



Soundsens i[®]

Soundsens i User Manual

Fluid Conservation Systems, Inc
502 TechneCenter Drive, Suite B
Milford, Ohio 45150
Phone (800) 531-5465
www.fluidconservation.com



Keep this record in the front of the User Manual. When the document has been amended write the amendment number, the date, the paragraph numbers affected by the amendment and your initials in the table below.

SoundSens User Guide
©Radcom (Technologies) Ltd

Contents

Record of Amendments	2
Introduction	5
Components	5
Concept	5
Charging the Carry Case	6
Setting Up SoundSens	7
Setup With PC	7
Start the software	7
Connect the carry case to the PC	8
Information regarding connection via Serial RS232	9
Information regarding connection via USB	10
Information regarding daisy chaining multiple cases together	11
Communication Test	12
REMEMBER TO SAVE REGULARLY	12
Quick recording setup	13
Quick recording setup with Multiple Cases	17
Setup Without PC	19
Basic Carry Case Operation	19
Set Time / Date	20
Recording options	20
Daytime Quick Recording Setup	21
Overnight Quick Recording Setup	22
Custom Recording Setup	23
Downloading Data To The Carry Case	25
Viewing Stored Data Details	25
Memory Capacity	25
SoundSens Case User Interface	26
Summary	26
Set Recording 1 (30 Minute Delay)	27
Set Recording 2 (2am Start)	28
Set User Defined Recording	29
Download Data From Loggers to Carry Case	30
View Stored Data	31
Set Time and Data	32
Dealing With Data	33
Creating A Pipe Layout	33
Pipe Layout Menu	33
Add a background image (optional)	34
Pipe Layout Toolbar	35
Putting loggers on the map	35
Putting text comments on the map	36
Adding connecting pipe work to the map	37
Changing Properties on Pipe Layout	38
Download loggers	39

SoundSens User Guide

Leak Localisation and correlation

Downloading Loggers (Multiple Suitcases)	40
Correlation.....	41
The Basic Recording Graph	44
Recording Graph Advance Features	45
SoundSens Software Advanced Configuration	47
The General tab	47
The General tab (continued)	48
The Communications tab	49
The Recording Defaults tab.....	50
The Pipe Layout tab	51
The Correlation tab.....	52
The Exhaustive Correlation tab	53
The Graph Colours tab.....	54
The Graph Options tab.....	55
Troubleshooting	56
Carry Case Not Communicating with PC or Laptop	56
Incorrect Sensor Type	56
Change Sensor Type	57
SoundSens Software	59
License Agreement	59
Installation Instructions.....	60
USB Driver Installation Instructions	63

SoundSens User Guide

Leak Localisation and correlation

Introduction

Components



SoundSens correlation pods
SoundSens carry case
Software CD
Mains charger
Download leads
(1 x Serial, 1 x USB)

Concept

The SoundSens system comprises a powerful software package and the new SoundSens i pods which can be setup in the field with or without a PC. Recordings can be stored in the memory of the pod, or the unit can be used with a PC to correlate in the field as a multipoint unit carrying out the test straight away or as a delayed test ie: over night.

SoundSens i can store four sets of recording sessions. This is equivalent to 4 nights of data storage. The SoundSens PC software contains help files for using the PC to setup, download and analyse recordings.

This manual was written using SoundSens software version 3.2.1 and Radcom SoundSens i sensors.

Charging the Carry Case

The carry case contains rechargeable batteries. It must be charged for 24 hours before first use. Re-charge the carry case when the battery status LED starts to flash RED. The data will be lost if the unit goes completely flat. However the battery low LED will give plenty of notice of a low battery (i.e. days) and should be seen as an indication to download data and re-charge.

The charge in the carry case battery pack should last approximately two months depending on how frequently it is used.

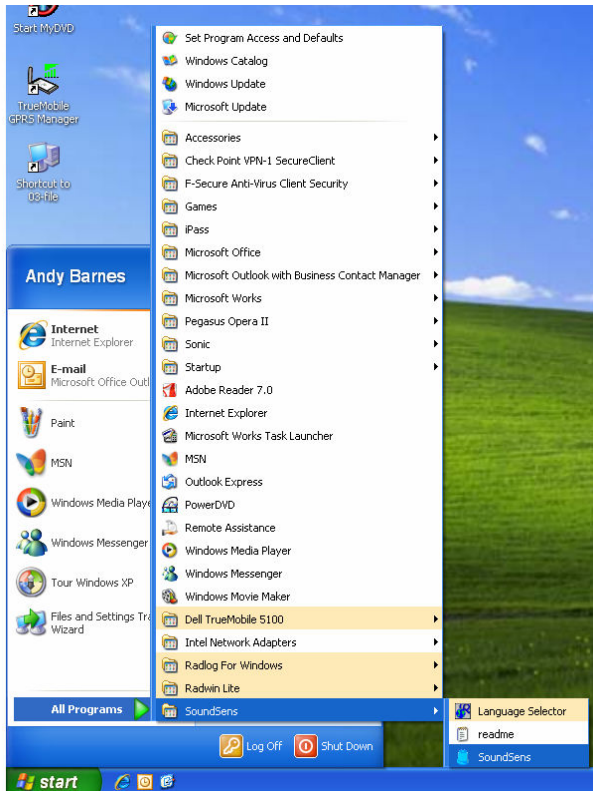
To charge the batteries plug the supplied mains charger into the charging socket next to the battery status LED. While charging the LED will flash ORANGE.

When the batteries are charged the battery status LED will flash GREEN (even if the charger is still connected).

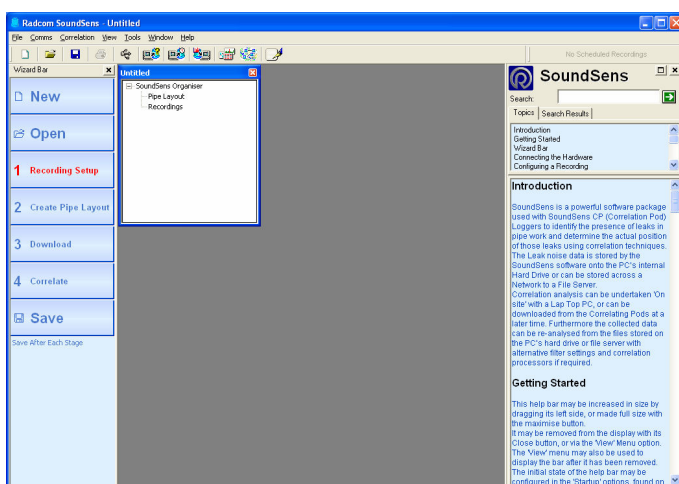
Setting Up SoundSens

Setup With PC

Start the software



Run the SoundSens software from the Start menu as illustrated here.



The opening screen for the SoundSens software.

SoundSens User Guide

Leak Localisation and correlation

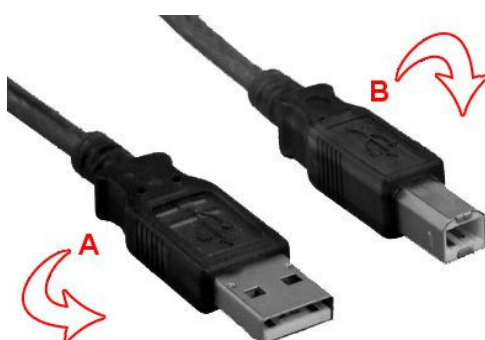
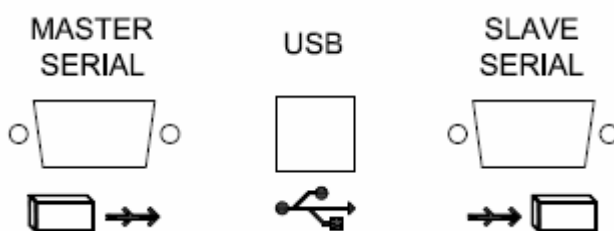
Connect the carry case to the PC



Serial (RS232) Communication Cable

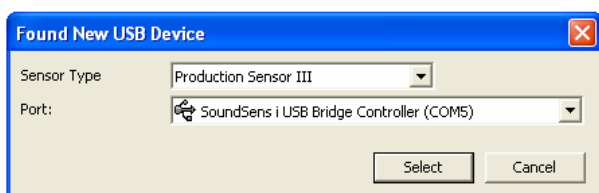
The male end of the cable plugs into the Master Serial connector on the carry case, and the female end plugs into your laptop or PC.

See next page for further information



USB Communication Cable

The A end (rectangle shape) plugs into your PC or laptop, and the B end (square shape) plugs into the USB connector on the carry case.



This message will appear indicating the software has detected the case

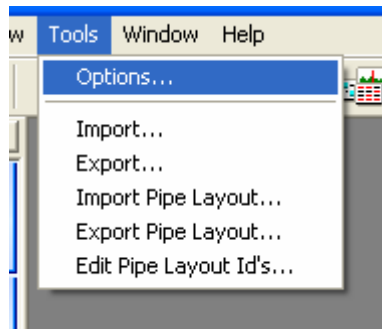
See next page for further information

SoundSens User Guide

Leak Localisation and correlation

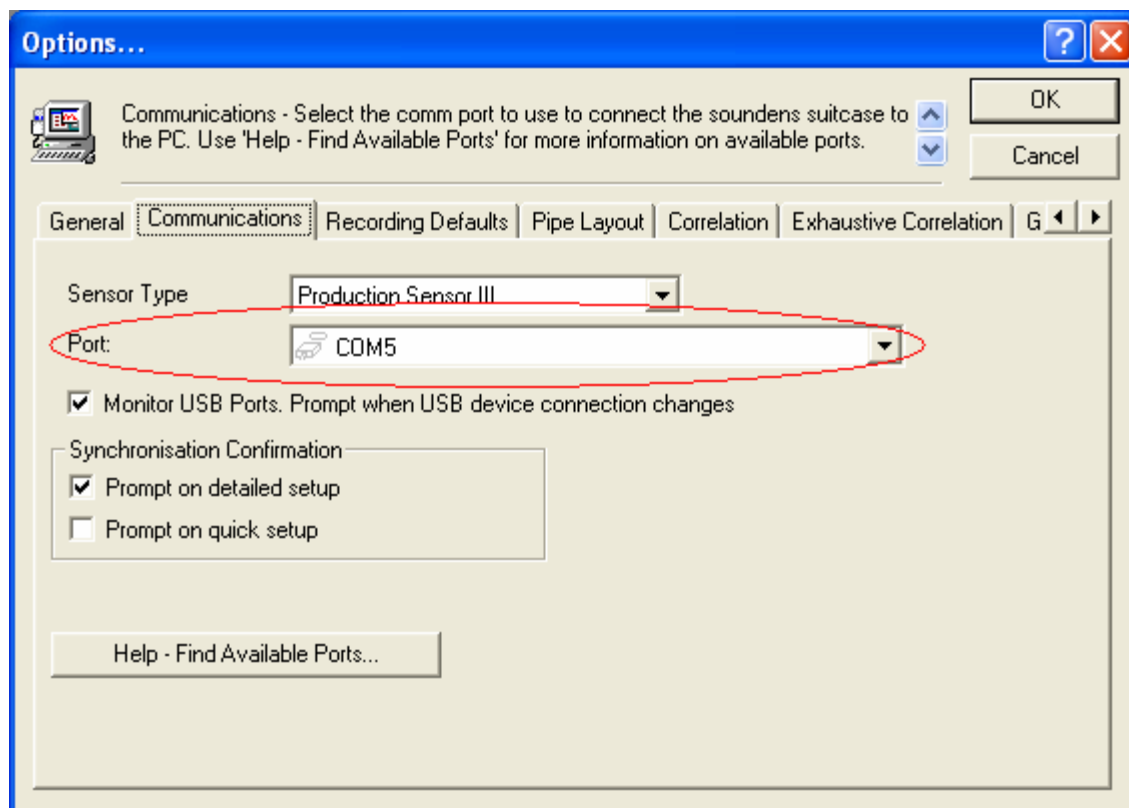
Information regarding connection via Serial RS232

When you connect the carry case to your laptop or PC via the Serial (RS232) cable the PC will not do anything. You must select the correct communications port manually.



From the Tools menu click Options

Then select the Communications tab (see below)



Select the correct port from the drop down list.

For extra help please see page 54 or contact the Radcom technical support team.

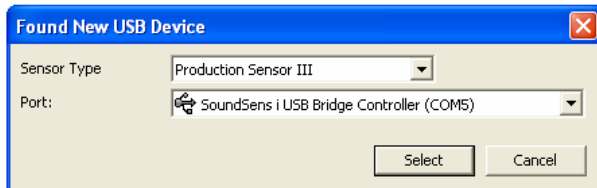
SoundSens User Guide

Leak Localisation and correlation

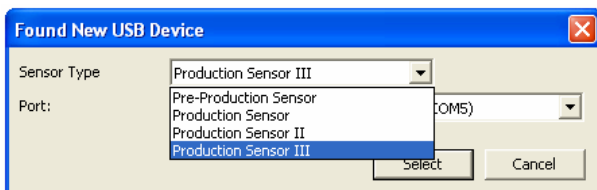
Information regarding connection via USB

With the software started connect the SoundSens carry case to the PC using the USB communication cable.

This message will appear indicating the software has detected the case.

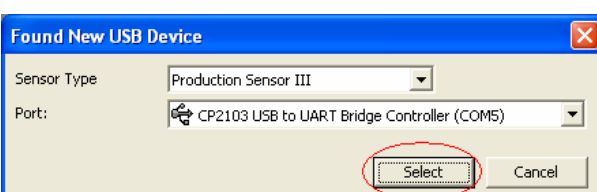
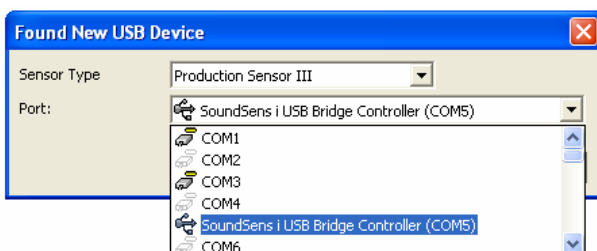


On the Sensor Type drop down menu you can select the following



- Pre Production Sensor
- Production Sensor (The original SoundSens logger)
- Production Sensor II (Dark blue plastic logger)
- Production Sensor III (Otherwise known as SoundSens i)

The port drop down menu is usually picked automatically.



Click Select to continue.

SoundSens User Guide

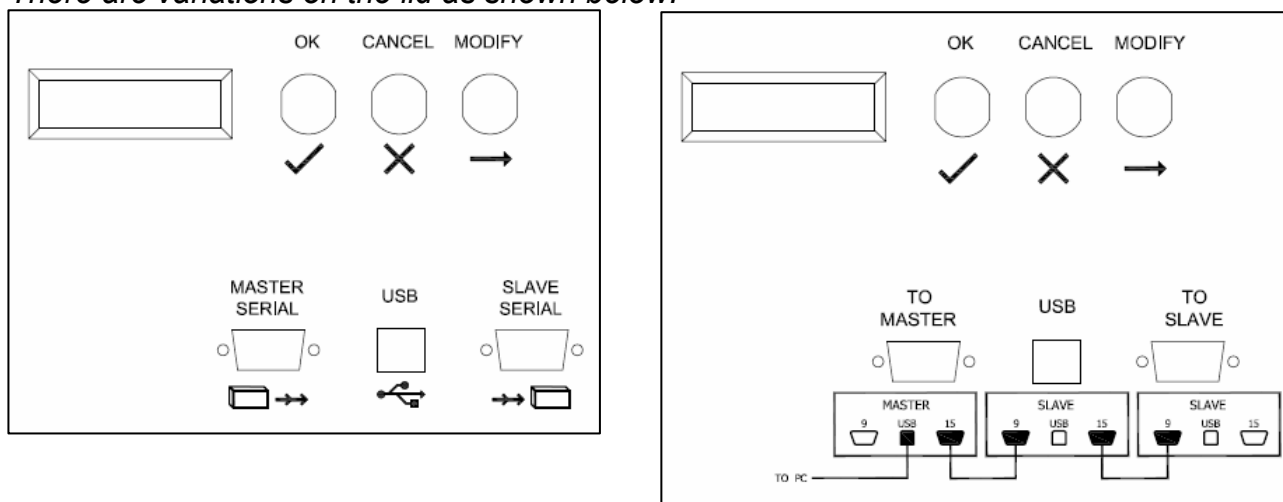
Leak Localisation and correlation

Information regarding daisy chaining multiple cases together

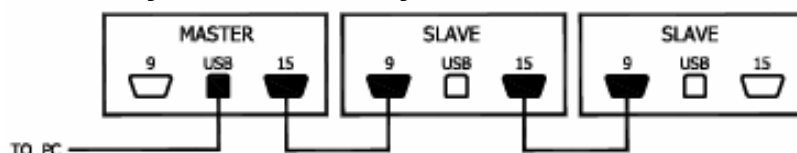
To communicate with multiple cases you need to connect them together using SoundSens serial communication cables, and then via USB to the PC.

The suitcase lid will have an arrangement of D shape communication ports and a USB port.

There are variations on the lid as shown below.



In all situations you need to daisy chain the cases as shown below.

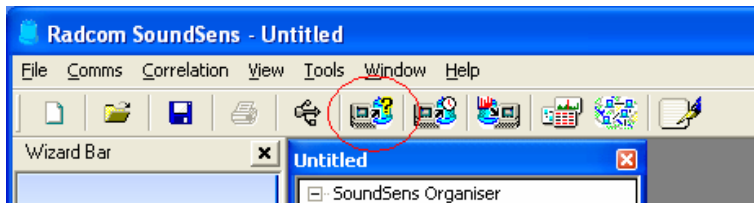


Note: You can not chain together 4 pod kits, but one 4 pod kit can be connected to the end of a chain of 8 or 6 pod kits.

SoundSens User Guide

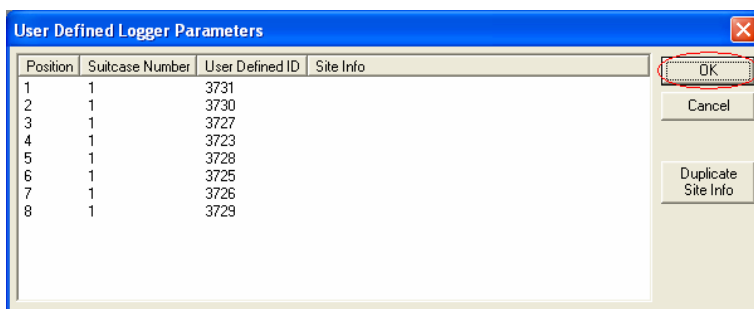
Leak Localisation and correlation

Communication Test



With the carry case (or cases) connected to your PC or Laptop click the sixth icon on the menu bar.

The software will now communicate with the case (or cases) and loggers.



The list which pops up shows the logger positions in the case. If any loggers have failed to communicate they will be missing from this list.

Click Ok.

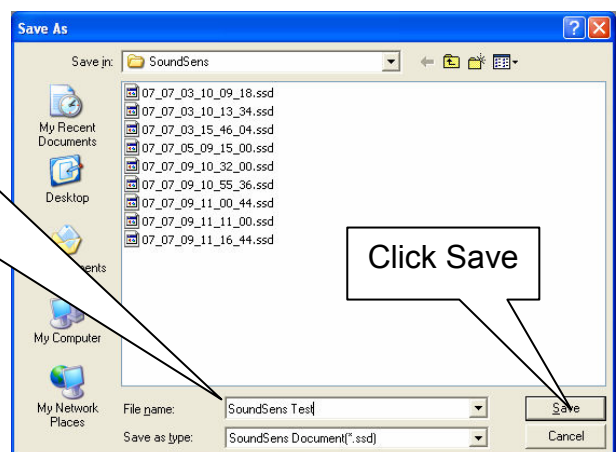
REMEMBER TO SAVE REGULARLY



Click Save

Type a name for your file.

Make sure the file name has not been used before.

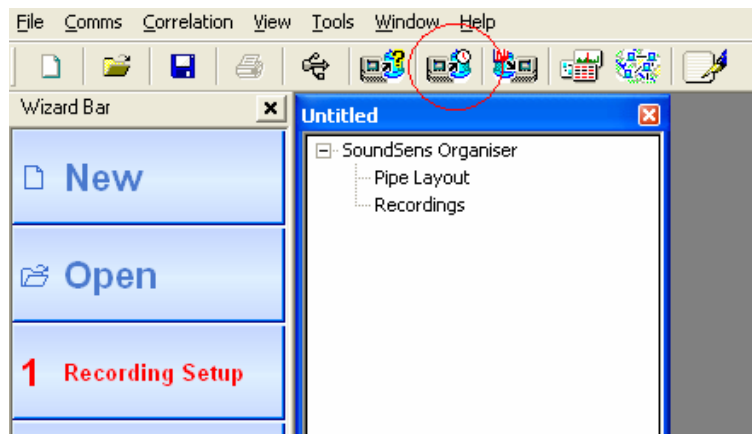
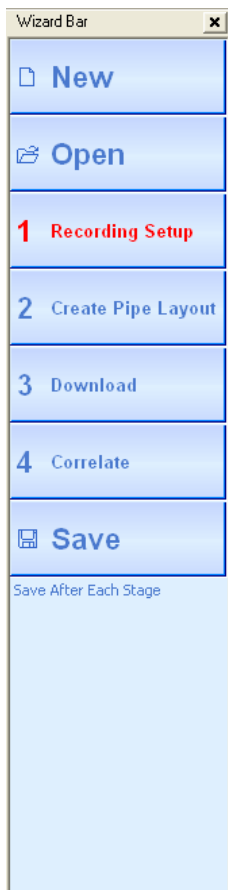


Click Save

You will only be prompted to type a file name if you have not clicked save before.

