COLOR TOUCH SCREEN
DATA LOGGER

OPERATIONS MANUAL

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The Color SDS Touch Screen Data Logger (SDS8120 / SDS8140) provides the hardware and software needed to meet industry standards for furnace temperature uniformity by logging and generating temperature and data log reports.

It is easy to use and addresses the many industrial applications where data logging, trending, and reporting are required. The product is available in either the 20- or 40-channel version with user-defined inputs for each channel and comes with reporting software to easily generate survey reports.

The easy to use Survey Template and Report Manager provide users with all of the tools needed to generate uniformity reports. The Report Manager includes a report writer that allows the user to set up reports to meet their specific requirements. The Template Manager allows survey specific data to be created, updated and used during the reporting process. All reports can be printed, saved electronically and emailed using the software utilities. The SDS software tools, along with the data logger, combine to create a powerful solution for data logging and reporting temperature uniformity surveys.

The SDS8120/8140 is designed for harsh operating environments but it is recommended that it be stored in a dry location without excessive heat when not in use.

Product Specifications

- User defined "logging" intervals as frequently as 10 seconds

- AC (90 – 240 V) and DC Power

- Rechargeable battery – Approximately 12 hours of "runtime"

- Password protected menu options

- Easy calibration

- Web-page enabled real-time view

- Ethernet and USB serial communications

- 16-Bit A/D converter

- 1 gigabyte of on-board storage

- SDS Dimensions: 16"(40.64cm)D x 20"(50.8cm)L x 8"(20.32cm)H

- SDS Weight: 29 lbs (13.15kg)

- Shipping Carton Dimensions: 25"(63.5cm)D x 22"(55.88cm)L x 15"(38.1)H

- Shipping Carton w/SDS Weight: 35 lbs (15.87kg)

| TC Type | Degrees F. | | A/D | Accuracy | Accuracy | Accuracy |
	Min	Max	Full scale	Full Scale	At 1600 Degrees F.	At 1600 Degrees F with thermistor error
B	32	3308	0.0124%	0.0179%	0.29	0.65
C	32	4208	0.0062%	0.0067%	0.11	0.47
E	-328	1832	0.0031%	0.0032%	0.05	0.41
J	-346	2192	0.0031%	0.0036%	0.06	0.42
K	-328	2502	0.0031%	0.0045%	0.07	0.43
N	-328	2372	0.0031%	0.0052%	0.08	0.44
NNM	0	1409	0.0031%	0.0033%	0.05	0.41
R	-58	3214	0.0062%	0.0118%	0.19	0.66
S	-58	3214	0.0124%	0.0133%	0.21	0.57
T	-328	752	0.0062%	0.0119%	0.19	0.55

Table 1 - Thermocouple Types, Scaling, and Accuracy

*** Note: Accuracy at 1600 Degrees F with thermistor error requires SDS firmware level 1.10 or later ***

Software Installation

You will find the SDS Reporter software that ships with the unit includes all the reporting and administrative utilities. Insert the USB drive into your computer and click the setup.exe file. You will be given a step-by-step instruction for completing the installation process. See Installing the SDS Software section for more details.

Changing the System Date and Time

The time and date that SDS uses are based on the time and date of the touch screen operating system. To change the time and date, first shut down the SDS software (Figure 1); note that this requires administrator access. Once the software is shut down, double tap on the time shown in the task bar at the bottom of the screen on the operating system desktop (Figure 2). Change the date and time in the dialog box that appears.

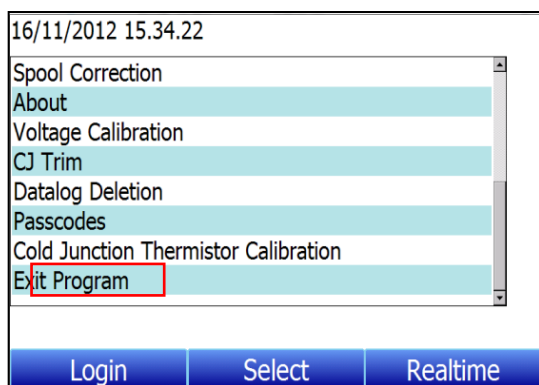Color Touch Screen Data Logger Operations Manual

Figure 1 - Option to Shut Down the SDS
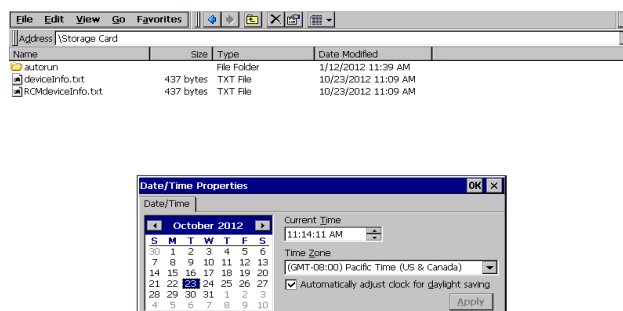Software (Administrator Access required)

Figure 2 - Date and Time Change Dialog Box

Once you have changed the date and time, you will need to save the changes to the operating system registry. This is done using the "SaveRegs" application. In most cases, the "SaveRegs" shortcut will be installed on the operating system desktop. Double tap on the shortcut and save the registry settings. Then close the "SaveRegs" window.

NOTE: If touch screen is recording data with date and time information that is "shifted" from that displayed in the external datalogging software (e.g., readings at 9am are displayed as 11am), then the time zone and daylight savings settings *on the external computer* may need to be adjusted, in addition to performing the procedure above.

Finding and Setting the IP Address of the Color SDS Data Logger

For certain functions, it may be necessary to find the IP address (the address that identifies the device on a network) of the Color SDS Data Logger. A possible example of this could be Connecting the SDS Data Logger to a Network. Less frequently, it may be necessary to <u>change</u> the IP address of the data logger, or to change it from a dynamic IP address assigned by the local network to a static IP address that does not change (unless you change it or set the IP address back to dynamic).

To <u>find</u> the current IP address of the data logger, simply open the Instrument Information screen and scroll down to the Screen IP Address (Figure 3)
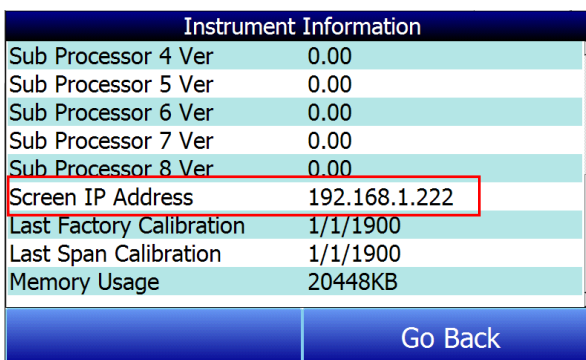

Figure 3 - Location of Screen IP Address in
Instrument Information screen

By default, the Windows CE operating system on which the data logger software runs obtains IP addresses dynamically. This means that the IP address may change depending on a number of factors. In order to change IP assignment or the IP address itself, you will need to shut down the SDS software and access the operating system Control Panel. This procedure is described below.

To change the IP address of the Color SDS Data Logger, first shut down the SDS software. This requires administrator access.
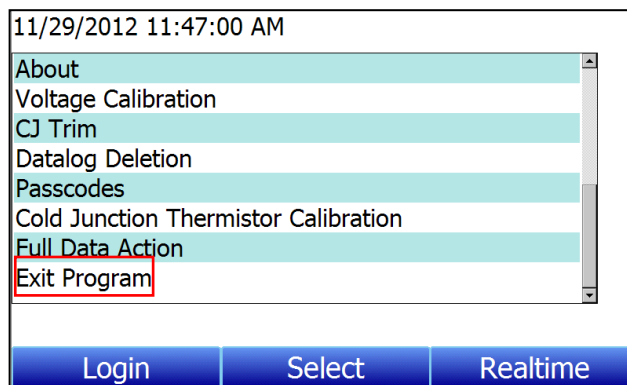
Figure 4 - Exit Program option (requires administrator access)

Next, click Start, Settings, and Network and Dial-up Connections (Figure 5).
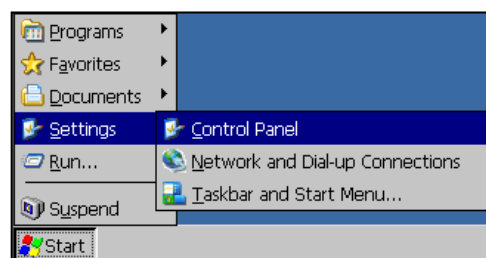
Figure 5 - Accessing the Network and Dial-Up Connections

Double tap on the connection for the Color SDS touch screen device (in the example, it is called "SMSC91181"). An Ethernet Driver settings window will appear, giving you the ability to specify an IP address. To do so, click the "Specify an IP address" radio button (see Figure 6). Then enter an IP address manually. **Make sure that the IP address does not conflict with another IP address already assigned on the network.**

You will also need to add a Subnet Mask and a Default Gateway. The subnet mask is usually already determined for

Figure 6 - Specifying an IP Address

the network. A common subnet mask is 255.255.255.0; however, check with the network administrator to be sure. The default gateway is usually the address of the network router or other device that is responsible for routing network traffic.
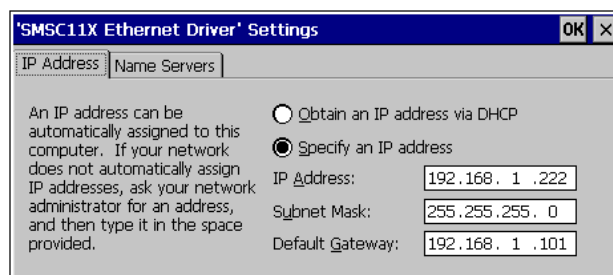
Calibration

The SDS data logger is calibrated prior to shipment. The calibration process is available through the touch screen Menu on the data logger. Instructions for calibration are included in this manual. Super Systems calibrates the SDS data logger using NIST traceable instruments that are listed on the calibration certificate included with the device. The default calibration is performed using a zero and span routine for the millivolt range of 0 – 80mV unless otherwise specified on the purchase order. Ranges and thermocouple types will be listed on the certification provided with the SDS data logger. Each range that is being used should be calibrated. For a list of suggested mV ranges by thermocouple types, please refer to Table 1 - Thermocouple Types, Scaling, and Accuracy. Other calibration ranges are available upon request.

An input device will be used to input a specific type K thermocouple value and the data logger value will be recorded. This will be performed at different temperatures and printed with the certificate.

Setting the DIP switches to Assign Board Numbers

Dip Switch

■ — ON
□ — OFF
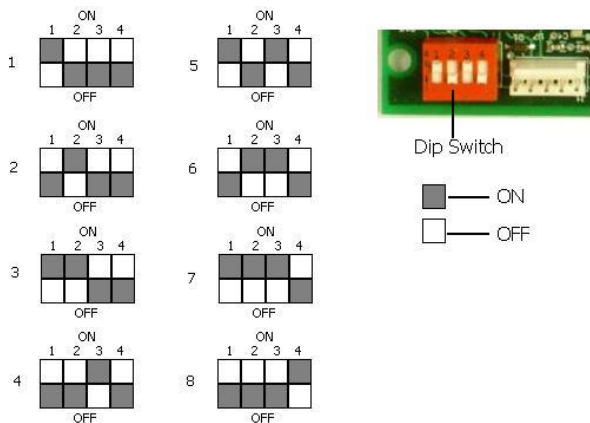
Each input board must have a unique address assigned by the DIP switches on each input board. A unique address will ensure that the Data Logger will correctly read all of the boards set up. If two or more boards have the same address, multiple errors could occur such as: Data Logger reading data from one board one second, then reading data from another board the next second, no data being read from the Data Logger, etc. *It is important that each board has a unique address*. Each DIP switch has four switches on it labeled: 1, 2, 3, and 4. These numbers follow a binary numbering system – i.e. 1 = 1, 2 = 2, 3 = 4, and 4 = 8. There is an ON and an OFF position for each switch. OFF = 0 and ON = 1.

IMPORTANT: When using SDS Reporter with the Color SDS Data Logger, Options > Color Screen Scanning must be selected. Refer to the section **Options → Color Screen Scanning** for more details.

When logging data, the operator will use the on-board display to start and stop the data logging / survey process. The first steps related to data logging are connecting the inputs to the terminal strips on the data logger. Each terminal strip represents a single analog board with 5 inputs. You can remove these terminal strips by pulling up on both ends of the terminal strip.

Depending on the model number, you have either 20 or 40 input channels for data logging. For each channel there will be a positive and negative connection which must be attached to the appropriate input.

The operator defines an input type for each channel.

Once the inputs have been connected, the operator selects which inputs will be included in the survey. This is done in two ways:
1. When a template has been selected, the input channels setup for the template, as defined in the Template Manager, will be the selected channels for the survey. **It is strongly suggested that you select a template prior to running a survey.** If you want to create new templates, please see the section *SDS Template Manager*. Survey Control and input selection screens are shown in Figure 7.
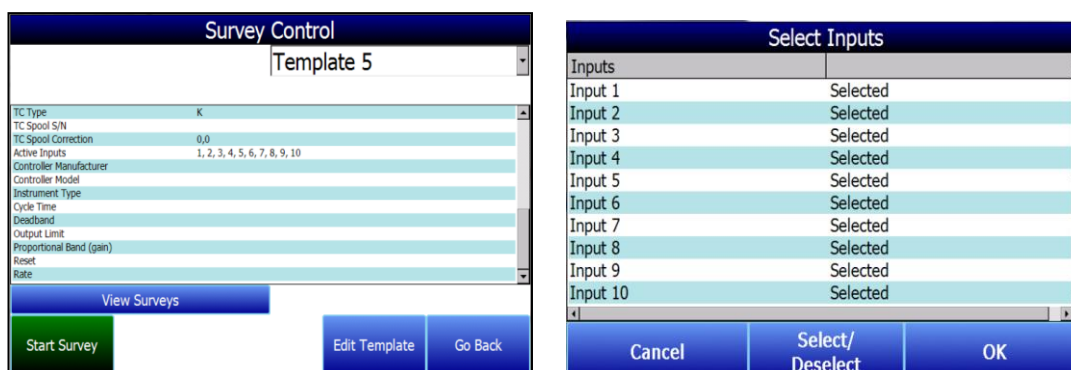
Figure 7 - Survey Control and Input Selection screens

IMPORTANT: Input channels defined in the Survey Template will override the settings in the *Select Input Channel* option once the survey is started. All channels are being data logged at all times. The active inputs provide real time information on the display and evaluation for stabilization, hottest TC and coldest TC. In the event that a TC is not selected, it can be selected when using SDS Reporter for inclusion in the final survey report.

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2. Once a survey is started, the input selection can be updated on the data logger using the *Select Input Channels* option.

Figure 8 - Select Input Channels Option in Main Menu

Analog Inputs

The Super Systems, Inc. 31631 Analog Board contains a group of five channels isolated from the main DC power source. The board can be connected to thermocouples, volta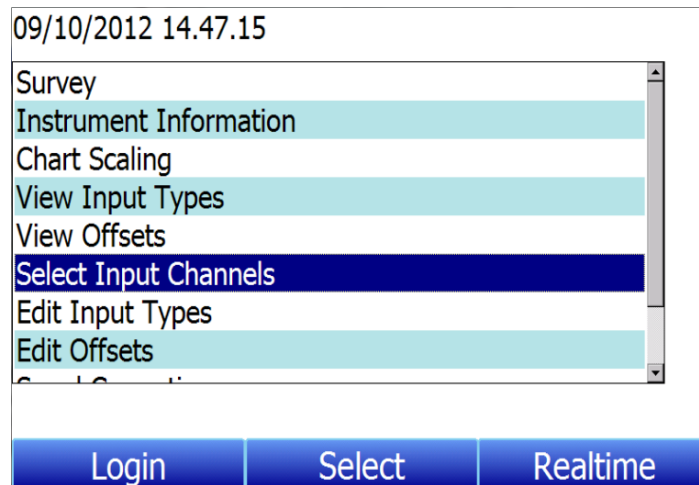ge sources from 20mV full scale to 1.28 Volts full scale, or 4 – 20 mA current loops. **Take caution when using current loops to avoid damaging the input** (see 4 – 20 mA Current Loop connections).

Thermocouple wires can be connected directly to the terminal blocks. The thermocouple junctions should not be grounded. If they do touch a ground reference, all thermocouples on a board must have a common ground reference. If multiple thermocouples are connected to different ground reference points, the accuracy of all thermocouples on the board cannot be guaranteed to be accurate.

Voltage connections

Voltages from 0 mV to 1.28 Volts can be directly connected to the terminal blocks. When measuring ground-referenced voltages, all references must share a common ground reference. If the voltage sources are connected to different ground reference points, the accuracy of all the voltage sources connected to the board need to be checked for accuracy.

4 – 20 mA Current Loop connections

Before connecting the current loop, insert the shorting jumper on the board for each channel used to measure current loops. This jumper inserts the 62-ohm shunt resistor across the input of the A/D. If multiple current loops are connected to one board, all must share the same power supply and ground reference points or the accuracy of all the current loops need to be checked for accuracy.

Survey Templates

The data logger will default to the last survey template used. To modify the template being used, the operator can go to the *Survey* menu option. This data will be carried over for the reporting process to make the reporting quick and easy. On the Survey Template screen there are parameters, such as setpoint, that can be modified for a specific survey. After setting the required parameters, the start survey process can be selected. This will timestamp the selection and the data logger will log all channels that have been selected for logging.

The operator may receive deviation alarms depending on the current input and setpoint as well as the alarm settings. The alarm will notify the operator when an input is outside the plus/minus tolerance for the setpoint. The alarm information will display on the data logger and show the number of channels above tolerance and below the tolerance. The survey continues to run. It is simply providing the operator with the information on the display.

The operator can view the input channel data on a number of different screens. The *overview display* will display all channels on the device.

At any time, the operator can view the data in real time from the computer using the SDS Reporter software. When selected, the real time data option displays data every 10 seconds. The system will update the data in 10 second intervals every minute. Follow instructions for connecting the data logger to the PC.
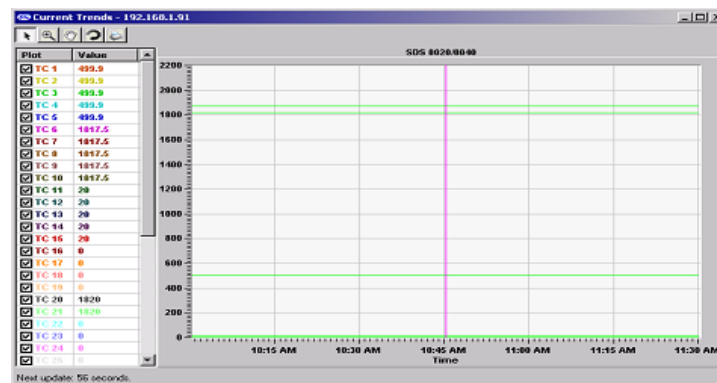

Figure 9 - Current Trends Screen (SDS Reporter)

While the survey is running, several options are available: To **stop** the survey, select *Complete Survey* from the Survey Control screen (which can be opened using the Survey option from the main menu). Use *Mark Approach* to add a timestamp to the survey on when the furnace was heating up to its target temperature. Use *Mark Survey Start* to mark when the survey began.
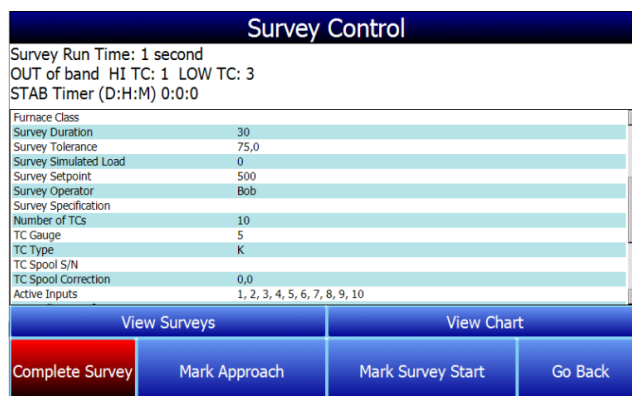
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Figure 10 - Survey Control Window (visible from the data logger during a survey)

Click *View Surveys* to view data on past surveys. Click *View Chart* to view the current chart of data being logged.

Survey Run Time indicates the amount of time since the current survey was started.

OUT of band indicates the number of TCs that are not within tolerance. *HI TC* indicates TCs above the user-defined max. *LOW TC* indicates TCs below the user-defined minimum.

STAB Timer indicates the length of time (in Days:Hours:Minutes) that all TCs have remained within tolerance. NOTE: The Stability Timer will reset when min or max TC values are changed.

After stopping the survey, other surveys can be taken by repeating the above steps. At any time, all survey data can be downloaded to the PC using the Download Surveys and Data option on SDS Reporter. Follow instructions for connecting the data logger to the PC.

Once the data has been downloaded, it is available for reporting. By clicking on the File > Open menu option, the operator will be given the Report dialog to generate a survey report. Reports use logged data and the user specified interval in the report. The report template that is selected will form the final report view with all of the template data, survey data and additional report parameters that are entered. The report templates are user-defined and should be configured to meet your needs. All reports can be saved and displayed at a later date.

Installing the SDS Software

IMPORTANT: The person installing the SDS Software must have administrative rights on the computer(s) where the installation is taking place for the installation to be successful. Refer to page 19 for specific Windows10 installation steps. NOTE: Software will not install on MacOS.

Double-click on the setup file, setup.exe, to start the auto-installation. (Avoid installing from SDSSetup.msi, as this will not install prerequisites if necessary.) If there is no version of the SDS Reporter running on the computer, the installation will prompt the user for the download location (Figure 11).
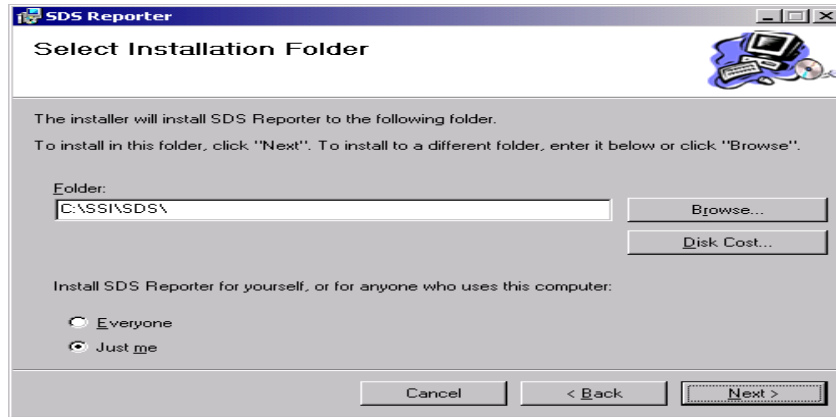
Figure 11 - SDS Reporter setup screen

Prerequisites for installing SDS Reporter include .NET Framework 2.0, SQL CE 3.5, and either ActiveSync or Windows Mobile Device Center. The setup.exe program will check to make sure that these prerequisites are installed and, if necessary, install them.

The default location is "C:\SSI\SDS". Click on the "Browse" button to select an alternate location. Clicking on the "Disk Cost..." button will display the available computer drives onto which the SDS Reporter can be downloaded, as well as the total space, available space, and required space for each drive. Selecting the "Everyone" option will install the SDS Reporter for all users on the computer, while selecting the "Just me" option will only install the SDSReporter for the current user. Clicking on the "Cancel" button will prompt the user to confirm exiting the setup without continuing. Clicking on the "< Back" button will display the previous screen, which is the introduction screen for the installer. Clicking the "Next >" button will continue with the installation process (Figure 12).
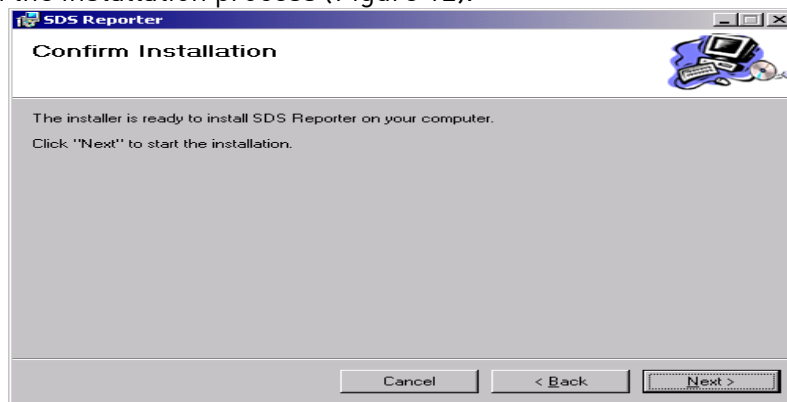

Figure 12 - Installation ready screen

Clicking on the "Cancel" button will prompt the user to confirm exiting the setup without continuing. Clicking on the "< Back" button will display the previous page, which is the installation setup page (Figure 11). Clicking on the "Next >" button will install the software to the specified location. Once the software has been installed, the installer can be closed. The SDS Reporter software will now be ready to use.

If there is a version of the SDS Reporter already installed on the computer, the installer will either re-install the software (Repair SDS Reporter option) or remove the software from the computer (Remove SDS Reporter option) (Figure 13). Clicking on the "Finish" button will

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proceed with the selected action. Note: The installer does not remove any subfolders in the main SDS folder. These files will have to be manually removed.
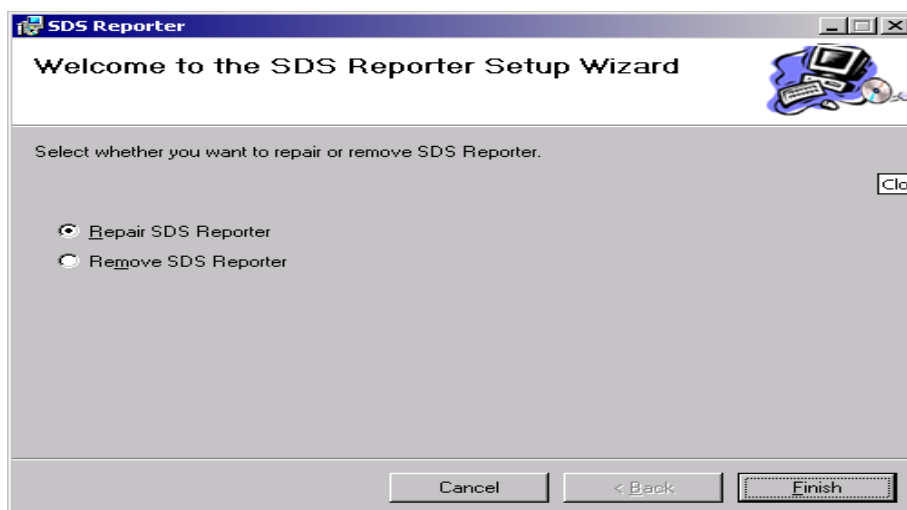

Figure 13 - Repair/Remove SDS Reporter screen

Connecting the SDS Data Logger to a Network

Every SDS Data Logger shipped includes an Ethernet crossover cable that will connect the data logger to a network. Once the data logger is connected to a network, the SDS Reporter software will be able to find it during any searches.

