Smart Patrol PC Software
User Manual v4 Updates

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Smart Patrol User Manual

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Issue D

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Written by PK

Introduction

This document outlines the new features implemented into the Smart Patrol PC software v4.0.0.0 or later.
The document also describes all changes made to the existing functions found in previous versions

Compatibility

The software is compatible with v7 USB Transceivers or later. However some of the added features implemented will not be available if used with USB Transceiver version prior to version 7.

The new software is compatible with all versions of logger. Loggers that are version 3 or earlier can not be used with any software feature that requires a request for individual data packets.

Meter Detail and Meter Data export csv files generated by Smart Patrol v3.2.4 or earlier will **NOT** import into Smart Patrol v4 or later.

Drive-By round export csv files will import and export across all versions of Smart Patrol

Contents

Software Changes

1. USB changed to manual connection
2. Downloaded data process no longer checks for existing data downloads

New Features Added

1. Improved Database CSV file based system
2. Database Manager
3. Import Dialog
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5. CSV File Setup
6. Drive-by screen right click menu
7. Receive Signal Strength Indicator (RSSI) value
8. RF Test Screen
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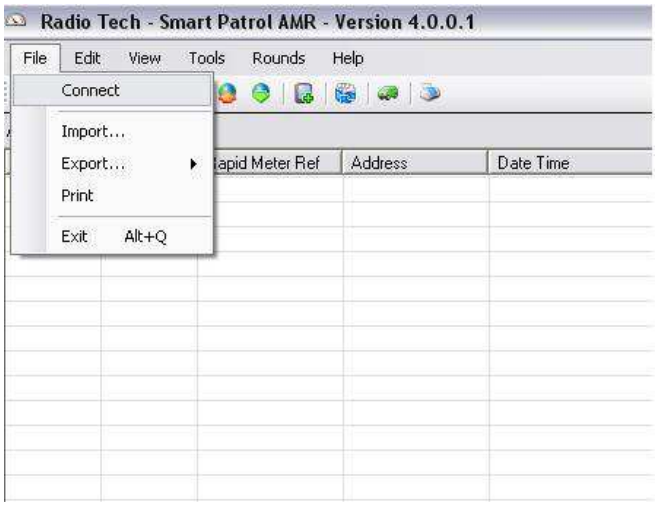
10. USB Transceiver Upgrade

USB Transceiver Connection Process

1. USB Transceiver connection

The software no longer automatically connects to the USB Transceiver on start-up. To connect to the USB transceiver, plug in the transceiver to the PC then on the software click File->Connect.



The message 'Searching ports to connect' will appear in the main form status bar

When the USB Transceiver connects the message USB connected will appear in the tool bar menu. Once connected the chip list will begin to fill with received chirps from loggers currently in RF range.

To disconnect click File->Disconnect

If you attempt to connect to the USB Transceiver with no Transceiver connected the software will continually attempt to connect until a USB transceiver is connected. There maybe a reduction in software performance whilst trying to connect to the USB transceiver. It is recommended to only connect to the USB Transceiver when a transceiver is plugged into the PC

Data Download Process

Historical Meter Reading Downloading

Smart Patrol will now only store data from the last download for each logger . Any existing data found in the Smart Patrol database from a previous download will automatically be deleted when downloading that same logger again. This change does not affect the logger information details (Meter ID, Address etc..)

To save previous downloads the user must ensure that downloaded data has been exported to (*.csv) file first before re-downloading an individual logger.

Current Meter Reading Only Download

Any Smart Patrol Import (*.sif) file that is imported into Smart Patrol will overwrite the meter readings currently stored in the database with the reading stored on the (*.sif) file

It is recommended at the end of the meter reading patrol to recreate the (*.sif) file with the meter information containing the updated meter readings.

To export the meter readings into one (*.csv) file use 'Export Meter Details' with the (*.csv) file type selected. See 'Export Dialog' below

The meter readings can also be exported using 'Export Meter Data' as with the historical data download, However each reading will be exported into a separate file for each meter.

CSV File System

The Smart Patrol Software database is now made up of a CSV file based system. This system allows quicker access when searching and exporting data and also is capable of storing large quantities of data.

The CSV file system is stored in two folders in the Smart Patrol working directory

<InformationStore>
This folder contains all data relating to Meter and Logger details.

