

K.I.S.S.
Kiln Interface Software System

Operation Manual

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Table Of Contents

Overview	3
KISS Start Up.....	3
KISS Main Screen.....	6
General Information:	6
Menu Bar:	7
KISS Status Screen	8
General Information:	9
Menu Bar:	9
Firing Status	9
Scroll Kilns.....	9
Error Messages:	10
KISS Menu Screen.....	11
General Information:	11
Information Fields:.....	11
Kiln Name.....	12
Cone Speed	12
Summary Report.....	12
Temperature Scale.....	12
Errors On/Off	12
Cone Offset Temperature.....	13
Collect Data All the Time?	13
Data Collection Parameters.....	13
Mark this Kiln as Temporarily Unavailable?	13
Error Messages:	13
KISS Program Screens	15
General Information:	17
Information Fields:.....	18
Cone Fire	18
Ramp/Hold.....	18
KISS Collect Data Screen.....	21
General Information:	22
Information Fields & Command Buttons:	24
Error Messages:	25
KISS Graph Screens	25
General Information:	27
Menu Bar:	28
KISS Install Kilns	29
General Information:	29
Port	29
How many kilns?.....	30
Appendix A: Summary Report Data Collection	31
Appendix B: Data Collection Options.....	32
Appendix C: Importing Data.....	36

OVERVIEW

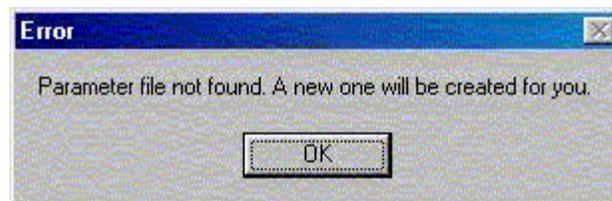
KISS (Kiln Interface Software System) is a computer program designed to allow users of ceramic kilns to access their Bartlett Instrument manufactured kiln controller through use of a personal computer. In addition to the ability to remotely access the existing functions of the controller, KISS also includes the capability to collect and store data from the firing process, which will allow for detailed evaluation of the kiln's actual temperatures during a firing. KISS will also allow the user to monitor, at a glance, a maximum of 50 kilns simultaneously, by providing a display of all 50 kilns' current status and current temperature.

KISS START UP

To Configure the Program:

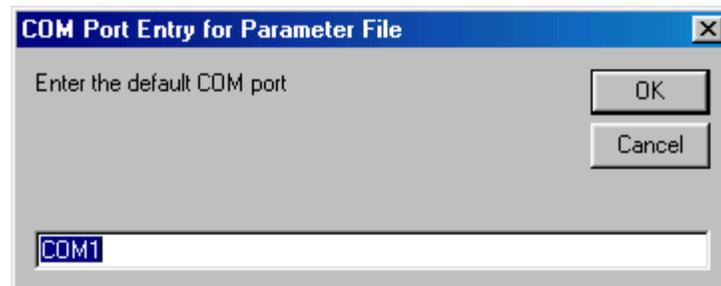
Identifying the serial port when initially running the program

The first time the program is run, a message will be displayed like the box below.



This is strictly an informational message, telling the user that the file containing parameter information about the KISS setup is not found in the current directory. This file, when the user has defined the information for their setup, will hold information such as which serial port on your computer is connected to the kiln controllers & names of the kilns, if user-defined names are given. The first time KISS is used, it will create a default parameter file, which will only contain information for one controller. Click *OK* to continue starting the program.

The next message will be displayed in a box similar to the one below:

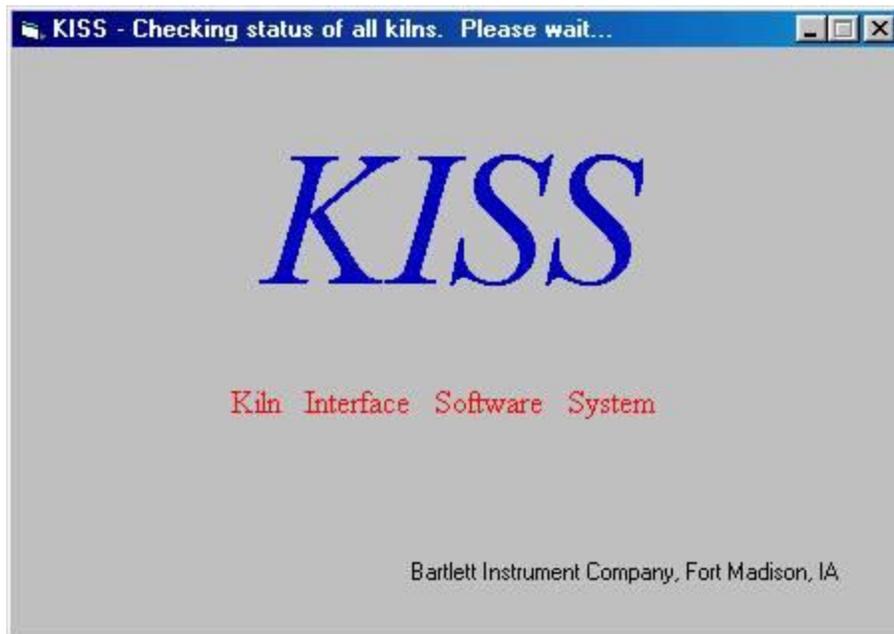


The user is expected to enter a port identifier, specifying which port (serial or USB) has the USB/RS485 converter. If the user is not sure, accept *COM1* as the default and the port can

be identified to the program later. When the correct serial port is in the place provided, click *OK* to continue running the program.

Displaying overview of all connected kiln controllers

When first starting to run KISS, the main status screen will be in the background while another is displayed similar to the box below:



This box is strictly informational, telling the user the program is polling each of the controllers to get information regarding the current condition of each controller. When that screen is no longer displayed, you are seeing the main status screen. This screen shows all the kiln controllers that the user has identified as being connected to the computer, showing a name for each kiln, its status (whether it is At Idle, Firing or has an Error), and the current temperature in Zone 2. If it is a single zone controller, that zone is still identified as Zone 2. This main status screen also has a taskbar at the top which allows the user access to the other program functions.

Specifying the current number of connected kiln controllers

When KISS is loaded for the first time, it assumes that you are using only one kiln controller with it. To change the number of connected kiln controllers, click *Install* in the top taskbar of the main status screen and change the number in the box that says “How many kilns?”. The number can be changed either by using the spin button next to it (the up & down arrows which will increment & decrement the number in the box if the user clicks the arrows with the mouse) or by clicking that field & using the keyboard to enter a new number from 1 to 50. Click *GO* for that change to take effect. Once the correct number of kilns is entered, the user can close the Install Screen, using the “X” in the upper-right hand corner and return to the main screen.

Changing the serial port identification

If the hardware has been installed properly and the serial port correctly identified when the user first runs the program, the main status screen should show one line on the main status screen for each kiln controller up to the number of controllers specified in the Install menu. If the serial port connected to the kilns needs to be changed, from the main status screen, click *Install* in the top taskbar. In the box labeled “Communications”, there is a field where the user can enter which port is in use for the network of kiln controllers. If you are unsure which port you are using, the user can select each option one at a time, then go to the main status screen to see if the kilns show their current condition or “Not Connected”.

Troubleshooting serial port problems

If you believe you have the correct serial port identified, there is a function on the Install menu to help troubleshoot communications problems. Click the box labeled *Run Echo Test* to start the process of troubleshooting. A message box labeled “Please install jumper on RS 485 connector before continuing” will be displayed. The Echo switch on the back of the USB Converter needs to be switched to on.

