



SARIS

Scintrex Automated Resistivity Imaging System

OPERATION MANUAL


SCINTREX
A DIVISION OF LRS



Rev	Description of change	ECO	Date of issue	App
1.1	Initial Release		Feb 12, 2001	R.B.
2	Removal of GPS option, Offset Wenner and IP sections	6227	Oct, 22, 2013	R.L.



SARIS

SCINTREX

Scintrex Automated Resistivity Imaging System

Operation Manual



SCINTREX LIMITED

HEAD OFFICE

SCINTREX Limited
222 Snidercroft Road
Concord, Ontario
Canada, L4K 1B5
tel: (905) 669-2280
fax: (905) 669-6403
e-mail:
scintrex@scintrexltd.com

World-wide web: <http://www.scintrexltd.com>

Copyright © SCINTREX Limited 2013. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form, or by any means, electronic, mechanical, photo-copying, recording, or otherwise, without prior consent from SCINTREX Limited.

Document Part No. 735700, Revision 2

Printed and bound in Canada



Table of Contents

Foreword

Getting Started

About this manual	1-1
Page numbering	1-1
Type styles	1-2
Chapter layout	1-3
Symbols	1-4
About the instrument	1-5
Important Safety Notice	1-5
Operation principles	1-6
Instrument overview	1-7
Console and Keypad	1-7
Keyboard description	1-8
Function keys	1-8
Function/Alphanumeric keys	1-9
Direction/Sign keys	1-10
Powering up the SARIS	1-11
Adjusting the contrast	1-11
Preset contrast values	1-12
Manually set contrast values	1-12
On-line display screens	1-14
On-line help	1-14
System information	1-15
Keyboard operations	1-17
Fields with preset values	1-20
Alphanumeric entry, example 1	1-20
Alphanumeric entry, example 2	1-21
Your survey	1-24
Sounding configuration	1-24
Profiling configuration	1-26
Dumping data	1-29
Dumping data through a USB port	1-29
Minimum system requirements	1-30



Resetting the SARIS	1-31
Resetting the default parameters	1-31

Instrument Setup

Set-up screen	2-1
Cable setup	2-2
Selecting a cable	2-4
Detecting a new cable	2-7
Deleting a cable	2-8
Copying a cable	2-10
Creating a virtual cable, example 1	2-15
Transmitter screen	2-21
Options screen	2-25
Presets setup	2-28
Creating a new preset	2-30
Selecting a preset	2-34
Copying a preset	2-38
Deleting a preset	2-42
Service screen	2-44
Service and support	2-45
Software upgrade	2-47
Database errors	2-47
GPS screen	2-49
Clock screen	2-50
Survey screen	2-52
Optional parameters	2-53
Optional header parameters	2-53
Optional survey reference point parameters	2-54
Survey parameter setup	2-56
Survey array setup	2-61
Sounding arrays	2-62
Profiling arrays	2-63
Borehole logging arrays	2-64
Survey cable setup	2-65

Field Operation

Field setup	3-2
Manual survey	3-2
Automated survey	3-3
Resistivity surveys	3-4
Example 1: Schlumberger sounding	3-5
Automated cable	3-8



Preset table of positions	3-8
Manual entry of electrode positions	3-8
Beginning a Schlumberger sounding	3-10
Taking the next measurement: Schlumberger sounding	3-11
Inverting your Schlumberger sounding	3-13
Example 2: Wenner profiling	3-16
Automated cable	3-20
Manual entry of electrode positions	3-20
Beginning a Wenner profile	3-22
Taking the next measurement: Wenner profile	3-24
Viewing your Wenner profile results	3-25
Entering notes	3-27
Recording notes	3-28
Recording notes using the pre-defined list of notes	3-28
Recording notes using available macros	3-29
Recording manually entered notes	3-33
Recalling data	3-34
Scrolling through your surveys	3-35
Scrolling through your soundings and profiles	3-36
Dumping data	3-39
Dumping data from your SARIS using the USB port	3-40
Dumping data using the RS-232 port	3-44
Setting the communication parameters	3-45
Memory clear	3-53

Maintenance and Trouble-shooting

Customer service	4-1
Battery charging	4-2
Charging procedure	4-2
Basic maintenance	4-3
Fuse replacement	4-3
Console disassembly and reassembly	4-5
Trouble shooting	4-6
Saris operation error messages	4-8
Inversion routine error messages	4-9

Reference Information

Saris technical specifications	5-1
Saris system components list	5-5
Warranty and repair	5-6
Warranty	5-6
Repair	5-6



Shipping instructions 5-7

Appendix A: Imaging Techniques

Introduction 6-1
Example: Wenner array 6-1

Appendix B: Scintrex Utilities Program

Installing SCTUTIL 7-2
Reprogramming your SARIS 7-9
 Using the RS-232 cable to upgrade 7-11
Installing your USB driver 7-13





Foreword

The SARIS is a versatile, advanced and highly portable instrument which is primarily designed for the mapping of the resistivity of near-surface formations, as well as for groundwater, geotechnical, engineering and archaeological applications. In addition, it provides basic induced polarisation information, often useful for the resolution of certain types of soils and rocks.

For the resistivity measurements, the SARIS transmits a sinusoidal current wave form, of fixed 5 or 6 Hz frequency. For the induced polarisation measurements, the transmitted wave is a bipolar, interrupted square wave of selectable duration, with potential measurements being made in four selectable windows on each voltage decay curve.

In any specific instance, the maximum depth to which the SARIS may provide good electrical physical properties is determined by the signal/noise ratio. This, in turn, depends on a number of local factors, including the applied current flow, the resistivity of the formations, the electrode array and spacing employed, and the ambient telluric noise. Additionally, it should be noted that in the IP measurement mode, the transient earth voltages measured are commonly about two orders of magnitude lower than the corresponding resistivity voltages, and likewise their signal/noise ratios. Thus in some instances, it may be possible to achieve acceptably good resistivity measurements but not acceptable corresponding IP measurements. An objective of the operator is to achieve acceptable signal/noise for each measurement by increasing the transmitted current, within the limits of the transmitting capability of the SARIS (100W, 500V and 1.0 Amperes)



The SARIS can be configured to suit your own unique requirements. In addition to the standard 4-electrode mode, the SARIS can use intelligent multi-electrode cables, supporting a wide variety of arrays such as:

- Schlumberger
- Wenner
- Pole-Dipole
- Dipole-Dipole
- In-line Pole-Pole
- Lateral Pole-Pole
- Gradient
- User-defined



1

Getting Started

About this manual

Page numbering

The numbering scheme used consists of two parts: the *chapter number* and *page number*. For example, **3-1** would refer to chapter **3**, page **1**.

For your convenience, each chapter has a thumb-tab on the right-hand side allowing you to quickly locate a chapter of interest. The thumb-tabs are arranged in descending order, with Chapter 1 always starting at the top.



Type styles

The following typeface conventions will be used throughout the manual.

Convention	Use
<i>Bold Italic</i>	Indicates an action to be taken
<i>Italic</i>	Denotes a new term being introduced
ALL CAPS	Denotes the name of a method or mode



Chapter layout






This manual is divided into five chapters and five appendices with the information flow detailed in the following table.

Chapter	Description
1. Getting Started	Gives an overview of the manual and the SARIS.
2. Setup	Describes how to setup your SARIS for a resistivity survey.
3. Operations	Describes each step in a resistivity survey. Thorough examples of a Schlumberger sounding and Wenner profile are given
4. Maintenance	Describes basic maintenance, trouble-shooting and basic repairs
5. Reference	Contains the technical specifications, instrument parts list and warranty information.
A. Imaging Techniques	Gives a brief overview of different imaging arrays and techniques.
B. Utilities program	Details the procedures on how to install the SCTUTIL utilities program, how to upgrade the software version and installing the USB driver.
C. GPS Datums	A list of all the available GPS datums in the SARIS.



Symbols

The following symbols will be used to highlight specific sections of text throughout the manual.

Symbol	Meaning
	Warning: Denotes an important point concerning safety
	Important: Indicates a important topic, particular attention should be paid to this section
	Note: Denotes a point of interest, or information you should read
	Tip: Denotes an interesting hint for smoother operation
	Question: Indicates a relevant question concerning an important topic



About the instrument

Important Safety Notice



Warning:

The SARIS can produce **LETHAL** currents. **DO NOT** touch current terminal A(C₁) and B(C₂) or any bare wires or current electrodes while transmitting current. **THIS CAN RESULT IN SERIOUS INJURIES.**

Whereas Scintrex has taken reasonable precautions in its design to minimize the possibility of personal injury in its normal and proper use, Scintrex can bear no responsibility in this regard.

All users are cautioned to establish and adhere scrupulously to safe operating procedures in the field, as well as safe practices in the maintenance and repair of this unit.

It is recommended that all field operators be fully advised of the potential hazard from these currents and of the operating procedures necessary to avoid accidents.

Positive communication between the operator and all field personnel will help ensure that accidents do not occur.

In case of an emergency, you can interrupt the injection of current by pressing and holding the Tx Stop key until an acknowledgement message appears

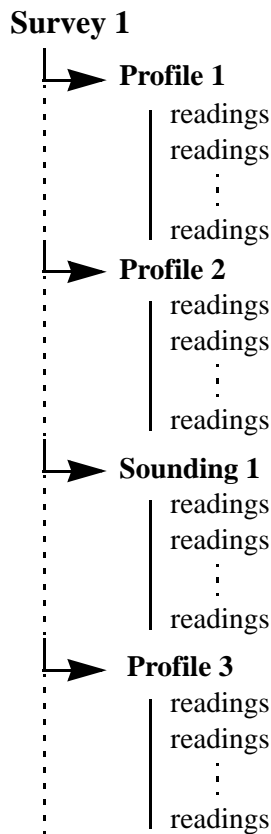
This will shut down the transmitter and avoid any further injuries.

Do not touch the electrodes or any section of bare wire when the SARIS is injecting current.



Operation principles

The SARIS has a structured database allowing you to enter as many surveys as you want. You are only limited by the physical size of the memory, which at 1008 Kilobytes will allow you to store more than a week's worth of data in your SARIS. Each survey is comprised of several soundings and/or profiles that contain individual readings. The following flowchart illustrates how the surveys are structured in the memory.

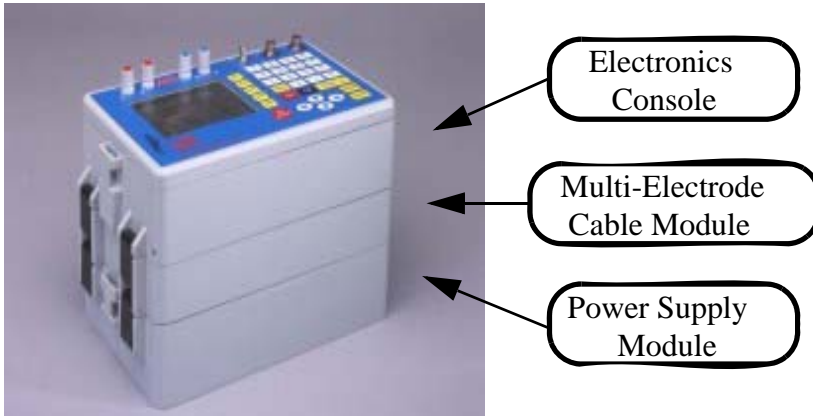


and so on.



Instrument overview

The SARIS resistivity system consists of an electronics console, optional multi-electrode or borehole interfaces which allow you to connect to intelligent multi-electrode or borehole cables and a power supply module. The following picture illustrates a SARIS system with a multi-electrode interface.



Console and Keypad

The following picture shows the front panel of the console.



Keyboard description

Function keys



The On key turns the instrument on.



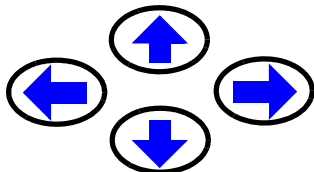
The Off key turns the instrument off.



The Enter key is used to acknowledge a particular keystroke sequence. This is commonly used when entering numeric parameters such as the value of the AB spacing in a Schlumberger sounding.



The CANCEL key is used to either clear the data field or to move the cursor back one space.



The arrow keys move the cursor either, right, left up or down.



Emergency Stop:

Will immediately stop the injection of current.



The F1 to F5 function keys access the sub-menu options. These options will vary according to the current menu. For instance in the surveys screen the F1 key allow you to access the parameters sub-menu.



Press the Sounding/Profile key to begin a sounding or a profile.





Starting a resistivity reading once a sounding or profile has been properly set up.

Function/Alphanumeric keys



Keying in the number 1, letters a, b and c as well as accessing the Setup screen.



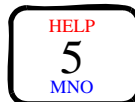
Keying in the number 2, letters d, e and f as well as accessing the Survey screen.



Keying in the number 3, letters g, h and i as well as accessing the Memory screen.



Keying in the number 4, letters j, k and l as well as accessing the Contrast Setting screen.



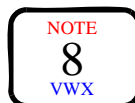
Keying in the number 5, letters m, n and o as well as accessing the On-line help screen.



Keying in the number 6, letters p, q and r as well as accessing the Dump screen.



Keying in the number 7, letters s, t and u as well as accessing the Information screen.



Keying in the number 8, letters v, w and x as well as accessing the Notes screen.





Keying in the number 9, letters y and z as well as accessing the Data Recall screen.

Direction/Sign keys



Keying in the north direction, increasing the contrast and entering a + sign.



Keying in the south direction, decreasing the contrast and entering a - sign.



Keying in the east direction, increasing the contrast and entering a + sign.



Keying in the west direction, decreasing the contrast and entering a - sign.



Powering up the SARIS

PRESS



To turn your SARIS on, *press* the On key.



Note:

If your SARIS does not turn on, or the screen is either totally blank or dark, please refer to “Trouble shooting” on page 4-6.

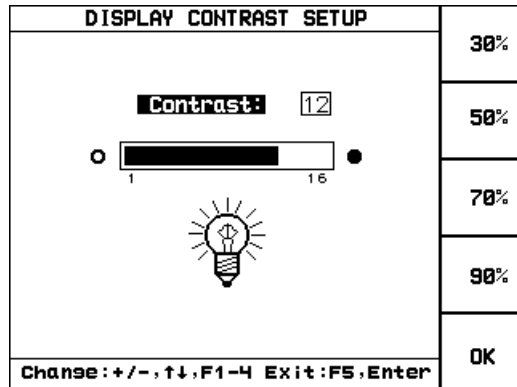
PRESS



Adjusting the contrast

If the screen is either too dark or too light, *press* the CONTRAST key.

The following screen will then appear.



Important:

Polarizing sunglasses may prevent you from seeing the screen, it will appear as all dark.



Preset contrast values

The preset contrast values are 30, 50 70 and 90% contrast. The default value for the contrast is 50%.



To set the contrast to 30%, *press* the F1 key.



To set the contrast to 50%, *press* the F2 key.



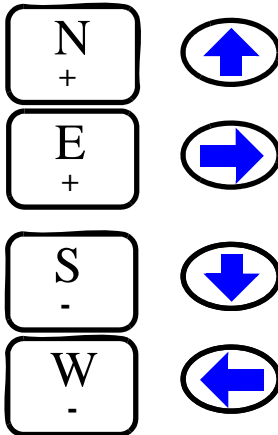
To set the contrast to 70%, *press* the F3 key.



To set the contrast to 90%, *press* the F4 key.

Manually set contrast values

The user can also manually set the contrast on a scale of 1 to 16, from lightest to darkest.



To increase the contrast you can *press* any of the keys illustrated on the left.

To decrease the contrast you can *press* any of the keys illustrated on the left.



PRESS



Press the F5 key to exit the Contrast Adjustment screen.



On-line display screens

In addition to the Contrast Screen previously described, there are two other on-line display screens. These screens can be accessed at any time during the operation of the SARIS.

On-line help

The help key line allows you to access help topics about the current screen being displayed.

PRESS



To access the on-line Help screen, *press* the HELP key.

The screen that will then appear will depend on the context in which the help key is pressed.

Example 1:

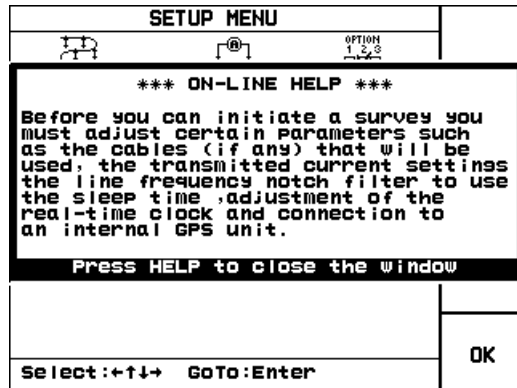
For instance, if the HELP key was pressed in the Survey Screen (Survey key), the following screen would appear as an overlay.

SURVEY HEADER		
SURVEY	Test	PARAMS
*** ON-LINE HELP ***		
Any new survey requires entry of survey information and Parameters. To enter additional Parameters press F1. Save new entry by pressing F5 to cancel the entry Press F4.		
Press HELP to close the window		
Azimuth:	<input type="text" value="0."/>	CANCEL
Altitude:	<input type="text" value="0."/>	
UTM Zone:	<input type="text" value="0."/>	
UTC Diff.:	<input type="text" value="0."/>	
Sel: ↑↓←→ Chg: Alpha, ↔		OK



Example 2:

If the HELP key was pressed in the SetUp Screen (SetUp key), the following screen would appear as an overlay.



PRESS



To exit the on-line help *press* the HELP/5/MNO key to return to the previous screen.

System information

The information on-line screen presents information about your SARIS.

PRESS



To show the on-line information screen, *press* the INFO key.



The following screen will then appear as an overlay to the screen being presently displayed.

SETUP MENU	
*** SYSTEM INFO ***	
Instrument Model	735500
Instrument Ver.	1
Software Ver.	3.7
Serial #	10
RAM Memory	512 Kb
FLASH Memory	1008 Kb
Data Memory Free	99 %
Battery	24.0 V
Inner Temperature	25°C
Press 7 to close the window	
Select : ←↑↓→ GoTo : Enter	

OK

The information topics illustrated on the screen are in order:

- Instrument model number,
- Instrument version,
- Software version,
- Serial number,
- Quantity of RAM available,
- Quantity of flash memory available
- Percentage of free memory,
- Battery voltage
- Inner temperature of the unit.

PRESS



Press the INFO key to return to the previous screen.



Keyboard operations

There are several basic keyboard operations that will be repeated throughout the manual. These operations are as follows:

- entering values in field,
- editing fields,
- entering alphanumeric values.

For purposes of clarity and brevity, we shall enumerate these procedures only once. Where in the manual these procedures are called upon, we shall refer to the present section.

Entering values in fields

There are two types of parameter fields:

- Fields with preset values.
- Fields with no preset values.

As a general example, let us consider a screen that has both types of fields.

In the Transmitter SetUp screen, you can select the operating options for the transmitted current.

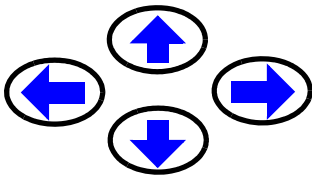
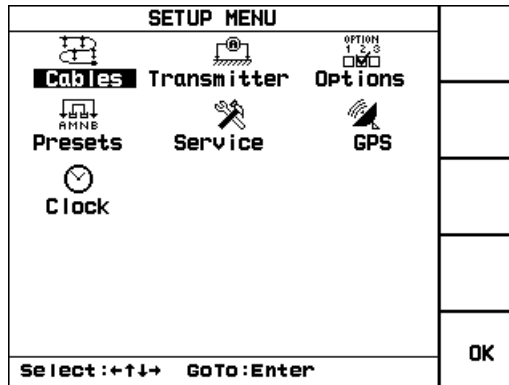
PRESS



With the SARIS turned on, *press* the SETUP key to access the Set-Up screen.



The following screen will then appear.

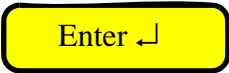


Press the arrow keys to bring your cursor to the transmitter icon.

The word Transmitter will then be highlighted, as illustrated below.

Transmitter

PRESS



Press the Enter key.



The following screen will then appear.

TRANSMITTER PARAMETERS SETUP	
Max. Current:	1000 mA
Min. Current:	1 mA
Noise threshold:	OFF
Max. fast measur. time:	1 sec
Max. IP cycles:	3
	FUNCT
	EDIT
	OK
Sel: ↑↓ Chg: ↔	

PRESS



Press the F3 key to toggle between the Function mode and the edit mode.

When in the EDIT mode, the word EDIT will be highlighted, as illustrated below.

EDIT

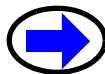


Fields with preset values



Press the up or down arrow keys to bring your cursor to the maximum current parameter.

Max. Current:



Press the right or left arrow key to set the value of the maximum current. The preset values are 50, 100, 200, 500, 750 or 1000 mA.

Alphanumeric entry, example 1

The alphanumeric keys allow you to enter four characters per key. The entered character depends on the number of times the key is pressed. For instance as you toggle the 2/DEF key you will successively obtain 2, d, e or f



Press the up or down arrow keys to bring your cursor to the maximum measurement time parameter.

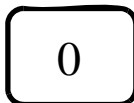
Max Measur. time:

PRESS



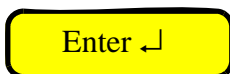
Key in the value. For instance for 20 *press* the 2 key,

PRESS



and then *press* the 0 key.

PRESS



Press the Enter key to acknowledge your choice.



PRESS



Press the F5 key to return to the SETUP screen.

Alphanumeric entry, example 2

PRESS



With the SARIS turned on, *press* the SURVEY key to access the Survey Header screen.

The following screen will then appear.

SURVEY HEADER		PARAMS
Survey:	<input type="text"/>	READ GPS
Client:	<input type="text"/>	FUNC EDIT
Operator:	<input type="text"/>	CANCEL
GRID REFERENCE:		OK
Eastings:	<input type="text"/>	
Northings:	<input type="text"/>	
Azimuth:	<input type="text"/>	
Altitude:	<input type="text"/>	
UTM Zone:	<input type="text"/>	
UTC Diff.:	<input type="text"/>	
Sel: ↑↓ Chg: Alpha, ↔		



Press the up or down arrow keys to bring your cursor to the Survey parameter.

The Survey parameter will then be highlighted as illustrated below.

Survey:

PRESS



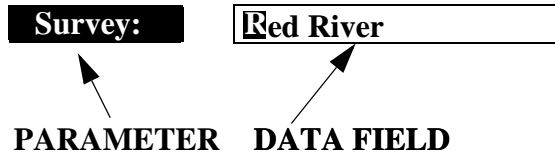
Press the F3 key to toggle between the function mode and edit mode.

When in the EDIT mode, the word EDIT will be highlighted as illustrated below,

EDIT



and the flashing cursor will move into the data field, as illustrated below.



PRESS 

To enter a new survey name, *press* the F2 key. This will clear the data field.

Key in the desired survey name, this can be any alphanumeric value up to 19 characters long.

PRESS 

For instance, if you were to write Test as the survey name, you would first *press* the F1 key until CAPS LOCK is on, in order to get uppercase characters, as illustrated below.

**CAPS
LOC
on off**

PRESS 

Then *press* the STU key until you obtain the letter T.

PRESS 


To return to lowercase, *press* the F1 key again to toggle back to lowercase characters, CAPS LOCK will then be set to off, as illustrated below.

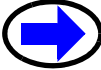
**CAPS
LOCK
on **off****


PRESS 

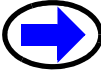
To advance your cursor, *press* the right arrow key.





PRESS  *Press the 2/DEF key until you obtain the letter e.*


PRESS  *Press the right arrow key to advance your cursor.*

PRESS  *Press the 7/STU key until you obtain the letter s.*

PRESS  *Press the right arrow key to advance your cursor.*

PRESS  *Press the 7/STU key until you obtain the letter t.*

PRESS  *Press the ENTER key to acknowledge your choice.*

PRESS  *When you are finished editing the parameter, **press** the F3 key to exit the EDIT mode.*



Your survey

The SARIS can be configured to suit your many needs. In order to optimize your survey you must first determine if either a sounding or profile is appropriate.

A sounding would be carried out if you would like to get vertical resistivity information at a given point, whereas an imaging survey would be carried out to get two-dimensional information of the sub-surface.

Furthermore, the SARIS can be configured to carry out profiles automatically with the help of the Automated Cables, connected as illustrated below.