Connecting the data logger to your network or directly to a PC can be accomplished using the Ethernet port on your data logger.
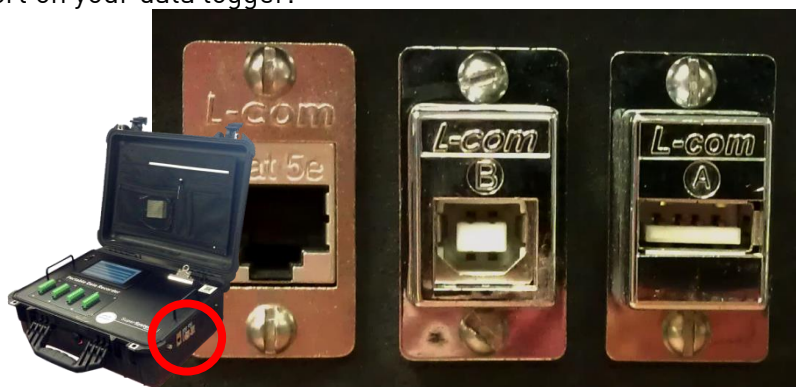

Figure 14 - Location of Ethernet and USB ports

If you are connecting the data logger to your network, you will need an Ethernet cable (the cable provided is a crossover cable for direct connections to a PC). The cable is plugged into the data logger Ethernet plug; the other end should be plugged into a network hub. If the IP Address of the data logger needs to be changed, this can be done on the data logger through the Set IP Address menu option.

If you are not putting the data logger on the network, you should use the Ethernet crossover cable that has been provided with the device. Ethernet crossover cables are most often used when connecting two Ethernet computers without a hub. An Ethernet crossover cable has

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its send and receive wires crossed. When using a hub or switch, this is automatically done for you.

With a crossover cable, you are forming a network between the computer that you are directly plugged into and the data logger. There will be some network settings on the data logger and on the computer that you will have to configure for the two devices to communicate.

Setting an IP address in the data logger is described in Finding and Setting the IP Address of the Color SDS Data Logger above.

Network settings can be found through the *Control Panel* in Microsoft Windows. Using the crossover cable will require the Local Area Connection to be modified.

In Windows Vista and Windows 7

In Windows Vista and Windows 7, open the Network and Sharing Center menu within Control Panel. Click "Change adapter settings". This will bring up a list of network connections, including active and inactive ones. Right click on the name of the network to which the Color SDS Data Logger is or will be connected, and then click Properties.
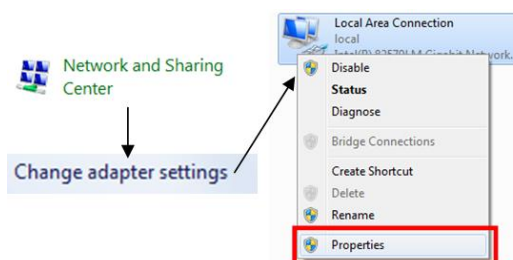

Figure 15 - Accessing Network Connection properties

The network properties window will appear. Click on the line that reads "Internet Protocol Version 4 (TCP/IPv4)" and then click Properties.
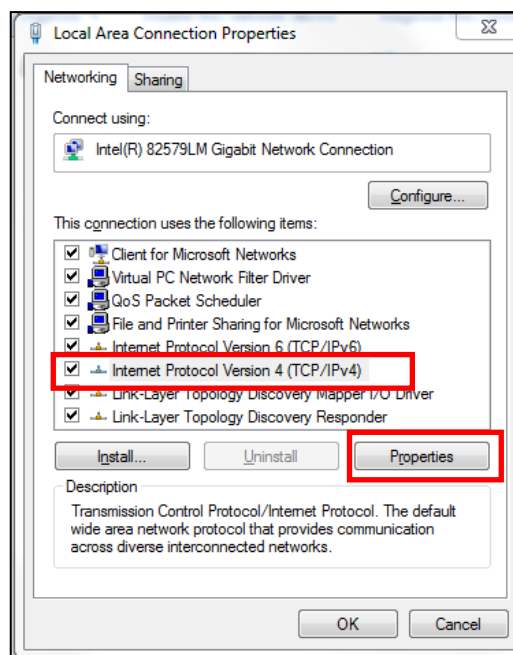

Figure 16 - Accessing TCP/IPv4 Properties

In the Internet Protocol Version 4 (TCP/IPv4) Properties window, you will need to select the option for Use The Following IP Address. These settings should match the settings on the Color SDS Data Logger.

To change the network settings on your computer you may need additional information. If needed, please refer to the computer manual.
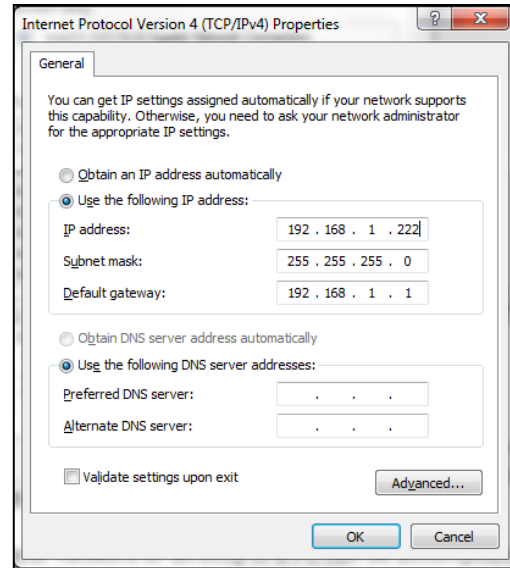

Figure 17 - Changing IP address settings

In other Windows versions:

The Properties can be changed by highlighting the connection and using the right mouse button to click and select the Properties tab or by highlighting the connection and clicking on Change setting of this connection.
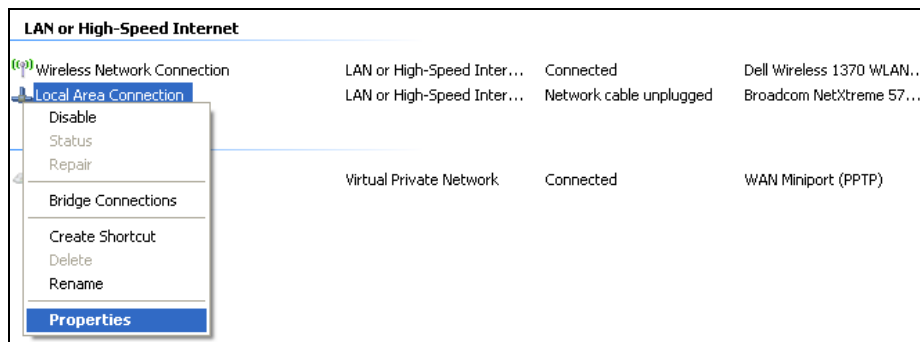

Figure 18 - Network Connection Properties

Once the Local Area Connection Properties screen is displayed, the Local Area Connection Properties tab should be highlighted. Click on Internet Protocol (TCP/IP) and then click the Properties button to display Internet Protocol (TCP/IP) Properties.
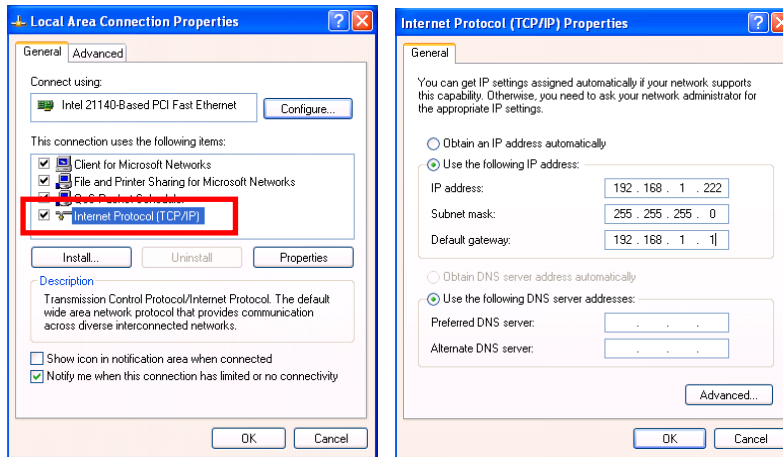
Figure 19 - Network Connection Dialog Boxes

In the Internet Protocol (TCP/IP) Properties window, you will need to select the option for Use The Following IP Address. These settings should match the settings on the Color SDS Data Logger.

To change the network settings on your computer you may need additional information. If needed, please refer to the computer manual.

Connecting the SDS Data Logger to a Local Computer via USB

The data logger can be connected directly to a local computer using a USB cable and SDS Reporter. Windows uses special software to transfer files and information between the data logger and the local computer when connected via USB. If you are using Windows XP, this software is called ActiveSync. If you are using Windows Vista or Windows 7, the software is called Mobile Device Center. If the required software was not installed prior to installing SDSReporter, the SDSReporter Setup utility (run from setup.exe) would have installed the required software.

Windows 10 users may need to perform the following steps to enable USB connectivity:

Go to the Start Menu (bottom left corner). In the Start Menu, type "Services" in the Search Bar.

Double-click on "Windows Mobile-2003-based devices connectivity."

In the "Log on" tab at top, select "Local System Account" and click "OK."

Go to the Start Menu again. Type "Services" in the Search Bar.

Double-click on "Windows Mobile-based device connectivity."

In the "Log on" tab at top, select "Local System Account" and click "OK."

Windows XP requires a driver for it to properly connect to the data logger's color touch screen operating system. Install this driver, if necessary, by selecting the "Check Screen Driver Installation" option under the **Help** menu in SDSReporter (Figure 20), and then clicking "Start Driver Installation" on the next screen.
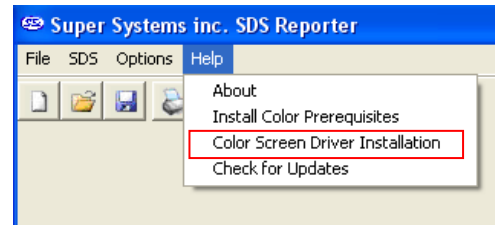

Figure 20 - Color Screen Driver Installation option

If you are using an older version of SDSReporter, be sure to update it by clicking "Check for Updates", also in the **Help** menu, and then downloading the update when prompted.

To connect the SDS Data Logger to a local computer with USB, first make sure that the data logger is turned on and that the SDS software is running on the touch screen. Next, identify the USB connection point used to connect the data logger to the local computer (shown in Figure 21). To connect the data logger to the computer, you will need a USB cable with cable ends that look like those in Figure 22.

Figure 21 - Location of USB connection point for connecting data logger to local computer

Figure 22 - USB connection types Standard-A (left), Standard-B (right)

Connect the SDS Data Logger to the local computer via USB. If you are connecting the data logger to the computer via USB for the first time, you may see a message on the screen saying that Windows is installing drivers, especially on Windows Vista and 7. Windows may also ask you if you want to set up the device. If this happens, allow Windows to install the drivers, but close the device setup window from ActiveSync or Mobile Device Center.

NOTE: If there is any question as to whether the computer is detecting the data logger and connecting to it properly, check the "My Computer" window in Windows XP or the "Computer" window in Windows Vista and 7. The data logger should appear in this window with a mobile or portable device icon, as shown in Figure 23. Other devices, such as smartphones, may also appear as part of the same list.
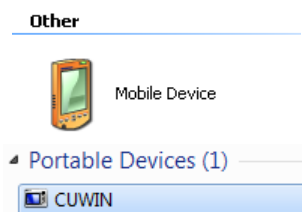

Figure 23 - Data Logger Device Icons in Windows XP (left) and Windows 7/Vista (right)

Once the SDS Data Logger is connected to the computer via USB, start SDS Reporter.

Web Portal

The Color SDS Data Logger features a web-based portal that can be accessed by web browser, using Ethernet, from any computer that is connected to the same network as the data logger. The web portal displays current temperature readings for each thermocouple input.

To access the web portal, first open a web browser (such as Internet Explorer or Firefox). Next, in the location bar, type *http://* followed by the IP address of the data logger. One way of finding this IP address is to obtain it from the Instrument Information window, as shown in Figure 24.

Instrument Information	
Sub Processor 4 Ver	0.00
Sub Processor 5 Ver	0.00
Sub Processor 6 Ver	0.00
Sub Processor 7 Ver	0.00
Sub Processor 8 Ver	0.00
Screen IP Address	192.168.1.222
Last Factory Calibration	1/1/1900
Last Span Calibration	1/1/1900
Memory Usage	20448KB
	Go Back

Figure 24 – Instrument Information screen and IP address

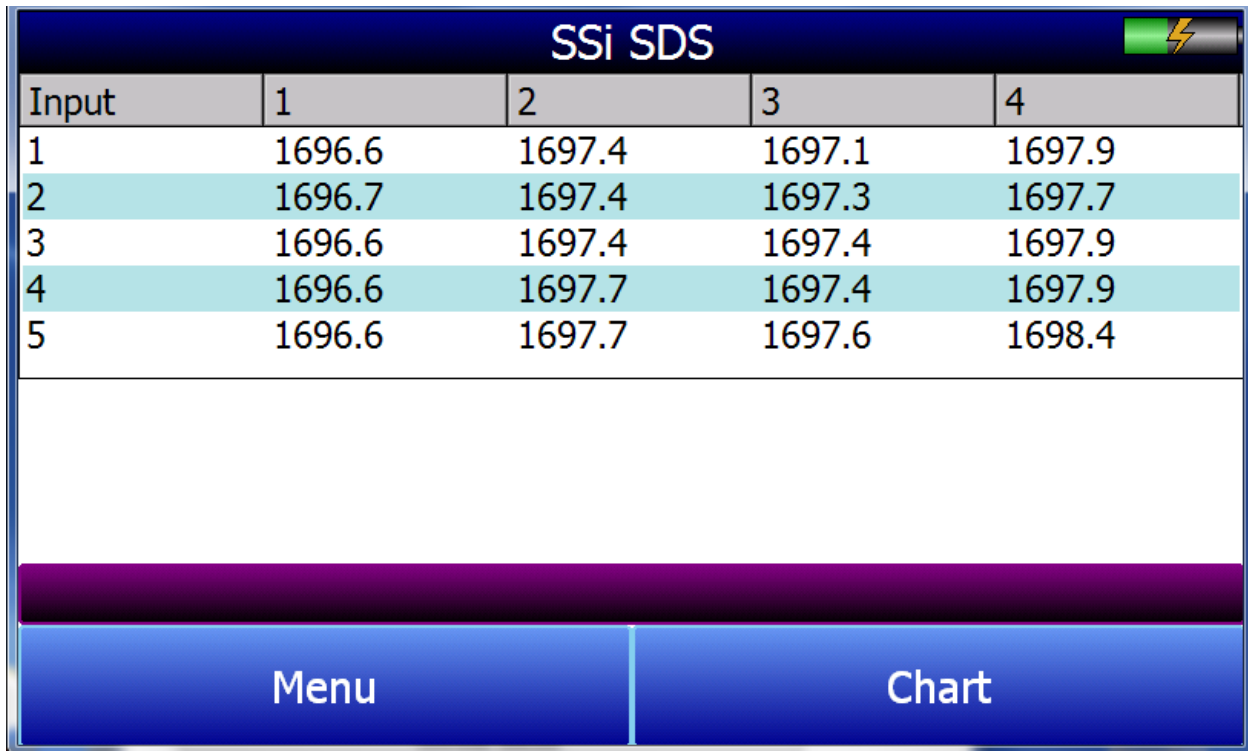Once you've entered the needed web address, you will see a screen that looks like the following one.

SSI Model SDS 8120 Datalogger

Input	Board 1	Board 2	Board 3	Board 4
1	106.5	105.5	105.6	104.9
2	106.2	106.4	106.6	105.6
3	106.4	106.4	106.8	105.6
4	106.2	106	106.7	105.6
5	106	105.7	106.4	105.1

Figure 25 - Web Portal Screen

Home Screen

The default Home Screen for the SDS will display the temperature at each channel. The grey bar along the top represents the 4 analog boards and the numbers along the left-hand side represent the 5 channels for each board.

Input	1	2	3	4
1	1696.6	1697.4	1697.1	1697.9
2	1696.7	1697.4	1697.3	1697.7
3	1696.6	1697.4	1697.4	1697.9
4	1696.6	1697.7	1697.4	1697.9
5	1696.6	1697.7	1697.6	1698.4

Menu	Chart

Figure 26 - Home Screen

Menu

Menu contains the list of operations that the SDS performs as well as other information about the unit. The viewable Menu items change depending on the login value. The complete list of Menu items includes:

User-Level Access (or Higher) Required:
- Survey
- Instrument Information
- Chart Scaling
- View Input Types
- View Offsets
- Select Input Channels
- Edit Input Types
- Edit Offsets
- Spool Correction
- About

Supervisor Access (or Higher) Required:
- Voltage Calibration

- CJ Trim
- Datalog Deletion

Administrator Access (or Higher) Required:
- Passcodes
- Cold Junction Thermistor Calibration
- Full Data Action
- Exit Program

Highest Level Security Access Required:
- Configuration
- Reset Calibration Dates
- Set Nominals
- Set K Factors
- SDX Control
- Modbus Control

> Please call Super Systems Inc. Technical Support (513-772-0060) before attempting to access any of these Menu items: Configuration, Reset Calibration Dates, Set Nominals, Set K Factors, SDX Control, or Modbus Control.

41145.4422237037
8/24/2012 10:43:17 AM

Survey
Instrument Information
Chart Scaling
View Input Types
View Offsets
Select Input Channels
Edit Input Types
Edit Offsets

| Login | Select | Realtime |
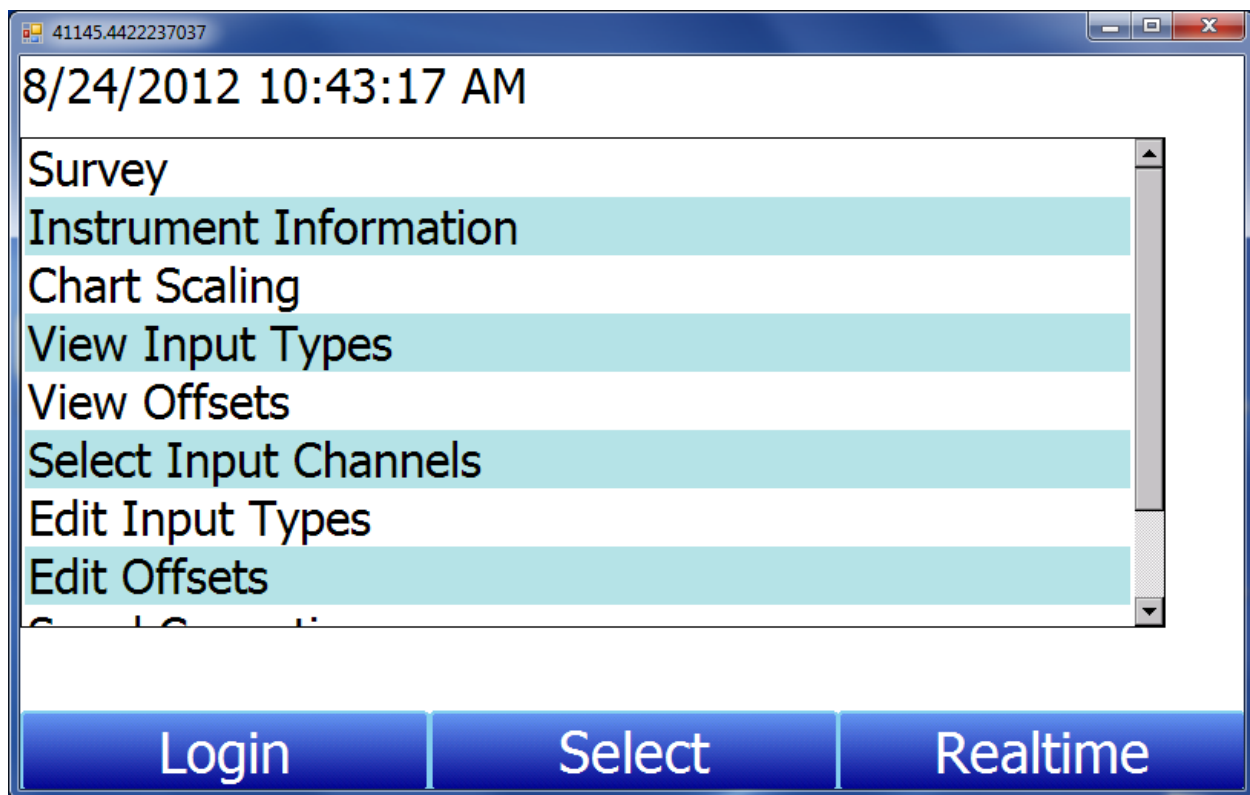
Figure 27 - SDS Menu

Survey

This option contains the survey information and the controls to perform a survey. The appropriate template can be chosen from the dropdown menu in the top right-hand corner. The **Edit Template** button allows for changes to be made to the selected survey. When editing a survey, pressing **OK** will make changes only for that particular survey, while pressing **Save** will permanently change the template. The **View Surveys** button will display a list of previous surveys from the selected time range. Once the template

has been selected and any necessary edits have been made, press **Start Survey** to begin.

Figure 28 - Survey Window

Figure 29 - Instrument Information

Instrument Information displays the condition of several parameters for the SDS, and no changes can be made to this screen.

Chart Scaling

Chart Scaling

Max:	2000
Min:	0

Save	Cancel

Figure 30 - Chart Scaling Window

Chart scaling allows the user to adjust the maximum and minimum degrees displayed on the chart. To change, press the blue button with the max or min number, press **OK,** then press **Save.**

View Input Types

This menu option displays the thermocouple type for each of the 20 channels. No changes can be made to this screen.
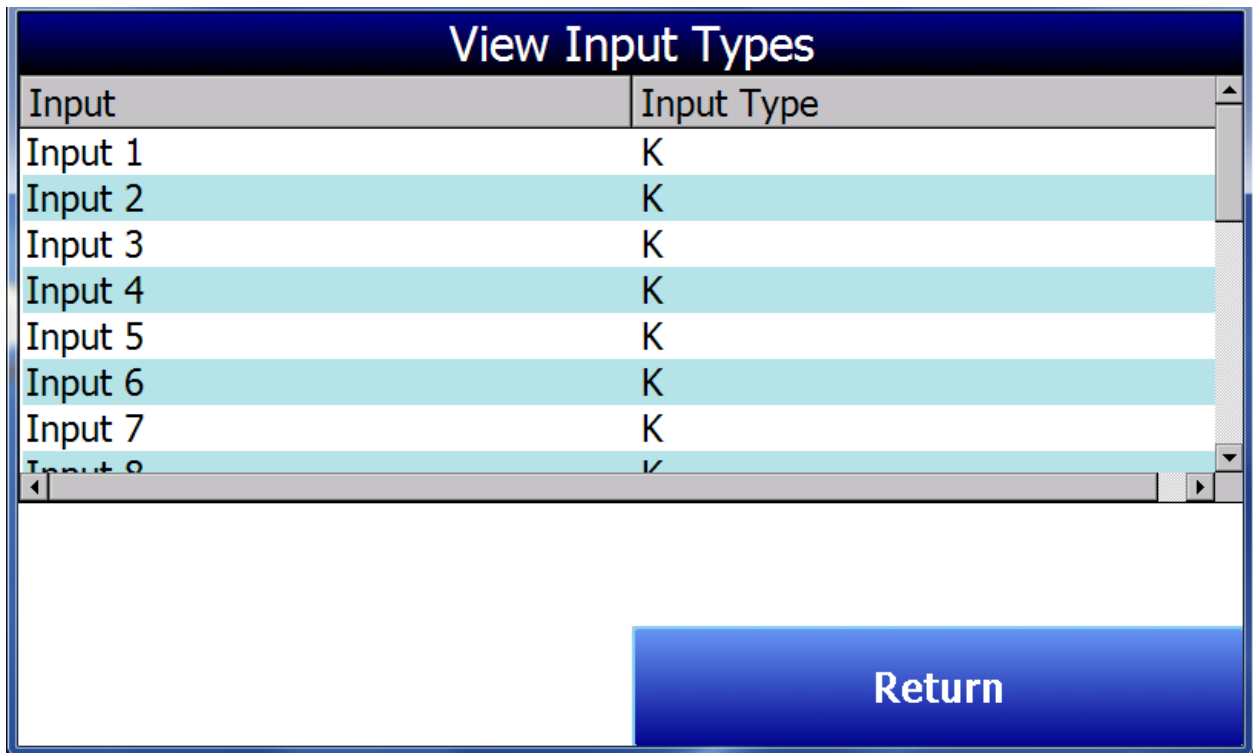
Figure 31 - View Input Types

View Offsets

View Offsets displays the offset values for each thermocouple channel on the SDS. No changes can be made to this screen.

Input	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0

View Offsets

Return

Figure 32 - View Offsets

Select Input Channels

Select Input Channels allows the user to manually determine whether a thermocouple is included in a survey or not while the survey is running. First press **Select Inputs.** Then, highlight the Input # to toggle between **Select/Deselect.** To save changes, press **OK.**

Figure 33 - Select Input Channels

Figure 34 - Select Inputs

Edit Input Types

Edit Input Types allows the type of thermocouple to be changed for any channel. The drop-down bar contains a list of thermocouple types. Select the appropriate thermocouple types. The Range Start and Range End correspond to the channels of the SDS that will be changed. To change only one channel, set the Range Start and Range End both to that number. To change all channels, the Range Start will be 1 and the Range End will be 20. Any interval in between can also be used. Press **Set Range Input Types** to save.

Figure 35 - Edit Input Types

Edit Offsets

The Edit Offsets option will change the offset for each thermocouple. Press the blue number button next to Select Input and enter the appropriate channel number. Press **OK.** Then enter the Offset Value and press **OK.**

NOTE: These offsets should be used to address the calibration report parameters to correct for a known deviation by individual channel at a specific temperature <u>OR</u> to compensate for an individual thermocouple wire for each channel. All offsets that are used can be displayed on the final report using the reporting tags.