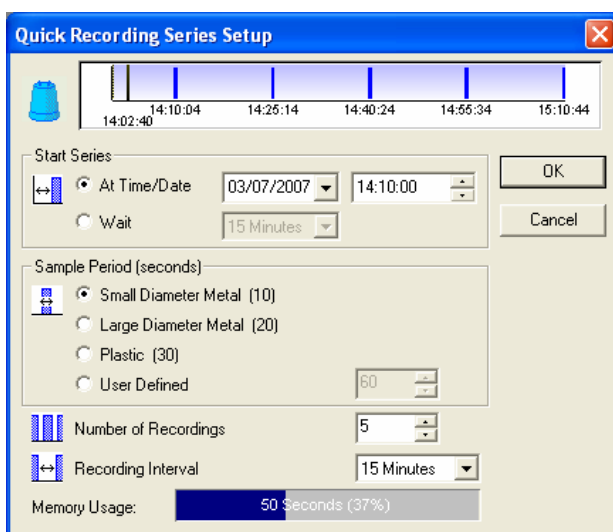
Every other time you click save the updates will be saved but no other action will be required.

Quick recording setup



Connect the carry case to your PC or Laptop.

To setup a quick recording either click the Recording Setup button on the Wizard Bar (left image), or click the 7th button on the menu bar (circled above).

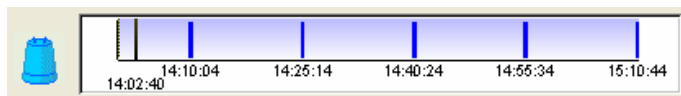


This is the Quick Recording Series Setup window which will pop up after clicking the Recording Setup button.

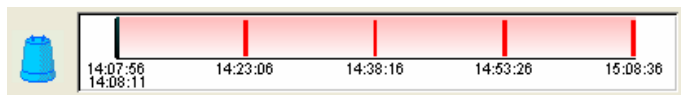
Quick recording setup is explained in detail next.

SoundSens User Guide

Leak Localisation and correlation



The time line shows a series of logging sessions as dark blue lines. (SEE DIAGRAM BELOW)



If the time line is red then check the “Start Series At Time/Date” values are not in the past (SEE NEXT DIAGRAM).

Start Series

☒ At Time/Date 03/07/2007 14:10:00

☐ Wait 15 Minutes

It is possible to set a date and time for the recording series to start
NOTE : Do not set a start time more than 36 hours in the future.

Start Series

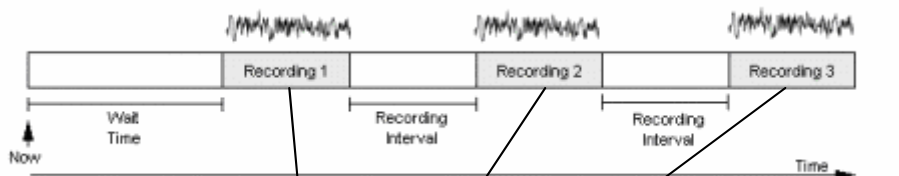
☐ At Time/Date 03/07/2007 14:25:55

☒ Wait 15 Minutes

15 Minutes
20 Minutes
25 Minutes
30 Minutes
35 Minutes
40 Minutes

Alternatively you can set the loggers to wait for a period of time before starting.
You can set the waiting time between 1 minute and 3 hours.

Make sure you have sufficient time to deploy the pods before the run starts!



Black line indicates the time now

First light blue space is Wait time

Dark blue lines are recording times

Quick Recording Series Setup

Timeline: 14:02:40, 14:10:04, 14:25:14, 14:40:24, 14:55:34, 15:10:44

Start Series

☒ At Time/Date 03/07/2007 14:10:00

☐ Wait 15 Minutes

Sample Period (seconds)

☒ Small Diameter Metal (10)

☐ Large Diameter Metal (20)

☐ Plastic (30)

☐ User Defined 60

Number of Recordings 5

Recording Interval 15 Minutes

Memory Usage: 50 Seconds (37%)

OK Cancel

SoundSens User Guide

Leak Localisation and correlation

Sample Period (seconds)

☒ Small Diameter Metal (10)

☐ Large Diameter Metal (20)

☐ Plastic (30)

☐ User Defined

Select the sample period.

This is determined by the pipe material and diameter.

Suggested sample periods for pipe materials and lengths are shown below.

Pipe	Short distances	Metre	Long distances	Metre	Very long distances	
Up to 6" Metal	10 Seconds	500	10-20 Seconds	1000		
8" +Metal	20 Seconds	400	20-30 Seconds	800		
Up to 6" AC	10 Seconds	100	20 Seconds	500		
8" + AC	20 Seconds	80	30 Seconds	500		
Up to 4" MDPE/PVC	30 Seconds	50	60 Seconds	100		
4" + MDPE/PVC	60 Seconds	50	120+Seconds	100		
300+Steel			20 Seconds	500	60 Seconds	1000+

NOTE : On sites with mixed pipe material always select the longest sample period. So if you have some 6" and some 8" Metal (less than 500 metre lengths) select 20 seconds.

Number of Recordings

Recording Interval

Memory Usage: 50 Seconds (37%)

Set the number of recordings

(max 9), and set the recording interval
(between 1 minute and 3 hours)

The recording interval is the gap between the START times of each recording.
e.g. if three recordings of 1 minute each are set to start at 1AM with a recording interval of 1 hour then the start times will be 1am, 2am, 3am. If the recording interval is 15 minutes then the start times will be 1am, 1:15am and 1:30 am.

Radcom recommends 3 recordings – see explanation below.

The recording interval needs to be set with local knowledge in mind. Think of how long it takes for a toilet to fill in your local area, and set the recording interval to that time. This will help reduce the detection of noise which is due to legitimate consumption.

This is also partly the reason why we suggest 3 recordings. If a logger detects a noise which can be put down to legitimate usage then hopefully on the second or third recording the usage will have stopped.

Number of Recordings

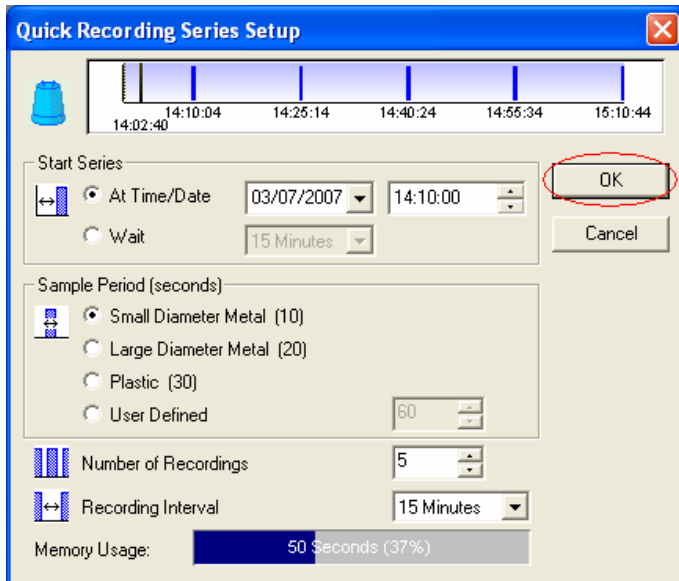
Recording Interval

Memory Usage: 140 Seconds (103%)

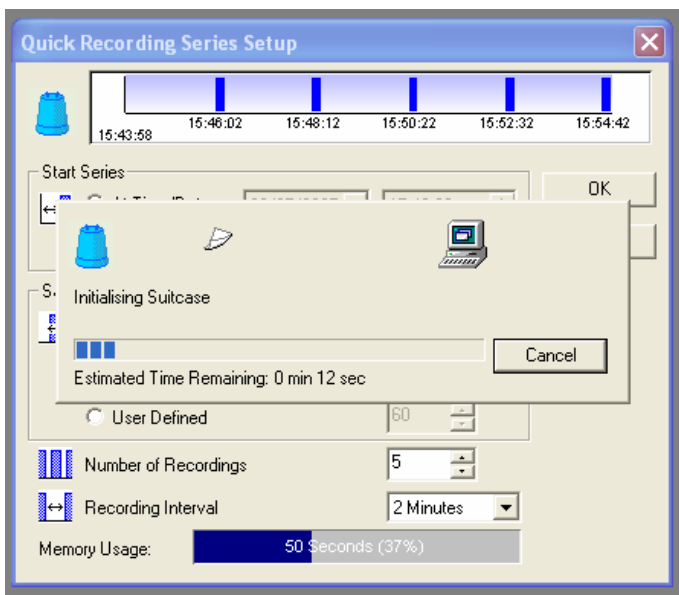
Some combinations of sample periods and number of recordings will cause excess memory usage. This is due to memory size restrictions in the logger.

SoundSens User Guide

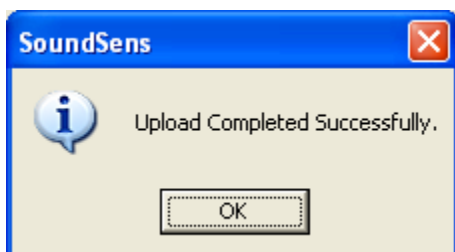
Leak Localisation and correlation



After you are happy with the settings in the setup window, click OK.



The SoundSens software should communicate with the suitcase.



The SoundSens software will display this message if the setup worked. Click OK to continue.

Deploy SoundSens correlation pods (i.e. loggers) on site.
You should have sufficient time to deploy the pods before the run starts.
As you deploy make a note of the SERIAL NUMBER of the Pod and it's location on site.

CONTINUED...

Quick recording setup with Multiple Cases

Connect the suitcases together as shown in the section “Information regarding daisy chaining multiple cases together”

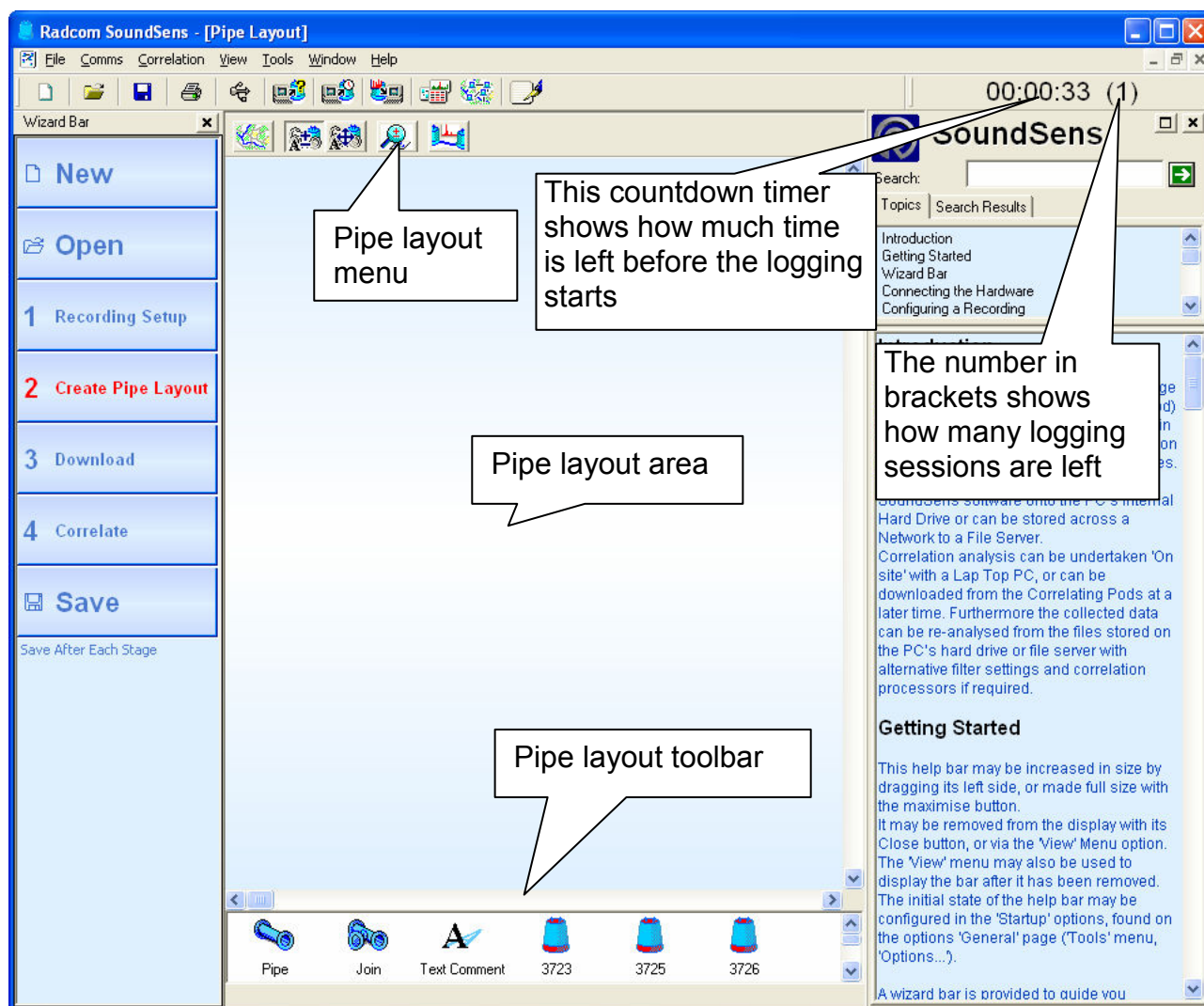
Follow the instructions from the section “Quick recording setup”.

At the stage of upload you will notice the software communicates with each suitcase and each logger within in turn.

SoundSens User Guide

Leak Localisation and correlation

After uploading the settings to the loggers the SoundSens software will look something like this...



The next step is to create a pipe layout.

Creating a pipe layout is explained in the Pipe Layout section within the Dealing With Data chapter of this manual.

REMEMBER TO SAVE REGULARLY (PAGE 8)

Setup Without PC

Basic Carry Case Operation

Please note

When the carry case is not being used it will switch to a low power standby mode for battery conservation, so the carry case display will turn off after 20 seconds if no buttons are pressed. If you are in the middle of making any changes or setting up a recording session you will have to start again.

The carry case display can be reactivated by pressing OK, CANCEL, or MODIFY. The first thing you see on the display will always be the time and date – **You must check that this is correct before setting up a recording.** However the chances of the time being wrong are very small because every time the SoundSens software communicates with the carry case it will synchronise the time.

In addition to the time/date this screen can also show

- BATTERY LOW (if the battery needs charging)
- BATTERY CHARGING (when the charger is plugged in)
- Recording countdown (time until next recordings starts) if neither of the above apply and a recording has been set up.

The format for the recording countdown is: HH:MM:SS (N)

HH	– Hours
MM	– Minutes
SS	– Seconds
N	– Number of recordings remaining

Pressing the MODIFY key cycles through the main options.

To select an option press OK.

Pressing CANCEL returns to the time/date screen.

Main options (Press Modify to cycle through):

- Time/Date
- Set recording 1? (30min delay) – daytime quick recording setup
- Set recording 2? (2am start) – overnight quick recording setup
- Recording setup? – Custom recording setup
- Download data?
- Stored data
- Set time/date

Set Time / Date

Setting the time is rarely necessary as the unit contains an accurate clock, and when connected to a PC the time and date are updated.

1. Press MODIFY to cycle through the menu options until you see **"Set Time / Date"**
2. Press OK to enter edit mode
3. Use the MODIFY key to change the value
4. Press OK to move to the next value

Recording options

There are three options for setting up a new recording.

1. Daytime Quick Recording
2. Overnight Quick Recording
3. Custom Recording

This table should assist you in deciding whether one of the pre-programmed sessions will be suitable, or if you need to set up a custom recording.

Pipe	Short distances	Metre	Long distances	Metre	Very long distances	
Up to 6" Metal	10 Seconds	500	10-20 Seconds	1000		
8" +Metal	20 Seconds	400	20-30 Seconds	800		
Up to 6" AC	10 Seconds	100	20 Seconds	500		
8" + AC	20 Seconds	80	30 Seconds	500		
Up to 4" MDPE/PVC	30 Seconds	50	60 Seconds	100		
4" + MDPE/PVC	60 Seconds	50	120+Seconds	100		
300+Steel			20 Seconds	500	60 Seconds	1000+

SoundSens User Guide

Leak Localisation and correlation

Daytime Quick Recording Setup

This sets up a recording session which will start after a 30 minute delay. Three recordings will be made each 20 seconds long, five minutes apart.

Delay to start of recording:	30 min
Interval between recordings:	5 min
Length of each recording:	20 sec
Number of recordings:	3

Check the table at the bottom of this page to see if it is suitable for your test.

1. Press MODIFY to cycle through the menu options until you see **"Set recording 1"**
2. Press OK to setup the quick recording

If the loggers contain any data then it will be downloaded before the new recording is set up. This ensures that the data in the loggers cannot be lost accidentally by setting up a new recording. All recordings will be available for download in the SoundSens software.

When the recording setup is complete the screen will show a confirmation message, e.g.

4 LOGGERS	-O--
PROGRAMMED	-OOO

The number of loggers programmed is displayed, and the right side of the screen shows a map of the positions of the programmed pods ('O' represents a logger present and a '-' shows a vacant position). If this differs from the actual positions of the loggers below the most likely explanation is that the windows on top of the pods are dirty or that an object is on top of the loggers.

Pipe	Short distances	Metre	Long distances	Metre	Very long distances	
Up to 6" Metal	10 Seconds	500	10-20 Seconds	1000		
8" +Metal	20 Seconds	400	20-30 Seconds	800		
Up to 6" AC	10 Seconds	100	20 Seconds	500		
8" + AC	20 Seconds	80	30 Seconds	500		
Up to 4"MDPE?PVC	30 Seconds	50	60 Seconds	100		
4" + MDPE/PVC	60 Seconds	50	120+Seconds	100		
300+Steel			20 Seconds	500	60 Seconds	1000+

SoundSens User Guide

Leak Localisation and correlation

Overnight Quick Recording Setup

This sets up a recording session which will start at 2am. Three recordings will be made each 20 seconds long, one hour apart.

Recording start time:	2 am
Interval between recordings:	1 hour
Length of each recording:	20 sec
Number of recordings:	3

Check the table at the bottom of this page to see if it is suitable for your test.

1. Press MODIFY to cycle through the menu options until you see **"Set recording 2"**
2. Press OK to start the recording setup

If the loggers contain any data then it will be downloaded before the new recording is set up. This ensures that the data in the loggers cannot be lost accidentally by setting up a new recording. All recordings will be available for download in the SoundSens software.

When the recording setup is complete the screen will show a confirmation message, e.g.

4 LOGGERS	-O--
PROGRAMMED	-OOO

The number of loggers programmed is displayed, and the right side of the screen shows a map of the positions of the programmed pods ('O' represents a logger present and a '-' shows a vacant position). If this differs from the actual positions of the loggers below the most likely explanation is that the windows on top of the pods are dirty or that an object is on top of the loggers.

Pipe	Short distances	Metre	Long distances	Metre	Very long distances	
Up to 6" Metal	10 Seconds	500	10-20 Seconds	1000		
8" +Metal	20 Seconds	400	20-30 Seconds	800		
Up to 6" AC	10 Seconds	100	20 Seconds	500		
8" + AC	20 Seconds	80	30 Seconds	500		
Up to 4"MDPE?PVC	30 Seconds	50	60 Seconds	100		
4" + MDPE/PVC	60 Seconds	50	120+Seconds	100		
300+Steel			20 Seconds	500	60 Seconds	1000+

SoundSens User Guide

Leak Localisation and correlation

Custom Recording Setup

This option sets up a recording with user-defined settings.

1. Press MODIFY to cycle through the menu options until you see **“Recording Setup”**
2. Press OK to start
3. For each setting number use the MODIFY key to change the value
4. Press OK to move to the next setting

The options available are:

1. Recording Start Delay
 - 1,5,10,15,30 or 60 minutes
 - At the beginning of an hour (press modify to cycle through)
2. Length Of Each Recording
 - 10, 20, 30 or 60 seconds
3. Recording Interval (time between recordings)
 - 1, 2, 5, 10, 15, 20, 30, 45 or 60 minutes
4. Number Of Recordings
 - 10, 20, 30 or 60 seconds

This table should assist in selecting the recording options you need.

Pipe	Short distances	Metre	Long distances	Metre	Very long distances	
Up to 6" Metal	10 Seconds	500	10-20 Seconds	1000		
8" +Metal	20 Seconds	400	20-30 Seconds	800		
Up to 6" AC	10 Seconds	100	20 Seconds	500		
8" + AC	20 Seconds	80	30 Seconds	500		
Up to 4"MDPE?PVC	30 Seconds	50	60 Seconds	100		
4" + MDPE/PVC	60 Seconds	50	120+Seconds	100		
300+Steel			20 Seconds	500	60 Seconds	1000+

NOTE : On sites with mixed pipe material always select the longest sample period. So if you have some 6" and some 8" Metal (less than 500 metre lengths) select 20 seconds.

The recording interval needs to be set with local knowledge in mind. Think of how long it takes for a toilet to fill in your local area, and set the recording interval to that time. This will help reduce the detection of noise which is due to legitimate consumption.

This is also partly the reason why we suggest 3 recordings. If a logger detects a noise which can be put down to legitimate usage then hopefully on the second or third recording the usage will have stopped.

Continued...

SoundSens User Guide

Leak Localisation and correlation

For the last setting, 'number of recordings', if a value is selected that uses more than the available memory in the logger then exclamation marks will be shown as a warning. For example if the recording length is set to 60 seconds and the number of recordings is set to 4 then the display will show:

NUMBER OF RECORDINGS:4 !!

The exclamation marks show that the logger memory will overflow if this combination of settings is used. In this situation, use a lower number of recordings or a shorter recording time.

If the loggers contain any data then it will be downloaded before the new recording is set up. This ensures that the data in the loggers cannot be lost accidentally by setting up a new recording. All recordings will be available for download in the SoundSens software.

SoundSens User Guide

Leak Localisation and correlation

Downloading Data To The Carry Case

Data can be held in the carry case and downloaded to a PC or Laptop at a later stage. To download data after a recording:

1. Place the pods back into the case (in any order or position) and lower the front panel.
2. Press MODIFY to cycle through the menu options until you see “**Download Data**”
3. Press OK to start the download

A message will be displayed during data transfer. After downloading data from the pods a confirmation message is shown. This is the same format used after setting up a recording and shows which loggers have transferred data.