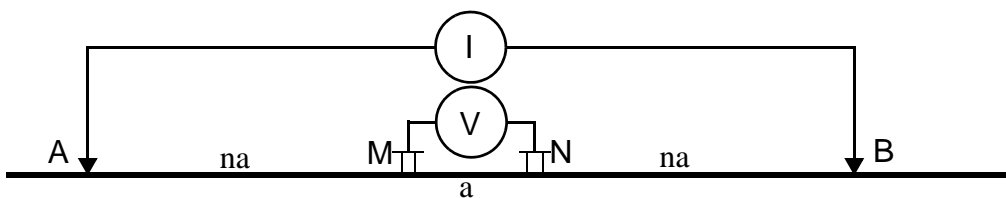


Sounding configuration

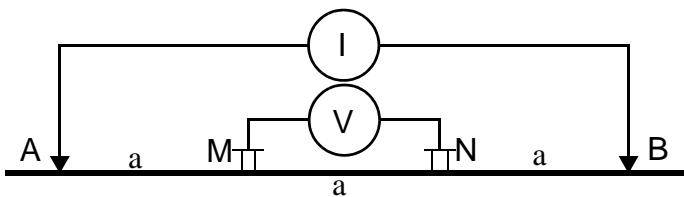
The following electrode arrays can be used for soundings:

- Schlumberger
- Wenner
- Dipole-dipole



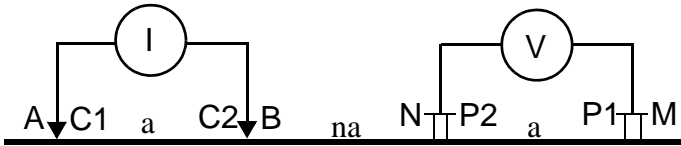


The Schlumberger electrode array



The Wenner electrode array





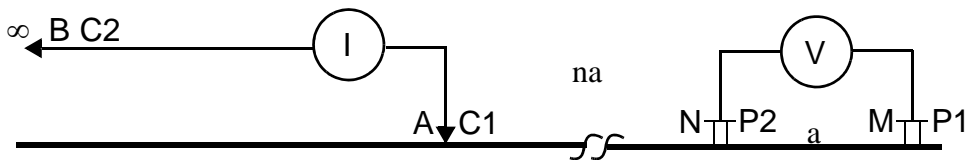
The dipole-dipole electrode array

Profiling configuration

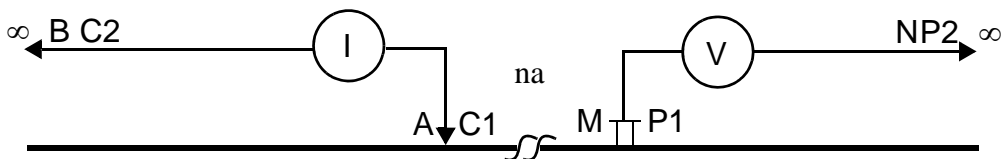
The following electrode arrays can be used for profiling:

- Schlumberger
- Wenner
- Dipole-dipole
- Pole-dipole
- Axial Pole-pole
- Lateral Pole-pole
- Gradient



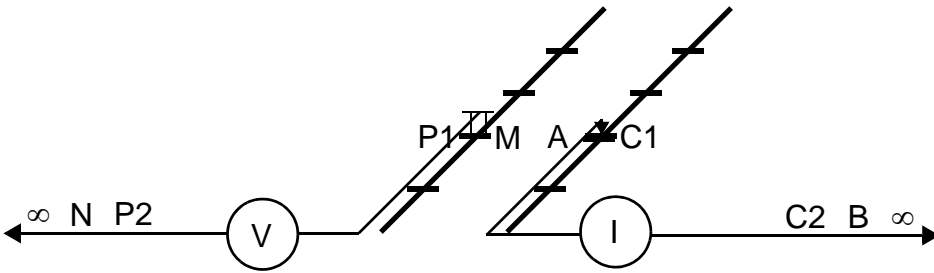


The Pole-dipole electrode array

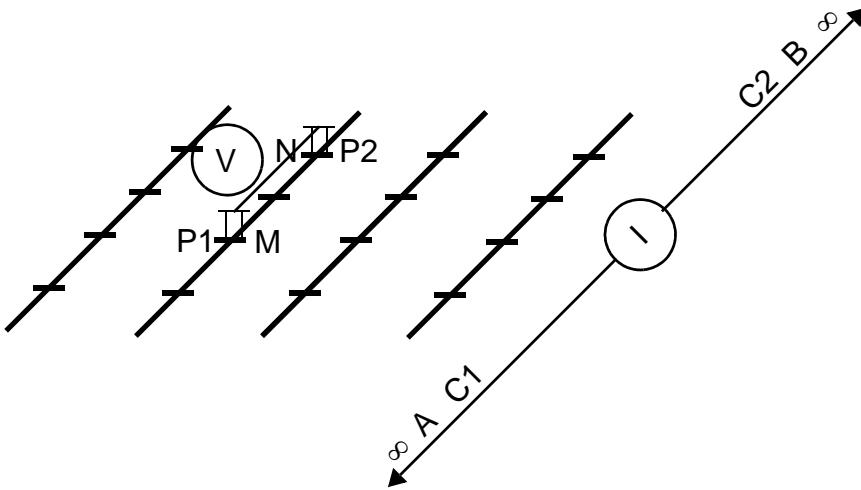


The Axial Pole-pole electrode array





The lateral Pole-pole electrode array



The Gradient electrode array

As previously mentioned, resistivity imaging surveys can be fully automated with the use of the intelligent imaging cables.



Dumping data



Important:

The SCTUTIL Scintrex Utilities program that is supplied along with your SARIS must be installed to allow you to transfer data from your SARIS. Please refer to “Installing SCTUTIL” on page G-2 for further instructions.

Dumping data through a USB port



Important:

In order for you to transfer data from your SARIS using the USB mode, you have the following in your PC:

- **USB Port**
- **USB Host Driver**

We strongly recommend that you install your USB driver immediately, before attempting to dump the data from your SARIS to your PC.



Minimum system requirements



Important:

The SCTUTIL Scintrex Utilities program **will not function in a Windows 7 environment.**

The Minimum requirements for your PC are as follows:

- **WINDOWS 95 or better**
- **8 MB of RAM**
- **3 MB of Hard Disk space**



Resetting the SARIS



Important:

Should your SARIS lock-up, i.e. that it does not respond to any keystroke,

PRESS



press the OFF key
and *hold* for approximately five seconds.

The instrument will then reset itself. However, your data *will not* be lost.

Resetting the default parameters



Important:

In the extremely rare event that your database becomes corrupted, (also see “Trouble shooting” on page 4-6), you will have to reset your SARIS to the default parameters. **However, this will entirely erase your data, list of cables and presets.**

To reset the SARIS to the default parameters:

First, shut the SARIS off by pressing the Off key

PRESS



press the Tx Stop

AND

and

PRESS



On keys together. The unit will then reset itself to the default parameter setting and all data, list of cables and presets will be erased.





2

Instrument Setup

Set-up screen

Before you can initiate a resistivity survey, you must adjust certain parameters such as the cables (if any) that will be used, the transmitted current settings, the line frequency notch filter to use, the sleep time, adjustment of the real-time clock, and connection to an internal GPS unit.

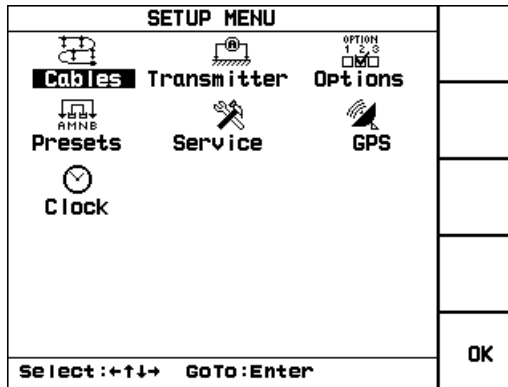
PRESS



Press the SETUP key to access the Setup screen.



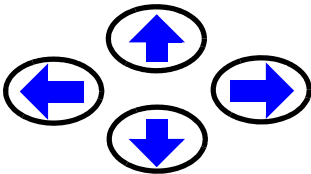
The following screen will then appear.



Cable setup



The Cable screen allows you to choose which imaging or sounding cable to use.



In the Setup screen, *press* the arrow keys to bring your cursor to the cables icon.

The word Cables will then be highlighted, as illustrated below.

Cables





PRESS

Enter ↵

Press the Enter key to access the cables screen.



The following screen will then appear.

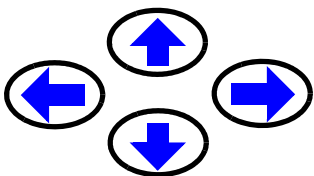
CABLE	
 Select	 Detect
 Delete	 Copy
Sel :←↑↓→ GoTo:Enter Exit:F5	
OK	

You have then the choice to either select a cable, read a new cable, delete an existing cable from the list of available cables or copy an existing cable for editing.



Selecting a cable

When you power up your SARIS with a multi-electrode cable module in place, it will automatically recognize the cable connected to it and enter the cable and its parameters in the list of available cables. If your cable is not connected to the module at this time you can also detect this cable (see “Detecting a new cable” on page 2-7).

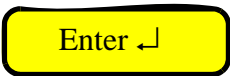


In the Cable Setup screen, **press** the arrow keys to bring your cursor to the Select icon.

The word Select will then be highlighted, as illustrated below.


Select

PRESS



Press the Enter key to access the cable list screen.

The following screen will then appear.

CABLE LIST	
 ICS-1 imaging	
	SHOW
	SELECT
	OK
Select: ↑, F1, 2 Exit: F5	





Press the up or down arrow keys to bring the cursor to the chosen cable.

The cable will then be highlighted as illustrated below.

ICS-1 Imaging

PRESS



To select this cable, *press* the F4(SELECT) key.

The cable will then be selected as illustrated below.

ICS-1 Imaging

PRESS



To show the parameters of this cable, *press* the F3(SHOW) key.

The following screen will then appear.

CABLE PARAMETERS	
Name:	ICS-1 imaging
Type:	IMAGING
Catalog No:	735900
Sections:	1
No. electrodes:	25
Spacing:	1.0
Grid:	X
Deletable:	YES
Units:	METER
Exit : F5 , Enter	
OK	





Important:

You cannot edit cable parameters, these are illustrated for information purposes only.

To exit the Cable Parameters screen, ***press*** the F5(OK) key to return to the Cable List screen.

PRESS



After selecting the cable, ***press*** the F5(OK) key to return to the Cable screen.



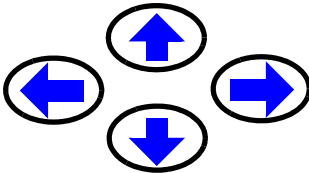
Detecting a new cable



During the course of your survey, you may want to add a new cable to the list of available cables.

Note:

If you turn your SARIS on and a cable is already connected to your multi-electrode cable module, the SARIS will automatically recognize this cable and add its parameters to the list of available cables.



In the Cable screen, *press* the arrow keys to bring your cursor to the Detect icon.

The word Detect will then be highlighted, as illustrated below.

Detect

Connect your new cable to the multi-electrode cable module.

PRESS

Enter ↵

Press the Enter key to access the new cable screen.

You will then be warned that the cable was added to the list of available cables. To view the list of available cables, see “Selecting a cable” on page 2-4.

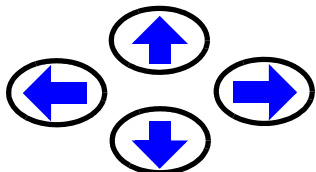
PRESS

Enter ↵

Press the Enter key to close this window and return to the Cable screen.



Deleting a cable

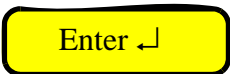


In the Cable screen, *press* the arrow keys to bring your cursor to the Delete icon.

The word Delete will then be highlighted, as illustrated below.

Delete

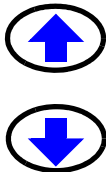
PRESS



Press the Enter key to access the cable delete screen.

The following screen will then appear.

CABLE LIST	
ICF ICS-1 imasins	
ICS-1 imasins	
	MARK
	OK
Select: ↑, F1, 2 Exit: F5	



Press the up or down arrow keys to bring the cursor to the chosen cable.



The cable will then be highlighted as illustrated below.

ICS-1 Imaging

PRESS




To select this cable, *press* the F4(SELECT) key.

The cable will then be selected as illustrated below.

ICS-1 Imaging

And the following screen will then appear.

CABLE LIST	
 ICS-1 imaging	
ICS-1 imaging	
	MARK
	DELETE
	CANCEL
Select: ↑, F1, 2 Exit: F5	

Note:

If you marked the wrong cable by mistake, you can always unmark a cable by pressing the F3(MARK) key again.

PRESS



To delete this cable, *press* the F4(DELETE) key.

PRESS



Press the F5(OK) key to return to the Cable screen.



Copying a cable



When you are daisy-chaining imaging cables, i.e. connecting several imaging cables end to end, you will need to create a new virtual cable comprising the totality of all the electrodes on the daisy-chained cables.



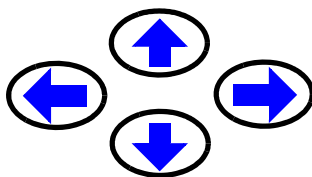
What is a virtual cable?

A virtual cable is a list of electrode positions. A virtual cable is treated like a real cable, but does not exist in a physical sense. For a detailed example on how to create a virtual cable, see “Creating a virtual cable, example 1” on page 2-15.



Hint:

When you are modifying your cable separation, i.e. using a smaller separation than the standard separation of your standard imaging cable, you will find it convenient to create a new virtual cable indicating the new electrode separation.

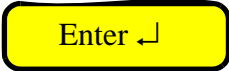


In the Cable screen, *press* the arrow keys to bring your cursor to the Copy icon.

The word Copy will then be highlighted, as illustrated below.

Copy

PRESS

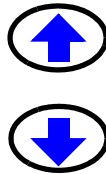


Press the Enter key.



The following screen will then appear.

CABLE LIST	
ICS-1 imaging	
	COPY
	CANCEL
Select: ↑↓, F1, 2 Exit: F5	



Press the up or down arrow keys to bring the cursor to the chosen cable.

The cable will then be highlighted as illustrated below.

ICS-1 Imaging

PRESS



To copy this cable, *press* the F4(COPY) key.
The following screen will then appear.

EDIT CABLE	
Name: ICS-1 imaging	
Type: IMAGING	
No. electrodes: 25	
Section: 1	
Spacings: 1.00	
Units: METER	
	FUNCT EDIT
	CANCEL
	SAVE
Sel: ↑↓ Ch9: Alpha, ↔	





Press the up or down arrow keys to bring the cursor to the chosen parameter you want to edit.

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Name:

Enter the cable name as an alphanumeric value; this can be up to 19 characters long.

Please refer to “Alphanumeric entry, example 2” on page 1-21 if you are unsure of the procedure.

Type:

Important:



You cannot edit your type of cable. This is indicated for information purposes only. All other cable parameters are fully editable.

No.electrodes:

The number of electrodes a cable has refers to the number of takeouts on the cable. In the case of two 25 takeout cable which are daisy-chained end to end, the total number of electrodes will then be 50 electrodes.

Enter the number of electrodes as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

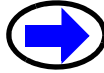


Section:

The number of sections usually depends on the type of cable: for instance a sounding will always need two cable sections because the sounding point is always in the center of the array. For imaging, the user can employ either one or two cables.

Important:

For the time being, only one-section imaging cable is supported.



Press the right or left arrow key to toggle between one or two s.

You will also notice the following icons appearing besides the number of sections:

For one section.



For two sections.

**Spacing:**

The base spacing between the electrodes can be set to any number as long as it is compatible with your cable. This value can be set from 0.1 to 10000.

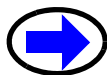
Hint:

You can use a smaller spacing with any imaging cable. Remember, however, to measure your electrode spacing precisely, otherwise your apparent resistivities could be erroneous.

Enter the electrode spacing as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

Units:

The units will be either in metres or in feet.



Press the right or left arrow key to toggle between meter and feet.

PRESS



Press the F3(FUNCT/EDIT) key to exit the EDIT mode.

PRESS



Once the cable parameter values are acceptable, *press* the F5(SAVE) key to accept them, save the new cable and to return to the cable list screen.

PRESS



Press the F5(CANCEL) key to exit to cable screen.

PRESS



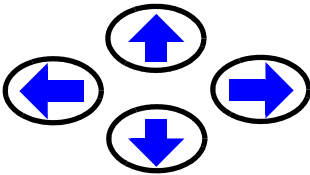
Press the SETUP key to return to the Set-Up screen.



Creating a virtual cable, example 1

As mentioned earlier, when you are daisy-chaining imaging cables, i.e. connecting several imaging cables end to end, you will need to create a new virtual cable comprising the totality of all the electrodes on the daisy-chained cables.

The following example illustrates a typical example of a virtual cable. Where a two standard ICS-1 cables with 25 takeouts each are daisy-chained and a virtual cable containing 50 electrodes is created.



In the Cable screen, *press* the arrow keys to bring your cursor to the Copy icon.

The word Copy will then be highlighted, as illustrated below.

Copy

PRESS

Enter ↵

Press the Enter key.

The following screen will then appear.

CABLE LIST	
ICS-1 imaging	
	COPY
	CANCEL
Select: ↑, F1, 2 Exit: F5	





Press the up or down arrow keys to bring the cursor to the chosen cable.



The cable will then be highlighted as illustrated below.

ICS-1 Imaging

PRESS



To copy this cable, *press* the F4(COPY) key.

The following screen will then appear.

EDIT CABLE	
Name:	ICS-1 imaging
Type:	IMAGING
No. electrodes:	25
Section:	1
Spacings:	1.00
Units:	METER
Sel : ↑↓ Ch9 : Alpha, ↔	
FUNCT EDIT CANCEL SAVE	



Press the up or down arrow keys to bring the cursor to the chosen parameter you want to edit.



PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.



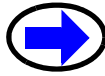
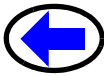
Name:

Enter the cable name “ICS-1 50 electrodes” as an alphanumeric value.

Please refer to “Alphanumeric entry, example 2” on page 1-21 if you are unsure of the procedure.

Type:

You will not change the type, it will remain an imaging cable.



Press the right or left arrow key to toggle between sounding and imaging.

**Important:**

You cannot edit your type of cable. This is indicated for information purposes only. All other cable parameters are fully editable.

No.electrodes:

The number of electrodes refers to the number of takeouts on the cable. In the case of two 25 takeout cable which are daisy-chained end to end, the total number of electrodes will then be 50 electrodes.

Enter the number of electrodes (50) as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

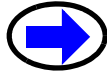
Section:

The number of sections usually depends on the type of cable: for instance a sounding will always need two cable sections because the sounding point is always in the center of the array. In this case you will be using only one section.



Important:

For the time being, only one-section imaging cable is supported.



Press the right or left arrow key to toggle between one or two sections.

You will also notice the following icons appearing besides the number of sections:

For one section.



For two sections.



Spacing:

The base spacing between the electrodes can be set to any number as long as it is compatible with your cable. This value can be set from 0.1 to 10000.



Hint:

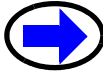
You can use a smaller spacing with any imaging cable. Remember, however, to measure your electrode spacing precisely, otherwise your apparent resistivities would be erroneous.



Enter the electrode spacing as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

Units:

The units will remain as metres.



Press the right or left arrow key to toggle between meter and feet.

PRESS



Press the F3(FUNCT/EDIT) key to exit the EDIT mode.

Your edit cable screen should resemble the following.

EDIT CABLE		
Name:	ICS-1 50 electrodes	
Type:	IMAGING	
No. electrodes:	50	
Section:	1	ca
Spacings:	1.00	
Units:	METER	
		FUNCT EDIT
		CANCEL
		SAVE
Sel : ↑↓←→ Chg : Enter #		

PRESS



Once the cable parameter values are acceptable, *press* the F5(SAVE) key to accept them, save the new virtual cable and to return to the cable list screen.



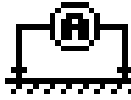
When you return to the Cable Select menu (see “Selecting a cable” on page 2-4), you will notice that your virtual cable is in the list of available cables, as illustrated below.

CABLE LIST	
ICS-1 imaging	
ICS-1 50 electrodes	
	SHOW
	SELECT
	OK
Select: ↑, F1, 2 Exit: F5	

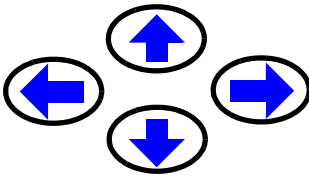
You can now select it as any other cable.



Transmitter screen



The transmitter screen allows the user to select the operating options for the transmitted current.



In the Setup screen, *press* the arrow keys to bring your cursor to the transmitter icon.

The word Transmitter will then be highlighted, as illustrated below.

Transmitter

PRESS

Enter ↵

Press the Enter key.

The following screen will then appear.

TRANSMITTER PARAMETERS SETUP	
Max. Current:	1000 mA
Min. Current:	1 mA
Noise threshold:	OFF
Max. fast measur. time:	1 sec
Max. IP cycles:	3
FUNC	
EDIT	
OK	
Sel: ↑↓ Chg: ←→	





Press the up or down arrow keys to bring the cursor to the chosen parameter you want to edit.

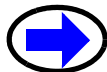
PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Max. Current:

The approximate maximum current value that you will be able to inject can be set to values of 50, 100, 200, 500, 750 and 1000mA.

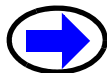


Press the right or left arrow key to set the value of the maximum current.

Min. Current:

In all instances, the SARIS will inject the minimum current possible, while still preserving the best data quality, in order to preserve battery power. You can also override this feature by setting a minimum current value which is higher than the SARIS would normally inject.

The approximate minimum current value that you will be able to inject can be set to values of 1, 2, 5, 10, 20, 50, 100, 200, 500, 750 and 900 mA.



Press the right or left arrow key to set the value of the minimum current.



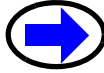
**Note:**

The SARIS will use approximate values for the current. You may very well have a current value slightly under the selected minimum.

Noise threshold:

The noise threshold is understood as the maximum variance of signal. The number of cycles that the measurement will take will depend on this threshold. The lower the threshold and higher the ambient electrical noise, the longer the measurement will take until it is acceptable.

The threshold can be set to OFF, LOW, MED or HI. These thresholds respectively correspond to maximum variance values of 0, 0.01, 0.1 and 0.5.



Press the right or left arrow key to set the value of the noise threshold.

Max. fast measur. time:

The maximum fast measurement time parameter determines what maximum length of time the unit will carry out a resistivity measurement for each reading. This applies only when operating in the “fast” resistivity mode; i.e. when using the square waveform. For a description of the waveform parameter, see “waveform” on page 2-59.

Enter the maximum measurement time as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.



Max. IP cycles:

The maximum number of IP cycles determines what maximum number of full cycles (ex. 8 seconds for a 2 sec cycle) the unit will carry out a resistivity/IP measurement for each reading. This applies only when operating in the IP mode; i.e. when using the time domain IP waveform. For a description of the waveform parameter, see “waveform” on page 2-59.

Enter the maximum number of IP cycles as a numeric parameter. The maximum number of IP cycles can be set from 3 to 100. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

Note:



The noise threshold always has precedence over any other setting, either the maximum fast measurement time or the maximum number of IP cycles. Therefore, the measurement will stop when the noise threshold is attained before either the maximum fast measurement time or the maximum number of IP cycles.

Hint:



If you want your SARIS to carry out the maximum number of IP cycles without stopping because of the noise threshold, set this threshold to 0.

PRESS



Press the F3(FUNCT/EDIT) key to exit the EDIT mode.

PRESS



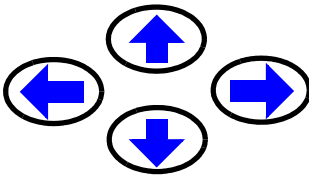
After you are satisfied with the chosen transmitter parameter values, *press* the F5(OK) key to accept them and to return to the Setup menu.



Options screen



The options screen allows you to select four options: the line frequency notch filter, the sleep time, whether to flag the warnings.



In the setup screen, **press** the arrow keys to bring the cursor to the options icon.

The word Options will then be highlighted, as illustrated below.

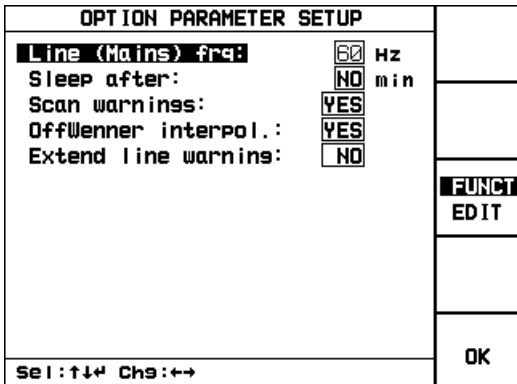


PRESS



Press the Enter key.

The following screen will then appear.



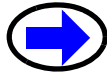
PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Line(mains) frq:

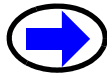
You have the choice between 60 and 50 Hz notch filters.