Figure 36 - Edit Offsets

Spool Correction

This menu item allows the thermocouple Spool Correction to be modified. First select the temperature type from the drop down menu, then enter the spool correction value and press **Set Spool Correction** to save. Press return to go back to the Menu list. The thermocouple spool correction can be used to before a survey is run so that the data displayed is corrected. You can also enter the TC offset in after the survey is completed using the SDS Reporter software.
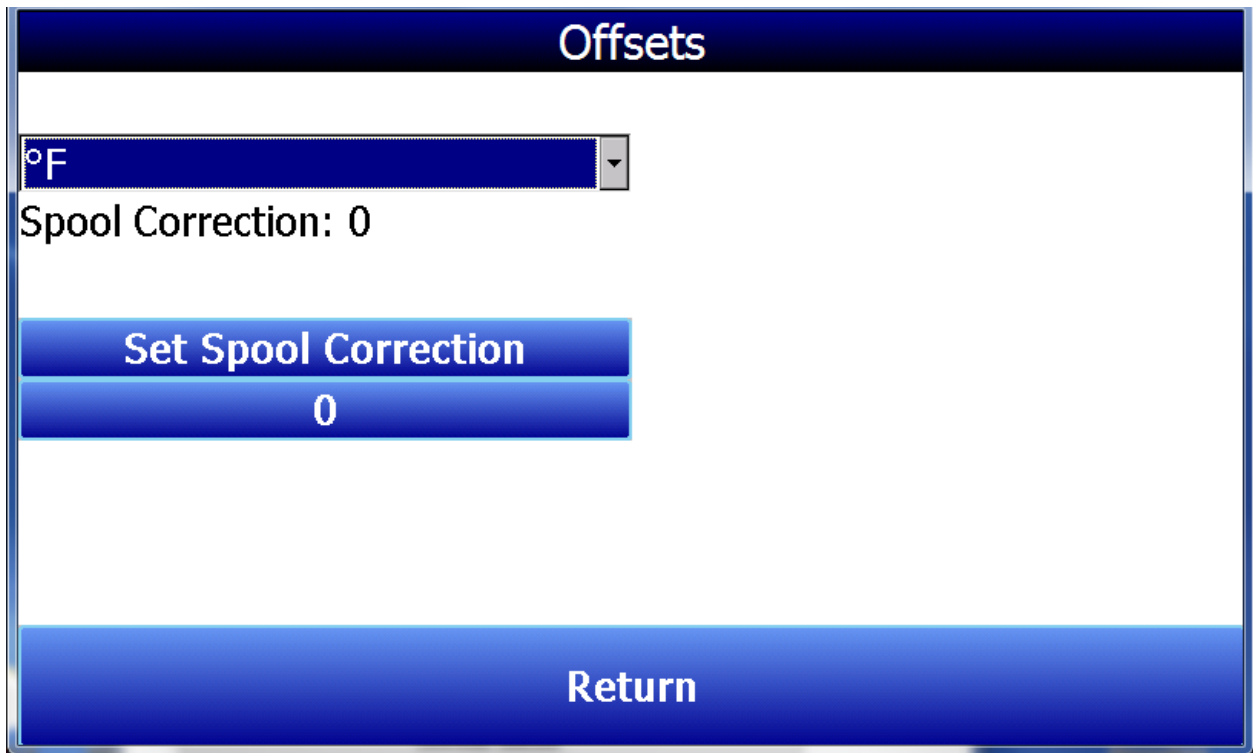
Figure 37 - Set Spool Correction

About

This screen will display basic information about the SDS including the version and the serial number. Nothing on this screen can be changed.

Figure 38 - The About Screen

Calibration

Before using the SDS Data Logger in surveys, it is essential to ensure that the unit is properly calibrated. This means that *raw* voltages *measured* by instruments connected to the data logger are converted (scaled) to values that accurately reflect the *actual* voltages. The calibrations that the user will typically need to perform (before using the data logger in surveys) are the Voltage Calibration and Cold Junction Trim Calibration (also called CJ Trim). First, the Voltage Calibration will be performed to ensure that the voltages measured by the leads connected to each thermocouple are scaled correctly. Second, the CJ Trim will be performed to ensure that the temperature measured at each data logger terminal (where the cold junction is created) is correctly scaled. Both types of calibration require a sourcing device and thermocouple wire. The sourcing device should be calibrated and certified to generate accurate voltages before these calibrations are performed.

> *IMPORTANT:* Do not perform any of these calibrations without a sourcing device that is properly connected and sourcing voltage into the proper inputs on the Color SDS Data Logger. Running a calibration without a sourcing device that is providing voltage into the unit may require additional calibration steps.

Voltage Calibration

The leads that connect to each input thermocouple measure the voltage generated by that thermocouple. In most cases, the voltage that the data logger detects (the raw voltage) is slightly different from the actual voltage generated by the thermocouple. When properly performed, a Voltage Calibration (also called an Input Calibration) ensures that the SDS Data

Logger software properly scales the raw voltage so that an accurate temperature can be calculated. The Voltage Calibration consists of two parts: a Zero Calibration and a Span Calibration. A Zero Calibration ensures that the raw voltage is scaled properly when the actual voltage at a thermocouple is zero volts. A Span Calibration ensures that the raw voltage is scaled properly when the actual voltage is 90% of the upper limit of the desired range (for example, 72 mV when the upper limit of the range is 80 mV).

Figure 39 shows what the Voltage Calibration screen looks like.

Input	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0

80mV ▾ ?
☑ Zero ☐ Span
☑ All ☐ Use Selected Select Inputs

Calibrate   Return

Figure 39 - Voltage Calibration screen

The horizontal row of numbers represents each circuit board containing five inputs. The vertical column of numbers represents each individual input. A 20-input SDS Data Logger will feature four circuit boards depicted on this screen, while a 40-input unit will feature eight circuit boards. Since each board has five inputs, a Voltage Calibration usually involves five inputs on the same board at one time. A single input can be calibrated if it is suspected that the temperature reading associated with one input is incorrect.

Range Value: The mV value shown in the drop-down box represents the range value for the particular kind of thermocouple wire that you are using in the calibration. Pressing the question mark ("?") will bring up a window that shows the range value specific to various kinds of thermocouple wire.

Zero or **Span:** Check "Zero" to perform a Zero Calibration. Check "Span" to perform a Span Calibration.

All or **Use Selected**: Check "All" to calibrate all inputs. Check "Use Selected" to calibrate a group of inputs selected by pressing the **Select Inputs** button and choosing the inputs that you want to calibrate.

Set up your calibration device as needed. When ready to begin calibrating, press **Calibrate.**
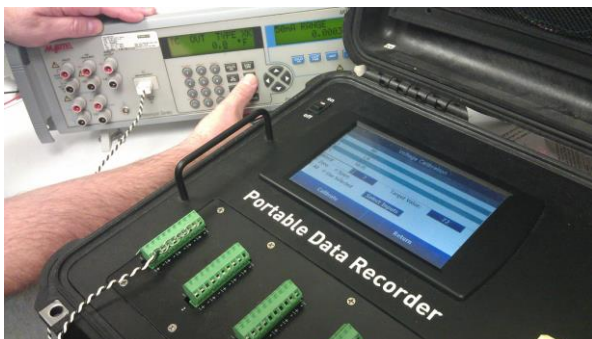

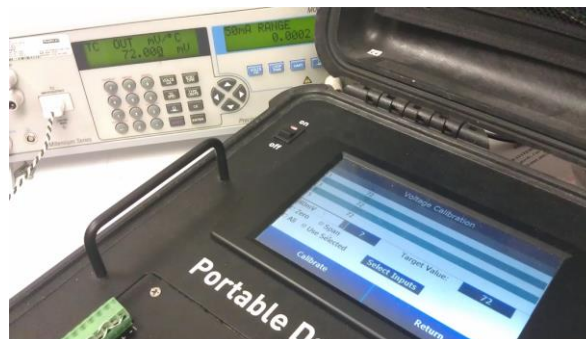*Figure 40 - Setting Up A Voltage Calibration*

Figure 41 - Voltage Calibration (Span) Ready to Begin

Use the results of the calibration to set up offsets for the SDS Data Logger. Editing offsets is described in the "Edit Offsets" section above.

CJ Trim

For the Trim calibration, TC wire should be used. The trim calibration is performed by connecting a thermocouple calibration device to each input and outputting a trim temperature that should be equal to the expected operating temperature. For example, the calibration could be completed using an output temperature of 1700°F. After the zero calibration and span calibration, the temperature may read 1701.5°F instead. This type of calibration should be used instead of the regular cold junction thermistor calibration unless the cold junction temperatures are reading a temperature that is much too high for what the ambient temperature could possibly be. A cold junction thermistor calibration can be used in this instance when need be, but the Trim Calibration is preferred.

IMPORTANT: Before performing this calibration:
1. Ensure that a sourcing device is properly connected and sourcing voltage into the proper inputs on the Color SDS Data Logger.
2. Ensure that the input types are set up correctly. See View Input Types and, if necessary, Edit Input Types.
3. If the data logger has been brought inside from a cold environment, wait 30 minutes before performing the Cold Junction Trim Calibration. This will provide enough time for the data logger to reach a stable temperature.

To perform a cold junction trim, first select the thermocouple type from the dropdown list. Select the inputs that will be included by pressing the **Select Inputs** button. Enter the **Target Value** and press **Calibrate.**

Figure 42 - CJ Trim Screen

Cold Junction Thermistor Calibration

This procedure is performed by Super Systems Inc. before the SDS Data Logger is shipped. In most cases, the procedure will not need to be performed in the field. If a situation should arise where a cold junction calibration may need to be performed in the field, please contact Super Systems Inc. Technical Support at 513-772-0060.

Datalog Deletion

The Color SDS Data Logger includes an option to delete log data files and survey data files. This option is useful when these data files are no longer needed or when removing them would free up space on a storage card nearing its full capacity. The Datalog Deletion screen (Figure 43) allows you to change the date and time range of the files that will be deleted (Start Date and End Date). The Delete Log Data button will cause only the log data files to be removed, while the Delete Survey and Log Data button will delete both the survey data and log data files.

Datalog Deletion

Start Date:

End Date:

| 10/24/2012 12:00:00 PM | 10/24/2012 12:00:00 PM |

Messages

| Delete Log Data | Delete Survey And Log Data |

Return

Figure 43 - Datalog Deletion Screen

Passcodes

This screen allows the user to set the passcodes to access the higher-level functions on the SDS. To change either passcode, press the corresponding button, enter the new code, and press OK.
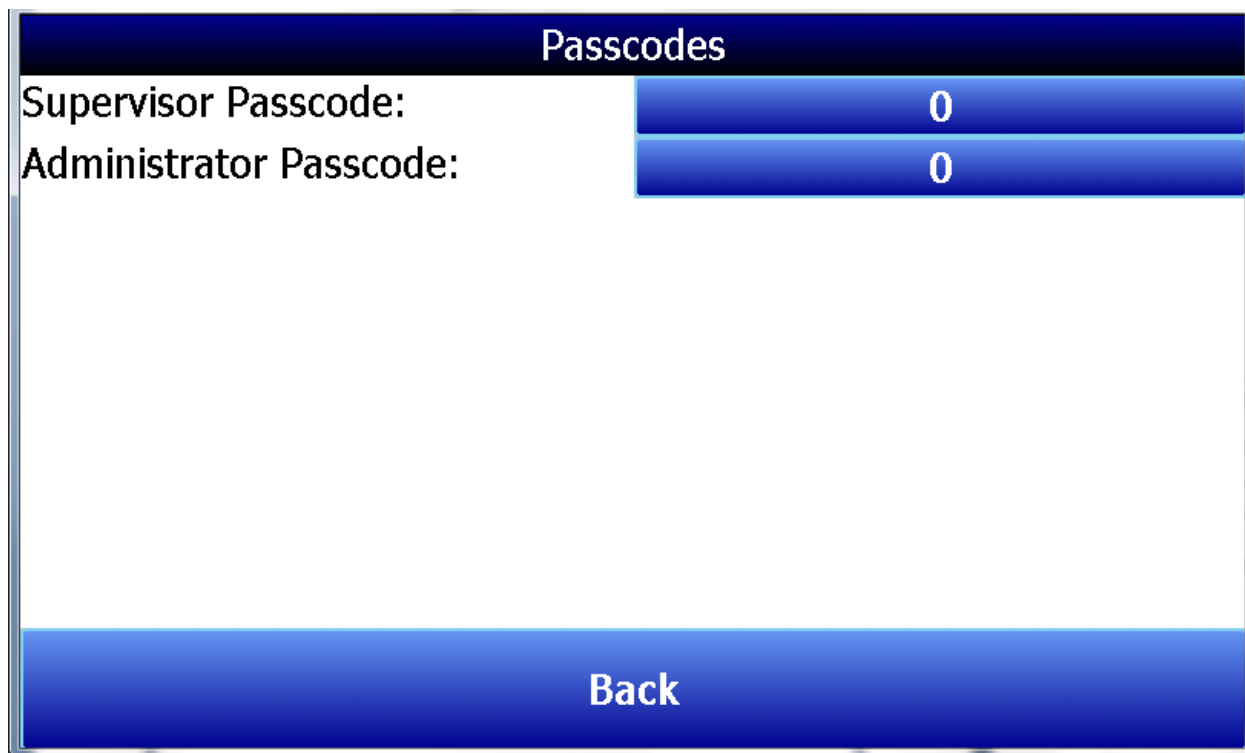
Figure 44 - Passcode Change Screen

Cold Junction Thermistor Calibration

Please refer to the Calibration section above for more details.

Full Data Action

Full Data Action allows you to configure the way in which the SDS software handles data logging and data log files as the storage card nears its full capacity. This can happen as data log files are continually added to the storage card, eventually leading to the card running out of storage space. As shown in Figure 45, there are two choices in this menu: Automatic Deletion and Stop Datalogging.

Automatic Deletion causes the SDS software to delete data log files (starting with the oldest) automatically as the storage card nears its full capacity; it will not delete data log files that have been written less than 30 days before the current system date and time. For this reason, it is important that the system date and time be set correctly when this setting is used and the storage card is nearing its full capacity. For more information on setting the system date and time, refer to Changing the System Date and Time.

Stop Datalogging causes the SDS software to stop logging data to the storage card when the storage card is nearing its full capacity. When this occurs, a message box will appear indicating that data logging has stopped. Click OK to close the window. In order to resume data logging, you will need to restart the Color SDS Data Logger. For more information on deleting data log files, see the section on Datalog Deletion.
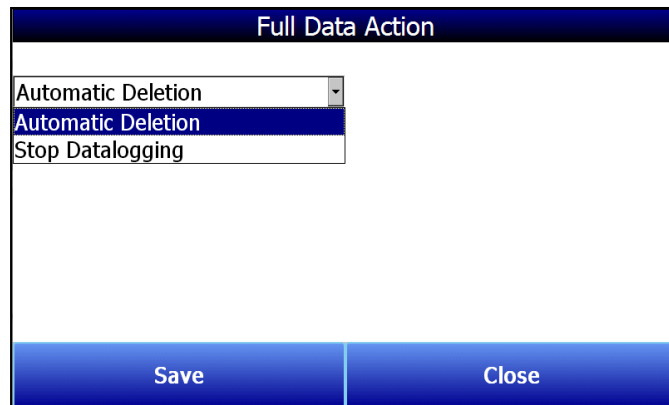
Figure 45 - Full Data Action options

Exit Program

Selecting this option allows you to exit the Color SDS Touch Screen program. A confirmation box will appear when you select this option (Figure 46). There are very few situations where this action would need to be performed.

Figure 46 - Shut Down Interface confirmation

Configuration

The Configuration Menu contains the following items:
- Communications Setup. This menu item allows you to change the COM port number, address, and baud rate of the communications port used to connect the touch screen interface to the SDS mainboard.
- Compact Database. When clicked, Compact Database optimizes and reduces the size of the database contained on the storage card.
- Read/Write Data. Using this feature, you can view the raw data on the underlying hardware and also write data to the underlying hardware. **This feature should not be used in most circumstances.**
- About. This option simply shows the About screen for Super Systems SDS, as shown in Figure 38.
- Shut Down Software. This option shuts down the SDS touch screen.
- Set Serial Number. This feature allows you to change the serial number of the touch screen software. **This setting should not be changed.**
- Degree Type. This feature allows you to change the unit of measurement used for temperature—degrees Fahrenheit or degrees Celsius.
- Product Type. This feature allows you to change the SDS product type as it is known to the touch screen software.

- Thermistor Calibration. This feature allows for calibration of the ambient thermistor (pictured in Figure 47) and internal thermistor.

Figure 47 - Location of Ambient (External) Thermistor

Figure 48 - Configuration Menu

IMPORTANT: Before attempting to access Configuration features, please contact Super Systems Inc. Technical Support (513-772-0060).

Reset Calibration Dates

To change either of these dates, press the corresponding button and enter the new date. Press OK to save.
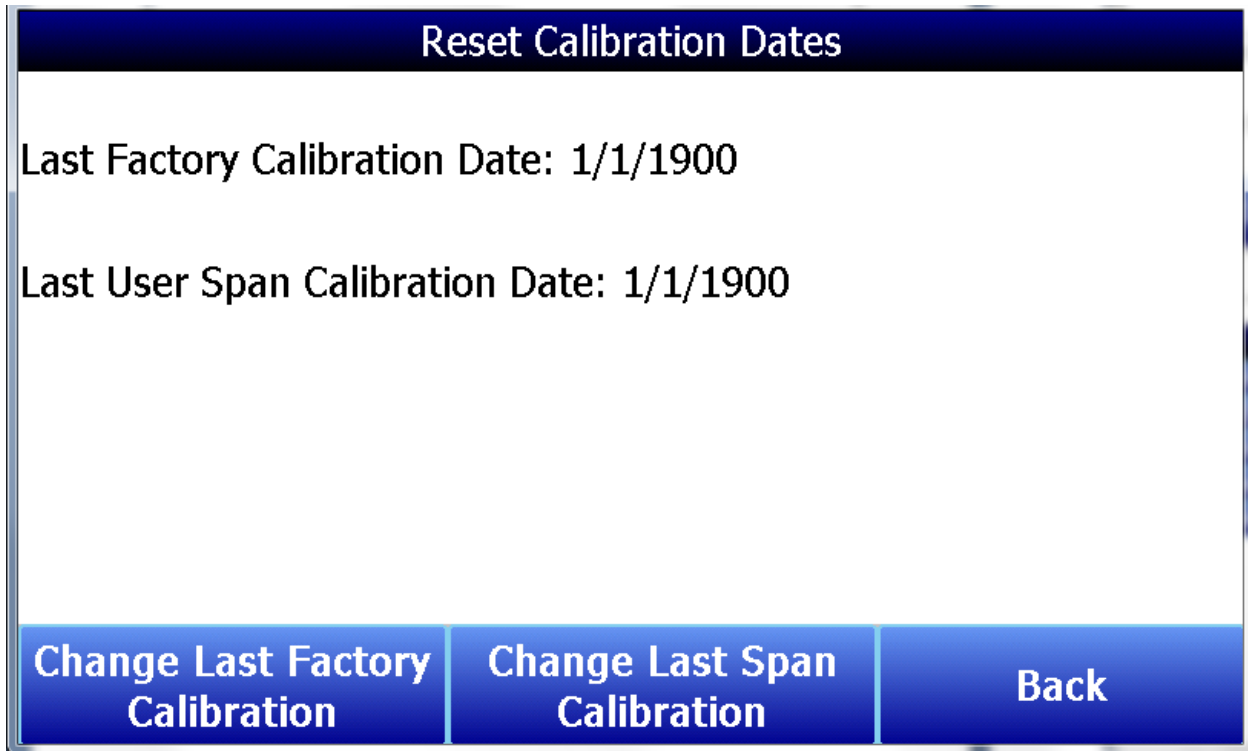
Figure 49 - Reset Calibration Dates

> **IMPORTANT:** Avoid resetting calibration dates without first contacting Super Systems Inc. Technical Support (513-772-0060).

Set Nominals

Nominals are calibration constants used in the process of converting raw analog data to voltage values. The **Set Nominals** menu provides the ability to reset calibration constants for all inputs, or for a specified set of inputs, to default values.

A user may decide to use this feature if, for example, temperature readings from the SDS are deemed to be outside a certain acceptable range and subsequent calibrations are not successful. When the calibration constants are reset, the device is placed in an uncalibrated state and will require recalibration. If recalibration does not result in temperature readings that are within an acceptable range, it is likely that the SDS has experienced hardware damage and will need to be shipped to Super Systems Inc. for repair.

The **Set Nominals** screen is shown in Figure 50. To reset all nominals, simply select the checkbox labeled "All" and then press the Set Nominals button.
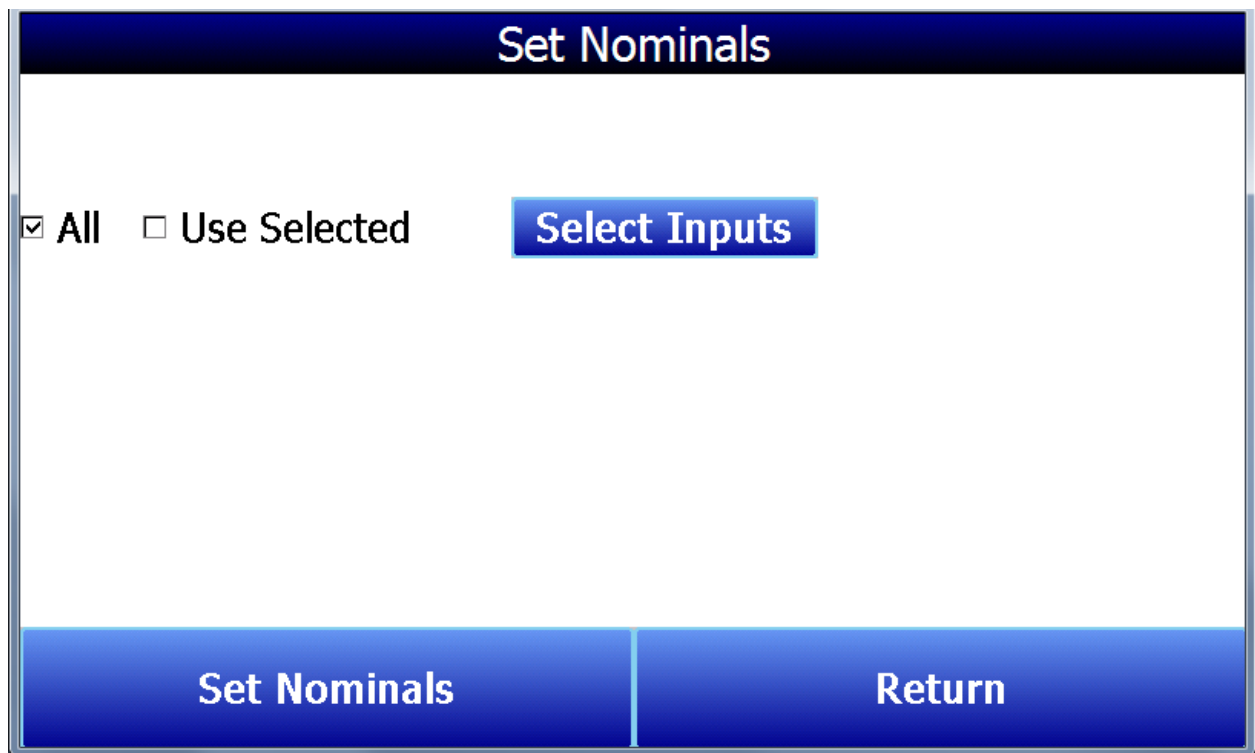
Figure 50 - Set Nominals

To reset nominals for specific inputs, first select the checkbox labeled "Use Selected" and then press the Select Inputs button. The **Select Inputs** screen will appear. Select each input for which you would like to reset the nominals, and then press Select Highlighted for each one. Note that you may enter a range of inputs using the "Select Range" feature. These screens are shown in Figure 51. Once you have selected the specific inputs for which you want to reset nominals, press Return and then press Set Nominals on the **Set Nominals** screen.
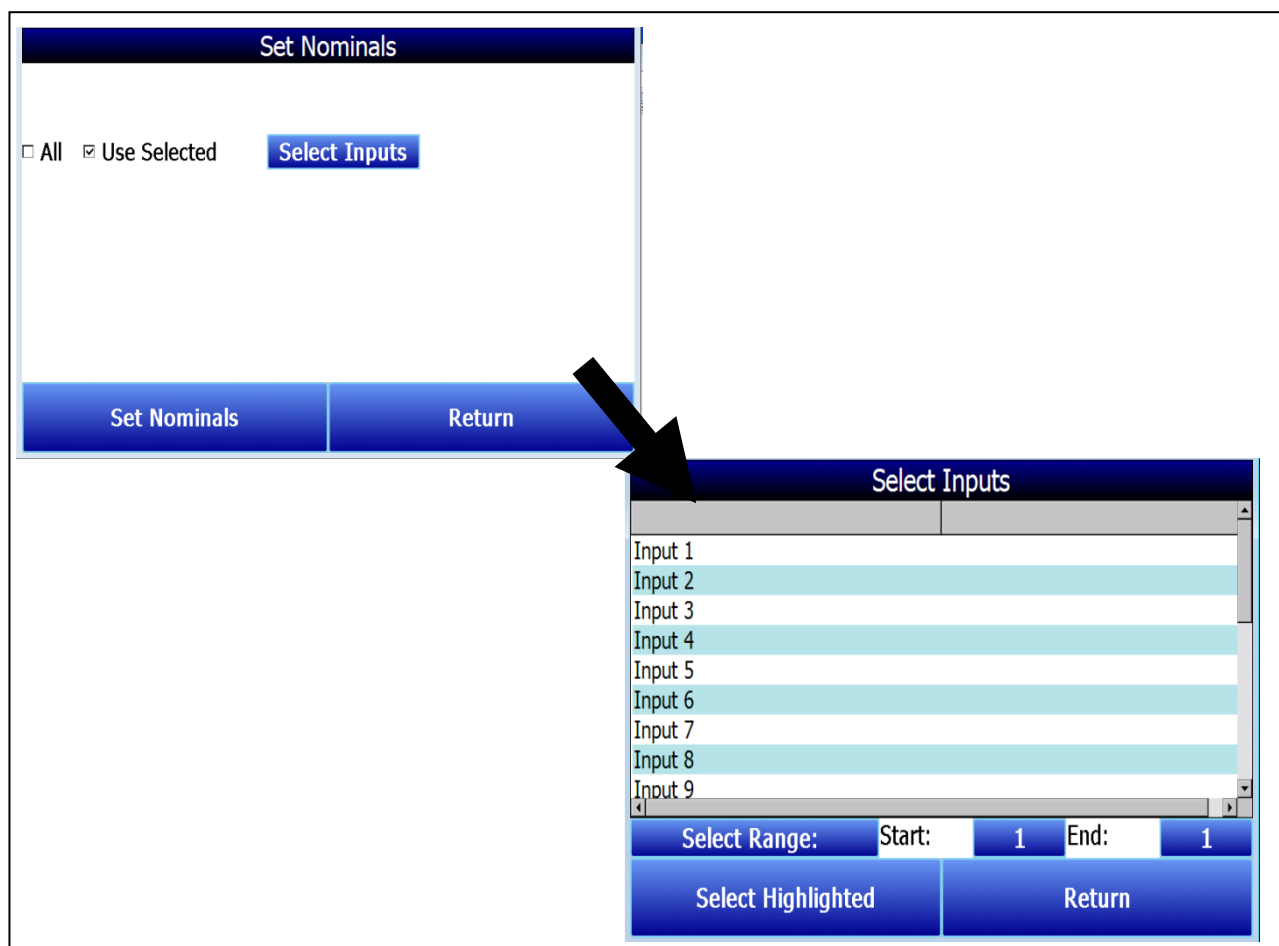
Figure 51 - Use Selected Inputs in Set Nominals Screen

> *IMPORTANT:* Avoid setting nominals without first contacting Super Systems Inc. Technical Support (513-772-0060).