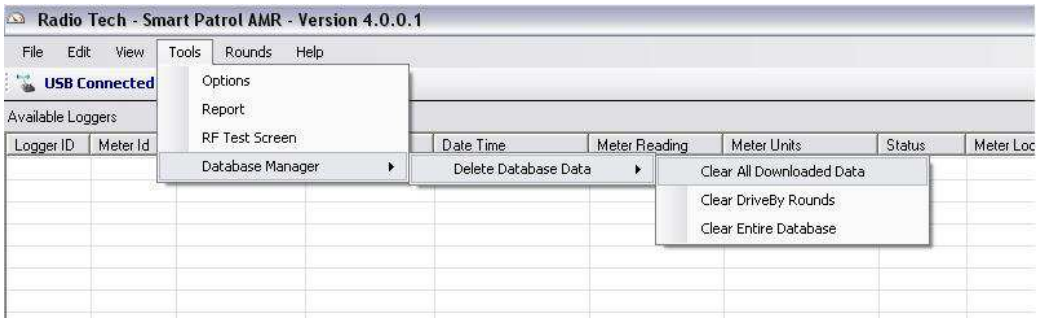
<DataStore>
This folder contains all data relating to the downloaded data

These files are only accessed via the Smart Patrol Software and should not be accessed by the user directly

Database Manager

The database manager will be used to manage the csv files making up the database

Current features available are listed below



Clear All Downloaded Data

This clears all downloaded data from the database. All meter and logger and drive-by details are retained

Clear Drive-By Rounds

This clears all the data relating to drive-by routes and rounds. All downloaded data and meter and logger details are retained

Clear Entire Database

This function deletes all Meter/Logger, drive-by and downloaded data held in the database. This feature is used to blank a database

Any data that is deleted using any of the above options cannot be retrieved once deletion is complete