Press the right or left arrow key to select the power line frequency of the area in which your SARIS is being used.

Sleep after:

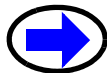
You can choose to have the unit turn itself off if no keys are pressed after 1, 2, 5, 10, 20 or 30 minutes. Furthermore, if you choose NO, the unit will not turn itself off unless you do so by pressing the OFF key.



Press the right or left arrow key to toggle between values.

Scan Warnings:

You can have your SARIS warn you if there are bad contacts or open loops when using intelligent electrode cables. The unit will automatically stop to allow you to verify the contacts or connect the appropriate electrode. If “NO” is selected, the SARIS will skip the problematic reading and continue with the measurements.

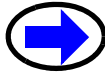


Press the right or left arrow key to toggle between YES and NO.



OffWenner interpol.:

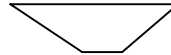
This function is no longer available.



Press the right or left arrow key to toggle between YES and NO.

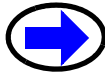
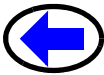
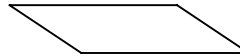
Extend line warning:

You can have your SARIS warn you if you want to continue your imaging section to obtain a full section, as illustrated below



In this case, Extend line warning is set to NO.

If Extend line warning is set to YES, the SARIS will prompt you to either extend the section to obtain a full section, as illustrated above or to stop and keep a section, as illustrated below.



Press the right or left arrow key to toggle between YES and NO.

PRESS



Press the F5(OK) key to return to the SETUP menu.



Presets setup

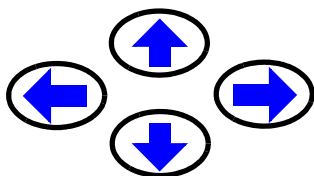


The presets menu allows you to choose a preset list of electrode positions. to be used with Wenner and Schlumberger soundings, when you are not using a sounding cable. The preset positions can be thought of as a virtual sounding cable.



Note:

Presets have no use in imaging. An imaging cable has takeouts at constant intervals, therefore using a preset list of positions in imaging is redundant; the next position is attained simply by incrementing from the keypad.

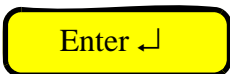


In the Setup screen, *press* the arrow keys to bring your cursor to the presets icon.

The word Presets will then be highlighted, as illustrated below.

Presets





PRESS



Press the Enter key to access the presets menu.



The following screen will then appear.

PRESET	
 Select	 New
 Delete	 Copy
Sel : ←↑↓→ GoTo : Enter Exit : F5	
OK	

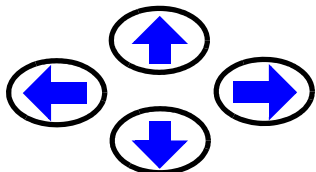
You have then the choice to either select a preset already created, create a new preset, delete an existing preset from the list of available presets or copy an existing preset for editing.



Creating a new preset



During the course of your survey, you may want to create a new preset list of electrode positions.

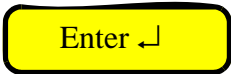


In the Preset screen, *press* the arrow keys to bring your cursor to the New icon.

The word New will then be highlighted, as illustrated below.

New

PRESS



Press the Enter key.

The following screen will then appear.

NEW PRESET	
Name: <input type="text"/>	POSITS
TYPE: <input type="text" value="WENNER"/>	
No. points: <input type="text" value="20"/>	
	FUNCT
	EDIT
	CANCEL
	SAVE
Sel: ↑↓ Chg: ←→	



You will then be prompted to enter the name of your new preset list of positions, its type and the number of points in the preset list.

Note:

You will already be in the edit mode, therefore there will be no need to press the F3(FUNCT/EDIT) key to access the edit mode.



Press the up or down arrow keys to bring the cursor to the chosen parameter you want to edit.

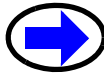
Name:

Enter the preset name as an alphanumeric value; this can be up to 19 characters long.

Please refer to “Alphanumeric entry, example 2” on page 1-21 if you are unsure of the procedure.

Type:

You can choose either Wenner or Schlumberger as your sounding type.



Press the right or left arrow key to toggle between WENNER and SCHLUM.

No.points:

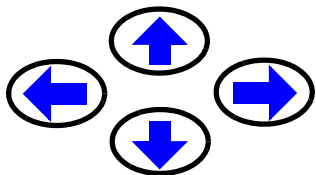
The number of points on a preset refers to the number of electrode spacings in the preset list.



Enter the number of spacings as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.



Press the F1(POSITS) key to access the position table.



Press the arrow keys to bring your cursor to selected location in the table.

Enter the spacings as numeric parameters. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

As an example, a completed Schlumberger 10 position preset table would resemble the following.

PRESET POINT POSITIONS		
No	ab/2(m)	mn/2(m)
1	3.	1.
2	4.	1.
3	6.	1.
4	8.	1.
5	10.	1.
6	15.	1.
7	15.	5.
8	20.	5.
9	25.	5.
10	30.	5.

FUNCT

EDIT

CANCEL

OK

Sel: ↑↓← Ch9:Enter #





Note:

If your table contains more than 10 spacings, you will be able to scroll through the pages by using either the F2(NEXT PAGE) or F1(PREV PAGE) keys.

PRESS



Press the F5(OK) key to return to the New Preset screen.

PRESS

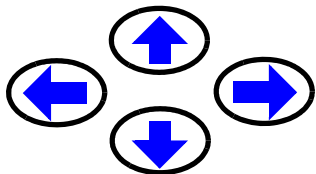


Press the F5(SAVE) key to save the new preset table of spacings and return to the Preset screen.



Selecting a preset

If you have already entered and saved a preset list of electrode spacings, you can now use it as you would a cable.

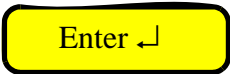


In the Preset screen, *press* the arrow keys to bring your cursor to the Select icon.

The word Select will then be highlighted, as illustrated below.

Select

PRESS

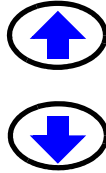


Press the Enter key to access the list of available presets.

A list of available presets will then appear, similar to the following screen.

PRESET LIST	
MGS	
	SHOW
	SELECT
	OK
Select: ↑, F1, 2 Exit: F5	





Press the up or down arrow keys to bring the cursor to the chosen preset.

The preset will then be highlighted as illustrated below.

MGS

PRESS



To select this preset, *press* the F4(SELECT) key.

The preset will then be selected as illustrated below.

 **MGS**

PRESS



To show the positions of this preset, *press* the F3(SHOW) key.

The following screen will then appear.

PRESET PARAMETERS		
Name:	MGS	
Type:	SCHLUM	
No. points:	26	
Spacing:	RANDOM	POS I
Deletable:	YES	
Exit : F5 , Enter		OK

Setup





Note:

You cannot edit preset parameters, they are displayed for information purposes only.

PRESS



Press the F3(POSITS) key to access the position table.

As an example, a completed Schlumberger 10 position preset table would resemble the following.

PRESET POINT POSITIONS		
No	ab/2(m)	mn/2(m)
1	3.	1.
2	4.	1.
3	6.	1.
4	8.	1.
5	10.	1.
6	15.	1.
7	15.	5.
8	20.	5.
9	25.	5.
10	30.	5.

Page:F1,F2 Exit:F5

NEXT PAGE

OK



Note:

If your table contains more than 10 electrode positions, you will be able to scroll through the pages by using either the F2(NEXT PAGE) or F1(PREV PAGE) keys.

PRESS



Press the F5(OK) key to return to the Preset Parameters screen.

PRESS



To exit the Preset Parameters screen, *press* the F5(OK) key to return to the Preset List screen.



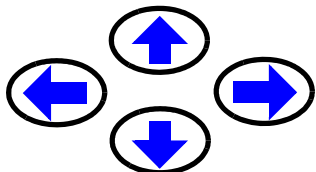
PRESS



After having selected a preset table, *press* the F5(OK) key to return to the Preset screen.



Copying a preset

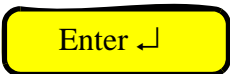


In the Cable screen, *press* the arrow keys to bring your cursor to the Copy icon.

The word Copy will then be highlighted, as illustrated below.

Copy

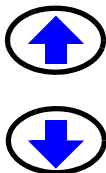
PRESS



Press the Enter key to access the preset copy menu.

The following screen will then appear.

PRESET LIST	
DEF MGS	
	COPY
	CANCEL
Select: ↑↓, F1, 2 Exit: F5	



Press the up or down arrow keys to bring the cursor to the chosen preset.

The preset will then be highlighted as illustrated below.

MGS



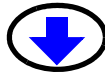
PRESS



To copy this preset, *press* the F4(COPY) key.

The following screen will then appear.

EDIT PRESET		POSITS
Name: MGS		
TYPE: SCHLUM		
No. points: 28		
		FUNCT
		EDIT
		CANCEL
		SAVE
Sel : ↑↓ Chg : ←→		



Press the up or down arrow keys to bring the cursor to the parameter you want to edit.

Name:

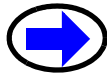
Enter the cable name as an alphanumeric value; this can be up to 19 characters long.

Please refer to “Alphanumeric entry, example 2” on page 1-21 if you are unsure of the procedure.

Type:

You can choose either Wenner or Schlumberger as your sounding type.





Press the right or left arrow key to toggle between WENNER and SCHLUM.

No.points:

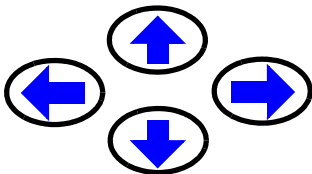
The number of points on a preset refers to the number of electrode positions in the preset list.

Enter the number of electrode positions as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

PRESS



Press the F1(POSITS) key to access the position table.



Press the arrow keys to bring your cursor to selected location in the table.

Enter the electrode positions as numeric parameters. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.



As an example, a completed Schlumberger 10 position preset table would resemble the following.

PRESET POINT POSITIONS		
No	ab/2(m)	mn/2(m)
1	3.	1.
2	4.	1.
3	6.	1.
4	8.	1.
5	10.	1.
6	15.	1.
7	15.	5.
8	20.	5.
9	25.	5.
10	30.	5.

Sel: ↑↓←

Chg: Enter

✱

FUNCT

EDIT

CANCEL

OK



Note:

If your table contains more than 10 electrode positions, you will be able to scroll through the pages by using either the F2(NEXT PAGE) or F1(PREV PAGE) keys.

PRESS



Press the F5(OK) key to return to the Edit Preset screen.

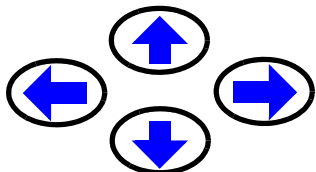
PRESS



Press the F5(SAVE) key to save the new preset table of positions and return to the Preset screen.



Deleting a preset

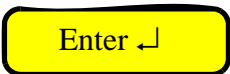


In the Preset screen, *press* the arrow keys to bring your cursor to the Delete icon.

The word Delete will then be highlighted, as illustrated below.

Delete

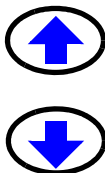
PRESS



Press the Enter key to access the preset delete screen.

A list of available presets will then appear, similar to the following screen.

PRESET LIST	
<div style="border: 1px solid black; padding: 2px;"> MGS MGS Copy </div>	
	MARK
	OK
Select: ↑, F1, 2 Exit: F5	



Press the up or down arrow keys to bring the cursor to the chosen preset. For instance the copy of the preset you had defined in the New Preset section and copied in the Copy Preset section.



The preset will then be highlighted as illustrated below.

MGS Copy

PRESS



To select this cable, *press* the F3(MARK) key.

The cable will then be selected as illustrated below.

x MGS Copy



Note:

If you marked the wrong preset by mistake, you can always unmark a preset by pressing the F3(MARK) key again.

PRESS



To delete this preset, *press* the F4(DELETE) key.

PRESS



Press the F5(OK) key to return to the Preset screen.

PRESS



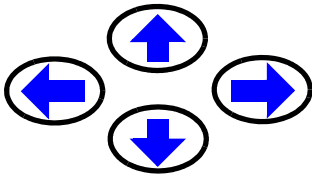
Press the SETUP key to return to the Set-Up screen.



Service screen



The service screen allows you to view the addresses of the Scintrex offices throughout the world, upgrade your current software version, and run a diagnostic program to detect and correct data base errors.

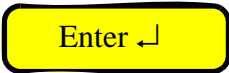


In the set-up screen, *press* the arrow keys to bring the cursor to the service icon.

The word Service will then be highlighted, as illustrated below.

Service

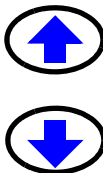
PRESS



Press the ENTER key.

The following screen will appear.

SERVICE MENU	
Service and support	
Software upgrade	
Data base errors	
Enable factory tests	
	OK
Select:↑↓ GoTo:Enter Exit:F5	



Press the up or down arrow keys to toggle between the available options.



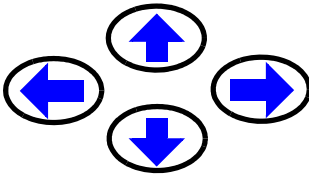
PRESS



Press the ENTER when you have chosen which operation you want to perform.

Service and support

The service and support item lists the locations of our offices worldwide.



Press the arrow keys to bring the cursor to the service and support line.

The phrase “service and support” will then be highlighted, as illustrated below.

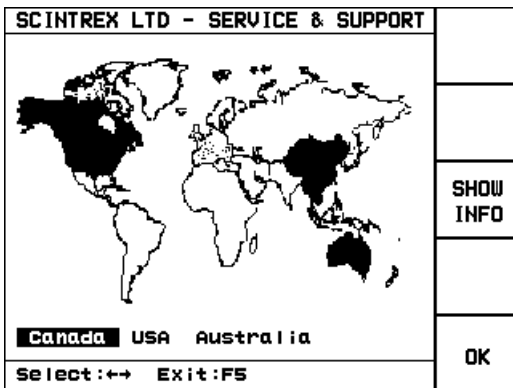
Service and Support

PRESS



Press the ENTER key.

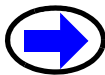
The following screen will then appear.



Setup



Canada



To find contact information about the Canadian office, use the right or left arrows to toggle to the word Canada.

The word Canada will then be highlighted, as illustrated below.

Canada

PRESS



Press the F3(SHOW INFO) key to show the information about this office.

The following screen will appear.

SCINTREX LTD - SERVICE & SUPPORT		
-		
SCINTREX LTD Canada (Head office)		
222 Snidercroft Road Concord, Ontario L4K 1B5		
Tel: (905)-669-2280 Fax: (905)-669-5132 Web: www.scintrexltd.com		SHOW INFO
Press F3 to close the window		
↓		
Canada USA Australia		
Select:←→ Exit:F5		OK

PRESS



Press the F3(SHOW INFO) key to close this window.

You can repeat the above-mentioned steps for our USA and Australia offices.

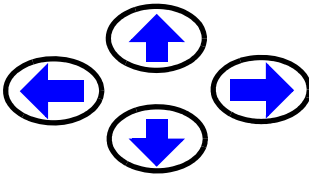


Software upgrade

The software upgrade selection allows you to upgrade your SARIS to the current software version. For a complete description of the upgrade procedure, refer to “Reprogramming your SARIS” on page G-9.

Database errors

The SARIS detects and corrects data base errors. Under most circumstances, a database error will not affect the integrity of your data. Furthermore, the SARIS is programmed to normally detect and correct database errors on its own, without user intervention. The database error detection feature provides a detailed list of the detected errors which is mainly for the use of customer service personnel. As a user, you need not be concerned by this feature.



Press the arrow keys to bring the cursor to the data base errors menu.

The phrase “data base errors” will then be highlighted, as illustrated below.

Data base errors

PRESS

Enter ↵

Press the ENTER key.



If no errors are detected, the following screen will then appear.

DATA MEMORY ERRORS	
No errors detected!	
Exit: F5	OK

If database errors are detected, they will be listed. These may be required by Customer Service personnel when you contact your nearest Scintrex Service & Support office. See “Service and support” on page 2-45.

PRESS



Press the F5(OK) key to return to the SETUP menu.



Note:

You cannot access the Enable factory tests menu; this is reserved for Scintrex Customer Service personnel.



GPS screen



This function is no longer available



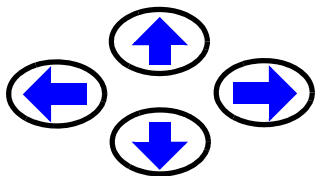
Clock screen

The clock screen allows you to adjust the internal real-time clock.



Note:

Time and date as determined by this clock will be included in the data files.

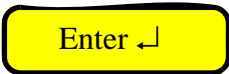


In the Setup screen, *press* the arrow keys to bring the cursor to the clock icon.

The word Clock will then be highlighted, as illustrated below.

Clock

PRESS

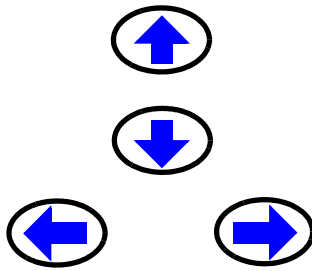


Press the ENTER key



The following screen will then appear.

REAL TIME CLOCK SETUP	
HH:MM:SS	02:23:11
YYYY/MM/DD	1999/01/01
	FUNCT EDIT
	OK
Sel: ↑↓ ← → Ch9:Enter *	



PRESS



Press the up or down arrow keys to move between the time and the date.

Press the right or left arrows to move between either of the three parameters ex. Hours, minutes or seconds.

Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Enter the time as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

Repeat the previous procedure for the minutes and seconds values.

PRESS



When you are finished editing the parameters, *press* the F5(OK) key to return to the SETUP menu.



Survey screen

The survey screen allows you to create the survey header included in the data file. This will include the survey name, the name of the client, the name of the operator, the grid reference point as well the survey parameters such as the units, electrode array, cable used and the waveform.

PRESS



To access the Survey screen, *press* the SURVEY key.

The following screen will then appear.

SURVEY HEADER		PARAMS
SURVEY:	<input type="text"/>	READ GPS
Client:	<input type="text"/>	
Operator:	<input type="text"/>	
GRID REFERENCE:		FUNCT
Eastings:	<input type="text"/> 0.	EDIT
Northings:	<input type="text"/> 0.	CANCEL
Azimuth:	<input type="text"/> 0.	
Altitude:	<input type="text"/> 0.	
UTM Zone:	<input type="text"/> 0.	
UTC Diff.:	<input type="text"/> 0.	
Sel : ↑↓← Ch9 : Alpha : ↔		OK



Press the up or down arrow keys to bring your cursor to the parameter you want to modify.

The selected parameter will then be highlighted as illustrated below.

Survey:

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.



Enter the survey name as an alphanumeric value; this can be up to 19 characters long.

Please refer to “Alphanumeric entry, example 2” on page 1-21 if you are unsure of the procedure.



Important:

The Survey name is required for any data file. Moreover no duplicate names will be accepted.

PRESS

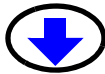


When the survey name is correct, *press* the ENTER key to acknowledge your choice.

Optional parameters

The remaining parameters in this screen, i.e. client name, operator and the grid reference point parameters are optional, i.e. you can choose to not enter any value for these parameters.

Should you wish to enter values follow the same steps as mentioned for the survey name.



Press the up or down arrow keys to bring your cursor to the next parameter you want to modify.

Optional header parameters

Client:

The client name can be any alphanumeric value up to 19 characters long.



Operator:

The operator name can be any alphanumeric value up to 19 characters long.

Optional survey reference point parameters

Easting:

The easting is the east coordinate of your grid reference point. This number can be set to any value from -999999 to 999999 (or E/W).

Northing:

The northing is the north coordinate of your grid reference point. This number can be set to any value from -99999999 to 99999999 (or N/S).

Azimuth:

The azimuth value is the direction, clockwise from true North, of your grid system.

Altitude:

The altitude is the value of the elevation of your grid reference point, either above mean sea level or relative to any particular point. This number can be set to any value from ± 50000 .

UTM Zone:

The UTM zone of your grid reference point. Consult the topographic map of your sector.

UTC Diff.:



The difference between your time zone and UTC time (Coordinated Universal Time).

PRESS



When you are finished editing the parameters, *press* the F3(FUNCT/EDIT) key to exit the EDIT mode.



Survey parameter setup



The survey parameter setup screen allows you to set the grid system, the survey units, whether you choose to do a sounding or a profile, which waveform you are using as well as the array and cable chosen.

PRESS



In the survey header screen, *press* the F1(PARAMS) key to access the Survey Parameter screen.

The following screen will then appear.

SURVEY PARAMETER SETUP		ARRAY LIST
Grid system:	NSEW	CABLE LIST
Units:	METER	
Sound/Prof/Bhole:	PROFILE 	FUNCT EDIT
Array:	WENNER	
Waveform:	SQUARE 	OK
Sel : ↑↓ Chg : ←→		



Press the up or down arrow keys to bring your cursor to the parameter you want to modify.

The selected parameter will then be highlighted as illustrated below.

Grid System:

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.



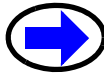
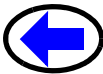
Grid System:

The grid system can either be NSEW or XY. This means that your grid can be represented with or without cardinal point references.

Note:



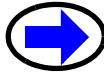
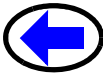
In a NSEW grid system, north-south oriented lines will have an E or W suffix, depending if they are located either east or west of the grid origin. Furthermore, east-west lines will have a N or S suffix, depending if they are located either north or south of the grid origin.



Press the right or left arrow key to set the grid system.

Units:

The units are either metres or feet.



Press the right or left arrow key to set the units.

Sounding/Prof/Bhole:

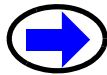
You can select the initial array to be used in the survey. This array is either a sounding array or an imaging array.

Note:



The initial array type can be changed at any moment during your survey. You are not bound by your initial selection.





Press the right or left arrow key to set the survey type to either sounding or profile.

If you choose **Profile**, an icon illustrating a typical profiling electrode array will appear at the right of the highlighted word profile, as illustrated below.

Profile:



If you choose **Sounding**, an icon illustrating a typical sounding electrode array will appear at the right of the highlighted word sounding, as illustrated below.

Sounding:



Array:

You can choose the array type to be used.

Note:



There are several types of arrays for sounding and profiling. The available arrays for sounding are:

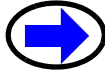
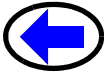
- Schlumberger
- Wenner
- Dipole-dipole

The available arrays for profiling are:

- Schlumberger
- Wenner
- Dipole-dipole
- Pole-dipole
- Axial Pole-pole



- Lateral Pole-pole
- Gradient



Press the right or left arrow key to set the array type.

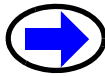
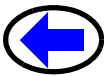
Waveform:

You can choose to use either a standard square waveform, or if you wish to also acquire IP data, you can also choose a Time Domain IP waveform.



Note:

The standard square waveform is recommended when you are only interested in acquiring resistivity data. The repetition rate of the squarewave signal is much higher than the rate of the IP waveform. Thus your data will be acquired much faster.



Press the right or left arrow key to set the type of waveform.

When you choose a time-domain IP waveform, your survey parameter setup screen, the on time parameter will pop-up, as illustrated below.

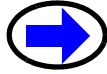
Waveform:
On Time:

TDIP 
 sec



On Time:

When you chose a Time Domain IP waveform, you will also be prompted to choose the on time of the TDIP signal, either 1, 2, 4 or 8 seconds.



Press the right or left arrow key to set the value of the on time.



Important:

The IP should never be used for mineral exploration as the number of windows (4) is insufficient to obtain a reliable IP reading.



Survey array setup

Within the survey parameter screen, you can also choose the initial array for your survey through the F1 key. As mentioned previously, this can also be done through the Survey Parameter Setup screen. See “Arrays” on page 2-58.

PRESS



Within the survey parameter setup screen, *press* the F1 (ARRAY LIST) key to access the Array Setup screen.

If you had previously chosen Sounding as your survey method in the survey parameter setup screen, the following screen will then appear.

SOUNDING SELECT	
Schlumberger Soundings	PROF. ARRAYS
Wenner Soundings	B. HOLE ARRAYS
Dipole-Dipole Soundings	
	MARK
	OK
Select: ↑↓ Change: F4 Exit: F5	

Proceed to “Sounding arrays” on page 2-62.



If you had previously chosen Profiling as your survey method in the survey parameter setup screen, the following screen will then appear.

PROFILE SELECT	
Wenner Profile	SOUND. ARRAYS
Dipole-Dipole Profile	B. HOLE ARRAYS
Pole-Dipole Profile	
Pole-Pole Axial Profile	
Pole-Pole Lateral Profile	
Schlumberger Profile	
Gradient Profile	
User Profile	MARK
Select: ↑↓ Change:F4 Exit:F5	
OK	

Proceed to “Profiling arrays” on page 2-63.



