned.
- Save Relative Board Count when changing Recipe, when not Saving other recipe Parameters.

Version 2.07 - September 9, 2009

- Modified Event Log and Maintenance Log to save file with Date and Time Stamp added to name when log is full.
- Changed Datalog Configuration maximum file size Choices to 1.0 mb and 10.0 mb to prevent Datalog file from becoming too large.
- Changed the Datalog filename renaming format when File reaches maximum size or configured log items change. The Old file is renamed with a the current Date and Time Stamp at the end of the configured filename. The New File is created with the configured filename only.
- Corrected a possible issue of Opening another application while Auto-Start Status Screen is open and returning to the Machine Software after Status Screen has closed due to Machine being Ready.

Version 2.06.1 - June 29, 2009

- Added detection of open Solder Pot Window during Auto-Start if the Hot Knife is configured and selected to run for the current Recipe. This activates an alarm when the Hot Knife fails to Start due to the open Window.
- Added "Use Entire Message for Recipe" Checkbox on the Barcode Operations Page. Allowing any length Barcode as long it is less than 32 characters to be used for the Recipe selection.
- Display Next Recipe in Queue in Title Bar when Running the Barcode Option in normal Mode and waiting for previous boards to clear before loading the next recipe, last scanned by the Barcode Reader.

Version 2.06 - May 4, 2009

- Modified Lead-Free Solder configuration.

Version 2.05 - February 12, 2009

- Added ServoJet Flux Flow Monitor Option.
- Fixed issue of Changing Solder Pot Temperature Setpoint when the Solder Timer is Active.
- New S2600.dll file added to project.
- Solder Nitrogen Tunnel/ Contour changes and Oxygen Monitor Standby LED changes.
- Disable Watchdog during entire Configuration Change Sequence after selecting OK.
- Add additional Log Events with Recipe Path included.
- Increased Machine Length Value for VectraES without Rail Extensions, to allow for correct Board Exit Sensor Location setting.
- Add Wave Height Option to VectraES.

Version 2.04 - October 3, 2008

- Fixed issue of Configuring Heaters with Special High Temp Options during initial Startup.
- ServoSonic Spray Segment width moved from Configuration to Operations page as a Recipe Parameter.
- ServoJet Valve Factor disabled when Selective Option active for the Current Recipe.
- ServoJet Selective Recipe download enabled when Barcode Quickload selected.

Version 2.03 - August 1, 2008
- Added ServoJet Servo Speed out of Tolerance Alarm. (Requires ServoJet Controller Software version SJRB7.1)
- Modified ServoSonic Maintenance functions to allow Ultrasonics and Flux and Air Nozzle to be turned on at the same time individually.
- Adjusted maximum Lead Clearance for Electra EC3 with Tunnel.

Version 2.02 - June 30, 2008
- Add ServoSonic Spray Fluxer Option.
- Add ServoSpray Dual Flux Head/ Dual Tank option.
- Changes to ServoJet Selective communication
- Resend Message to Fluxer after a new Recipe is loaded after a Delay.
- Fixed issue with Wave Height Restriction values on the Solder Configuration Page while configured for Mixed Units.
- Send new message to the ServoJet Fluxer as soon as a Conveyor Speed or Width Setpoint change is made.
- Disable Space bar on Dialogue Boxes to prevent activation of Start Buttons.

Version 2.01 - March 05, 2007
- Added Oxygen Monitor Auto-Purge option.
- Added Oxygen Monitor Purge Time to Solder Configuration Page.
- Added support for new USB Fluxer Hasp Key to replace Parallel Port Key.

Version 2.00 - December 19, 2007
- Released the ElectraElite software platform.
- Increased the solder bar feeder on timer from 5.0 to 8.0 seconds.
- Disabled the convection blowers from turning back on, due to temperature, during a solder spill alarm.
- Disabled the start button and added a tool tip for a Hardware High Temperature condition for the solder pot heaters, preheaters and hot air knife.

Version 1.11 - November 05, 2007
- Hide or disable display of certain ServoJet and Opti II Parameters dependent on Recipe Settings on Flux Operations and Text View Pages.
- Changed minimum Lambda RPM Boost Time to one second.
- Added ServoJet Dual Flux Tank Control.

Version 1.10 - July 27, 2007
- Fixed display of ServoJet Max Stroke Factor on Text View and Global Recipe Edit Pages.
- Added Special configuration of Lead Clearance for Return Conveyor Special.

Version 1.09 - April 4, 2007
- Added Updated s2600.dll to correspond with new Sensoray Analog I/O module.
- Updated ServoJet Auto Purge Configuration checkbox to default to selected.
- Fixed issue with Solder Pump Protect Delay when starting Machine program when Solder Pot Heater Timer is not Active and Solder Pot temperature is already above the Pump Protect Temperature (Lead-Free Solder Only).
- Fixed issue of configuring a Foam Fluxer. This was added in Version 1.07.

