



Northwood Power
Instruments Inc.



Silent Partner SPC™ Current Logger

***Silent Partner SPC™* User's Guide**

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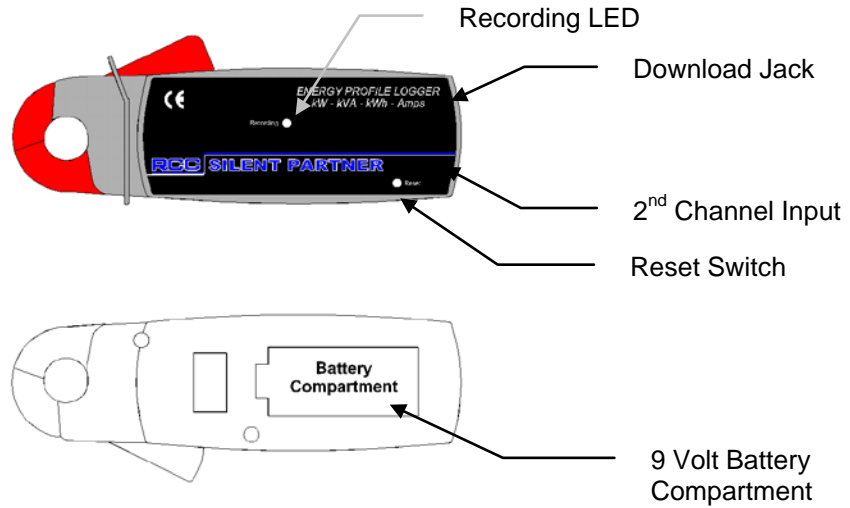
SPC Clamp-on Logger Features

The SPC is an integrated clamp-on current logger capable of recording up to 200 Amps AC (10A version also available). The logger can be ordered with either a 2nd channel for temperature or a 2nd channel to accept an external AC voltage module.

It uses a standard 9-volt alkaline battery, inserted via the battery compartment located on the back of the logger case.

Applications

- Energy Studies
- Machinery and motor analysis
- HVAC studies
- Electrical Utilities
- Peak shaving and Load Management
- Transformer Studies



SPC Models:

SPC

- Standard SPC logger, measures 2 to 200 Amps AC.



SPC2-V

- SPC current logger measures 2 to 200 Amps AC.
- Second input for external voltage module.
- External AC Voltage input 10 to 750 VAC (see right):



SPC2-T

- SPC current logger measures 2 to 200 Amps AC.
- Second input for temperature probe.
- 2 metre temperature sensor cable (see right):



Silent Partner Software:

The SPC includes easy-to-use Silent Partner software. Silent Partner will allow you to download, graph, print, display tables and export all of your SPC data. In addition, Northwood Power Instruments Inc. offers two enhanced versions of Silent Partner Software:

Silent Partner PowerPack

Silent Partner PowerPack has all of the capabilities of the basic software *plus* the ability to **calculate power** for all Silent Partner and LMR loggers.

Silent Partner Power software enables you to calculate power values using any Silent Partner current logger. Calculations can be made using measured current, an assumed line voltage and power factor, or using measured current, measured voltage and an assumed power factor. Simple drop-down menus allow you to quickly define your metering setup. You can also calculate power for any data files you may have already created with the standard Silent Partner software.

- New data types: kVA, kWatt, kWh, kWh Cost (and totals).
- Display and print power graphs and tables.
- Summarized data for power values on the summary page.
- Full support for all Silent Partner current loggers.

Silent Partner PowerPack Plus

PowerPack Plus software has all of the features of the basic software and PowerPack software, plus the ability to download and display data for ERA, ERA-3, DURA, Rochester Load Logger, Broy Logmaster, and BRV, DRV, and ERV voltage loggers.

Please contact your nearest RCC representative for more information on Silent Partner PowerPack and PowerPack Plus software.

Quick Start

Important Safety Notice

Although this device is designed to be as safe as possible, safety in use is the responsibility of the operator who must be suitably qualified and/or authorized.

- The device should not be brought into contact with any surface water, as the unit is not hermetically sealed, and ingress of water could damage the electronics as well as causing a potential shock hazard.
- Never work alone with high voltage circuits. Make certain that a qualified observer is watchful and aware of your intentions.
- When installing the device near high voltage circuits, connections should be made to the circuits while the power is off.
- The SPC is rated for use on insulated conductors only. Use on uninsulated conductors is not recommended.

We understand that you may want to start using your SPC as soon as possible, and that you might not want to take the time to read the manual to get going.

Following these instructions will get you up and running, but you should still read the rest of this manual for more detailed information on how to get the most from your SPC.

- Install and start Silent Partner software.
- Select the **L**ogger menu and choose **Logger Serial Port**. Choose the appropriate communications port and select the type of logger you want to download.
- Connect the communications cable to the SPC, then connect the communications cable to the computer.
- Set time, date, and storage rate with the **L**ogger menu and **C**hange Parameters function.
- Remove the download cable from the SPC.
- Clamp the SPC over the conductor you want to monitor.
- Press the RESET button. The SPC is now logging.

After your survey is done:

- Start Silent Partner software.
- Connect the communications cable to the SPC.
- Connect the communications cable to the PC.
- Select the **L**ogger menu and choose **D**ownload. Please note that downloading the logger does not clear the information stored in it.
- Select a report display type using the **V**iew menu.
- Tailor the report's appearance using the selections in the **S**etup menu (**G**raph Options) and using the **V**iew menu (**Z**oom).

There are several sample data files supplied with Silent Partner. To retrieve a file:

- Using the **F**ile menu, select **O**pen.
- Select the survey file you would like to load.
- Select a report display type using the **V**iew menu.
- Tailor the report's appearance using the selections in the **S**etup menu (**G**raph Options) and using the **V**iew menu (**Z**oom).

Installing Silent Partner Software

System Requirements:

Windows 3.1 or greater
VGA display (colour recommended)
COM1, 2, 3, or 4 (serial communications port)
Hard disk with at least 1 megabyte free

Your computer must be IBM compatible, running Windows version 3.1 or better, with a VGA display (colour strongly recommended), and a hard disk or network drive with at least 1 megabyte of free space. Although not essential, a mouse makes using the Silent Partner software much easier and faster. You should be familiar with running applications in Windows.

To install the software:

- Make sure that your computer is running Windows.
- Insert the **Silent Partner** distribution disk in drive A: (or drive B:).
- Select Program Manager (or click the **Start** button in Windows 95).
- Select Run from the File menu (click Run in Windows 95).
- In the Command Line dialog, type "**A:\SETUP**" (or "**B:\SETUP**").
- Follow the on-screen instructions.

A program group called **Silent Partner** will be created containing the Silent Partner icon. Windows 95 users will have the option of creating a shortcut on their desktop. As with any Windows application, the Silent Partner software is run by double clicking the icon with the mouse. Now that the software installation is complete, you can begin using your Silent Partner right away.

Logger Setup

To prepare your SPC for use, follow these steps:

1. Install a fresh 9-volt alkaline battery.
2. If the SPC has an external temperature probe or voltage module, plug it in to the SPC (see page 1 for diagram).
3. Connect the download cable to the SPC, then to the computer (see page 1 for diagram).
4. Set the logger's time and date using the software.
5. Select **Change Parameters** (see page 13 for details) to setup the logger to your requirements.
6. Disconnect the download cable from the logger.
7. **Test the SPC before you install it!** To do this, press the recessed RESET button with a pen. If the logger is working properly, the LED should flash on for about 1 second right after pushing the button, then continue to flash every 5 seconds or so. If this does not happen, double-check the battery and configuration.
8. Clamp the logger around the conductor you want to monitor. Remember that the SPC is intended for use on insulated conductors only.
9. If the SPC has an external voltage module, connect it to the appropriate voltage source.
10. If the SPC has a temperature probe, position the probe near the area you wish to monitor.
11. Press the Reset button.