DOWNLOAD	----
COMPLETE	-OO-

Viewing Stored Data Details

This option shows a summary of data sets stored in the SoundSens i. A ‘set’ is the collection of data transferred during a download. The summary shows the set number, number of pods used and the start time of the first recording, e.g.

SET: 02	PODS: 06
09:50	20/02/07

1. Select the **Stored Data?** option with MODIFY
2. Press OK to view the summary for the first set
3. Press OK to view the next set

When all sets have been displayed there is an option to delete the last set. Note the delete operation **cannot be undone**.

1. Select the **Stored Data?** option with MODIFY
2. Press OK until all the sets have been seen and the message “Remove last set” is shown

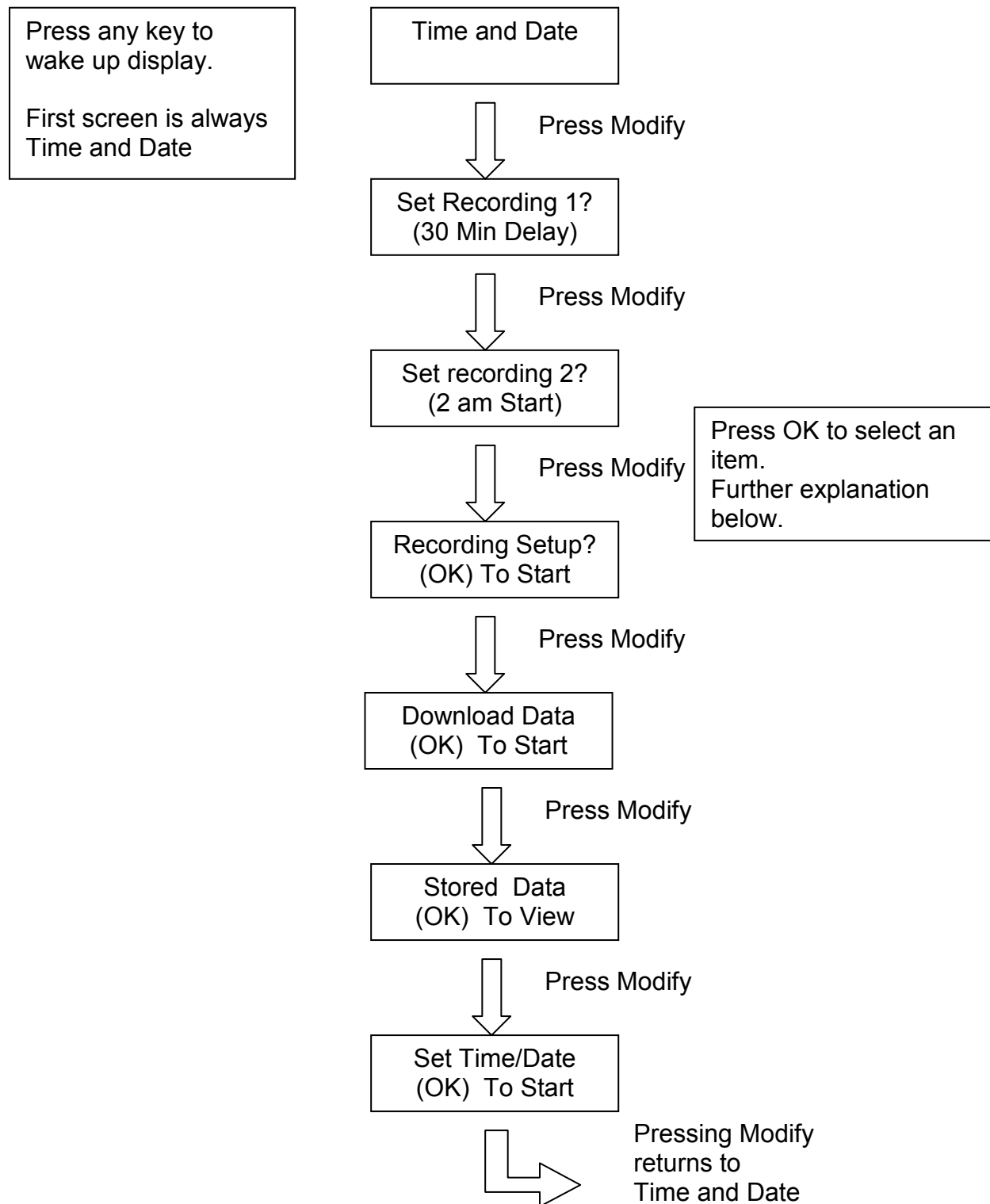
To delete the data use the MODIFY key to select YES then press OK

Memory Capacity

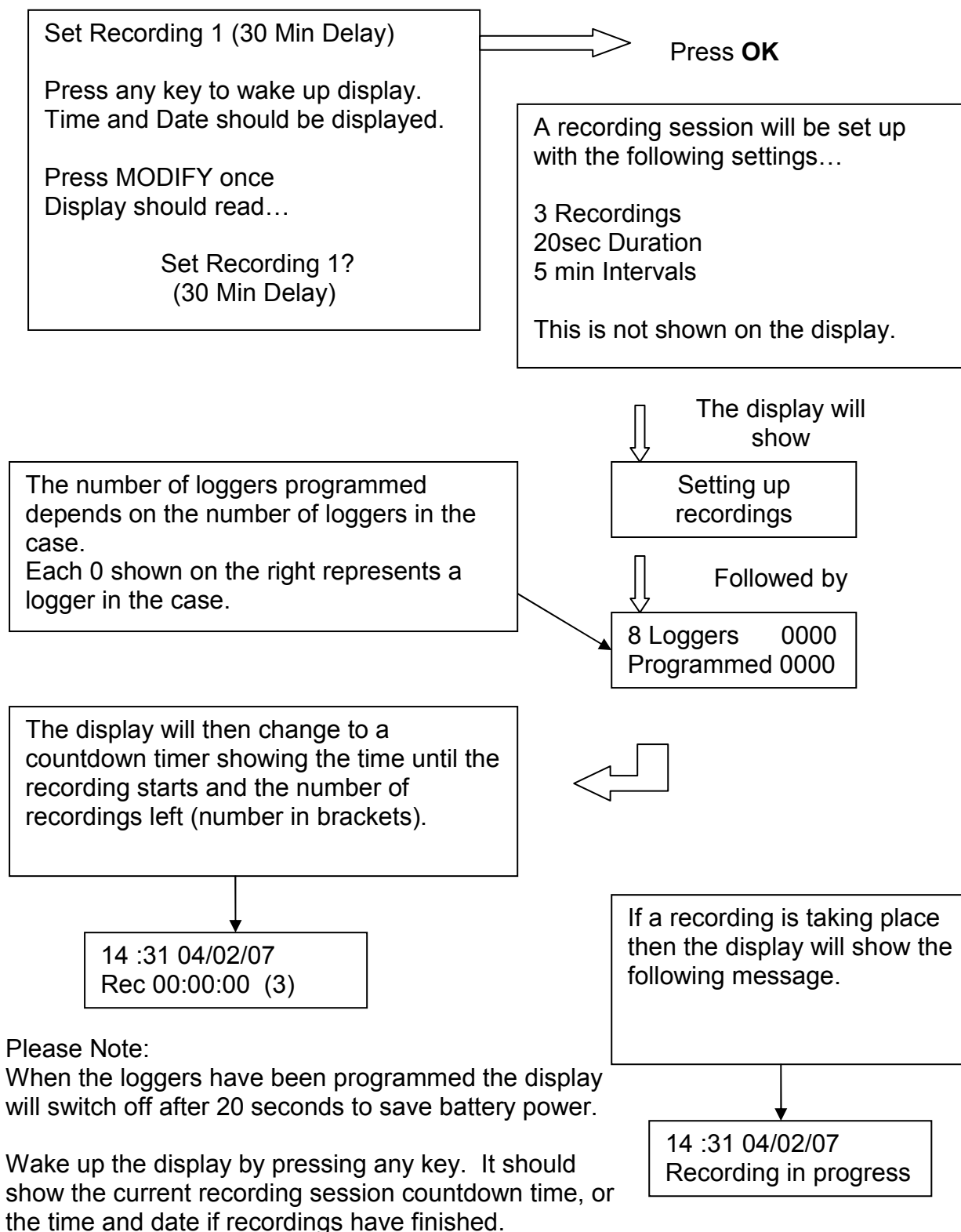
There is enough memory in the case to hold 4 downloads from 8 SoundSens i correlator pods which are full of data. When the case and all the pods are full of data you will not be able to record any more and you will see “Memory Full” on the display. Either download the data to a PC or erase some data from the View Data menu. One pod will hold approximately 120 seconds of data.

SoundSens Case User Interface

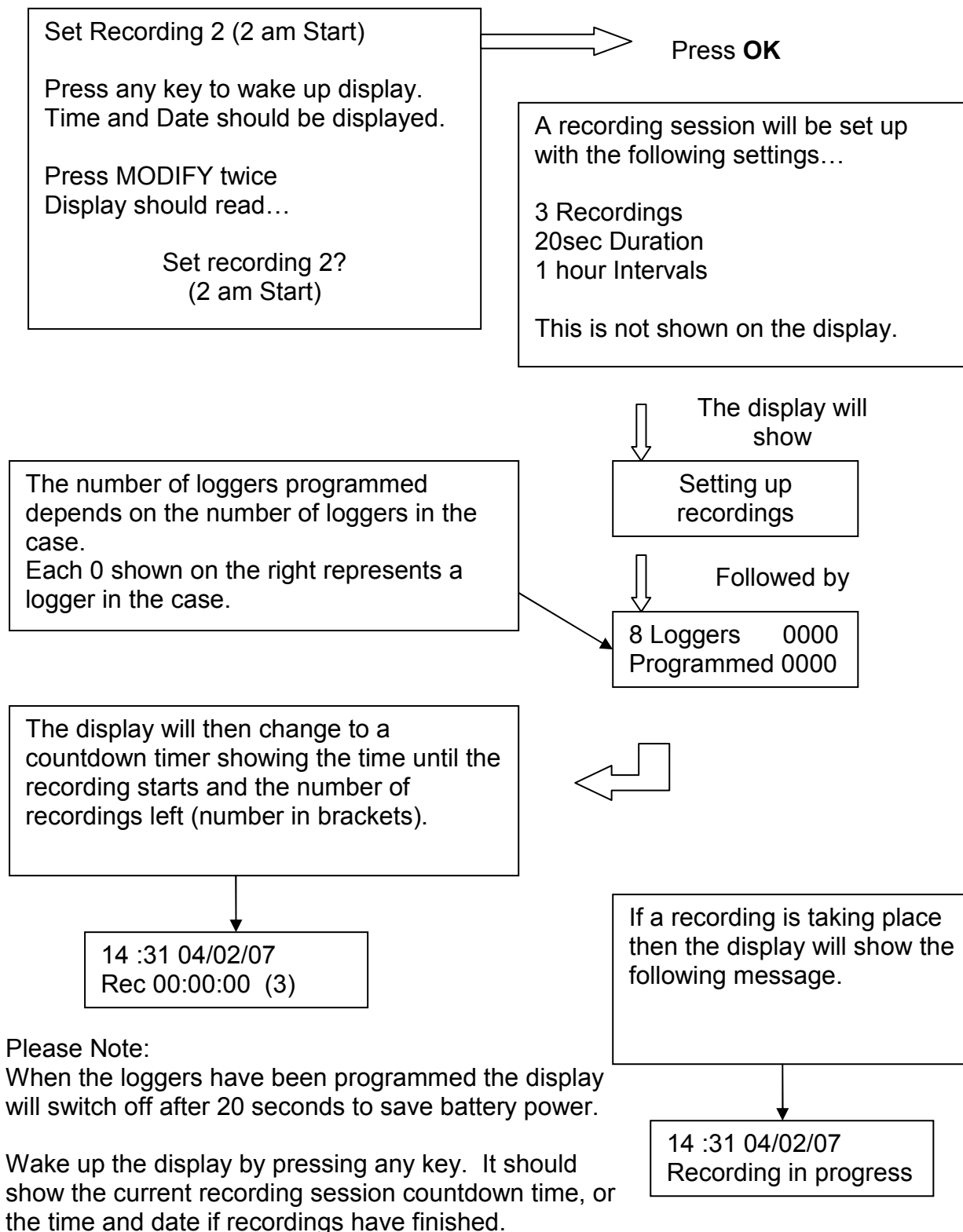
Summary



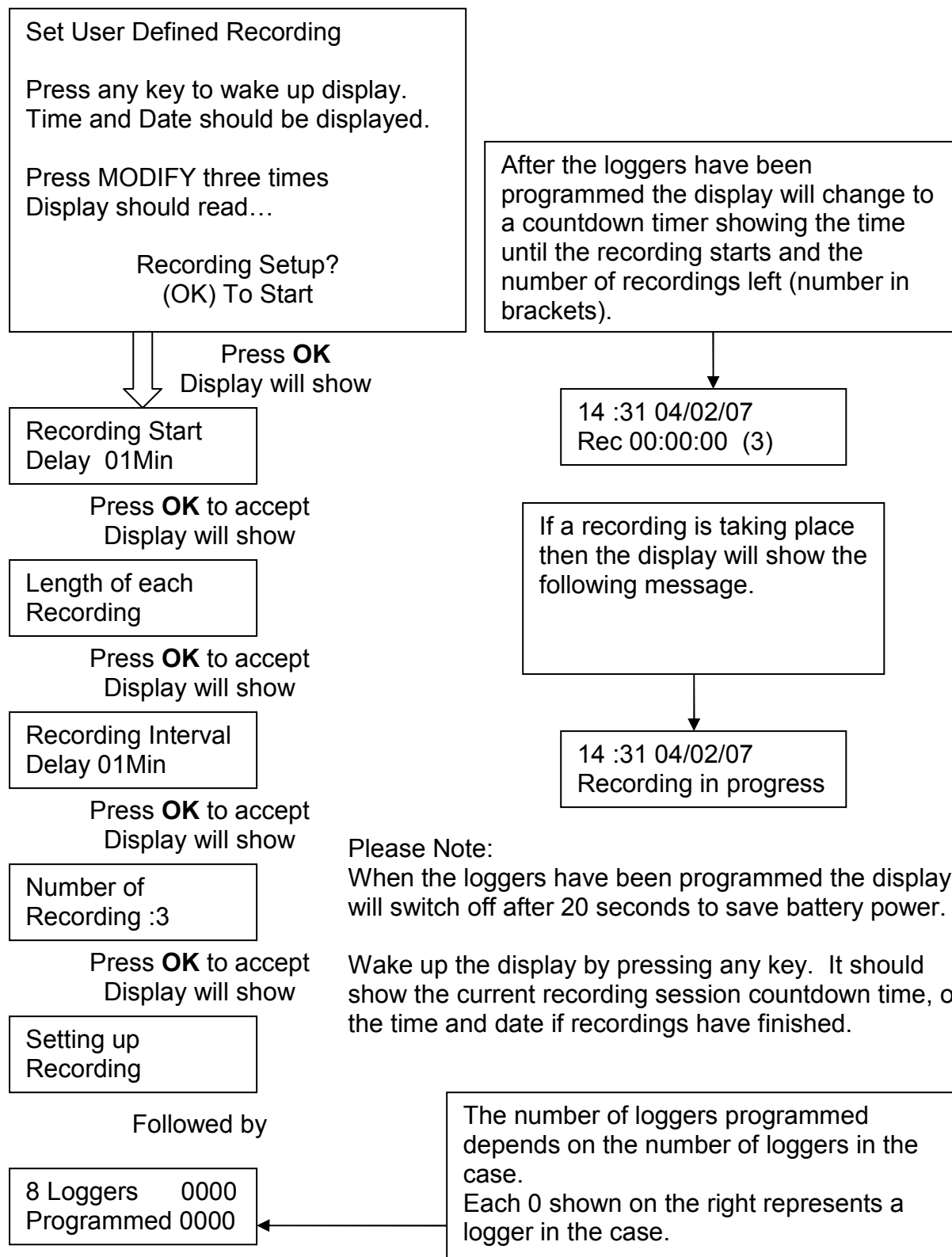
Set Recording 1 (30 Minute Delay)



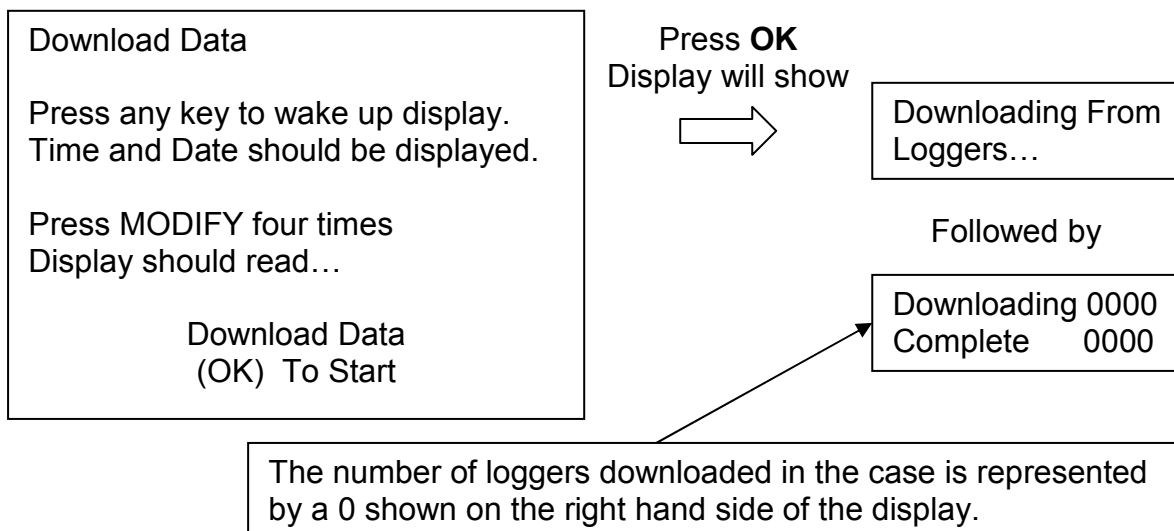
Set Recording 2 (2am Start)



Set User Defined Recording

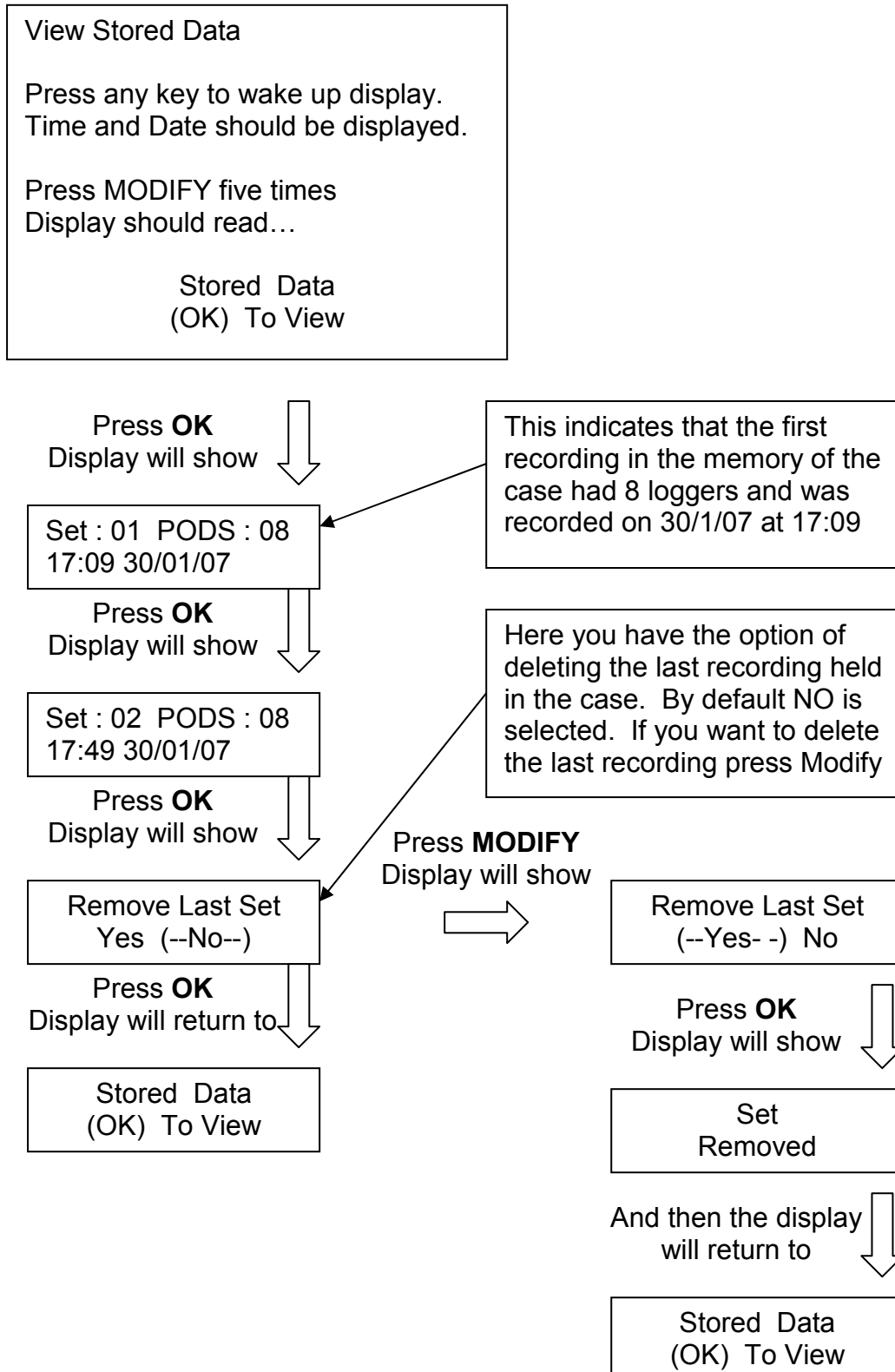


Download Data From Loggers to Carry Case



When the download data option is used, the data is read from the loggers and held in the memory of the case. It can then be downloaded to the SoundSens software at a later stage.

