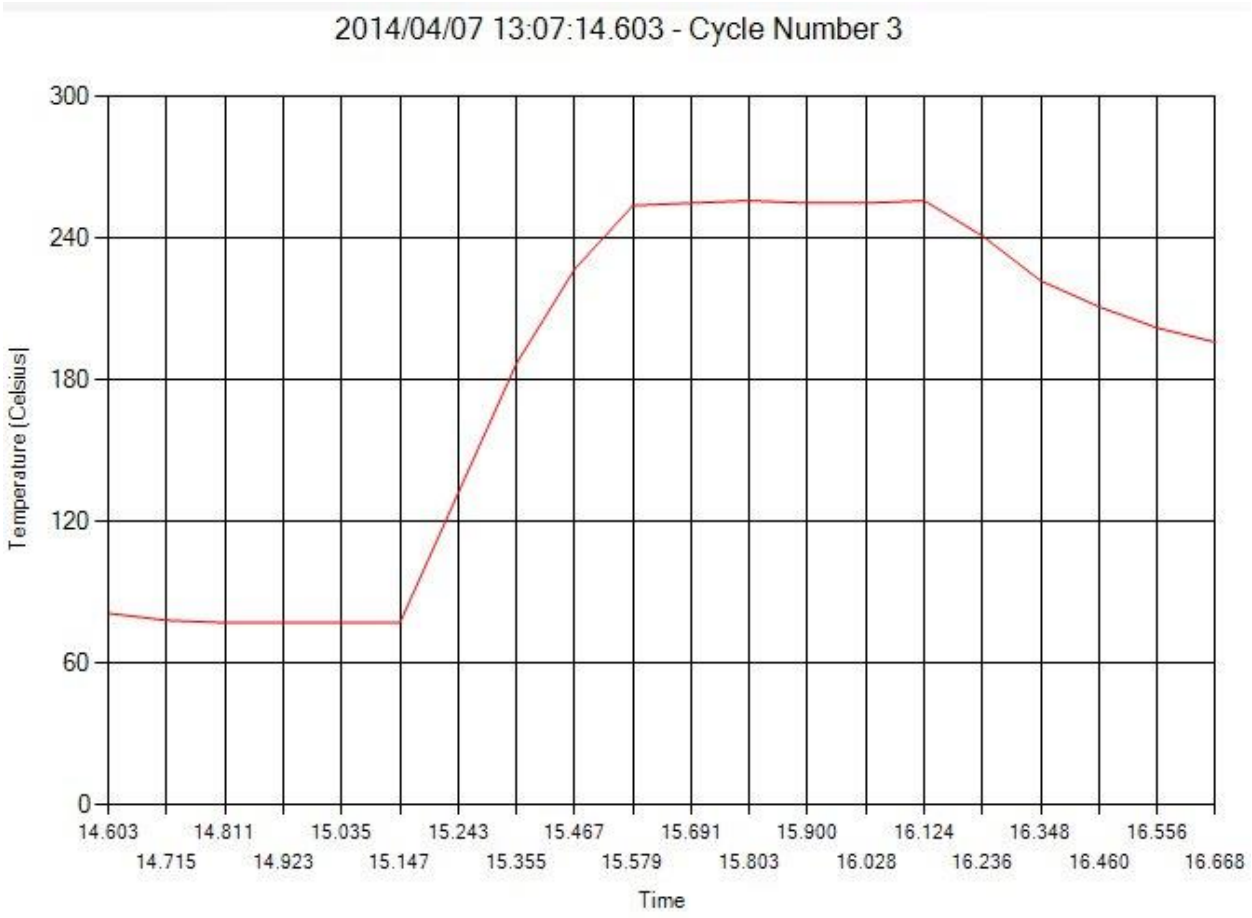
USER MANUAL
PIREG COM TEST
Data Acquisition Software



Data Acquisition Software

This page intentionally left blank

1. Contents

2. Introduction

"Pireg Com Test" is a multi-function software utility built specifically for T*O*S*S heat seal controllers. The software allows the user to manage the controller connection, configure the controller, view and store configuration and heat seal operation data from the controller. The file logging capability allows the user to monitor and maintain the qualitative integrity of the heat seal process. While in operation each heat seal cycle is numerically identified, and time/temperature data points are recorded to a file. These files can then be reviewed inside the utility to view heat seal history. This logged time/temp data is stored in .CSV file to facilitate export to other software. Connection to the controller is via a USB cable connected to a Microsoft Windows PC

3. Requirements

1. Windows XP or greater.
2. .NET Framework 4.0 or greater.
3. Resolution 800 x 600 minimum
4. USB A/B cable.
5. USB connection point.

At present the software appears to run properly on Windows XP at 800 X600 dpi. However, Microsoft officially stopped support for Windows XP in April of 2014. Future compatibility with Windows XP cannot be guaranteed. Users are encouraged to upgrade to the minimum requirements.

4. Installation

The software can be installed on a computer with or without being connected to a heat seal controller. Unzip the setup program into a directory and double click “setup.exe” to start the installation.

The installer will guide you through the installation process. The only interaction is to select the location for the installed files and to select who can use them. (Figure 1.)

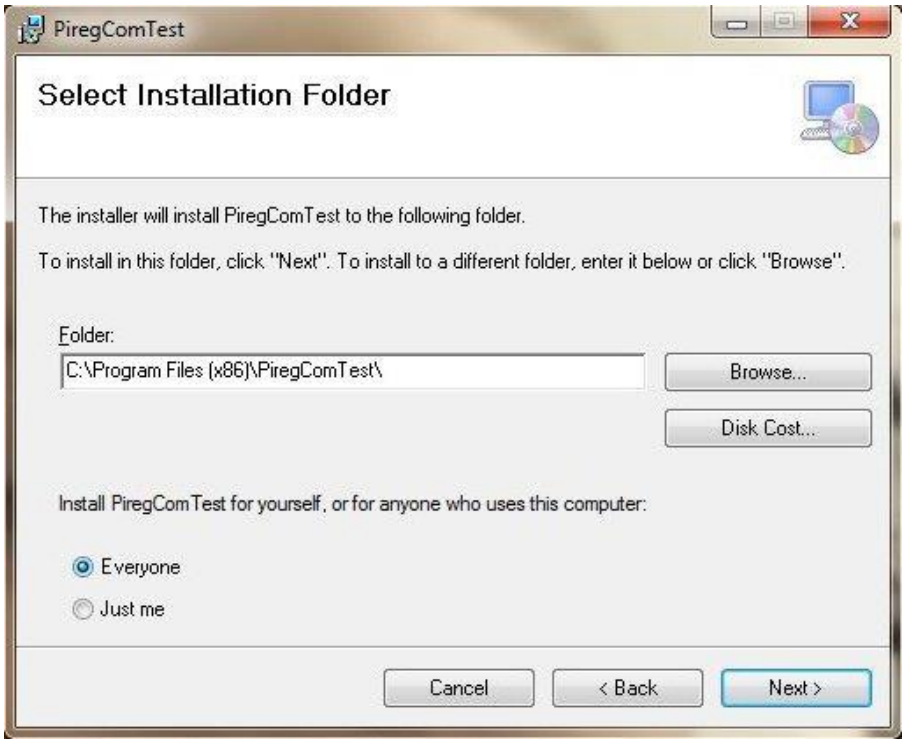


Figure 1

5. First time startup and operation

When the software is run for the first time the software will most likely be in disconnected mode if the comport does not match. The Comport will need to be changed to the appropriate comport in order to connect.

Figure 2

6. Operating

When attempting a connection to a heat seal controller first thing is to connect the heat seal controller to the computers USB port and wait for the drivers to completely update.

When the drivers are finished updating a message will appear that the device is ready to be used. The computer will install a universal Comport driver and automatically assign a comport unique for each controller that you plug into the USB port.

Start the software and launch the program. Setup the appropriate comport.

Figure 3

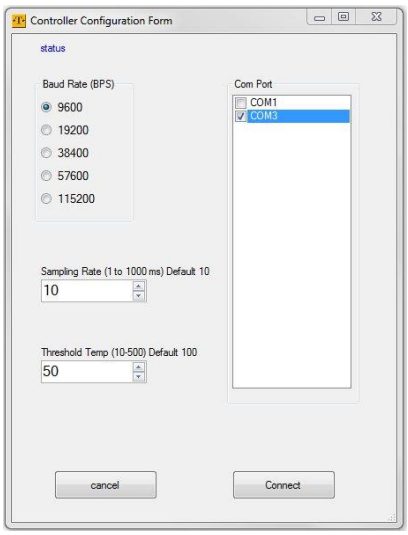


Figure 4

A list of all active comports will be displayed in the comport window. Select the appropriate comport here.

Select a baud rate. This will affect the data collection. Setting it too low could result in a slower record speed.

The sample rate is the speed at which the data is sampled in milliseconds. This directly corresponds to the speed on the graph as well as the data collection speed.

Threshold is the trigger point in which the software goes into sample mode. Above the Threshold the data will be collected in its entirety. Below the threshold like data points will be discarded. This is used to prevent the data file from becoming to large. When data is collected it is compared to the previous data point. If it is identical it is not recorded. If it is off by 1 degree it is logged into the data file.

Pressing connect will connect to the heat seal controller if it can establish a connection.

If it cannot connect the following message will be displayed (Figure 5)

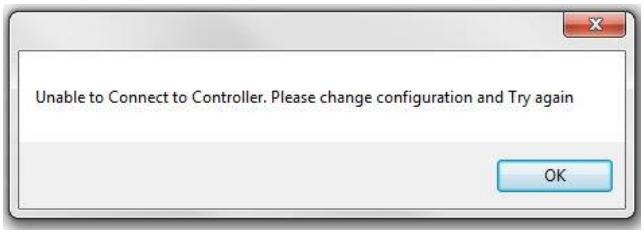


Figure 5

When connected the following screen will be displayed.