The SPC is now logging data. The LED on the SPC blinks every five seconds to let you know that it is recording.

- If the logger has been setup in Wrap mode, it will continuously record data until it is reset.
- If the logger is not in Wrap mode, it will record until the end of memory is reached and then go into low power sleep mode. When in sleep mode, the LED does not flash.

When you are finished recording:

1. Carefully remove the SPC from the conductor (and voltage/temperature module if applicable) .
2. To download the data, plug the download cable into the logger, then into the computer.
3. Select **L**ogger, **D**ownload Data.

See below for detailed information on using each Silent Partner software function.

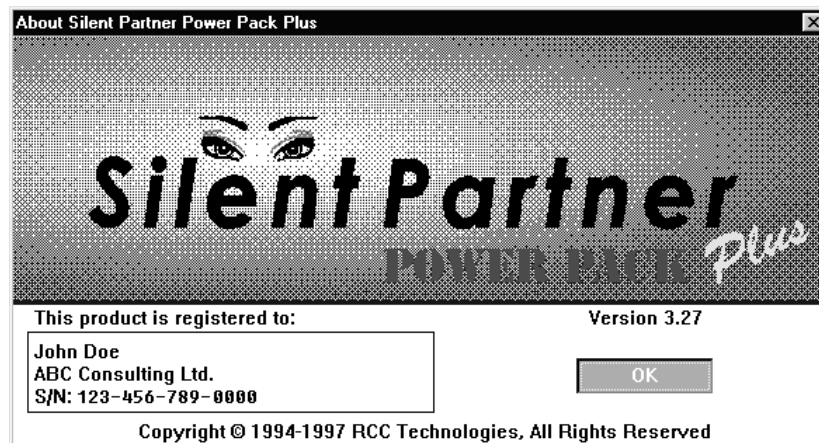
Using Silent Partner Software

There are several options that can be set up to control how graphs are displayed, the directories that Silent Partner uses, etc. For details on these option settings, please refer to the section entitled **Setup** on page 14.

A Short Note About the Time and Date Format:

The time and date format in the various reports will appear in the format you have selected in the *International Settings* section of Windows Control Panel. For instance, if you setup Windows to use 24 hour time format, Silent Partner will display all times in military or 24 hour format.

After double clicking the Silent Partner icon, the opening screen will appear.



This screen contains important information such as the version number of the software and to whom the software is registered. After a few seconds, the title screen will disappear and the main title bar will appear.

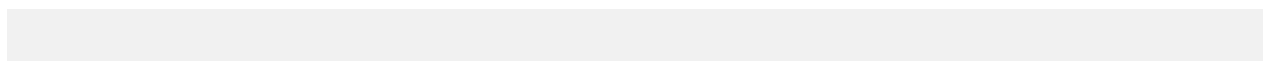
Navigating Silent Partner Menus



The main menu is divided into five sub-menus; File, View, Logger, Setup and Help. Notice that there is one letter underlined in each command (the F in File, the V in View, etc.). This allows users without a mouse to invoke commands using the keyboard by depressing the ALT key and the underlined letter. This is a feature common to all Windows applications, and can be used for any of the commands in Silent Partner software.

If a selection in a menu is dimmed out or you can't select it, it means that that particular choice is not available to you. This may be because there is no data loaded (e.g. trying to View a graph when you have not loaded or downloaded any data yet), or it may be a feature only available with a different type of Silent Partner logger.

Below is a summary of each menu and its associated functions:



Software Command Summary

Each main menu has an associated drop down menu that allows you to execute a particular function. Below is a brief description of each menu and all of its related functions.

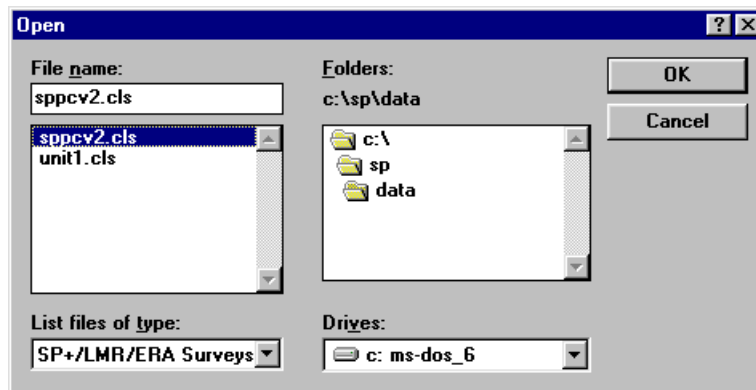
File

The File menu groups all of the functions required to manipulate Silent Partner data files.



Open

Retrieves a previously stored survey file. Selecting Open will display the file selection dialog box:



To retrieve a file, double click on the files name from the pick list or enter the file name in the file name box and click on OK. If the file you wish to retrieve is not in the current directory, you can select a different directory using the directory tree list, or by entering the directory name. The default directory is the directory specified in the **Setup** section of the program (see page 14 for more details).

Save

Saves changes to the survey you have been working on. This function is useful if you have downloaded a file but opted not to save it at the time of downloading, or if you have changed the summary information or notes and want to update the survey file. The survey is re-saved under the original file name if it was saved before, otherwise you are prompted for a file name. To save a changed file under a different name, use the **Save As** function. When you choose Save, the survey remains loaded so you can continue working with it if you wish.

Save As

Saves a new or existing survey. You can name a new survey or save an existing survey under a new name. The original survey remains unchanged. When you choose Save As, the survey remains loaded so you can continue working with it if you wish.

Delete

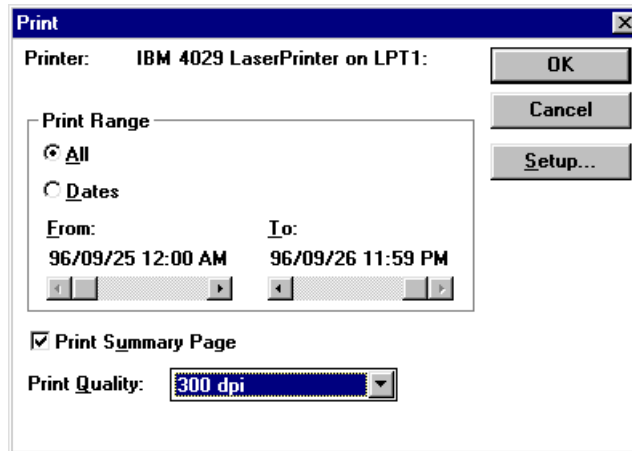
Deletes a survey file. The file select dialog will appear to allow you select which file to delete.

Export

Translates the current survey into Lotus WK1 format. The time and date of each measurement is exported, along with the reading. This feature allows you to transfer your data into spreadsheet and graphics programs to create custom reports.

Print

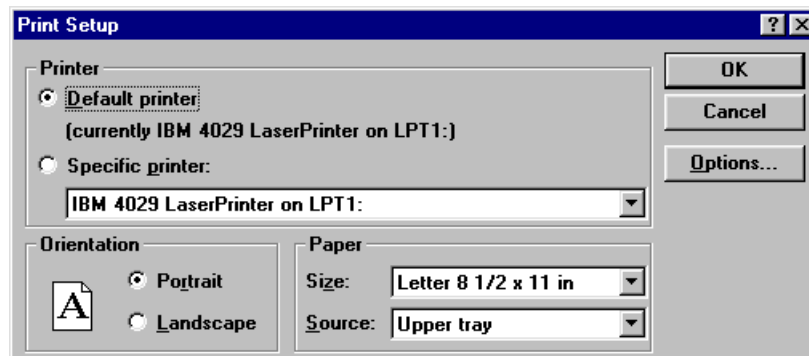
Prints out the report that is currently on the screen. You can also choose which printer to use, and setup certain features of your printer.