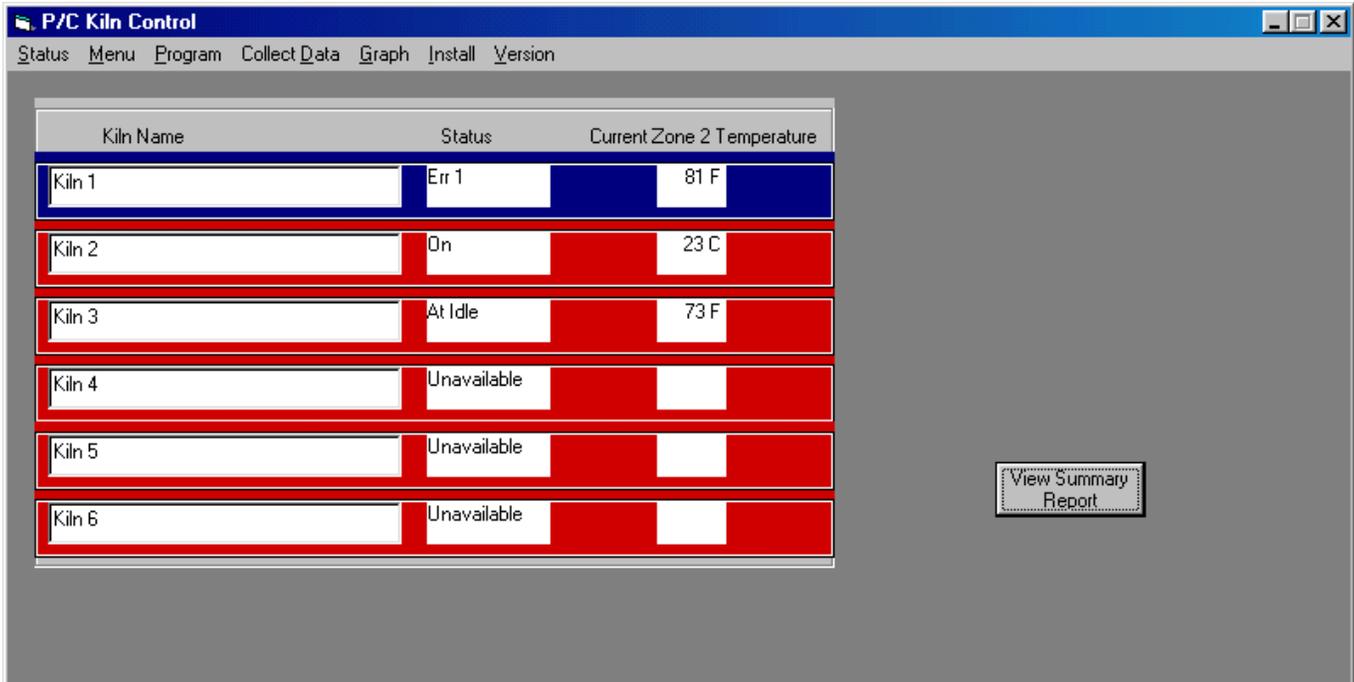
Once the user has moved the jumper, click *OK* to continue the test. If the jumper has been moved correctly and the correct serial port is identified, the echo test will display a message “Echo test completed successfully”. If the jumper was not moved correctly, but the serial port is correctly identified, the echo test will display a message “Echo test not successful – please try again”. If the USB converter has been installed on a different serial port than the one identified by the user, the echo test will also display the message “Echo test not successful – please try again”. So, if this message is displayed after running the echo test, all the kiln controllers should show “Not Connected” for the current status and the connection with the controllers is not getting past the serial port of the computer. If the message indicating an unsuccessful echo test is displayed, the user needs to try a different serial port and ensure that the jumper has been installed correctly for the echo test.

Controller ID

At each controller, the id number must be set to a number 1 through 50. Each controller must have a unique id number. That id number will correspond to the position that controller appears on the main screen. For instance, the controller with the id number “1” will appear as the first controller on the main screen; the controller with the id number “2” will appear as the second controller on the main screen, etc.

KISS MAIN SCREEN

Sample Screen:



This is an example of what the main screen for the Kiln Interface Software System looks like. Each line in the table gives information about one kiln in the system and the line marked with the blue background (Kiln 1, in this example) is the currently selected kiln. By being the currently selected kiln, when the user opts to program a kiln or look at the status of a kiln, that kiln will be the kiln with which KISS will interface until a different kiln is selected. The menu bar at the top gives the user access to other screens for other functions in the program.

GENERAL INFORMATION:

This screen will be the first screen displayed to the user of KISS, once the program has tried to communicate with each of the controllers connected to the system. There will be one line in the table on this screen for each kiln, up to the number of kilns specified in the Install Menu. If more than twelve kilns are connected to the system, there will be a slider bar to the right of the table, allowing the user to scroll through all the kilns.

MENU BAR:

- Status
- Menu
- Program
- Collect Data
- Graph
- Install
- Version

Command Buttons:

View Firing Report

This command button takes the user to the summary file report, if one exists for this kiln. It is important to remember that this report will continue to add information to this file for each firing. So, for the most recent firing, the user needs to look at the information at the end of the file. This file can be deleted by the user any time and, at the next firing, it will be recreated by KISS, if the summary report option is still set to “ON” in the menu screen.

Error Messages:

When trying to view a firing report, the user may get this message. There are several reasons for this message.



1. The controller must be set up to be creating a firing report in the Menu Screen. If that option button has not been set to “Yes”, the firing reports will not be created.
2. The controller’s current name (in the Kiln Name field in the Menu Screen) must match the name that was being used while the firing occurred. This button causes the program to look for a file named the kiln name with an extension of “.txt” and, if the user has changed the kiln name since a firing, the firing report will not be found using this button. The user could still access the file using another program, such as WordPad.
3. The controller must either be started or stopped using the KISS system. If the program is started at the controller panel and goes to “COMPLETE”, a firing report will not be generated then, either.

KISS STATUS SCREEN

Sample Screens:

The screenshot shows a software interface for a kiln. The title bar reads "Kiln Status - Kiln 3 Kiln: At Idle". Below the title bar, there are several sections:

- Firing Status:** "CONE FIRE 06 Slow Bisque".
- Errors:** "On".
- Lag Temperature:** "0010".
- Alarm Temperature:** "9999".
- Cone Offset Temp:** "0".
- Preheat Time:** "0000".
- Hold Time:** "0000".
- Current Program:** A table with columns: Seg, Rate, Temp, Hold, Est. Time.

Seg	Rate	Temp	Hold	Est. Time
1				
2				
3	200	250	00.00	00:54
4	400	1000	00.00	01:52
5	180	1150	00.00	00:50
6	300	1578	00.00	01:26
7	120	1828	00.00	02:05
8				
- Segment and Set Point:** Two cyan buttons.
- Temperature - Zone 1:** "Thermocouple FAILURE".
- Temperature - Zone 2:** "73 F".
- Temperature - Zone 3:** "Thermocouple FAILURE".
- All temperatures given in Fahrenheit:** A white box with black text.
- Firing Time:** A cyan button.
- STOP:** A large red octagonal sign with the word "STOP" in white.

The warning dialog box has a grey background and a red title "WARNING!!". The main text reads: "You are about to start a kiln. Ensure that the kiln is clear of all combustible material and ready for safe operation." Below this, it says "Kiln is ready for firing." followed by two radio buttons: "Continue" (which is selected) and "Cancel". To the right of these buttons is an "OK" button.

The first screen is an example of a typical status screen, giving the user information about the currently selected controller. The second screen is an example of the warning screen displayed before KISS sends the message to the controller to start the kiln. The function of this screen is to notify the users to take standard safety precautions before starting the kiln, just as the user should before starting a kiln manually.

GENERAL INFORMATION:

This screen is designed to give the user information about the current state of a single controller. It will display:

- The current program loaded into the controller. If a ramp/hold firing is loaded, the user program number (1 through 6) will be given. If a cone firing is loaded, the cone number and speed will be given.
- The details of the current program. This is contained in the large box in the center of the screen, where each row of information contains the details for a different segment. So, by the number “1” will be the rate of rise, the target temperature, the hold time, and KISS’s estimate for how long it will take to complete the first segment. If the rate is given as “9999”, the estimated time will simply say “Full Power”, indicating KISS cannot provide the time estimate. The estimated time will be displayed as “No Power” on segments where the setpoint temperature is less than the previous segment’s setpoint temperature, indicating again that KISS cannot provide a time estimate for this segment and that the kiln is in a down ramp situation.

MENU BAR:

- Firing Status
- Scroll Kilns

FIRING STATUS

This menu item is composed of the three following commands: “Begin Firing Now”, “Delay Start Firing”, and “Stop Firing”. Only the appropriate command(s) corresponding to the current state of the controller will be available. For instance, when the kiln is at “Idle”, the user would be able to begin the firing then or do a delay start firing. But, the command to stop the firing would not be available. If the controller is at “Complete”, it will need to be sent a “Stop Firing” command before the “Begin Firing Now” or “Delay Start Firing” can be selected – this works just as the controllers work.

When the selection “Start Firing” is selected, a warning screen will be displayed, as shown in the sample screens section. The function of this screen is to notify the users to take standard safety precautions before starting the kiln, just as the user should before starting a kiln manually. If the user chooses the “Continue” option and clicks the “OK” button at the warning screen, KISS will send the message to the controller to start the firing process. If the user chooses the “Cancel” option and clicks the “OK” button at the warning screen, no message will be sent. Once the “OK” button has been clicked, the program will return to the status screen.

SCROLL KILNS

This menu item will only occur when KISS is set up to use more than one controller, as specified in the Install Menu. The only two options from this “Scroll Kilns” menu item are “Next” and “Previous”. These just allow the user to scroll through forwards and backwards, respectively, and look at the status of the kilns without having to return to the Main Screen and select a new kiln.