Set K Factors

K Factors are mathematical coefficients that help correct for changes in outside temperature. When correctly programmed, K Factors help minimize the effect of outside temperature variations on thermocouple temperature readings. It is possible to adjust K Factor settings from the **Set K Factors** menu, but doing so is not recommended without first contacting Super Systems Inc. Technical Support. See the notice below.

> *IMPORTANT:* Avoid adjusting K Factors on any channel without first contacting Super Systems Inc. Technical Support (513-772-0060). Incorrect adjustment of K Factors will likely result in incorrect temperature readings.

Figure 52 - Set K Factors

SDX Control

By selecting **Run** for SDX Control, the SDS will run a program called SDX that monitors thermocouples to ensure they are calibrated properly using the SDX software module. SDX is available through SSi.

Figure 53 - SDX Control

> **IMPORTANT:** Avoid running SDX without first contacting Super Systems Inc. Technical Support (513-772-0060).

Modbus Control

Running Modbus Control will enable the Modbus protocol to read and write registers. To set this up, press **Run,** then determine the range of Modbus registers that will be monitored. Press **OK** to save.

Figure 54 - Modbus Control Not Running Screen

Figure 55 - Run Modbus Control Window

> **IMPORTANT:** Avoid running Modbus control without first contacting Super Systems Inc. Technical Support (513-772-0060).

SDS Reporter

> **IMPORTANT:** When using SDS Reporter with the Color SDS Data Logger, Options > Color Screen Scanning must be selected. Refer to the section **Options → Color Screen Scanning** for more details.
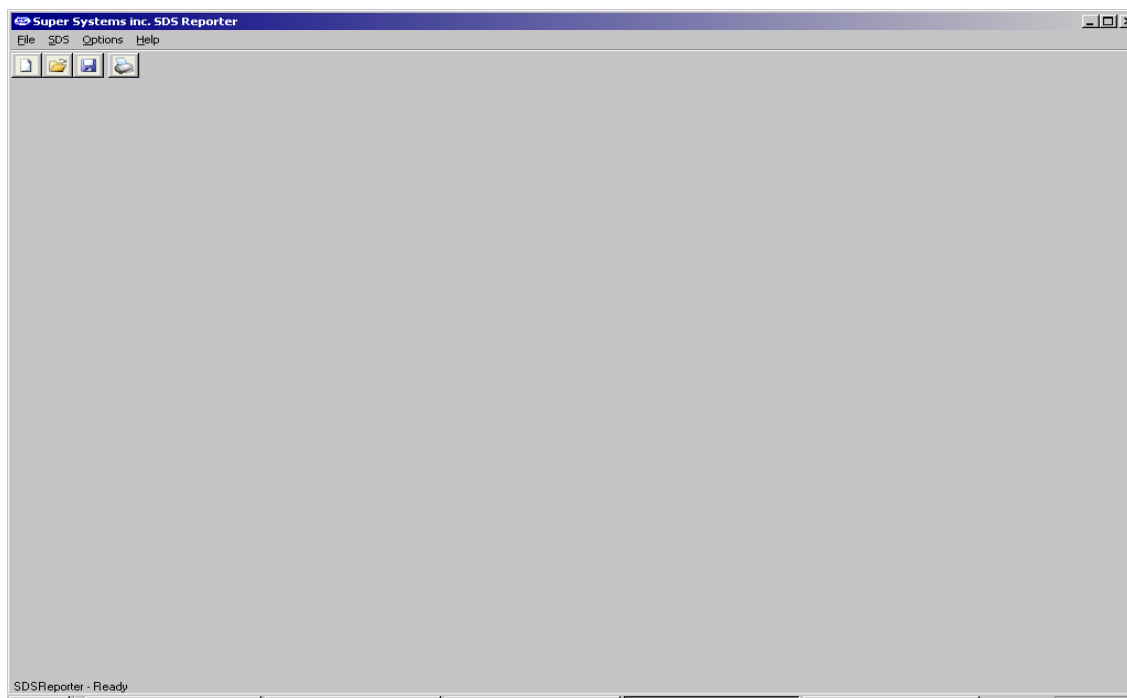
Figure 56 - SDS Reporter initial screen

When the SDS Reporter software is started up, the user sees the above screen (Figure 56). The four menu options to choose from are: *File*, *SDS*, *Options* and *Help*. There are four buttons to choose from: New ⬚ , Open ⬚ , Save ⬚ , and Print ⬚ .

File Menu Options

File → New / New Button ⬚

The New option allows the user to create a new report that will include the report properties, the trend chart, and the TC data (Figure 57). Note: the selected tab will be in Red when it is active only for the three main tabs – Report Properties, Chart, and Data.
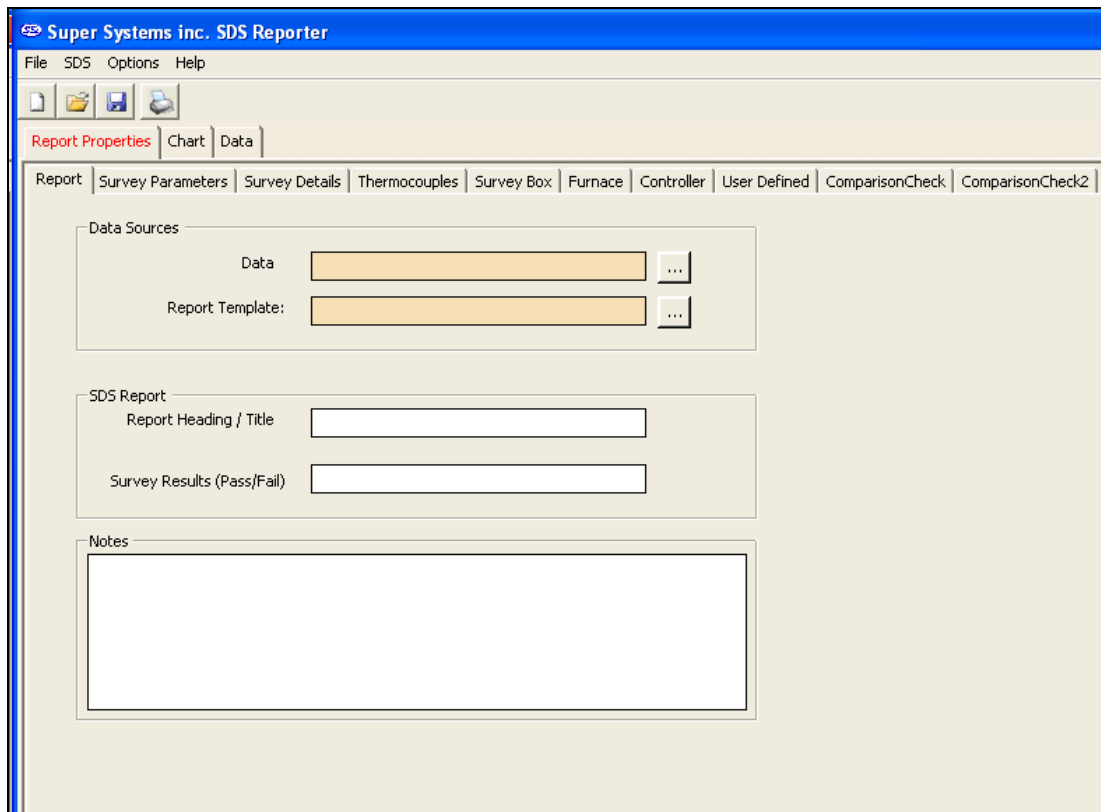
Figure 57 - Report Properties Tab

File → Open / Open Button

The Open menu option will allow the user to choose an existing report from a common Windows Open dialog box. The software will open the dialog box in the "SDSReports" folder (typically, C:\SSi\SDS\SDSReports) for existing reports (.SDSReport) to open.

The Report Properties tab contains several tabs, which in turn contain the information that makes up the report. The first tab is the Report tab (Figure 57), which contains the data to use for the report, the report template to use, the report heading or title, the survey results, and any notes about the report.

Figure 58 - Report Properties Report Tab

Clicking on the open box, [...], next to the "Data" field will display a screen from which the user can select the interval time (ten seconds, twenty seconds, thirty seconds, one minute, two minutes, or five minutes) and also the specific survey to use (Figure 58). This screen will only display survey data that has already been downloaded (SDS → Download Surveys and Data).

Figure 59 - Load Survey Data screen

The default interval is one minute. Select the survey to use and click on the "Use" button. Information included with the data sources is: Template Name, [Company Name - Furnace Id], (Survey box Serial number), and the date/time range of the survey data. Any manual entries will have [Manual Entry] at the beginning. See the section *Manually Creating a Survey Record* for information on how to add a survey record manually. Clicking on the open box next to the "Report Template" field will open a dialog box from which the user can select the specific report template to use for the report. The software will open the dialog box in the "SDSReportTemplates" folder (typically C:\SSi\SDS\ReportTemplates) for existing report templates to use. The "Report Heading / Title" field is for the heading or title of the report and

the "Survey Results (Pass/Fail)" field is for the results of the survey. The "Notes" field is for any general notes for the report.

Manually Creating a Survey Record

Clicking on the "Advanced: Manually Create Survey Record" link from the Load Survey Data screen will allow the user to create a survey record to use. Clicking on this link will display the "Manually Create Survey Record" form (Figure 60). Five pieces of data are required to manually create a record: the SDS model, serial number, the start time and date of the survey, the end time and date of the survey, and the TC Spool Offset. All data will need to be downloaded from the SDS either before or after this process in order to get data. To download all data, please refer to section SDS → Download Surveys and Data.
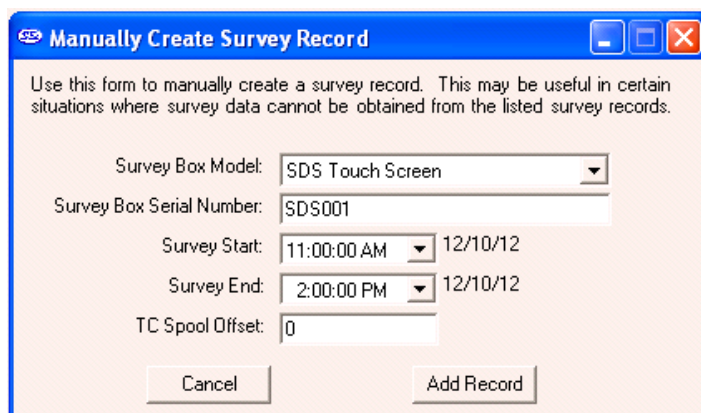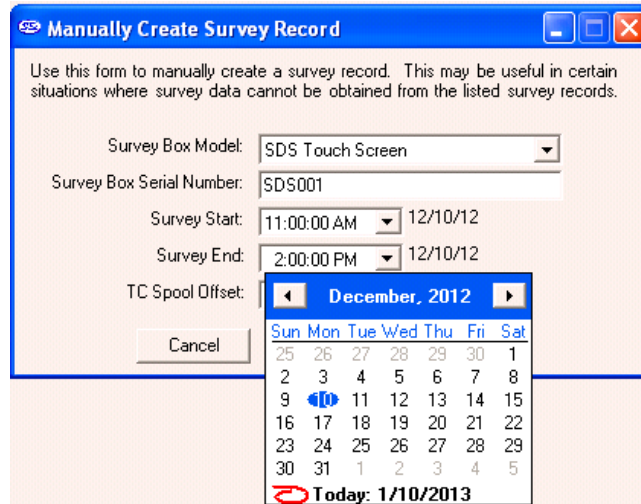
Figure 60 - Manually Create Survey Record form

The drop-down list next to "Survey Box Model" contains a list of the available models. Make sure to select the appropriate Color SDS Data Logger. Select the model type (the Color SDS Data Logger is referred to as "SDS Touch Screen"). Enter the SDS serial number on the next line, "Survey Box Serial Number". The serial number can be found in the About window, as discussed in the About section. The process for selecting the start date/time and the end date/time is the same. To select a date, click on the down arrow next to the time listed. This will bring up a calendar from which the user can select a new date (Figure 61). Select the new date by clicking on it.

Figure 61 - Select new date

The date of the survey start /end is listed to the right of the drop-down list. To select a time, click on the hours, minutes, seconds or "AM/PM". The selected field will be highlighted. Each field can be changed by using the up or down arrows on the keyboard. If the survey start date is later than the survey end date, a message will be displayed to the user and the record will not be added (Figure 62).
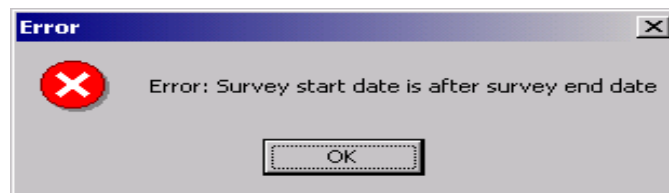

Figure 62 - Survey start/end date error message

Enter the TC spool offset and click on the "Add Record" button to add the record. Clicking on the "Cancel" button will cancel the add process and bring the user back to the "Load Survey Data" dialog box. If the add was successful, a message box will be displayed (Figure 63).

Figure 63 - Record Add successful message

The added record will be displayed chronologically in the top of the list. Any record manually added will begin with "[Manual Entry]" (Figure 64). If the manually created survey is less than one second, it will not be displayed in the list.
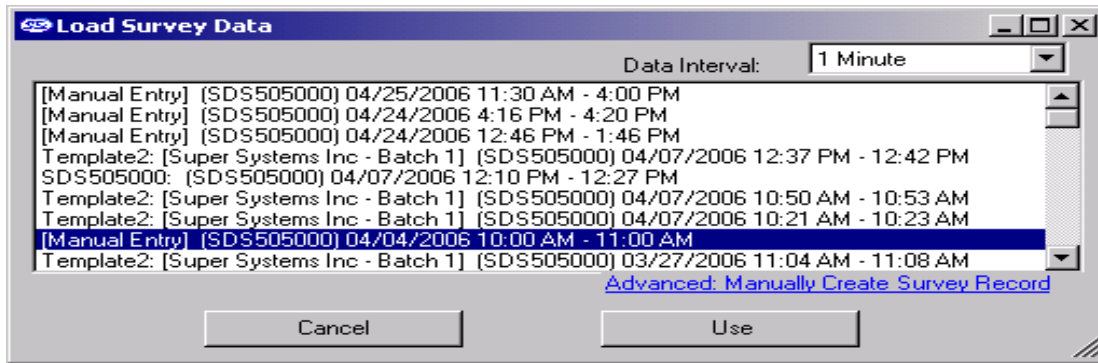
Figure 64 - Manual entry on Load Survey Data form

NOTE: Most of the "Report Properties" tabs (Report, Furnace, Survey Box) will need to be filled out manually as well.

The next tab is the Thermocouples tab (Figure 65). This tab contains the information about the thermocouple settings and it also lists the active thermocouples. The information in the thermocouple settings includes: the temperature type (F or C), the number of thermocouples, the number of TCs used in the report, the thermocouple type, the thermocouple gauge, the thermocouple spool number, whom the thermocouple was calibrated by, the date the thermocouple was calibrated, and the thermocouple spool correction factor. Clicking on the "Change" button will allow the user to change the spool correction (Figure 66).

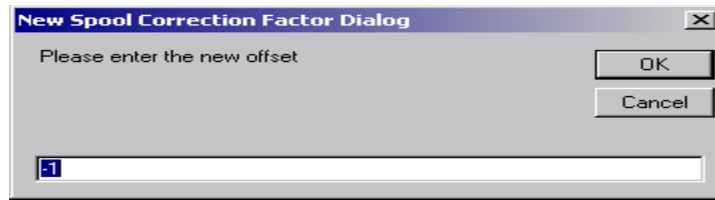*Figure 65 - Report Properties Thermocouples Tab*

Figure 66 - Spool Correction screen

All values displayed to the users are corrected. That means if there is a defined offset for the TC Spool and a channel offset, the user would be shown the net result of those offsets into the value displayed.

There are checkboxes for a possible forty thermocouples, but only the active thermocouples will have checks in the checkboxes. Clicking on the "Define Control TC" link will allow the user to select the TC or TCs that will be the control TC(s) (Figure 67). The operator can select any of the thermocouples to be the control TC(s) and provide an optional description for that TC.
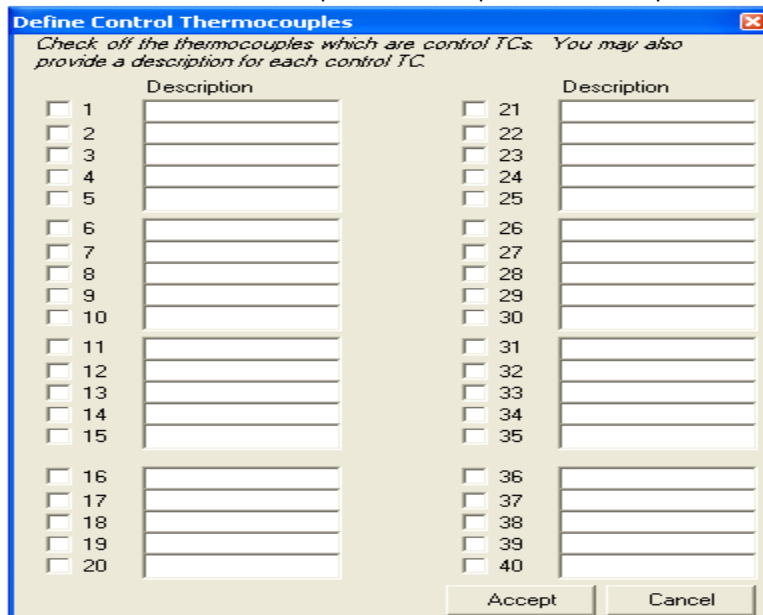

Figure 67 - Define Control TC screen

Clicking on the Accept button will set the selected control TC(s). Once a control TC(s) has been selected, the TC's number will be in Red on the "Active Thermocouples" section of the Thermocouples tab. *The thermocouple(s) that is identified as the control TC will not be used for the TC summary when identifying hottest and coldest channels.*

Clicking on the "View Offsets used in Survey" link will display a list of the offsets that were used on the survey (Figure 68). **All values that are displayed to the users are corrected values.** That means the Offset defined for these TCs have already been incorporated into the value the operator would see. IF there is a value for the TC Spool Correction Factor, that value will also be incorporated providing a corrected view for the user.
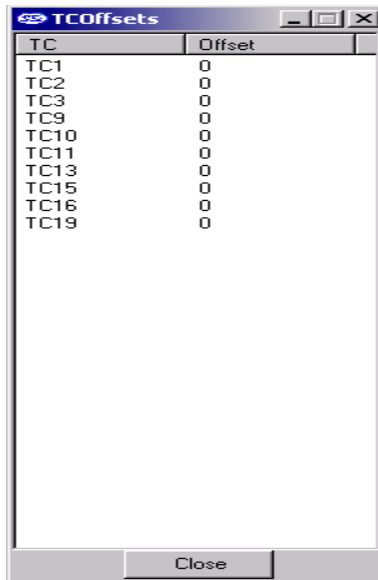
Figure 68 - TCOffsets screen

Note: Checking or unchecking TCs on the Thermocouples Tab will affect the TCs plotted on the Chart Tab.

The Thermocouples tab also includes an option to view and edit individual TC correction factors (see Figure 69). Once these correction factors are in place, they will be applied to TC values from survey data. These corrections will be reflected in the report generated by SDS Reporter.
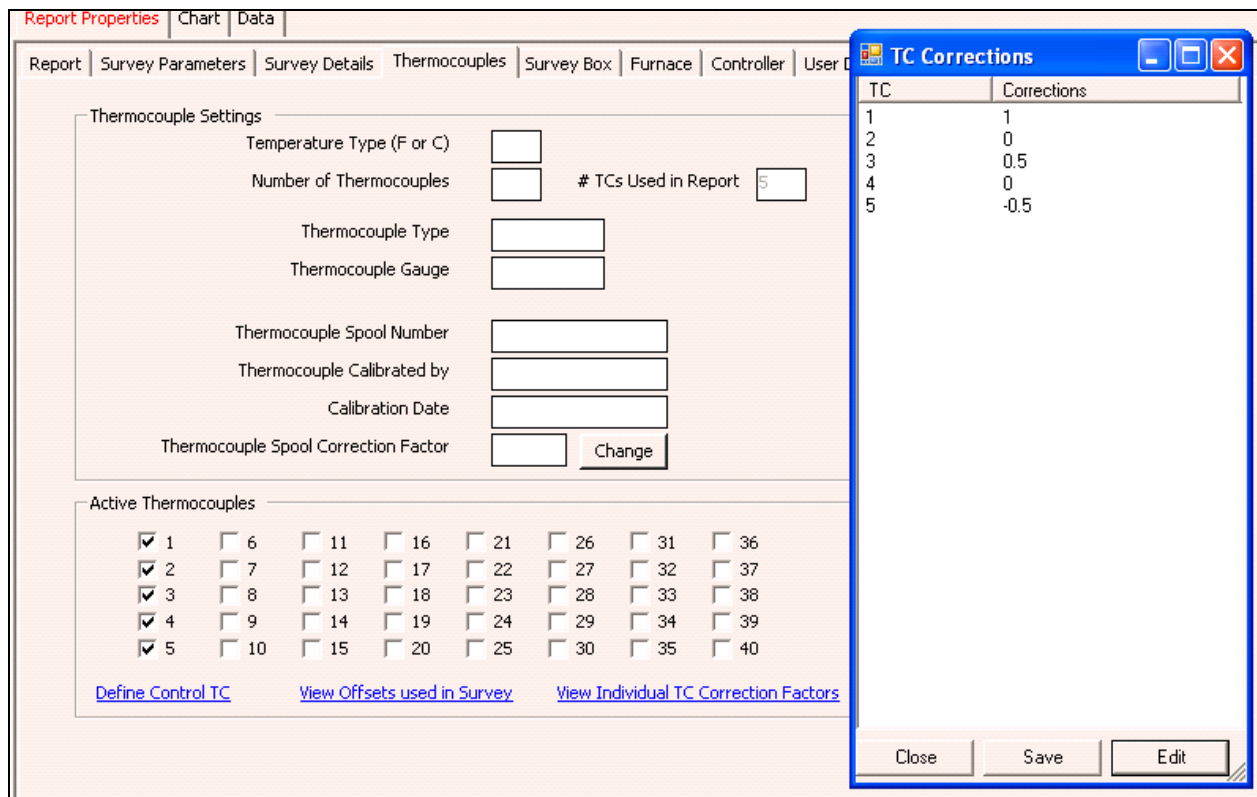
Figure 69 - Viewing and Editing Individual TC Correction Factors

The TC correction factors are passcode protected in the *SDSReporter.ini* file contained in the SDS Reporter installation folder (typically, the "C:\SSi\SDS" folder). The default passcode is 2. To change it, open the *SDSReporter.ini* file and add this line in the **[SETTINGS]** block of the .ini file:

PASSCODE=*x*

Where *x* is zero or a positive integer.

The next tab is the Furnace tab (Figure 70), which contains the furnace ID, the make and model of the furnace, the furnace type, the furnace use, the furnace's operating range, the furnace dimensions, the furnace class (newer versions only), and an optional image of the furnace.

Figure 70 - Report Properties Furnace Tab

Clicking on the open box next the image frame will open a dialog box where the user can search for an image of the furnace to use.

The next tab is the Survey Box tab, which contains information about the survey box itself, such as the make and model, the serial number, whom the survey box was calibrated by, and the calibration date (Figure 71).

Figure 71 - Report Properties Survey Box Tab

The next tab is the Survey Details Tab (Figure 72). The Survey Details tab contains the company name, the survey start date, the survey duration, the actual duration of the survey, the survey

specification(s), whom the survey was performed by, whom the survey was approved by, the date range for the survey, and the due date of the next survey.

Figure 72 – Report Properties Survey Details Tab

The next tab is the Survey Parameters Tab (Figure 73). The Survey Parameters tab contains: the survey tolerance, the survey setpoint, the overtemp setpoint, the simulated load in pounds, and the microns.

The Cooling/Heating combo box affects tags:
- <SDS:OV>
- <SDS:OD>
- <SDS:OVT>

Heating is default. If Cooling is selected, values below the tolerance range are thought to be overshot instead of above the tolerance range (as they are thought to be for Heating).

Figure 73 - Report Properties Survey Parameters Tab

The next tab is the Controller Tab (Figure 74). This tab contains the Controller manufacturer, the controller model, and the instrument type (newer versions only) in the "Temperature Controller Settings" area and this tab also contains the PID Settings: cycle time, dead band, output limit, PB (Gain), rate, and reset.

Figure 74 - Report Properties Controller Tab

The User Defined tab contains twenty fields that can be defined by the user and included in the report. To create a user defined field, click on the "Modify User Defined Fields". This will display a screen that will allow the user to edit the fields (Figure 75). The user can type in the name or description of the field and click the "Save" button.
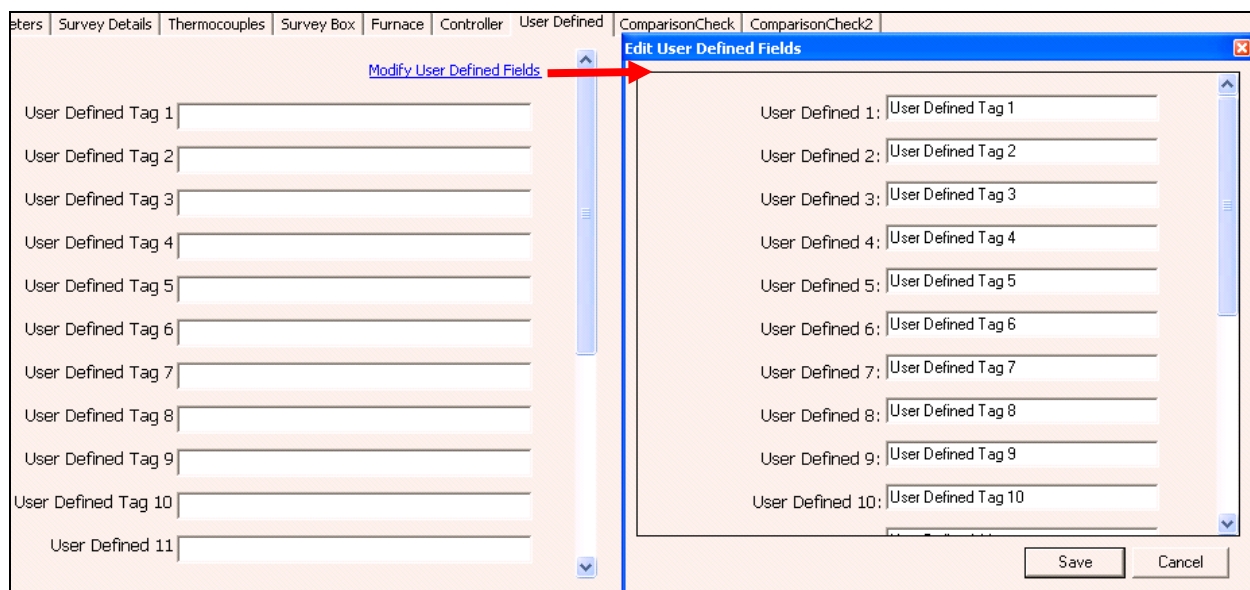
Figure 75 - User Defined Fields screen

Comparison Check

SDS Reporter includes two Comparison Check tabs, as shown in Figure 76. The two Comparison Check tabs perform the same function with different defined data sets.