The top of the Print dialog box will tell you which printer is currently selected. The Print Range section allows you to define the days that are included in the printout. For example, you could print one or two days of graphs from a 30-day survey (this can save a lot of paper). To change the date range, select the **Dates** selector. Choose the starting and ending dates using the sliders below the **From** and **To** headings. You can also select whether or not to print a summary report with each printout. The summary report contains statistical information, user notes and the start and stop times of the logger.

Note: *The statistics printed are based on the selected print range, not the entire logging period.*

Clicking the Setup button will allow you to choose which printer to use, and to change certain options for the printer.



The Default Printer is the primary printer as specified by the Printers section in Windows Control Panel. If you want to print to another printer, select the **Specific Printer** selector. You will then be presented with a

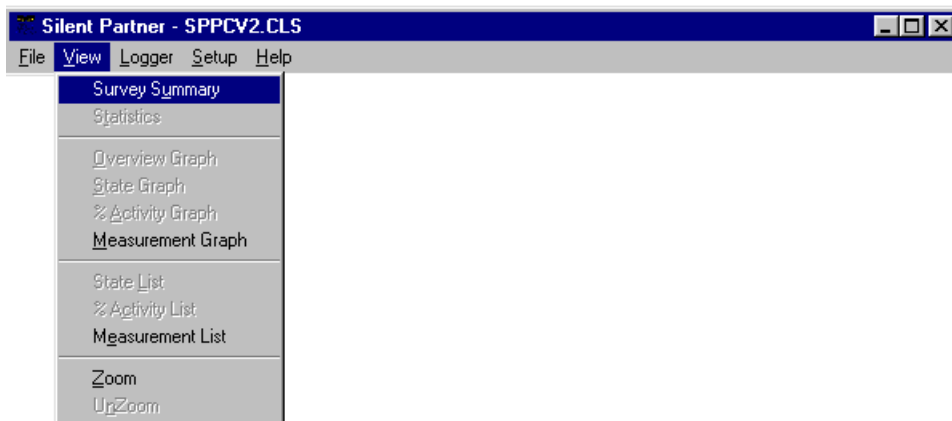
list of the available printers installed in Windows. If the printer you want to use is not on the list, you must load the appropriate Windows driver. For information on installing Windows drivers, please consult your Windows manual.

Clicking the Options button will allow you change the operational setup of your printer. Here you can change printer options such as print darkness, resolution, orientation, etc. The options available will vary depending on the printer you have. Please note that the summary page always prints out in portrait mode.

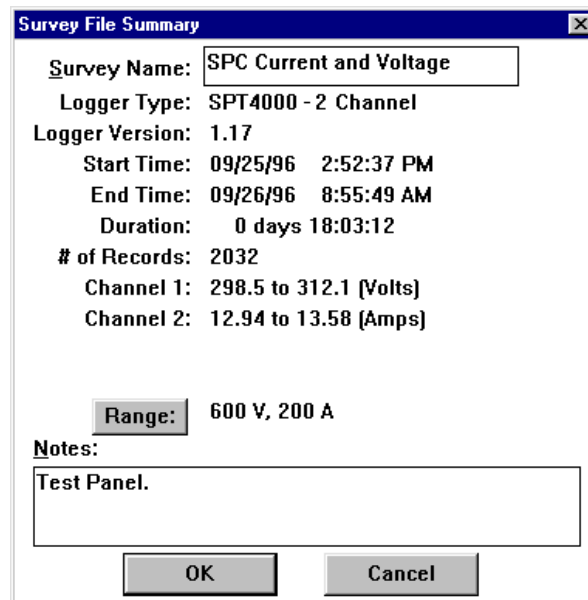
Exit
Quits the program.

View

The View menu allows you to select how to display your data.

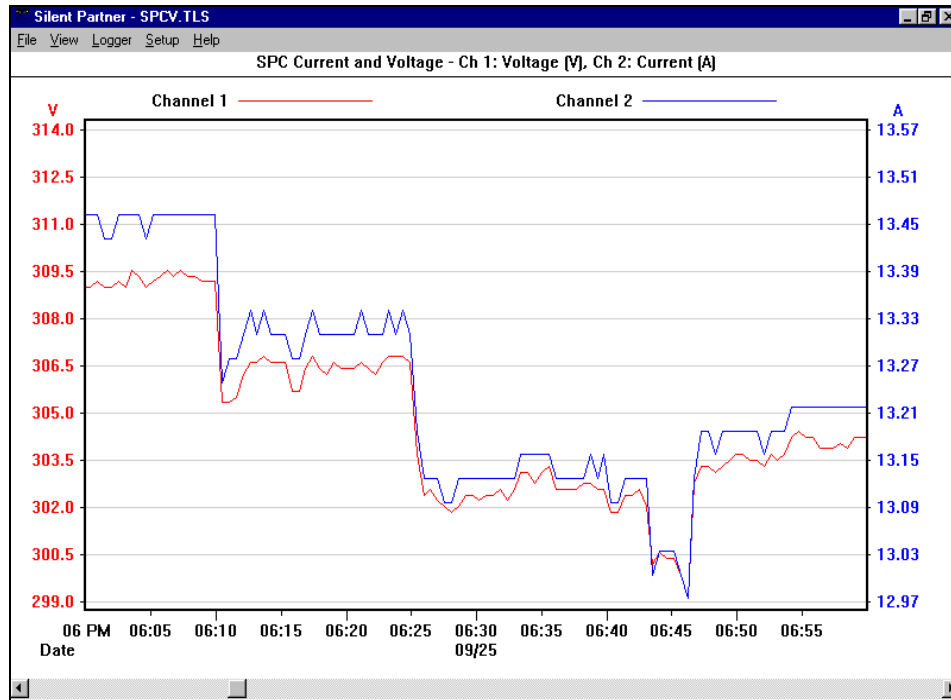


Survey Summary



Displays summary information and notes about the current survey. This information is useful for finding out how long the Silent Partner was actually logging, when it was started, when it stopped logging, and the range for each channel. You can also enter in a survey title, notes, or other descriptive text to identify your report. Selecting the Range button allows you to select the appropriate CT and/or PT range. This value is normally set during the setup process.

Measurement Graph



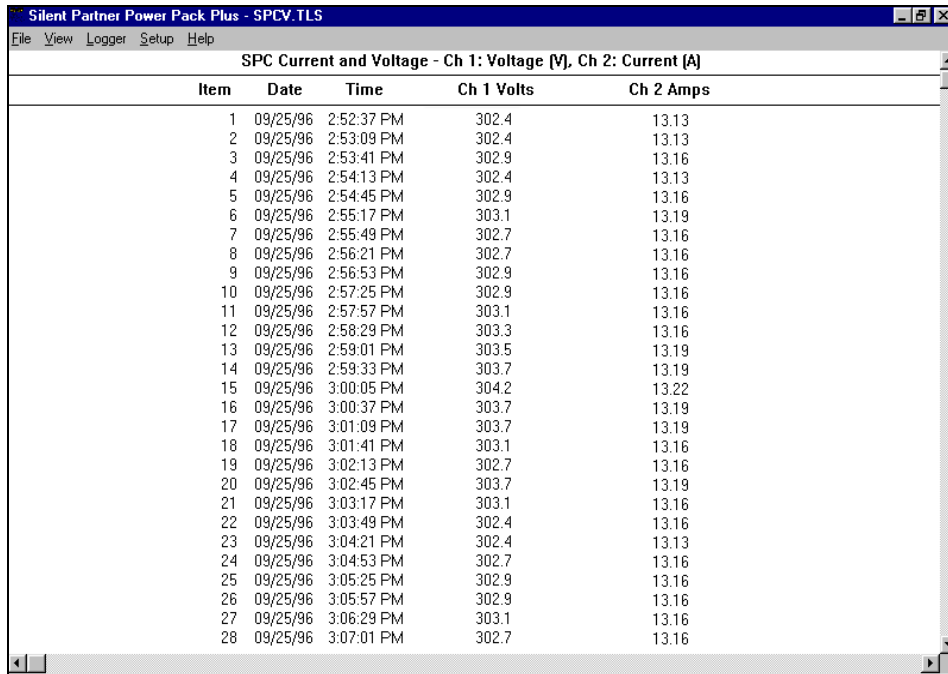
Displays a graph of each measurement according to time. The number of days along the bottom of the graph is set using the **Graph Length** selector in the **Graph Options** menu (see page 16 for more details).