ERROR MESSAGES:



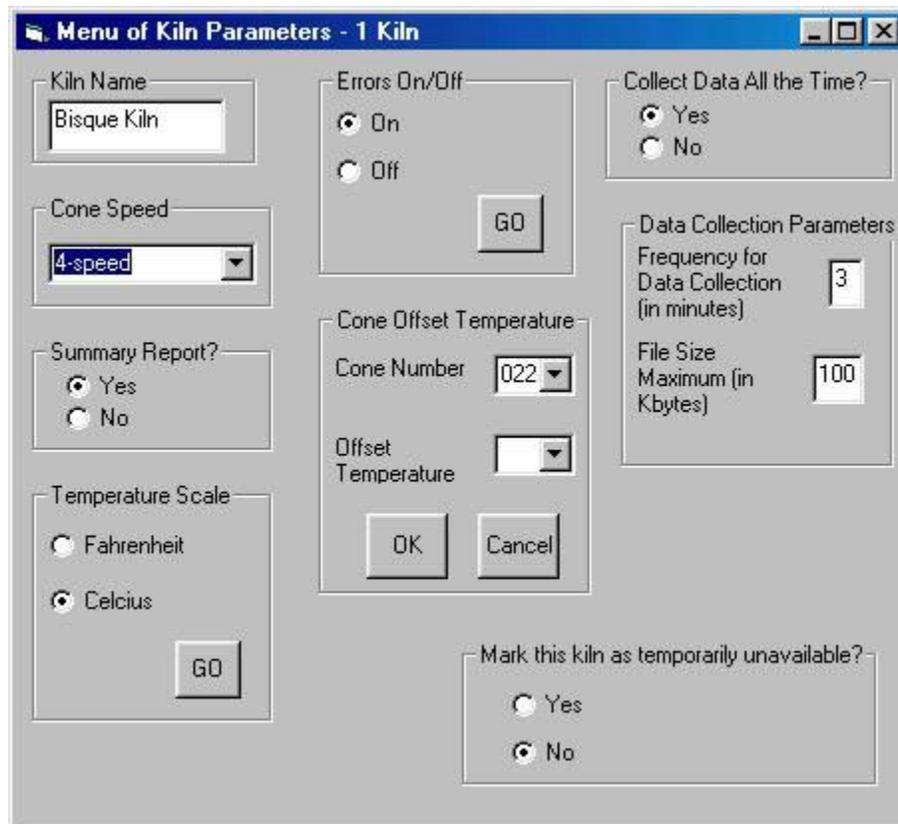
This error message is displayed when the user has selected to start the kiln, KISS has sent the appropriate message to the controller and could not get a response back. Some of the possible explanations for this situation would be a kiln becoming disconnected, or a user at the keypad interacting with the controller. When a user starts to interface with the controller at the keypad, the controller stops communications with KISS until the keypad interface is complete. For example, if a user starts to enter a ramp/hold program at the keypad, the controller will not communicate with KISS until the entire program has been entered, which may cause KISS to temporarily assume that the controller is disconnected.



This error message is displayed when the user has selected to start the kiln, the controller is responding to the message from KISS, but is continuing to indicate a status other than "Firing". One possible explanation for this situation is a user stopping the firing at the keypad in between when KISS sends the message to start the kiln and when the controller answers back to KISS when it tries to verify that the kiln actually started.

KISS MENU SCREEN

Sample Screen:



The screenshot shows a software dialog box titled "Menu of Kiln Parameters - 1 Kiln". The interface is organized into several sections:

- Kiln Name:** A text input field containing "Bisque Kiln".
- Cone Speed:** A dropdown menu currently set to "4-speed".
- Summary Report?:** Radio buttons for "Yes" (selected) and "No".
- Temperature Scale:** Radio buttons for "Fahrenheit" and "Celcius" (selected), with a "GO" button below.
- Errors On/Off:** Radio buttons for "On" (selected) and "Off", with a "GO" button.
- Cone Offset Temperature:** A "Cone Number" dropdown set to "022", an "Offset Temperature" dropdown, and "OK" and "Cancel" buttons.
- Collect Data All the Time?:** Radio buttons for "Yes" (selected) and "No".
- Data Collection Parameters:** Two input fields: "Frequency for Data Collection (in minutes)" set to "3" and "File Size Maximum (in Kbytes)" set to "100".
- Mark this kiln as temporarily unavailable?:** Radio buttons for "Yes" and "No" (selected).

This is an example of the screen where the user would change setup information specific to a single controller.

GENERAL INFORMATION:

Most of the information fields entered on the Menu Screen are parameters that would be accessed through a menu button or options button on the controller. The other information is specific to data collection and controller identification.

INFORMATION FIELDS:

- Kiln Name
- Cone Speed
- Summary Report
- Temperature Scale
- Errors On/Off
- Cone Offset Temperature
- Collect Data All the Time?

- Data Collection Parameters
- Mark this Kiln as Temporarily Unavailable?

KILN NAME

This option is here to give the user a way to customize an identifier for each kiln. This should make it easier, especially for applications with a large number of kilns, for the user to know which kiln is which in KISS. An example might be to name a kiln the “Cone 6”, if that’s what is normally fired in that kiln.

CONE SPEED

This information field will only appear on the Menu Screen, if the controller does not have the functionality to tell KISS how many speeds it uses. If this field appears, the user needs to select whether the corresponding controller is a 3-speed controller or a 4-speed controller. This will, then, determine how many speed options the user has on the cone fire mode of the Program Screen. To select which type of controller, the user should click on the arrow to the right side of the field, which causes a list to be displayed of the options for cone speed.

SUMMARY REPORT

If this summary report option is turned on, a brief report will be generated which summarizes the firing information for each firing. This report is then available by clicking the button on the main screen “View Summary Report”. The firing, however, must be started or stopped using KISS for this summary report to be written. If the controller is started and stopped at the controller panel itself, this firing report will not be written. Also, if the controller is started at the controller and goes to complete, a firing report will not be written. See **Appendix A: Summary Report Data Collection** for more information.

TEMPERATURE SCALE

This field allows the user to select which type of temperature scale to use, either Fahrenheit or Celsius. If the user selects the type of temperature scale already in use on the controller, this message will be displayed immediately:



If the user selects a change in temperature scale, the watch icon will be displayed. This indicates the message to change the temperature scale is being sent and KISS is verifying that the controller received the message correctly and the scale did get changed. When all that is finished, the above message indicating the temperature change has occurred.

ERRORS ON/OFF

If this errors option is turned on, the standard error checking capabilities are functional in the controller. Caution should be taken when turning this errors option off, because that leaves the kiln vulnerable to malfunctions that would normally be detected by the error codes.

CONE OFFSET TEMPERATURE

This cone offset temperature option is used to raise or lower the final cone temperature. This can be changed by a maximum of 50°F, either higher or lower than the preset cone temperature.

COLLECT DATA ALL THE TIME?

This option to collect data all the time controls the use of the continuous data collection. By selecting the “Yes” option, any time KISS is running on the computer, data will be written to the file for this controller. The data format and the filename, as well as other details of this data collection, are specified in **Appendix B: Data Collection Options**.

DATA COLLECTION PARAMETERS

This option will only be displayed if the previous field has been set to “Yes”. These parameters, then, allow the user to give specifications about their continuous data collection file. The first one, “Frequency for Data Collection (in minutes)”, specifies how often the data is written to the file. So, for this information field, if the user enters a 4, the temperature of that kiln will be written to the file every four minutes. The minimum value for this field is 1 and the maximum value is 30. The second information field, “File Size Maximum (in Kbytes)”, specifies a maximum size in kilobytes that this constant data collection file can become before KISS notifies the user. When the user is notified by KISS that the file has reached its maximum size, as set here, the user has the choice to increase this maximum file size or delete the file, which would cause the current data in the file to be deleted, but KISS would recreate the file and continue with the data collection at the next interval for writing data to the file.

MARK THIS KILN AS TEMPORARILY UNAVAILABLE?

This option gives the user a way to temporarily stop the communication between KISS and an individual controller. If this option is set to “No”, KISS will check this kiln’s status every time it runs through its process of checking all the kilns. If this option is set to “Yes”, this kiln will be skipped in the process of checking all the kilns. This may be useful if a kiln is powered down during the loading and unloading of ware, as KISS will wait for each controller’s answer to messages and would slow down while waiting for a controller to answer that is powered off.

ERROR MESSAGES:



This message box is displayed if the message sent from KISS to the controller to change the temperature scale does not complete successfully. The message may not have been transmitted correctly or the data received from the controller during the verification process may have contained noise.



This error message is displayed when the user has selected to turn on the error checking feature, but the feature is already on at the controller.



This error message is displayed when the user has selected to turn off the error checking feature, but the feature is already off at the controller.



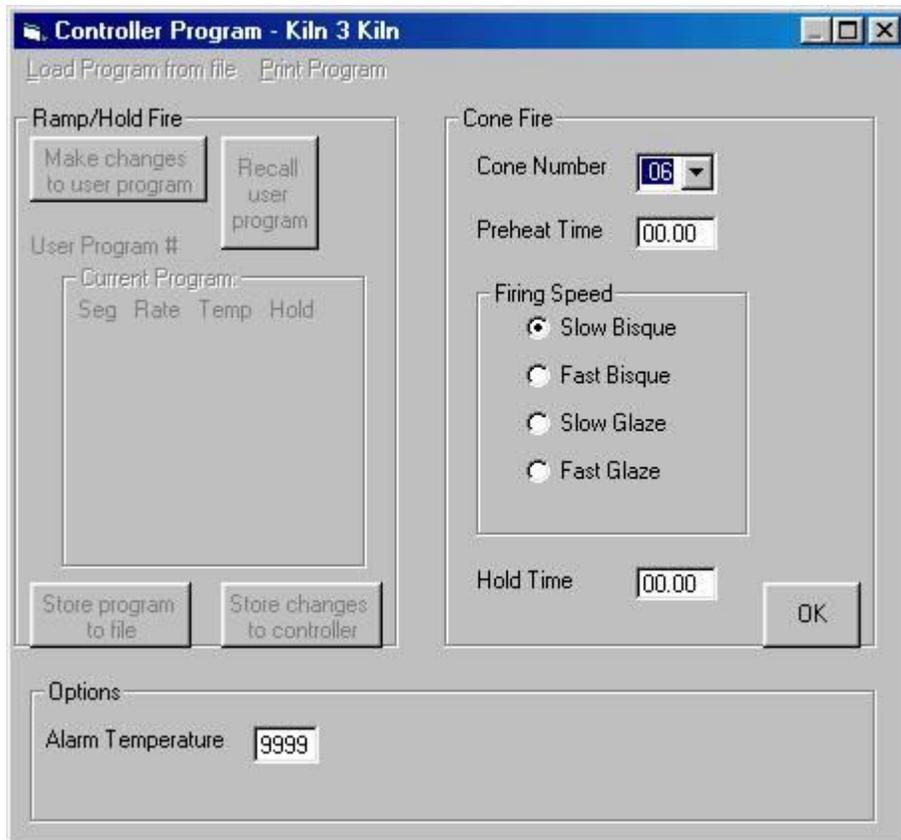
This error message is displayed when the user has selected to either turn on the error checking feature when it's already on or when the user has selected to turn off the error checking feature when it's already off. It is an informational message to let the user know that KISS has not sent a new message to the controller about the error checking.