Note:

You can also toggle between sounding and profiling by pressing the F1 key. The borehole logging arrays are selected by pressing the F2 key.

Sounding arrays



Press the up or down arrow keys to bring the cursor to either sounding array.

The array will then be highlighted as illustrated below.

Wenner Sounding



PRESS



To select this sounding array, *press* the F4(MARK) key.

The selected sounding method will then be marked as illustrated below.

 **Wenner Sounding**

PRESS



After choosing the array, *press* the F5 (OK) key to return to the Survey Parameter Setup screen.

Profiling arrays



Press the up or down arrow keys to bring the cursor to either profiling array.

The profiling array will then be highlighted as illustrated below.

 **Wenner Profile**

PRESS



To select this profiling array, *press* the F4 (MARK) key.

The selected profiling array will then be marked as illustrated below.

 **Wenner Profile**

PRESS



After choosing the array, *press* the F5 (OK) key to return to the Survey Parameter Setup screen.



Borehole logging arrays

This function is no longer available.



Survey cable setup

Within the survey parameter screen, you can also choose the cable or the preset for your survey. This can also be done through the Setup screen. See “Cable setup” on page 2-2, or “Presets setup” on page 2-28.

**YOU HAVE NOW COMPLETED YOUR
SET-UP**





3

Field Operation

By now you have decided what type of resistivity surveys you want to perform and have already setup your SARIS accordingly. Now, we will go on to next step where you will carry out a survey, add macro notes, recall data, dump your data to your PC and finally clear the memory for future use.

We shall give thorough examples of a Schlumberger sounding and a dipole-dipole profile. For purposes of briefness and clarity, the other sounding and profiling arrays shall be dealt with succinctly.



Field setup

The following paragraphs illustrate how to connect the SARIS unit and its electrodes. Proceed to “Resistivity surveys” on page 3-4 if you are already familiar with the field setup of a resistivity survey.

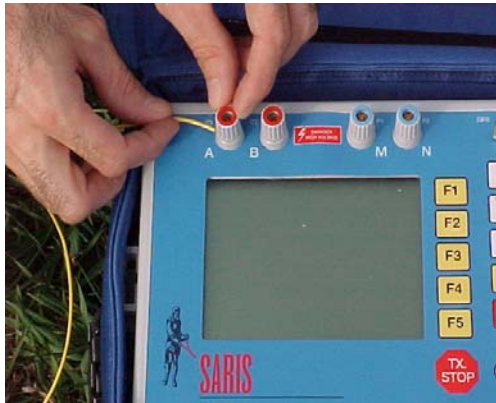
Manual survey

First, the electrodes are positioned in their proper place along the survey line. For instance, for a Schlumberger sounding with the first AB/2 of 25m and the first MN/2 of 5m, electrodes would be located respectively 5 and 25 m on either side of the SARIS.

These electrodes are then connected to the SARIS using wire, as illustrated below.



The wires are then connected to the binding posts of the SARIS.



Automated survey

First, the intelligent electrode cables are connected to the multi-electrode interface module, as illustrated below.



The electrodes are then connected to the intelligent electrode cables.



Resistivity surveys



Note:

Should one of the potential wires become momentarily disconnected during the measurement, the Standard Deviation of your measurement will become very high. Refer to page 3-11 or page 3-23 for an illustration of the standard deviation. If one of the current wires should become momentarily disconnected during the measurement, the measurement will immediately stop.



Note:

If you are performing a Wenner sounding using automated sounding cables, you must connect the center electrode to the center binding post, as illustrated below. The center electrode will be located at your sounding point.



Center binding post



Example 1: Schlumberger sounding

The following chapter illustrates how to perform a Schlumberger sounding. If you have not already setup your SARIS for a Schlumberger sounding, or if you are unfamiliar with the setup, please see “Instrument Setup” on page 2-1.

PRESS



To access the sounding/profile screen *press* the Sounding/Profile key.

The following screen will then appear.

SOUNDING: SCHLUMBERGER		ARRAYS
ID:	1	READ GPS FUNCT EDIT CANCEL OK
Eastings:	619919E	
Northings:	4850017N	
Altitude:	193.8	
Azimuth:	0.	
Scan mode:	NO CABLE	
GPS Readings Acquired		



Note:

The ID parameter identifies your particular sounding with a number in the survey. A survey can contain as many soundings and profiles as you want, you are only limited by the amount of memory available in the SARIS. Furthermore, no new sounding will be saved until the F5(OK) key is pressed.

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.



Easting:

The east coordinate of your sounding reference point. The value of this parameter is relative to the position of your survey reference point. For an explanation of the easting of the survey reference point, see “Optional survey reference point parameters” on page 2-54.

Northing:

The north coordinate of your sounding reference point. The value of this parameter is relative to the position of your survey reference point. For an explanation of the easting of the survey reference point, see “Optional survey reference point parameters” on page 2-54.

Azimuth:

The direction clockwise from true North, of your sounding. The value of this parameter can be either relative to true north or to your grid reference azimuth. For an explanation of the grid reference azimuth, see “Optional survey reference point parameters” on page 2-54.

Altitude:

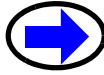
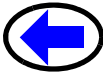
The elevation of your sounding reference point, either above mean sea level or relative to the grid reference point. For an explanation of the survey reference point altitude, see “Optional survey reference point parameters” on page 2-54.



Enter the values of your Easting, Northing, Azimuth and Altitude parameters as numeric parameters. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

Scan mode:

You can choose to carry out your survey either manually (NO CABLE) by moving the electrodes after each measurement, or automatically (CABLE-AUTO) in conjunction with the intelligent electrode cable and the intelligent electrode interface module.



Press the right or left arrow key to toggle between NO CABLE and CABLE-AUTO.

PRESS



When these sounding parameters are acceptable, *press* the F5(OK) key to save your parameters and exit the SOUNDING: SCHLUMBERGER screen. You are now in the Schlumberger Sounding electrode setup screen.



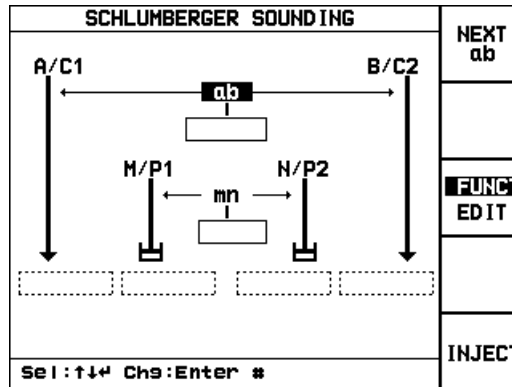
Note:

You must now enter sounding parameters such as the first ab and mn values. These are expressed either in meters or in feet as per the Units display in the Survey Parameter Setup screen. See “Survey parameter setup” on page 2-56.

If you had not chosen the proper sounding cable or had not chosen a preset list of positions, you will be warned to do so by the SARIS. To close this window, *press* the ENTER key.



The following screen will then appear.



Automated cable

If you had already connected an automated Schlumberger sounding cable to the multi-electrode interface module, you will notice that the cable parameters will automatically be loaded upon the beginning of the sounding.

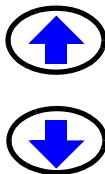
Proceed immediately to “Beginning a Schlumberger sounding” on page 3-10.

Preset table of positions

If a preset table of electrode positions had been chosen (see “Presets setup” on page 2-28), you will notice that the first value in table will automatically be loaded upon the beginning of the sounding.

Proceed immediately to “Beginning a Schlumberger sounding” on page 3-10.

Manual entry of electrode positions



In the Schlumberger Sounding Electrode Parameter Setup screen, *press* the up or down arrow keys to bring the cursor to the ab parameter.



The word **ab** will then be highlighted, as illustrated below.

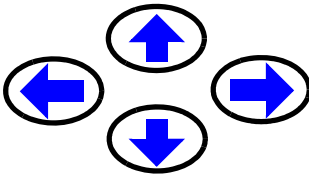
ab

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Enter the value of **ab** as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.



Press the arrow keys to bring the cursor to the **mn** parameter.

The word **mn** will then be highlighted, as illustrated below.

mn

Enter the value of **mn** as a numeric parameter.

PRESS



Press the ENTER key to acknowledge your choices. The cursor will then move back to the **ab** parameter.

PRESS



Press the F3(FUNCT/EDIT) key to exit the EDIT mode.

PRESS



Press the F5(OK) key to save the changes to your new sounding.



Beginning a Schlumberger sounding

PRESS



Within the Schlumberger Sounding Electrode setup screen, *press* the F5(INJECT) key to start injecting current.



Note:

In case of an emergency, you can interrupt the injection of current either by pressing and holding the Tx Stop key until an acknowledgement message appears,



This will shut down the transmitter, and the measurement will be discarded.

or,

By pressing the F4(STOP) key, you will stop the reading at the end of the current cycle.



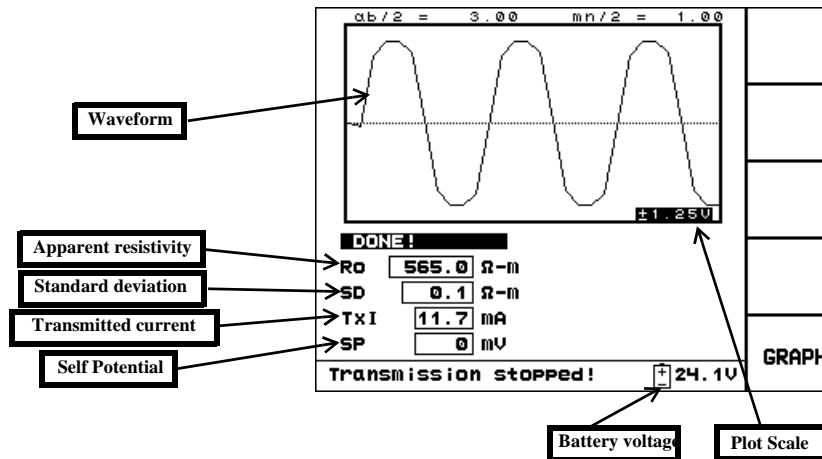
Once you have pressed the F4(STOP) key, you can accept or reject the reading.



After the maximum measurement time is attained or the signal dispersion gets below the noise threshold, the measurement will automatically stop. The unit will then display the following message.

DONE !

as well as the reading, within the following screen.



Once the measurement is done, the values of the apparent resistivity (R_o), standard deviation of the resistivity measurement (SD), transmitted current (TxI) and self-potential (SP), battery voltage, vertical plot scale, ab and mn are illustrated. During the measurement and also once the measurement is completed, the SARIS also displays the voltage waveform at the MN electrodes.

Taking the next measurement: Schlumberger sounding

In the automatic mode, i.e. with mode set to CABLE-AUTO, with an automated sounding cable and the multi-electrode interface module attached, the next reading will be performed automatically without user intervention. Therefore if you are in



automatic mode, this section can be skipped and you should *proceed* to “Inverting your Schlumberger sounding” on page 3-13.

PRESS



To repeat a reading or to proceed to the next sounding measurement, *press* the reading key.

You can now proceed to take the next measurement either by:

- If a preset table of electrode positions has been chosen

PRESS



By *pressing* the F1(next ab) key. The SARIS will automatically insert the next set of ab and mn values from the preset table, or

OR

- If not

PRESS



By *pressing* the F3(FUNCT/EDIT) key to choose the EDIT mode and manually entering the new ab and mn values.

PRESS



Press the F5(INJECT) key to start injecting current.

You can repeat the procedures in this section until you have obtained all the points on your sounding curve.

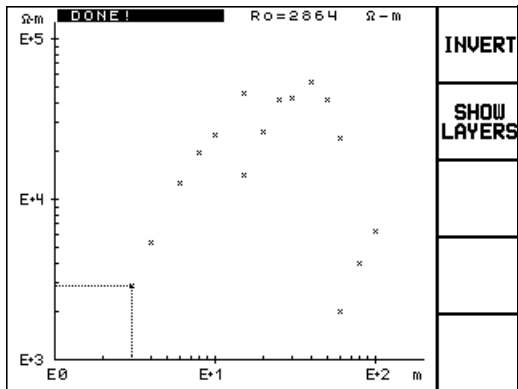


Inverting your Schlumberger sounding

PRESS



To view the sounding curve, *press* the F5(GRAPH) key, within the measurement screen. A typical sounding curve should resemble the following illustration.



PRESS

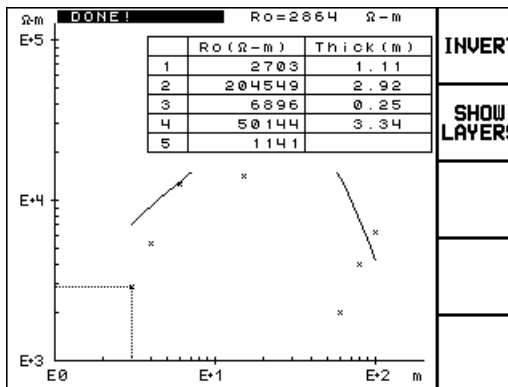


To obtain the layered resistivity values, *press* the F1 (INVERT) key.

You will then be prompted to choose the number of estimated layers. This can be any number from 0 to 5. Should you choose 0, the SARIS will define the optimum number of layers for you.



The inversion results will then be displayed as follows.



Note:

The inversion software of the SARIS, called ISSETAB does not use a starting model. Only the field data is necessary. You can invert your sounding data by using other inversion programs currently available on the market. ISSETAB was developed by Daniel Doucet, Consulting Geophysicist¹.

PRESS

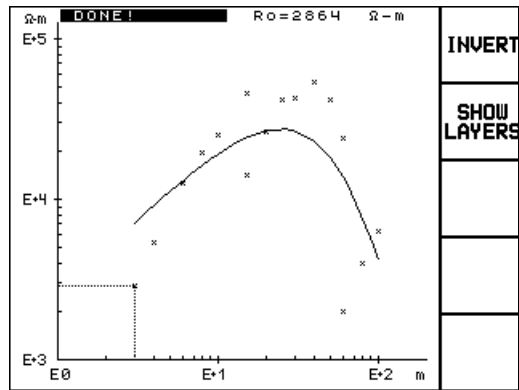


To illustrate the sounding curve without the layer parameters, *press* the F2(SHOW LAYERS) key.

1. Complete address: Daniel Doucet, Bureau 104, 30 rue des Violettes, 76350 Oissel, FRANCE
tel: (+33) 608-05-98-40.



The sounding curve alone will then appear as illustrated below.



Note:

This accuracy of the sounding inversion results will be indicated by the goodness of fit of the sounding curve versus the field results.

You are now ready to proceed with your next sounding or profile



Example 2: Wenner profiling

The following chapter illustrates how to perform a Wenner profile. If you have not already setup your SARIS for a Wenner profile, or if you are unfamiliar with the setup, please see “Instrument Setup” on page 2-1.

PRESS



To access the sounding/profile screen *press* the Sounding/Profile key.

The following screen will then appear.

PROFILE: WENNER		ARRAYS
ID:	3	
Line direction:	N-S	
Line position/Y:	0.	
Altitude:	0.	
1st Station/X:	0.	FUNCT
Station step:	1.	EDIT
Base spacing(a):	1.	CANCEL
Max. n:	1	
Scan mode:	MANUAL	OK
Sel : ↑↓←→ Chs : ↔		



Note:

The ID parameter identifies your particular profile with a number in the survey. A survey can contain as many soundings and profiles as you want, you are only limited by the amount of memory available in the SARIS. Furthermore, no new profile will be saved until the F5(OK) key is pressed.

PRESS

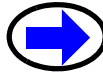
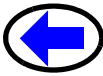


Press the F3(FUNCT/EDIT) key to choose the EDIT mode.



Line Direction:

The cardinal direction of your profile. If your profile is in a North-South direction, then you would choose N-S. If your profile is in an East-West direction, then you would choose E-W. You can also choose to identify direction according to the azimuth from true (AZ). For an explanation of the survey reference azimuth, see “Optional survey reference point parameters” on page 2-54.



Press the right or left arrow key to toggle between N-S, E-W and AZ.

Line Position/Y:

The position of your profile relative to the Y axis of your survey reference point.

Altitude:

The elevation of the position of the first electrode in your profile, either above mean sea level or relative to the survey reference point. For an explanation of the survey reference point altitude, see “Optional survey reference point parameters” on page 2-54.

Azimuth:

The azimuth of your profile, either relative to true north or to your grid reference azimuth. This parameter appears on the screen only if you have chosen AZ as the Line Direction. For an explanation of the grid reference azimuth, see “Optional survey reference point parameters” on page 2-54.



1st Station/X:

The position of the first electrode in your profile relative to the survey reference point.

Station Step:

The station increment that you want your profile to increase by. The default value is 1.

Base Spacing:

The base spacing is usually the minimum spacing between each successive electrode. For imaging cables, this will be the spacing between two adjacent electrodes. In the manual mode, it will usually be the smallest possible spacing. Electrode spacings, for example “a” in the Wenner array when incremented through the F2(NEXT a) key will rotate through values given by $a=n*\text{base spacing}$, where n is an integer between 1 and Max n as defined in the next paragraph. The default value for the base spacing is 1.



Note:

The arbitrary value of “a” can nevertheless be entered in the reading screen, independently of any selection of Base spacing or Max n.

Max. n:

In the cable mode, this will be the maximum number of separations for which readings will be taken. The actual separations will vary according to the array selected. For example, in the Wenner array, separations a for $1*\text{base spacing}$ to $\text{Max } n*\text{base spacing}$ will be read. In the manual mode, this value

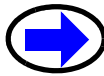
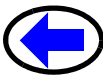


will only affect the maximum spacing value. For a complete description of imaging techniques and arrays, see Appendix F, “Imaging Techniques”.

Enter the values of the Line position/Y, Altitude, Line Azimuth, 1st Station/X, Station step, Base spacing (a) and Max. n parameters as numeric parameters. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.

Scan mode:

You can choose to carry out your survey either manually, (NO CABLE) by moving the electrodes after each measurement, or automatically (CABLE-AUTO) in conjunction with the intelligent electrode cable and the intelligent electrode interface module.



Press the right or left arrow key to toggle between NO CABLE and CABLE-AUTO.

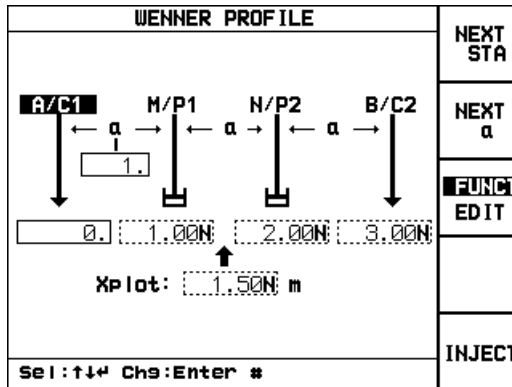
PRESS



Having selected the profiling parameter, **press** the F5(OK) key to exit the PROFILE: WENNER screen. You are now in the Wenner Profile electrode setup screen.



The following screen will then appear.



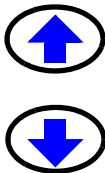
You must now enter your “a” separation, as well as the position of your first electrode (A/C1). These are expressed either in meters or in feet as per the Units display in the Survey Parameter Setup screen. See “Survey parameter setup” on page 2-56.

Automated cable

If you have connected an automated Imaging cable, you will notice that the cable parameters will automatically be loaded upon the beginning of the profile.

Proceed immediately to “Beginning a Wenner profile” on page 3-22.

Manual entry of electrode positions



In the Wenner Profile electrode parameter setup screen, *press* the up or down arrow keys to bring the cursor to the A/C1 parameter.



The letters A/C1 will then be highlighted, as illustrated below.

A/C1

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Enter the position of your first electrode (A/C1) as a numeric parameter. Please refer to “Alphanumeric entry, example 1” on page 1-20, if you are unsure of the procedure.



Press the up or down arrow keys to bring the cursor to the a parameter.



The letter a will then be highlighted, as illustrated below.

a

Enter the value of your “a” spacing as a numeric parameter.

PRESS



Press the ENTER key to acknowledge your choices. The cursor will then move back to the A/C1 parameter.

PRESS



Press the F3(FUNCT/EDIT) key to exit the EDIT mode.

PRESS



Press the F5(OK) key to save the changes to your new profile.



Beginning a Wenner profile

PRESS



Within the Wenner Profile electrode setup screen, *press* the F5(INJECT) key to start injecting current.



Note:

In case of an emergency, you can interrupt the injection of current either by pressing and holding the Tx Stop key until an acknowledgement message appears,



This will shut down the transmitter, and the measurement will be discarded.

or,

By pressing the F4(STOP) key, you will stop the reading at the end of the current cycle.



Once you have pressed the F4(STOP) key, you can accept or reject the reading.

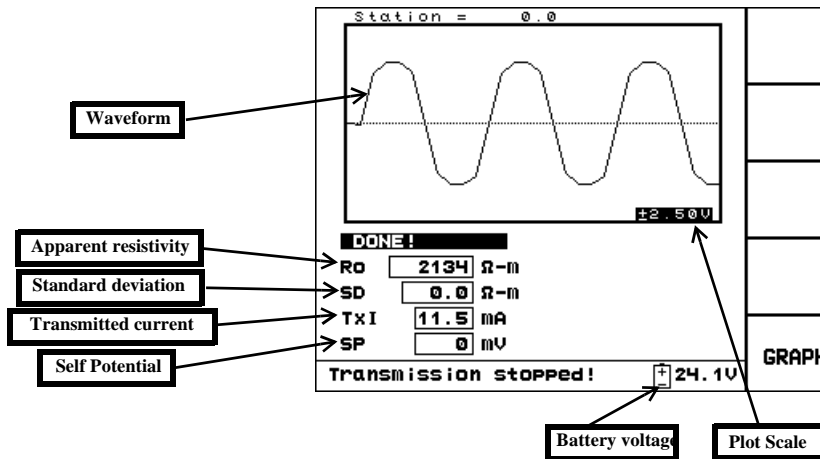




After the maximum measurement time is attained or the signal dispersion gets below the noise threshold, the measurement will automatically stop. The unit will then display the following message.

DONE !

as well as the reading, within the following screen.



Once the measurement is done, the values of the apparent resistivity (R_o), standard deviation of the resistivity measurement (SD), transmitted current (TxI) and self-potential (SP), battery voltage, vertical plot scale, ab and mn are illustrated. During the measurement and also once the measurement is completed, the SARIS also displays the voltage waveform at the MN electrodes.



Taking the next measurement: Wenner profile

In the automatic mode, i.e. with mode set to CABLE-AUTO, with an automated imaging cable and the multi-electrode interface module attached, all readings will be taken automatically without user intervention. Therefore if you are in automatic mode, this section can be skipped and you should proceed to “Viewing your Wenner profile results” on page 3-25.

PRESS 

To repeat a reading or to proceed to the next one, *press* the reading key.

You can now proceed to take the next measurement either by:

PRESS 

Pressing the F1(NEXT STA) key; this will move up your profile to the next station, the A/C1 value will increase automatically according to the “Station Step” parameter,

OR

or,

PRESS 

for a multi-separation profile or section, where the “Max. n” parameter is greater than 1, by *pressing* the F2(NEXT a) key; this will increase your “a” separation by the Base Spacing (a) value, as defined in the Profile Header screen.

OR

or,

PRESS 

by pressing the F3(FUNCT/EDIT) key to manually enter the new A/C1 and/or a values.

PRESS 

Press the F5(INJECT) key to start injecting current.

You can repeat the procedures in this section until you have obtained all the points in your profile.



Viewing your Wenner profile results

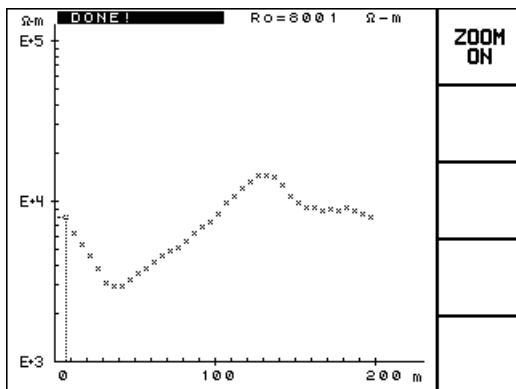
PRESS



To view your profile, *press* the F5 (GRAPH) key, within the measurement screen.

- **Case 1: Single separation Wenner profile**

For a single separation profile, data is presented as a profile, as illustrated below.



- **Case 2: Multi-separation Wenner profile or section**

For a multi-separation Wenner profile or section, data is presented as a spreadsheet, as illustrated below.

DONE!			
XPlot (m)	a (m)	n	RO (Ω -m)
7.50E	5.00		2134
15.00E	10.00		4267
22.50E	15.00		6401
7.50E	5.00		2133
15.00E	10.00		4267
22.50E	15.00		6400
7.50E	5.00		2666
15.00E	10.00		5328
22.50E	15.00		7988
7.50E	5.00		4291

NEXT
PAGE



Note:

The n column is empty because this parameter does not apply for a Wenner profile.