View Stored Data



Set Time and Data

Set Time and Date

Press any key to wake up display.
Time and Date should be displayed.

Press MODIFY six times
Display should read...

Set Time/Date
(OK) To Start

Time and Date
Displayed

Press **OK**

Set Hour

Press **Modify** to change value
Then press **OK**

Set Minutes

Press **Modify** to change value
Then press **OK**

Set Day

Press **Modify** to change value
Then press **OK**

Set Month

Press **Modify** to change value
Then press **OK**

Set Year

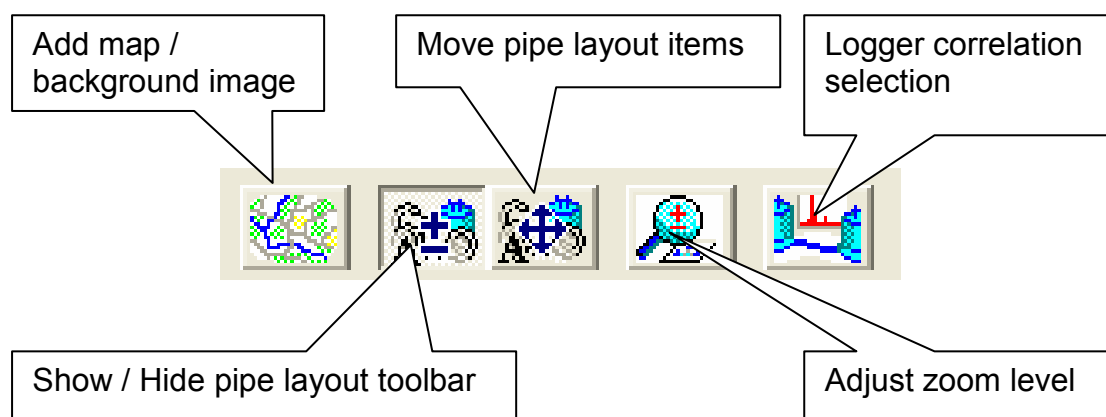
Then press **OK** to set the time.

Dealing With Data

Creating A Pipe Layout

It is possible to either create a basic schematic layout of the underground pipe work, or add a background image for illustration purposes.

Pipe Layout Menu



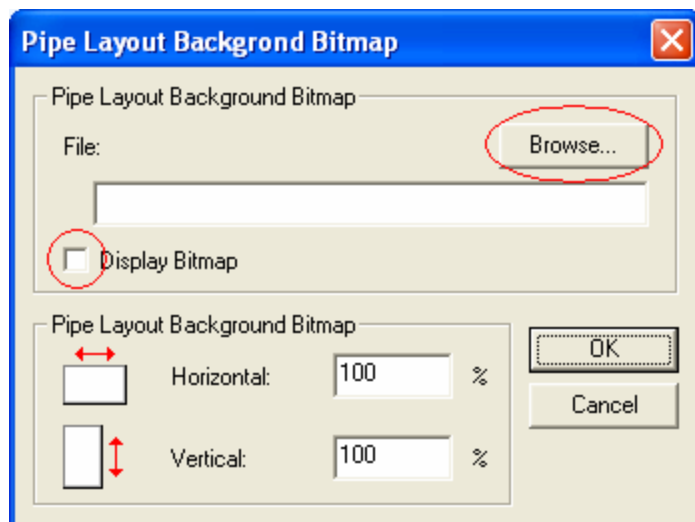
SoundSens User Guide

Leak Localisation and correlation

Add a background image (optional)



Click the Add Map / Background Image button.

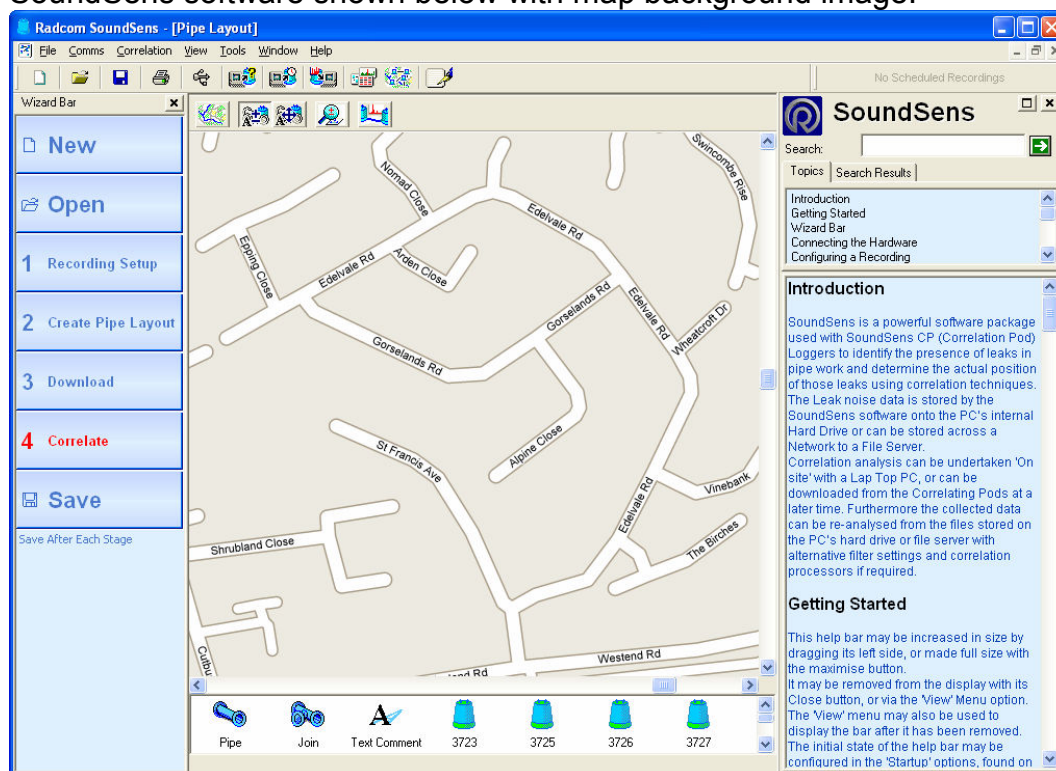


Click Browse and use the standard windows explorer interface to locate a bitmap (bmp) file to use as a background.

You must click the “Display Bitmap” tick box for it to appear on the layout. By default it is **not** ticked.

At a later stage you can go back to this menu and un-tick this option to remove the map.

SoundSens software shown below with map background image.



SoundSens User Guide

Leak Localisation and correlation

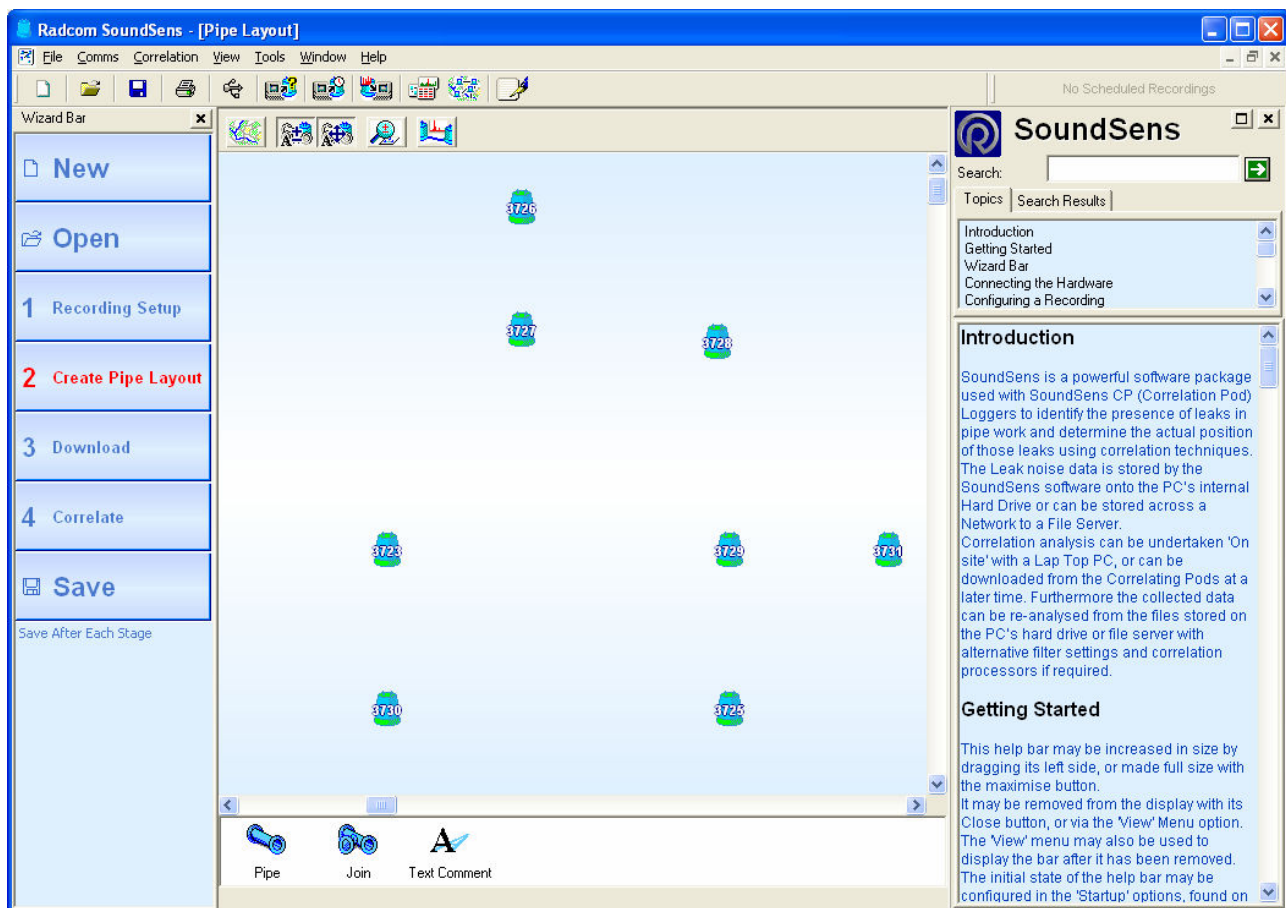
Pipe Layout Toolbar



The pipe layout toolbar at the bottom of the pipe layout area shows Pipe, Join, Text Comment and the serial of each logger used.

Putting loggers on the map

Start by selecting a logger and with the mouse button held down drag and drop it from the toolbar onto the pipe layout area. It is not important to place the loggers precisely as the software pays no attention to position on the screen. The most important data is pipe length and material type which is entered later.



Putting joins on the map

To add a join on the map click once on Join and then click once on each place that you need a join. Only use a join

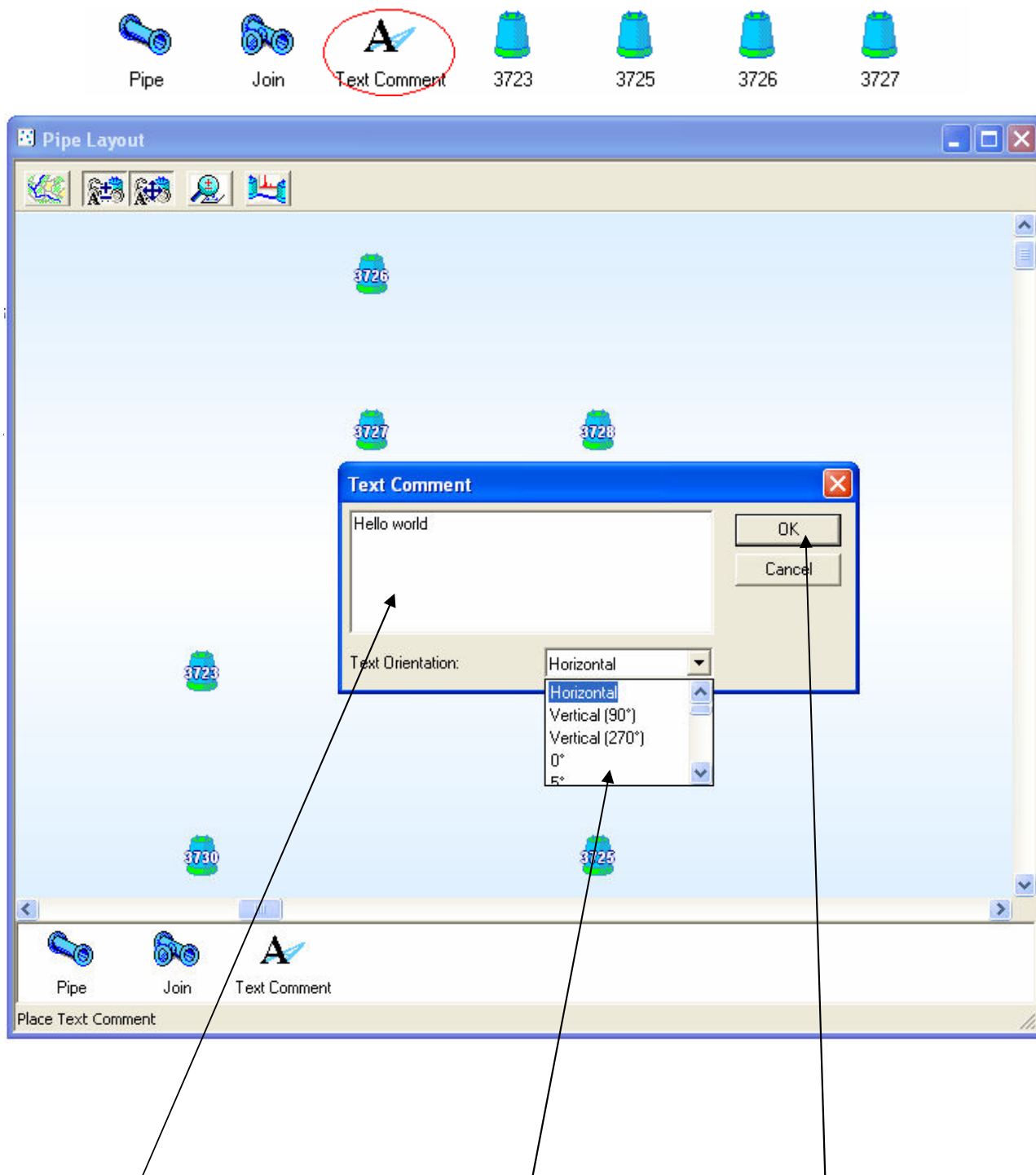


for a change in pipe direction, or pipe material.

REMEMBER TO SAVE REGULARLY (PAGE 8)

Putting text comments on the map

To add a text comment click Text Comment and then click on the map where you wish to see a text comment.



Type your text comment here, and pick a text direction, then click OK

SoundSens User Guide

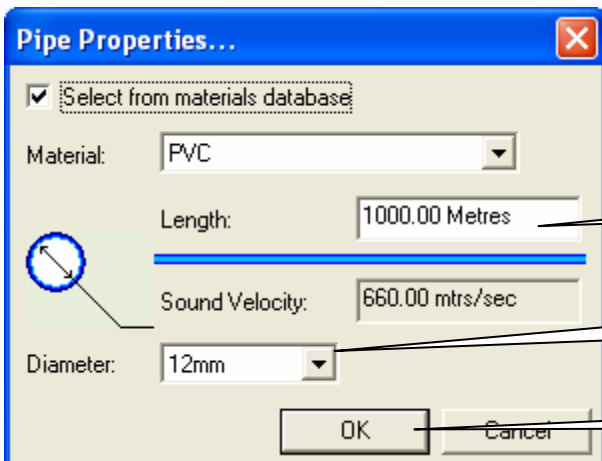
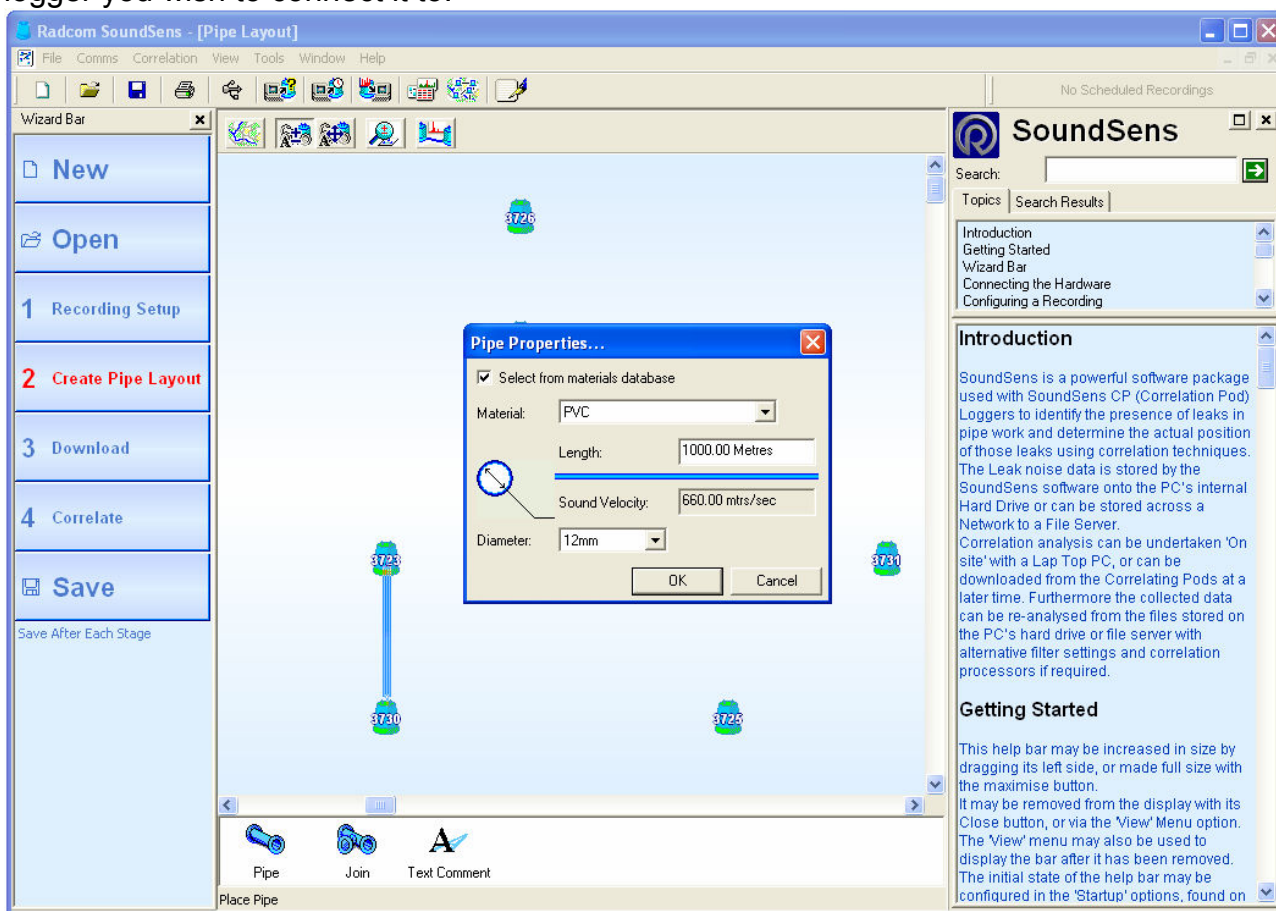
Leak Localisation and correlation

Adding connecting pipe work to the map

After dragging and dropping the loggers onto the pipe layout area and adding the join points you can start adding the connecting pipes.



Click the pipe icon once and then move the mouse pointer over one of the loggers. Click and hold the mouse button down over the first logger and then move the mouse to the logger you wish to connect it to.



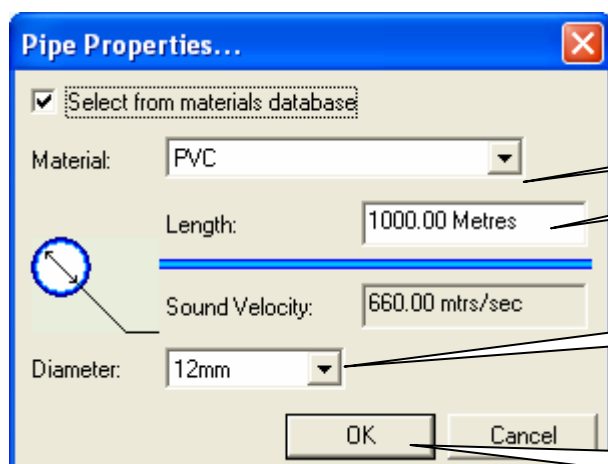
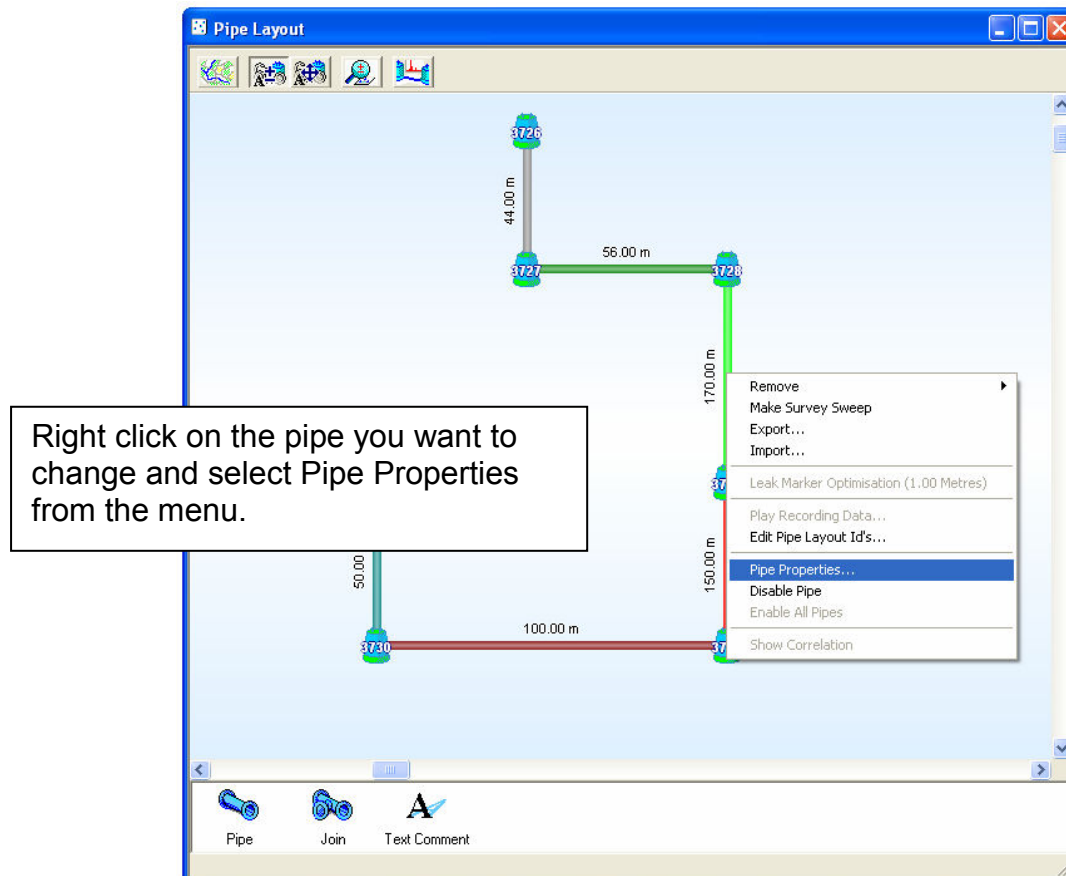
Selecting a material from the drop down list will set a sound velocity. Un-tick "Select from materials database" to enter your own sound velocity.