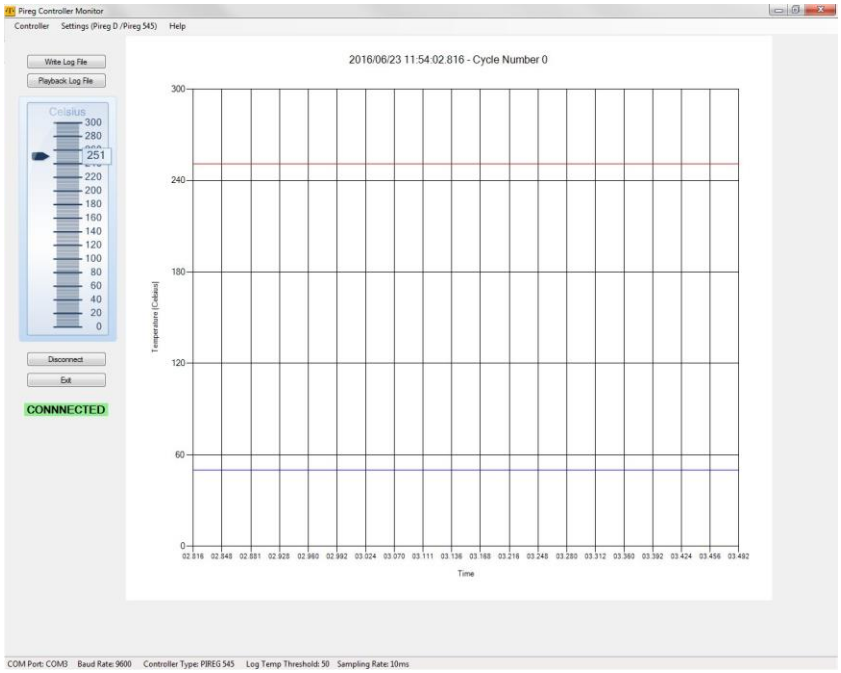


Figure 6.

The main graph is a representation of the actual average temperature as read from the heat seal controller. The red line is the heat profile. The blue line is the Threshold.

Disconnect will put the software into disconnected mode.

Displayed across the bottom is all the settings from the connection menu.

The graph on the left is the real time temperature as read from the heat seal controller.

The help tab displays the version of the software.

“Write Log file” will open a window and prompt you to enter a filename and location for the trend file to be recorded. When Open is clicked the data will start recording to file.(Figure 7).

The program will not allow an over write. If a file already exists it will need to be deleted before the file can be used.

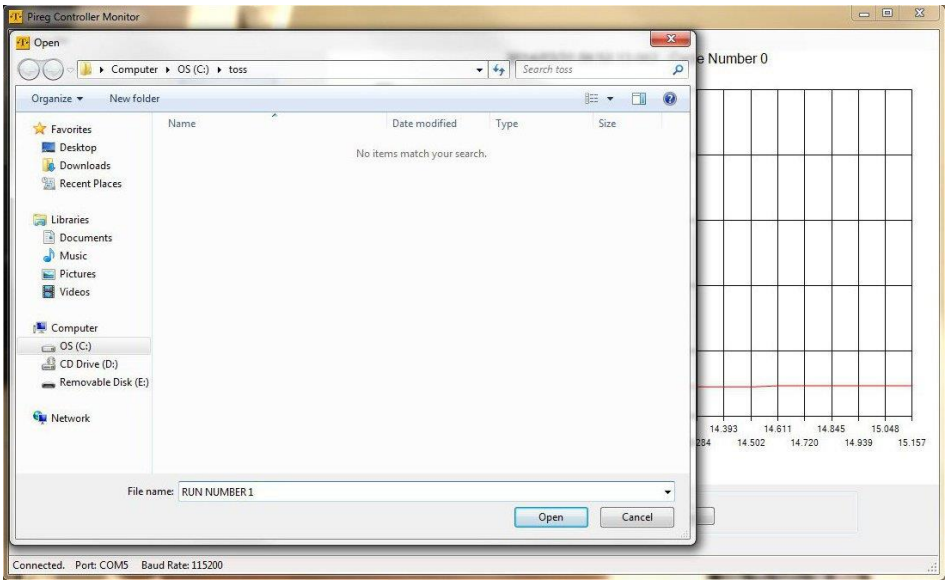


Figure 7.

When Playback Log File is clicked a window will open to prompt you for the file location and will load the previously recorded trend file. (Figure 8)

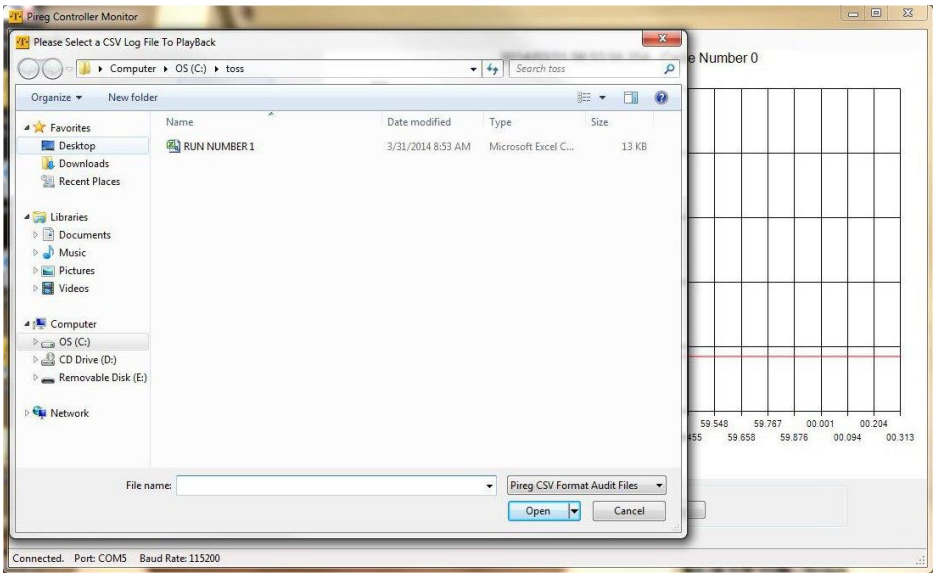


Figure 8.

When playing back a previously recorded log file the buttons on the bottom are very useful.

Stop and Play starts and stops the animation playback. <<< >>> These are page left and right. << >> these are fine adjustments.

When the mouse is moved over the curve the temperature is displayed for that point as in Figure 9.

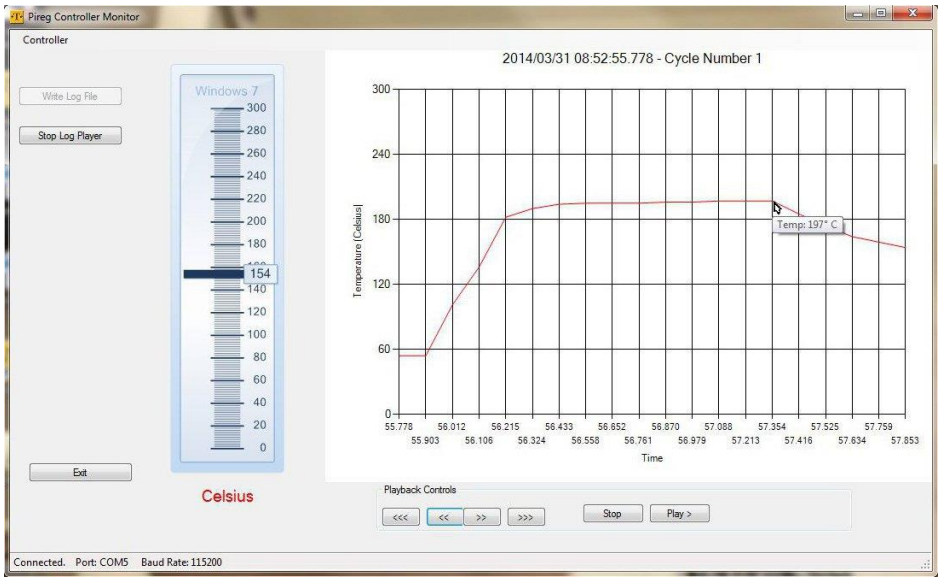


Figure 9.

The controller version can be retrieved using the controller version button.

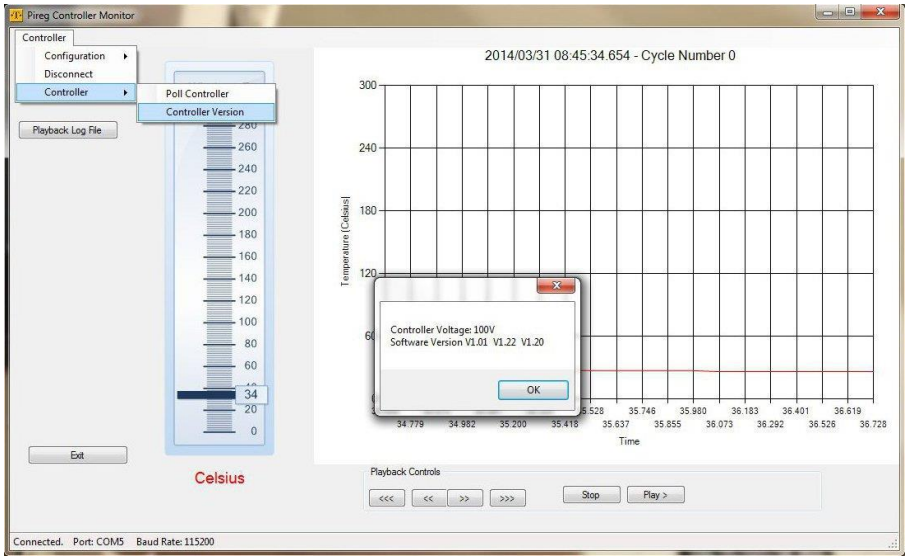


Figure 10.