The scale on the Y-axis can be changed using the **Measurement Scale** function in the **Setup** menu (see page 14 for more information). The Y-axis can also be zoomed or unzoomed via the **View** menu (page 8).

The graph can be scrolled horizontally by clicking the mouse on the scroll bar at the bottom. It can also be scrolled using the keyboard:

- ← and → move the graph forward or backward by one period.
- **Home** will return the display to the beginning of the survey.
- **End** will advance the display to the end of the survey.
- **Page Up** and **Page Down** advance the graph by one full period. For instance, if you are viewing a 7 day graph and press **Page Down**, the next 7 days will be displayed.

Measurement List



The screenshot shows a software window titled "Silent Partner Power Pack Plus - SPCV.TLS". The window contains a menu bar with "File", "View", "Logger", "Setup", and "Help". Below the menu bar is a title bar for the data table: "SPC Current and Voltage - Ch 1: Voltage [V], Ch 2: Current [A]". The table has five columns: "Item", "Date", "Time", "Ch 1 Volts", and "Ch 2 Amps". The data rows show measurements from 09/25/96 at 2:52:37 PM to 3:07:01 PM. The voltage values range from 302.4 to 303.7, and the current values range from 13.13 to 13.22.

| Item | Date | Time | Ch 1 Volts | Ch 2 Amps |
|------|----------|------------|------------|-----------|
| 1 | 09/25/96 | 2:52:37 PM | 302.4 | 13.13 |
| 2 | 09/25/96 | 2:53:09 PM | 302.4 | 13.13 |
| 3 | 09/25/96 | 2:53:41 PM | 302.9 | 13.16 |
| 4 | 09/25/96 | 2:54:13 PM | 302.4 | 13.13 |
| 5 | 09/25/96 | 2:54:45 PM | 302.9 | 13.16 |
| 6 | 09/25/96 | 2:55:17 PM | 303.1 | 13.19 |
| 7 | 09/25/96 | 2:55:49 PM | 302.7 | 13.16 |
| 8 | 09/25/96 | 2:56:21 PM | 302.7 | 13.16 |
| 9 | 09/25/96 | 2:56:53 PM | 302.9 | 13.16 |
| 10 | 09/25/96 | 2:57:25 PM | 302.9 | 13.16 |
| 11 | 09/25/96 | 2:57:57 PM | 303.1 | 13.16 |
| 12 | 09/25/96 | 2:58:29 PM | 303.3 | 13.16 |
| 13 | 09/25/96 | 2:59:01 PM | 303.5 | 13.19 |
| 14 | 09/25/96 | 2:59:33 PM | 303.7 | 13.19 |
| 15 | 09/25/96 | 3:00:05 PM | 304.2 | 13.22 |
| 16 | 09/25/96 | 3:00:37 PM | 303.7 | 13.19 |
| 17 | 09/25/96 | 3:01:09 PM | 303.7 | 13.19 |
| 18 | 09/25/96 | 3:01:41 PM | 303.1 | 13.16 |
| 19 | 09/25/96 | 3:02:13 PM | 302.7 | 13.16 |
| 20 | 09/25/96 | 3:02:45 PM | 303.7 | 13.19 |
| 21 | 09/25/96 | 3:03:17 PM | 303.1 | 13.16 |
| 22 | 09/25/96 | 3:03:49 PM | 302.4 | 13.16 |
| 23 | 09/25/96 | 3:04:21 PM | 302.4 | 13.13 |
| 24 | 09/25/96 | 3:04:53 PM | 302.7 | 13.16 |
| 25 | 09/25/96 | 3:05:25 PM | 302.9 | 13.16 |
| 26 | 09/25/96 | 3:05:57 PM | 302.9 | 13.16 |
| 27 | 09/25/96 | 3:06:29 PM | 303.1 | 13.16 |
| 28 | 09/25/96 | 3:07:01 PM | 302.7 | 13.16 |

The measurement list is a listing of the actual readings and the time and date on which they occurred. This list represents the same data as the Measurement Graph, only in numerical form.

The list can be scrolled vertically by clicking the mouse on the scroll bar on the right hand side. The list can also be scrolled using the keyboard:

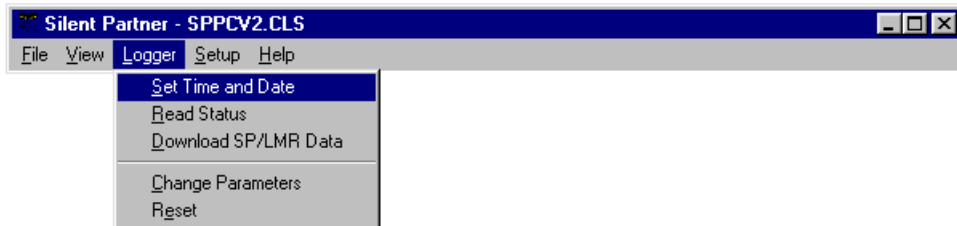
- ↑ and ↓ moves the list up or down one item.
- **Page Up** and **Page Down** will move the list up or down by one page.
- **Home** will move to the beginning of the list.
- **End** will move to the end of the list.

Zoom

Zoom allows you to see more resolution (detail) when viewing graphs. In the unzoomed mode, the Y - axis will be scaled from the lowest to the highest value in the logger's range. For the SPC, the unzoomed Y-axis would be scaled from 0 to the full scale value (in this case, 200 amps). If you select Zoom, the software will scan the data to obtain the highest and lowest values recorded. These two values will then be used as the upper and lower Y-axis values.

If your SPC has a second channel for voltage or temperature, a second Y-axis is plotted on the right-hand side of the graph. Zooming will affect this axis in the same way as the regular Y-axis.

Logger



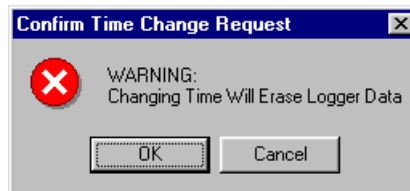
Before executing any of the following commands, the logger must be connected to the correct serial port. Serial ports are usually found on the back of the PC, and are almost always either a male 9 pin connector or a male 25 pin connector.

If your computer has more than one serial port, make sure you connect to the same port that you specified in Setup. If you are not sure which port you are connected to, you can have Silent Partner find that out for you. For details on selecting or searching for serial ports, Please refer to the section in **Setup** called **Logger Serial Port** on page 15 for more details.

Set Time and Date

Synchronizes the Silent Partner's internal clock to the time and date of the computer's clock, clears memory and resets the logger. After selecting this function, Silent Partner will stop to confirm that you really want to clear the logger.

REMEMBER – SETTING THE TIME IN AN SPC LOGGER CLEARS ALL MEMORY !