Figure 76 - Report Properties Comparison Check window

The information for the comparison check is generated from several of the Report Properties fields.

Report Field	Location in Tabs
Time	Chart Start Time
Comparison Test T/C Spool Number	Middle Left of Comparison Check
Comparison T/C Number	Top Right of Comparison Check
Comparison T/C Wire Correction Factor	Top Right of Comparison Check
Comparison Instrument Correction Factor	Thermocouples
Comparison T/C Temperature Readings	Records the temperature of the Comparison T/C
Adjacent T/C Number for Comparison Check	Top Right of Comparison Check
Adjacent T/C Wire Correction	Thermocouples, click **View Offsets Used in Survey** button*
Adjacent Instrument Correction Factor	Thermocouples, click **View Offsets Used in Survey** button
Adjacent T/C Temperature Readings for Comparison Check	Records the temperature of Adjacent T/C
CC Difference	Difference Between Comparison T/C and Adjacent T/C temperatures
Accept/Reject Criteria = Tolerance of Furnace	Set on Comparison Check Page, Middle Right
Accept/Reject	Dependent on A/R Criteria

Table 2 - Location of Report Fields

*The offsets for the T/C Wire Correction can be adjusted solely for the purpose of the comparison by checking the box on the Comparison Check page labeled **Use Custom Wire Corrections.**

A header text and a body text can be put in the report. There are **Preview Report** and **Print Report** buttons in the top left hand corner of the Comparison Check page.

The Chart Tab (Figure 77) contains the charted information from the time specified on the survey. This tab is similar in design and function to the Real-Time chart (Figure 89). When the chart tab is active, the chart toolbar buttons also appear and these buttons can be used to zoom in on a section of the chart, pan the chart up, down, left or right, and refresh the chart back to its original values. The screen will display 2 horizontal lines that represent the high and low temperature tolerance levels based on the setpoint. This display will change based on the tolerance level and setpoint defined in the Report Parameters. For more information about the function of this screen, see the section "**SDS → View Real-time Data**."
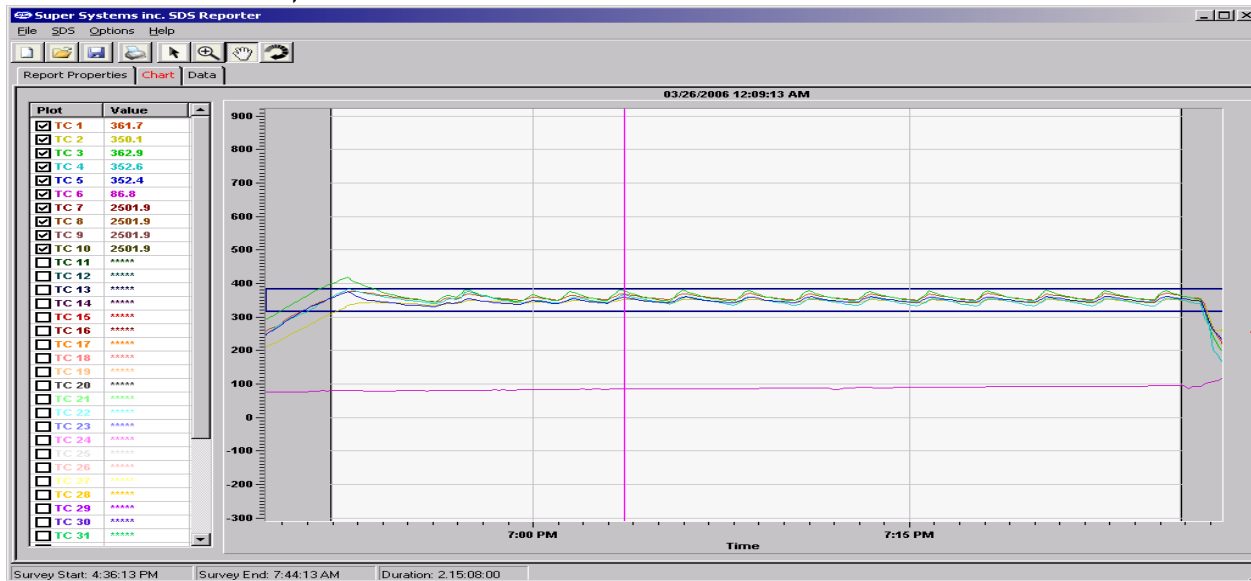
Figure 77 - Chart Tab

Note: checking or unchecking TCs on the Chart Tab will affect the Active TCs on the Report Properties – Thermocouples tab.

The Data Tab (Figure 78) contains the data from each thermocouple for the each interval selected from the Load Survey Data screen (Figure 59).

Figure 78 - Data Tab

Clicking on the "Round this data off to the nearest degree" link will pop up a message box confirming the action (Figure 79). The rounding only affects imported data. The data in the

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logged files will still contain data rounded to one decimal place. Clicking on the "Yes" button will round the data.
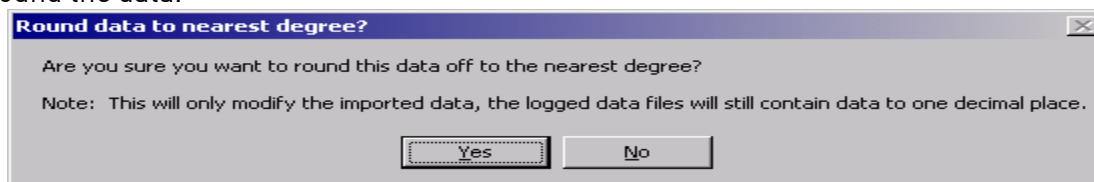
File → Save / File → Save As / Save Button 💾

This will save any changes made to a new or existing report. If an existing file was opened, then the software will automatically save the file without prompting. If a new file was created, then the software will display a common Windows Save dialog box that will allow the user to save the report to the "SDSReports" folder. Once the report has been saved to the "SDSReports" folder, the software will automatically save the file the next time the save command is chosen. Clicking the Save As menu option will automatically bring up the Save dialog box.

File → Export

There are four sub-menu options available for the export function:

> Export Report to Word
> Export Report to RTF
> Export Survey Data to CSV
> Export to Word - All

The *Export Report to Word* menu option will export the report to a Word document format, which will provide more detail than the standard .rtf file format, if that option is desired. When this menu option is clicked, the software will automatically begin to export the report selected to a word document. Once the report has been exported, the new document will be displayed. *Note – no save dialog box will be displayed to the user*. Initially, the report is saved as "temp.doc" to the "C:\Temp" directory. The user can rename and save this report to any other desired location. *Note – any time this menu option is used, the resulting report will be saved as "temp.doc", so any previous report that has not been re-saved will be lost*. The *Export Report to RTF* menu option will export the report to a rich-text format (RTF). When this menu option is clicked, the software will display a Windows Save dialog box that will save the .rtf file to the "SDSReports" folder. The *Export Survey Data to CSV* menu option will export all of the survey data (as seen on the Data tab) to a comma-separated value format file. When this menu option is clicked, the software will display a Windows Save dialog box that will save the .csv file to the "SDSReports" folder. The *Export to Word – All* menu option will export all of the survey's information to a Word file (report data, survey data, etc).

File → Print

This menu option is slightly different from the print button. There are five sub-menu options available:

> Print Report
> Print Survey TC Data
> Print Approach TC Data
> Print All
> Print Multiple Surveys

The *Print Report* menu option will allow the user to print out a copy of the .SDSReport file. The user will have to select the printer to print the report (Figure 80).
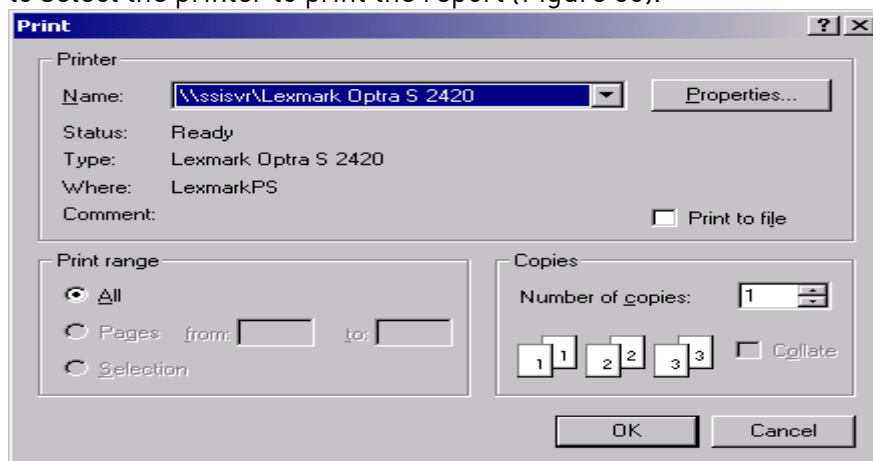
Figure 80 - Print prompt screen

The *Print Survey TC Data* menu option will print out a copy of the TC data (as seen on the Data tab). The user will have the option to configure the page settings and select a printer to print to (Figure 81).
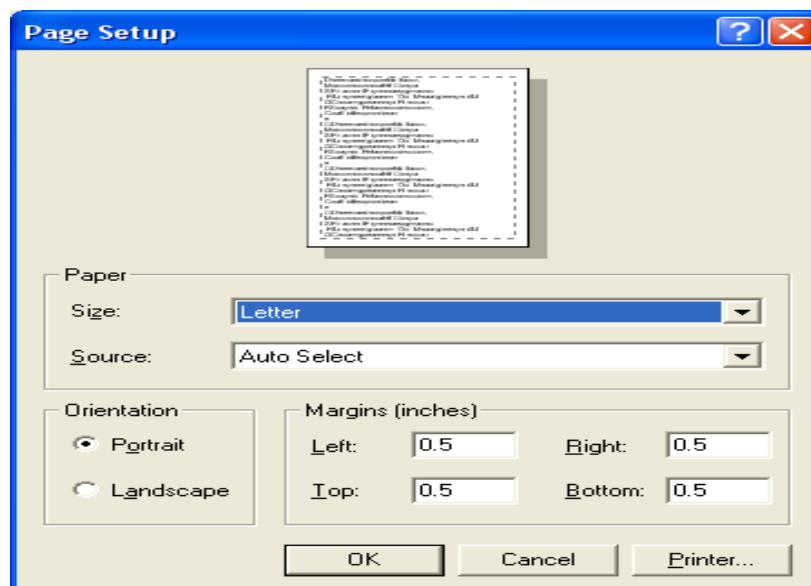
Figure 81 - Page Setup screen

The *Print Approach TC Data* menu option will allow the user to just print the approach data in a tabular format. The *Print All* menu option will print all of the options – Report, Survey TC Data, Approach TC Data – at once. The user will be able to select the printer (Figure 80). All three options will be printed as separate reports.

Print Multiple Surveys

The SDS Reporter software will support the ability to print multiple setpoint survey reports. ***Note – The software does not support multiple setpoint surveys***. The multiple setpoint survey report screen can be accessed by the File → Print → Print Multiple Surveys menu option. ***Note – When the screen is first displayed, the main SDS Reporter screen will be closed and any***

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unsaved data will be lost. Any unsaved data will need to be saved before printing the multiple setpoint survey report.

The Print Multiple Setpoint Survey screen will allow the user to select a report template that utilizes the multiple setpoint survey tags (described below) and up to 5 survey files (.SDSReport).

The search buttons -
 `...` - next to each field will allow the user to select the specific report template or survey file for the report.

Once the report template and survey files have been selected, the user will be able to export the report to Word by clicking on the **Export to Word** button.

In order to view the multiple setpoints on a survey, the user will

Figure 82 - Print Multiple Setpoint Survey screen

need to use the {*n*} tag, where *n* is the survey number from the *Print Multiple Setpoint Survey* screen (Figure 82). What the {*n*} tag does is tell the report to use the *n*th survey information for all of the following tags until another {*n*} tag is found. Using the displayed screen as an example, the following could be an excerpt from the template file:

{1} Survey #1 Duration: <SDS:DUR>
{2} Survey #2 Duration: <SDS:DUR>
{3} Survey #3 Duration: <SDS:DUR>
          Setpoint: <SDS:SP>
          Max TC Value: #mtcv#
{4} Survey #4 Duration: <SDS:DUR>

This survey would display the durations for each of the survey files, and it would also display the survey setpoint and max T/C value for survey #3. Notice that the normal data tags are still used. The new tag only tells the software which survey to pull data from. *Note – For single survey reports, the report template file does not need to be updated*. If no {*n*} tag is used, the software will default to the first survey file. On the actual report the {*n*} tag is invisible.

When the *Print Multiple Setpoint Survey* screen is closed down, the main SDS Reporter screen will re-open.

Print Button

When the user clicks on the Print button, the software will display the print preview screen, which is similar in design and function to the print preview screen on the View Real-time chart (Figure 90 or Figure 83 below).

File → Print Preview

The print preview screen is similar in design and function to the print preview screen on the View Real-time chart (Figure 90) and is displayed here (Figure 83). See the section "Print Button" under the <u>SDS</u> → <u>View Real-time Data</u> menu option for an explanation of the screen. There are three sub-menu options available:

Print Preview Report
Print Preview Survey TC Data
Print Preview Approach TC Data
Each option will display a print preview of the desired report.
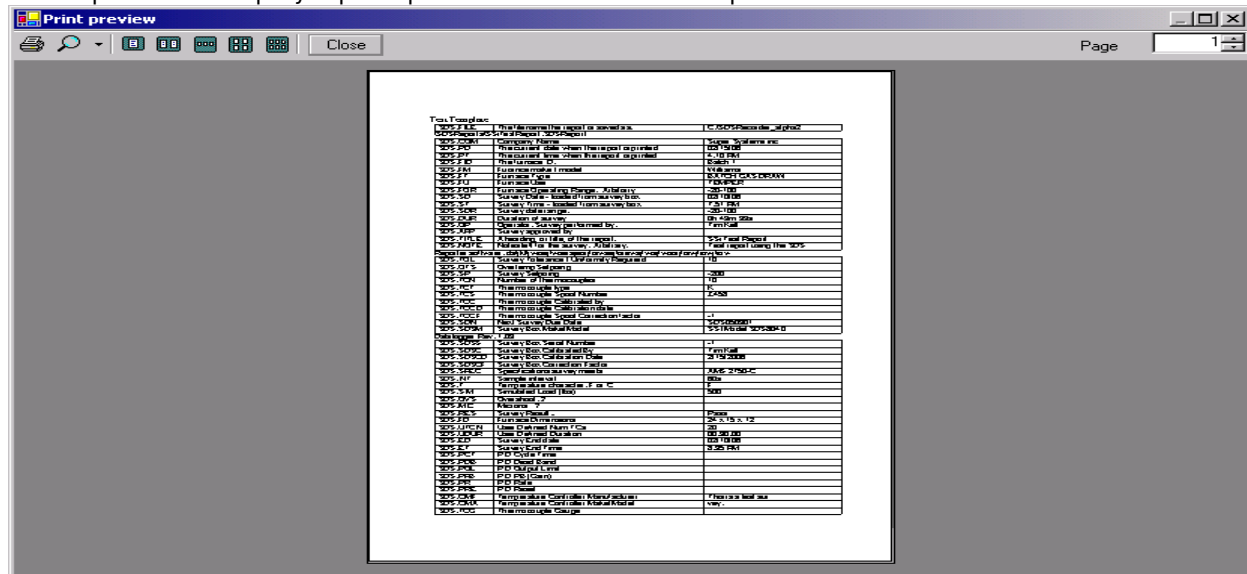
Figure 83 - Print Preview screen

File → Exit

This menu option will exit the application.

SDS Menu Options

SDS → Manage Survey Templates

The Manage Survey Templates menu option will display the SDS Template Manager screen, which will allow a user to add new templates and modify existing templates. See the section **SDS Template Manager Screen** for a more detailed description of the functions of this screen.

SDS → Download Surveys and Data

The Download Surveys and Data menu option will allow the user to download surveys from a specific SDS instrument. When the menu option is clicked, the SDS software will begin to search for any and all data loggers located on the network (Figure 84).
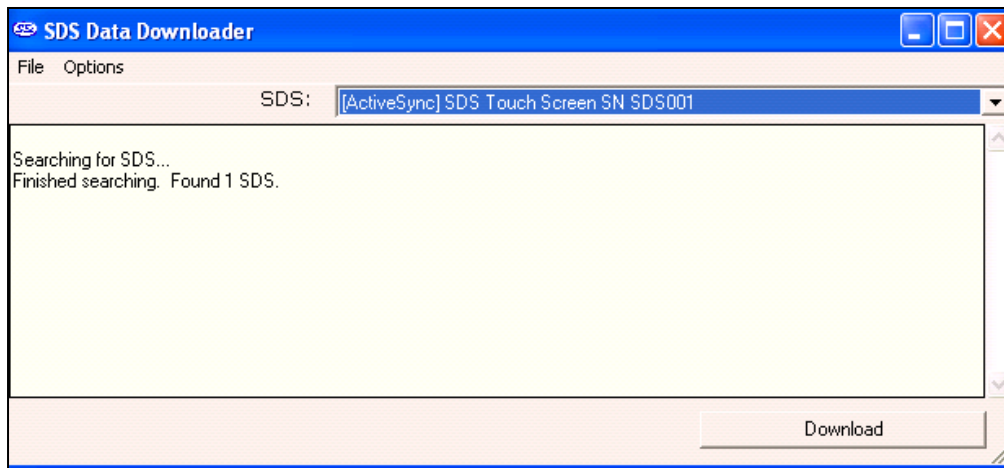
Figure 84 – SDS Data Log Extractor screen

Any data logger found on the network will be added to the drop-down list at the top of the screen. If no devices are found, a message box will pop up letting the user know that no devices were found on the network (Figure 85). Check the network connections to verify that any data logger and computer are properly connected to the network.
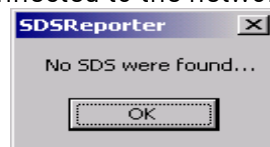
Figure 85 - No SDS devices found box

Select the instrument from which to download the data files from the drop-down list box labeled "SDS:". Under the *Options* menu, the *Download* menu option (Figure 86) will allow the user to choose to download only data that has been used in surveys, or all of the logged data. The SDS data logger will log data continuously when it is on regardless if a survey is running or not. There will be a check mark next to the menu option selected. The default menu option is *Only data used in surveys*. To download all data, make sure that *All data* is checked.
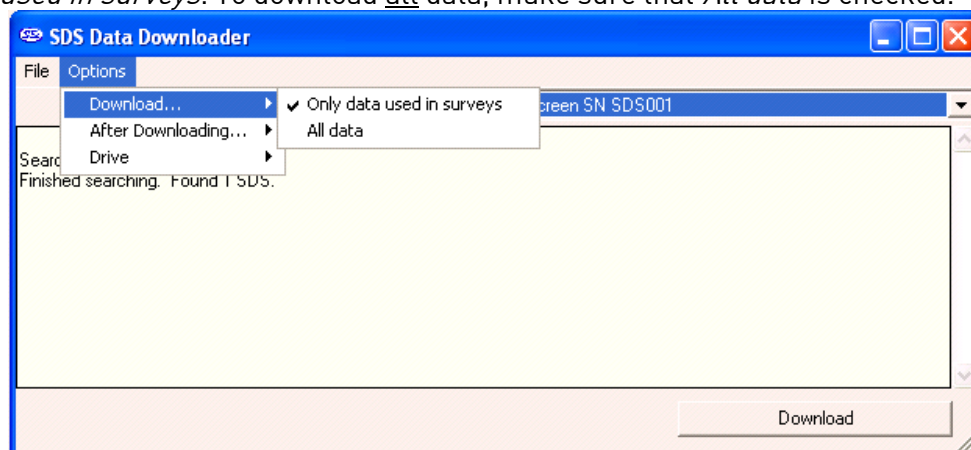
Figure 86 - Download menu option

The *After Downloading* options do not apply to use with the Color SDS Data Logger.

The SDS software will begin to download the survey data once the user has clicked on the "Download" button (Figure 88). The button will read "Abort" while the data files are downloading.

If the user chose to only download data files used in surveys, and no data files are found, the software will display an error message (Figure 87).
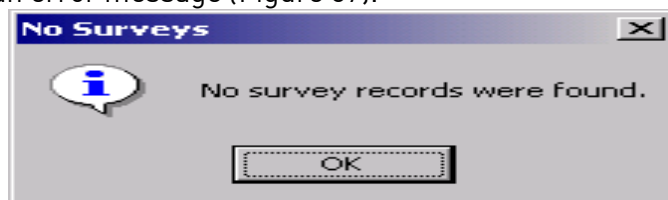
Figure 87 - No survey records found box

The files will be downloaded to: SDS\(SDS Model number)\log(year)—e.g., SDS\SDS505000\log2006.
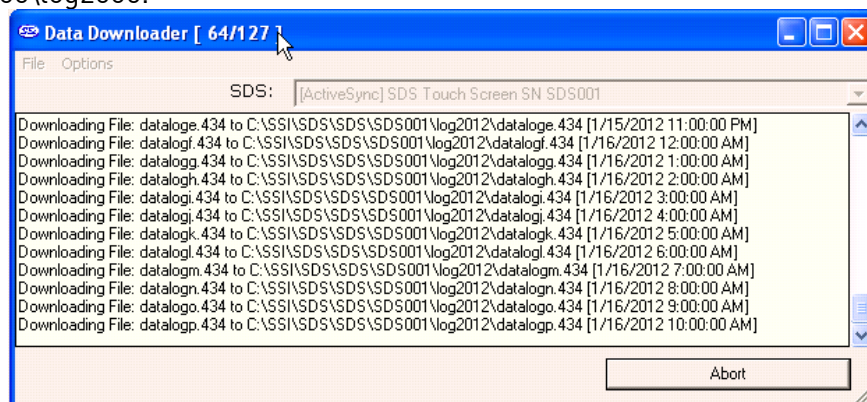
Figure 88 - SDS Data Log Extractor progress

The software will display a continuous progress of the download status (see Figure 88). Note: since there may a large number of files to download, this process may take several minutes to complete.

When all of the files have been downloaded, the words "Operation Complete" will be at the bottom of the list, and the button at the bottom will read "Download". A message box will also be displayed reading "Operation Complete". Clicking on the **OK** button on the message box will close down the download data screen.
Clicking on the "Abort" button will stop the download and close the SDS Data Log Extractor screen. Any files that have already been downloaded will not be erased. The next time the user wishes to download survey data from the same device, the files that have already been downloaded will be skipped and not be downloaded again.

SDS → Launch Direct FTP
The Launch Direct FTP option does not apply to the Color SDS Data Logger.

Figure 89 – Real-time Data screen

The View Real-time Data menu option will display the most current real-time data available. This screen will update itself with the most current real-time data every 60 seconds. The amount of time left until the next update will be displayed in the bottom left-hand corner of the screen. When it does update, the software will connect to the SDS, download the data, and re-draw the screen. Any screen settings, such as the size of the graph and how zoomed in the user is, will not be changed. Note: If the Multiple SDS Mode menu option is checked, then the SDS software will display a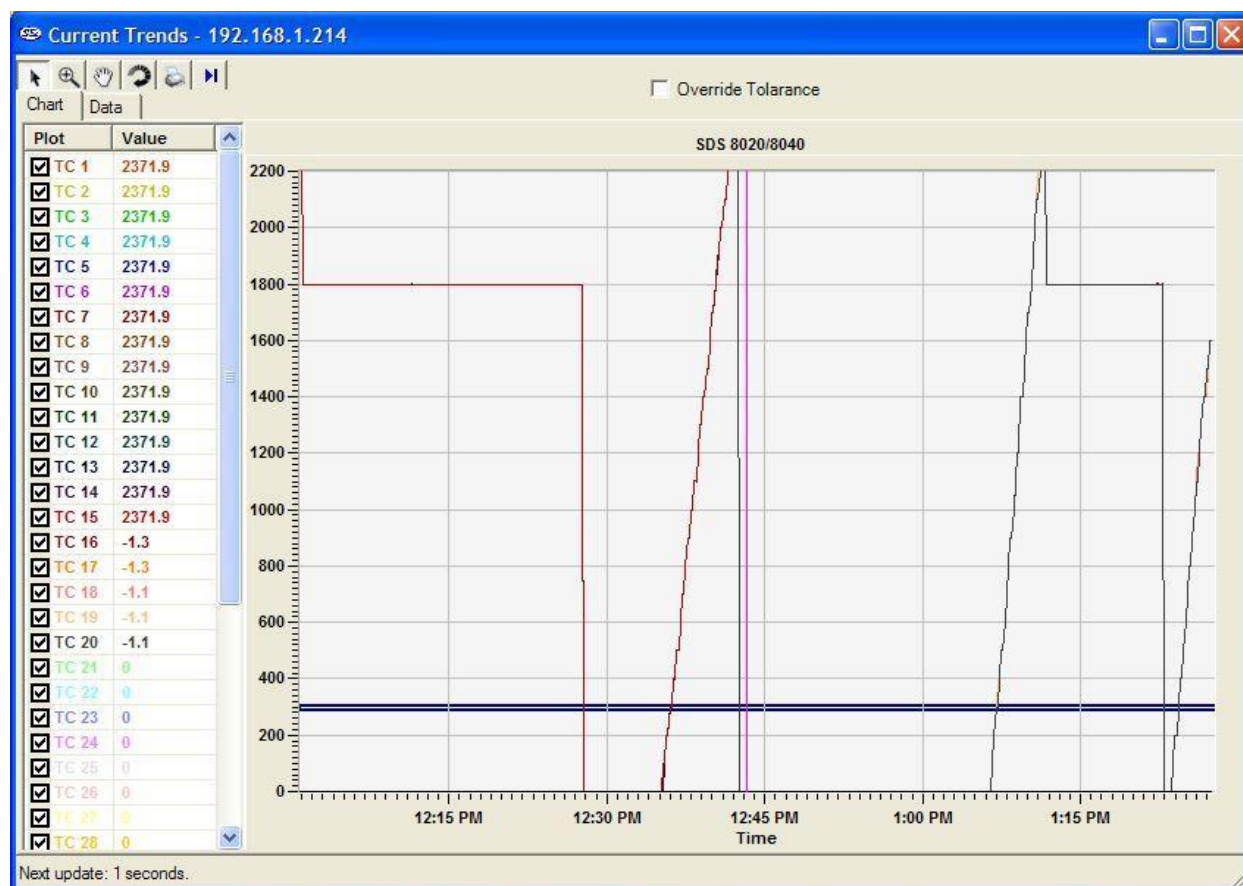 device selection box that will allow the user to choose which device to gather the real-time data from. If the Multiple SDS Mode menu option is not checked, then the SDS software will gather real-time data from the first SDS device that it finds on the network. Note: it is possible to view real-time data from more than one SDS instrument at a time. To view multiple real-time data, click on the View Real-time data menu option again and select the next SDS instrument. The Chart tab will display the real-time data as a graph, along with the tolerance, displayed as 2 blue lines. The Data tab will display the real-time data in numerical form. On the Chart tab, all of the buttons are available. On the Data tab, only the Print button is available.