When the Heat seal controller is reset, or connection is lost the software will go into error recovery mode. The program will try to re-establish a connection 50 times. If it succeeds it will pick up right where is left off. If it fails it will switch to the disconnected state. (Figure 11)

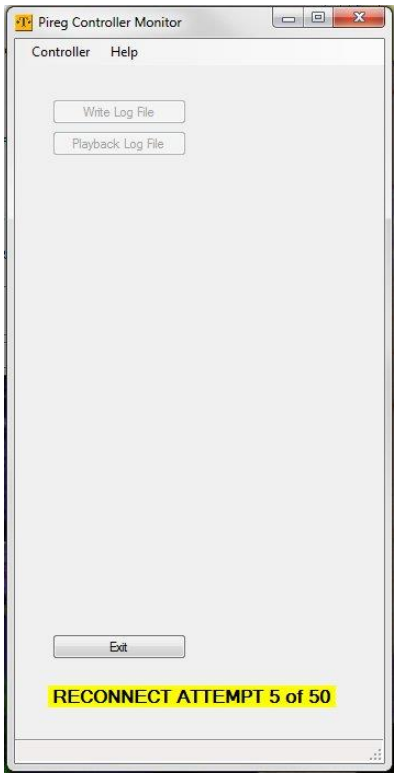


Figure 11.

When the controller goes into alarm, the diagnostic code can be retrieved from the controller through the use of the poll controller button. See Decoding Controller State.

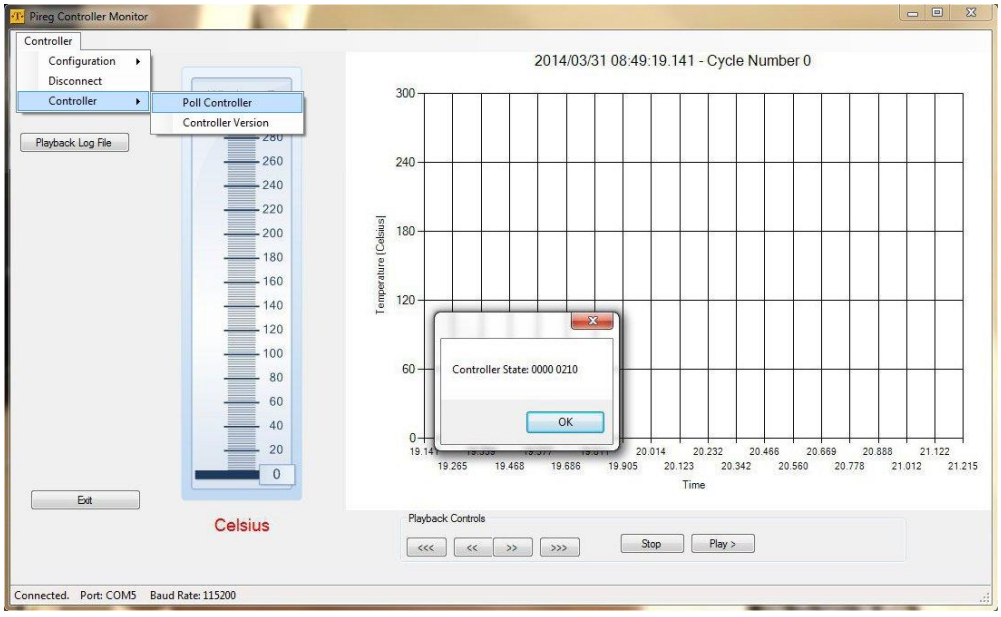


Figure 12.

7. Settings Pireg D/ Pireg 545

All of the Pireg 545/D settings can be backed up and restored with this feature

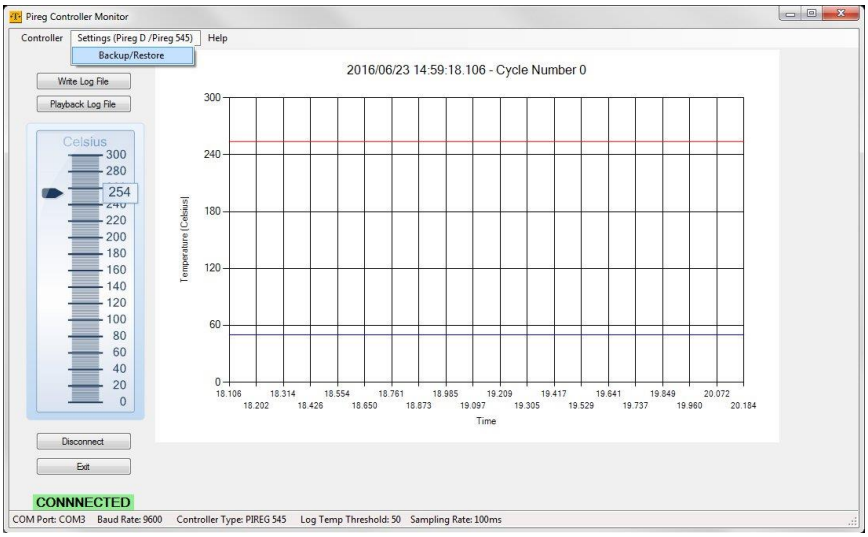


Figure 13

Backup and restore window.

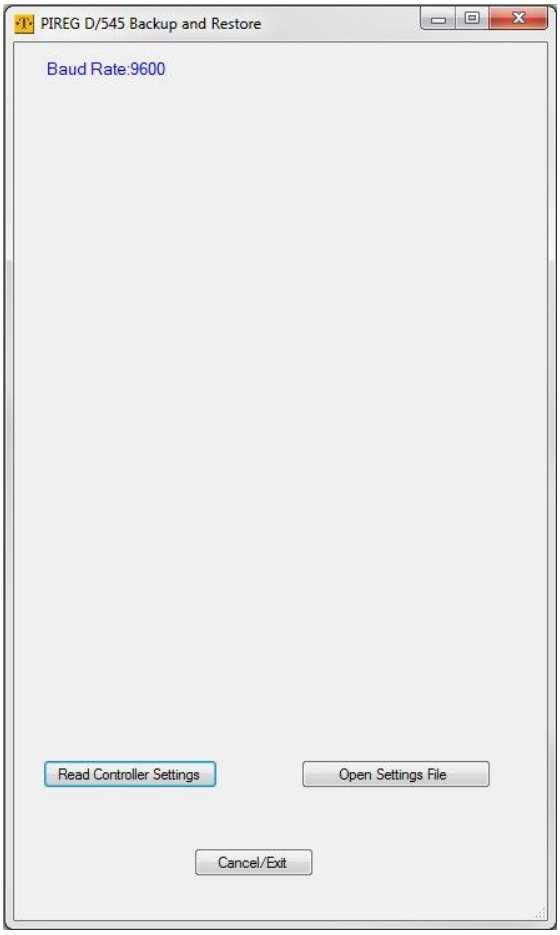


Figure 14

Read controller settings acquires all of the settings from the Heat seal controller.

Open Settings File will restore saved settings to a heat seal controller.

8. Backing up configuration 545/D

Once read controller is pressed the copied configuration from the heat seal controller will be displayed for saving. Pressing save controller settings will store the read settings into a file of your choice.

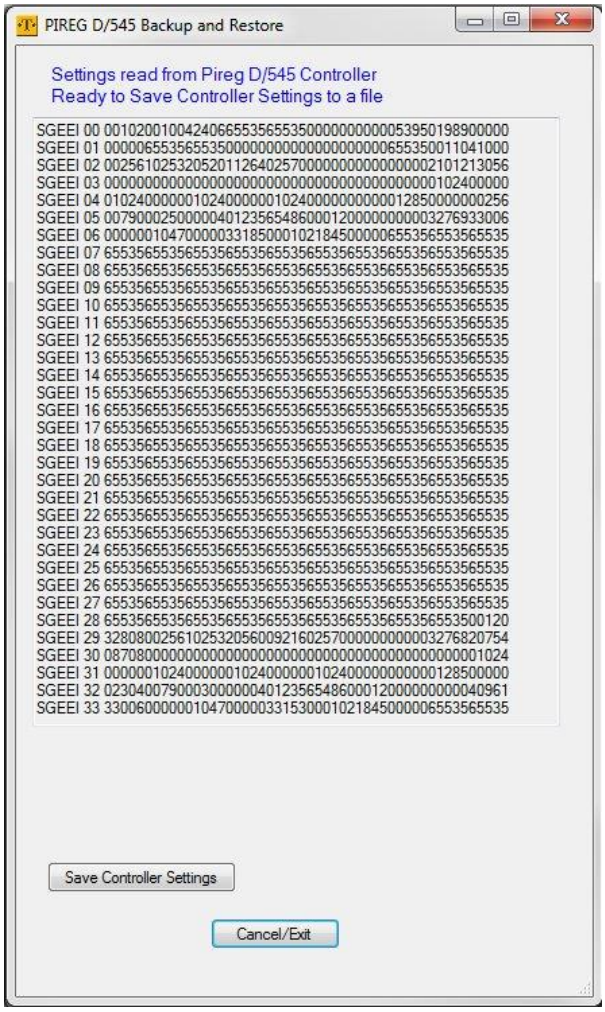


Figure 15

9. Restoring a configuration 545/D

If an improper setting file is chosen for restore the software will throw an error and return to the main operating screen. If a proper file is selected pressing Write settings to controller will write the configuration to the heat seal controller.