Enter the pipe length

Select the pipe diameter from the drop down menu

Click OK

Changing Properties on Pipe Layout



Change the pipe material here

Change the pipe length here

Change the pipe diameter from the drop down menu here

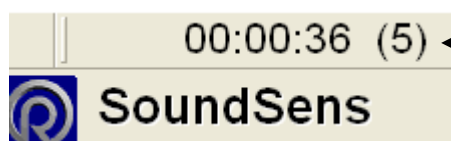
Click OK to keep the changes or Cancel to leave unchanged.

REMEMBER TO SAVE REGULARLY (PAGE 8)

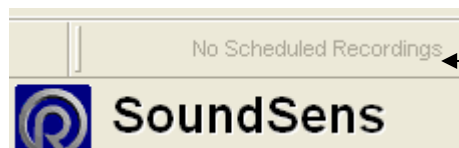
Download loggers

The loggers can be collected when the recordings have finished.

If you leave the SoundSens software running then you will see the following information to help you tell when the recordings are being done, and when they are finished.

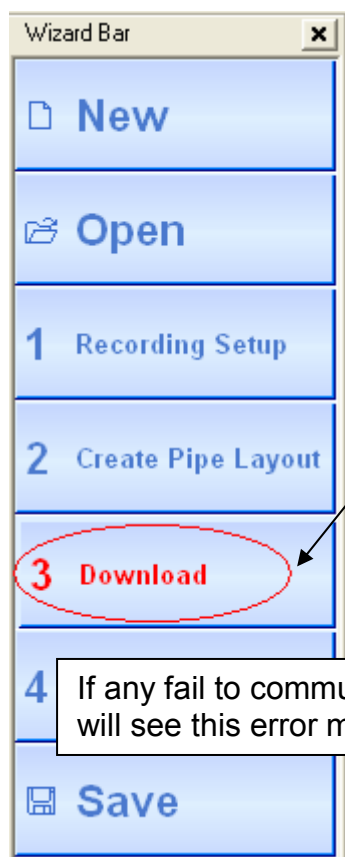


Time shows how long until the recording starts. The number in brackets shows how many recordings are left to do.

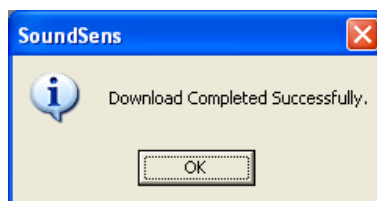


When it says No Scheduled Recordings it means all the recordings have been finished. The SoundSens software must be left running for this to work. If the software is stopped then the counter will reset back to showing No Scheduled Recordings.

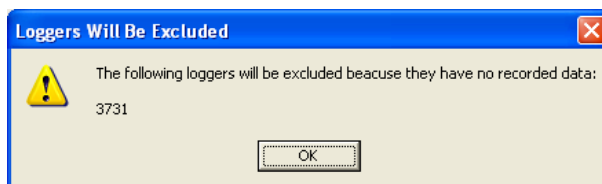
Note : When the loggers are put back in the case for downloading they can go back in any order.



With the SoundSens software running and the USB cable connected between the laptop and the suitcase click the Download button.



If any fail to communicate you will see this error message.



Downloading Loggers (Multiple Suitcases)

Connect the suitcases together as shown in the section “Information regarding daisy chaining multiple cases together”

Connect the USB cable to the first suitcase.

Click the Download button.

The software will ask for conformation about the number of cases. If this number is incorrect ensure the USB cable is connected to the first suitcase, and that all the cases are connected together correctly.

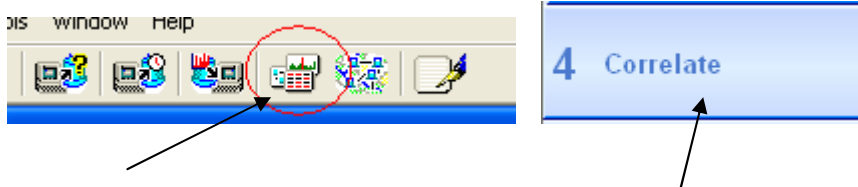
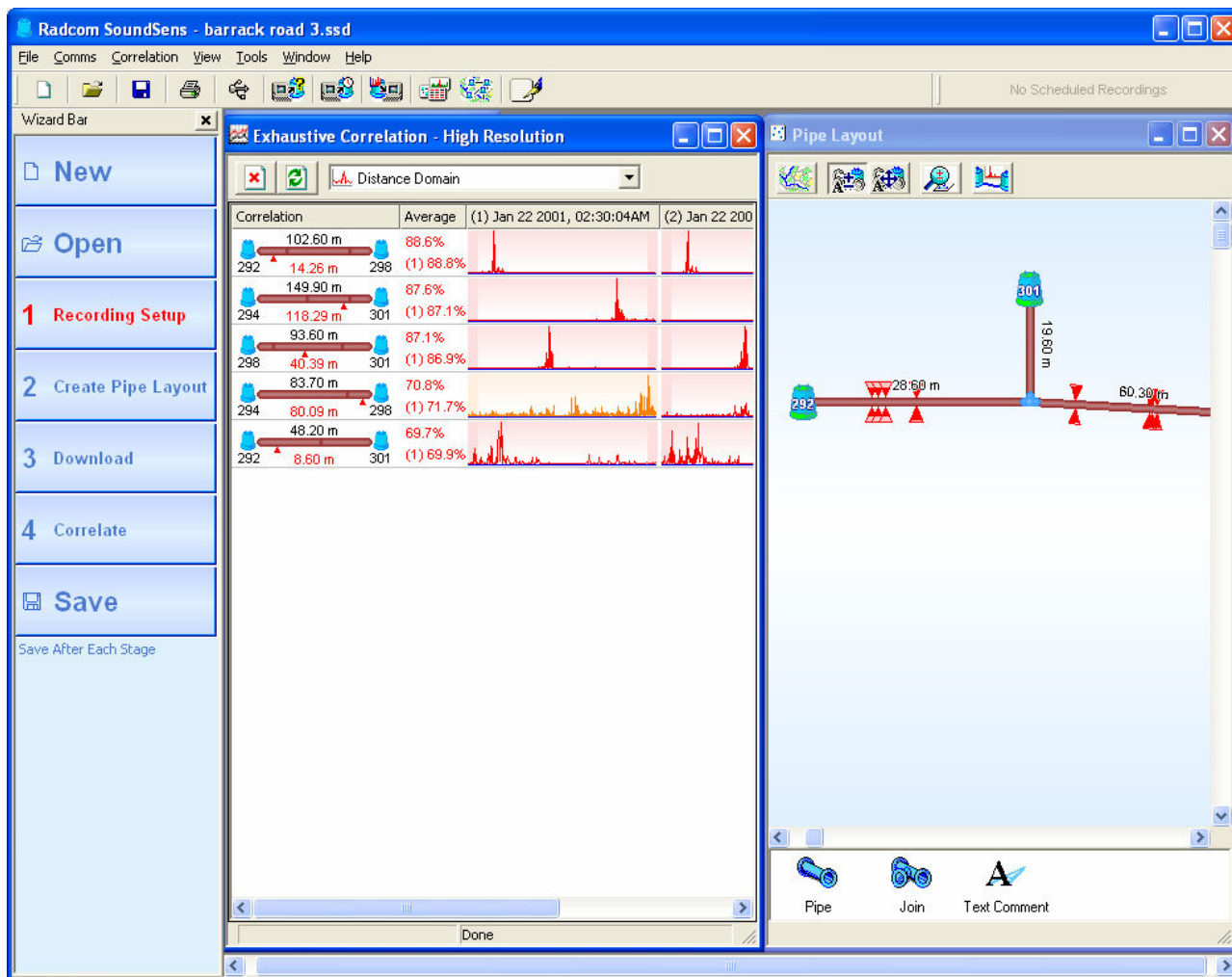
If the number of cases is correct then the download can begin. After each box of loggers has been downloaded the software will ask for the USB cable to be moved to the next box in the line. This process will be repeated until all the connected boxes have been downloaded.

SoundSens User Guide

Leak Localisation and correlation

Correlation

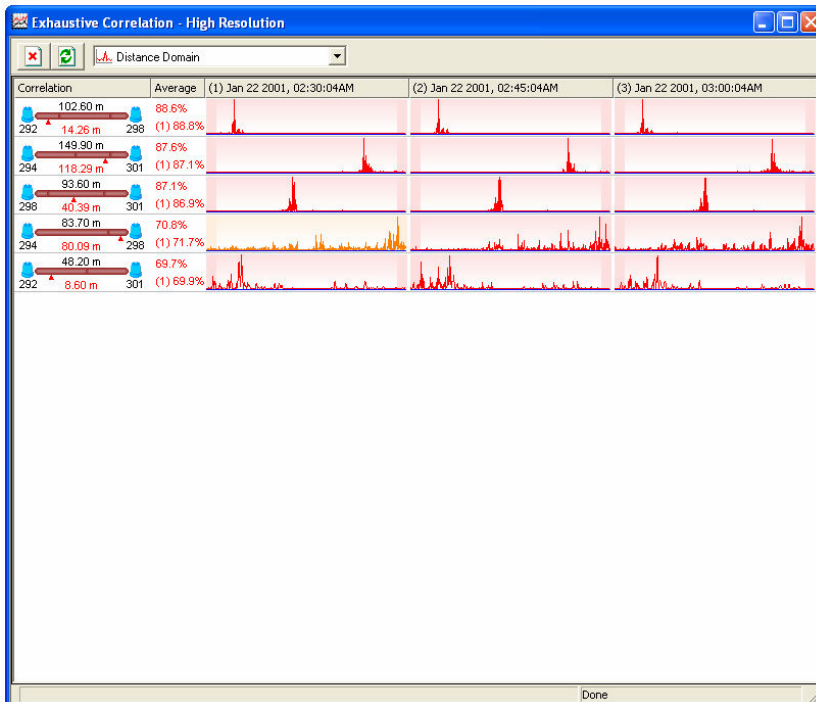
After the data has been downloaded correlation begins automatically.



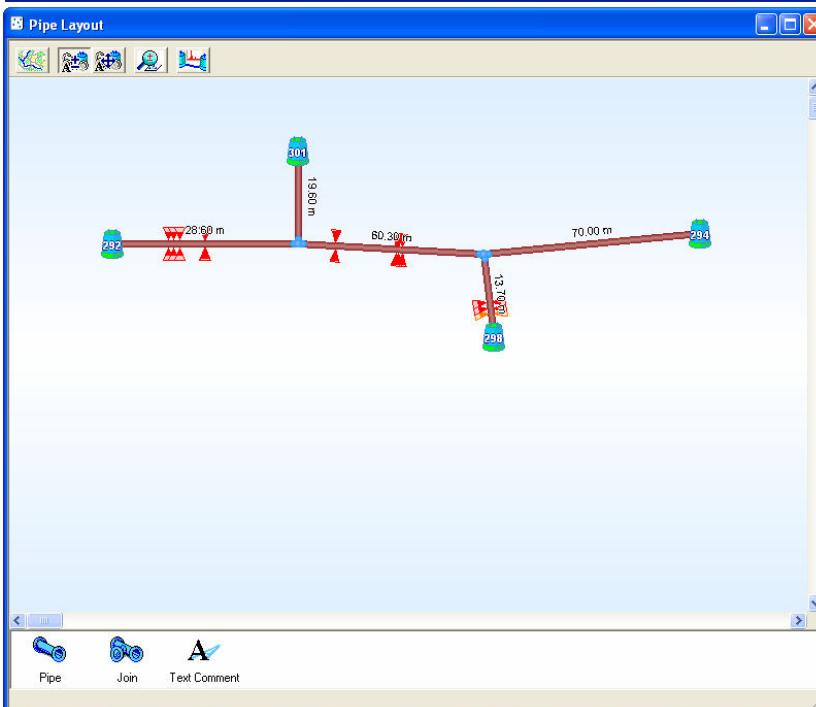
To begin the correlation process manually after opening a data file click the Perform Correlation button, or click Correlate on the left menu bar.

SoundSens User Guide

Leak Localisation and correlation



After correlation has finished the software sorts the data. The most likely leak correlations will be at the top.



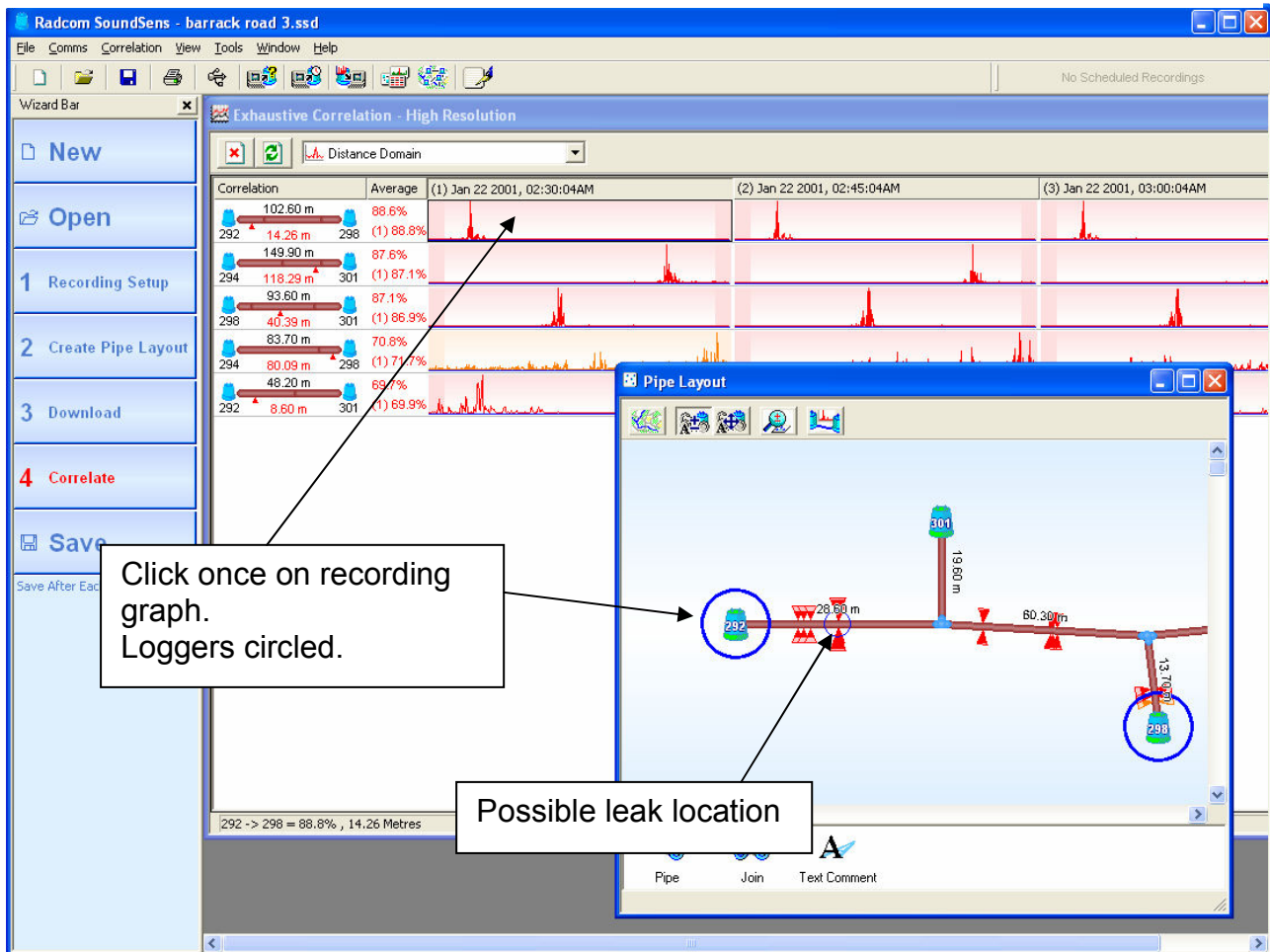
The location of each possible leak is marked on the map by red markers.

SoundSens User Guide

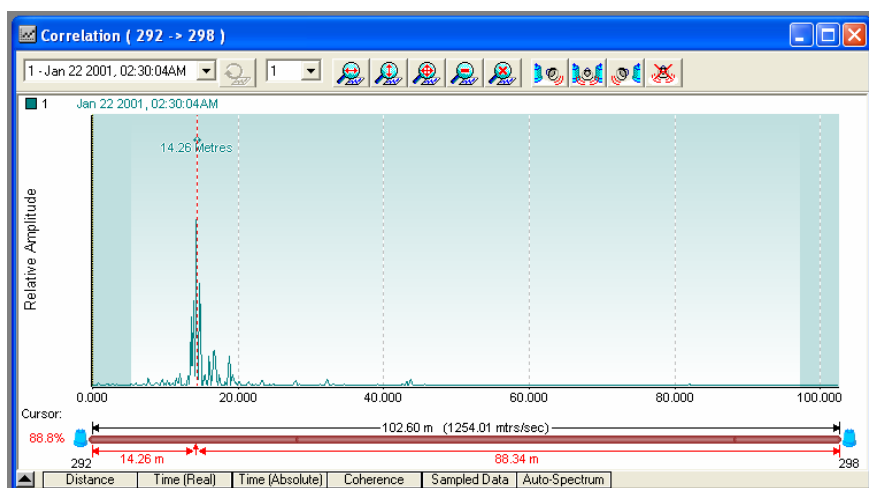
Leak Localisation and correlation

Click once on the recording graph and the blue circles will indicate which two loggers have been correlated between.

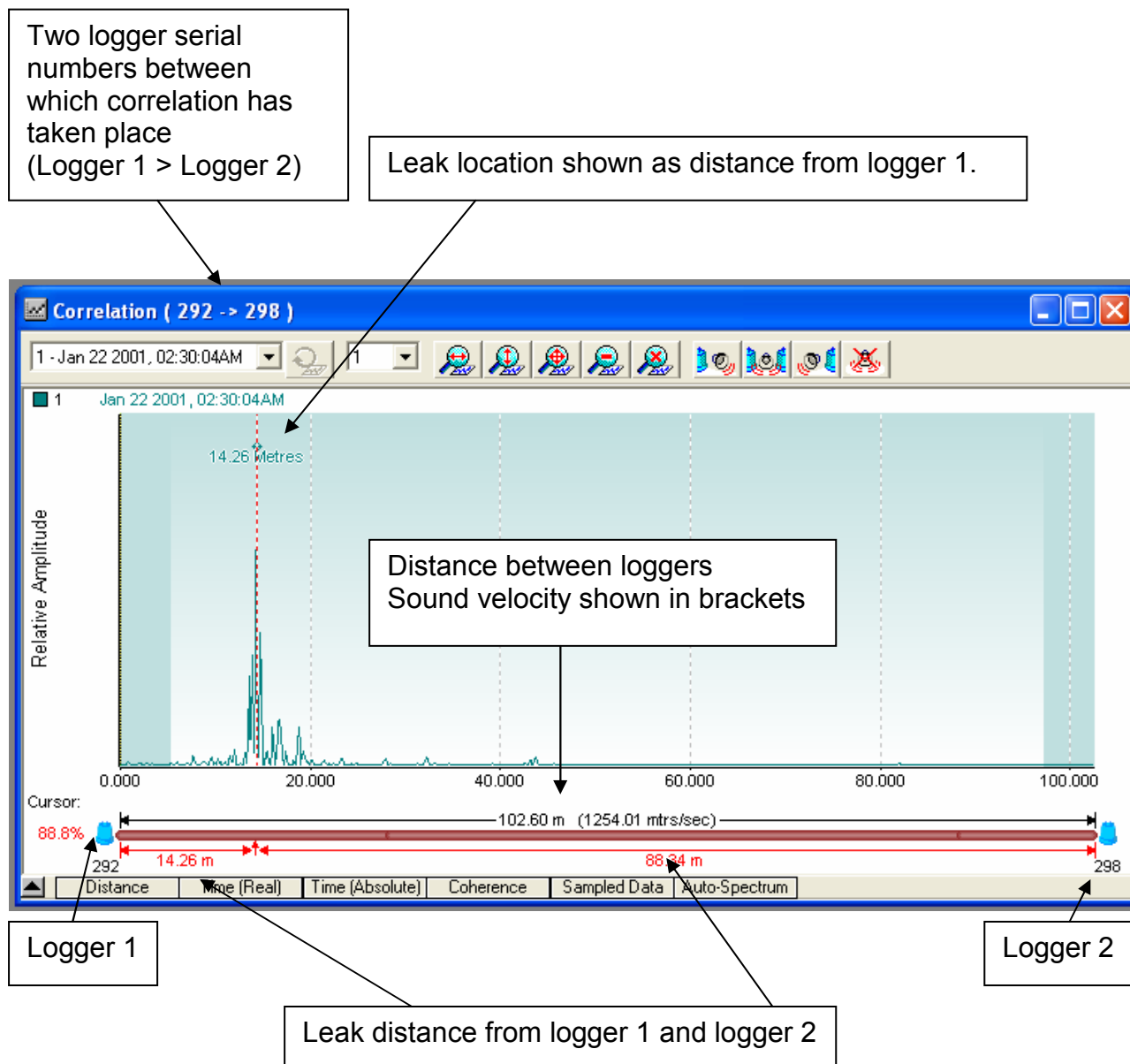
A third smaller blue circle will show the possible leak location



Double click on the recording graph to see a close up view.