This error message is displayed when the user has selected to turn off the error checking feature.

KISS PROGRAM SCREENS

Sample Screens:



Controller Program - New Name for Kiln 2 Kiln

Load Program from file Print Program

Ramp/Hold Fire

Make changes to user program **Recall user program**

User Program # 1

Current Program:

Seg	Rate	Temp	Hold
1	0000	0200	00.00
2	0500	1575	00.00

Store program to file Store changes to controller

Cone Fire

Cone Number: 022

Preheat Time: 00.00

Firing Speed:

- Slow Bisque
- Fast Bisque
- Slow Glaze
- Fast Glaze

Hold Time: 00.00 **OK**

Options

Alarm Temperature: 9999

Programming Segment # 1

Rate: 100

Temp: 200

Hold: 00.00

Ramp Time Estimate: 01:12

Segment Time Estimate: 01:12

Previous Segment

Segment Complete

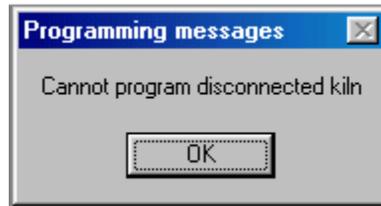
Delete Segment

End Programming

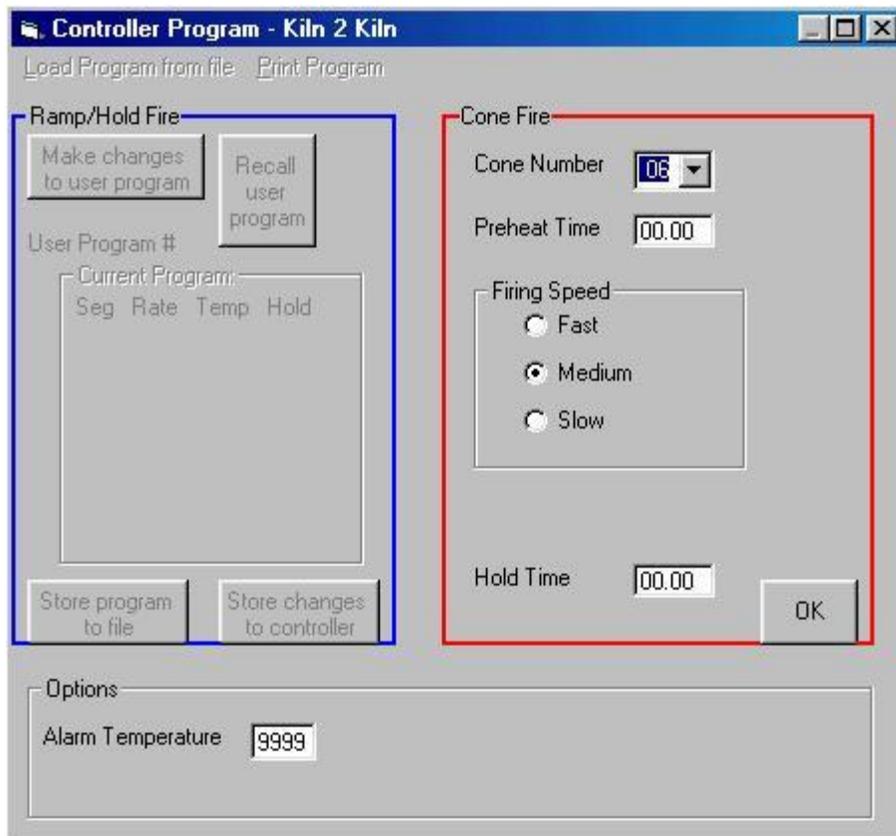
The first screen shows an example of an initial display a user would see when programming a controller that currently has a cone fire program in the controller, while the second screen shows an example of an initial display a user would see when programming a controller that currently has a ramp/hold program in the controller. The third screen shows an example of the display shown when a user is entering the first segment of a ramp/hold program.

GENERAL INFORMATION:

This screen is only available for controllers that are connected to the KISS software. If the user tries to program a controller that is showing a status of “Not Connected” on the main screen, the message box below will appear:



When the program screen is initially displayed for a controller, it will be displayed with the type of programming available that is currently being used on the controller, whether it is a cone fire program or a ramp/hold program. There is different information to be entered, depending on which type of firing the user selects. The programming screen will be the same, but only certain fields are accessible for cone fire programming and others accessible for ramp/hold programming. To switch between the two types of firing, the user can click with the mouse in the area outlined for that type of firing. For example, in the screen below, the user could click anywhere in the red line for cone fire programming and anywhere in the blue line for ramp/hold programming:



INFORMATION FIELDS:

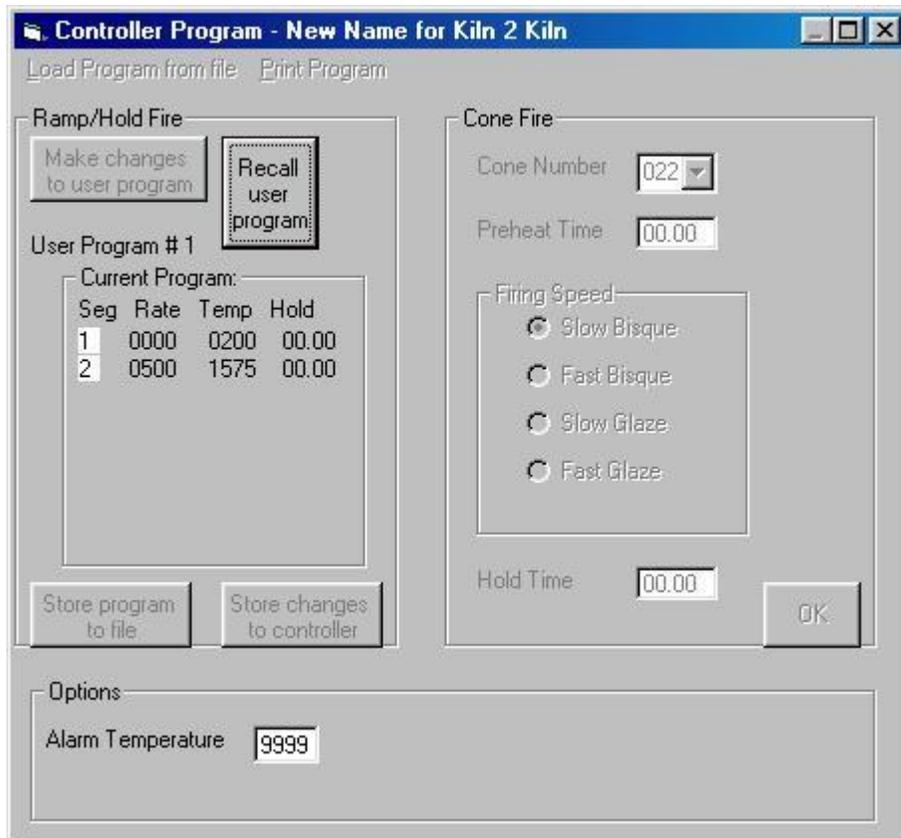
- Cone Fire
- Ramp/Hold
 - Load Program from File
 - Print Program
 - Make changes to User Program
 - Store Program to File
 - Store Changes to Controller

CONE FIRE

When the cone fire mode of programming is selected or if the controller is in that mode of programming when this screen is originally displayed, there will be five fields available for the user to input information. Those include cone number, preheat time, firing speed, hold time and alarm temperature. The cone number must be selected from the listing of valid cone numbers. There will be choices of firing speeds available based on what the controller tells KISS the speed choices are, if the controller has that capability. If the controller does not have that capability, the firing speeds will be based on the user's selection of the Cone Speed option on the Menu Screen.

RAMP/HOLD

When the ramp/hold mode of programming is selected or if the controller is in that mode of programming when this screen is originally displayed, the program screen will appear similar to the one below:



The previous ramp/hold program in use on this controller will be displayed. It is not available until the button, “Recall User Program”, has been clicked and then the user program, from 1 to 6, selected, which indicates which of the user programs on the controller the user wants to work with. When the user has selected one of the six programs, the other buttons and menu items for ramp/hold programming will be available:

Load Program from File

This menu item allows the user to load a previously-stored program from storage on the computer to the KISS system, and then onto the controller.