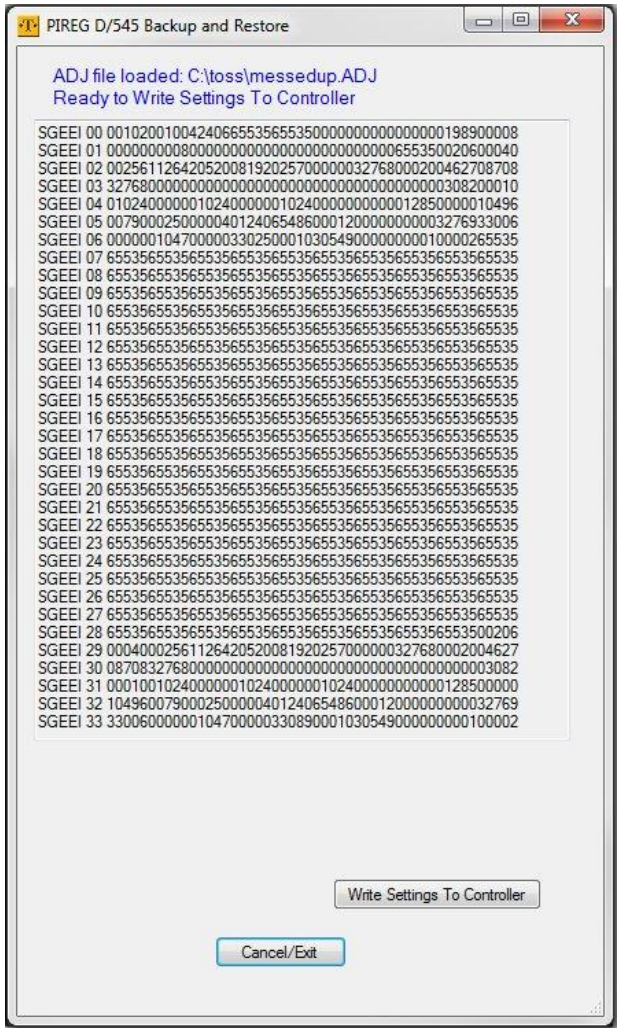


Figure 16

10. Pireg C

When a Pireg C is connected the main screen looks a little different in that it has a settings tab for manipulating the settings for the Pireg C

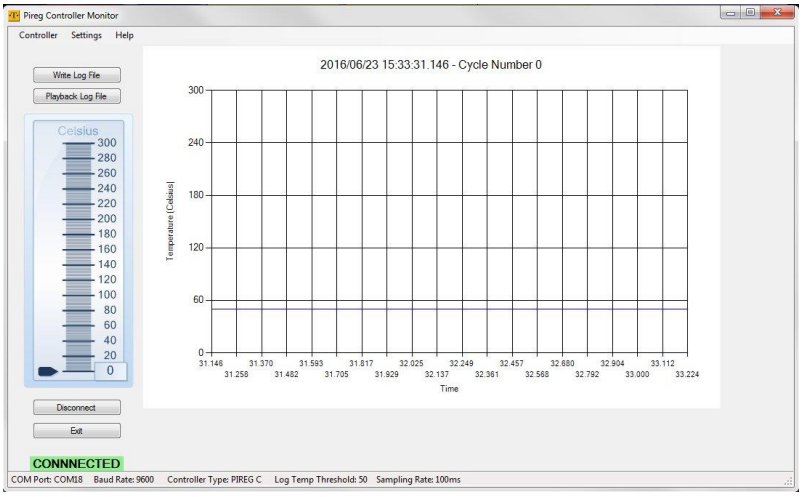


Figure 17

The Controller tab located top far left (Figure 18) has a number of options assigned. The Configuration and Connect tab will bring up the main controller configuration form described earlier. This will allow you to make desired changes to the controller connection.

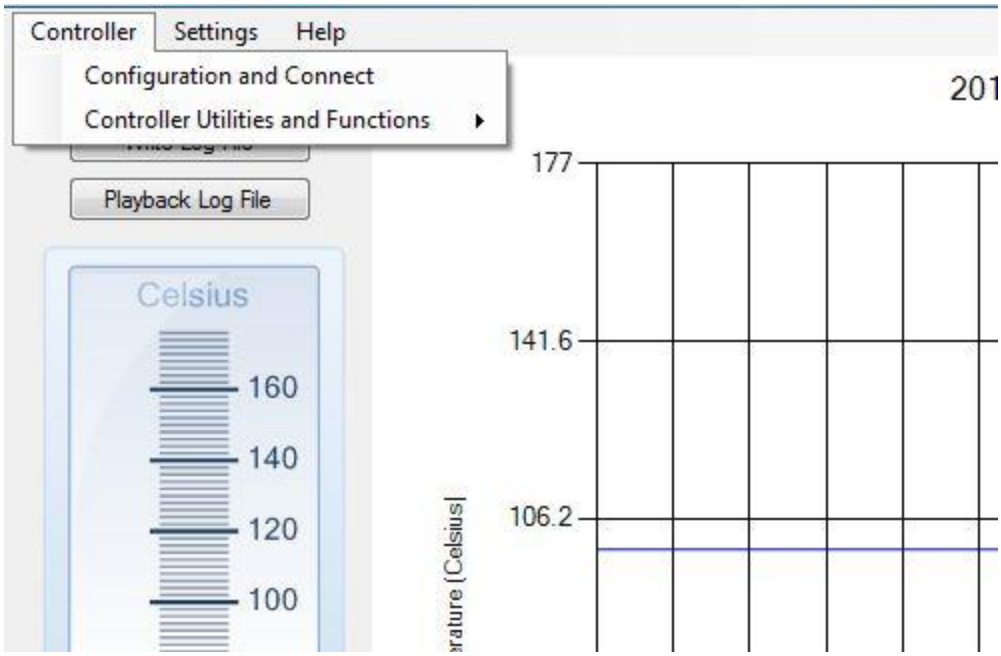


Figure 18

The Controller Utilities and Functions will bring up another tab list (Figure 19)

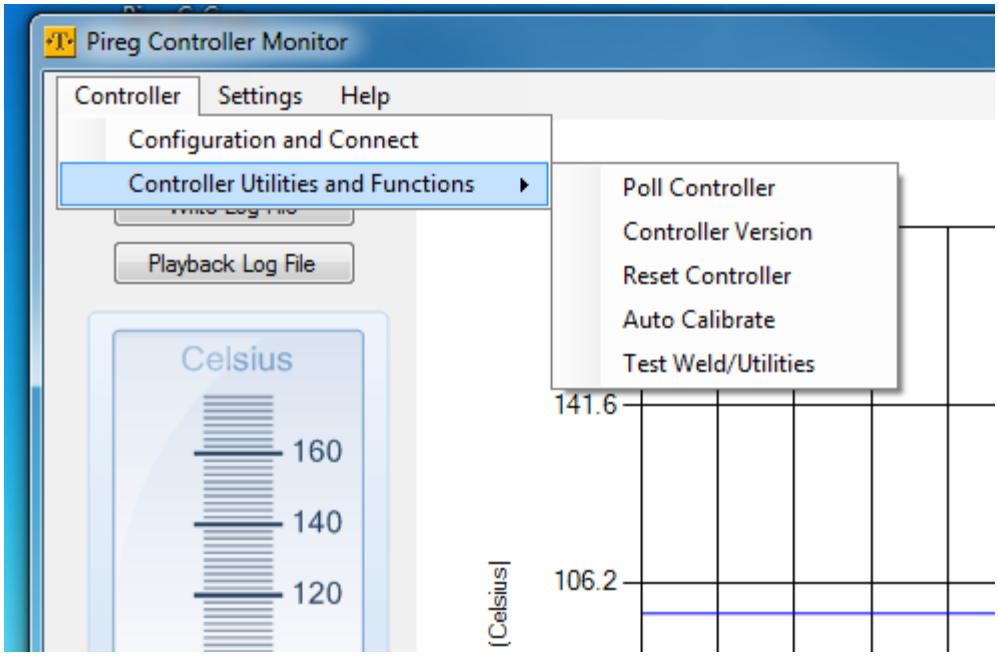


Figure 19

The Poll Controller option returns the current controller state (Figure 20).

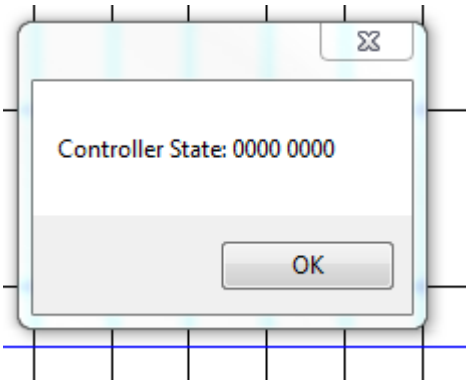


Figure 20

The Controller Version Tab returns the current Controller Version (Figure 21)

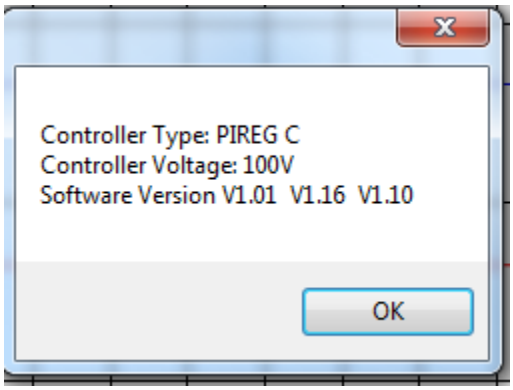


Figure 21

Reset Controller returns the controller to Factory defaults

Auto-Calibrate performs a complete calibration of the controllers

Test/Weld Utilities Provide the capability to test varying time temperature settings on the controller.