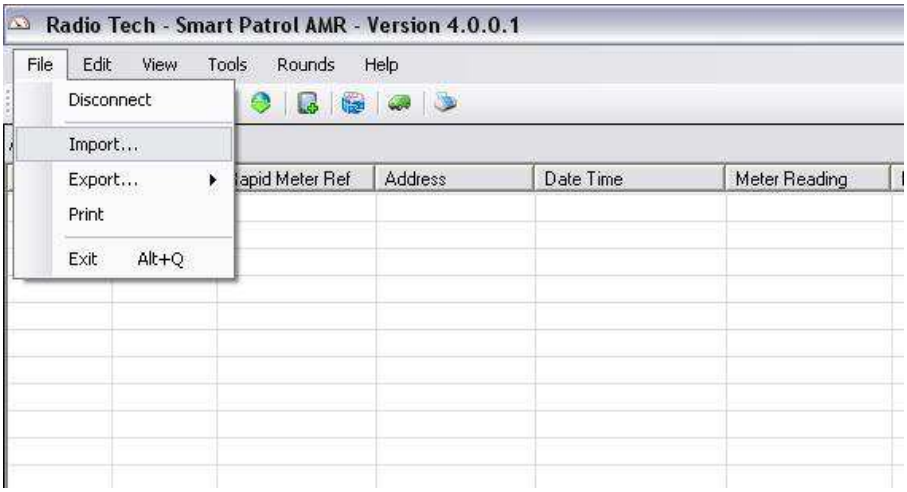
Import Dialog

The software is able to import two file types

Meter / Logger Details — as (*.sif) Files

Drive-by Round Details — as (*.csv) Files

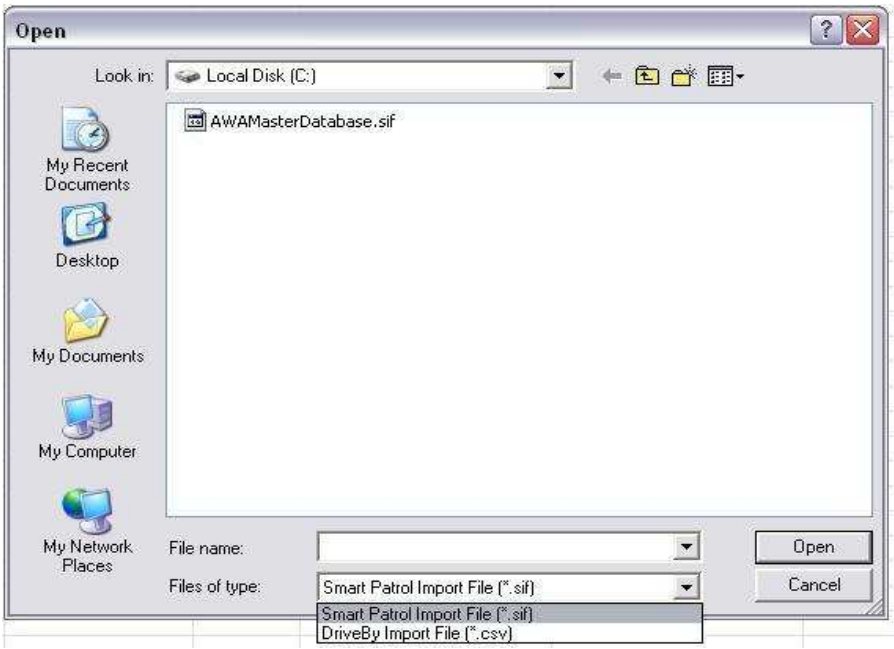
To import a file click File->Import



In the open dialog select the file type for the file you want to import

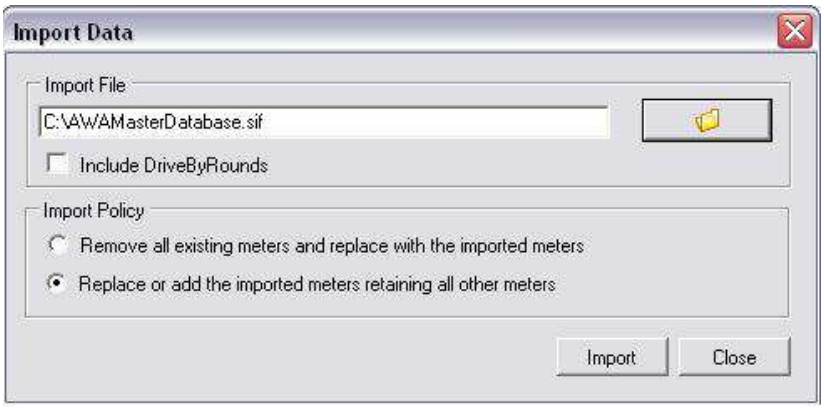
For Meter / Logger Details select (*.sif)

For Drive-by Round Details select (*.csv)



Once selected click open to start the import dialog

Import Dialog Cont'd



The import dialog has the following features

Include DriveByRounds

If this is ticked when 'Import' button is clicked the Smart Patrol Software will import both the Meter/Logger details and the drive-by round details together. The drive-by details file (*.csv) to be imported must have the same filename as the Meter/Logger details file (*.sif). Both files must also be located in the same folder. With this check box checked both files must be located successfully for any data to be imported

Example

<DriveRoundImportFolder>

- ImportedData.sif - file containing Meter/Logger details
- ImportedData.csv - file containing drive-by details

Import Policy

Remove all existing meters and replace with imported meters

Selecting this policy will clear the database before importing the data. The database will just contain the imported data

Replace or add the imported meters retaining all other meters

Selecting this policy will update any existing meter entry in the database with the data found in the import file. If the imported file contains meters not found in the main database then these meters will be added to the database. No changes will be made to all other meters found in the database

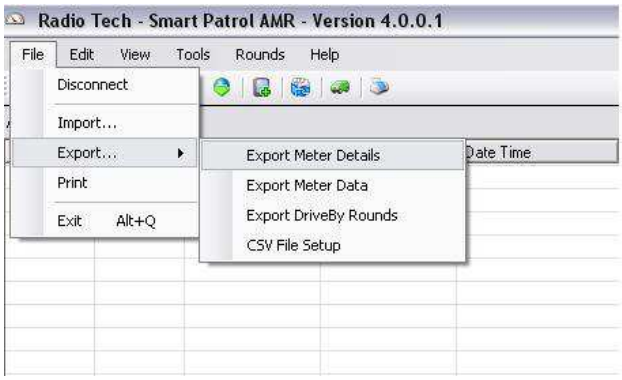
When importing Smart Patrol import file (*.sif) the current meter reading will always be updated with the reading stored in the (*.sif) file. Please ensure that any (*.sif) file being imported contains the latest meter readings.