Print Program

This menu item allows the user to produce a hard copy of the current user program. The printed output will look like the section of the program screen which contains the ramp/hold mode of programming and include the user program number, the current program’s segment information (rate, temperature and hold time), as well as the alarm temperature.

This menu item is only available when a program has been recalled from the controller. If this menu item is not enabled, the user needs to click on the “Recall User Program” button and select one of the six user programs to be used as the current user program.

Make changes to User Program

This menu item will bring up another screen, which allows the user to enter the programming information for an individual segment in the ramp/hold program type. The screen to enter this information will look similar to the one below:

Programming Segment # 1

Rate	<input type="text" value="100"/>	Ramp Time Estimate:	<input type="text" value="01:12"/>
Temp	<input type="text" value="200"/>	Segment Time Estimate:	<input type="text" value="01:12"/>
Hold	<input type="text" value="00.00"/>		

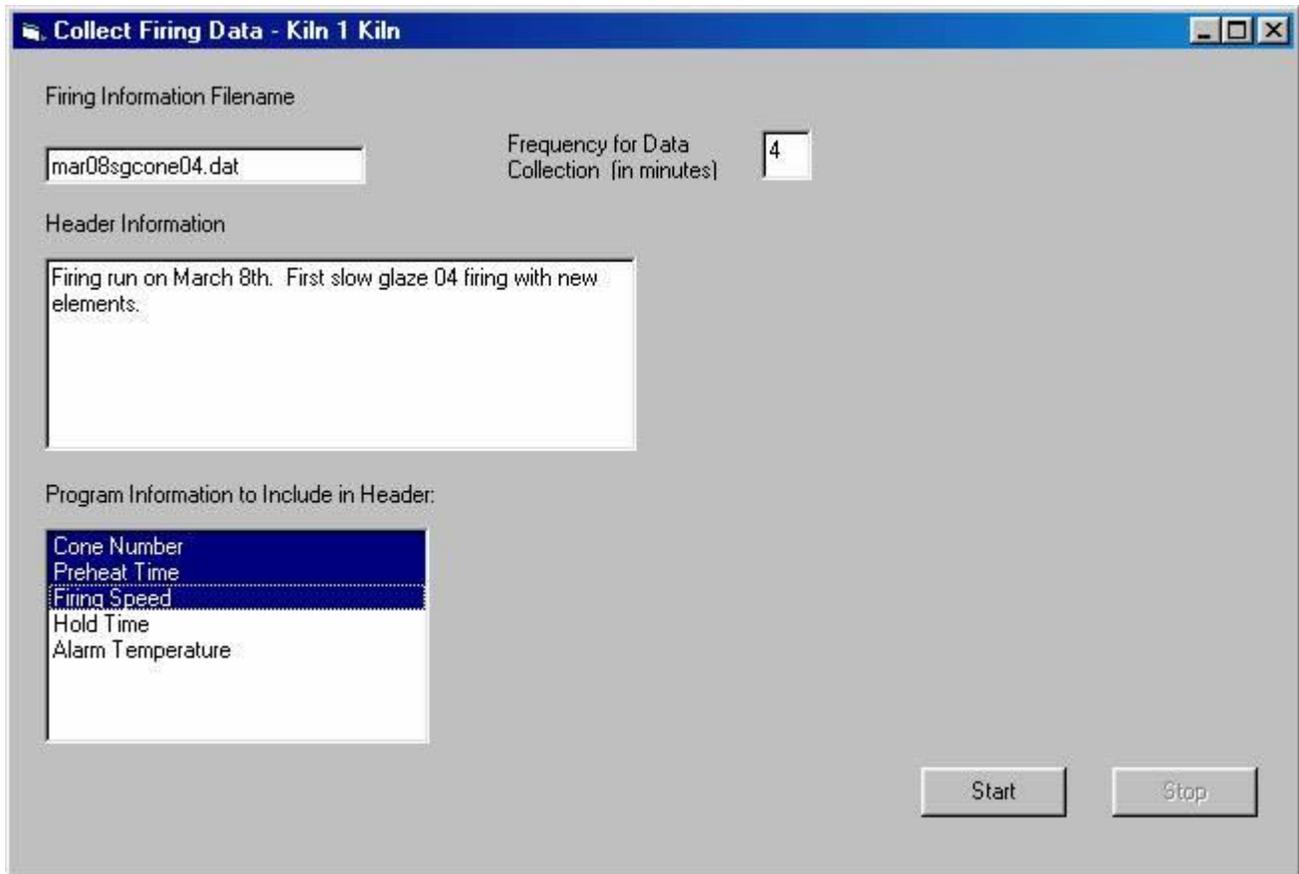
Once this screen has been displayed, the user may make changes to the ramp rate, the target temperature, and a hold time for one segment at a time. As this information is entered, KISS will display estimates for the amount of time it calculates that this segment of the firing will take. The “Ramp Time Estimate” is the amount of time calculated, based on the ramping rate, temperature of the previous segment, and target temperature, that this segment will be firing. The “Segment Time Estimate” is an estimate for the “Ramp Time” plus the hold time, as entered by the user. For segment #1, the temperature of the previous segment is assumed to be 70°.

KISS COLLECT DATA SCREEN

Sample Screens:



The first sample screen shows a screen sample that would be displayed as soon as Collect Data is clicked from the Main Screen. The user may select a different directory by creating a new folder or going up a level, using the standard Windows interface buttons next to the directory name. The user may also select to add the information from this data collection to a current file, or may give a name of a new file in the "File name" information field. When the user has finished with this screen, the *Open* button should be clicked to get the next screen of parameters for the data collection process.



This screen shows a sample of entering the other information for an individual firing data collection. The filename just selected in the previous screen will be displayed, but could still be changed by the user on this screen.

GENERAL INFORMATION:

This data collection screen is only available for controllers that are connected to the KISS software. If the user tries to collect data from a controller that is showing a status of “Not Connected” on the main screen, the message box below will appear:



This screen is used to set up individual firing data collection files. This must be turned on when a kiln has been started to fire, or this data collection utility will prompt the user to start the kiln, if it is not running and the user has asked for the data collection process to start.

When collecting data, the information will be written to the file in the temperature currently in use by the controller, Fahrenheit or Celsius.

When the controller goes into a “COMPLETE” mode or displays an error condition, the setpoint will be written to the data collection file as zeroes.

Individual Firing Data Collection File Contents

The records written to the individual firing data collection file will contain the header information about the firing, as specified by the user, as well as detail records which contain time, temperature and program information. The format for the detail records is the same format used by the continuous data collection file, but there are no header records in the continuous data collection file. There will be a new detail record written at each time interval, as specified in the Collect Data Screen, in the field labeled “Frequency for Data Collection”. In each detail record, each of the fields will be separated by a comma, which will allow for import of these files into a spreadsheet-type application, such as Microsoft Excel. The first field contains an asterisk, which distinguishes it from the header records. The other fields in the detail records contain the information described in the table below. The date is given in the MM/DD/YY format and the time is given in the HH:MM:SS XX format, where XX is either AM or pm.

The fields numbered 2 through 7 are all in numeric format. Field #7 is in alphanumeric format and will appear as blanks, if the kiln is not currently firing when the record is written out. If Field #7 is blank, it will still be delimited from the other fields by commas. If the kiln is firing, Field #7 will contain which ramp or hold section of the firing program is currently occurring. For example, “Ramp 3” would indicate the kiln is firing the 3rd ramp section of the program. Field #8 will also be in alphanumeric format and will indicate the current status of the kiln when the record is written. For example, “At Idle” in Field #8 indicates the kiln is currently at a stopped condition or “Firing” in Field #8 indicates a program is being run.

Field #1	*
Field #2	Date
Field #3	Time
Field #4	Setpoint Temperature
Field #5	Current Temperature Reading from Thermocouple 1
Field #6	Current Temperature Reading from Thermocouple 2
Field #7	Current Temperature Reading from Thermocouple 3
Field #8	Current Segment, if Firing
Field #9	Current Status

Information about how to import this file into a spreadsheet application is given in **Appendix C: Importing Data.**

INFORMATION FIELDS & COMMAND BUTTONS:

- Firing Information Filename
- Frequency for Data Collection (in minutes)
- Header Information
- Program Information to Include in Header

Firing Information Filename

When first selecting to Collect Data from the Main Screen, KISS displays the “Firing Information Filename” screen, where the user can select from files already stored or enter a new filename. Once the user has chosen one of those two things and clicked “Open”, the filename chosen by the user will be displayed in this information field in the Collect Firing Data screen. The user may click on this field and make changes to the filename, but the previous screen may only be accessed by closing the “Collect Firing Data” screen and re-selecting Collect Data from the Main Screen.

This field contains the filename that the user selects in which to store the firing data records. If the file already exists, KISS will ask if the user wishes to append the information to the end of the current file. That screen looks like this:



By selecting the “OK” command button, the user will be adding firing information to the end of the current file on the disk and, by selecting the “Cancel” command button, the user will be able to enter a different filename for this firing’s data.

If the user chooses to enter a new filename, these characters may not be used in the filename: $\backslash > < ? *$. There are no restrictions on the length of the filename, as far as how many characters can be used to make up the filename. However, the filename cannot be blank.