The user may select the Settings tab from the Main form. This displays a single drop down option of Adjust Settings (Figure 20 above). This selection opens the Pireg C Settings form shown below (Figure 22).

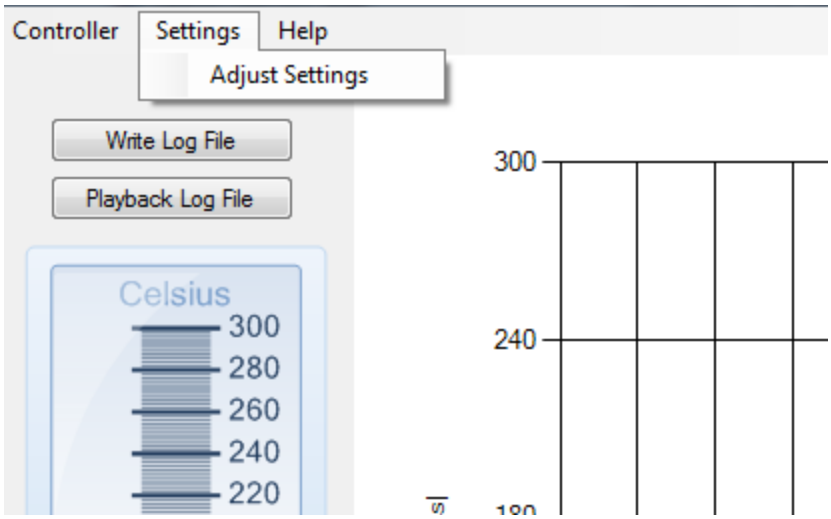


Figure 22

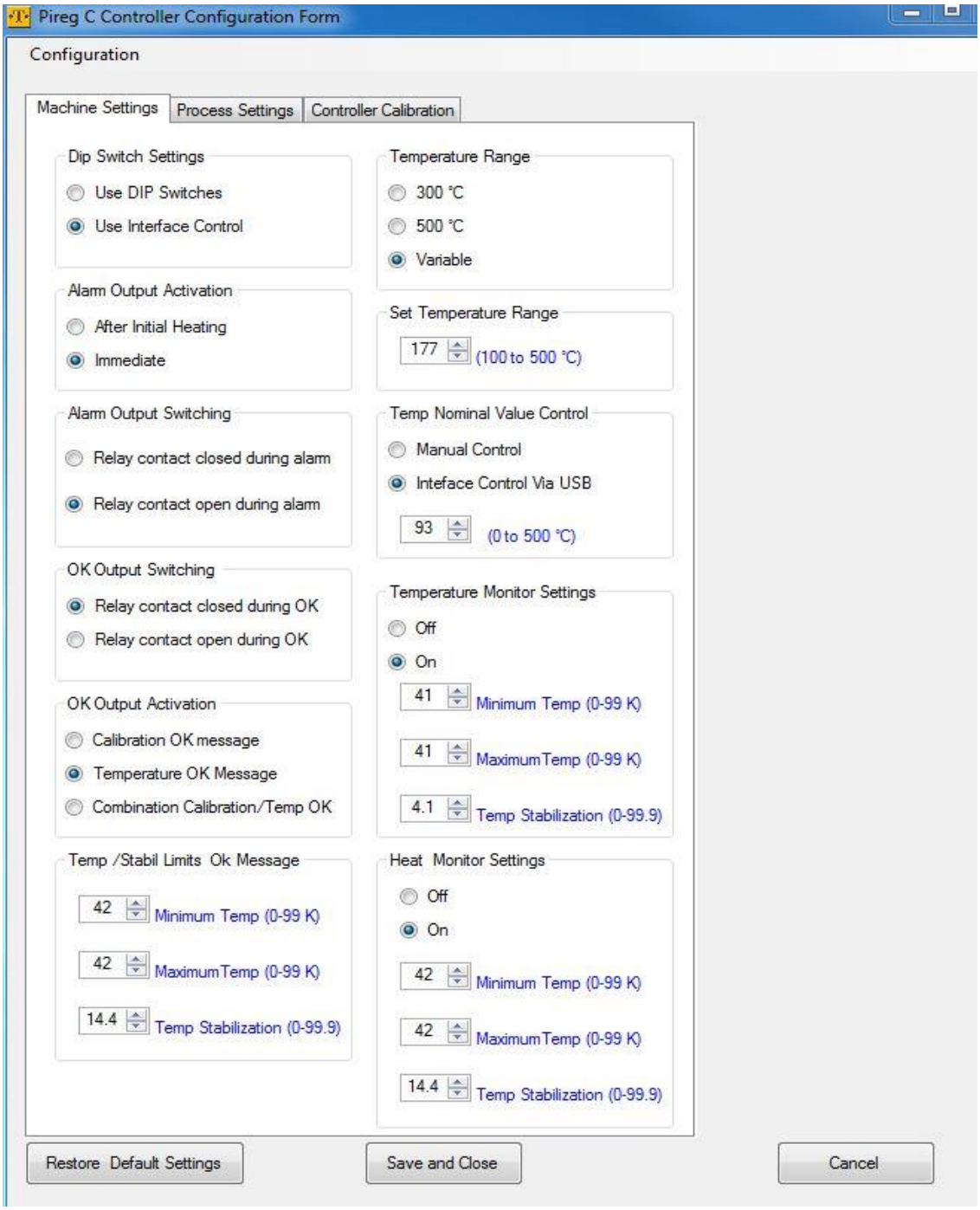

Pireg C Controller Configuration Form
Configuration
Machine Settings
Process Settings
Controller Calibration
Dip Switch Settings
Use DIP Switches
Use Interface Control
Alarm Output Activation
After Initial Heating
Immediate
Alarm Output Switching
Relay contact closed during alarm
Relay contact open during alarm
OK Output Switching
Relay contact closed during OK
Relay contact open during OK
OK Output Activation
Calibration OK message
Temperature OK Message
Combination Calibration/Temp OK
Temp /Stabil Limits Ok Message
42 Minimum Temp (0-99 K)
42 Maximum Temp (0-99 K)
14.4 Temp Stabilization (0-99.9)
Temperature Range
300 °C
500 °C
Variable
Set Temperature Range
177 (100 to 500 °C)
Temp Nominal Value Control
Manual Control
Inteface Control Via USB
93 (0 to 500 °C)
Temperature Monitor Settings
Off
On
41 Minimum Temp (0-99 K)
41 Maximum Temp (0-99 K)
4.1 Temp Stabilization (0-99.9)
Heat Monitor Settings
Off
On
42 Minimum Temp (0-99 K)
42 Maximum Temp (0-99 K)
14.4 Temp Stabilization (0-99.9)
Restore Default Settings
Save and Close
Cancel

Figure 23

11. The Pireg C configuration form has 3 tabs associated with it

Machine Settings (Figure 23 above)

Process Settings (Figure 24)

Controller Calibration (Figure 25)

11.1 Machine Settings

The following settings can be modified on the Machine Settings Tab Dip switch settings.

If dip switch settings are used all other settings to the right will disappear.

Using interface controls will disregard dip switch settings and use the settings as outlined by the interface console.

Alarm Output Activation.

This is in regards to the alarm output. If an alarm occurs, the alarm output has 2 options.

1. Activate alarm output immediately.
2. Activate alarm output after initial heating.

Alarm Output Switching

This adjusts the state of the alarm output to either normally open or normally closed.

OK Output Activation

The OK output can be configured to be active during Calibration OK, Temperature OK, or a combination of both.

OK Output switching

This adjusts the state of the OK output to be either normally closed or normally open.

Temperature limits and stabilization time of the temperature OK message (STOKG)

The upper and lower limits (0-99K) as well as the stabilization time (0-99.9 seconds of the temperature OK range.

Machine Settings Continued

Temperature Range

This will adjust the upper limit of the heat seal controller. If 300 is used the controller will not be able to exceed 300 degrees °C.

Set Temperature Range

If the user sets a variable temperature range this box will be visible. The user may then set the upper temperature range from 100 to 500 °C.

Temperature Nominal Value Control

Determines whether this value is set manually or via the USB interface. If via USB is chosen a numeric up/down allows the user to set the value from 0 to 500°C.

Temperature Monitor Settings

Temperature Monitoring can be set Off or On. If set on there are 3 parameters that can be adjusted are minimum and maximum temperature (0-99K). as well as stabilization time (0-99.9 seconds).

Heat Monitor Settings

Temperature Monitoring can be set Off or On. If set on there are 3 parameters that can be adjusted are minimum and maximum temperature (0-99K). as well as stabilization time (0-99.9 seconds).