PRESS



If you have more than one page of data points, *press* the F2(NEXT PAGE) key.

PRESS



To return to a previous page of data points, *press* the F1(PREV PAGE) key.

You are now ready to proceed with your next sounding or profile



Entering notes

During the course of your survey, you may want to enter notes regarding cultural or topographic features that were encountered. These notes can be entered at any time during your survey and will be stored in a sequential fashion, i.e. just after the last measurement collected up till then.

PRESS



To access the notes screen, *press* the NOTE key.

The following screen will then appear.

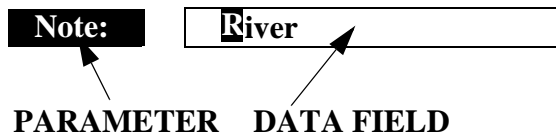
NOTES		USE MACRO
Note:	<input type="text"/>	USE LIST
#	Macros	FUNC EDIT
1		CANCEL
2		
3		
4		
5		
Sel : ↑↓ Chg : Alpha, ↔		RECORD

Operation

Note:



Please note that the note that will be stored in your data file will be the one indicated in the data field beside the NOTE parameter field, as illustrated below.



You can enter and record a note in your data file at any time.



Recording notes

The notes that you will record in your data file can either be:

- a note taken from the pre-defined list. This list is comprised of 24 items. or,
- one of five macros. or,
- manually entered text not included in the pre-defined list of features nor in the list of macros.

Recording notes using the pre-defined list of notes

In the notes screen, *press* the up or down arrow keys to bring the cursor to the note parameter field as illustrated on page 3-27.



PRESS



Press the F2(USE LIST) key to access the pre-defined list of notes.

The following screen will then appear.

NOTES		NEXT PAGE
Note:	Base Line	
	Claim Post	
	Incline	
#	Decline	
1	Cliff	
2	Bog (swamp)	
3	Pond	
4	River	
5	Hill	
	Visible Clay	CANCEL
	Outcrop	
	Road	OK
Sel: ↑↓ Chg: A lpha, ↔		





Press the up or down arrow keys to bring the cursor to the feature you want to choose. It will then be highlighted.

PRESS



If the note you want to choose is not on the present list, *press* the F1(NEXT PAGE) key to go to the next page.

PRESS



To cancel this function, *press* the F4(CANCEL) key. This will return you to the notes screen.

PRESS



When you are satisfied with the selected note, *press* the F5(OK) key to use this note as your chosen note. It will now be inserted in the note parameter field.

PRESS



To record this note in your data file, *press* the F5(RECORD) key. The note parameter field will then be cleared and ready for the next note recording.

Recording notes using available macros

What is a macro?



A macro is a note that you would wish to reuse. It can be one of the notes taken from the list or it can be any arbitrary string of characters.



Defining your five macros—



In the notes screen, *press* the up or down arrow keys to bring the cursor to the first macro entry, as illustrated below.

NOTES		USE MACRO
Note: <input type="text"/>		USE LIST
#	Macros	FUNCT EDIT
1		CANCEL
2		RECORD
3		
4		
5		
Sel : ↑↓ Chs : Alpha, ↔		

You can enter each macro by either use the pre-defined list (by pressing the F2(USE LIST) key) as described in the previous section or by manually entering the string of characters as explained below.

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Enter the note, as an alphanumeric value up to 19 characters long. Please refer to “Alphanumeric entry, example 2” on page 1-21 if you are unsure of the procedure.

PRESS



Once the entered macro is correct, *press* the F3(FUNCT/EDIT) key to exit the EDIT mode.



In the following illustration, the five chosen macros are a combination of pre-defined notes and manually entered notes.

NOTES		USE MACRO
Note: <input type="text"/>		USE LIST
#	Macros	FUNC EDIT
1	Base Line	CANCEL
2	Drill Collar	
3	Pond	
4	Walkabout Creek	
5	Telephone Line	
Sel : ↑↓← Chg : Alpha , ↔		RECORD



Note:

Macros can be edited or reentered at any time.



Using your macros—



In the notes screen, *press* the up or down arrow keys to bring the cursor to the macro you wish to enter in the note parameter field. For instance if you wish to use macro #5, then the number 5 will be highlighted as illustrated below.

NOTES		USE MACRO
Note:	<input type="text"/>	USE LIST
#	Macros	FUNC EDIT
1	Base Line	CANCEL
2	Drill Collar	
3	Pond	
4	Walkabout Creek	
5	Telephone Line	
Sel: ↑↓ Chs: Alpha, ↔		RECORD

PRESS



Press the F1(USE MACRO) key to insert the chosen macro in the note parameter field. The screen will resemble the one illustrated below.

NOTES		USE MACRO
Note:	Telephone Line	USE LIST
#	Macros	FUNC EDIT
1	Base Line	CANCEL
2	Drill Collar	
3	Pond	
4	Walkabout Creek	
5	Telephone Line	
Sel: ↑↓ Chs: Alpha, ↔		RECORD



PRESS



To record this feature in your data file, *press* the F5(RECORD) key. The note parameter field will then be cleared and ready for the next note recording.

Recording manually entered notes



In the notes screen, *press* the up or down arrow keys to bring the cursor to the note parameter field as illustrated on page 3-27.

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.

Enter the note, as an alphanumeric value up to 19 characters long. Please refer to “Alphanumeric entry, example 2” on page 1-21 if you are unsure of the procedure.

PRESS



Once the entered note is correct, *press* the F3(FUNCT/EDIT) key to exit the EDIT mode.

PRESS



To record this note in your data file, *press* the F5(RECORD) key. The note parameter field will then be cleared and ready for the next note recording.



Recalling data

During the course of your soundings or profiles, you may want to recall any stored data, regardless of when it was stored.

PRESS



To access the recall screen, *press* the RECALL key.

The following screen will then appear.

RECALL		SHOW SURVEY PARAMS
SURVEY:	<input type="text" value="Test"/>	SEARCH
SEARCH BY ID NUMBER		
ID:	<input type="text" value="1"/>	FUNCTION EDIT
Eastings/X/Line:	0.	
Northings/Y:	0.	RECALL ID GRAPH
Altitude:	0.	
Azimuth:	0.	
Array:	WENNER PROFILE	LAST ID GRAPH
Select: ↑↓ Change: ←→		

You can recall data sequentially from every file that was stored in memory.

Note:



A survey can contain as many soundings and profiles as you wish. Each sounding or profile is identified with its unique identification number (ID) within a particular survey.



Scrolling through your surveys

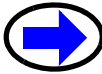
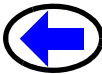
If you have more than one survey in your data file, you will be able to scroll through each survey in your data file. Each survey is stored sequentially in the order it was created.



In the recall screen, *press* the up or down arrow keys to bring the cursor to the survey parameter field as illustrated on page 3-34.

The word survey will then be highlighted as illustrated below.

Survey:



Press the right or left arrow key to toggle between surveys.

The survey name will then appear in the parameter field and the parameters of the first sounding or profile will also appear, as illustrated on page 3-34.

PRESS



To display the complete set of your survey parameters, *press* the F1(SHOW SURVEY PARAMS) key.



The following screen will then appear.

SHOW SURVEY PARAMETERS	
Survey:	Test
Client:	Scintrex
Operator:	RL
Eastings:	0.00
Northings:	0.00
Azimuth:	0.0
Altitude:	0.00
UTM Zone:	0
UTC Diff.:	0.0
Grid system:	NSEW
Units:	METER
Waveform:	TDIP
On Time:	2.0
OK	

PRESS



Press the F5(OK) key to exit this screen.

Scrolling through your soundings and profiles

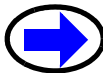
If you have more than one sounding or profile in your survey, you will be able to scroll through each sounding or profile in your survey. Each sounding or profile is stored sequentially in the order it was created.



In the recall screen, *press* the up or down arrow keys to bring the cursor to the ID parameter field.

The word ID will then be highlighted as illustrated below.

ID:



Press the right or left arrow key to toggle between each sounding or profile.



OR or,

PRESS 

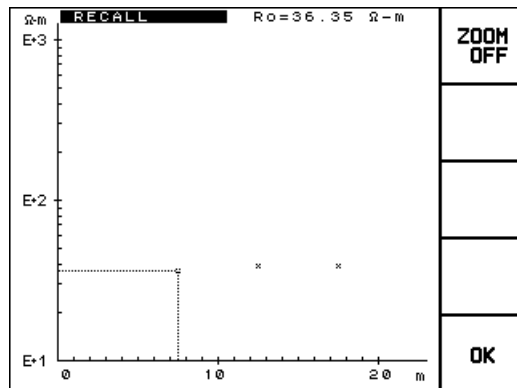
press the F2(SEARCH) key after having manually entered the ID number or the particular profile or sounding your are interested in viewing.

The parameters of each sounding or profile will appear, as illustrated on page 3-34.

PRESS 

To display the sounding or profile table, *press* the F4(RECALL ID GRAPH) key.

A typical resistivity profile or sounding is illustrated below.



PRESS 

To adjust, the horizontal scale, *press* the F1(ZOOM OFF) key.





Note:

When ZOOM is off, twenty metres (feet) of data are illustrated. When ZOOM is on, two hundred metres (feet) are illustrated.

If you are performing a multi-separation profile or sounding, the data will be illustrated as table of resistivity values. A typical resistivity table is illustrated below.

RECALL			
XPlot (m)	a (m)	n	Ro (Ω -m)
1.50E	1.00	1	360.1
2.00E	1.00	2	1440
2.50E	1.00	3	3601
3.00E	1.00	4	7203
3.50E	1.00	5	12601
4.00E	1.00	6	20168
2.50E	1.00	1	360.2
3.00E	1.00	2	1441
3.50E	1.00	3	3601
4.00E	1.00	4	7204

NEXT PAGE

OK

PRESS



If you have more than one page of data points, *press* the F2(NEXT PAGE) key.

PRESS



To return to a previous page of data points, *press* the F1(PREV PAGE) key.



Dumping data

Eventually, you will want to transfer the data from your SARIS to a PC for future and more advanced processing. You can dump either through RS-232 cable or through your USB cable. We recommend that you dump your data every day.

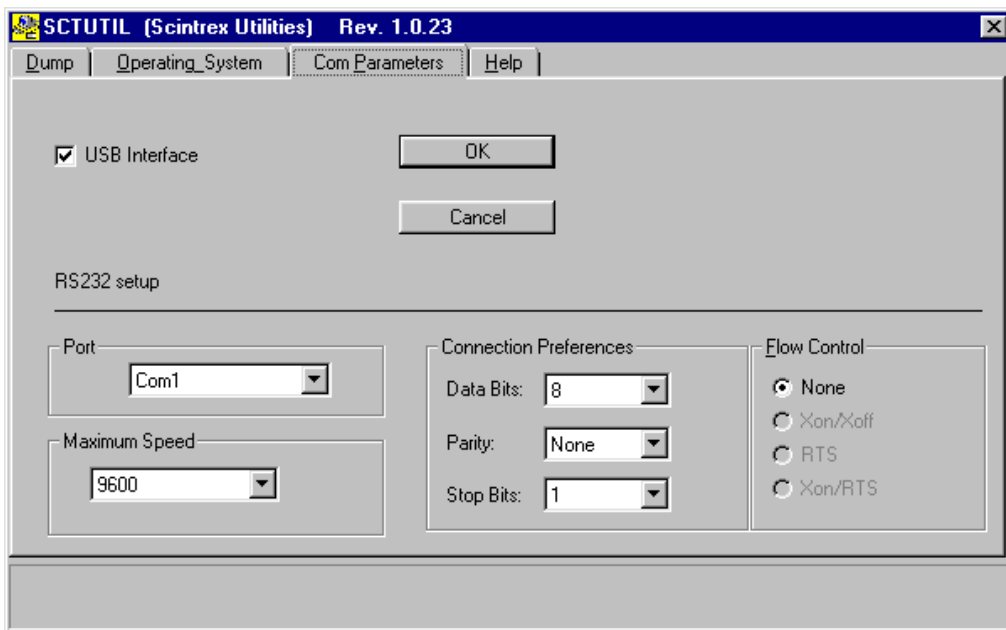
**Important:**

If you are dumping data from your SARIS for the first time, you must first install the Scintrex Utilities program supplied to you with your SARIS. You will not be able to transfer data from your SARIS to your PC without having SCTUTIL installed in your PC. If you are unsure of this procedure, please refer to “Installing SCTUTIL” on page G-2.



Dumping data from your SARIS using the USB port

In the Com Parameters window of the SCTUTIL program, make sure that USB Interface is enabled. To enable this interface click on the USB window, as illustrated below.



Power up your SARIS by pressing the ON key.

Connect your USB cable to the your PC.

Connect your USB cable to your SARIS.



**Note:**

If this is the first time that you are dumping through the USB port, your PC will then recognize the new hardware and prompt you through the installation of the USB driver. Your SARIS USB driver is located on the SCTUTIL CD-ROM. If this is not the case or you are unsure of this procedure, refer to “Installing your USB driver” on page G-13.

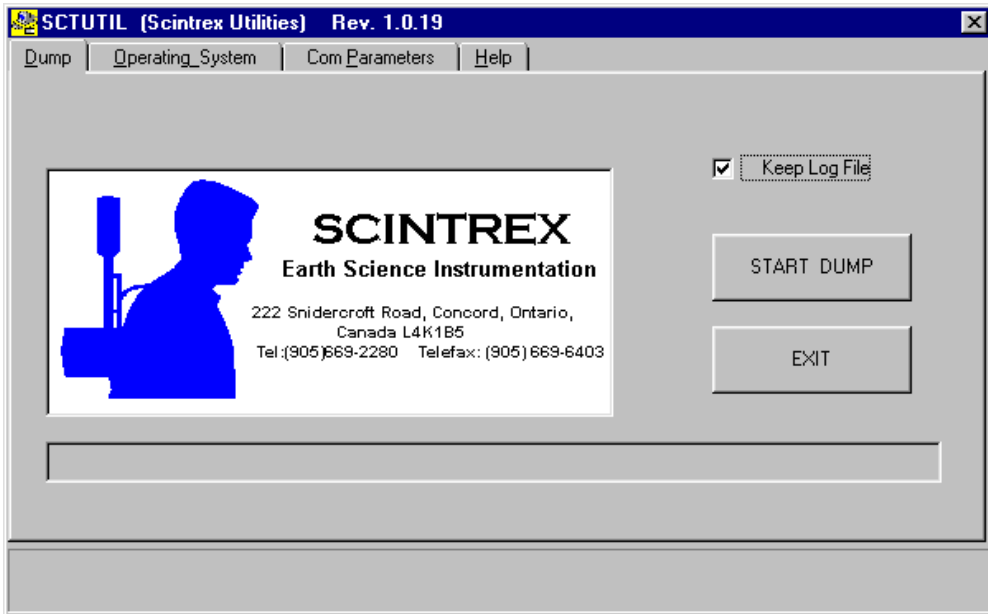
**Note:**

In the Dump window of the SCTUTIL program, you can enable **Keep Log File**, this will produce a complete log of all the surveys as well as assist the Customer Service personnel in helping you trouble-shoot. The log file contains all the settings of your SARIS. Other files that are produced are the following:

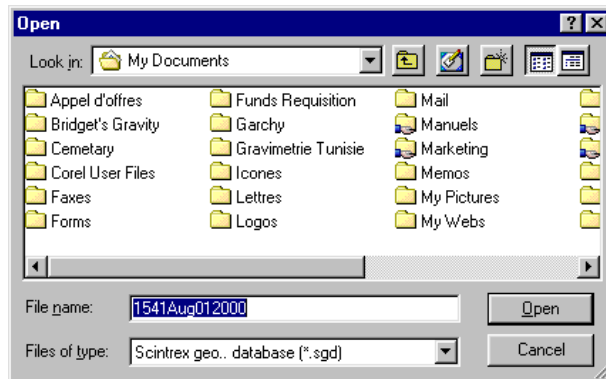
- *.raw: The raw data file. This is in binary format and cannot be opened by the user.
- *.log: The log file. This is a text file and can be opened using NOTEPAD.EXE or WORDPAD.EXE.
- *.sgd. The Scintrex Geophysical Data Format file. This is your dump file that can be used with many applications such as RES2DINV and Oasis Montaj. It is a binary file.
- *.txt: The text version of your dump file. It can be viewed with either NOTEPAD.EXE or WORDPAD.EXE.
- *.i2d: The INTERPEX ResixIP2DI dump file. This is useful if you are using this INTERPEX program.



In the Dump window of the SCTUTIL program, *click* on START DUMP to initiate the data transfer to your PC.



You will then be prompted to choose a file name for your data, as per the screen illustrated below.

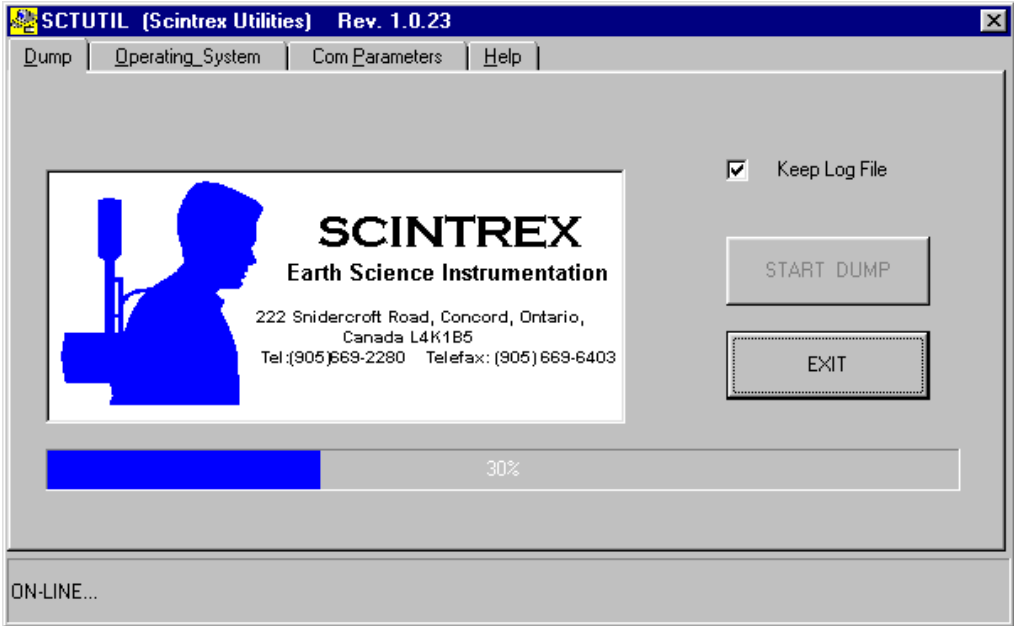




Note:

The default name of your file follows the following format: time(24 HRS) minutes month date year. The SARIS will dump in Scintrex Geophysical Database format. This format is compatible with all modern resistivity programs.

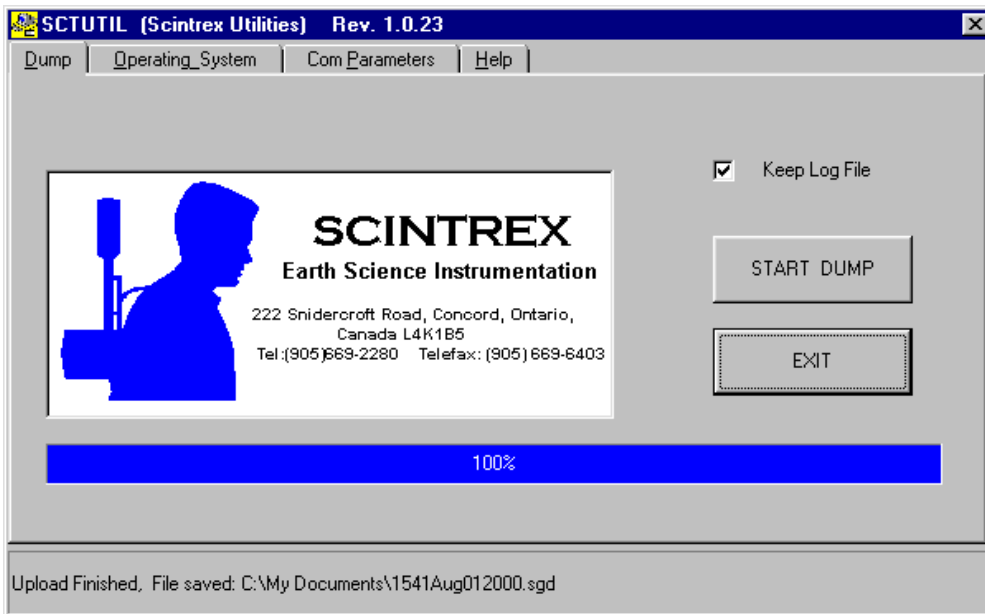
Click on the Open button. You will then notice the “ON-LINE” message appears and that the data is being transferred, as illustrated by the following screen.



Operation



Once the data is successfully transferred, a message indicating successful upload of your data will appear. *Click* on EXIT to close your data file.



PRESS



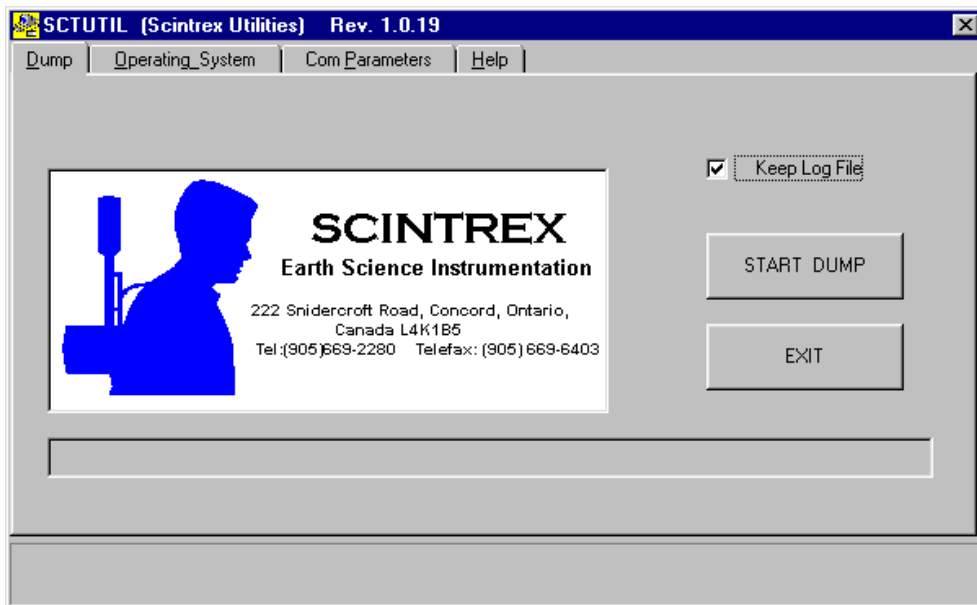
Once you have transferred your data to your PC, press the F5(OK) key on your SARIS to return to the previous screen.

Dumping data using the RS-232 port

Double-click on the SCTUTIL icon to start the program.



The following screen will then appear.



You can enable **Keep Log File**, this will produce a complete log of all the surveys as well as assist the Customer Service personnel in helping you trouble-shoot. The log file contains all the settings of your SARIS.

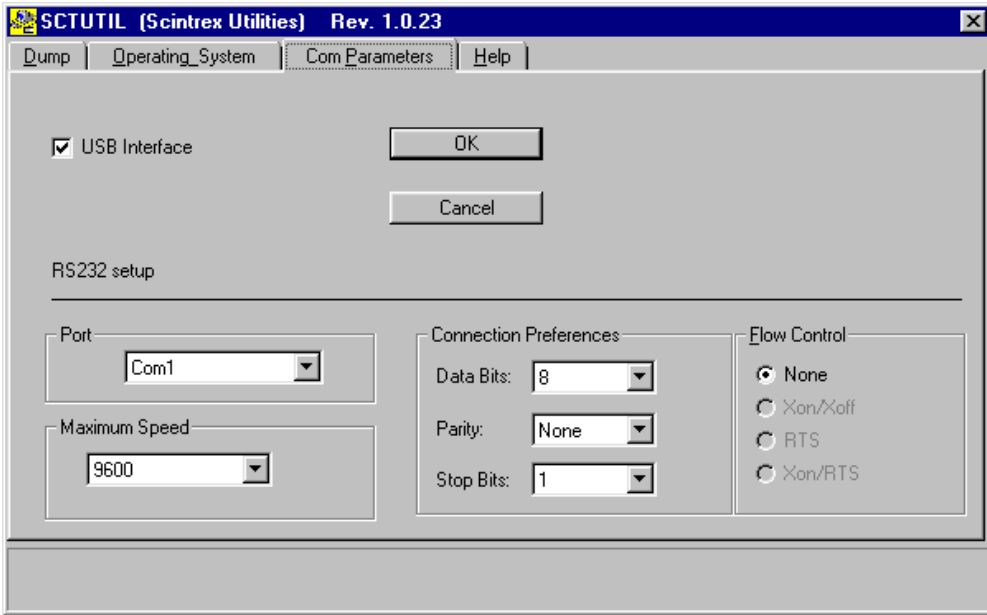
Setting the communication parameters

Before you can transfer data or upload the most recent version of SARIS operating software, you must set the proper baud rate as well as the correct number of data bits.