Selecting Cancel will abort the operation. Selecting OK will set the logger time to the computer's time and clear the memory.



Since the PC's time is sent to the logger, it is important to make sure that your computer's time and date are correct.

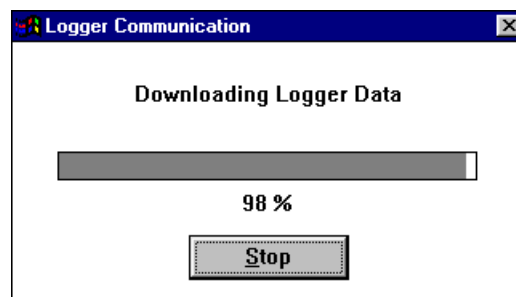
Read Status



Displays operational information about the logger such as logger type, firmware revision, start time, record count, clock time, present reading for each channel, channel configuration, battery voltage, and whether Wraparound recording is enabled. This is a useful function for verifying that the logger is operating properly and communicating with the PC.

Download Data

Retrieves all of the data from the Silent Partner. Note that downloading an SPC logger does **not** destroy the data, so the logger can be downloaded as often as you want. Before downloading, connect the SPC to the download cable, and then connect the cable to the back of your computer. Please note that communications ports on most PC's are 9 pin or 25 pin male connectors. If your port uses a 25 pin connector, you may need to use a 25 to 9 pin adapter (available at most computer stores). After selecting **Download Data**, Silent Partner will inform you that it is initiating communications with the logger. As the data is transferred, you will see a completion gauge telling you how the download is progressing.



After downloading, a short message is displayed about the amount of data transferred. Next, you will be prompted to fill in the summary information screen. This screen allows you to enter in a survey title as well as several lines of notes. The notes section is often used to record such items as site details, the logger serial number, contact names, addresses, etc.

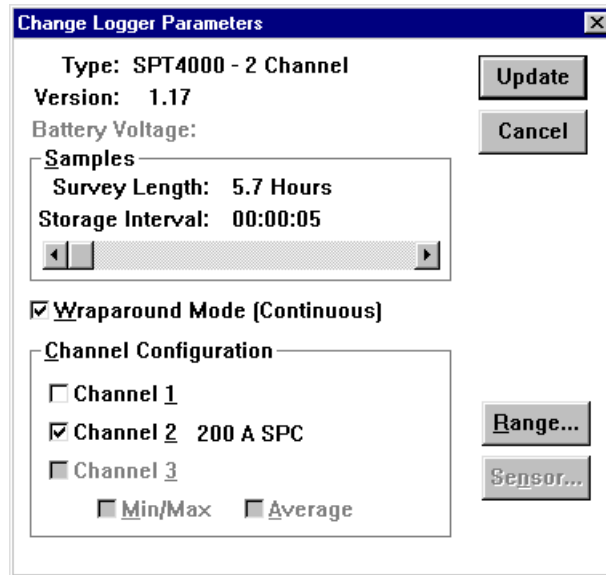
Pressing the **RANGE** button will allow you to examine the current range scaling for each channel. If you are using PowerPack software, the **Range/Power** button allows you to set the parameters for calculating power.

When the summary information looks correct, press the OK button and the file save dialog appears. If you don't want to save the file or you want to look at the data first, you can press the Cancel button. You can save the data at any time later using the **S**ave option in the **F**ile menu.

After pressing the OK or CANCEL button, the screen will clear and the Measurement Graph will be displayed. You can view your data in graphical or tabular form by choosing one of the display types from the **V**iew menu. For further information on display types, please see the section regarding the **V**iew menu on page 8.

Change Parameters

Change Parameters allows you to configure how the logger will operate.



Samples

By moving the slider, you can set how often the logger will store a reading. When you move the slider, the values for the Storage Interval and the Survey Length will automatically change. As you increase the Storage Interval, the Survey Length also increases.

Wraparound Mode

Checking the Wraparound Mode box causes the logger to replace the oldest data with the newest reading when the end of memory is reached. This feature is useful for making sure you always have the most current data. If the Wraparound box does not contain a , the logger will stop recording when memory is full and enter SLEEP mode to conserve power.

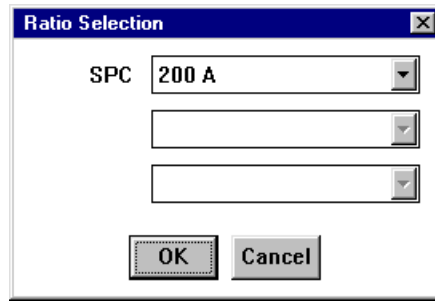
Channel Configuration

Checking or unchecking each box allows you to enable or disable recording for individual channels. Disabling channels allows you use the memory allocated to the disabled channels to record longer surveys. This feature is only available for 2 channel SPC's. Beside the check box is the channel assignment and range for each channel. **Single channel SPC's always have channel 1 disabled, and use channel 2 for current. 2 channel SPC's use channel 1 for temperature or voltage, and channel 2 for current.**

Min/Max and Average

This mode cannot be changed for the SPC and is permanently set for average recording.

Range/Power



Pressing the Range/Power button allows you to select from a list of preconfigured CT or PT ranges.

Sensor

Sensor functions are not available with the SPC logger.

Update

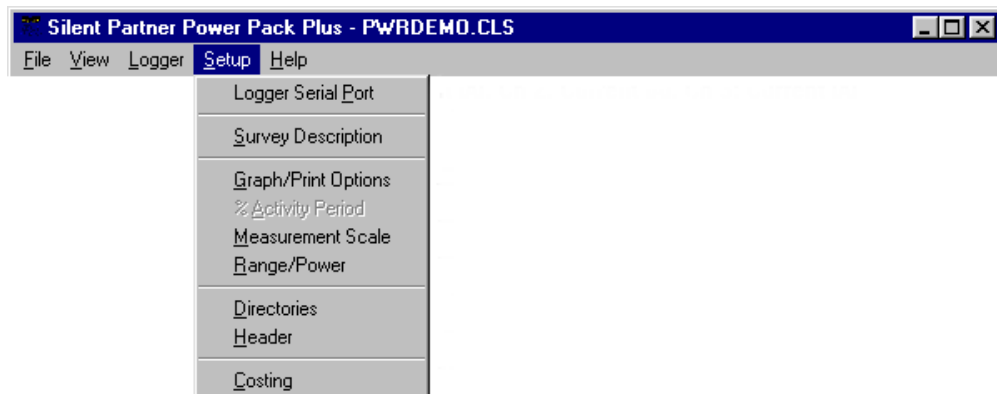
Click on this button when you wish to send the new parameters to your logger.

UPDATING PARAMETERS WILL RESET THE LOGGER AND CLEAR MEMORY!

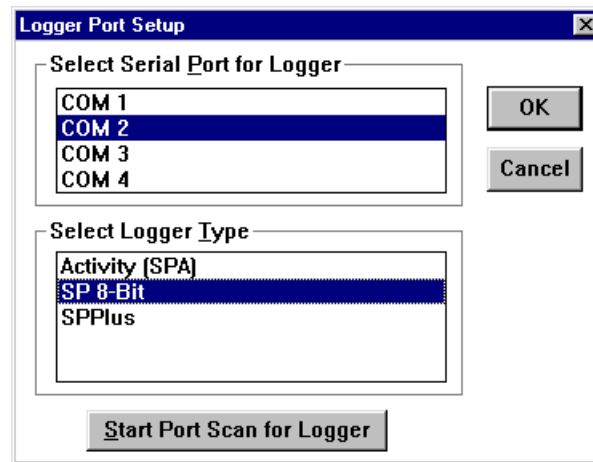
Please be certain this is what you want to do before clicking on Update. Click **Cancel** if you decide not to change any of the logging parameters.