11.2 Process Settings

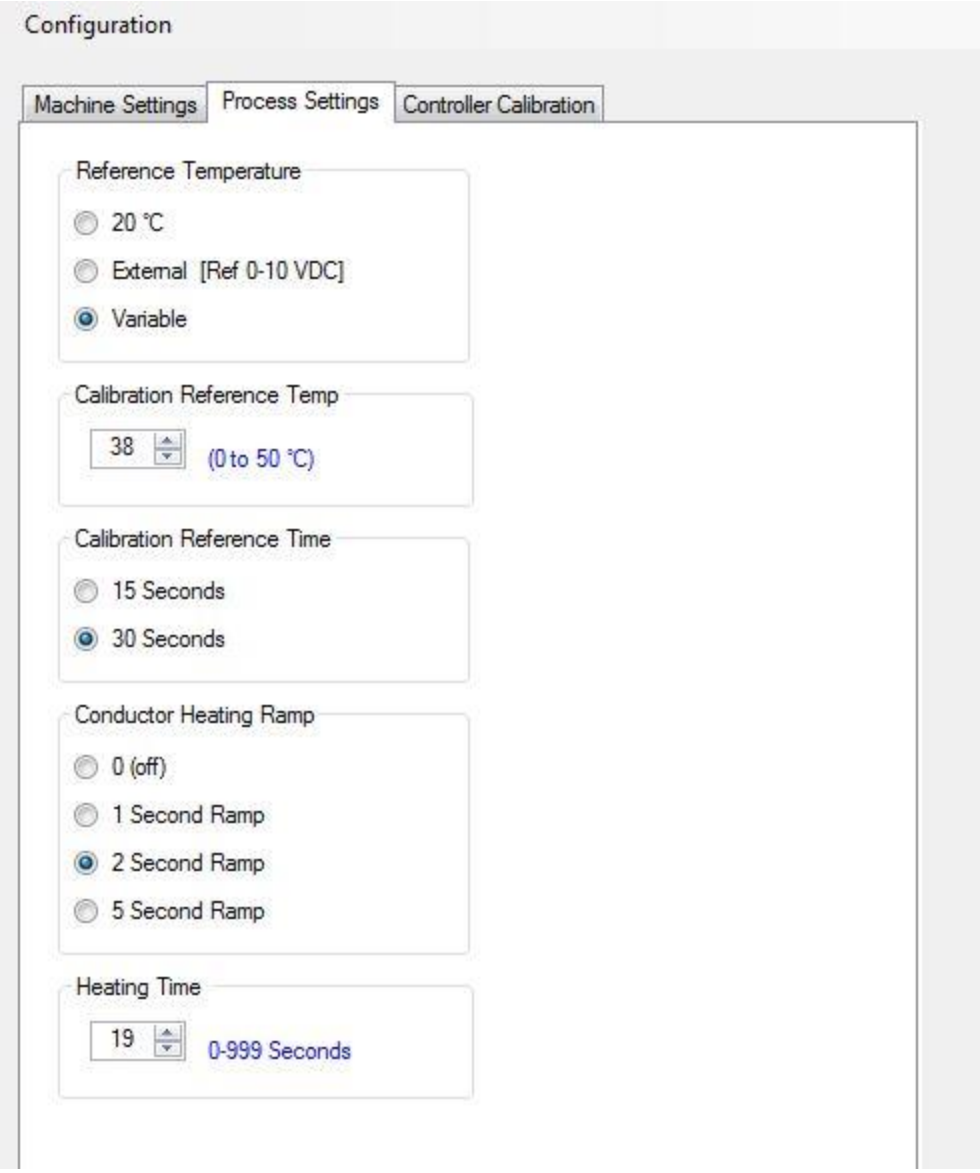


Figure 24

Reference Temperature

3 Settings exist for this parameter. If Variable is chose a separate box with a calibration reference up down selector allows the user to select an appropriate value.

Calibration Reference Temperature

The reference temperature is the temperature to be used as the ambient temperature for the Autocal procedure.

Calibration Reference Time

Insert Text Here.

Calibration Heating Ramp

Insert Text Here.

Heating Time

Insert Text Here.

11.3 Controller Calibration

The controller calibration tab is displayed below in figure 25

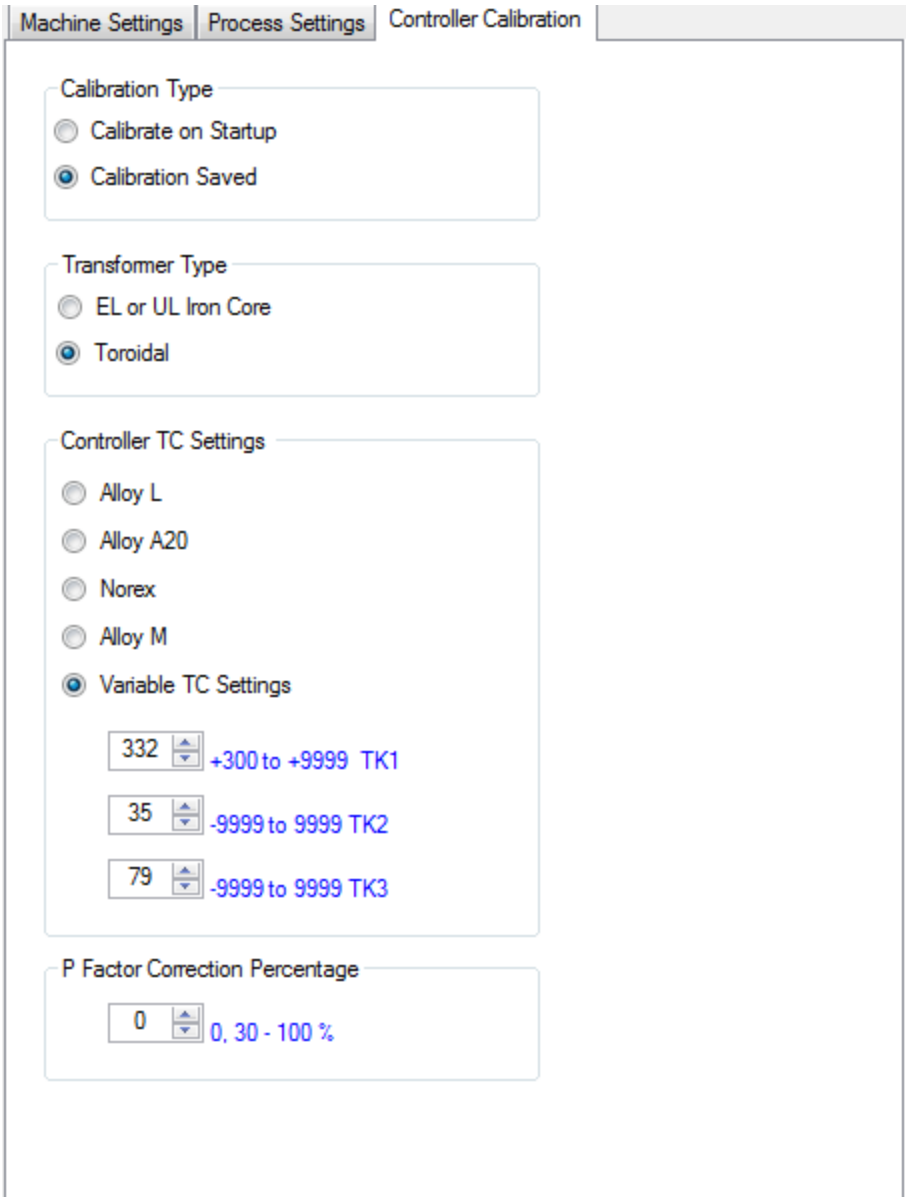


Figure 25

Calibration Type

If set to calibrate on startup the heat seal controller will automatically perform an Autocal when the controller is turned on.

If Calibration saved is used the heat seal controller will only perform a calibration when the Autocal input is energized.

Transformer Type

This is used to set the transformer type.

Controller TC Settings

There are 4 settings available for different band materials or Variable can be used to dial in the heat profile of any given material. Changes made here will require an Autocal.

P Factor Correction Percentage

Insert Text Here.

Calibration Reference Time

During Autocal the heat seal controller will pause for the set time (15 or 30 seconds). To ensure that the band temperature is not changing during Autocal. 30 seconds is generally used on larger bands.

Command Buttons

“Save and close” will cause the settings to be saved to the heat seal controller.

“Restore default settings” will cause the heat seal controller to default to factory settings.

“Cancel” will close the configuration form making no changes and restore the main run-time form

12. Pireg C Log File Playback

From the main form the user may select the command button “Playback Log File”. This will provide a File dialog box (Figure 26) to allow the file selection