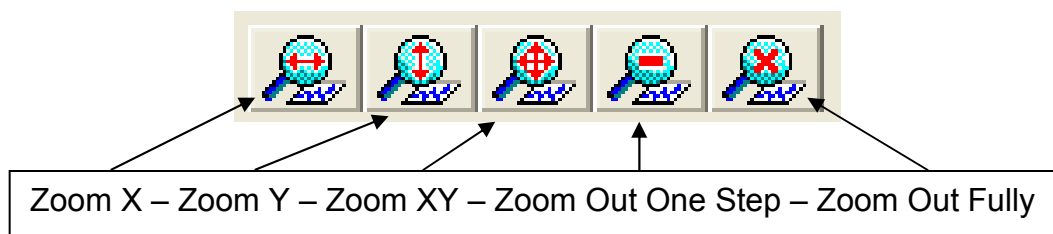


The Basic Recording Graph

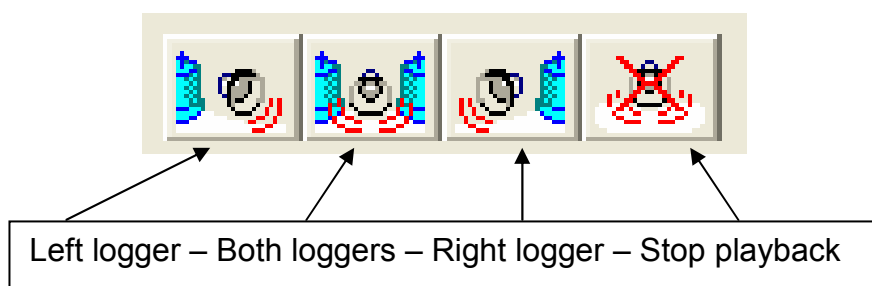


Recording Graph Advance Features

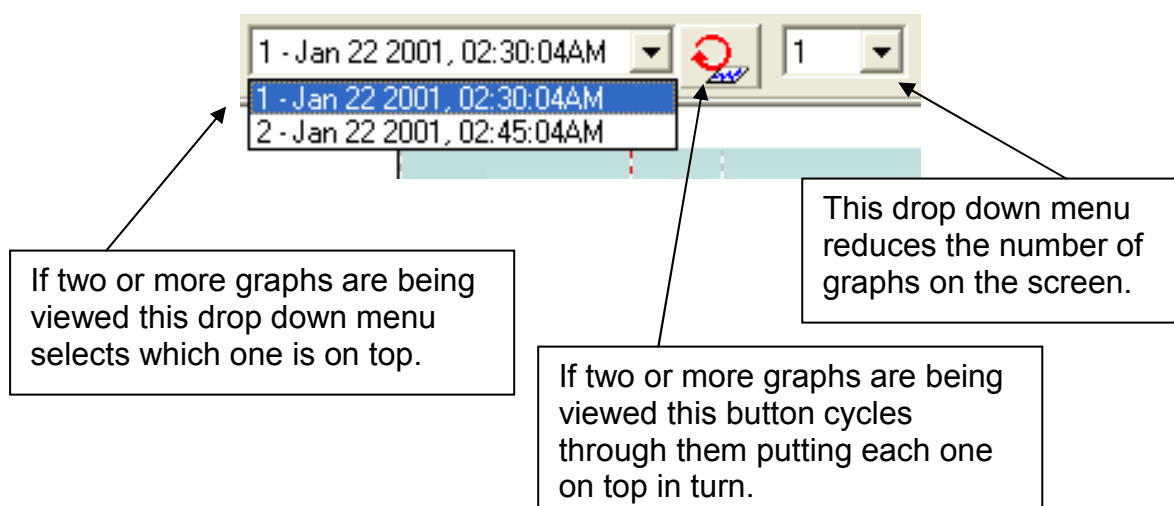
Zoom functions



Listen to recordings from loggers



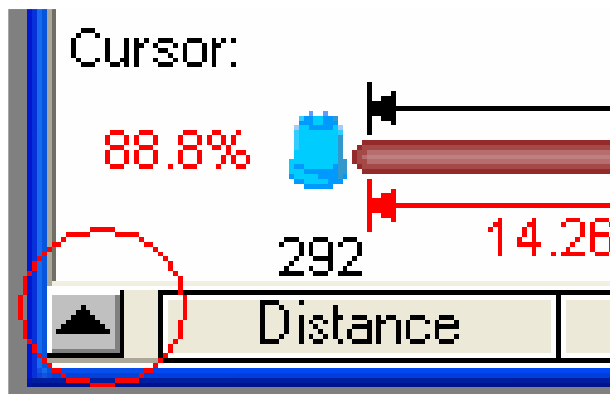
Graph viewing options



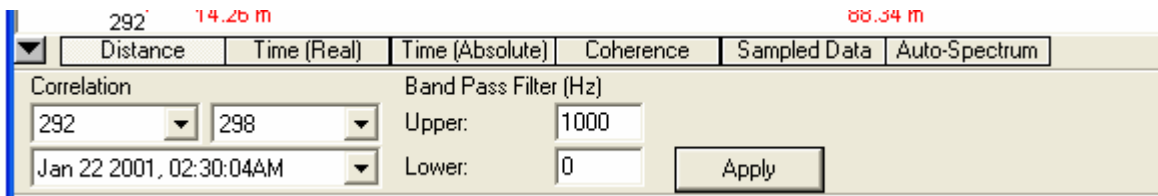
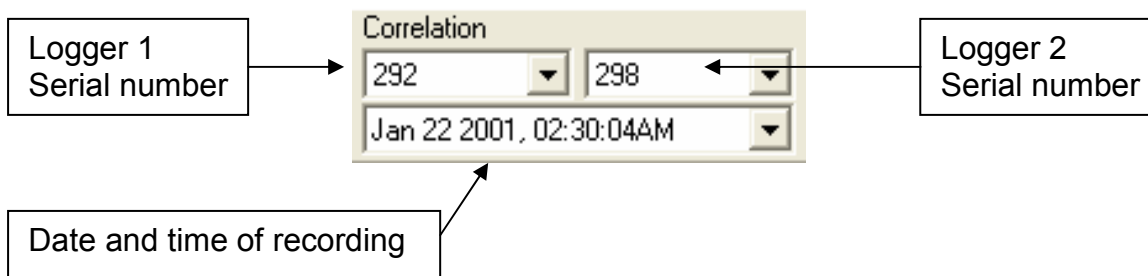
SoundSens User Guide

Leak Localisation and correlation

Reveal Advanced Graph Options



Click the small up arrow on the bottom left of the graph to reveal the advance graph options (see below)

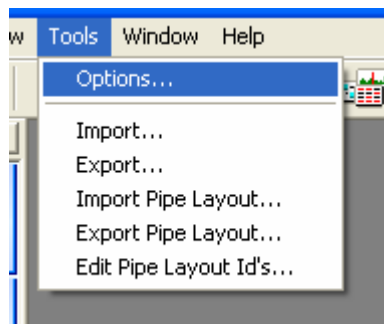



To see the correlation graph between two different loggers just change the serial numbers shown in the drop down menus for logger 1 and logger 2, and then click Apply.

To superimpose another recording taken between the same two loggers over the existing graph, select it from the time and date drop down menu and then click Apply.

To change the Band Pass Filter, adjust the figures and then click Apply.

SoundSens Software Advanced Configuration



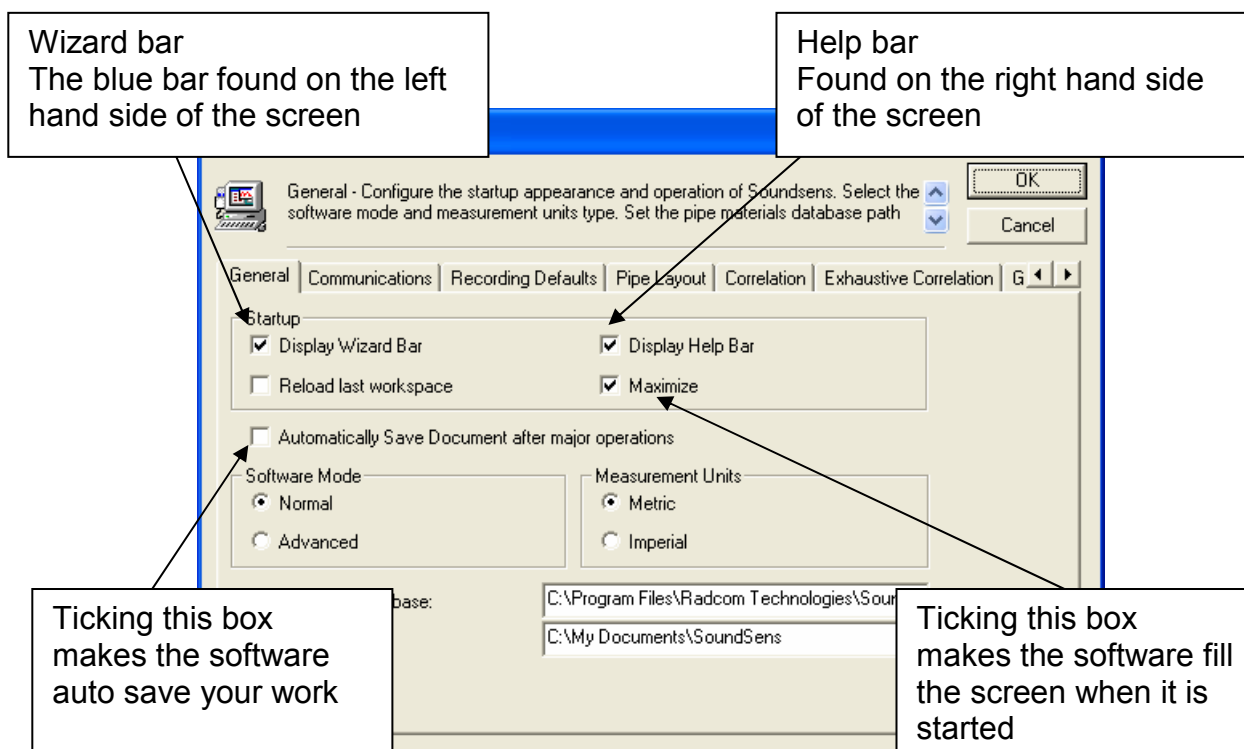
From the Tools menu click Options.

This is intended as a general guide to the SoundSens software options. For further assistance and explanation please contact the Radcom technical support team.

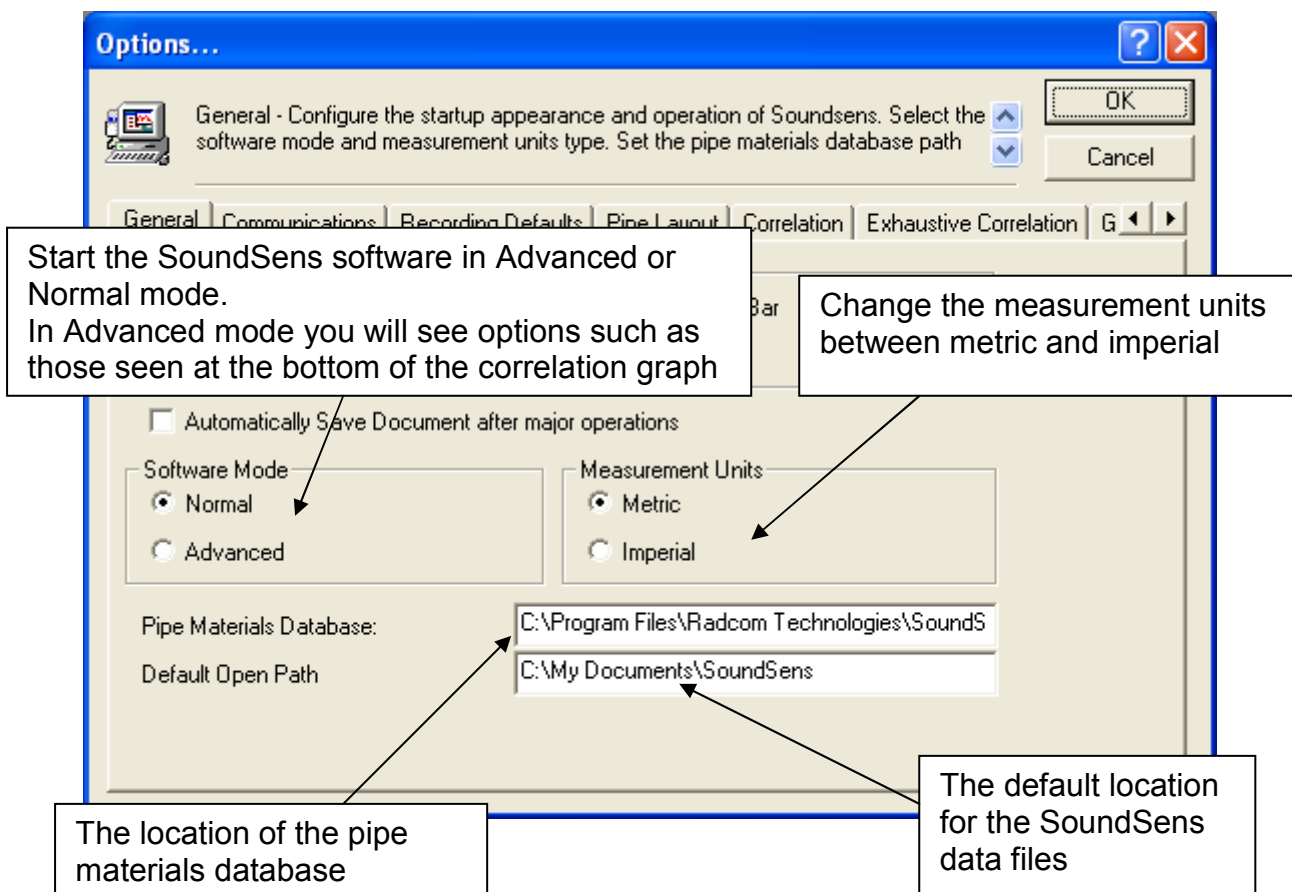
The General tab

Software start up options.

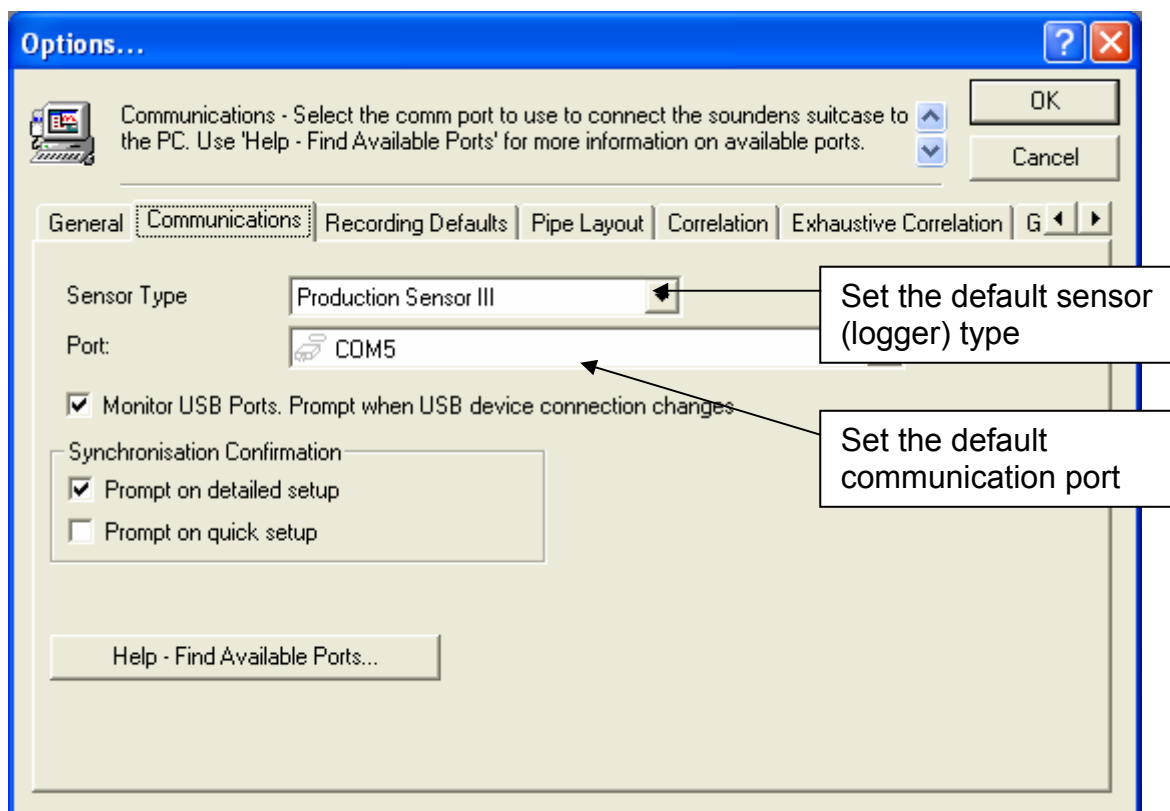
These changes will take effect next time the software is started.



The General tab (continued)



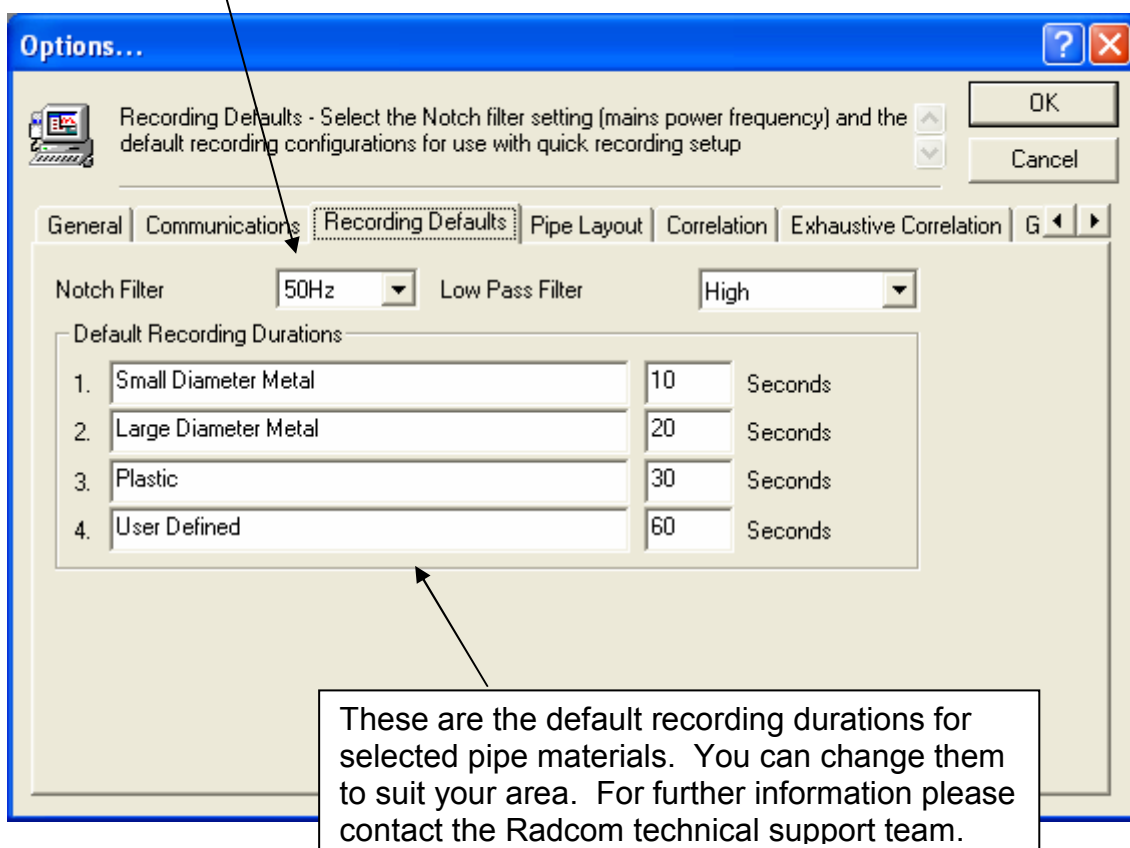
The Communications tab



The Recording Defaults tab

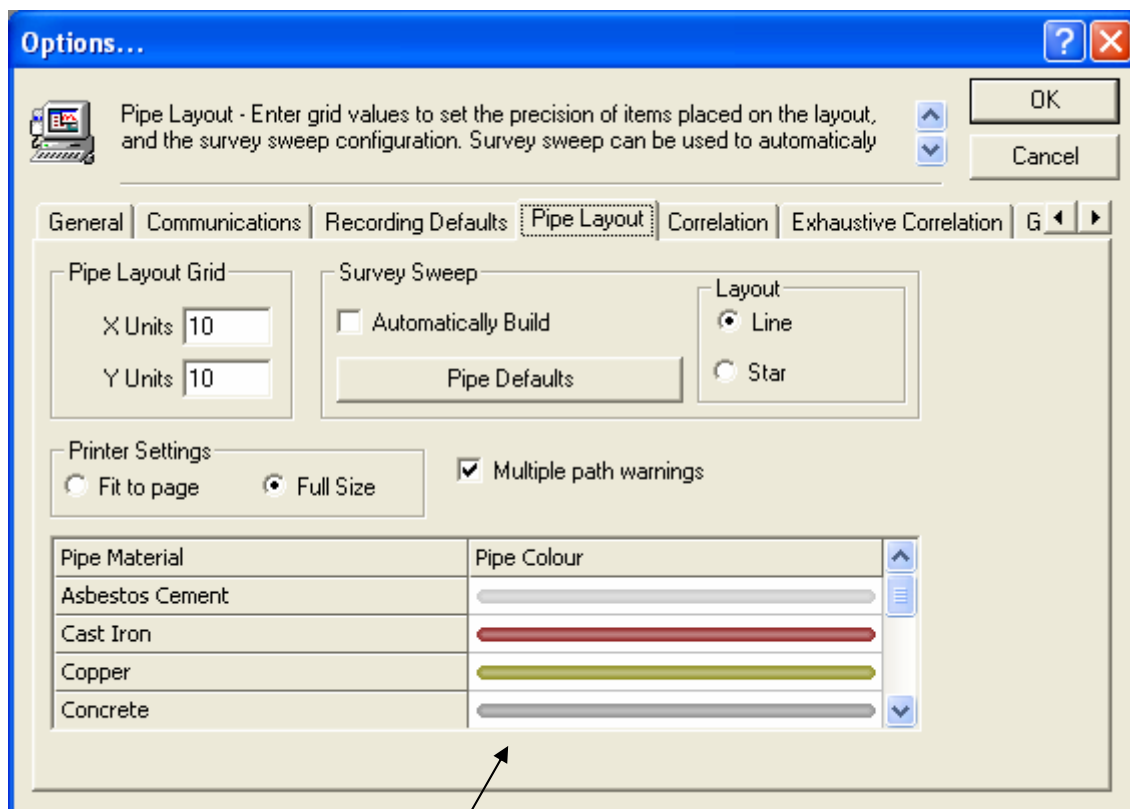
The default recording options.