Frequency for Data Collection (in minutes)

This information field, “Frequency for Data Collection (in minutes)”, specifies how often the data is written to the file. So, for this information field, if the user enters a 4, the temperature of that kiln will be written to the file every four minutes.

Header Information

This field is a free-format character field, designed in to give the user the opportunity to enter any information they would like stored in the data collection file. The information will be written to the data collection file right after the date and time and before the user program. The idea behind this field is to store “other notes” that may be helpful to the user when they look back over firing data and need to know more about this firing. For instance, if a new type of clay was being used or if new elements had been installed in the kiln, that type of information might be entered here.

Program Information to Include in Header

This field allows selection of which program information will be written to the header section of the data collection file. If no selection is made, all the program information will be written to the header. To make individual selections, however, the user clicks in the box on the line of the information that should go to the file. When an individual selection is made, that line will change to a blue color. To reverse a selection once a line is blue, the user just needs to click it again. The user may select more than one piece of program information to be written to the header by clicking each line that should be included. The example shown in the sample screen is showing how this field would look if the user chose to the cone number, preheat time, and firing speed to the data collection file.

ERROR MESSAGES:

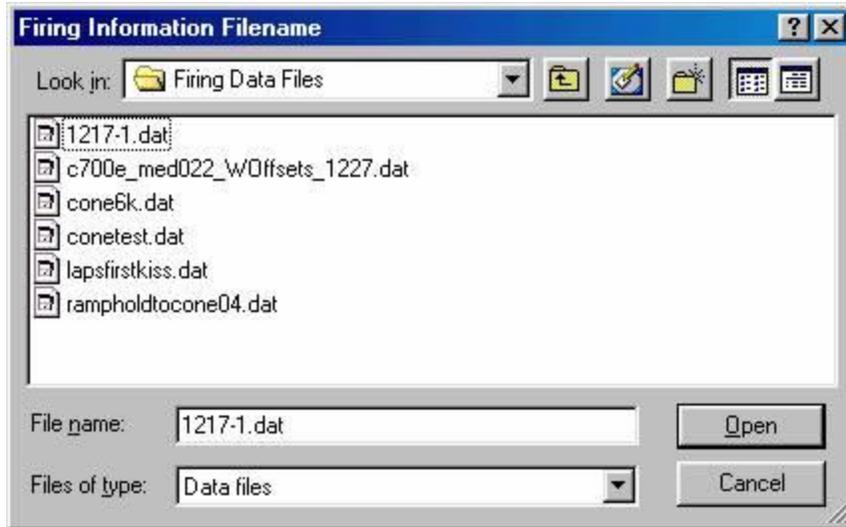


This message box will be displayed if the user tries to use a blank filename. The user will be returned to the data collection screen and needs to enter a valid filename or close the screen to not collect data.

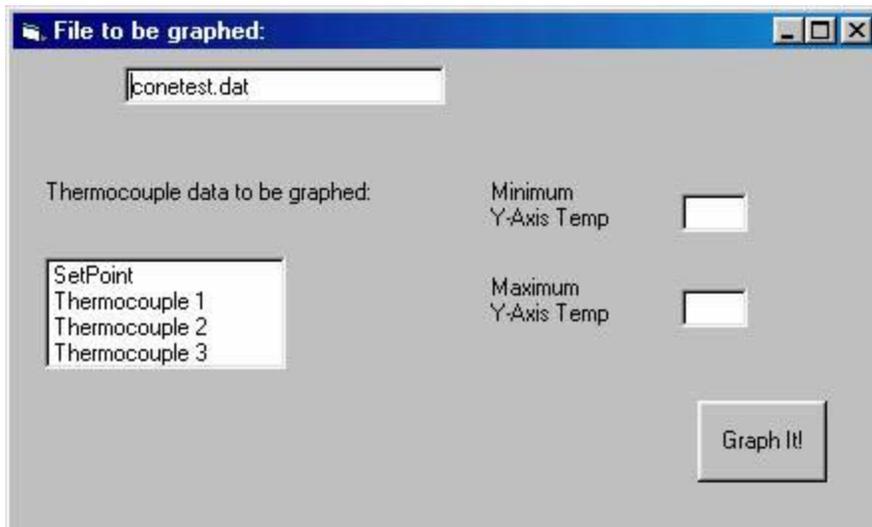
KISS GRAPH SCREENS

Sample Screens:

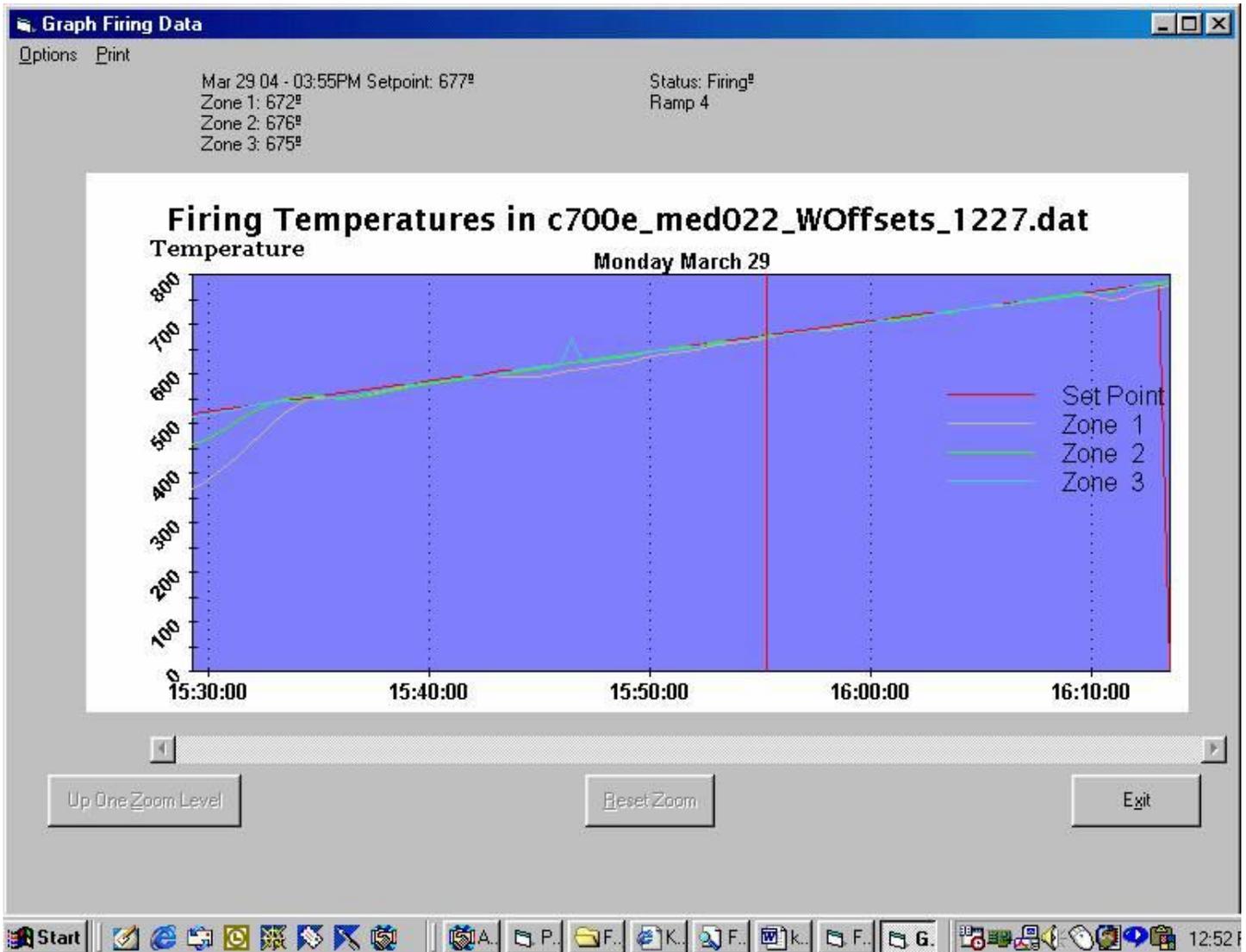
For graphing data, there are actually several different sample screens. The first one shown is the screen where the user selects which data file should be graphed.



The sample screen shows the one where the user selects different parameters about the graph to be created. For example, if the user wants to only graph the setpoint temperature and the actual temperature of thermocouple 1, without graphing the actual temperatures of all three thermocouples, this would be the screen to select that option.



This last sample screen is giving an example of the actual graph screen. This particular data file was graphed using all the data points in the file.



GENERAL INFORMATION:

When the data has been read from the file collected with KISS, a graph can be displayed which corresponds with the data in the file. Each record in the data collection file is used as a point on the graph, with lines drawn to connect those points. As the user moves the mouse around in the graphing screen, it is possible to see the actual data which makes up the points in the graph. As the mouse is moved to different areas of the graph, the user's red bar is moved horizontally along the graph and when the mouse is near a data point from the file, the information (setpoint and temperatures in each zone, as chosen by the user) from that data point will be displayed above the graph, along with the controller status (FIRING, COMPLETE, etc.). In the sample screen, for example, the data point that is near the mouse position was collected on March 29, 2004, at 3:55 pm and the setpoint was 677, thermocouple #1 temperature was 672, thermocouple #2 was 676 and thermocouple #3 was 675. The program was firing the ramp #4 segment of the program.