Setup

The Setup menu allows you to specify how graphs and tables will appear, where data is stored, and other operational options of the program.



Logger Serial Port



Allows you to select which communications port the Silent Partner is connected to. If you experience problems communicating with the logger, make sure you have selected the correct port.

If you don't know which port your Silent Partner is connected to, you can use the **Scan Ports for Logger** feature. Selecting this feature initiates an automated search of all the installed serial ports for the presence of a logger.

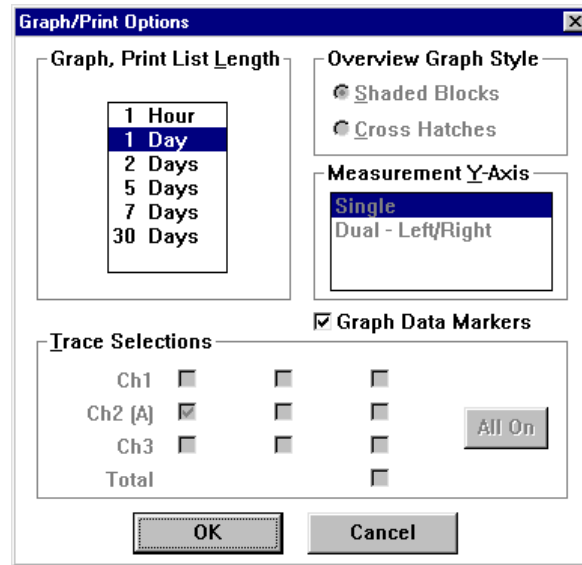
To search for the correct serial port, follow this procedure:

- Select **SP 8-Bit** in the **Select Logger Type** box.
- Plug the download cable into the back of the PC. Serial ports are always either a 9 pin male DB9 connector or, on older computers, a male 25 pin DB25. Connect the other end (male 3.5 mm. stereo plug) to the Silent Partner logger.
- Click on the **Start Port Scan for Logger** button.
- The software will begin to search all of the available serial ports installed on your computer for the presence of a Silent Partner logger. A dialog box informs you which port is being tested, and whether or not a logger has been found.
- If the software reports that a logger was found, that serial port will be selected as the download port when you press OK.
- If the software does not find a logger, try moving the download cable to another connector at the back of the computer. If you still cannot communicate with the Silent Partner, there may be a problem with your computer's communications interface.

Survey Description

Allows you to edit or change the survey file summary notes. For a complete description of the survey summary, please refer to the **View** menu (page 8).

Graph Options



Graph, Print List Length

Allows you to select the period displayed on the X - axis (bottom) of the measurement graph.

Overview Graph Style

The overview graph is only available for SPA activity loggers and is not used with the SPC.

Measurement Y-Axis

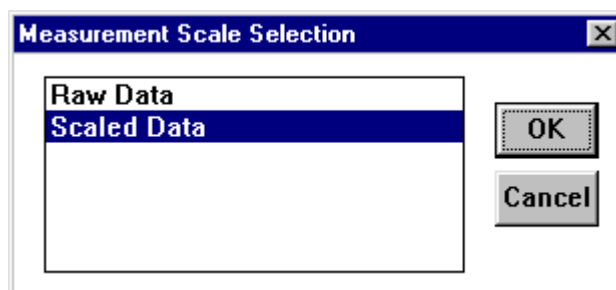
Silent Partner will automatically select dual Left/Right Y-axes for 2 channel SPC's. This means that the left Y-axis will be scaled for Volts or temperature, and the right Y-axis will be scaled in Amps. Single channel SPC's always have the left-hand Y-axis set for Amps.

Trace Selections

Trace Selections allows you to show or hide individual traces on the graphs. Checking the box beside the trace name will cause the trace to be plotted, whereas clearing the check box will hide the trace. If the trace names for a particular channel are dimmed out, the channel was not recorded and therefore cannot display any data.

Pressing the **All On** button will select all available traces for display.

Measurement Scale



The measurement scale allows the user to select the units of measurement for the logger readings:

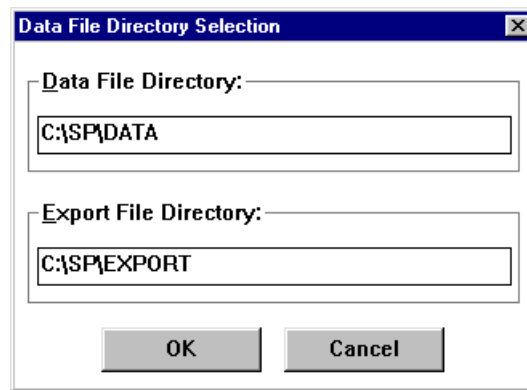
-
- **Raw Data** is the actual sampled data stored by the logger with no scaling or engineering units applied.
 - **Scaled Data** displays the data with the correct scaling and units as specified when the logger was initialized (see section on Change Parameters on page 17) .

If you have purchased PowerPack software to calculate power, you will also see choices for power quantities such as **kVA**, **kW**, and **kWh**.

Range/Power

See a full discussion of the Range function on page 14. Power functions are only available with PowerPack software.

Directories



Specifies where survey files and export files are located. The **Data File Directory** is the directory that Silent Partner will store all downloaded data. It is also the default directory from which files are retrieved. The **Export File Directory** is the directory where files created using the **Export** function (in the **File** menu) are stored.

Header

Header setup allows you to customize your printed reports by incorporating a company logo or graphic, as well as two lines for company address, report author, etc.

Use Header For:

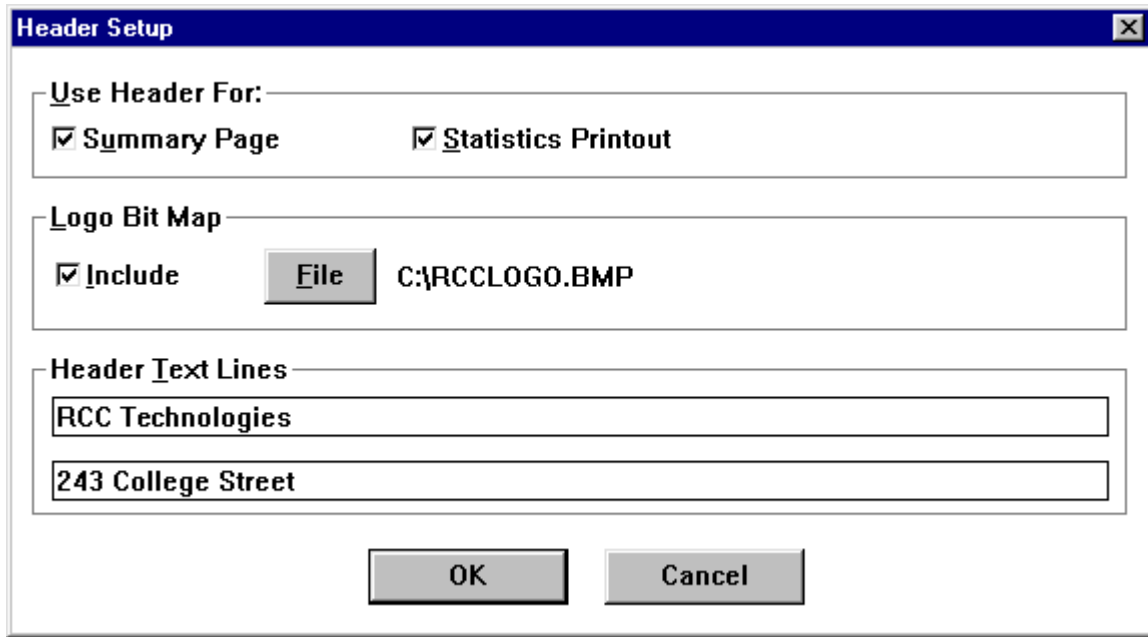
Determines what pages will include the header information.