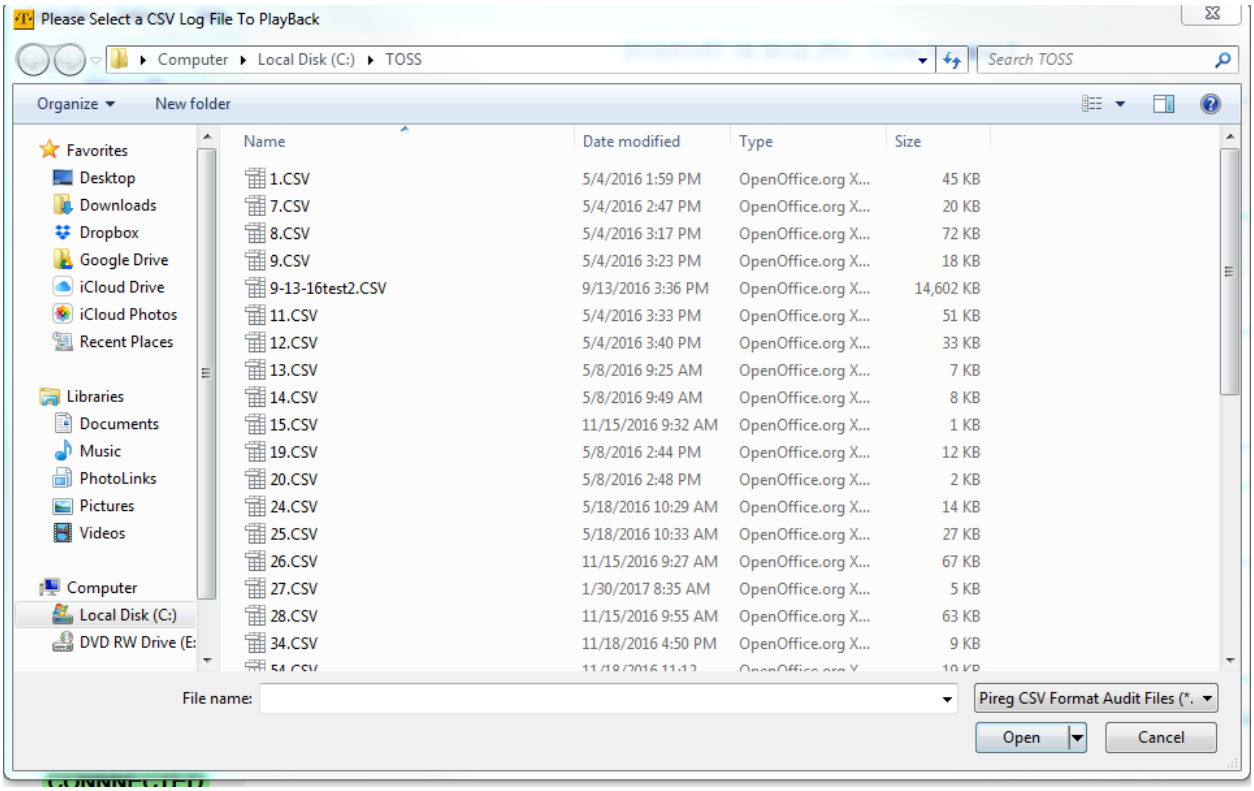


Figure 26

The default directory with be the TOSS directory specified in the .ini file. The default file extension will be .CSV. Note: Not all .CSV files will read properly in the Log File Player. Only those files created during a controller runtime event will contain properly formatted data that will provide meaningful results.

Once the file is selected and loaded a new form will appear (Figure 27)

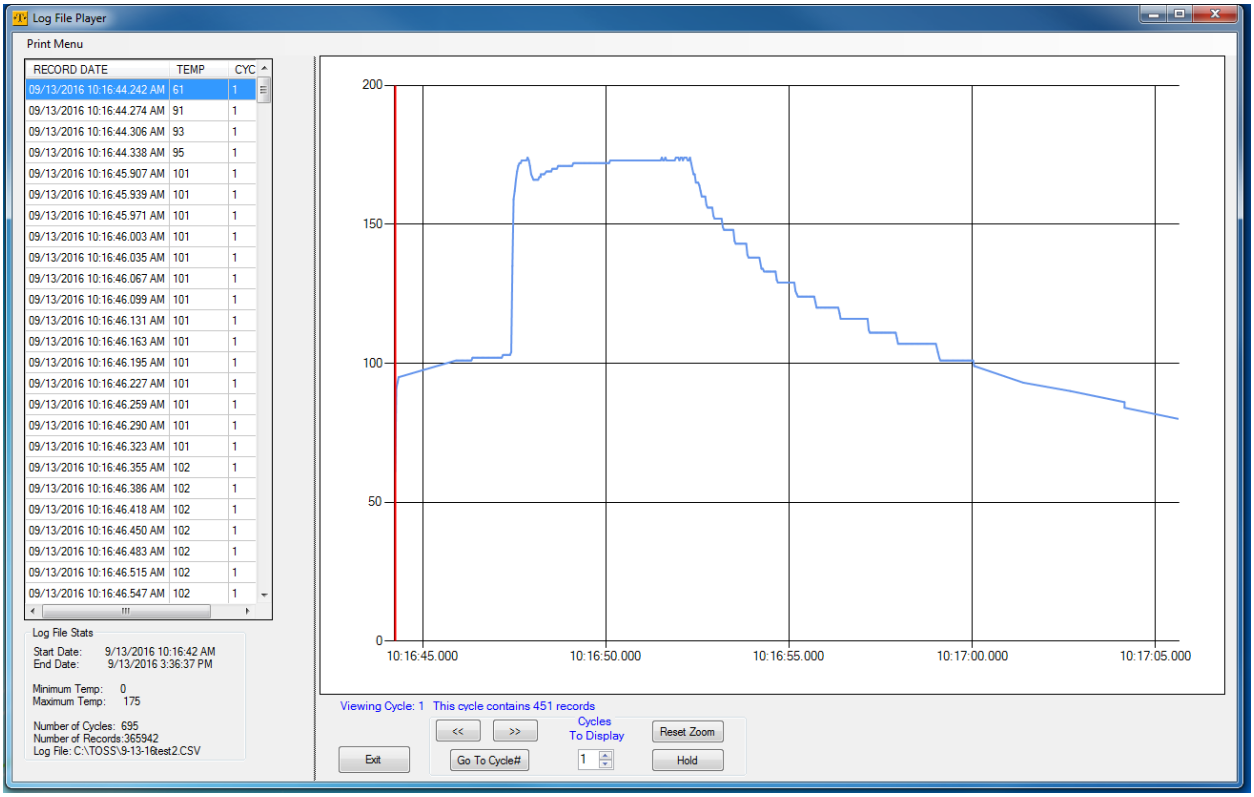


Figure 27

The Log Player provides a variety of information from a previously logged controller runtime series. On the far left is a grid providing the time/date, temperature, and cycle number in the order in the file. A horizontal scroll bar will appear when necessary to allow the user to scroll through the entire file's data points.

Below the Grid the form contains a legend showing file start and stop, min and max temperature, number of cycles, number of records and the file name currently open.

The main form initially displays all of the data from the first heat seal cycle in the file. It will also show how many records were taken for that heat seal cycle. The forward and back buttons can be used to move forward and backwards through the heat cycles in the file. The “Goto Cycle” button allows the user to jump immediately to any cycle number in the file.

Left click on the mouse will bring the vertical position bar to the point clicked. At the same time the datagrid highlight will be moved to this point position.

Left click + hold on the mouse will allow the user to zoom an area of the form. The “reset zoom” button will return to the original scale.

A user may display a multiple seal cycles if desired. Simply use the numeric up/down under “Cycles to Display” box to access this feature. Figure 28 shows 6 cycles displayed on a single form

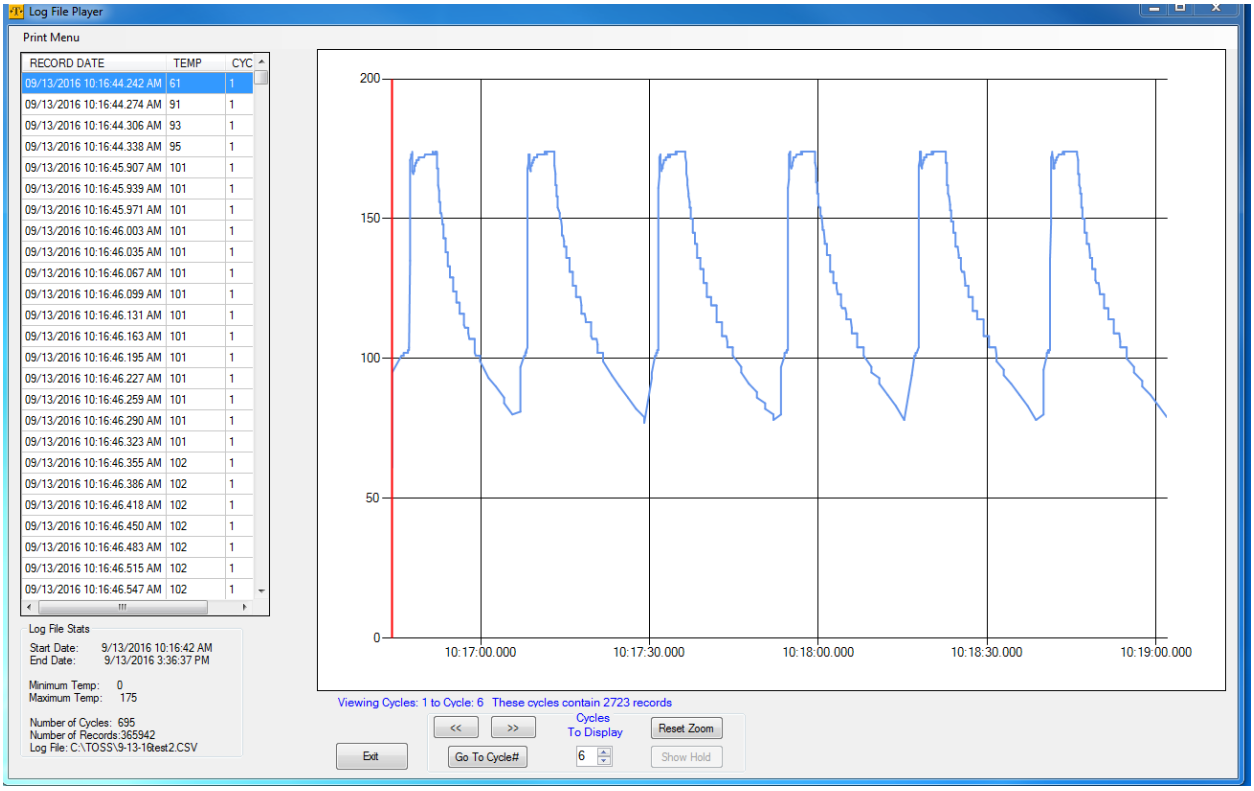


Figure 28

The software has an interesting feature titled “hold”. This allows the user to superimpose one particular cycle over any or all other cycles. Suppose for example a user determines the 3rd seal should be the “model seal” for all subsequent seals. While they can certainly take the datafile and machine that for mathematical comparison, the hold feature offers a quick visual verification.