Version 1.08 - March 8, 2007
- Moved the lower convection blowers speed control outputs from analog board #2 to board #1 on the VectraES only.
- **NOTE:** This requires a hardware change on the VectraES before upgrading to this revision.

- Added 20 minute extended Solder Pump Protect during initial Solder Pot Heat-up when starting Solder Pot Heaters and the initial start Temperature is less then the Pump protect temperature. (Lead-Free Solder Only)

Version 1.07 - February 13, 2007
- Added ServoSpray Air Knife Option.

Version 1.06 - December 20, 2006
- Added VectraElite 20" Width Option.

Version 1.05.5 - December 4, 2006
- Changed Motorized PCB Support Width to work with Manual Conveyor Width.

Version 1.05.4 - November 29, 2006
- Set Lower Blower Fail Detect Alarm Actual Off when Stopping or Starting Blowers.

Version 1.05.3 - November 20, 2006
- Fixed Solder Pot Roll-out Over Torque Alarm that was disabled in Version 1.05.1.
- Fixed VectraES Roll-In Alarm, "Solder Pot at In Limit but Not at In Limit Prox".
- Turn Off Convection Blower Status if a Blower Fail Detect alarm is Active and the Blowers were not turned on Via Maintenance Mode.

Version 1.05.2 - October 31, 2006
- Removed Preheat Configuration Selections that are currently unsupported for the VectraES.

Version 1.05.1 - October 11, 2006
- Fixed issue with Preheat PID on VectraES.
- Corrected a problem of adding or removing the Extended Rails on a VectraES when pressing both the Apply and OK buttons on the Conveyor Configuration Page.
- Added Preheat Zone 1 Temperature Setpoints to Barcode Quickload Option.
- Changed Variable Speed Drive Parameters for Conveyor Motor.

Version 1.05 - August 22, 2006
- Released VectraES Beta Software.
- Added support for the solder pot roll-out motor on the ElectraElite platform.
- Fixed issue of Running Standby Boost Speed without Wave Height configured.
- Fixed problem of having Two Spray Fluxers configured, both requiring a Hardware Key.
- Change Preheat Blower Fail Detect Alarm to be non-configurable and Always set to Soft-Stop.

Version 1.04.3 - August 17, 2006
- Repaired an issue of timing and Incoming Board Detect Sensor Input on the leading edge of the board.
- Fixed issue using Lambda Wave RPM Boost when Wave Height is not configured and Standby is used.

Version 1.04.2 - June 29, 2006
- Changed Minimum Preheat Blower Speed to 60%.
- Fixed issue of Running Solder Waves in Full Conveyor without Wave Height Configured.

Version 1.04.1 - June 2, 2006
- Added Lambda Wave RPM Boost.

Version 1.04 - May 25, 2006
- Changed Machine Executable, Folder and Config File names from Vectra to VectraElite.

- Added Quick Clean and Auto-Solvent Purge Options to the ServoJet Fluxer.
- Decreased Default Air Purge Duration to 3 Seconds and Increased minimum Tank Pressure to 15 psi on the ServoJet Fluxer.
- Reduced Solder Pump Standby Minimum to 375 RPM's.
- Added Finishing changes to release the ServoSpray Fluxer.

Version 1.03 - May 8, 2006

- Repaired issue of Solder Timer Standby Temperature while in Metric Units.
- Corrected High Temperature Alarm Setting for Upper HVC Preheat.
- Fixed issues with saving Exit Photocell, Solder Wave and HAK Distance from Incoming PCB Detect Setpoints.
- Added Offset from PCB Detect Configuration to allow movement of this sensor.
- Changed Preheat Names as displayed on the Heater Configuration Page.
- Fixed Fluxer Configuration Page when an Optima is Configured for the choices for the Stroke Length.
- Fixed ServoJet and ServoSpray Nozzle Refill Pulse and Cleaning Liquid Pulse Setpoints while in Metric Units.

Version 1.02.2 - April 10, 2006

- Fixed Conveyor Speed at 1 foot a minute.
- Allow the Pot to roll out with a Tunnel, when at the Lower Limit and a Low Solder Temperature.

Version 1.02.1 - March 22, 2006

- Corrects issue with FDC Actual Flux Temperature Display.

Version 1.02 - March 15, 2006

- Wave Height corrected to allow changing From Lambda RPM to Wave Height Control while in Auto Mode. Fixes issue of Displaying Wave Height after changing the Lambda Setpoint by more than 20 RPM's and controlling the Pump in RPM Mode.

Version 1.01 - February 01, 2006

- Changed Encoder Input from Mono Clock to Quadrature x4.

Initial Release - Version 1.0 - January 24, 2006

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