Logo Bit Map

You can include a bit map file in your printouts by pressing the File button and selecting the file name. Silent Partner will load the bit map file at the top left of the printed page. Please note that there is no scaling performed, so if the graphic appears too big or too small, you must change the file using a paint program. The software allows you to load any .BMP or .DIB bit map files.

Header Text Lines

This section allows the entry of 2 additional lines of text that will appear at the top of each report, just underneath the logo file. These lines are also useful if you do not have a logo file to display.

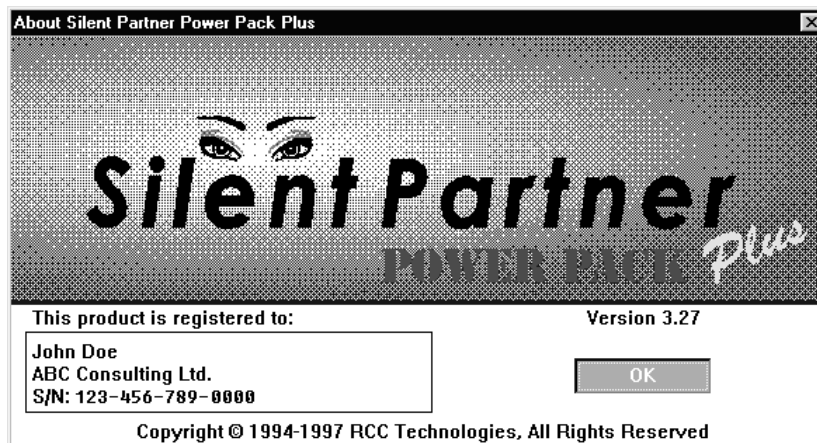


Costing

The costing feature is only available with PowerPack software. It allows you to calculate operating costs based on consumption.

Help

About



The About function displays the sign-on screen and current version number of the Silent Partner software.

If Things Go Wrong ...

If you are having problems with your Silent Partner, consult the list of solutions that follows. If you still have trouble, please call your nearest RCC representative or email us at: rcct@rccgroup.com

Power Calculations

I can't get to the power setup screen when I press the Range/Power button.

- The basic software that is included with Silent Partner loggers does not support power calculations. Make sure you are running Silent Partner PowerPack, or Silent Partner PowerPack Plus software (see page 2 for a description of the different versions available).
- Make sure you have recorded more than one record of data.

Download Problems

The SPC will not download.

- Check the download cable and make sure it is plugged into the right communications port on your computer.
- Make sure you have selected the correct COM port in the Setup section of the software (see page 15).

The software reports an "Invalid Wakeup Response."

- This message is most often displayed when the software tries to communicate with something other than a Silent Partner logger. This is sometimes due to an internal modem or some other device responding when the software tries to initiate a conversation. If this happens, go back in to the Setup - Logger Serial Port section and choose a different port.

"Scan Ports for Logger" says that no logger was found.

- Make sure the download cable is plugged in before pressing the scan button.
- If you have unplugged a serial mouse and then plugged the logger into that port, it probably will not work. The reason for this is that the Windows mouse driver will report that the port is still in use by the mouse, regardless of whether or not it is physically connected. If this happens, Windows will not allow Silent Partner to use that port for communications. This can be overcome by using a different port for the logger if available, or by buying a second serial port (they are quite inexpensive).
- Ensure that the port you are using actually works. Although most newer PC's are equipped with two serial ports, it is not unheard of for the second port to be defective. Connectors are sometimes put on the outside of the case that aren't actually connected to anything inside. The best way to verify that the port is indeed working is to try communicating with some other device such as an external modem.

Time and Date

The time and date on all of the graphs and printouts is wrong.

- Make sure you have set the logger's clock using the Set Time and Date function in the software (see page 11 for details).
- Ensure that your computer's time and date are set correctly.
- Make sure that you press the RESET button on the Silent Partner to begin logging.

*All of the times on the graphs and reports are in 24 hour format, but I want 12 hour format (or vice - versa).
The dates appear in the wrong format.*

- The way in which times and dates are displayed in the Silent Partner software is determined by the International Settings portion of Control Panel In Windows. To change the settings, open the Main program group and select Control Panel. Select the icon for International Settings, and adjust the time and date formats to suit your preference.

Printing

I click on the cancel button when printing, but the printer keeps on going.

- Printing can continue after hitting the cancel button for several reasons. Firstly, Windows has a feature called Print Manager which acts as a background print spooler. The function of a print spooler is to allow printing in the background, freeing up your computer for more important things. If Print Manager is enabled, the Silent Partner software will print to Print Manager instead of the printer. Print Manager, in turn, will send the data to the printer leaving the computer free for other tasks. Pressing cancel will stop data from going to Print Manager, but it will not stop Print Manager from sending the data it already received to the printer. To remedy this situation, you can cancel the print job by selecting Print Manager from the Main program group. Select the proper print job from the list and delete it. If you wish to disable Print Manager and print directly to the printer, it can be disabled by opening the Main program group and selecting Control Panel. Next, select the Printers icon, and uncheck the **Use Print Manager** box on the bottom left hand side of the dialog box. For full details on the correct use of Print Manager, please consult your Windows Manual.
- Your printer may also continue to print if it has a large amount of on-board memory. This memory serves the same purpose as Print Manager by providing a temporary storage space for the printed data so the computer can move on to more important tasks. If your printer continues to print after pressing Cancel and Print Manager is disabled. Try resetting your printer. This should clear any data stored in the printer. If your printer does not have a reset switch, turn the printer off, then on again.

Display

The colours on the Graph are difficult to see on the screen.

- Please refer to Appendix B for details on changing some of Silent Partner's Graph colours.

Appendix A - SPC Specifications

| | Specification |
|--------------------------------|---|
| Maximum Channels | SPC1 - 1 channel, SPC2 - 2 channel |
| Range | 2 - 200 Amps + 25% Overrange. SPC2: 0 - 600 VAC + 25% overrange, or temperature from - 21°C to 80°C (- 14°F to 176°F). |
| External Connections | RS232 download, optional temperature probe or AC Voltage module for SPC2. |
| Sensor Type | Integral split-core CT. SPC2: external AC to DC module, or 6-foot temperature probe. |
| Storage / Sampling Rate | 1 second to 4 hours. |
| Parameters Stored | Modified single point store. |
| Memory Treatment | Stop when full, or wrap. |
| Memory Size | 8K, 16K, or 32K (must be specified when ordering). |
| Storage Capacity | 8192, 16384, or 32768 readings depending for single channel logger, depending on memory size (see above). |
| Indicators | Flashing LED when logging. |
| Power | Internal 9 volt alkaline battery. |
| Battery Life | Approximately 1½ years. |
| Communications | RS232, support for remote setup. |
| Software | Silent Partner for Windows. Silent Partner PowerPack for power calculations. |
| Resolution | 1 Amp |
| Accuracy | ± 1 % Range ± 1 LSD. |
| Safety | Isolation of measurement circuit via integral CT. |
| Dimensions | 180 x 47 x 35 mm (7.1" x 1.9" x 1.4"). |
| Max. Conductor Size | 19 mm diameter (¾" diameter). |
| Weight | 150 grams (4 oz.). |
| Humidity | Up to 90%, non-condensing. |
| Operating Temperature | - 40°C to 60°C |



Appendix B - SILPRTNR.INI File Settings

Silent Partner software stores most of its configuration information in a special file called SILPRTNR.INI. This file can be edited using Notepad or any other text editor. ***This file should only be modified by advanced users.***