Click on the Com Parameters window to set the communication parameters.



The following screen will then appear.



Click on USB interface to disable it. The default setting for the SARIS is USB enabled.

Select the desired baud rate, number of data bits, stop bits and parity, the default values are 19200,8,1 and n.



Important:

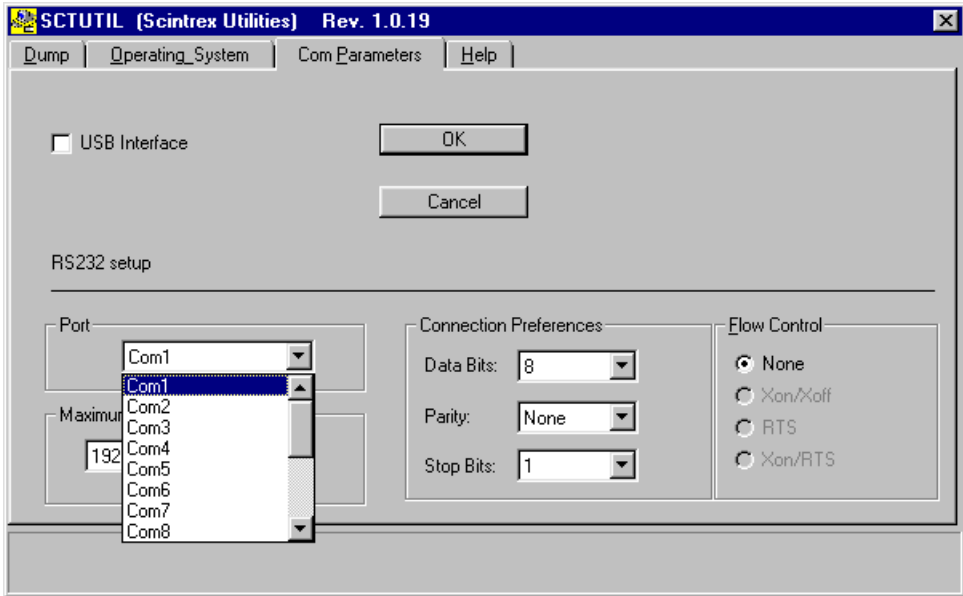
Your baud rate, data bits and stop bits have to be the same on your SARIS and your PC. Furthermore the data bits, parity and stop bit are fixed on your SARIS: never change these. You need only to set the com port and the baud rate.

Select flow control, the default is none.



To select your com port, *click* on the down arrow located beside the com1 selection.

The following screen will then appear.



Select the desired com port. In most cases, this will be com1.

Connect your RS-232 cable to the your PC.

Important:



Make sure that your RS-232 cable is connected to the appropriate serial port on your PC. Most modern PC's have more than one serial port.

PRESS



To access the Data Dump screen on your SARIS, *press* the DUMP key.



The following screen will then appear.

DUMP PARAMETER SETUP		START DUMP
Baud rate:	9600	
Data bits:	8	
Parity check:	NO	
Stop bits:	1	FUNCT EDIT
Data format:	BINARY	
Chs : ↔		OK



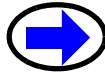
Note:

You can only modify the baud rate, the other dump parameters cannot be modified, they are illustrated only as a reference in order to set your PC serial port accordingly.

PRESS



Press the F3(FUNCT/EDIT) key to choose the EDIT mode.



Press the right or left arrow key to select the baud rate at which you want to transfer your data.

PRESS



Press the F1(START DUMP) key to initiate a data dump; a message indicating that the data is being transferred will appear in the lower left hand corner of the console screen.

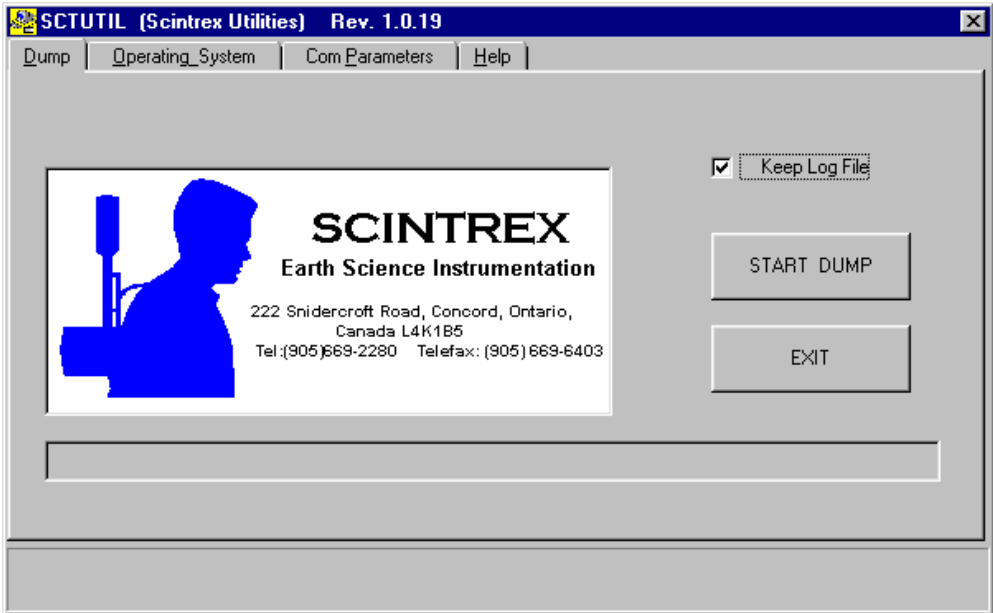


Note:

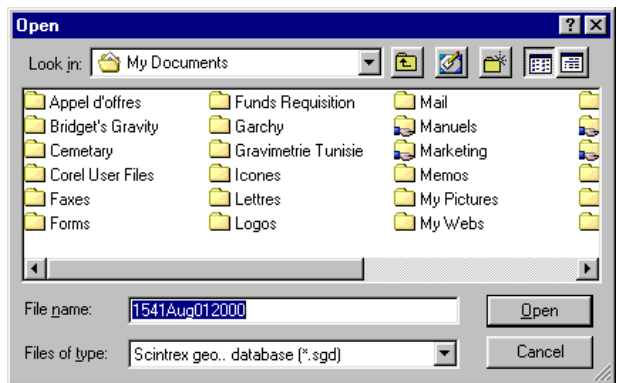
To abort the dump process while the data is being transferred, you can press the F1(STOP DUMP) key.



In the Dump window of the SCTUTIL program, *click* on START DUMP to initiate the data transfer to your PC.



You will then be prompted to choose a file name for your data, as per the screen illustrated below.

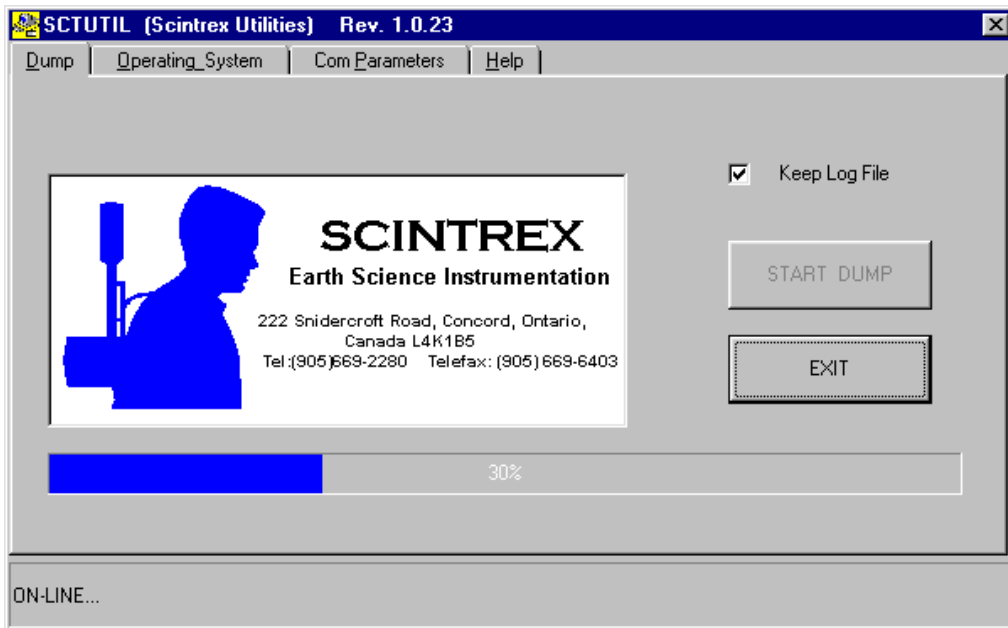




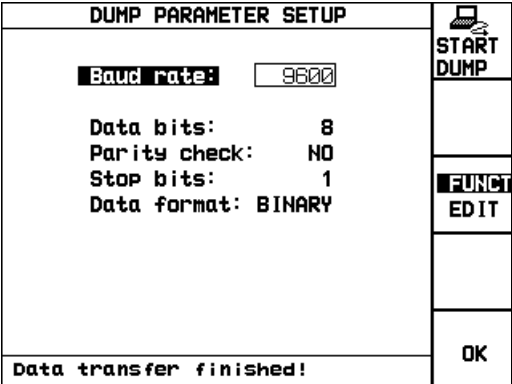
Note:

The default name of your file follows the following format: time(24 HRS) minutes month date year. The SARIS will dump in Scintrex Geophysical Database format. This format is compatible with all modern resistivity programs.

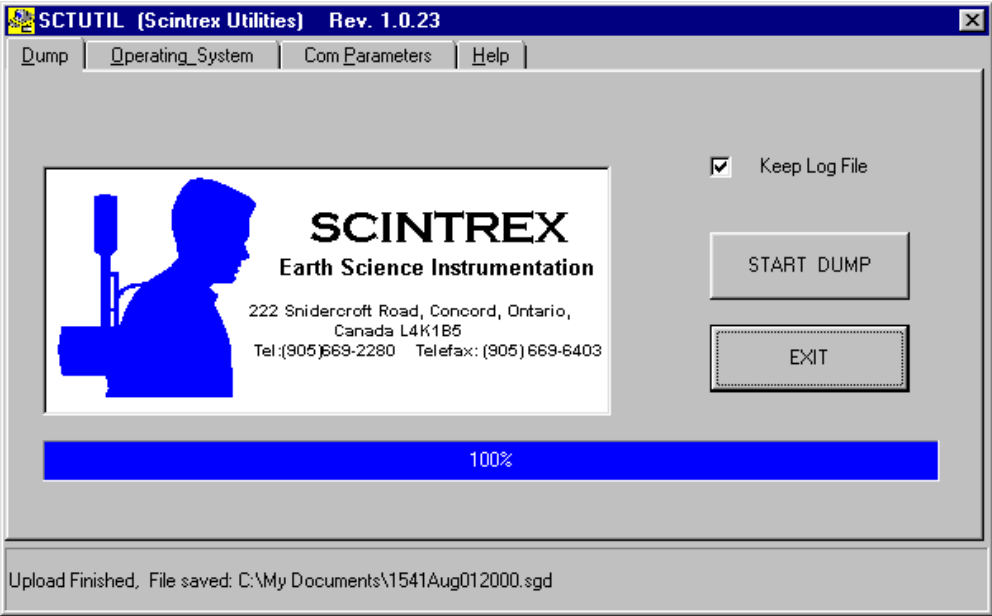
Click on the Open button. You will then notice the “ON-LINE” message appears and that the data is being transferred, as illustrated by the following screen.



After the data is successfully transferred, a message indicating successful data transfer will appear in the lower left-hand portion of your SARIS screen, as illustrated below.



Once the data is successfully transferred, a message indicating successful upload of your data will appear. *Click* on EXIT to close your data file.



Operation



PRESS



After you have transferred your data to your PC, press the F5(OK) key on your SARIS to return to the previous screen.



Memory clear

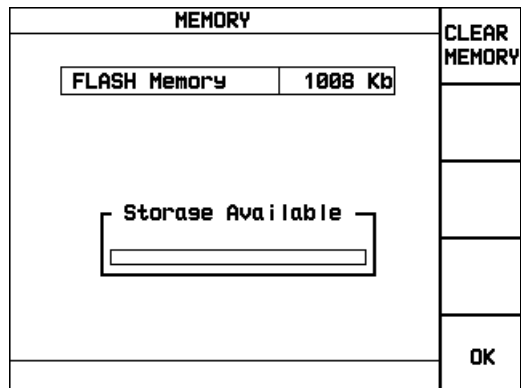
You can clear the SARIS flash memory whenever convenient. However, you must first dump your data, if you have done so, so far.

PRESS



To access the Memory Clear screen, *press* the MEMORY key.

The following screen will then appear.



The amount of total installed memory in flash memory is illustrated in kilobytes. Furthermore, the storage available gives the percentage of this space that is still available.

PRESS



Press the F1(CLEAR MEMORY) to clear the memory.





Note:

To clear the memory, you must *press* the following sequence of hot keys: F1, F3, F2 and F4. Only then will the memory be cleared.

PRESS



While the memory is being erased, the message “Memory clearing” will appear where the “Storage Available” message was. The unit will beep when you have cleared the memory.

PRESS



Press the F5(OK) key to exit this screen.



4

Maintenance and Trouble-shooting

Customer service

In order to provide our valued customers with the utmost in customer service, a help service is available through e-mail to either of our offices world-wide. You can reach at least one of our offices through e-mail regardless of your time zone. If you need any help with the instrument, either in operating it or applying it towards a particular application, do not hesitate to contact Scintrex SARIS support at the following address:



Canada: (from 8:30 AM to 5:30 PM EDT; 12:30 to 21:30 GMT)

Tel: (+1-905) 669-2280

Fax: (+1-905) 669-6403

e-mail: service@scintrexltd.com

web site: www.scintrexltd.com



Battery charging

The SARIS uses a 24V 7.5Ah high-capacity gel-cell battery pack. Depending on field conditions, you may be able to carry out your surveys without having to recharge the battery pack for several days. However, recharging your batteries every day is a good practice.

Optimum charging is done at room temperature.



Warning:

NEVER CHARGE A BATTERY AT EXTREMELY COLD TEMPERATURES. THIS COULD RESULT IN AN EXPLOSION OF YOUR BATTERY PACK.

Charging procedure

- 1 **CONNECT** the battery charger to the SARIS battery pack



- 2 **CONNECT** your battery charger in the wall outlet.



Basic maintenance

Your SARIS is a virtually maintenance-free instrument. However, there are some small components that may have to be replaced from time to time.

Fuse replacement

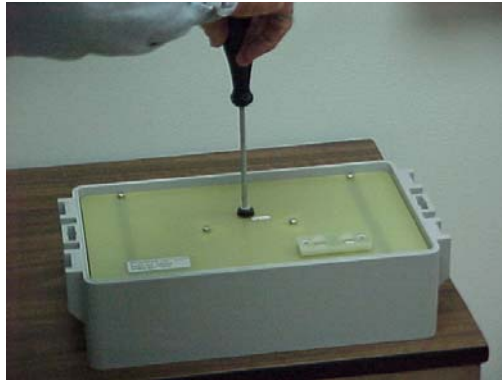
The battery pack fuse is located in the center of the top portion of the battery pack.



- 1 **Detach** the battery pack from the electronics console.



2 *Unscrew* the fuse from the battery pack



3 *Remove* the fuse from the fuse holder



- 4 *Replace* and *screw* the fuse back in place.



Console disassembly and reassembly



Warning:

Disassembly of the console is strongly discouraged due to the complexity of the tasks required and the risk of electrical shock. Scintrex cannot be held responsible for any mishap that console disassembly would cause. The SARIS can produce **LETHAL** voltages inside the console. **THIS CAN RESULT IN SERIOUS INJURIES.**

Whereas Scintrex has taken reasonable precautions in its design to minimize the possibility of personal injury in its normal and proper use, Scintrex can bear no responsibility in this regard.



Trouble shooting

Despite the fact that your SARIS is a very reliable instrument, there can be circumstances where problems may occur. The following table lists some of these problems and their attempted solution. However, please do not hesitate to contact your nearest Scintrex office. See “Customer service” on page 4-1 for the office nearest you.

Problem	Possible cause	Possible solution
Unit will not turn ON when the ON key is pressed	Battery pack is not connected	Connect battery pack to electronics console.
	Blown fuse on battery pack	Replace fuse as per “Fuse replacement” on page 4-3.
Screen is completely dark or light	Contrast is not adjusted properly	Press the ENTER key, press CONTRAST key and press F2 (50%) key.
Unit does not respond to any keystroke; no keys will respond		Reset the unit by pressing and holding the OFF key until unit shuts off. Press the ON key.
Number of database errors corrected is less than number of errors detected		Reset the unit to default parameters by pressing the ON and Tx Stop keys together. However, caution must be applied in this case, since this will erase your data entirely.
Unit shuts off immediately after ON key is pressed	Low battery	Charge battery as per “Charging procedure” on page 4-2.
Display flickers and unit shuts off	Low battery	Charge battery as per “Charging procedure” on page 4-2.



Problem	Possible cause	Possible solution
Data does not dump	RS-232 or USB cable is not connected to SARIS	Connect cable as per "Dumping data" on page 3-39.
	RS-232 or USB cable is not connected to PC	Connect cable as per "Dumping data" on page 3-39.
	File transfer program is not installed properly	Check installation of SCTUTIL program as per "Installing SCTUTIL" on page G-2.
Unit will not recognize automated cables	Multi-electrode interface module is not connected properly	Connect multi-electrode interface module to electronics module.



Saris operation error messages

The following table lists the error messages that you may encounter during operation of your SARIS. Please do not hesitate to contact your nearest Scintrex office. See “Customer service” on page 4-1 for the office nearest you.

Error Message	Possible cause	Possible solution
Open Loop MN	Bad contact on one or both of the potential electrodes	Check contact resistances, or for a broken wire or loose contacts with the takeouts (see note at the bottom of the page)
Open Loop AB	Bad contact on one or both of the current electrodes	Check contact resistances, or for a broken wire or loose contacts with the takeouts (see note at the bottom of the page)
Not Enough Power	Requested current setting exceeds power capabilities of the SARIS	Reduce the current
Defective Transmitter Failure code T01	Defective electronics	Contact your nearest Customer Service Office
Defective Transmitter Failure code T02	Defective electronics	Contact your nearest Customer Service Office



Note:

When working with imaging cables and after having improved the contact, the reading can be restarted by pressing the READING key followed by the F5(INJECT) key.



Inversion routine error messages

During the inversion of your sounding data, inversion errors may occasionally appear. These errors are almost always the result of resistivity data which is incompatible with the layered earth model used by the inversion software.

Appearance of one these errors means that the inversion results are unreliable and should therefore be disregarded.





5

Reference Information

Saris technical specifications

Saris Specifications

Output (Transmitter)

Output Power	100W maximum in both 100 Ω and 2500 Ω loads
Output Current:	1.0 Amp maximum into 100 Ω load
Current Regulation	None, unregulated
Output Current measurement accuracy:	$\pm 1.25\%$
Output Voltage:	500V into 2500 Ω load



Saris Specifications (Continued)

Input (Receiver)

Input Resistance:	11 M Ω nominal
Input Voltage Dynamic Range:	$\pm 40V$
Maximum Input Voltage:	1000VDC, max. 5 seconds
Input Voltage Measurement Accuracy:	$\pm 0.5\%$
Input Voltage Resolution:	0.6 μ Volt
Input Dynamic Range:	156 dB
Noise Rejection:	98 dB (50/60Hz) power line rejection
SP Compensation:	$\pm 1V$

Resistivity Measurement

Fast Resistivity cycle frequency:	5 or 6 Hz according to power line frequency for Resistivity
IP Cycle Time:	1, 2, 4 or 8 seconds ON Time for time domain IP
Number of cycles:	Automatic, 1 to ∞
Resistivity accuracy	$\pm 1\%$ (measured in 2500 Ω load)

IP

Number of IP windows:	4
Position of IP windows	See "Saris IP Window specifications" on page 5-4.
Chargeability Units	mV/V
IP Chargeability Resolution:	0.1 mV/V

Environmental



Sarīs Specifications (Continued)

Operating Temperature:	-20°C to +55°C
Water resistance:	Waterproof to IP65

Power Supply

Power Supply Type: 24V, 7.5Ah clip-on Lead-Acid Battery, 180 W-h capacity

Measuring Capacity: 100 hours standby operation
>12000 minimum power, 30 sec. Readings.
(Maximum number of readings will decrease according to output power)

Internal Computer

Display: 320 by 240 quarter VGA monochrome LCD

Communication Interfaces: 12 MHz USB and RS-232

Data Storage Capacity: >10,000 single readings

Weight and Dimensions

Complete SARIS Unit with Battery: 336*215*201mm outside all connectors
336*190*177mm without connectors

8.9 Kg

SARIS Battery only: 336*215*86mm

6.4 Kg



Saris IP Window specifications

	60 Hz power line				50 Hz power line			
Ton	1 sec	2 sec	4 sec	8 sec	1 sec	2 sec	4 sec	8 sec
M1Begin time (ms)	100	100	100	200	100	100	100	200
M1End time (ms)	150	200	300	600	160	200	300	600
M2Begin time (ms)	150	200	300	600	160	200	300	600
M2End time (ms)	250	400	700	1400	280	400	700	1400
M3Begin time (ms)	250	400	700	1400	280	400	700	1400
M3End time (ms)	450	800	1500	3000	520	800	1500	3000
M4Begin time (ms)	450	800	1500	3000	520	800	1500	3000
M4End time (ms)	850	1600	3100	6200	880	1600	3100	6200



Saris system components list

Item Description	SCINTREX Part Number
Resistivity Module	735 500
Multi-Electrode Interface Module	735 501
RS-232 Cable	745 081
Battery Module	735 502
Battery Charger	735 503
Spare Carrying Bag	735 507
Scintrex Utilities CD-ROM	735 650
User's Manual	735 700
ICS-5m 5 Takeout Imaging Cable	746 563
50m Single Core Cable	735 040
100m Single Core Cable	735 041
200m Single Core Cable	735 042
250m Single Core Cable	735 043
300m Single Core Cable	735 044
500m Single Core Cable	735 045
750m Single Core Cable	735 046
Electrode	735 519
SARIS Spare Parts Kit	735 061
Carrying Case	735 528



Warranty and repair

Warranty

All Scintrex equipment, with the exception of consumable items, is warranted against defects in materials and workmanship for a period of one year from the date of shipment from our plant. Should any defects become evident under normal use during the warranty period, Scintrex will make the necessary repairs free of charge.

This warranty does not cover damage due to misuse or accident and may be voided if the instrument console is opened or tampered with by persons not authorized by Scintrex.

Repair

When to ship the unit

Please do not ship your instrument for repair until have communicated the nature of the problem to our Customer Service Department by e-mail, telephone, facsimile or correspondence. Our Customer Service Department may suggest certain simple tests or steps for you to do which may solve your problem without the time and expense involved in shipping the instrument back to Scintrex for repair. If the problem cannot be resolved, our personnel will request that you send the instrument to our plant for the necessary repairs.

Description of the problem

When you describe the problem, please include the following information:

- the symptoms of the problem,
- how the problem started,
- if the problem is constant, intermittent or repeatable,
- if constant, under what conditions does it occur,
- any printouts demonstrating the problem



Shipping instructions

No instrument will be accepted for repair unless it is shipped prepaid. After repair, it will be returned collect, unless other arrangements have been made with Scintrex. Please mention the instrument's serial number in all communications regarding equipment leased or purchased from Scintrex.

Head Office

Instruments within Canada should be shipped to:

SCINTREX Limited

222 Snidercroft Road

Concord, Ontario

L4K 1B5

tel: (905) 669-2280

fax: (905) 669-6403

e-mail: scintrex@scintrexltd.com



Other areas

Instrument shipped for repair from outside Canada should be addressed to Scintrex and shipped to:

Scintrex Limited

222 Snidercroft Road

Concord, Ontario

L4K 1B5

tel: (905) 669-2280

fax: (905) 669-6403

e-mail: scintrex@scintrexltd.com

The shipper should add a note indicating DANZAS-AEI as the incoming broker.