Change the Notch filter value for filtering out mains frequency interference. This is set when the software is installed, but can be changed here (for UK it should be set to 50Hz)



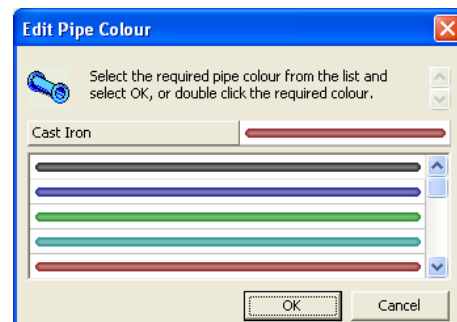
The Pipe Layout tab

The pipe layout area options



To change the colour of the pipes on the pipe layout double click on the coloured area.

Select a new colour from the menu which pops up on the screen, and then click OK



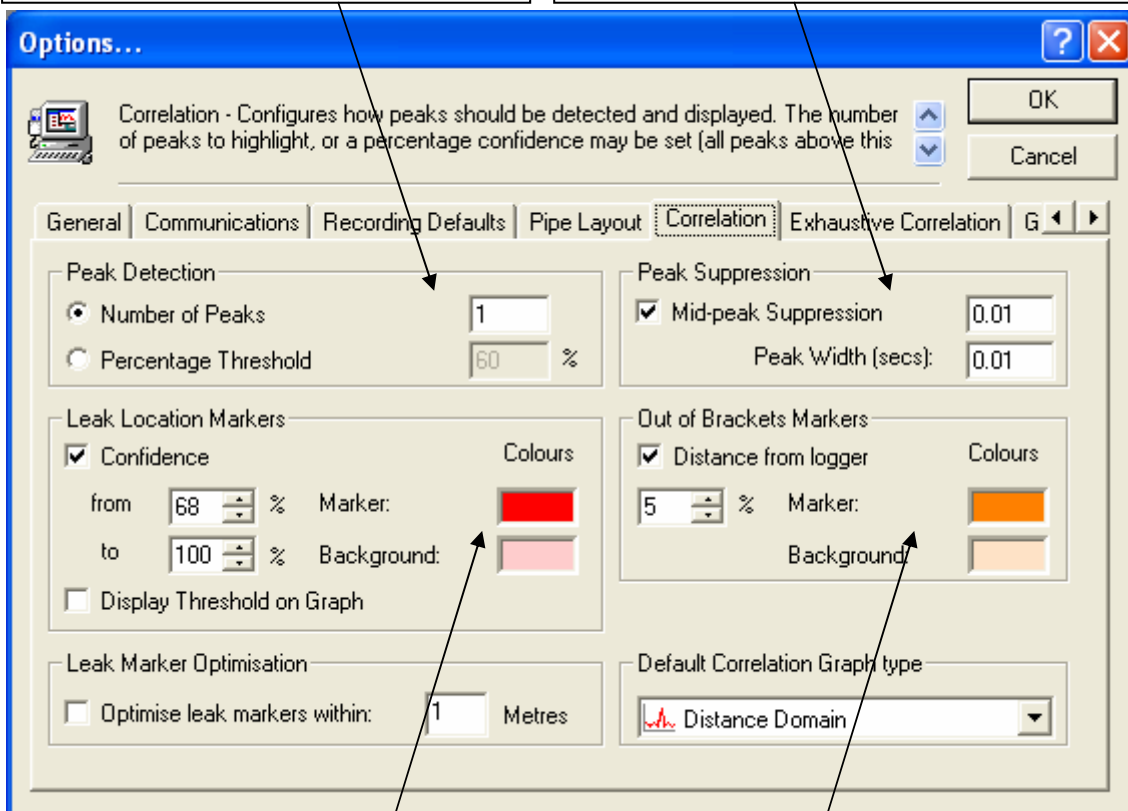
SoundSens User Guide

Leak Localisation and correlation

The Correlation tab

By default only one peak will be highlighted with it's value displayed on the graph. You can change this to a higher number if preferred.

Mid peak suppression
If the logger hears nothing then it may put a large peak in the centre of the correlation graph. This option will prevent it from happening



Options...

Correlation - Configures how peaks should be detected and displayed. The number of peaks to highlight, or a percentage confidence may be set (all peaks above this

General | **Communications** | **Recording Defaults** | **Pipe Layout** | **Correlation** | **Exhaustive Correlation** | G < >

Peak Detection

- ☒ Number of Peaks: 1
- ☐ Percentage Threshold: 60 %

Peak Suppression

- ☒ Mid-peak Suppression: 0.01
- Peak Width (secs): 0.01

Leak Location Markers

- ☒ Confidence
- from: 68 % Marker: [Red Box]
- to: 100 % Background: [Pink Box]
- ☐ Display Threshold on Graph

Out of Brackets Markers

- ☒ Distance from logger
- 5 % Marker: [Orange Box]
- Background: [Light Orange Box]

Leak Marker Optimisation

- ☐ Optimise leak markers within: 1 Metres

Default Correlation Graph type

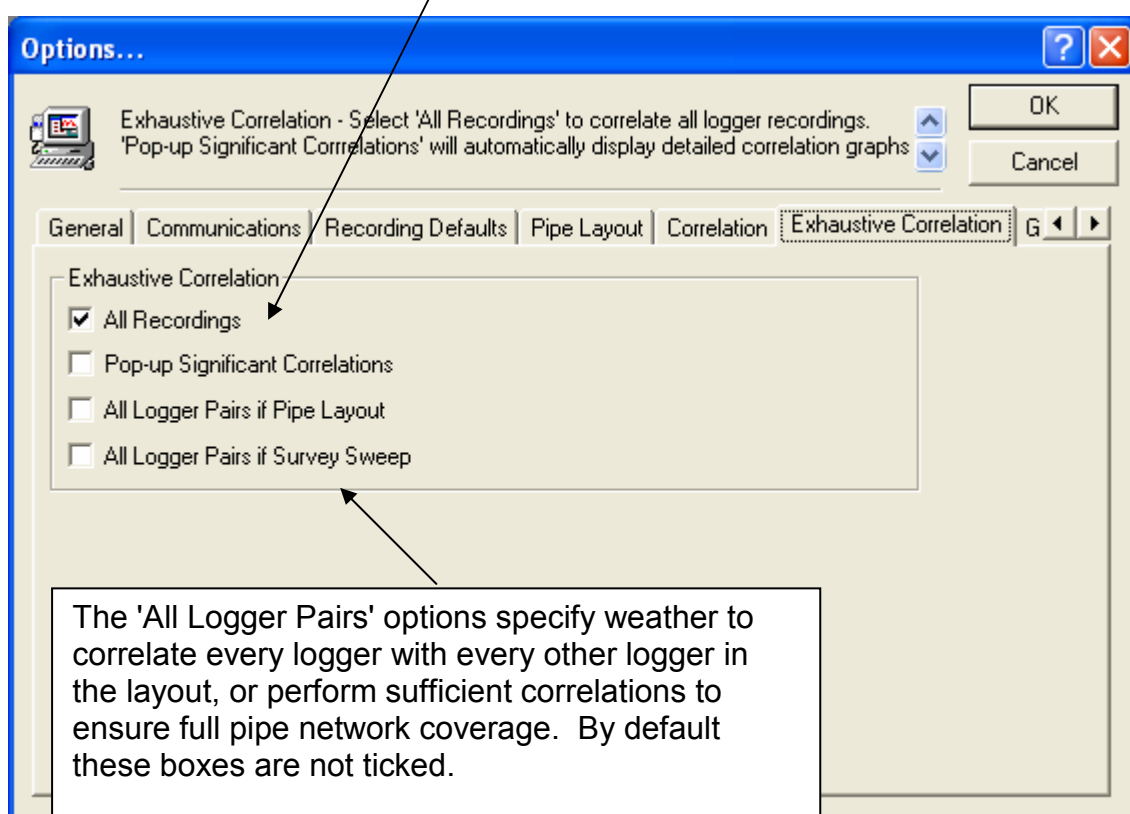
- [Distance Domain]

Change the default colours of your leak location and out of bracket markers here.

The Exhaustive Correlation tab

The default option here is All Recordings. This will perform correlation using all the recordings in the loggers.

Use Pop-up Significant Correlations to automatically display the graph or graphs for locations most likely to have leaks.

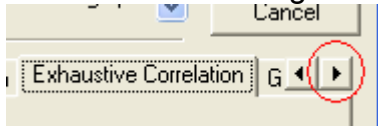


The 'All Logger Pairs' options specify whether to correlate every logger with every other logger in the layout, or perform sufficient correlations to ensure full pipe network coverage. By default these boxes are not ticked.

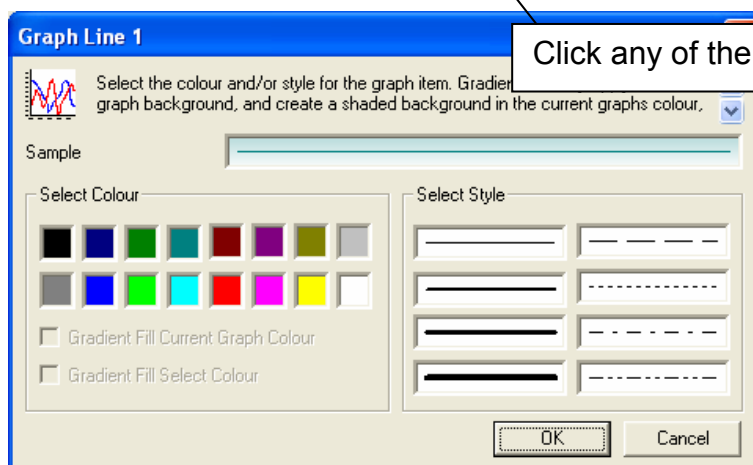
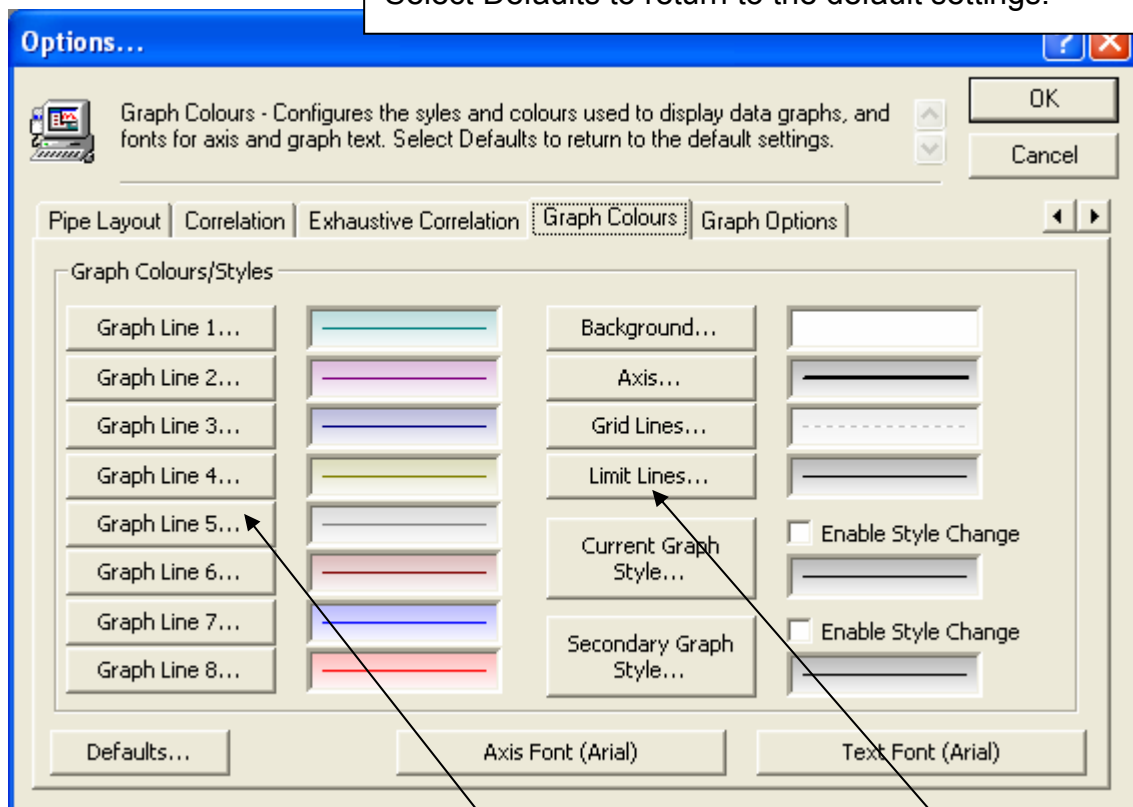
Exhaustive correlation using 'All Logger Pairs' may take significantly longer on a large pipe network.

The Graph Colours tab

To access the tabs past Exhaustive Correlation you need to click the right hand arrow as indicated on this diagram



Configures the styles and colours used to display data graphs as well as fonts for axis and graph text. Select Defaults to return to the default settings.

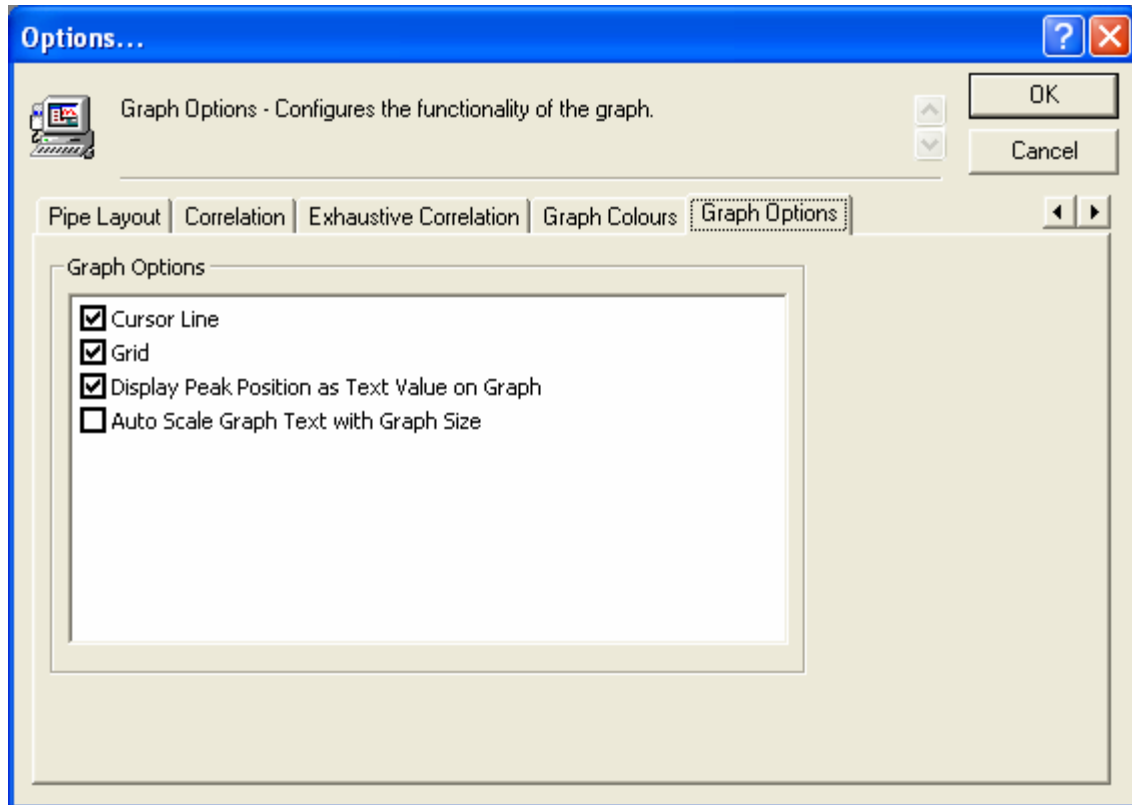


Click any of the buttons to change a colour

Select a new line colour and style, and then click OK

The Graph Options tab

Configures the functionality of the graph.



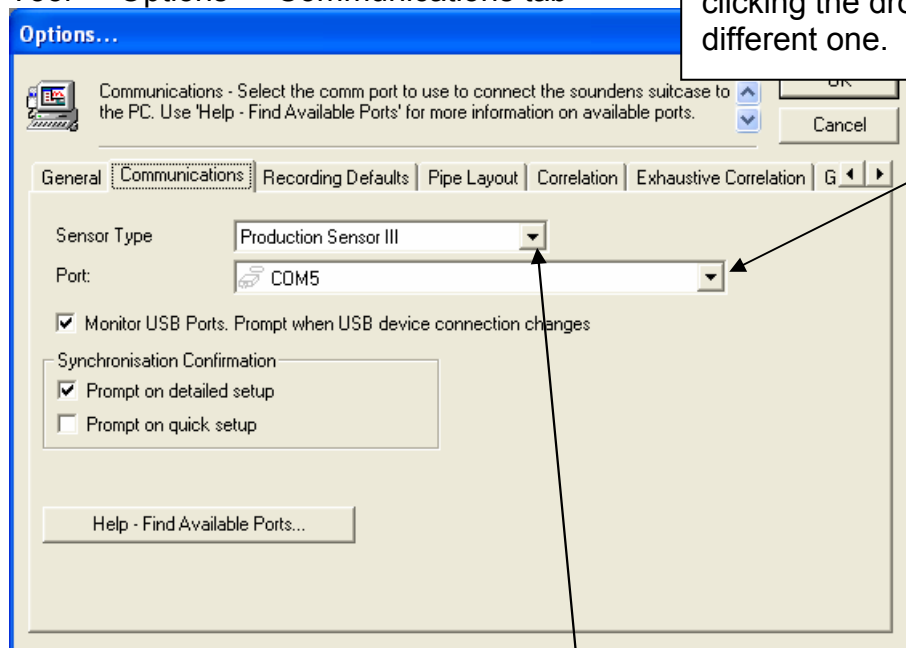
Troubleshooting

Carry Case Not Communicating with PC or Laptop

Using Serial (RS232) Cable

Check the communications port.

Tool -> Options -> Communications tab



Incorrect Sensor Type



If the wrong sensor type is selected you may see an error during communication.