Customizing Graph Colours

If the colours used in the measurement graph aren't to your liking, you can change the colours used by Silent Partner. Each colour is defined by the amount of RED, GREEN, and BLUE. To change the colours, you must edit the sections in boldface type below:

```
[GraphPref]
OnRGB=0, 0, 64      Box colour for 100% ON on Overview Graph (Not Used for SPC)
1-99RGB=0,255,255  Box colour for 1-99% ON on Overview Graph (Not Used for SPC)
OffRGB=255,255,255 Box colour for 100% ON on Overview Graph (Not Used for SPC)
MaxDaySel=0
OverviewStyle=1
PeriodSel=5
MeasYAxis=1
Meas1RGB=255, 0, 0   Channel 1 trace colour for Minimum
Meas2RGB=0, 0,255   Channel 1 trace colour for Average
GridRGB=206,206,206 Graph grid colour (SPT, SPPLUS, SPC)
Meas3RGB=0,255, 0   Channel 1 trace colour for Maximum
Meas4RGB=128,128,128 Channel 2 trace colour for Minimum
Meas5RGB=0,255,255 Channel 2 trace colour for Average
Meas6RGB=255, 0,255 Channel 2 trace colour for Maximum
Meas7RGB=255,255, 0 Channel 2 trace colour for Minimum
Meas8RGB=0,128, 0   Channel 2 trace colour for Average
Meas9RGB=0, 0, 0   Channel 2 trace colour for Maximum
Orientation=1
```

To determine which colours to use, you can experiment using Paintbrush (a paint program that comes with Windows). After starting Paintbrush, Select the **Options** menu, then select **Edit Colors**. A box will pop up with sliders for red, green and blue. To the right of the sliders is a number that will change from 0 to 255 as you move the slider from left to right. As you move each of the sliders, the box on the extreme right will change colour. Move the sliders around until the box is the colour you want, then note the numbers beside the red, green and blue sliders. These are the numbers you will enter into the SILPRTNR.INI file using the text editor, Simply replace the old RGB values with the new ones.

The remaining items in the file reflect the various options that have been selected while using the software. They can also be edited, but it is probably easier to just change the option from within Silent Partner.

```
[ComPort]
Port=1              Communications port number
Type=1             Default Logger Type.

[Directory]
Data=C:\SP\DATA    Default directory for data storage and retrieval
Export=C:\SP\EXPORT Default directory exported data

[Measurement]
MConvert=1
MConvert1=2
MConvert2=1

[Options]
BattWarn=Status,Param
LoBattV=8.0        Battery voltage after which Silent Partner will warn of a low battery

[PrintPref]
LogoSummary=1      1=Print Logo on Summary Page, 0= don't print logo on Summary Page
LogoStats=1        1=Print Logo on Stats Page, 0= don't print logo on Stats Page
IncludeBitMap=1    1=Use bitmap file specified below, 0= don't use bitmap file
BMPFile=C:\TECH5CL.BMP Name and path of bitmap logo file used on reports
LogoL1=            Text on first line after logo
LogoL2=            Text on second line after logo
```



Appendix C - Temperature Accuracy

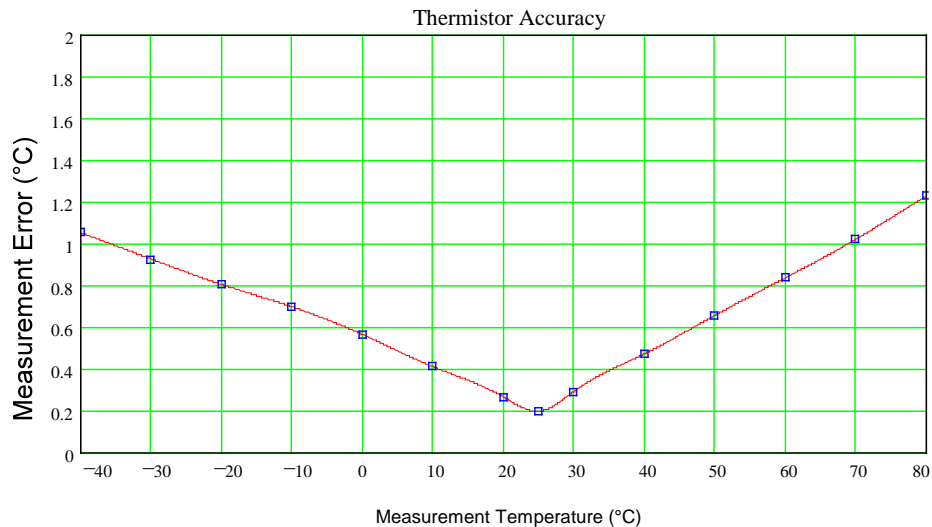
The accuracy of the SPC temperature measurement is determined by a combination of component accuracy, thermistor accuracy, temperature resolution, and sampling speed.

Component Accuracy

The total system accuracy encompasses the total error of all components in the system including the analogue to digital converter, precision passive components, and the thermistor.

Thermistor Accuracy

The SPC's thermistor responds in a known fashion to variations in temperature. The thermistor manufacturer guarantees that each thermistor will conform to the stated characteristics within the accuracy limits graphed below:



Thermistors do not have a linear response to all temperatures in its measurement range. Silent Partner software compensates for this nonlinearity by adding a correction factor (calibration curve) to the *Raw Data*. The calibration curves are derived from the manufacturer's published data using the Steinhart-Hart equation:

$$\frac{1}{T} = A + B \ln R + C(\ln R)^3$$

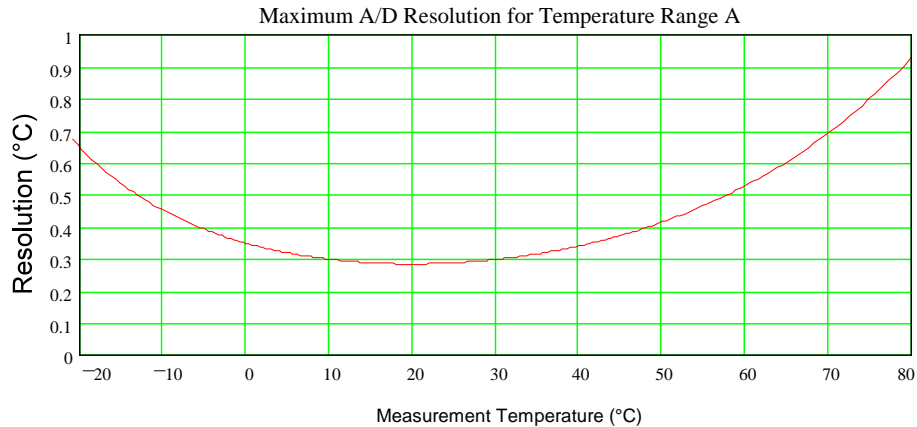
where:

- T = Degrees Kelvin
- R = Resistance of the thermistor
- A, B, C = Curve fitting constants, determined according to selected temperature range.

This equation yields linearity correction data accurate to $\pm 0.02^\circ\text{C}$ for a temperature span of 100°C .

Temperature Resolution

The actual temperature resolution is dependent on the temperature range selected and varies with respect to the measurement temperature. SPC's are configured to measure temperatures from - 21°C to 80°C (- 14°F to 176°F), with the best resolution being **0.28°C at 20°C**.



Sampling Speed

The rate at which a datalogger acquires data from its environment is known as sampling speed or sample rate. The more samples of data that are acquired for a given time period, the more accurate the representation of the phenomena being monitored. Sampling speed is usually limited by the response of the data acquisition circuitry and the amount of available memory. The SPC allows sampling rates from 1 second to over 4 hours in one second increments.

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