Three sets of customs documents must be included:

- one set inside the package,
- one set attached to the package and sealed to the outside of the package,
- one set attached to the air waybill.

Scintrex instruments are manufactured in Canada, consequently there is no custom duty payable in Canada. It is advisable to state on the customs documents the following:

- “Canadian Goods Returned to Canada for Repair”
- Name of the equipment
- Value
- Serial Number
- Reason for return
- Packaging and weight









Imaging Techniques

Introduction

The purpose of electrical imaging techniques is to produce an image of the subsurface resistivity. These results are produced as two-dimensional true resistivity section. With the knowledge of this true resistivity one can confirm or infirm the geological model. A more correct term for this process is sounding-profiling.

Example: Wenner array

There are many electrode arrays that are used in electrical imaging. These arrays have been illustrated in chapter 1. See “Profiling configuration” on page 1-26.



As an example, let us consider the Wenner array in imaging. The following illustration shows how data obtained from a Wenner electrical imaging survey is plotted as a pseudo-section.

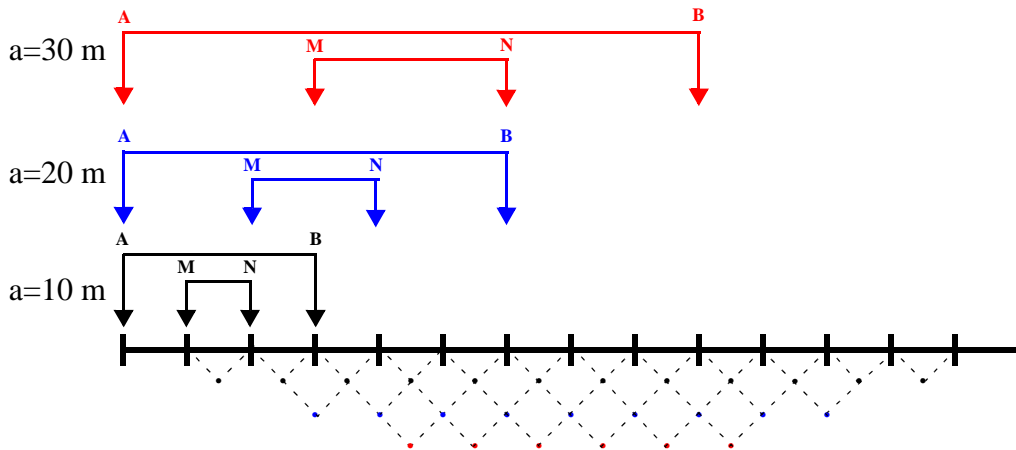


Figure 1: Building a Wenner pseudo-section

A first profile with a fundamental “a” spacing of 10 metres is first carried out (black). Then the “a” spacing is increased to 20 metres and a second profile is carried out (blue). Finally, “a” spacing is increased to 30 metres and a second profile is carried out (red).

The data points are then plotted on a pseudo-section and contoured.

Data thus obtained data would resemble the following pseudo-section.

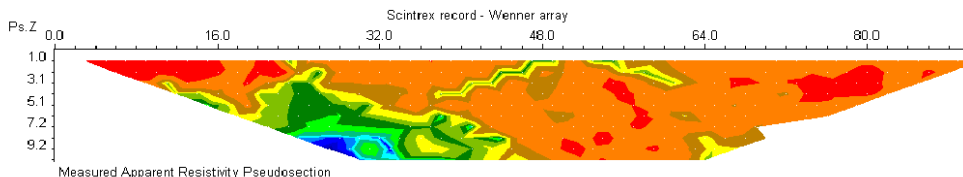


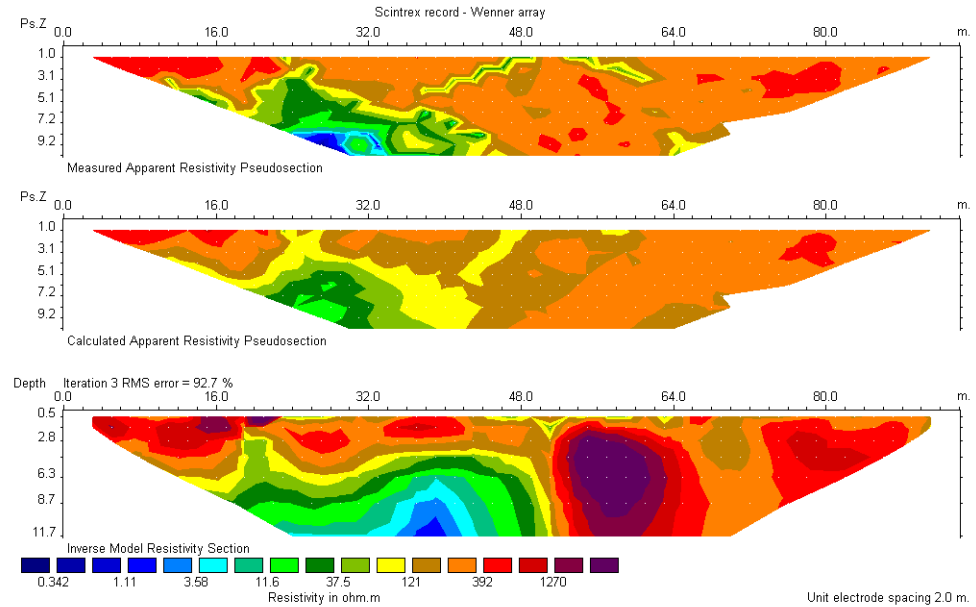
Figure 2: Wenner pseudo-section

Once this pseudo-section is obtained, a true resistivity section must be produced in order to relate to the true geological section. This true section is obtained by a process called “inversion”. Several inversion programs are



available on the market. Two such programs are well suited for the SARIS; they are RES2DINV from M.H. Loke (www.geoelectrical.com) and RESIXIP2DI from Interpex Limited (www.interpex.com).

The following caption illustrates the inversion results obtained from the field data illustrated in figure 2.



Inversion Completed

Figure 3: Wenner Inversion Results

The mathematical basis of these inversions is beyond the scope of this manual, and the user should refer to the aforementioned web sites for further details.

Any inversion is only as good as its relation to the geological model. Furthermore, prior knowledge of the geological model is a prerequisite for a viable inversion. Both RES2DINV and RESIXIP2DI allow the user to fix certain start parameters such resistivities or thicknesses of layers. Thus the inversion should converge towards a solution which is more in line with the true geological model.



Because the mathematical assumptions and methods are different from one inversion program to another, one should not expect identical results from different inversion programs using the same field results. Furthermore, because of these same mathematical assumptions and methods, certain inversion programs will be better suited than others in a given situation.

The previous point cannot be emphasized enough. Many in the geophysical industry have come to believe in the infallibility of geophysical results; i.e. that they should stand alone and that computed inversions be accepted as gospel. All modern exploration tools such as geophysics, geological mapping, structural geology, geochemistry, to name a few are subservient to the geological model.





Scintrex Utilities Program

The SCTUTIL Scintrex utilities program allows the user to download data from the SARIS as well as upload the most current version of the SARIS operating software supplied to you by Scintrex.

The SCTUTIL program is located on the CD-ROM disk provided supplied with every SARIS.

You will find this CD-ROM is one of the compartments of your SARIS transit case.

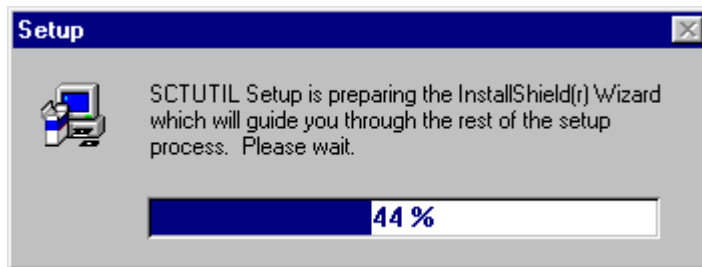


Installing SCTUTIL

Before you can use the SCTUTIL utilities program, you must first install it on your PC.

Insert the SCTUTIL CD-ROM in the proper drive on your PC.

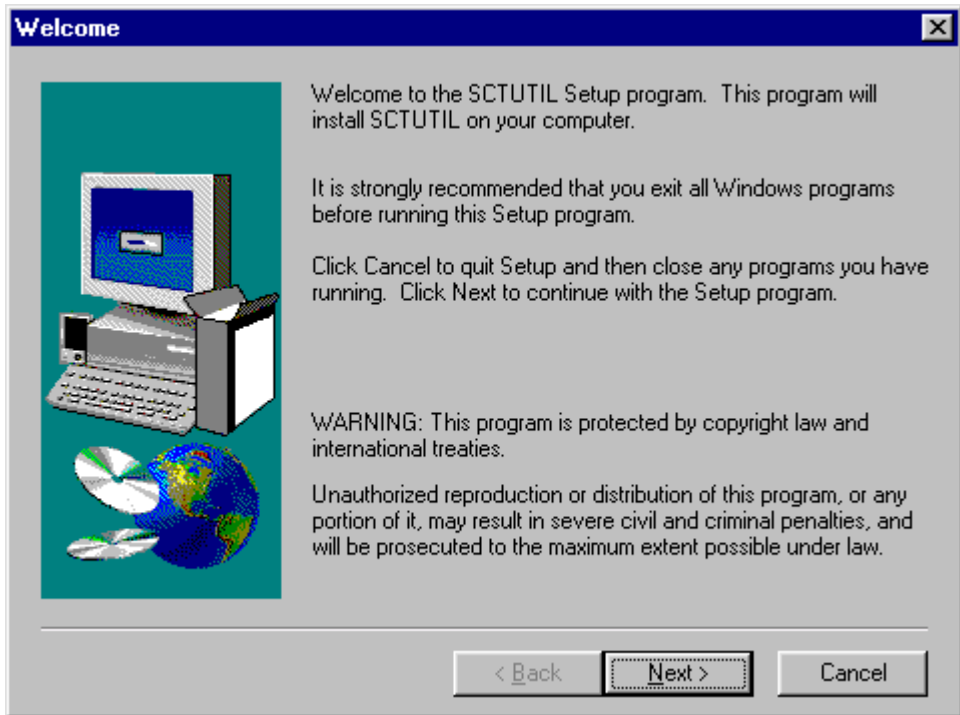
The installation program is self-executable, therefore you should see the following screen appear.



If it does not appear, *go* to your CD-ROM drive and *run* the Setup.exe program.



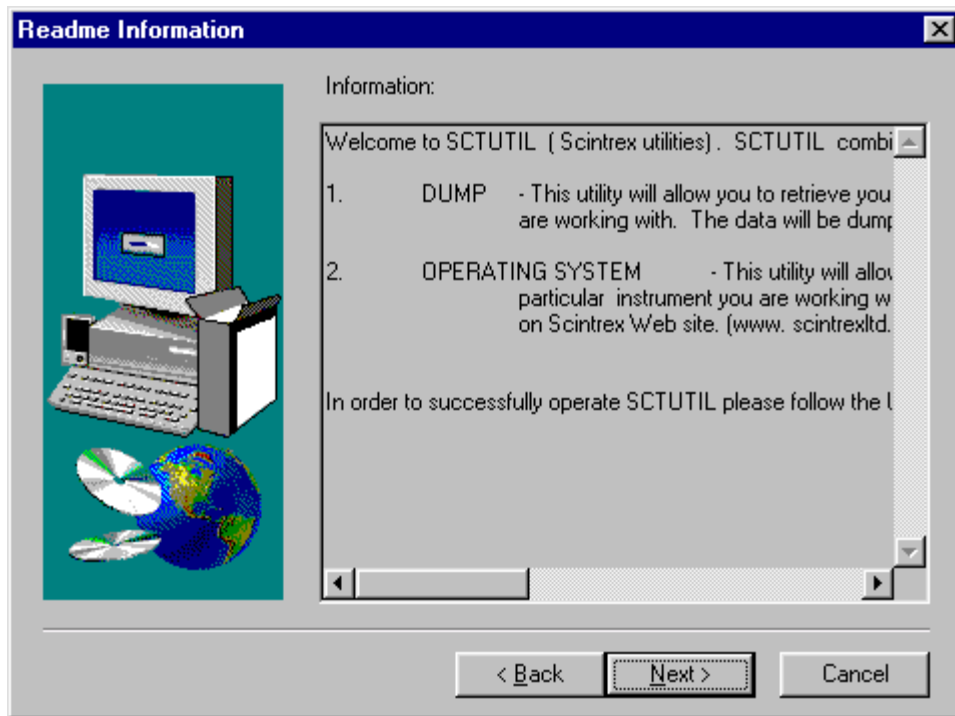
After the Install Shield Wizard is prepared, the following screen will then appear.



Click on Next.



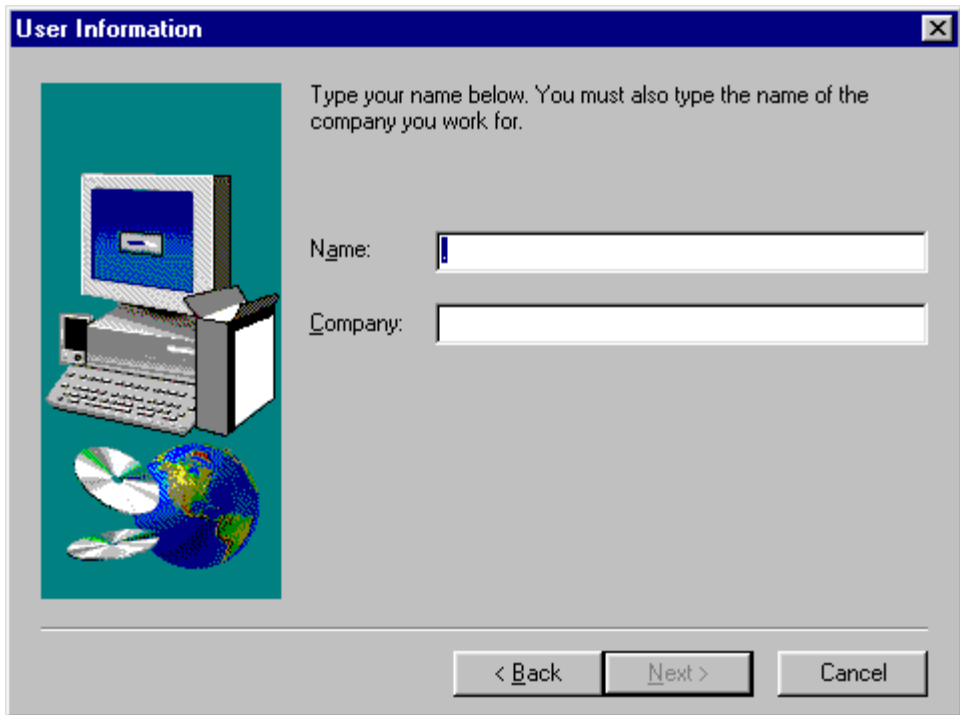
The following screen will then appear.



Click on Next.



The following screen will then appear.

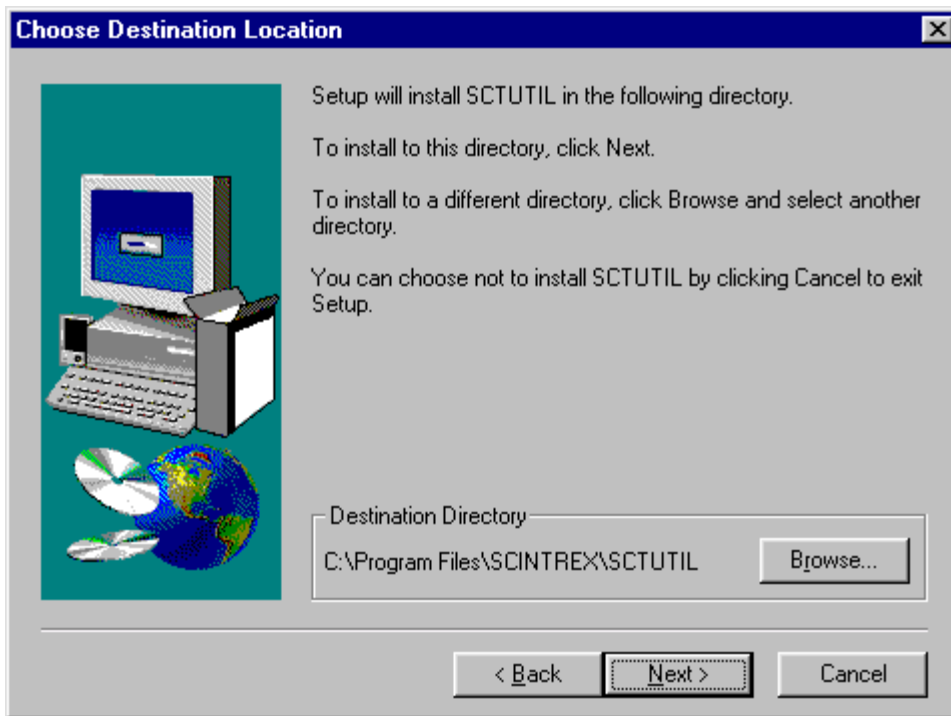


The image shows a Windows-style dialog box titled "User Information". On the left side, there is a graphic with a teal background depicting a computer monitor, keyboard, mouse, and a globe with several CD-ROMs. The main text area contains the instruction: "Type your name below. You must also type the name of the company you work for." Below this text are two input fields: "Name:" and "Company:". At the bottom of the dialog box, there are three buttons: "< Back", "Next >", and "Cancel".

If you wish, *type* your name and company.
Click on Next.



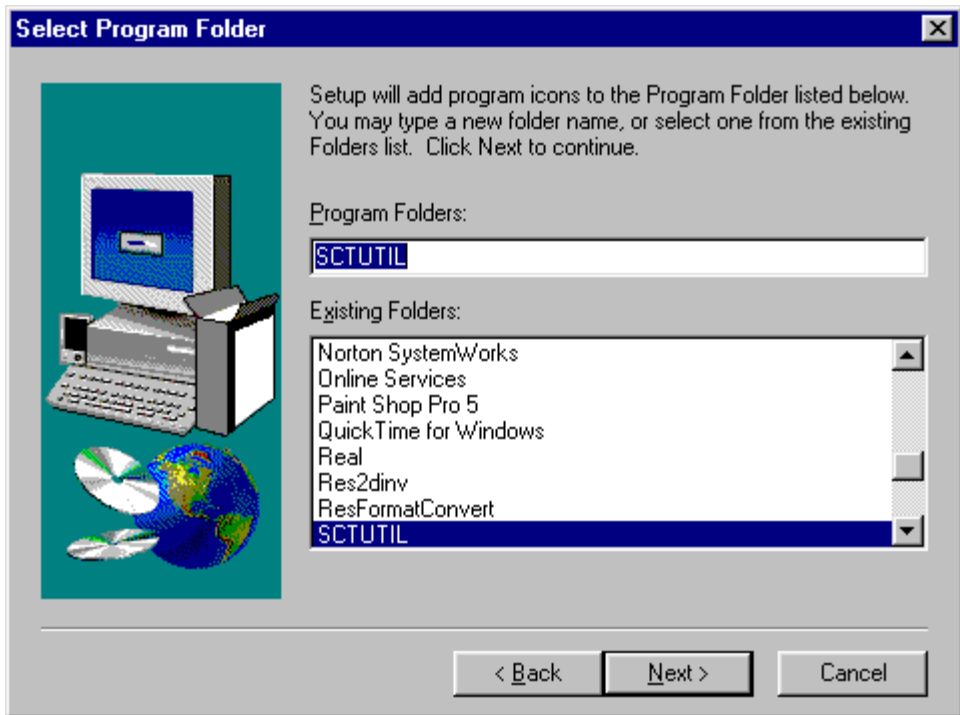
The following screen will then appear.



If you do not want the program to be installed in the default directory, **click** on Browse to choose another directory and then **click** on Next, otherwise just **click** on Next.



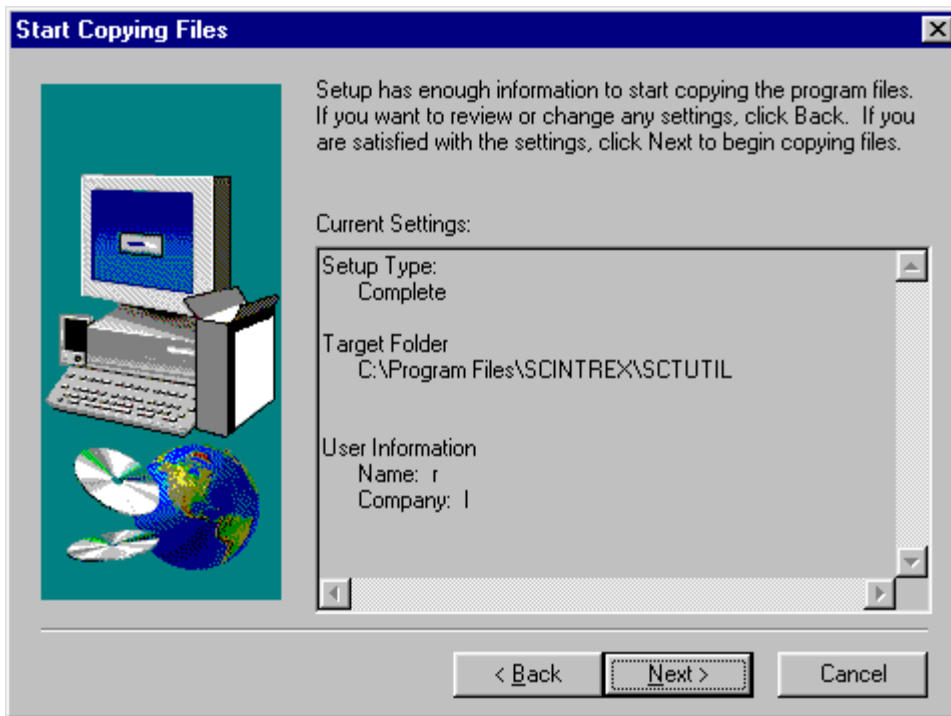
The following screen will then appear.



Click on Next.




The following screen will then appear.



Click on Next.

The installation program will then load the appropriate files onto your PC.

When the installation is complete, you can run the program by clicking on the SCTUTIL icon. 



Reprogramming your SARIS

From time to time, you will be receiving software upgrades for your SARIS. You can easily upload the most current version of the SARIS operating software by using SCTUTIL.



Note:

The upgrading of your software version can be done either with the RS-232 or USB ports. However, the USB port upgrade is much faster and uses less menus.



Note:

If you are unsure of the current software version, *press* the INFO/7/STU key. The software version will be indicated on the third line of this screen.



Important:

Before you upgrade your software to the newest version, you must dump all data. This data may be erased once you upgrade your software.

PRESS

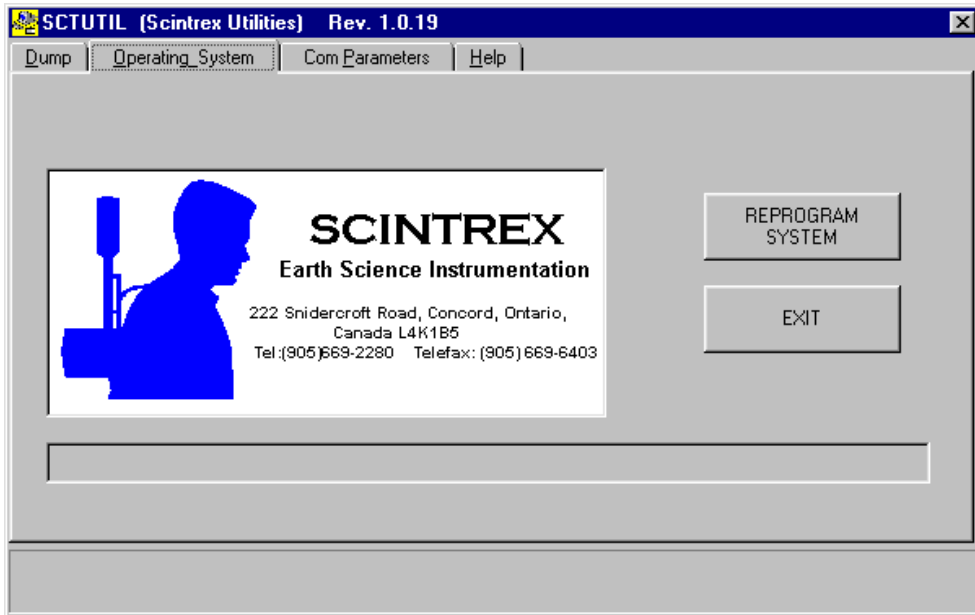


Press the On key.

Connect your USB or RS-232 cable to your PC and your SARIS.