Change the sensor type from the drop down menu

The options are

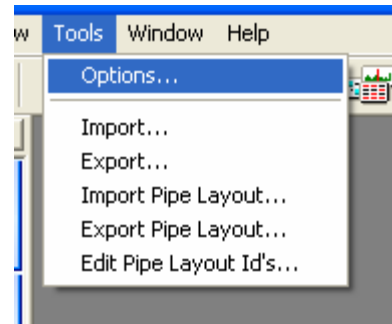
- Pre Production Sensor
- Production Sensor (The original SoundSens logger)
- Production Sensor II (Dark blue plastic logger)
- Production Sensor III (Otherwise known as SoundSens i)

SoundSens User Guide

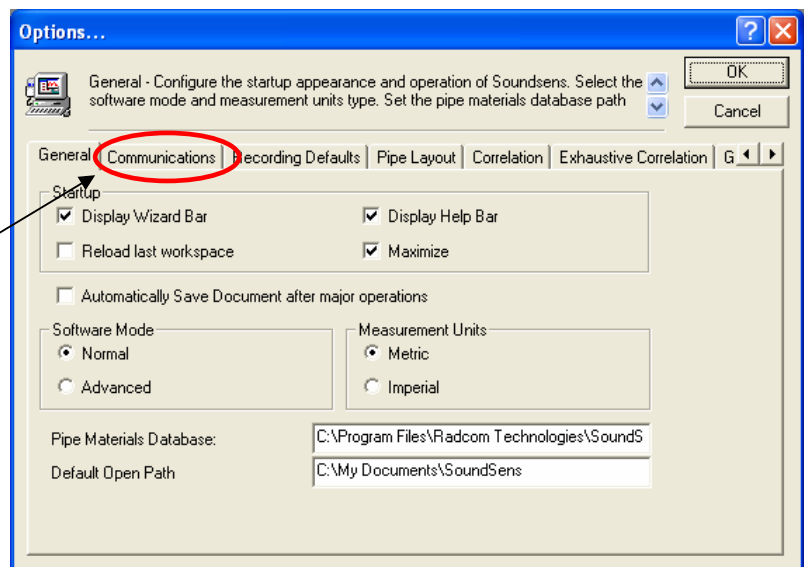
Leak Localisation and correlation

Change Sensor Type

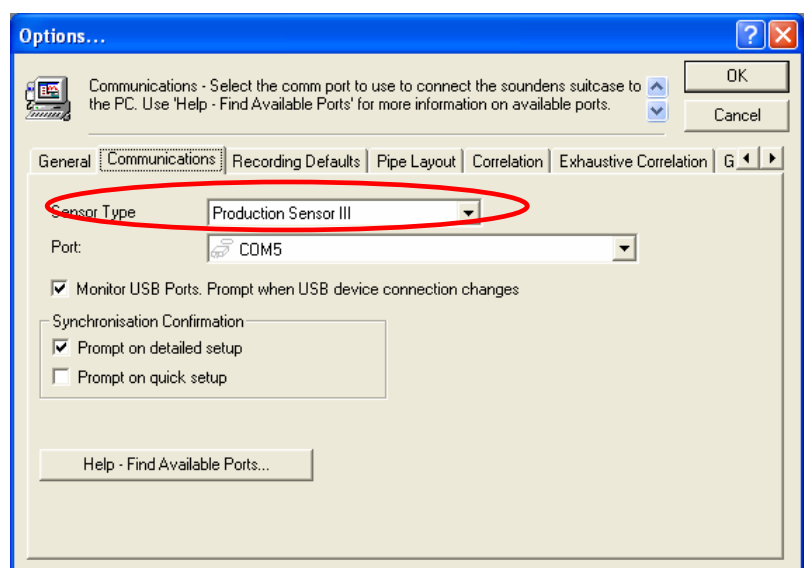
From the Tools menu click Options



Click the Communications tab



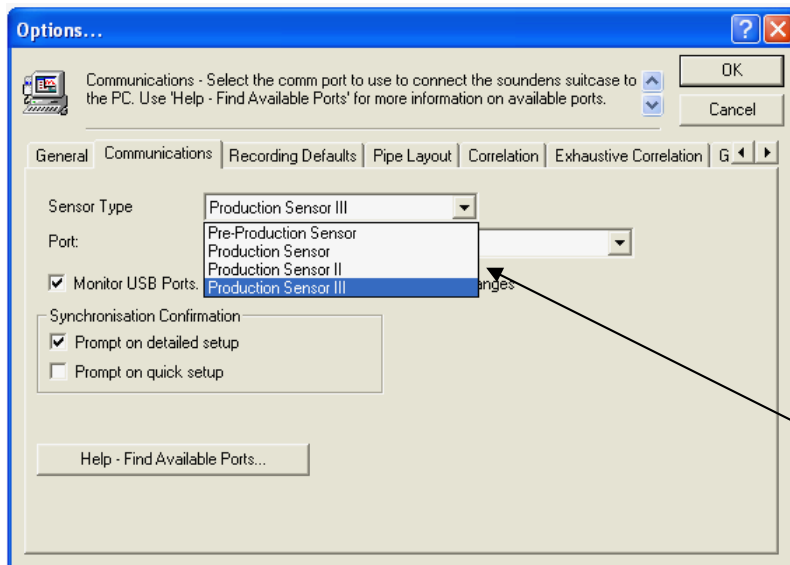
The currently selected sensor is shown here



To change the sensor type follow the next instruction

SoundSens User Guide

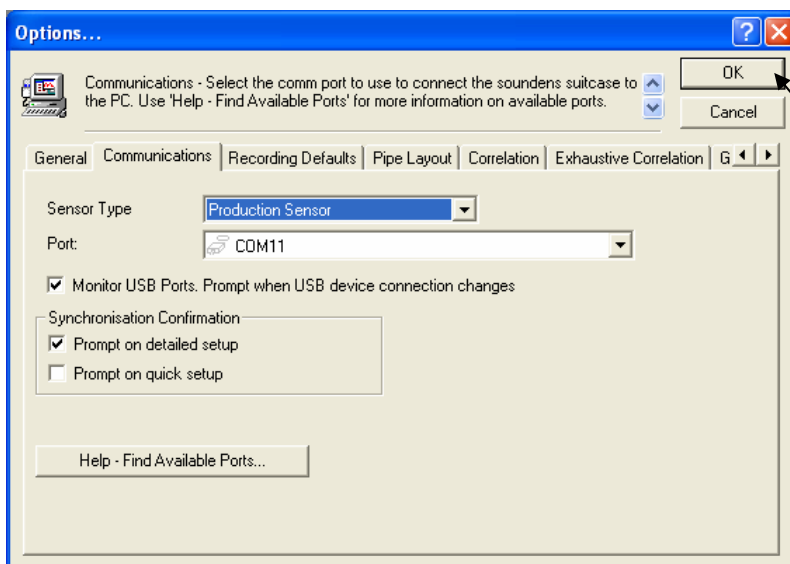
Leak Localisation and correlation



Click the drop down menu and click on the type of sensor you have.

The options are

- Pre Production Sensor
- Production Sensor (The original SoundSens logger)
- Production Sensor II (Dark blue plastic logger)
- Production Sensor III (Otherwise known as SoundSens i)



After making your selection click OK to save the change.

SoundSens Software

License Agreement

Carefully read all the terms and conditions of this agreement prior to using this SoundSens Software. By attempting to load the Software you indicate your acceptance of these terms and conditions.

License: You have the non-exclusive right to use the enclosed Program on a single CPU. You may physically transfer the Program from one CPU to another provided that only the licensed company uses the Program. You may not distribute copies of the Program or related documentation to others. You may not modify or translate the Program or related documentation without the prior written consent of Radcom. You may not use, copy, modify or transfer the Program or documentation, or any copy thereof, or permit anyone else to do so, except as expressly provided in this agreement.

Back-up and Transfer: You may make one (1) copy of the Program solely for your own back-up purposes. You must reproduce and include the copyright notice on the back-up copy. Transfer of Program and license to another party may only be made after written approval from Radcom, provided the other party agrees to the terms and conditions of this agreement and completes and returns a Product Registration Form to Radcom. If you transfer the Program you must at the same time transfer the documentation and back-up copies or transfer the documentation and destroy the back-up copies.

Copyright: The Program and its related documentation are copyrighted. You may not copy the Program or its documentation except for your own back-up purposes and to load the Program into the computer as part of executing the Program. All other copies of the Program and its documentation are in violation of this Agreement.

Terms: This license is effective until terminated. You may terminate it by destroying the Program and documentation and all copies thereof. The license will also terminate if you fail to comply with any term or condition of this Agreement. You agree upon such termination to destroy all copies of the Program and documentation.

Warranty: Radcom warrants to the original licensee that the diskettes on which the Program is recorded be free from defects in materials and workmanship under normal use and service for a period of 90 days from the date of delivery to you as evidence by a copy of your invoice. During this period Radcom warrants that each program, which is designated by Radcom, as warranted in its program specifications, supplied with the program, will conform to such specifications provided that the program is properly used on the machine for which it was designed. If you believe that there is a defect in a warranted program such that it does not meet its specifications, you should notify Radcom within the warranty period (the warranty period may be extended by signing a software update agreement with Radcom) in a manner set forth in the program specification.

All back up copies are provided "as is" without warranty of any kind, either express or implied. The entire risk as to quality and performance of the Program is with you. Should the Program prove defective, you assume the entire cost of all necessary servicing, repair or correction. Radcom does not warrant that the functions contained in any program will meet your requirements or that the operation of the Program will be uninterrupted or error-free or that the programs defects will be corrected.

The foregoing warranties are in lieu of all other warranties, express or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Radcom is not responsible for problems caused by changes made after the publication of the software in the operating characteristics of the computer hardware, test instruments or operating systems, nor for problems in the interaction of the Program with non-Radcom software components.

Limitation of Remedies: Radcom's entire liability and your exclusive remedy shall be as follows:

a. With respect to defective media during the warranty period, Radcom will replace media not meeting Radcom's "limited warranty", if returned to Radcom with a copy of your receipt.

b. With respect to warranted programs, in all situations involving performance or non-performance during the warranty period, your remedy is (1) the correction or bypass by Radcom of program defects or (2) if, after repeated efforts, Radcom is unable to make the Program operate as warranted, you shall be entitled to a refund of the money paid.

In no event will Radcom be liable to you for any lost profits, lost saving or other incidental or consequential damages arising out of the inability to use any program even if Radcom have been advised of the possibility of such damages, or for any claim by any other party.

Update Policy: In order to be able to obtain updates of the Program during the warranty period, the licensee and persons to whom the Program is transferred in accordance with this agreement must complete and return the attached User Registration Form to Radcom. If this registration form has not been received by Radcom, Radcom is under no obligation to make available to you any updates.

Miscellaneous: This license agreement shall be governed by the laws of England and shall inure to the benefit of Radcom, its assigns and successors.

Acknowledgement: You acknowledge that you have read this agreement, understand it, and agree to be bound by its terms and conditions. You also agree that this agreement is the complete and exclusive statement between the parties and supersedes all proposals or prior agreements, verbal or written, and any other communications between the parties relating to the subject matter of this agreement.

Should you have any questions concerning this agreement, please contact Radcom in writing at the relevant address:

RADCOM (Technologies) Ltd.
Sentry House, 10 Romsey Industrial Park,
Greatbridge Road, Romsey
Hampshire SO51 0HR
Tel: +44 (0)1794 528 700 • Fax: +44 (0)1794 528 760

SoundSens User Guide

Leak Localisation and correlation

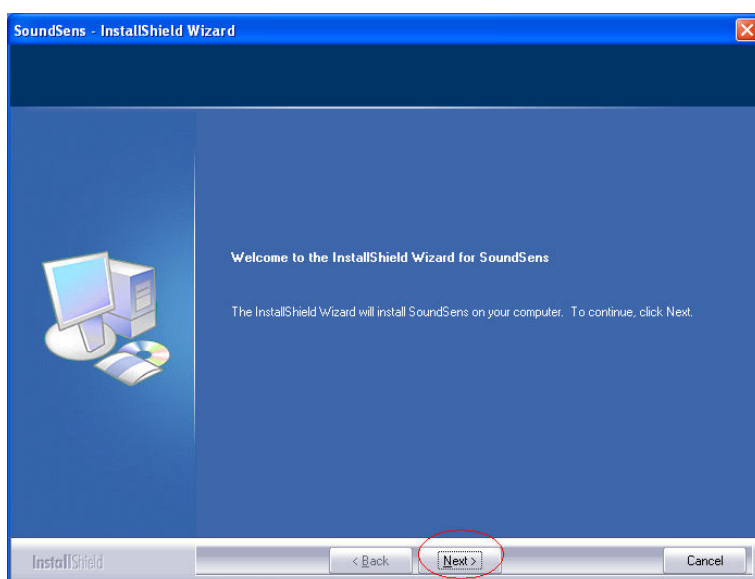
Installation Instructions



Put the CD in your PC drive, and double click the “installer” icon



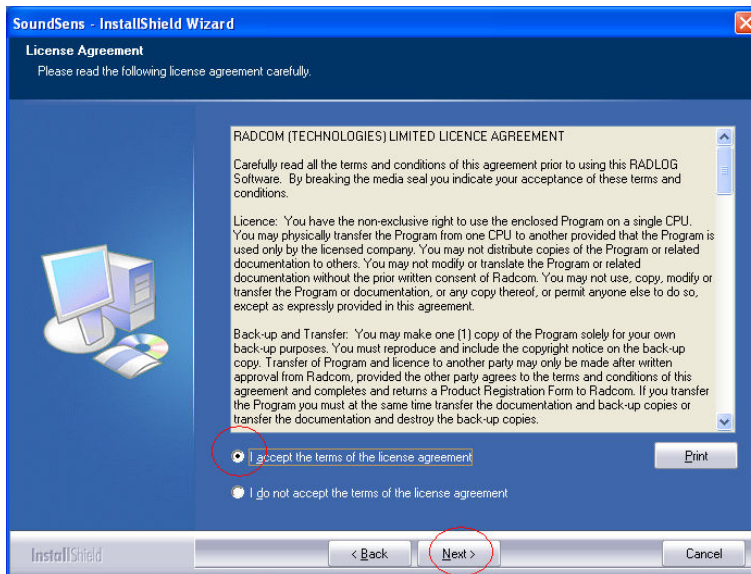
The Radcom Software Installer window will pop up. Click the SoundSens button.



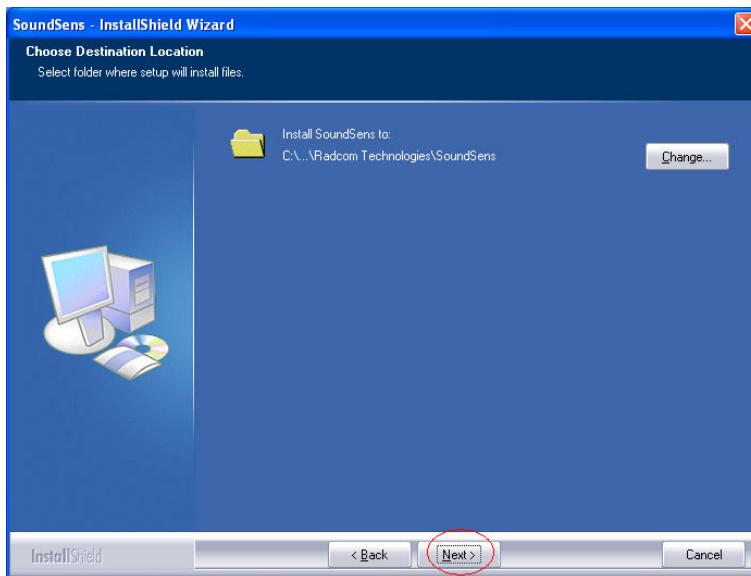
When the Installation Wizard begins click Next to continue.

SoundSens User Guide

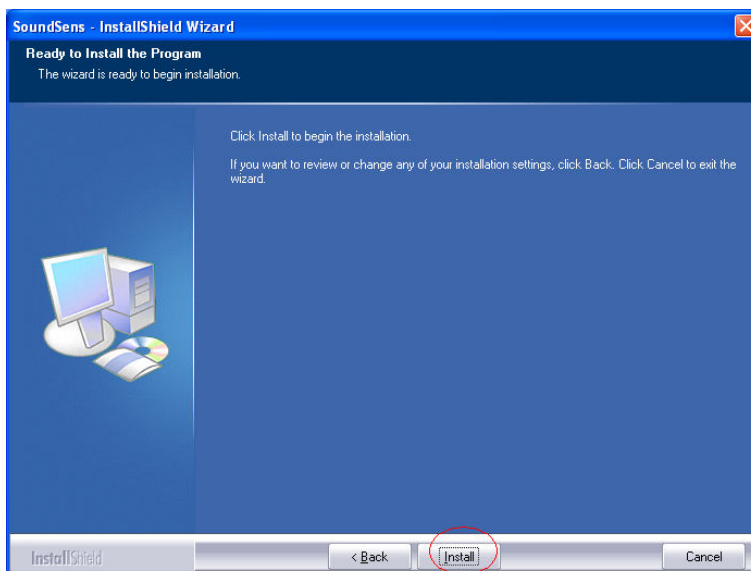
Leak Localisation and correlation



Agree to the license, and then click next.



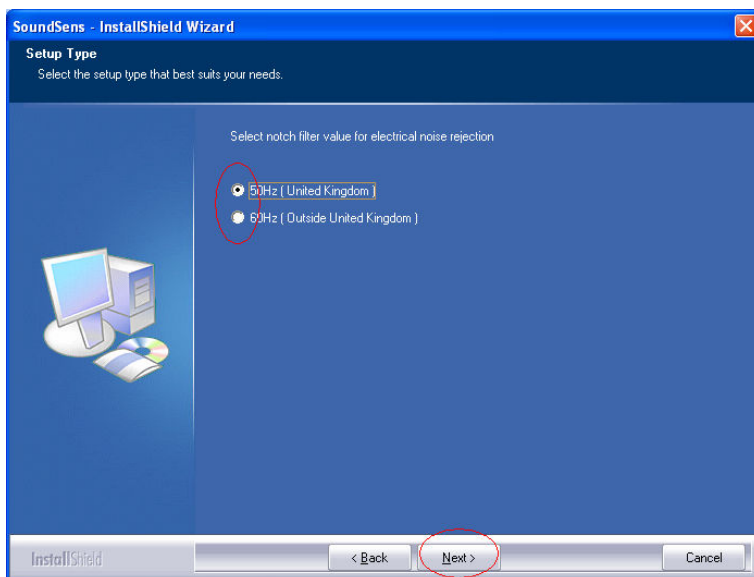
If you wish to change the location of the installed files you may do so here. Click next to continue.



Click install to continue.

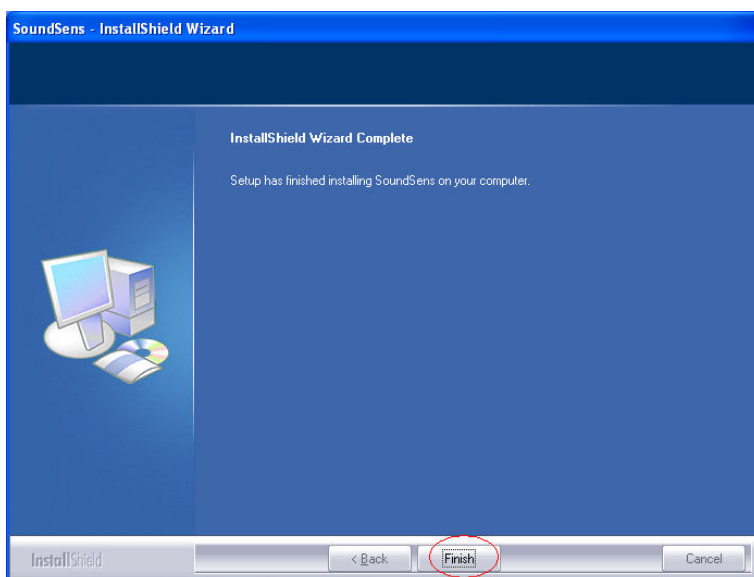
SoundSens User Guide

Leak Localisation and correlation



Select notch filter value for electrical noise rejection. By default 50Hz is selected for the United Kingdom. Then click next.

(this option can be changed from within the software after installation.
Tools -> Options -> Pipe Layout)



Click Finish to complete the installation.

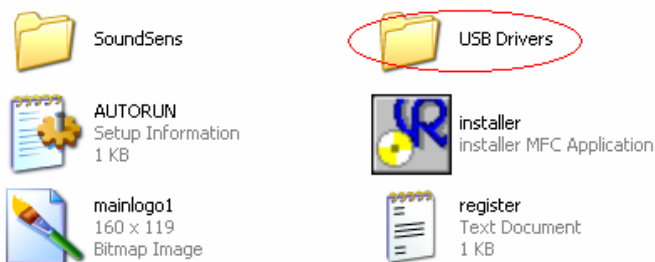


Finally close the Radcom Software Installer.

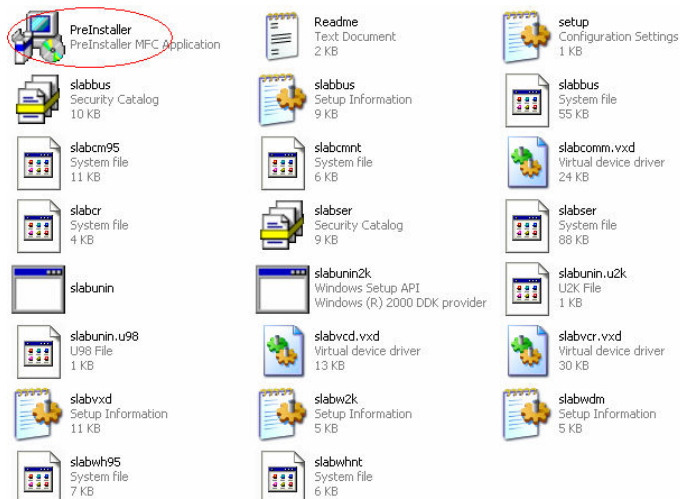
Please now follow the USB driver instructions.

USB Driver Installation Instructions

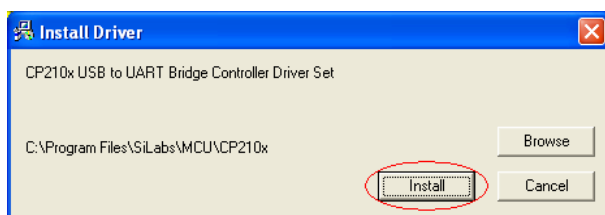
If you are installing the SoundSens software on a PC which has never had a USB SoundSens case connected to it, you should install the USB driver.



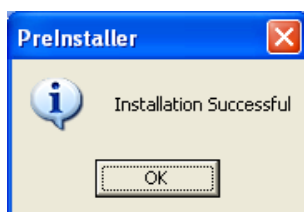
From the installation CD double click the “USB Drivers” folder.



Double click the “PreInstaller” icon.



Click Install to “install” the driver.



The PreInstaller program will display this message if the driver installs correctly. Click OK to continue.

CONTACT



Fluid Conservation Systems, Inc
502 TechneCenter Drive, Suite B
Milford, Ohio 45150

Toll free (800) 531-5465

Fax (513) 831-9336

Web www.fluidconservation.com

Note:

Fluid Conservation Systems, Inc reserves the right to change products, services and/or specifications without additional notice to the consumer.