Cursor Button

This is the default cursor used on the screen. The user can select the various TCs to plot and move the scrollbar on the left side of the screen up or down in order to see more TCs.

⊕ Zoom Button

This will allow the user to zoom in the graph of the real-time data. Once the cursor is over the graph it will change to a crosshair, +. The user can then hold down the left mouse button and drag the cursor to highlight the section of the graph that is to be enlarged. Letting go of the mouse button will enlarge the graph.

✋ Pan Button

This will allow the user to pan to a different part of the graph. Once the cursor is over the

graph, it will change to a crosshair with arrows: ✛ . By holding down the left mouse button and moving the mouse left, right, up, or down, the user can move the scale of the graph by minutes or temperature, or both.

↻ Refresh Button

This will refresh the graph and reset the graph's display values to their default values. For the values along the y-axis, the refresh sets the range from 0 to 2400. For the minutes along the x-axis, the refresh encompasses approximately two hours. Note: when the Real-time screen first loads up, the graph encompasses roughly one hour of data. The graph is marked with fifteen-minute intervals along the x-axis.

🖨 Print Button

This will create a print preview of the graph for printing purposes. When the user clicks on the Print button, the Print Preview screen will be displayed (Figure 90).
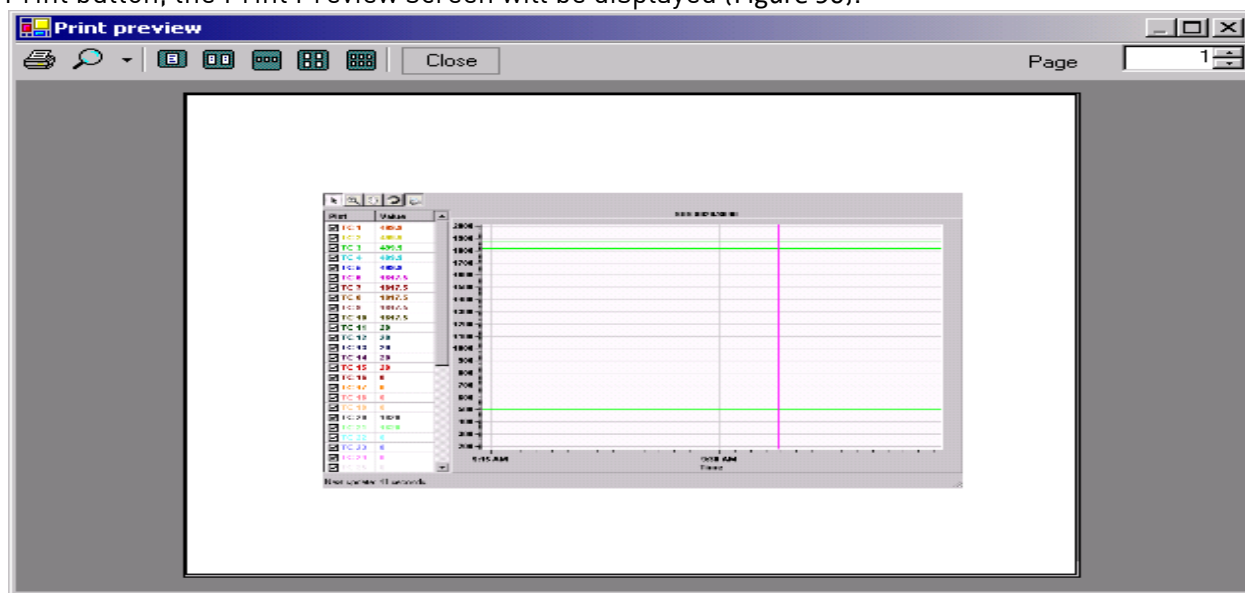
Figure 90 - Print Preview screen

From the Print Preview screen, the user can choose to zoom in on the preview by pre-defined percentages (10% - 500%) or leave the zoom on the default setting (auto). The user can also determine how many pages to view at once (one, two, three, four or six). The default is one page. The upper right-hand corner of the Print Preview screen contains a page counter, which will allow the user to select which page to preview. Clicking on the "Close" button will close the Print Preview screen without printing the chart. Clicking on the Print button (🖨) will print the

document. Note: the Zoom function is for preview purposes only and will not affect the actual print size. Once the document has been printed, the user can close the Print Preview screen.

▶❙ Real-time button

This button will allow the user to keep the cursor in a real-time mode, which will automatically update the TC values on the left of the screen after every update. Clicking on this button will start the real-time mode. Clicking on this button a second time will take the screen out of real-time mode. *Note - The graph will still continue to update once a minute, but the values on the left will no longer be up-to-the-minute accurate*.

The checkboxes under the "Plot" section will allow the user to determine which TCs to plot on the graph. Checking a specific TC will display that TC's data on the graph. The data under the "Value" section is the current temperature of the TC. Note: even if the Pan button or the Zoom button has been selected, the user can still select or de-select the TCs. This will not affect the zoom status or the pan status.

The "Override Tolerance" checkbox will allow the user to override the tolerance that is set up for the report. *Note – This does not change the actual tolerance on the survey report, only on the real-time screen*. Once checked, the user will be able to select a setpoint and a new tolerance. The tolerance bars on the graph will also update with these changes.

SDS → Manage Survey Records
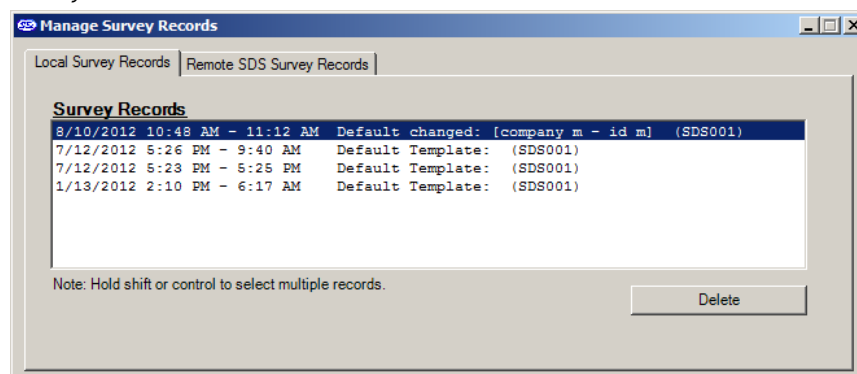
Figure 91 - Manage Survey Records – Local Survey Records Tab

The Manage Survey Records screen will allow the operator to delete survey records from the survey database file either locally on the computer or remotely on the SDS data logger. The "Local Survey Records" tab (Figure 91) will work with survey records saved locally to the computer. To select multiple sequential records, hold down the Shift key and click on the desired survey records. To select non-sequential records, hold down the Ctrl key and click on the desired survey records. The operator will have to confirm the deletion by clicking on the "Yes" button on the message box (Figure 92).

Figure 92 - Confirm deletion of local records

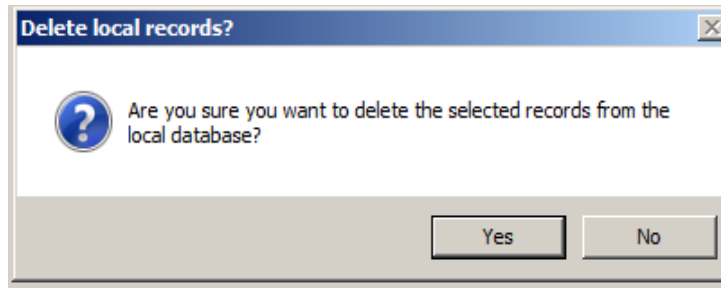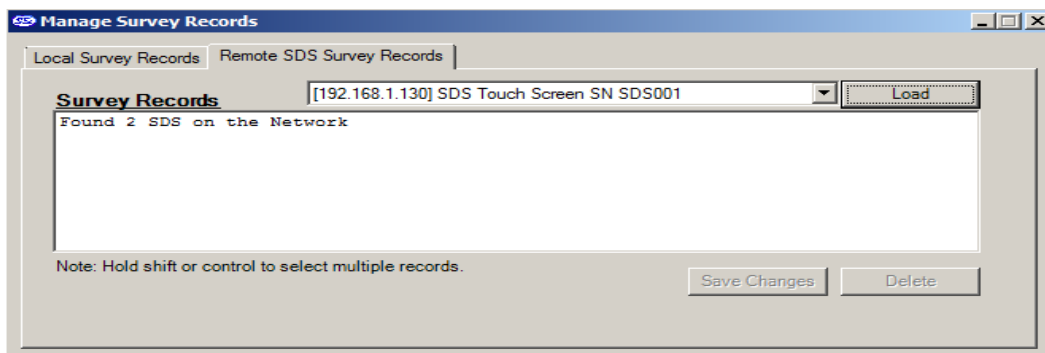*Figure 93 - Remote SDS Survey Records Tab*

The "Remote SDS Survey Records" tab (Figure 93) will allow the operator to delete survey records directly from the SDS data logger. The drop-down list at the top of the screen will list all of the SDS data loggers found on the network.

Note: The drop-down list may take a few moments to search the network for SDS data loggers.

Note: Currently, the drop-down list will also be populated with Video Recorder data loggers. Please use caution when selecting a data logger from the list; deleting data from a Video Recorder could produce undesirable consequences. When the operator has selected the correct data logger, he/she can click on the "Load" button to load the survey data. To select multiple sequential records, hold down the Shift key and click on the desired records. To select multiple non-sequential records, hold down the Ctrl key and click on the desired records. Clicking on the "Delete" button will remove the survey records from the list. *Note – The survey records will be removed from the list, but not actually deleted from the SDS data logger until the "Save Changes" button has been clicked. If one or more survey record is accidentally deleted, click on the "X" in the top right of the screen to close the screen down, and start over.* Clicking on the "Save Changes" button will save the changes back to the SDS data logger. No confirmation is needed for this action. Once the changes have been saved, a message box will be displayed (Figure 94).
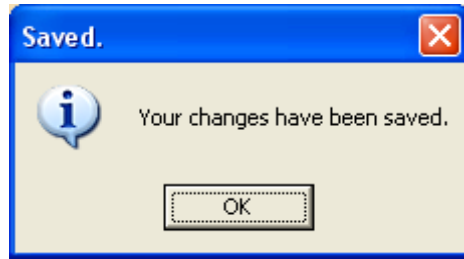
Figure 94 - Changes Saved message box

SDS → Perform Comms Test

The Perform Comms Test menu option will send out a broadcast over the network to determine if any SDS instruments are located on the network. If an instrument is located on the network, the software will attempt to ping the device. This function will let the user know if communication with an SDS instrument through the SDS Reporter software is possible. When the test has finished, one of three options will happen:

1. No SDS found

No SDS instruments were found on the network. Check the network connections. A message will be displayed to the user (Figure 95). Click the "OK" button to close the form
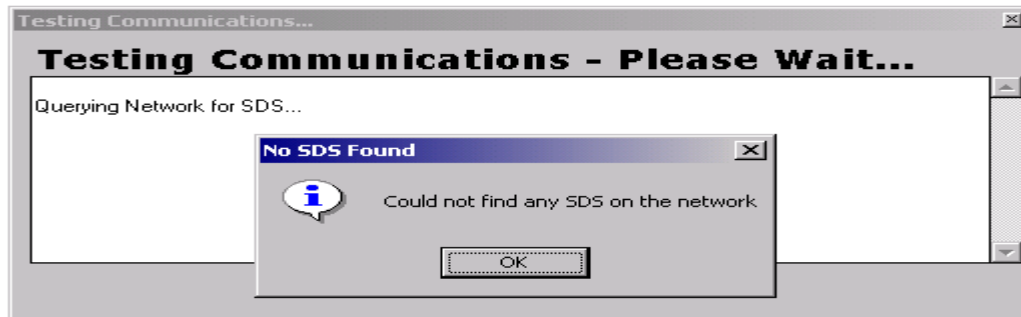

Figure 95 - No SDS found on network message

2. One or more SDS were found.

One or more SDS instruments were found on the network, and all responded to the ping. A message will be displayed (Figure 96).
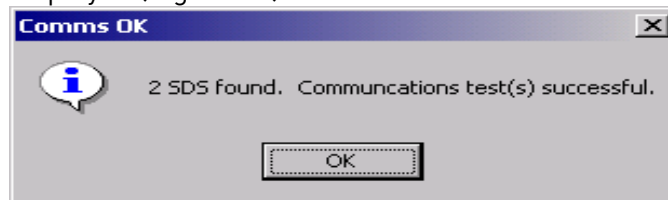

Figure 96 - Communications OK message

This means that all communications appear to be ok (Figure 97). Click the "Close" button to close the form.
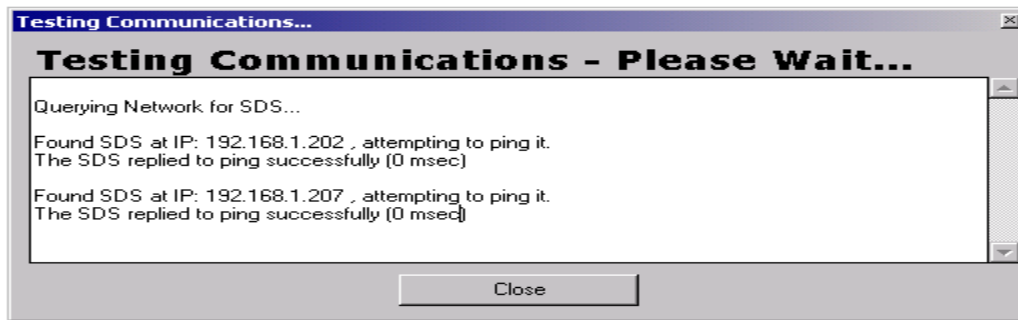
Figure 97 - Communications OK message on Test Comms dialog box

3. One or more SDS were found, but one or more failed to respond to a ping.

   SDS instruments were found on the network, but one or more did not respond to a ping. For each instrument that does not successfully respond to the ping, the user will be informed that there was a problem testing the communications and the software will give the IP address of the SDS instrument(s) that failed to respond as well as the IP address of the SDS instrument(s) that did respond successfully to the ping (Figure 98). The most common cause is different subnets between the SDS and the computer (Figure 99). The user may need to change the IP address of the SDS through menu option 26, *Set IP Address*. Click the "Close" button to close the form.
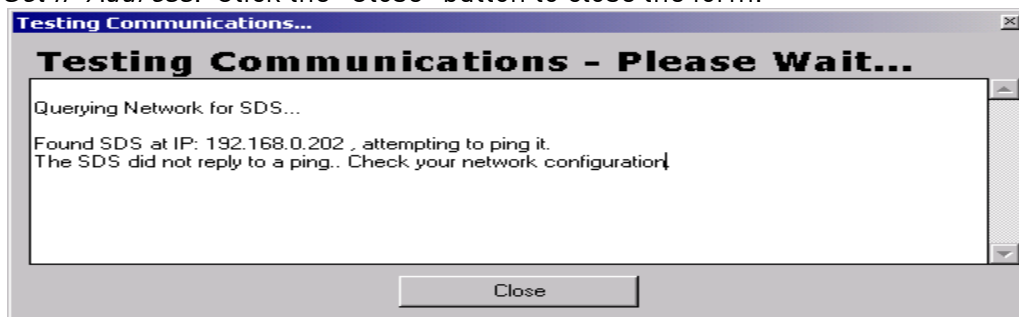
Figure 98 - One or more SDS did not respond message on Test Comms dialog box
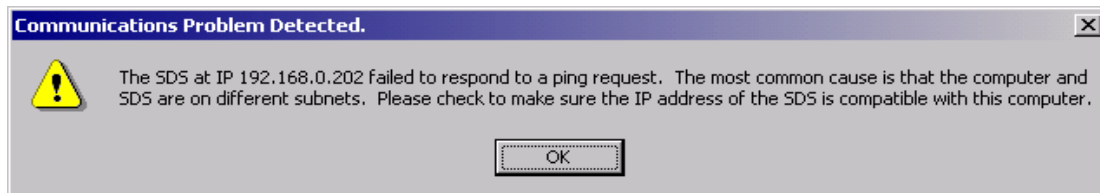
Figure 99 - One or more SDS did not respond message

If the user is attempting to communicate with the SDS directly using a laptop that also has a wireless network on it, the wireless network could interfere with some of the SDS Reporter functions. The UDP error could happen if the user tried to ping a data logger while a wireless network was enabled (Figure 100). Any wireless network should be disabled before running the SDS Reporter software.
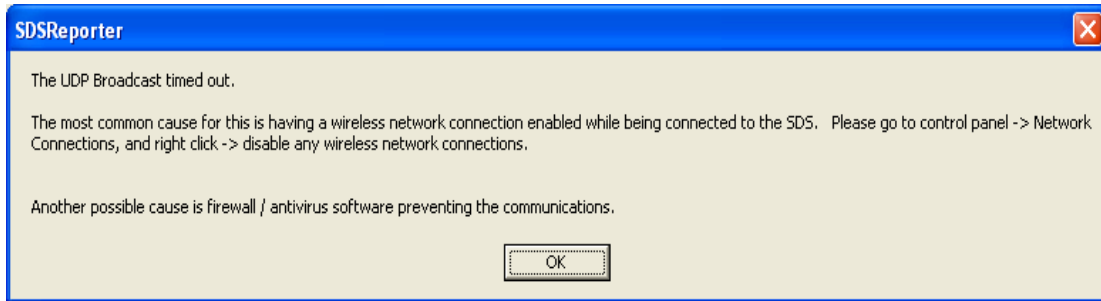
Figure 100 - UDP Error

Options Menu Options

Options → Multiple SDS Mode

This is a toggle switch for the application. If there are multiple SDS instruments located on the network, click this menu option. Once clicked, there will be a check mark next to the menu item. If this menu option is not checked and there are multiple SDS instruments on the network, the software will use the first SDS device that is found. This menu option is checked by default.

Options → Show Labels On Chart

This is a toggle switch for the application. When checked, this will display the "Begin Survey" label for the survey on the real-time graph (Figure 101).
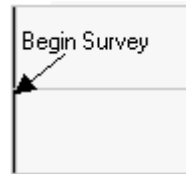

Figure 101 - Label from real-time graph

Options → Color Screen Scanning

This is a toggle switch for the application. This option must be checked in order for SDS Reporter to scan for the Color SDS Data Logger. This scanning will take place over Ethernet and over USB using ActiveSync (Windows XP) or Mobile Device Center (Windows Vista/7).

Help Menu Options

Help → Check for Updates

The Check for Updates menu option will check for updates over the Internet and automatically update the SDS firmware and software. If an update is found, the software will display a message box asking the user for update confirmation (Figure 102).
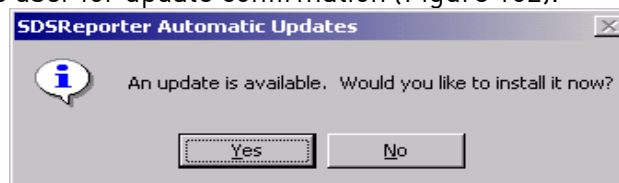
Figure 102 - Update found message box

The software will automatically update the files and restart the application (Figure 103)
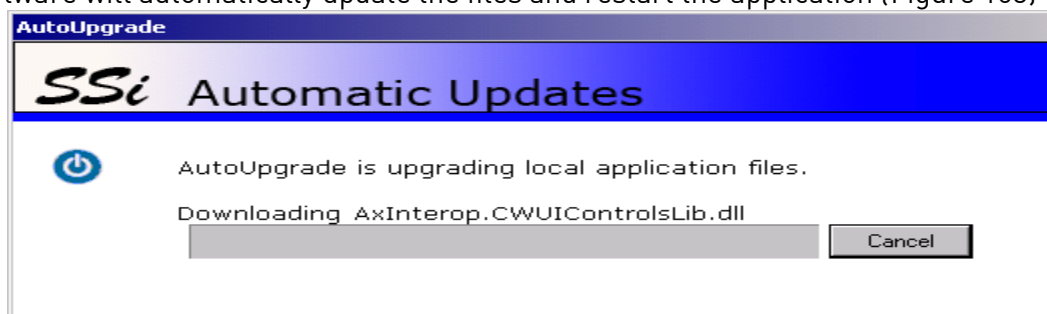
Figure 103 - Automatic Update screen

If no updates are available, then the software will display a message box informing the user (Figure 104).
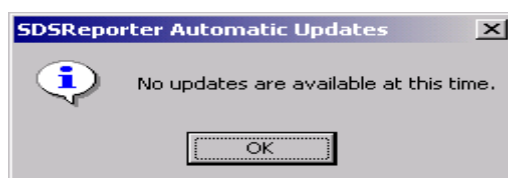
Figure 104 - No updates message box

Help → About

The About menu option displays the SDS Reporter version that is running, and all of the previous versions with any version notes (Figure 105).
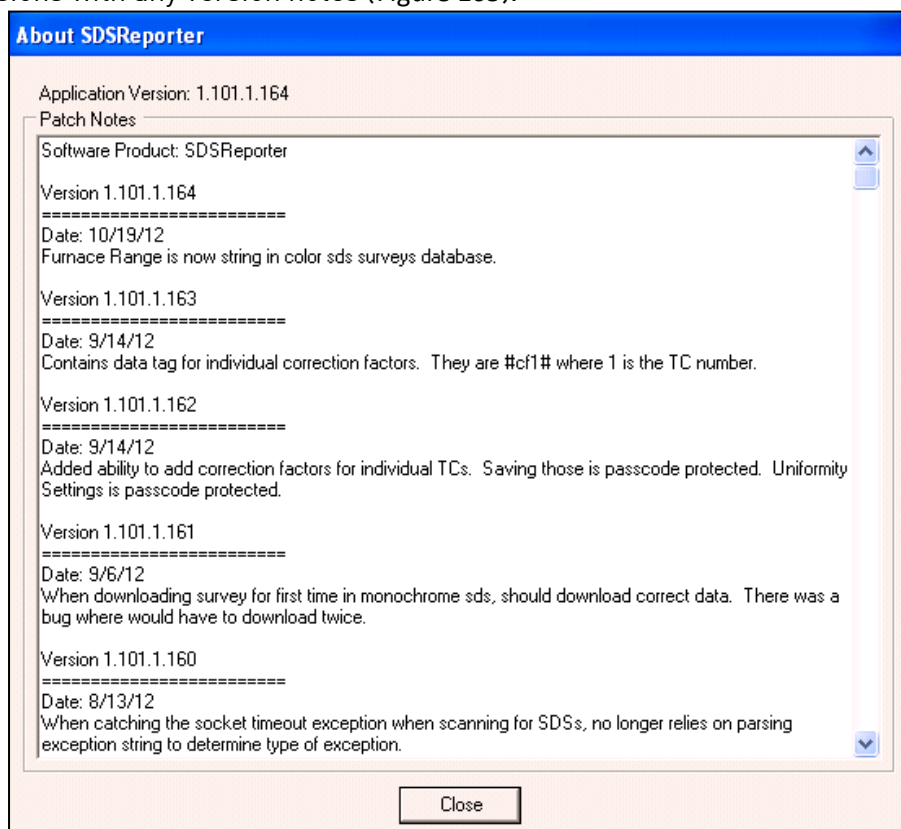
Figure 105 - SDSReporter About box

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SDS Data Tags

SDS Data tags are created so that all of the template information and survey data can automatically be used for the report process. Data that is captured during the survey is summarized to provide the overall results for the report. This can be in the form of a graph, tabular data, text, etc. Data tags have been specifically created to address the uniformity requirements for AMS and other standards. We have tags that address overshoot, minimum TC with value, maximum TC with value, trend data, tabular data, etc. An example of an output from the data tags can be seen by opening the Example report from the SDS Reporter provided with the installation. The only data not generated from data tags is the tabular print out of the actual temperatures. This data is generated from the *Survey TC Data* option and will print all data points that are displayed on the graph between the "start" and "stop" selected by the user in the survey.