Export Dialog

The export dialog is used to export files for the following

<Specified Filename>.sif - file to export meter and logger details
<Specified Filename>.csv - file to export driveby details
<Specified Filename>.csv - file to export custom csv file as per CSV FileSetup dialog - this can be used to import into external software or used for reporting purposes

The following lists the type of exports



Export Meter Details

Select this when exporting Meter/Logger Details

Export Meter Data

Select this when exporting downloaded data

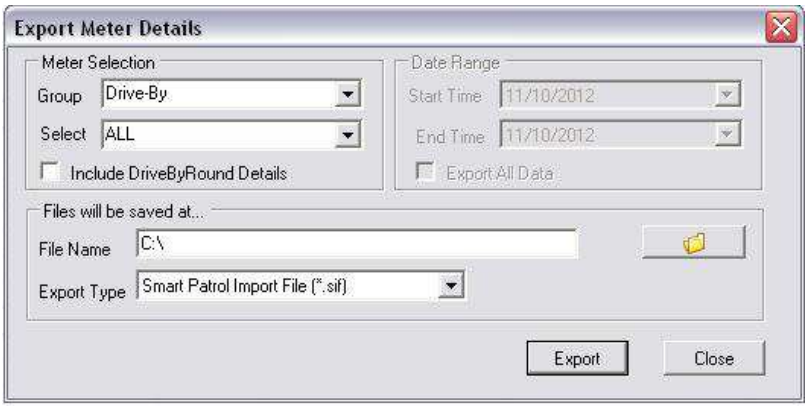
Exporting Driveby Rounds

Select this when exporting the drive-by details to be re-imported back into Smart patrol (*.csv) file. The headers in this file are fixed and cannot be changed by the CSV File Setup dialog

CSV File Setup

Select this to setup the csv file export headers for meter details and meter data csv file exports

Export Details Dialog



The Export Meter Details has the following features

Meter Selection

Meters to be exported can be grouped by

- Driveby— Meters listed for a particular drive-by round
- Meter— lists all meters in the database
- Selected—Lists meters that have been highlighted on the main form

When a group is selected the selection dropdown box will contain the individual selections for that group. Select 'ALL' to export the entire meter group

Include DriveByRounds Details

If this box is ticked when the Export button is pressed then the drive-by rounds file will also be exported with the meter details. Both files will be given the same filename specified by the user.

Do not check this box if you are exporting meter details as a csv file

Files will be saved at…

Filename—Either user the browse button to enter a location file path or the path can be typed manually

Exported Type—Specifies two export types

Smart Patrol Import File (*.sif) - File to be imported back into Smart Patrol

Comma Separated Values (*.csv) - Export file as setup by the CSV File Setup dialog

Export Data Dialog

The Export Meter Data has the following features

Meter Selection

Meters to be exported can be grouped by

- Driveby— Meters listed for a particular drive-by round
- Meter— lists all meters in the database
- Selected—Lists meters that have been highlighted on the main form

When a group is selected the selection dropdown box will contain the individual selections for that group. Select 'ALL' to export the entire meter group

Include DriveByRounds Details

This must be unchecked to export meter data

Data Range

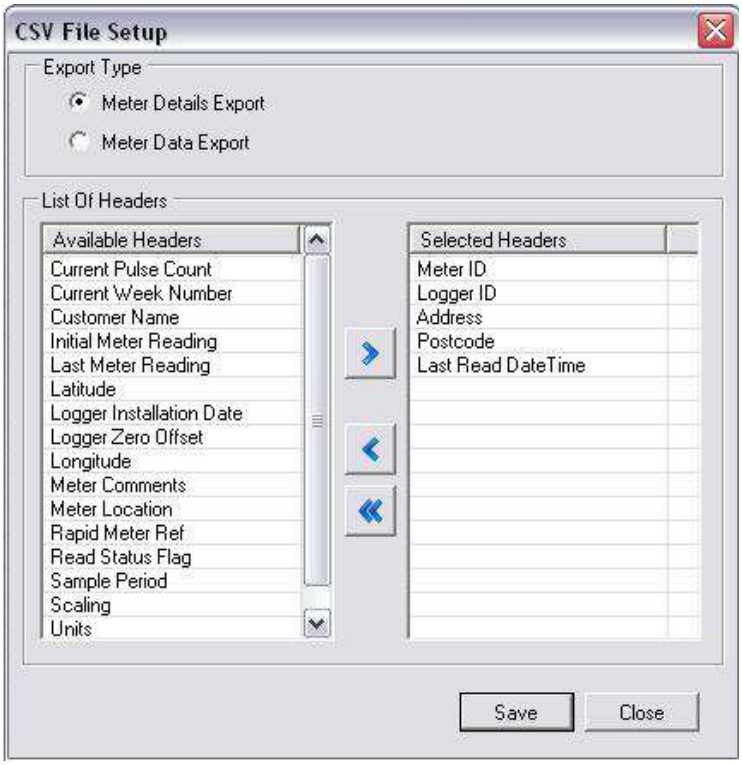
Either specify a date range to be export or click 'Export All Data' to export all stored data.