It is also possible to zoom in on the data on a graph. By positioning the vertical bar in the graph, clicking and holding the left button of the mouse, then dragging the red bar to another position right or left in the graph, the user can zoom in on that highlighted portion of the graph. That zoom function can be performed repetitively, in order to zoom in even further on firing data. Once the zoom function has happened once, the buttons to “Up One Zoom Level” and “Reset Zoom” become functional. The “Up One Zoom Level” will return to the previously displayed zoom version of a graph, while the “Reset Zoom” button returns to the originally displayed graph. The slider bar shown under the graph also becomes functional, once a zoom has been performed, allowing the user to slide along the data on the graph, at whatever zoom level the graph is being currently displayed.

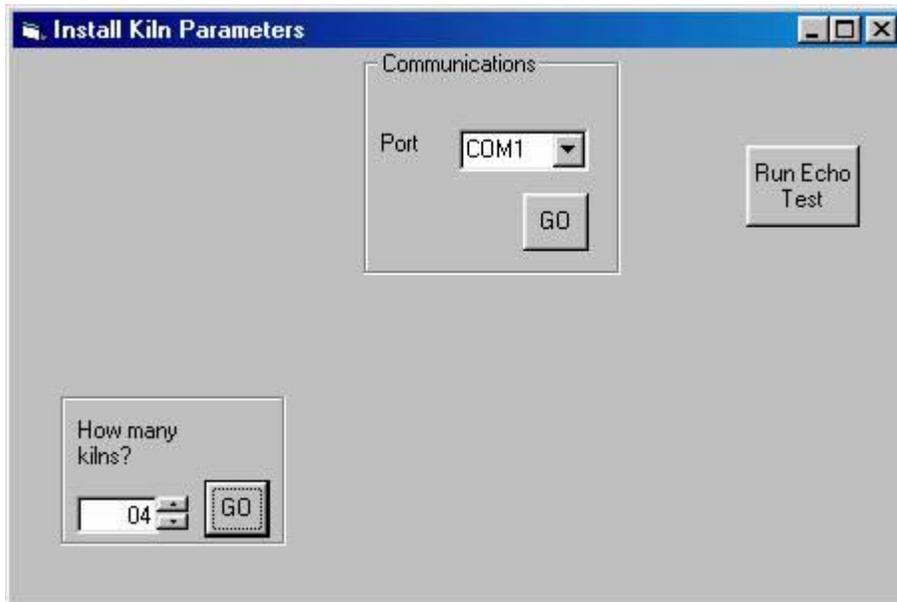
There are also some options available to the user regarding what should be displayed on the graph. These are chosen in the screen titled “File to be graphed” (the second sample screen shown in the section above). The box title “Thermocouple data to be graphed” shows what kind of data the user can graph. To select one of those options, the user just clicks on that line in the box. When a line is highlighted, that indicates that data is selected for display on the graph. Once a line is highlighted, if clicked again, that item will not be displayed on the graph. The user may manually select as many of those items to select on the graph, or, if none are selected, all of the items will be displayed. Another option available to the user for graphing is to select a temperature range to graph. For example, a user may only be interested in looking at the data points collected during a hold period at 200° and could specify 190 for the “Minimum Y-Axis Temperature” and 210 for the “Maximum Y-Axis Temperature” to see that data.

MENU BAR:

- Options – this choice allows the user to pick different font types for the headings on the graph. Some screens do not display the default type as well as other screens and changing to a different font may make the display more readable.
- Print – this menu bar option prints a copy of the currently displayed graph on the default printer for the computer.

KISS INSTALL KILNS

Sample Screen:



GENERAL INFORMATION:

This screen provides a way for the user to tell KISS about its connection with the kiln controllers, as well as providing a way to perform some testing of that connection, if there's a problem.

Information Fields & Command Buttons:

- Port
- GO button in "Communications" Box
- How many kilns?
- GO button in "How many kilns?" Box
- Run Echo Test

PORT

This field is used to define to KISS where the converter connected to the kiln controllers is plugged into the computer. The first time KISS is run, this field will contain COM1, indicating the serial port #1 on the computer. Any subsequent times KISS is used, this field will retain any change the user has made to this field in this screen, if the user has saved the change by clicking the GO button in the Communications Box. If this selection is not made correctly, all the kilns may show up as "Not Connected". If you think you have selected the correct port here, and the kilns are still showing up as "Not Connected", the Connection Troubleshooting may be able to help identify the problem.

HOW MANY KILNS?

This field is used to change the number of kiln controllers connected to the computer. The first time KISS is run, this field will contain 1, indicating one kiln controller is hooked up. Any subsequent times KISS is used, this field will retain the number of kilns from the last time the program was used. So, once the user has set how many kilns are connected, this does not need to be changed unless kiln controllers are added or taken away from the physical setup.

The number in this field can be changed either by using the spin button next to it (the up & down arrows which will increment & decrement the number in the box if the user clicks the arrows with the mouse) or by clicking into this field & using the keyboard to enter a new number from 1 to 50. The *GO* button in this box must be clicked after the number is displayed in the field for the change to take effect.

APPENDIX A: SUMMARY REPORT DATA COLLECTION

This type of data collection provides an overview of the firing process in a kiln, according to what the controller had been set up to do. Here is an example of what a summary report would look like:

All temperatures given in Fahrenheit K.I.S.S. Report Generator			
Report Name: Kiln 1.txt			
Firing Type: Ramp/Hold User Program 1			
Segment	Rate	Temp	Hold
1	0001	1000	0005
2	1000	0900	0005
3	0500	1000	0005
4	9999	1800	0005
5	9999	1600	0005
6	1500	1900	0005
Start Time: 1/4/05 11:23:17 AM			
End Time: 1/4/05 11:49:42 AM			
Elapsed Firing Time: 00:26			
Firing Aborted. Current Status: At Idle			
Final Temperatures: Zone 1: 77°			
Zone 2: 77°			
Zone 3: 77°			
Settings			
Errors: On			
Lag Temperature: 0010			

The file created using this type of data collection is always named “kilnX.txt”, where the X indicates the controller id for this kiln. For example, “kiln4.txt” would be the file used for the controller with id #4. If the firing process is starting at the controller, rather than using KISS, the start time in this report will be blank, but an elapsed firing time according to the controller will be printed.

APPENDIX B: DATA COLLECTION OPTIONS

The Kiln Interface Software System has capabilities to collect data about the firing process. The data collection is a process of reading the information from the controller and storing the data on the computer's mass storage. This means the controllers must be powered up, the computer must be left running and KISS must be running the entire time the data collection is in process.

There are three kinds of data collection:

- continuous data collection, which will collect detailed information about the kiln environment whenever this software is running
- individual firing data collection, which will collect the detailed information about a firing process and assumes the user will want to stop the data collection once the firing has completed
- summary report data collection, which only provides an overview of the firing in a kiln, such as elapsed firing time, and the program which was used to fire the kiln, but not detailed temperature & time information.

This table compares the different types of data collection and the features associated with each type.

	Continuous Data Collection	Individual Firing Data Collection	Summary Report Data Collection
Data can be Imported into Excel	Y	Y	N
Filename	monitorX.dat	User-selectable	kilnX.txt
Maximum File Size Controlled	Y	N	N
Detailed Information	Y	Y	N
Must Be In Effect when Firing is Started	N	N	Y
Once Turned On, Stays in Effect every time KISS is started	Y	N	Y
Contains Controller Program Information	N	Y	Y
Writes All Information at End of Firing	N	N	Y
Must have Firing Started or Stopped w/ KISS to write Information	N	N	Y

Continuous Data Collection

This type of data collection is turned on one time and then, whenever KISS is running, will write the information to the file for that kiln until it is turned off by the user. The data written using this type of data collection will work with the graphing capability in the software, giving the user a visual presentation of the kiln environment. To access this type of data collection, the user must first turn it on using the Menu Screen. There is an information field on that screen titled “Collect Data All the Time?”. This field should be marked “Yes” to set up this continuous data collection. If that information field is marked “Yes”, then two other information fields will be displayed on the Menu Screen. Those information fields will allow the user to enter two additional parameters for this type of data collection, specifying how often the information is written to the file and how large the file can get before the user is notified. The first information field, “Frequency for Data Collection (in minutes)”, specifies how often the data is written to the file. So, for this information field, if the user enters a 4, the temperature of that kiln will be written to the file every four minutes. The second information field, “File Size Maximum (in Kbytes)”, specifies a maximum size in kilobytes that this constant data collection file can become before KISS notifies the user. At that point, the user has the choice to increase this file size or delete the file, which would cause the current data in the file to be deleted, but KISS would recreate the file and continue with the data collection at the next interval.

The file created using this type of data collection is always named “monitorX.dat”, where the X indicates the controller id for this kiln. For example, “monitor5.dat” would be the file used for the controller with id #5.

Continuous Data Collection File Contents

The records written to the continuous data collection file will contain temperature and program information. There will be a new record written at each time interval, as specified in the Menu Screen, in the field labeled “Frequency for Data Collection”. In each record, each of the fields will be separated by a comma, which will allow for import of these files into a spreadsheet-type application, such as Microsoft Excel. The first field contains an asterisk. The other fields contain the information described in the table below. The date is given in the MM/DD/YY format and the time is given in the HH:MM:SS XX format, where XX is either AM or pm.