In the figure below (Output From Data Tags), you can see an example of the data tags for the graph, survey setpoint, minimum and maximum TCs with values and deviation. The data tags used to generate the information below are:

<SDS:GRAPH600x400>

TC Survey Summary

Temperature Setpoint: <SDS:SP>°#

Minimum TC number: **#mtcn#**	Maximum TC number: **#xtcn#**
Minimum TC Value: **#mtcv#**	Maximum TC Value: **#xtcv#**
Min deviation from setpoint: **#md#**	Max deviation from setpoint: **#xd#**
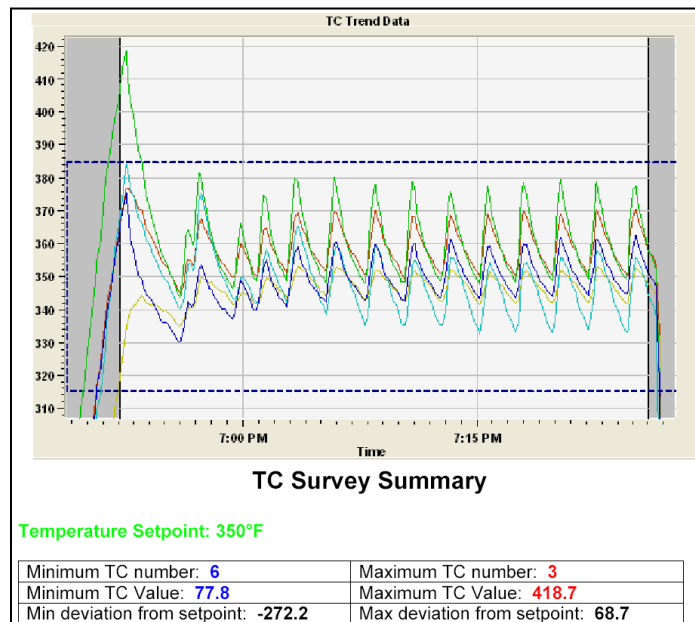
Figure 106 - Output from Data Tags

Tag	Description	Usage
SDS:FILE	The filename the report is saved as	<SDS:FILE>
SDS:PD	The current date when the report is printed	<SDS:PD>
SDS:PT	The current time when the report is printed	<SDS:PT>
SDS:FID	The furnace ID	<SDS:FID>
SDS:FM	Furnace make/model	<SDS:FM>
SDS:FT	Furnace type	<SDS:FT>
SDS:FU	Furnace use	<SDS:FU>
SDS:FD	Furnace dimensions	<SDS:FD>
SDS:FC	Furnace Class	<SDS:FC>
SDS:FOR	Furnace operating range	<SDS:FOR>
SDS:SD	Survey date	<SDS:SD>
SDS:ST	Survey time	<SDS:ST>
SDS:SDR	Survey date range	<SDS:SDR>
SDS:DUR	Duration of the survey	<SDS:DUR>
SDS:OP	Operator. Survey performed by	<SDS:OP>
SDS:APP	Survey approved by	<SDS:APP>
SDS:TITLE	The heading, or title, of the report	<SDS:TITLE>

Tag	Description	Usage
SDS:NOTE	Notes for the survey	<SDS:NOTE>
SDS:TOL	Survey tolerance / uniformity required	<SDS:TOL>
SDS:OTS	Overtemp setpoint	<SDS:OTS>
SDS:SP	Survey setpoint	<SDS:SP>
SDS:TCN	Number of thermocouples	<SDS:TCN>
SDS:TCT	Thermocouple type	<SDS:TCT>
SDS:TCS	Thermocouple spool number	<SDS:TCS>
SDS:TCC	Thermocouple calibrated by	<SDS:TCC>
SDS:TCCD	Thermocouple calibration date	<SDS:TCCD>
SDS:TCCF	Thermocouple spool correction factor	<SDS:TCCF>
SDS:SDN	Next survey due date	<SDS:SDN>
SDS:SDSM	Survey box make/model	<SDS:SDSM>
SDS:SDSS	Survey box serial number	<SDS:SDSS>
SDS:SDSC	Survey box calibrated by	<SDS:SDSC>
SDS:SDSCD	Survey box calibration date	<SDS:SDSCD>

SDS:SDSCF	Survey box correction factor	<SDS:SDSCF>
SDS:SPEC	Specifications the survey meets	<SDS:SPEC>
SDS:INT	Sample interval	<SDS:INT>
SDS:T	Temperature character – F or C	<SDS:T>
SDS:SIM	Simulate load, in pounds	<SDS:SIM>
SDS:OVS	Overshoot (Deprecated)	<SDS:OVS>
SDS:MIC	Microns	<SDS:MIC>
SDS:RES	Survey result	<SDS:RES>
SDS:GRAPH600x400	Inserts a 600X400 image of the graph	<SDS:GRAPH600x400>
SDS:COM	Company name	<SDS:COM>
SDS:UDUR	User defined survey duration	<SDS:UDUR>
SDS:UTCN	User defined number of thermocouples	<SDS:UTCN>
SDS:PCT	PID cycle time	<SDS:PCT>
SDS:PDB	PID dead band	<SDS:PDB>
SDS:POL	PID output limit	<SDS:POL>
SDS:PPB	PID PB (gain)	<SDS:PPB>
SDS:PR	PID rate	<SDS:PR>

Tag	Description	Usage
SDS:PRE	PID reset	<SDS:PRE>
SDS:CMF	Temperature controller manufacturer	<SDS:CMF>
SDS:CMA	Temperature controller make/model	<SDS:CMA>
SDS:IT	Controller instrument type	<SDS:IT>
SDS:TCG	Thermocouple gauge	<SDS:TCG>
SDS:OV	Overshoot - yes or no	<SDS:OV>
SDS:OD	Outputs TC and temp if overshoot occurred	<SDS:OD>
SDS:OVT	Time the overshoot occurred	<SDS:OVT>
SDS:CTD	Inserts a note regarding the control Thermocouple. Inserts nothing if no control Thermocouple was chosen	<SDS:CTD>
SDS:CTN	Control thermocouple. Inserts "None" if None is defined	<SDS:CTN>
°#	°degree type	°#
SDS:ED	Survey end date	<SDS:ED>

SDS:ET	Survey end time		<SDS:ET>
SDS:TCM	Thermocouple map (image)		<SDS:TCM>
SDS:UD1	User defined field	1	<SDS:UD1>
SDS:UD2	User defined field	2	<SDS:UD2>
SDS:UD3	User defined field	3	<SDS:UD3>
SDS:UD4	User defined field	4	<SDS:UD4>
SDS:UD5	User defined field	5	<SDS:UD5>
SDS:UD6	User defined field	6	<SDS:UD6>
SDS:UD7	User defined field	7	<SDS:UD7>
SDS:UD8	User defined field	8	<SDS:UD8>
SDS:UD9	User defined field	9	<SDS:UD9>
SDS:UD10	User defined field	10	<SDS:UD10>
SDS:UD11	User defined field	11	<SDS:UD11>
SDS:UD12	User defined field	12	<SDS:UD12>
SDS:UD13	User defined field	13	<SDS:UD13>
SDS:UD14	User defined field	14	<SDS:UD14>
SDS:UD15	User defined field	15	<SDS:UD15>

Tag	Description		Usage
SDS:UD16	User defined field	16	<SDS:UD16>
SDS:UD17	User defined field	17	<SDS:UD17>
SDS:UD18	User defined field	18	<SDS:UD18>
SDS:UD19	User defined field	19	<SDS:UD19>
SDS:UD20	User defined field	20	<SDS:UD20>

*** Survey scope data tags – {*n*} where *n* is the survey number – are used to display survey information for the multiple survey report feature. See the section *Print Multiple Surveys* for more information on how to use these data tags ***

Sample Output

Tag	Sample Output
SDS:FILE	SDSReport1.sdsreport
SDS:PD	2/16/06
SDS:PT	11:30:00 AM

SDS:FID	Batch 1
SDS:FM	Furnace Mfg.
SDS:FT	Batch Gas Draw
SDS:FU	Temper
SDS:FD	24 x 15 x 12
SDS:FC	A
SDS:FOR	650 - 1000°C
SDS:SD	2/16/06
SDS:ST	11:30:00 AM
SDS:SDR	2/13 THRU 2/14
SDS:DUR	00:30:00
SDS:OP	Shaun Scott
SDS:APP	Scott Brown
SDS:TITLE	Test Survey 1
SDS:NOTE	This is a test survey
SDS:TOL	[+/-] 10
SDS:OTS	+10
SDS:SP	750
Tag	**Sample Output**
SDS:TCN	20
SDS:TCT	K
SDS:TCS	Z458
SDS:TCC	Soandso
SDS:TCCD	1/15/06
SDS:TCCF	-1
SDS:SDN	2/28/06
SDS:SDSM	SSI SDS8120
SDS:SDSS	SDS60293201
SDS:SDSC	Super Systems Inc
SDS:SDSCD	1/15/12
SDS:SDSCF	-1.0
SDS:SPEC	AMS 2750-D and E
SDS:INT	10s
SDS:T	F

SDS:SIM	500
SDS:OVS	None
SDS:MIC	N/A
SDS:RES	Passed
SDS:GRAPH600x400	[An image of the graph]
SDS:COM	Company Name
SDS:UDUR	30 mins
SDS:UTCN	20
SDS:PCT	20
SDS:PDB	2
SDS:POL	2
SDS:PPB	2
SDS:PR	2
SDS:PRE	2
SDS:CMF	Super Systems
SDS:CMA	7EK
SDS:IT	B

Tag	Sample Output
SDS:TCG	16
SDS:OV	Yes
SDS:OD	TC6 - 1700°
SDS:OVT	5:30
SDS:CTD	TC5 is the control TC, and is not used in uniformity survey results
SDS:CTN	TC5
°#	°F
SDS:ED	2/16/06
SDS:ET	11:30:00 AM
SDS:TCM	[Thermocouple image]

TC Offsets

Tag	Description	Usage
#o1#	Offset for TC1	#o1#

| #cf1# | Individual correction factor for TC1 | #cf1# |

Tag	Sample Output
#o1#	-1

Min/Max/Mean/Spread/Deviation

Tag	Description	Usage
#n1#	Minimum temp for TC1 within the selected Survey region. Substitute numbers for other TCs	#n1#
#x1#	Max temp for TC1	#x1#
#m1#	Mean temp for TC1	#m1#
#s1#	Spread for TC1	#s1#
#vn1#	Deviation @min temp from setpoint for TC1	#vn1#
#vx1#	Deviation @max temp from setpoint for TC1	#vx1#

Tag	Description	Usage
#vm1#	Deviation @mean temp from setpoint for TC1	#vm1#
#mtcn#	Minimum TC number	#mtcn#
#mtan#	Minimum TC number during approach segment	#mtan#
#mtav#	Minimum TC value during approach segment	#mtav#
#mtcv#	Minimum TC value	#mtcv#
#mtcx#	The maximum temperature of the minimum TC	#mtcx#
#md#	Minimum calculated survey TC absolute deviation from setpoint	#md#
#rect#	Recovery Time – the time between the when the first TC comes into tolerance	#rect#

	the time when the last TC comes into tolerance	
#xtcn#	Maximum TC number	#xtcn#
#xtan#	Maximum TC number during approach segment	#xtan#
#xtav#	Maximum TC value during approach segment	#xtav#
#xtcm#	Minimum temperature of the maximum TC	#xtcm#
#xtcv#	Maximum TC value	#xtcv#
#xd#	Maximum calculated survey TC absolute deviation from setpoint	#xd#

Tag	Sample Output
#n1#	183
#x1#	183
#m1#	183
#s1#	12.5

Tag	Sample Output
#vn1#	383
#vx1#	383
#vm1#	383
#mtcn#	2
#mtan#	2
#mtav#	150
#mtcv#	1
#mtcx#	500
#md#	201.0
#rect#	3 mins 30 secs
#xtcn#	1
#xtan#	6
#xtav#	1500
#xtcm#	500

#xtcv#	183
#xd#	383.0
#ts#	13.8

Creating a Personalized Template

To create a personalized template, the user needs to open a document in WordPad and save it to the "ReportTemplates" folder in the main installed folder as a Rich Text Format (.rtf) file. Any of the SDS data tags listed in the above section can be used to create a company-specific template. For example, suppose that someone wanted to create a simple template called "NewTemplate" which displays the current date and time the report is printed, the company name, the title of the report, the number of thermocouples used, and the results of the survey. First, the user would open WordPad and save the file as "NewTemplate.rtf" in the "ReportTemplates" folder in the main installed folder. Next, the user would set up any initial formatting settings, such as margin sizes, page layout (portrait or landscape), etc. Now, the user can set up the template to his or her company's specifications. Suppose that the current date and time will be in the top right corner of the report and should be 10-point Arial font. On the first line, the user can select the right-justified option, the 10-point font size option, and the Arial font option. This will leave the cursor in the top right corner. Next, the user will enter the following exactly (including the brackets): <SDS:PD>. This will be where the current date is displayed. On the next line, the user can enter <SDS:PT>. This will be where the current time is displayed. Now suppose the title of the report should be centered, bold, 14-point Arial font. The user will select the center-justified option, and the 14-point font size option. This will place the cursor in the middle of the line. The user will then enter <SDS:TITLE>. The rest of the report - company name, number of thermocouples used, and the results of the survey - can be left-justified, non-bold, 12-point font. On the next line, the user will select the left-justified option, the 12-point font size option, and deselect the bold option. The user can then enter: Company name: <SDS:COM>. On the next line the user can enter: Number of thermocouples used: <SDS:TCN>. On the next line, the user will enter: Survey results: <SDS:RES>. Next, make sure the document is saved and close the document out. Note: it is always good practice to save a document in progress often in case of power failure. The resulting template should resemble Figure 107 below.
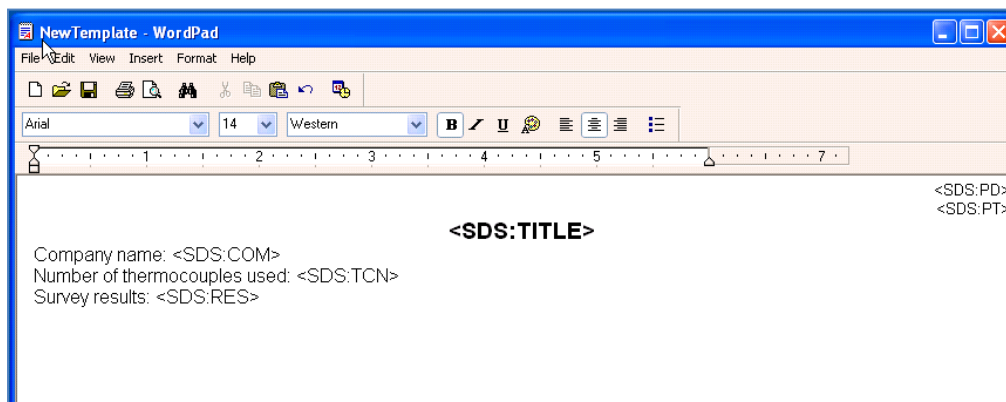

Figure 107 - Completed NewTemplate report template (saved as an RTF file in WordPad)

Next, the user will select the report template to use from the SDSReporter application's Open

option. Clicking on the Open button, [...], next to the Report Template field will allow the user to choose which report template to use (Figure 58). The user can choose the NewTemplate.rtf file. Next, the user will choose the "Export to RTF" print menu option on the File menu and choose the location to save the .rtf file. The actual report should resemble Figure 108 below.
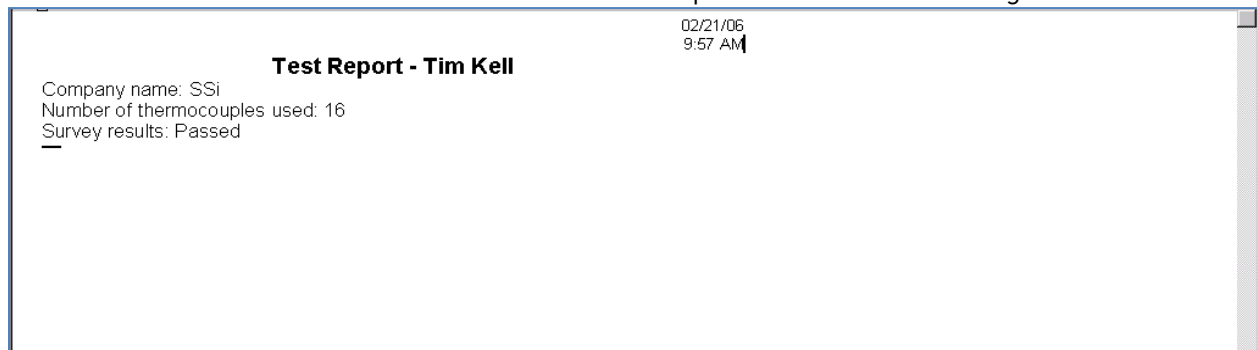
02/21/06
9:57 AM

Test Report - Tim Kell

Company name: SSi
Number of thermocouples used: 16
Survey results: Passed

Figure 108 - Actual NewTemplate report

SDS Template Manager

The purpose of a template is to save the user's time by filling in some of the more generic survey data. For example, the user could create a template for one customer, including company name, TC type, etc; then when the survey is run using this template, this information is already present and it won't need to be entered for each survey run for that customer. The new SDS Template Manager (Figure 109) allows the user to see all of the templates currently stored on the SDS instrument, as well as any templates saved to a local computer. The Template Manager also allows the user to create new templates and save them to a local file on a computer or network, or to the SDS instrument.
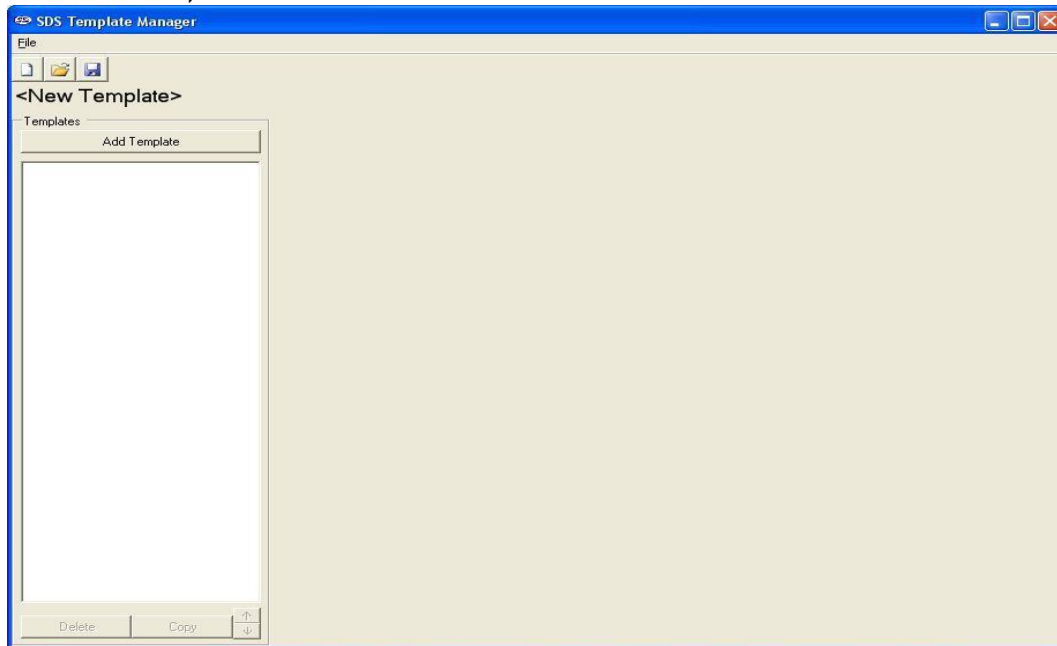
Figure 109 - New SDS Template Manager

Description/Function of Template Manager Screen buttons/menu options
This section will describe the function of the toolbar buttons and menu options for the Template Manager Screen. Clicking on either the form button or the menu option will produce the same result, so each pair of button/menu option will be explained in this section.

New Button / File ➔ New

The New button, [icon], or New menu option will allow the user to create a new set of templates. The maximum number of templates that can be added per file is 32. Note: initially, there are no templates in the file.

Open Button / File ➔ Open
The Open button, [icon], or the Open menu option will allow the user to open an existing template file either from the local computer, or from an SDS instrument on the network (Figure 110).
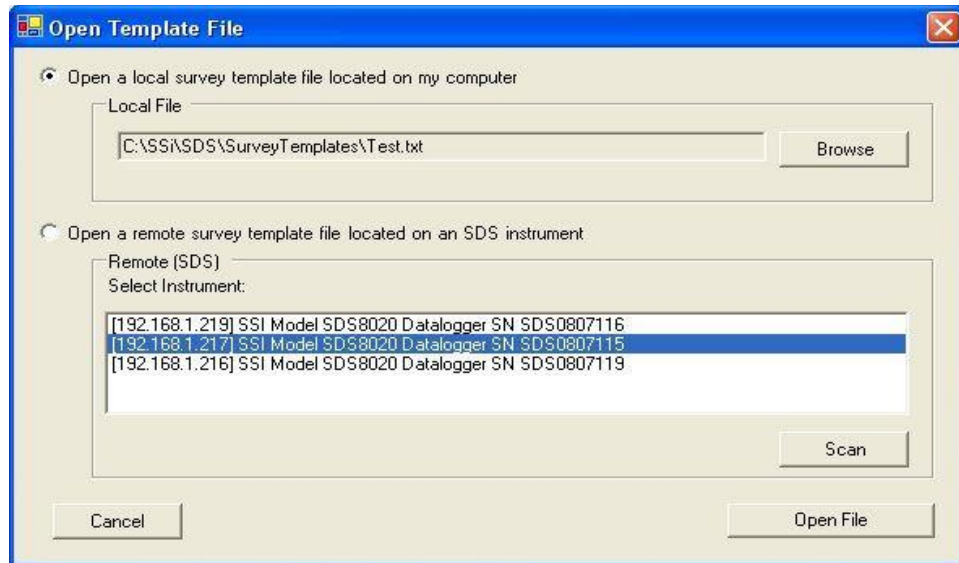
Figure 110 - Open template menu option

The use will be able to open a local template file or a template file that is on an SDS. If the user selects a local file, the user will be able to click on the **Browse** button to select the file to open. The SDS software will display a common Windows dialog box for the user to select which file to open. If the user selects an SDS instrument, the SDS Software will display a selection box with all of the available SDS instruments on the network. Note: Since the SDS software is searching the network for all SDS devices, it may take a couple of minutes for the selection box to be displayed. This list will be populated with all of the available SDS devices found when the "Open Template File" screen is first opened. Clicking on the **Scan** button will allow the user to re-scan the network for available SDS instruments. Once a local or remote file has been selected, click on the **Open File** button to open the file, or click on the **Cancel** button to close down the screen without opening a file. Note: When the Open Button or the Open menu option is clicked, the tabs that contain all of the fields for the template will not become visible – an individual template must be selected to view the tabs. Once the file has been loaded, the filename will be listed above the Templates list on the left of the form (Figure 109).

Save Buttons / File ➜ Save

The Save button, 🖫, or Save menu option will allow the user to save the current file back to the local machine or the SDS instrument. Note: Any changes made to any template will be saved at once when this option is selected. Note: If the user is working with a new template file, the Save function will act like the Save As function (see below section).

File ➜ Save As

This option acts the same way as the Save option, only it will display a dialog box that will allow the user to select the file to save (Figure 111). This functionality of this screen is similar to the Open Template screen (Figure 110). The template file can be saved locally on a computer or remotely on an SDS instrument. If the user selects to save the file locally, the user will be able to click on the **Browse** button, which will display a common Windows save dialog box. The user will be able to select the location and give the template file a name. If the user selects to save the file to a remote SDS, the software will display a selection box with all of the available SDS instruments on the network. Note: Since the SDS software is searching the network for all SDS devices, it may take a couple of minutes for the selection box to be displayed. This list will be

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populated with all of the available SDS devices found when the "Save Template File As" screen is first opened. Clicking on the **Scan** button will allow the user to re-scan the network for available SDS instruments. Once a local file or remote file has been selected, click on the **Save File** button to save the file, or click on the **Cancel** button to close down the screen without saving the file.
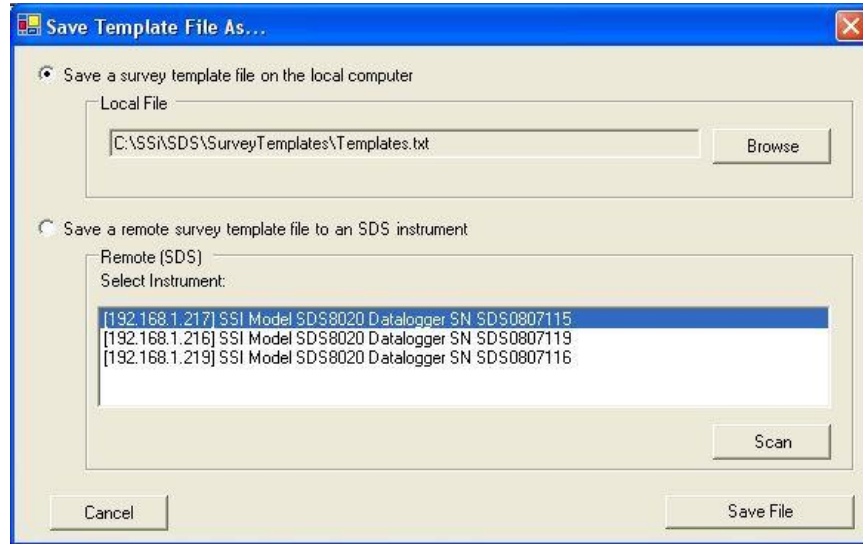

Figure 111 - Save Template File As... screen

The software will always display a message box with the success or failure of the save.

Exit Button / File ➔ Exit

This option will close the Template Manager screen.

Add Template Button

This option will add a template to the collection of templates stored in memory, up to 32 total templates. The only required field is the Template Name. The default template name is <Template Name>

Once a template has been added, the new template will be loaded into the fields.

Delete Button

This option will delete a template from the collection of 32 templates stored in memory.

Copy Button

This button will copy a template into the collection, assuming there are less than 32 templates already. This would be useful if the user only wanted to change one or two items on the template, such as the setpoint.

Arrow Buttons

The arrow buttons next to the **Copy** button will allow the user to change the order of the templates in the file. This way, the more commonly used templates can be kept at the top of the file so the user will not have to scroll down to see the template on the SDS. The up arrow button will move the template up one position, and the down arrow button will move the template down one position.

Description of Template Manager Screen Tabs

Template Information Tab

Figure 112 - Template Information tab

This tab contains general information about the template such as the Template Name, the Company Name, furnace information such as the furnace ID, the make and model of the furnace, the furnace dimensions, the temperature type (Fahrenheit or Celsius), the temperature range, the furnace type, the furnace use, the furnace class, and any Notes about the template. See "Description of Template Manager Screen Fields" for the maximum number of characters allowed per field.

Survey Information Tab

Figure 113 - Survey Information tab

This tab contains information about the survey such as the Survey Duration in minutes, the Survey setpoint, The survey Tolerance, the Operator performing the survey, the simulated load, in pounds, and the Specification the survey meets.

Active TCs Tab

Figure 114 - Active TCs Tab

This tab contains information about the active TCs such as the number of TCs used, the Gauge of the TC, the TC type, spool serial number, spool correction, and a check box for each of the TCs. There is also a check box to allow the user to use the active settings for the TCs or to individually select the TCs to use on the SDS instrument. Checking "Use these active TC settings" will set the checked TCs.

Controller Information Tab

Figure 115 - Controller Information Tab

This tab contains information about the controllers such as the Controller Manufacturer, the Controller Model, and the instrument type. It also contains information about the PID settings such as the Cycle Time, the Dead Band, the Output Limit, the PB (gain), the Rate, and the Reset.

Warranty

Limited Warranty for Super Systems Products:

The Limited Warranty applies to new Super Systems Inc. (SSI) products purchased direct from SSI or from an authorized SSI dealer by the original purchaser for normal use. SSI warrants that a covered product is free from defects in materials and workmanship, with the exceptions stated below.

The limited warranty does not cover damage resulting from commercial use, misuse, accident, modification or alteration to hardware or software, tampering, unsuitable physical or operating environment beyond product specifications, improper maintenance, or failure caused by a product for which SSI is not responsible. There is no warranty of uninterrupted or error-free operation. There is no warranty for loss of data—you must regularly back up the data stored on your product to a separate storage product. There is no warranty for product with removed or altered identification labels. SSI DOES NOT PROVIDE ANY OTHER WARRANTIES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME JURISDICTIONS DO NOT ALLOW THE LIMITATION OF IMPLIED WARRANTIES, SO THIS LIMITATION MAY NOT APPLY TO YOU. SSI is not responsible for returning to you product which is not covered by this limited warranty.

If you are having trouble with a product, before seeking limited warranty service, first follow the troubleshooting procedures that SSI or your authorized SSI dealer provides.

SSI will replace the PRODUCT with a functionally equivalent replacement product, transportation prepaid after PRODUCT has been returned to SSI for testing and evaluation. SSI may replace your product with a product that was previously used, repaired and tested to meet SSI specifications. You receive title to the replaced product at delivery to carrier at SSI shipping point. You are responsible for importation of the replaced product, if applicable. SSI will not return the original product to you; therefore, you are responsible for moving data to another media before returning to SSI, if applicable. Data Recovery is not covered under this warranty and is not part of the warranty returns process. SSI warrants that the replaced products are covered for the remainder of the original product warranty or 90 days, whichever is greater.