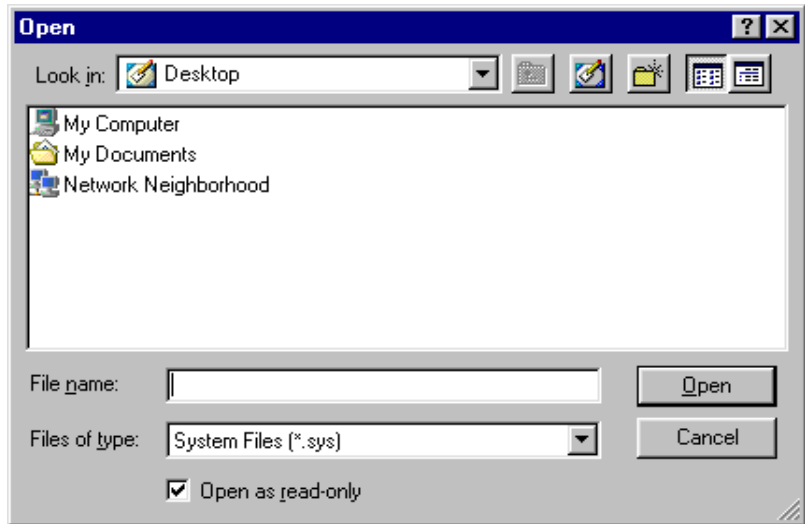
Start your SCTUTIL program and *click* on the operating system window, the following window will appear.



Click on Reprogram system.



The following window will appear.



You will then ***browse*** for the SARIS system (*.sys) files sent to you by Scintrex.

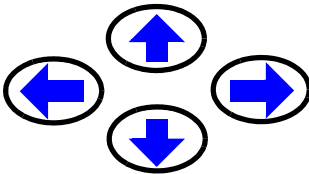
Once you have found it, ***click*** Open.

If you are using your USB cable, the upgrade will then start and should be completed in a very short time.

If you are using an RS-232 cable instead, proceed to the next section.

Using the RS-232 cable to upgrade

On your SARIS, ***press*** the arrow keys to bring the cursor to the software upgrade menu.



The phrase “software upgrade” will then be highlighted, as illustrated below.

Software upgrade

PRESS

Enter ↵

Press the ENTER key.

You will then be prompted to do one of the following:

PRESS

F1

To cancel this operation, *press* the F1(CANCEL) key,

OR

or

PRESS

Enter ↵

to continue, *press* the ENTER key.

The following message will then appear on the SARIS screen.

REPROGRAMMING OPERATING SYS-

Once, the message has disappeared, the reprogramming of your SARIS is complete.

Note:



The SCTUTIL program will also indicate that the reprogramming is proceeding. Please wait that the SARIS powers down for the reprogramming to be complete. When the SARIS is powered up an hourglass will appear for five seconds.



Installing your USB driver

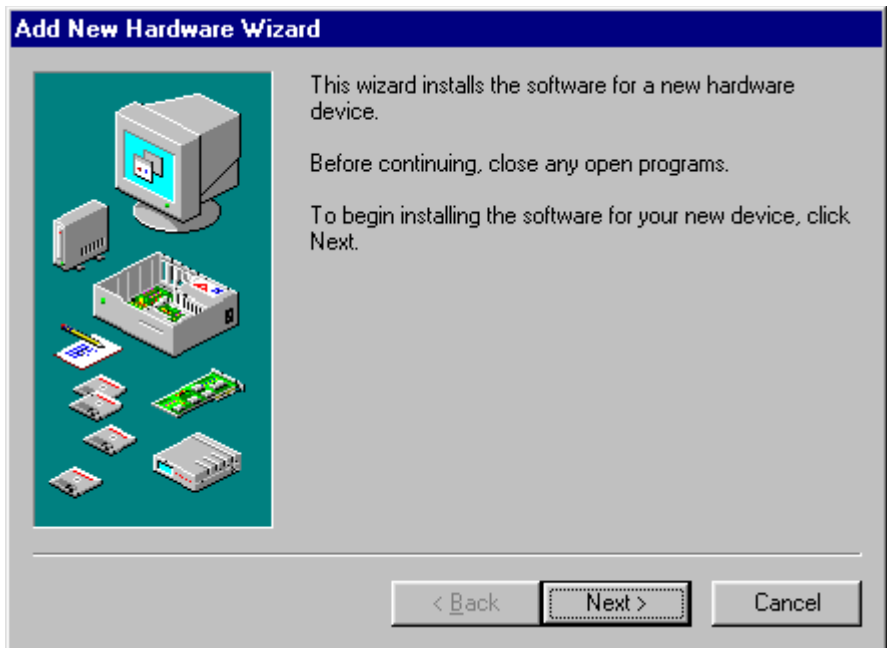
The USB driver is located on your SCTUTIL CD-ROM. Before transferring data in USB mode from your SARIS to your PC, you must first install this driver on your PC.

Close all applications on your PC.

Insert the SCTUTIL CD-ROM in the proper drive on your PC.

In the Control Panel window of your PC, *double-click* on “Add New Hardware”.

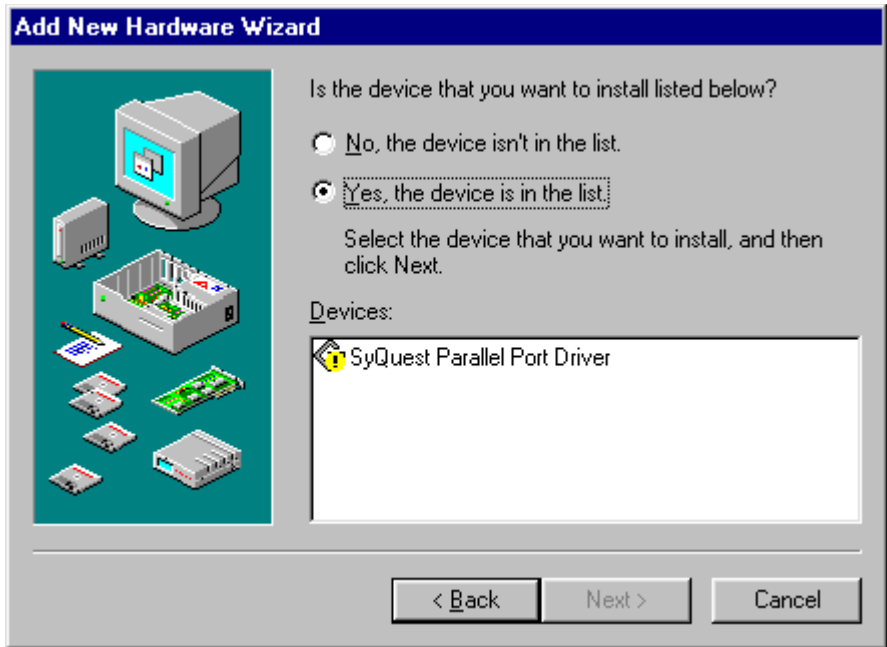
The following window will appear.



Click on Next and let the Wizard search for plug and play devices, the following screen will then appear.



When it has finished searching for plug and play devices, the following screen will then appear.



Click on No and *press* Next.



The following screen will then appear.



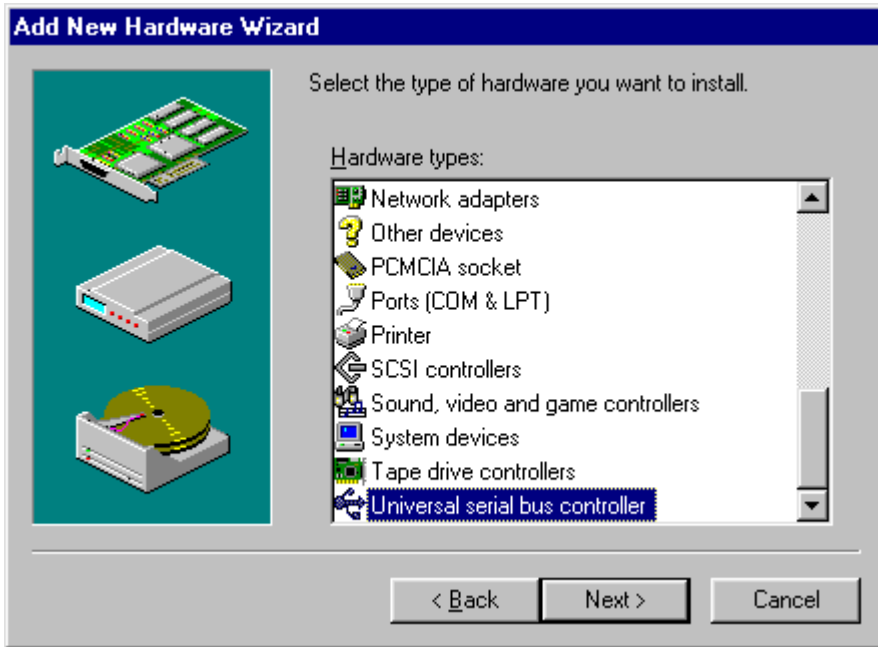
Click on No and *press* Next.



The following screen will then appear.



Scroll down and select Universal Serial Bus, as per the following screen.



Click on Next. The following screen will then appear.



Click on Have Disk.

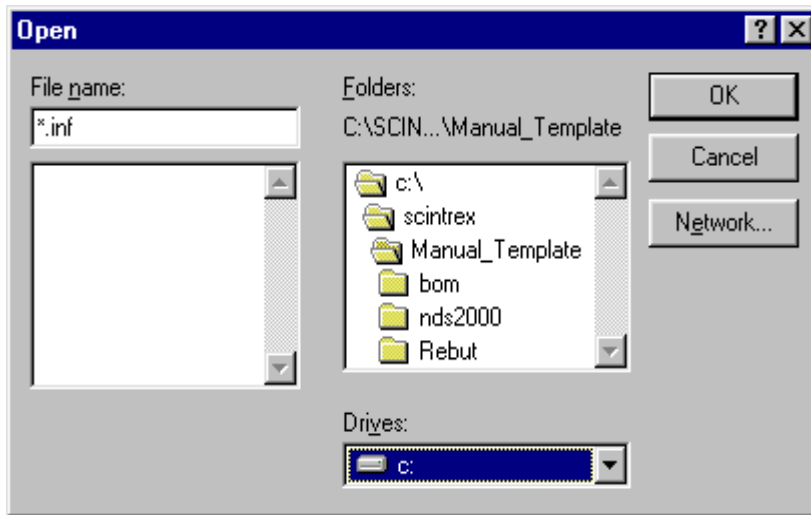
The following screen will then appear.



Click on Browse.



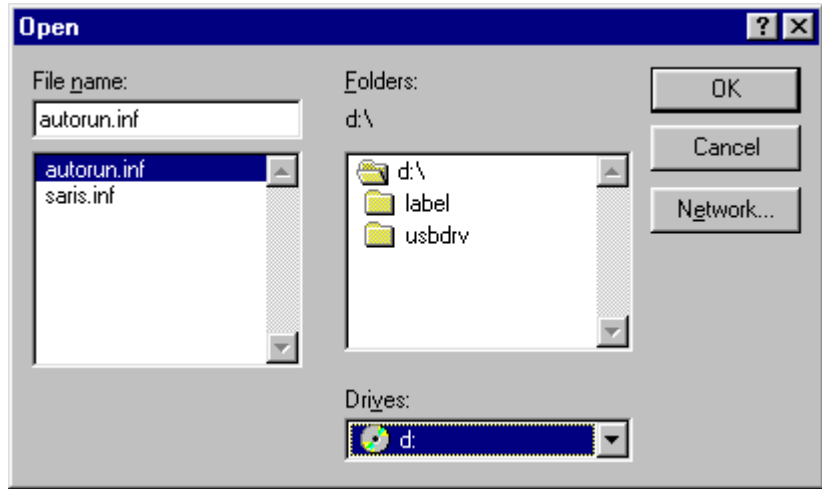
The following screen will then appear.



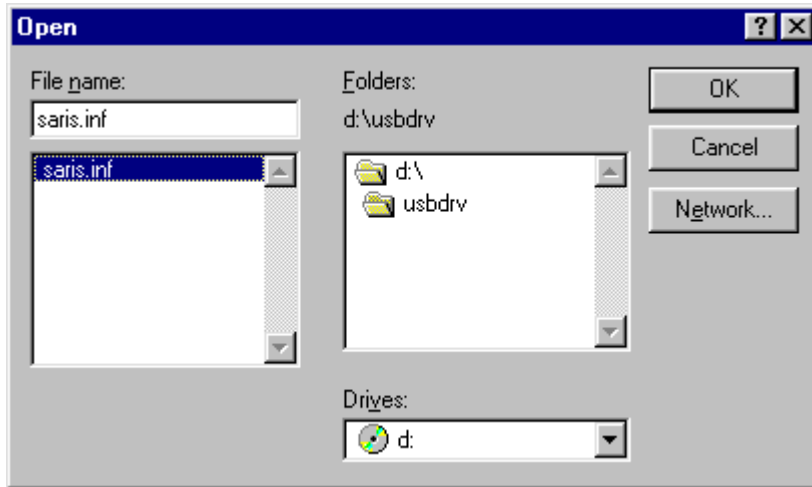
Insert your SCTUTIL CD-ROM in your D:drive (or whichever CD-ROM drive is appropriate in your case)



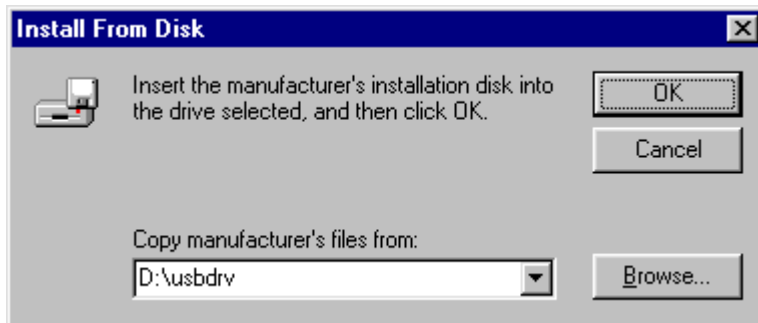
Click on the down arrow in Drives and **select** the drive where your CD-ROM has been inserted. The following screen will then appear.



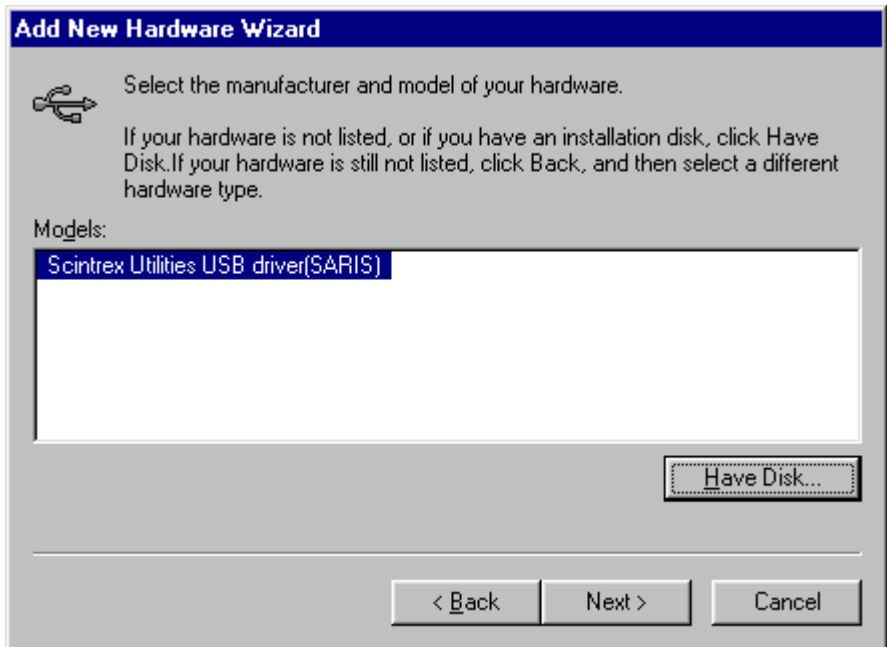
Double-click on the USBDRV directory and *click* on the “saris.inf” file. The following screen will then appear.



Click on OK. The following screen will then appear.



Click on OK. The following screen will then appear.



Click on Next. At this point you may be prompted by your PC that the driver is incompatible but select it anyway. The following screen will then appear.



Click on Next. Wait for the installation to complete. After the installation is complete, the following screen will then appear.



Re-boot your PC to acknowledge the changes.

Your USB driver is now installed.





Index

A

Arrow keys 1-8

B

Battery

charging 4-2

Borehole Logging arrays

choosing 2-64

C

Cable

detecting a new cable 2-7

Cables

creating a virtual cable 2-15 to 2-20

daisy-chaining 2-10

entering name 2-12, 2-17, 2-31, 2-39

Number of sections 2-13, 2-18

setup 2-2 to 2-20

Type of 2-17

CANCEL Key 1-8

Chapter layout scheme 1-3

Clock

adjusting the 2-50

Components list 5-5

Console 1-7

disassembly and reassembly 4-5

electronics 1-7

Contrast

adjusting the 1-11

manually set values 1-12

preset values 1-12

CONTRAST/4/JKL Key 1-9

Current

adjusting the 2-13, 2-18

Customer service 4-1

D

Daisy-chaining cables 2-10

Data

dumping 3-39 to 3-52

recalling 3-34 to 3-38

structure 1-6

Database

detecting and correcting errors 2-47 to 2-48

Default parameter reset 1-31, 4-6

Detecting a new cable 2-7

Direction/Sign Keys 1-10

DUMP/6/PQR Key 1-9

Dumping data 3-39 to 3-52

RS-232 mode 3-44 to 3-52

USB mode 3-40 to 3-44

E

East/+ Key 1-10

Electrode

Spacing 2-13, 2-18

Electrodes

adjusting the number of electrodes 2-12, 2-17

adjusting the positions 2-31, 2-40

Emergency Stop 1-5, 3-10, 3-22

Emergency Stop Key 1-8

Enter Key 1-8

Entering values in fields 1-17 to 1-23

alphanumeric entry, example 1



1-20 to 1-21
alphanumeric entry, example 2
1-21 to 1-23

Error messages

Inversion routine 4-9

SARIS operation 4-8

Extending your line 2-27

F

F1 to F5 keys 1-8

Function keys

description 1-8

Function/Alphanumeric Keys 1-9

Fuse replacement 4-3

G

GPS

choosing differential mode ?? to
2-49

setup ?? to 2-49

Grid System 2-57

H

Hazard

electrical 1-5

Help

on-line 1-14 to 1-15

HELP/5/MNO Key 1-9

I

INFO/7/STU Key 1-9

IP

adjusting the number of cycles
2-24

choosing 2-59

K

Keyboard

description 1-8

Keypad 1-7

Keys

Arrow 1-8

Backspace 1-8

CANCEL 1-8

CONTRAST/4/JKL 1-9

DUMP/6/PQR 1-9

East/+ 1-10

Emergency Stop 1-8

Enter 1-8

F1 to F5 1-8

Function/Alphanumeric 1-9

HELP/5/MNO 1-9

INFO/7/STU 1-9

MEMORY/3/GHI 1-9

North/+ 1-10

NOTE/8/VWX 1-9

Off 1-8

On 1-8

Reading 1-9

RECALL/9/YZ 1-10

SETUP/1/ABC 1-9

Sounding/Profile 1-8

South/- 1-10

SURVEY/2/DEF 1-9

West/- 1-10

L

Line frequency

adjusting the 2-26

M

Macros



- defining 3-30 to 3-31
- using 3-32 to 3-33
- Maximum current
 - adjusting the 2-22
- Maximum measurement time
 - adjusting the 2-13, 2-18, 2-23
- Maximum number of IP cycles
 - adjusting the 2-24

- Memory
 - clearing the 3-53 to 3-54
 - size 1-6

- MEMORY/3/GHI Key 1-9

- Minimum current
 - adjusting the 2-22

- Modules
 - multi-electrode interface 1-7
 - power supply 1-7

N

- Noise threshold
 - adjusting the 2-23

- North/+ Key 1-10

- NOTE/8/VWX Key 1-9

- Notes

- entering 3-27 to 3-33
- recording 3-28 to 3-33
 - manually entered notes 3-33
 - using available macros 3-29 to 3-33
 - using pre-defined list of features 3-28 to 3-29

- Numeric parameters
 - entering 1-8

O

- Off key 1-8

- Offices

- addresses 2-45 to 2-46

- Offset Wenner interpolation 2-27

- On Key 1-8

- On Time 2-60

- On-line screens

- HELP 1-14 to 1-15

- system information 1-15 to 1-16

- Operation

- principles 1-6

P

- Page Numbering 1-1

- Parameter

- Altitude of grid reference point 2-54

- Altitude of profile reference point 3-17

- Altitude of sounding reference point 3-6

- Apparent resistivity 3-11, 3-23

- Azimuth of grid system 2-54

- Azimuth of profile 3-17

- Azimuth of sounding 3-6

- Base spacing 3-18

- Easting 2-54

- Easting of sounding reference point 3-6

- 1st Station/X 3-18

- Grid System 2-57

- Line direction 3-17

- Line position/Y 3-17

- Maximum n 3-18

- Northing 2-54

- Northing of sounding reference point 3-6



- Numeric parameters
 - entering 1-8
 - On time 2-60
 - Optional parameters 2-53 to 2-55
 - Header 2-53
 - reference point parameters 2-54
 - Ro 3-11, 3-23
 - Scan mode 3-7, 3-19
 - SD 3-11, 3-23
 - Self-potential 3-11, 3-23
 - setting up the survey parameters 2-56 to 2-65
 - SP 3-11, 3-23
 - Standard deviation 3-11, 3-23
 - Station step 3-18
 - Survey 2-52 to 2-53
 - Transmitted current 3-11, 3-23
 - TxI 3-11, 3-23
 - Units 2-57
 - UTM difference 2-55
 - UTM Zone 2-54
 - Waveform
 - IP 2-59
 - squarewave 2-59
 - Powering up your SARIS 1-11
 - Preset
 - copying a preset 2-38 to 2-41
 - creating a new preset 2-30 to 2-33
 - deleting a preset 2-42 to 2-43
 - selecting a preset 2-34 to 2-37
 - setup 2-28 to 2-43
 - type of preset 2-31
 - Profile Key 1-8
 - Profiling
 - Wenner
 - setting electrode positions 3-20
 - starting a profile 3-22
 - taking a next measurement 3-24
 - viewing the results 3-25
 - Wenner, example 2 3-16 to 3-26
 - Profiling arrays 1-26 to 1-28
 - choosing 2-63
- ## R
- Reading key 1-9
 - RECALL/9/YZ Key 1-10
 - Recalling data 3-34 to 3-38
 - Reprogramming your SARIS 7-9 to 7-12
 - Resetting the SARIS 1-31, 4-6
 - Resetting the SARIS to the default parameters 1-31, 4-6
- ## S
- Scan Warnings
 - enabling the 2-26
 - Screens
 - Clock 2-50 to 2-51
 - GPS 2-49
 - Options 2-25 to 2-27
 - Service 2-44 to 2-48
 - Set-up 2-1 to 2-2
 - Survey 2-52 to 2-65
 - Transmitter 2-21 to 2-24
 - SCTUTIL program
 - Important notice 1-29
 - installing 7-2 to 7-8
 - installing USB driver 7-13 to 7-25
 - Minimum system requirements 1-30



Setup

- array 2-61 to 2-63
- cables 2-65
- field setup 3-2 to 3-3
 - automated survey 3-3
 - manual survey 3-2 to 3-3

SETUP/1/ABC Key 1-9

Shipping instructions 5-7 to 5-8

Sleep time

- adjusting the 2-26

Software

- upgrading the software version 2-47, 7-9 to 7-12

Sounding arrays 1-24 to 1-26

- choosing 2-62

Sounding Key 1-8

Soundings

Schlumberger

- example 1 3-5 to 3-15
- inverting the sounding 3-13
- setting electrode positions 3-8
- starting a sounding 3-10
- taking a next measurement 3-11

- scrolling through 3-36 to 3-38

South/- Key 1-10

Start value

- adjusting the 2-14, 2-19

SURVEY/1/DEF Key 1-9

Symbols 1-4

T

Technical specifications 5-1

Trouble-shooting 4-6 to 4-7

Type styles scheme 1-2

U

Units 2-57

Upgrading

- software version 2-47, 7-9 to 7-12

USB

- Dumping data 3-40 to 3-44
- Important notice 1-29

V

Virtual cable

- creating a virtual cable 2-15 to 2-20

W

Warning

- USB requirements 1-29

Warranty and repair 5-6 to 5-8

Waveform 2-59

West/- Key 1-10





Head Office

222 Snidercroft Road
Concord, Ontario
Canada, L4K 2K1
tel: (905) 669-2280
fax: (905) 669-6403
e-mail:
scintrex@scintrexltd.com