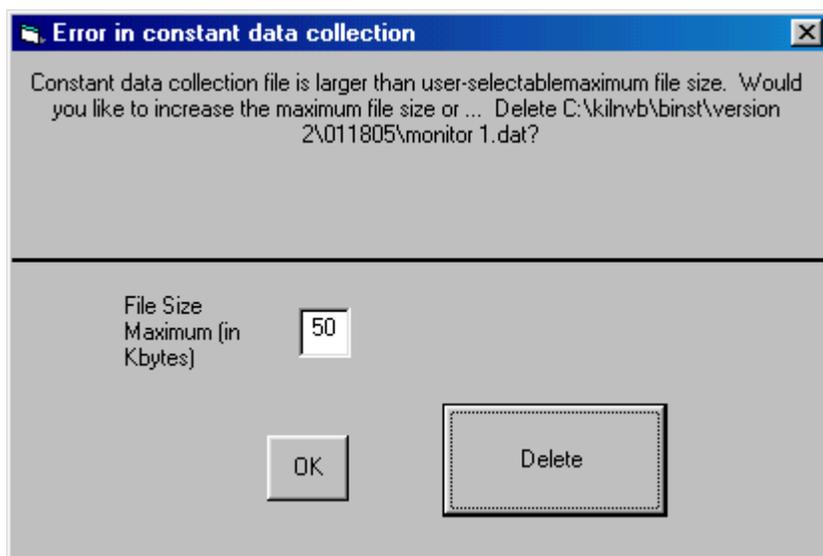
The fields numbered 2 through 7 are all in numeric format. Field #7 is in alphanumeric format and will appear as blanks, if the kiln is not currently firing when the record is written out. If Field #7 is blank, it will still be delimited from the other fields by commas. If the kiln is firing, Field #7 will contain which ramp or hold section of the firing program is currently occurring. For example, “Ramp 3” would indicate the kiln is firing the 3rd ramp section of the program. Field #8 will also be in alphanumeric format and will indicate the current status of the kiln when the record is written. For example, “At Idle” in Field #8 indicates the kiln is currently at a stopped condition or “Firing” in Field #8 indicates a program is being run.

Field #10	*
Field #11	Date
Field #12	Time
Field #13	Setpoint Temperature
Field #14	Current Temperature Reading from Thermocouple 1

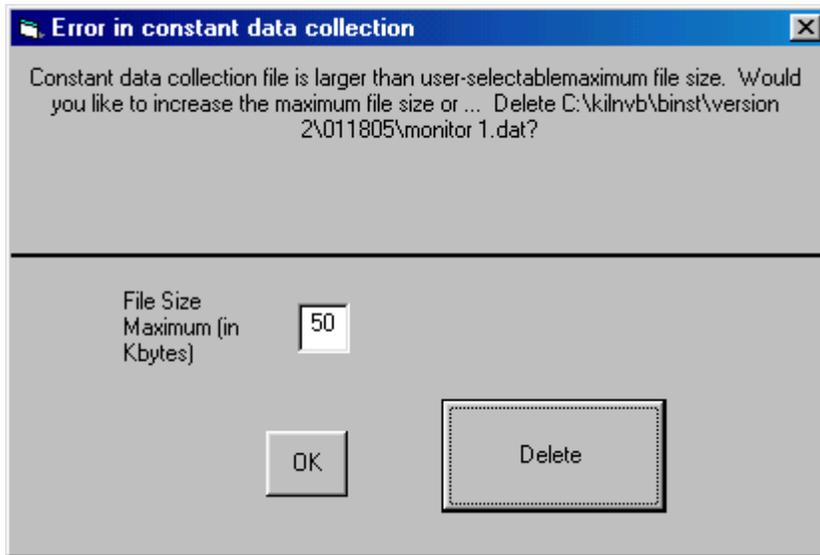
Field #15	Current Temperature Reading from Thermocouple 2
Field #16	Current Temperature Reading from Thermocouple 3
Field #17	Current Segment, if Firing
Field #18	Current Status

Continuous Data Collection Errors

This type of data collection does monitor the size of the file in which the detail records are being written. The objective of this monitoring is to ensure that the file does not become larger than the user wants it to be. Every time a record is written to the file, the current file size is checked against the file size maximum, as entered by the user in the Menu Screen. If the current file size is larger than the maximum allowable size, the following screen will be displayed, where the filename will depend on which kiln. For example, in the following screen, the kiln whose constant data collection file has become too large is the kiln whose controller has an id number of 1. (*monitor1.dat*)



If this screen is displayed, the user has two choices: to increase the maximum allowable file size or to delete the current file. If the user chooses to increase the file size, this next screen will be displayed:



The user may enter a larger file size in the information field titled “File Size Maximum (in Kbytes)”, or delete the current file, by clicking on the “Delete” button. If the user chooses to increase the file size at this error screen, this parameter will be saved and can be verified on the Menu Screen, just as if the user had changed it there. If the user chooses to delete the current file and start the continuous data collection over, the “Delete” command button should be clicked. The option of deleting the file will be verified with this

Individual Firing Data Collection

This type of data collection must be turned on as each firing occurs. Like the continuous data collection type, this file will write temperature and firing information to the file that will work with the graphing capability in KISS, giving the user the visual presentation of what actually happened during a firing in the kiln environment. To access this feature, the controller program must be running (not at Idle) or the user can start the kiln once data collection parameters have been set up, right from the data collection screen. This type of data collection will then continue until stopped by the user. However, once the controller has gone to “COMPLETE” or “STOP”, reminders will be displayed on the screen that the data collection is still occurring and asking whether the user would like to stop the data collection.

To start the individual firing data collection when the kiln is not currently running, the user should select Collect Data from the Main Screen. At this point, the user will be asked for the filename

APPENDIX C: IMPORTING DATA

Data collection using either the continuous data collection option or the individual firing data collection option should be able to be imported into a spreadsheet application. This explanation will focus on importing this type of information into Excel, but the general information should be transferable into any type of spreadsheet.

To import the data file into a spreadsheet, open Excel. From the main toolbar, click *File*, then *Open*. Because the data file is not originally an Excel file, click the down arrow towards the bottom of the screen, next to the place labeled “Files of type” and select the option “All Files”. After this, the data file collected by KISS should be displayed in the file selections, once the user has selected the correct directory for that file.

If the user selected all defaults when installing and working with KISS, the correct directory would be “C:\Program Files\kilnkiss”. For continuous data collection, the filename is “monitorX.dat”, where X indicates the controller id, but, for individual firing data collection, the user has named the file.

Once the file has been selected, a set of several screens will be displayed to allow the user some options for importing this data file into the spreadsheet. The first such screen, labeled “Text Import Wizard – Step 1 of 3”, allows the user to define whether the fields in each record are delimited or fixed length. The user should select delimited fields for files created by either type of data collection.

For the individual firing data collection type, the user may opt to start the import at a different row, rather than the default of row 1. That will omit from the spreadsheet the information that the user entered in the header field in the data collection screen on KISS, but could be included to use in the spreadsheet. There is a preview of the file available on this screen, so the user can determine where the actual data records begin (those records have an asterisk in the first field of the record).

The continuous data collection type does not have any header information, so the data records will actually start with the first row in files collected using that type of collection. Once the user has noted that the fields are delimited and not fixed length, click “Next” for the next set in these screens. The second screen, labeled “Text Import Wizard – Step 2 of 3”, allows the user to define the delimiter used to separate the fields in this file. The user should select the comma as the delimiter, then click “Next” for the last in this set of screens. This final screen allows the user to select each column of data and define what kind of information is contained in that column.

In the sample files, the first column, containing all “*”s, was not imported into the spreadsheet file, the second column was defined as a date field in the “MDY” format and the remaining columns were left as the default, the general data format. Once the user has defined each column appropriately, click “Finish”.

The spreadsheet will be displayed with the conversion done as the user asked. The column containing dates may be displayed with all asterisks, indicating that the column width is not large enough to display the dates, until the user widens the column. Once the file has been selected, a set of several screens will be displayed to allow the user some options for importing this data file into the spreadsheet. The first such screen, labeled “Text Import Wizard – Step 1 of 3”, allows the user to define whether the fields in each record are delimited or fixed length. The user should select delimited fields for the temperature log file.

The sample data included in this documentation also had the option set from this screen to start the import at row 2, rather than the default of row 1. That will omit from the spreadsheet the information that the user entered in the header field in the data collection screen on G/H CIS, but could be included to use in the spreadsheet. Once the user has noted that the fields are delimited and not fixed length, click “Next” for the next set in these screens. The second screen, labeled “Text Import Wizard – Step 2 of 3”, allows the user to define the delimiter used to separate the fields in this file. The user should select the comma as the delimiter, then click “Next” for the last in this set of screens. This final screen allows the user to select each column of data and define what kind of information is contained in that column.

In the sample files, the first column, containing all “*”s, was not imported into the spreadsheet file, the second column was defined as a date field in the “MDY” format and the remaining columns were left as the default, the general data format. Once the user has defined each column appropriately, click “Finish”.

The spreadsheet will be displayed with the conversion done as the user asked. The column containing dates may be displayed with all asterisks, indicating that the column width is not large enough to display the dates, until the user widens the column.