Revision History

Rev.	Description	Date	MCO #
New	Initial Release	03/05/2013	2112
A	Added info on STAB timer, Survey Run Time and OUT of band notifications, added Dip Switch instructions	02/28/2017	2209
B	Added time zone and daylight savings note to Time and Date section	5/26/2017	2217
C	Additional weight/dimension info; updated installation info to reference USB drive; added Win10 connection steps	8/16/2019	2269
D	Added storage note	10/28/2021	2314

Appendix 1: Quick Start Guide

The purpose of this Quick Start Guide is to provide a step-by-step guide to using the Color SDS Data Logger for the very first time. More specifically, this guide provides a procedure for preparing and using the data logger in survey operations beginning with receipt of shipment and concluding with downloading data with SDS Reporter after the survey has been run and generating reports. This guide provides concise information on unpacking, setting up, and operating the Color SDS Data Logger, as well as downloading data and generating a report; for more detailed information, please refer to specific sections of the manual.

Unpacking the Color SDS Data Logger
When you receive the Color SDS Data Logger, it will arrive in a box similar to the one shown below.

Typical Box in Which Color Touch Screen Data Logger is Shipped

When the shipment arrives, move the box to a sturdy, elevated location (such as a table that can support the weight of the data logger) with a working electrical outlet nearby and sufficient room in which to work. When moving the box, employ proper safety precautions in order to avoid personal injury.

Once the box containing the data logger has been placed on a sturdy work surface, you may begin removal of the data logger from the box. First, using a utility knife or other appropriate cutting instrument, cut the tape on top of the box. Then turn the box on its side and pull the box flaps back, ensuring that there is enough clearance on the work surface that the data logger will fit, with minimal risk of falling.

Removing Data Logger from Box

Carefully remove the data logger and other contents from the box. Place the data logger flat on the table, and set the box aside. The contents should include items shown in the picture below.


Standard Contents of Box

Warming Up and Charging the Data Logger

If the data logger was recently brought indoors from a cold outside environment, allow the data logger to warm up to the ambient temperature before plugging it in or turning it on. This will help prevent condensation from forming on or inside the data logger and will help prevent damage to electrical parts.

If the data logger has not been charged, first plug it into an electrical outlet using the electrical cord provided. Allow the unit to charge until the charging light turns from red to green (green is fully charged).
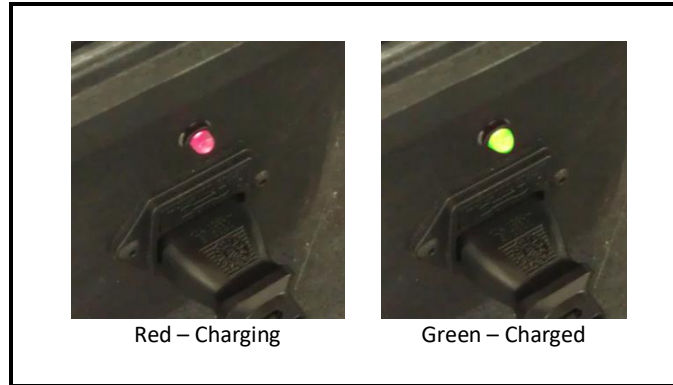
Charging Indicator on Data Logger

Red – Charging   Green – Charged

Turning on the Data Logger

Move the data logger to the survey area.

Turn on the data logger by turning the switch located on the side of the unit to the "ON" position.


Power Switch in "ON" Position

The data logger will turn on. The touch screen will start. After a few minutes, the main Color SDS Touch Screen menu will appear. Ensure that there are no error messages on the screen after one minute of operation.

Connecting the Thermocouple Wires and Setting the Input Type

Connect the thermocouple wires to the input boards on the data logger.
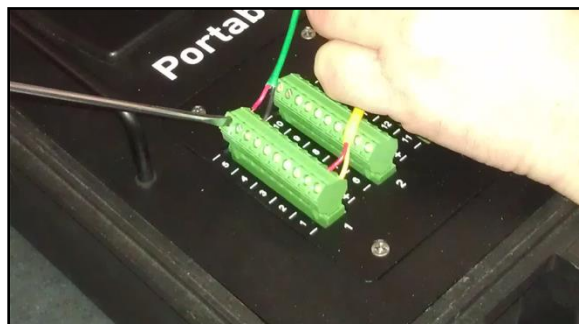
Connecting Thermocouple Wires to Input Board

Set the Input Type (thermocouple wire type) using the Edit Input Types menu.

Edit Input Types

Using Survey Templates

If a survey has been run previously, the data logger will default to the last survey template used. To modify the template being used, access the *Survey* menu option. This option contains the survey information and the controls to perform a survey.

Choose the appropriate template from the drop-down menu in the top right-hand corner.

The **Edit Template** button allows for changes to be made to the selected survey. When editing a survey, pressing **OK** will make changes only for that particular survey, while pressing **Save** will permanently change the template.

The **View Surveys** button will display a list of previous surveys from the selected time range.

Starting a Survey

Once the template has been selected and any necessary edits have been made, press **Start Survey** to begin. This will timestamp the selection and the data logger will log all channels that have been selected for logging.

Survey Window

You may receive deviation alarms depending on the current input and setpoint as well as the alarm settings. The survey continues to run. It is simply providing you with the information on the display.

You can view the input channel data on a number of different screens. The *Overview Display* option will display all channels on the device.

While the survey is running, several options are available: To **stop** the survey, select *Complete Survey* from the Survey Control screen (which can be opened using the Survey option from the main menu). Use *Mark Approach* to add a timestamp on when the furnace was heating up to its target temperature. Use *Mark Survey Start* to mark when the survey began.

Survey Control Window (visible from the data logger during a survey)

Click *View Surveys* to view data on past surveys. Click *View Chart* to view the current chart of data being logged.

Stopping Survey

When finished, select *Complete Survey* from the Survey Control screen (which can be opened using the Survey option from the main menu).

Installing SDS Reporter

IMPORTANT: The person installing SDS Reporter must have administrative rights on the computer(s) where the installation is taking place for the installation to be successful.

Double-click on the setup file, setup.exe, to start the auto-installation. (Avoid installing from SDSSetup.msi, as this will not install prerequisites if necessary.) If there is no version of the SDS Reporter running on the computer, the installation will prompt the user for the download location.
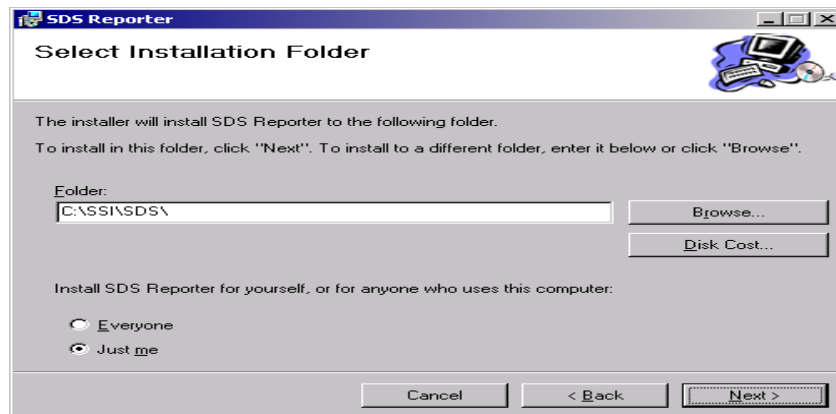

SDS Reporter setup screen

Prerequisites for installing SDS Reporter include .NET Framework 2.0, SQL CE 3.5, and either ActiveSync or Windows Mobile Device Center. The setup.exe program will check to make sure that these prerequisites are installed and, if necessary, install them.

The default installation location is "C:\SSI\SDS". Click on the "Browse" button to select an alternate location. Clicking on the "Disk Cost..." button will display the available computer drives onto which the SDS Reporter can be downloaded, as well as the total space, available space, and required space for each drive. Selecting the "Everyone" option will install the SDS Reporter for all users on the computer, while selecting the "Just me" option will only install the SDSReporter for the current user.

Click the "Next >" button to continue with the installation process.
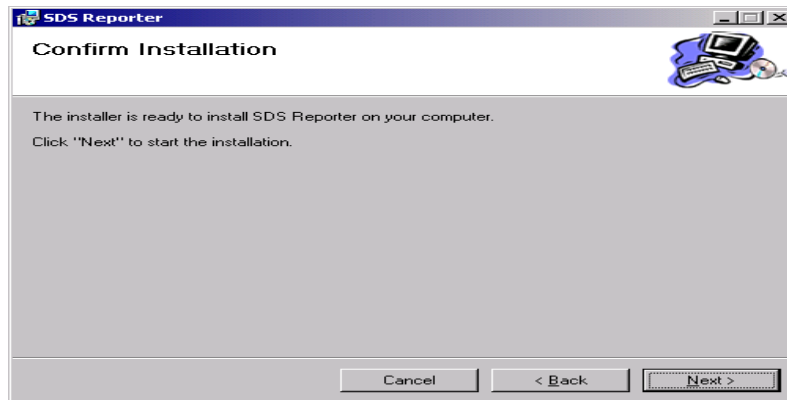
Installation ready screen

Click on the "Next >" button to install the software to the specified location. Once the software has been installed, close the installation program.

Connecting the SDS Data Logger to a Local Computer via USB

The data logger can be connected directly to a local computer using a USB cable. Windows uses special software to transfer files and information between the data logger and the local computer when connected via USB. If you are using Windows XP, this software is called ActiveSync. If you are using Windows Vista or Windows 7, the software is called Mobile Device Center. If the required software was not installed prior to installing SDSReporter, the SDSReporter Setup utility (run from setup.exe) would have installed the required software.

Windows XP requires a driver for it to properly connect to the data logger's color touch screen operating system. Install this driver, if necessary, by selecting the "Check Screen Driver Installation" option under the **Help** menu in SDSReporter, and then clicking "Start Driver Installation" on the next screen.
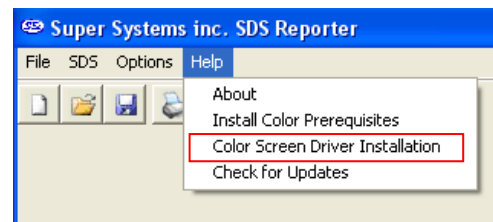
Color Screen Driver Installation option

If you are using an older version of SDSReporter, be sure to update it by clicking "Check for Updates", also in the **Help** menu, and then downloading the update when prompted.

To connect the SDS Data Logger to a local computer with USB, first make sure that the data logger is turned on and that the SDS software is running on the touch screen. Next, identify the USB connection point used to connect the data logger to the local computer. To connect the data logger to the computer, you will need a USB cable with cable ends that look like those shown in the figure at right, below.
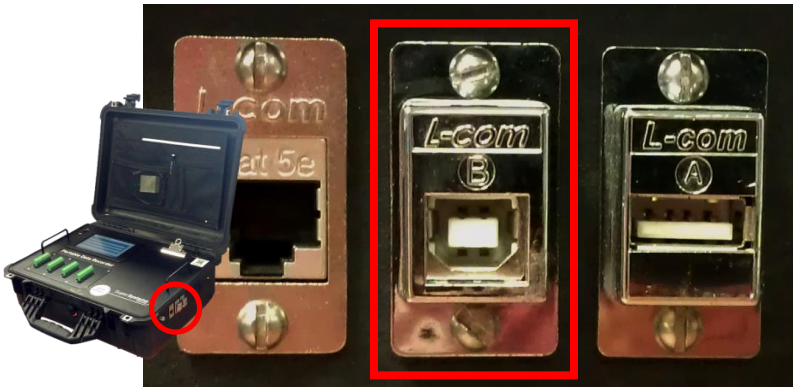
Location of USB connection point for connecting data logger to local computer

USB connection types Standard-A (left), Standard-B (right)

Connect the SDS Data Logger to the local computer via USB. If you are connecting the data logger to the computer via USB for the first time, you may see a message on the screen saying that Windows is installing drivers, especially on Windows Vista and 7. Windows may also ask you if you want to set up the device. If this happens, allow Windows to install the drivers, but close the device setup window from ActiveSync or Mobile Device Center.

NOTE: If there is any question as to whether the computer is detecting the data logger and connecting to it properly, check the "My Computer" window in Windows XP or the "Computer" window in Windows Vista and 7. The data logger should appear in this window with a mobile or portable device icon, as shown at right. Other devices, such as smartphones, may also appear as part of the same list.


Data Logger Device Icons in Windows XP (left) and Windows 7/Vista (right)

Once the SDS Data Logger is connected to the computer via USB, start SDS Reporter.

Downloading Data with SDS Reporter

The "Color Screen Scanning" option must be checked in order for SDS Reporter to scan for the Color SDS Data Logger. This scanning will take place over USB using ActiveSync (Windows XP) or Mobile Device Center (Windows Vista/7).
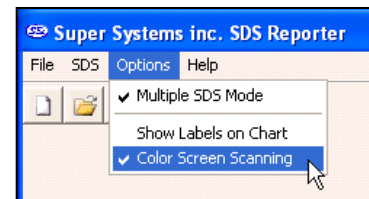
Color Screen Scanning Option

Open the Download Surveys and Data option in SDS Reporter. The software will begin to search for any data loggers located on the network.
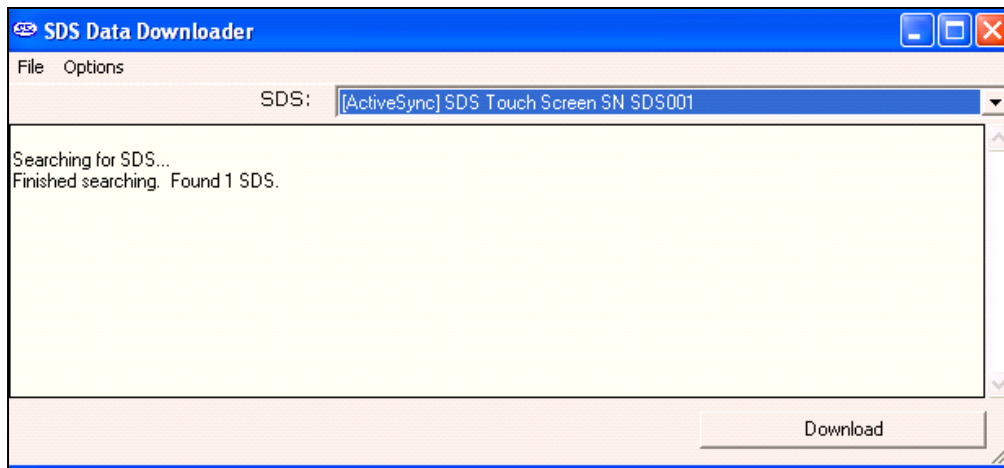
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SDS Data Log Extractor screen

Any data logger found on the network will be added to the drop-down list at the top of the screen. If no devices are found, a message box will pop up letting the user know that no devices were found on the network. Check the network connections to verify that any data logger and computer are properly connected to the network.


No SDS devices found box

Under the *Options > Download* menu, the *Download* menu option will allow the user to choose to download only data that has been used in surveys, or all of the logged data. (The SDS data logger will log data continuously when it is on regardless if a survey is running or not. There will be a check mark next to the menu option selected.) The default menu option is *Only data used in surveys*. To download <u>all</u> data, make sure that *All data* is checked.
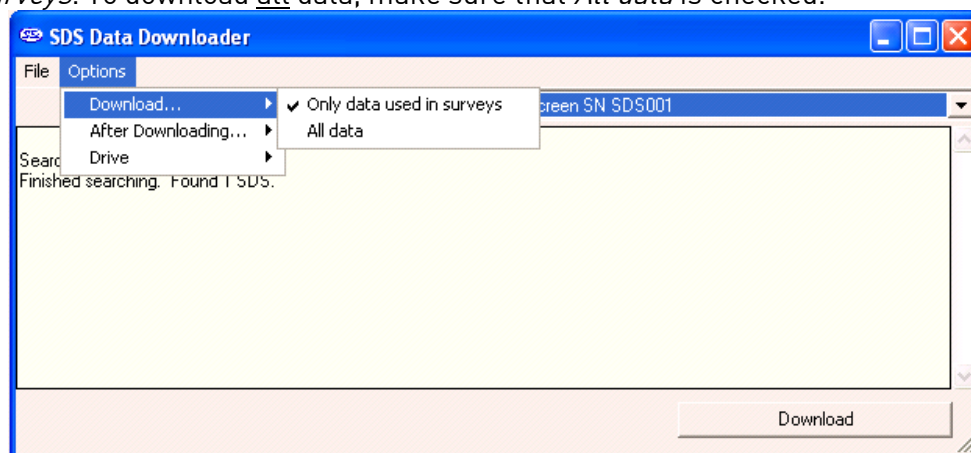

Download menu option

Click the "Download" button. SDS Reporter will begin to download the survey data once the user has clicked on the "Download" button. The button will read "Abort" while the data files are downloading.

If you chose to only download data files used in surveys, and no data files are found, the software will display an error message.
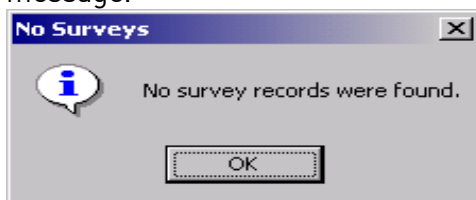
No survey records found box

The files will be downloaded to: SDS\(SDS Model number)\log(year)—e.g., SDS\SDS505000\log2006.
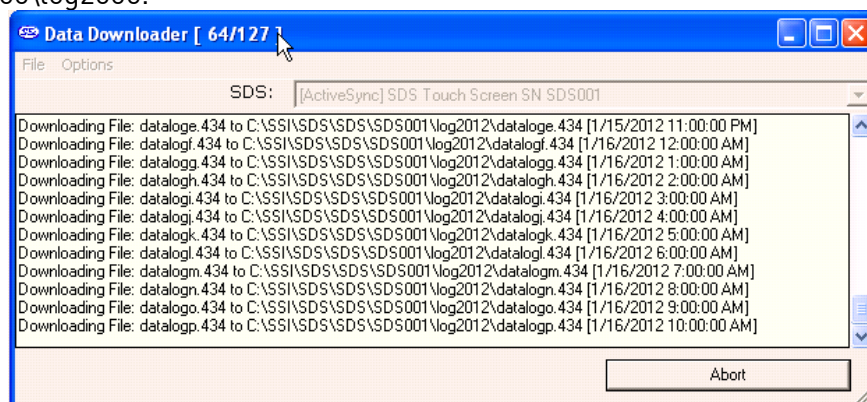

SDS Data Log Extractor progress

The software will display a continuous progress of the download status. Note: since there may be a large number of files to download, this process may take several minutes to complete.

When all of the files have been downloaded, the words "Operation Complete" will be at the bottom of the list, and the button at the bottom will read "Download". A message box will also be displayed reading "Operation Complete". Click the **OK** button on the message box to close the download data screen.

Once the data has been downloaded, it is available for reporting.

Generating a Report

Click on the File > New menu option to bring up the Report dialog. Reports use logged data and the user specified interval in the report.   The report template that is selected will form the final report view with all of the template data, survey data, and additional report parameters that are entered. All reports can be saved and displayed at a later date.
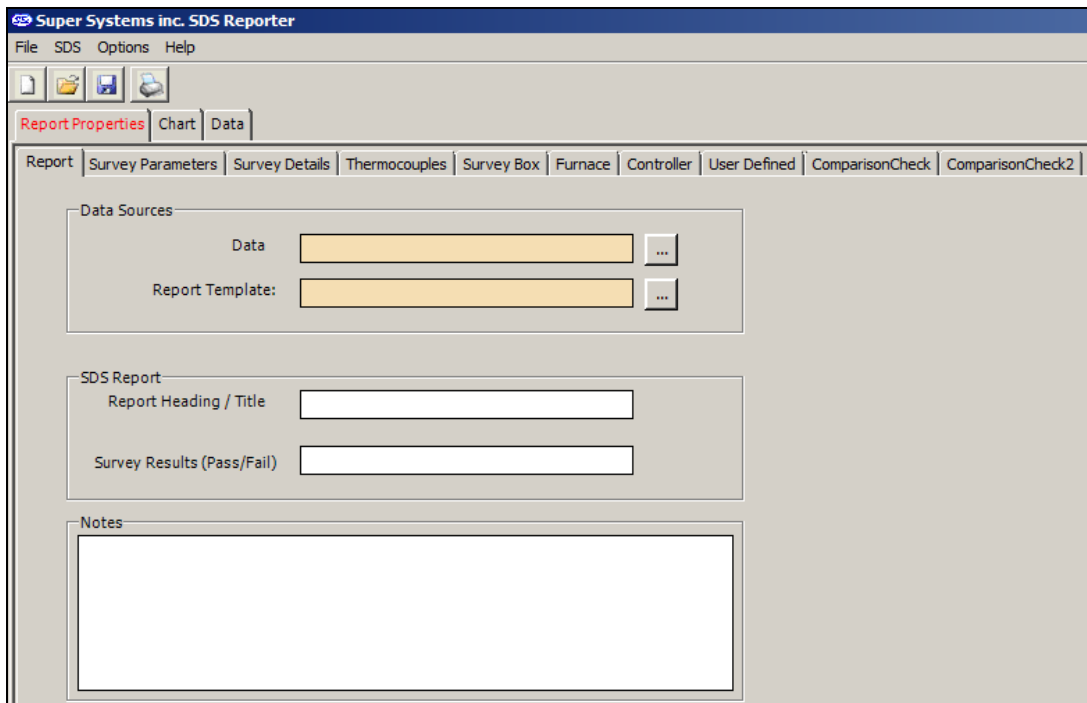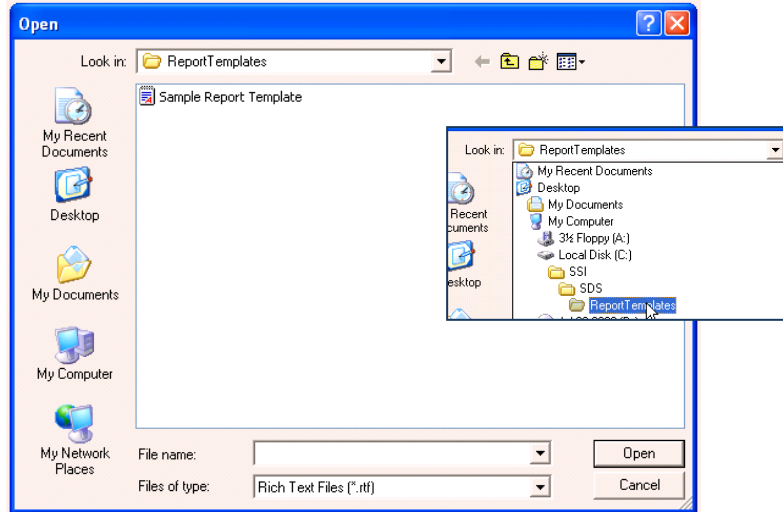
Report Window

After bringing up the Report window, you must select a data source. To do this, click the [...] button next to the Data field. A screen similar to the one below will appear.
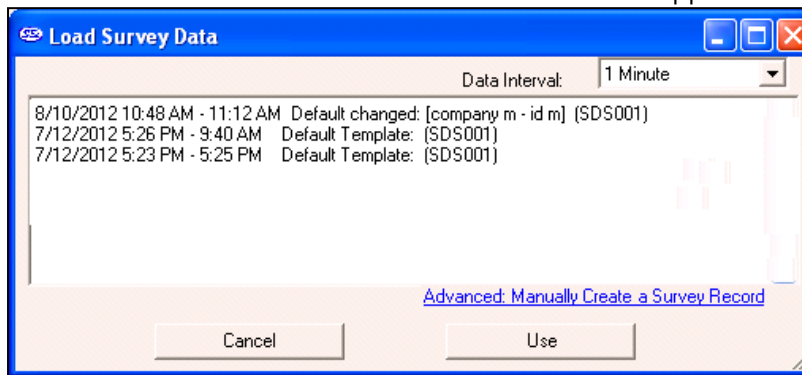

Load Survey Data Window

Select the survey data source on which you want to base the report that SDSReporter will generate. Click "Use". The Data field will be populated with the data source you selected.

Next, click the [...] next to the Report Template field. An Open window will appear similar to the one in the figure below.

Report Template Open Window

Select the Sample Report Template. The Data and Report Template fields will now be populated, as shown in the figure below.
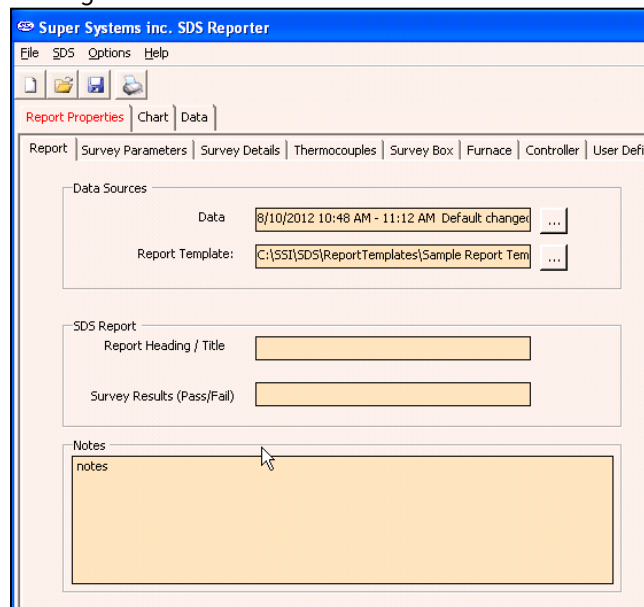
Report Properties > Report Tab with Data and
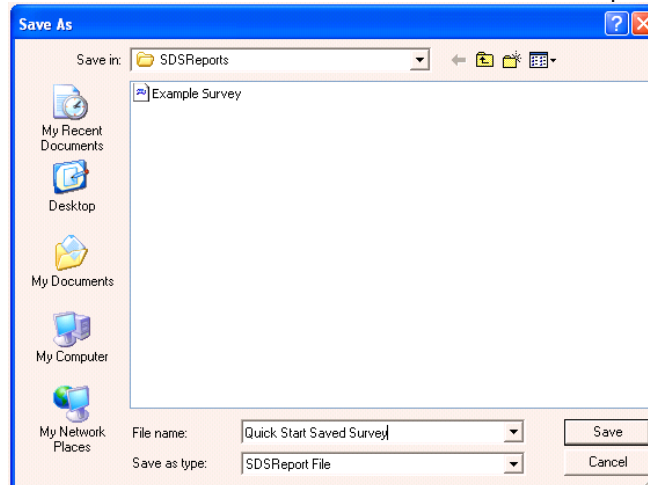*Report Template Fields Populated*

Once the Data and Report Template fields are populated with accurate data, SDS Reporter performs a number of reporting functions. Additional tabs provide additional functionality and options. These are covered in detail in the SDS Reporter section. Two of the most commonly used functions are printing a report and saving report files.

Print a report by selecting File > Print > Print Report, as shown below.

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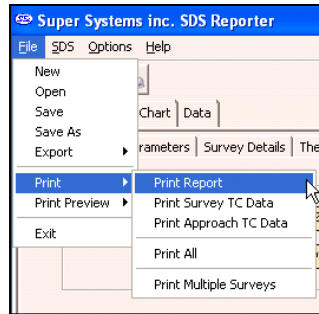
Print Report option

Save a report for future reference by selecting File > Save As, entering a file name, and clicking "Save". All report files are saved with the default file extension .sdsreport.

Report "Save As" Window

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