The “Show Hold” button is only enabled with a single heat cycle displayed. Navigate to the desired cycle and adjust the interface to 1 cycle displayed if necessary. The user should now activate the “Hold” Button. A new panel on the bottom right of the form will be made visible. This is highlighted in Figure 29

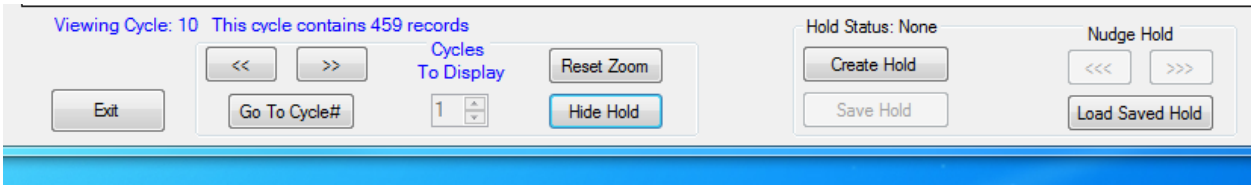


Figure 29

The user may then depress the “Create Hold” button and the current graphed area of the cycle will be highlighted in red as shown in figure 30

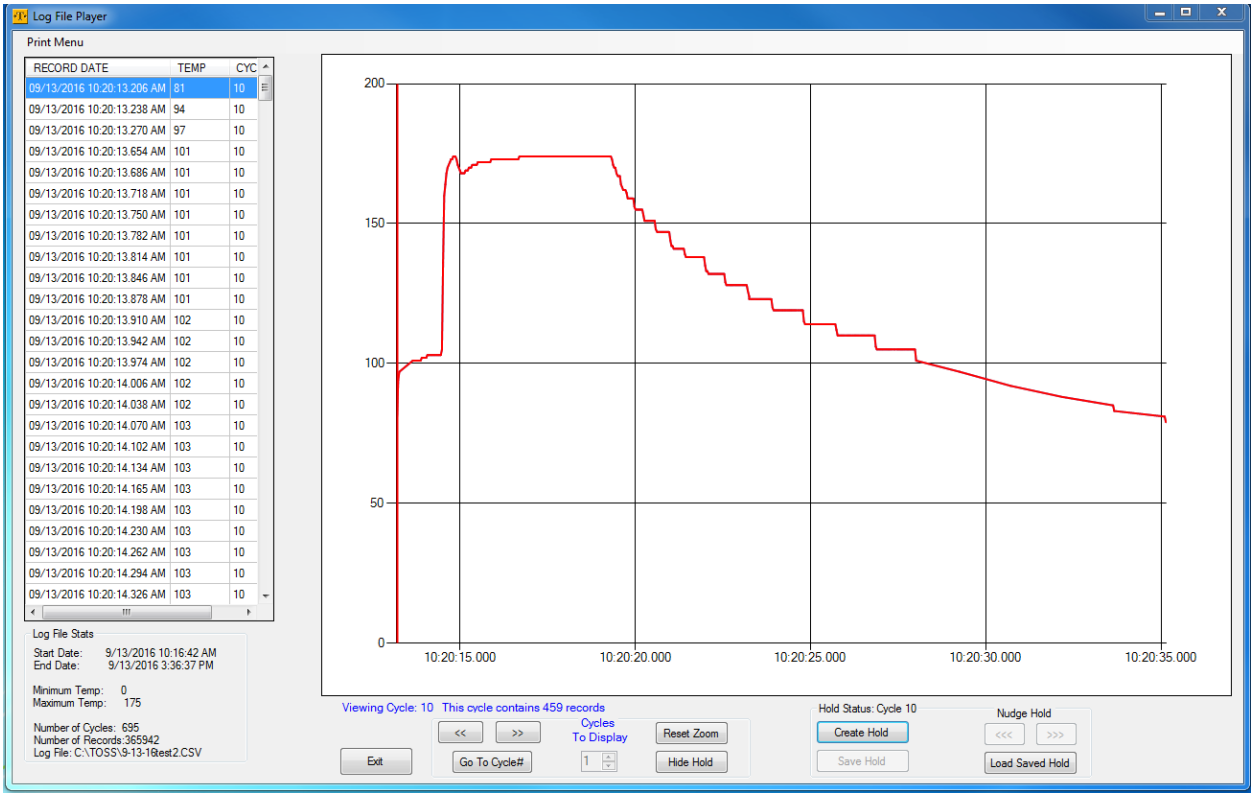


Figure 30

At this point the user may use the forward backwards navigation buttons to move to other heat cycles. They will now see the red “Hold” cycle overlayed against the current hold in blue. Figure 31 shows an example pretty cool.

The datagrid will display the current cycle data as the user navigates through the file with the hold in place. In addition the user may zoom an area in question to examine in further detail.

The user may save a hold to compare it against other log files if desired. The “Save Hold” and Load Save Hold accomplish these features.

There also exists a limited capability for printing out the chart if desired.

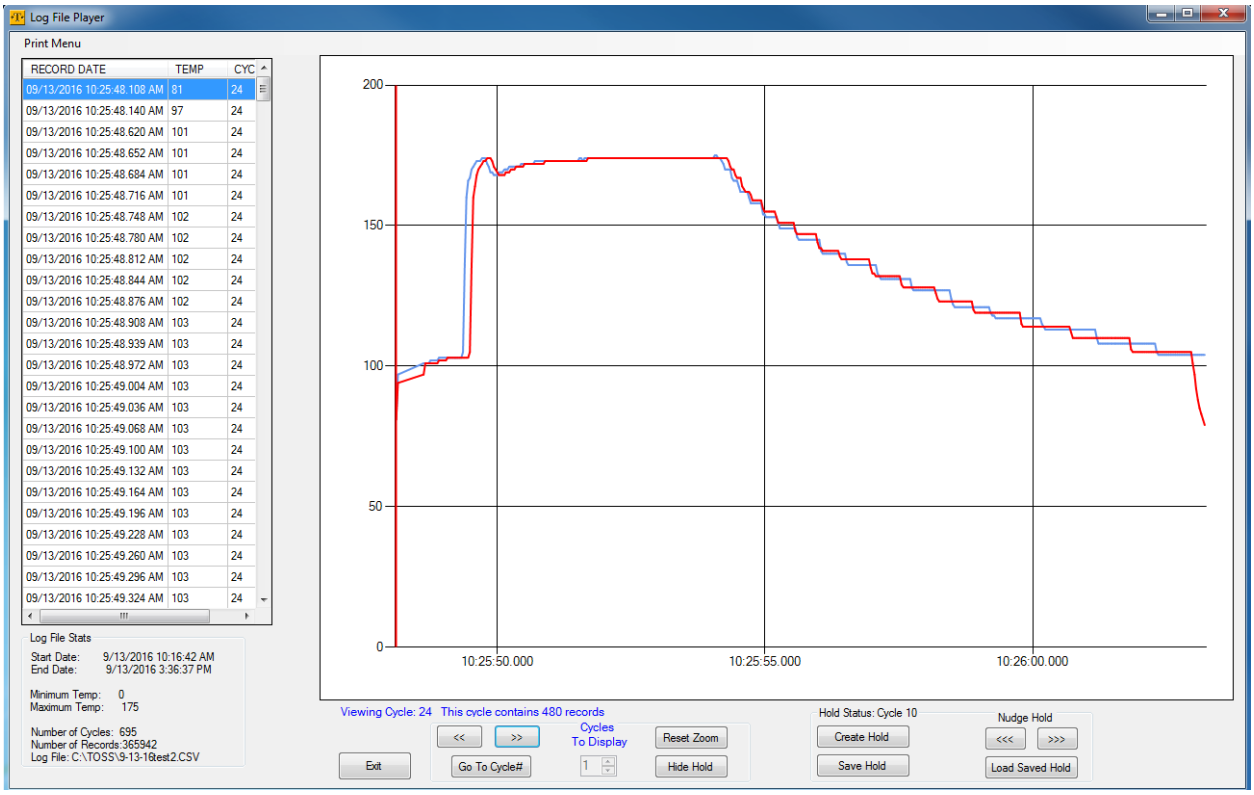


Figure 31

13. Decoding Controller State

Controller State (ABCD_EFGH)

A), Hardware error

0 = OK 1 = Error

B), Power line error

0 = OK 1 = Under voltage 2 = Over voltage 3 = Line frequency error

C), Data error

0 = OK 1 = Cal data does not match 2 = memory error 3 = Com monitoring

D), NOT USED

E), Voltage Signal Ur

0 = OK 1 = Too small 2 = Too Large

F), Current signal Ir

0 = OK 1 = Too small 2 = Too Large

G), Band temp

0 = OK 1 = Too small 2 = Too Large

Temp monitor 3 = Too small 4 = Too Large

Heat Monitor 5 = Heating time exceeded

H), Calibrating error

0 = OK
1 = Parameter error
2 = Voltage or current signal defective
3 = Error in determining the phase shift
4 = R20 cannot be determined
5 = Error in determining the P factor
6 = The selected reference temperature is too high
7 = Range of temperature coefficient correction exceeded
8 = Start signal during calibration
9 = Data error on access