Files will be saved at…

Filename — Specify a folder to export the data. Folders can be specified either by using the browse button or by manually typing the location path. Do not add a '\' at the end of the folder name

Exported Type — Comma Separated Values (*.csv) - Data files will be exported as setup by the CSV File Setup dialog

CSV File Setup



The above dialog allows the user to select what data is to be exported when selecting to export by csv file type.

Export Type

Meter Details Export — click this to select the data to be exported when exporting Meter/Logger Details

Meter Data Export — click this to select the data to be exported when exporting the downloaded data

List of Headers

Available Headers — This lists the data headers that can be selected for the export file. This list will change depending on the export type selected above

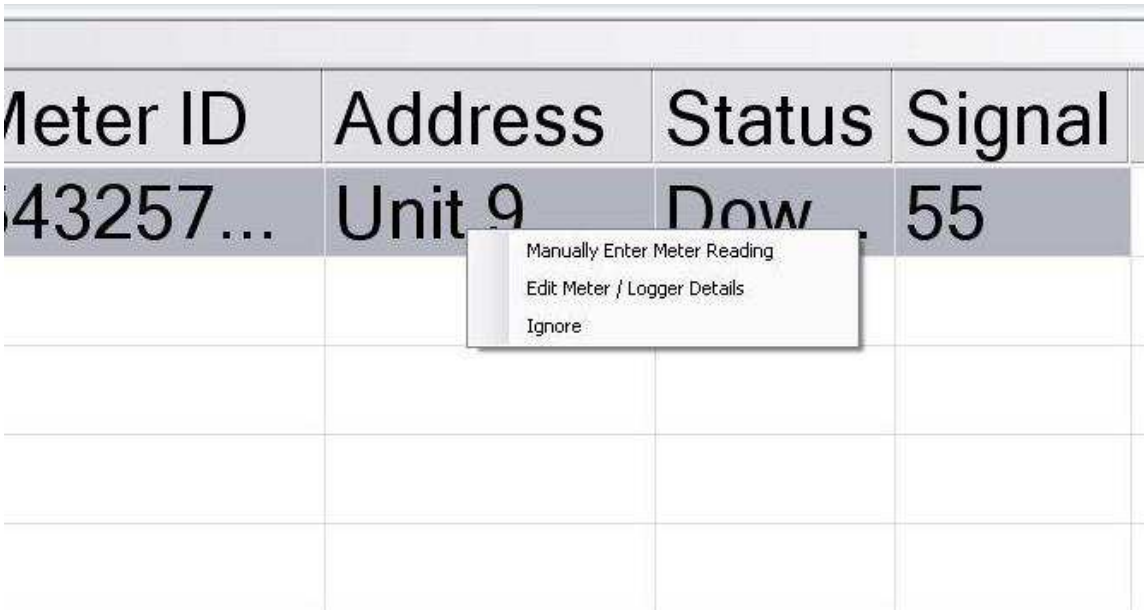
Selected Headers

This list of headers is the current selection for the export file.

To add or remove a data header either double click on that header or use the arrow buttons, The double arrow button removes all headers from the Selected Header List.

Headers that are listed at the top of the Selected Header list will appear as the left most column on the exported CSV

Drive-by Right Click Menu



When performing a drive-by right clicking on a particular meter entry will give you the following menu options

Manually Enter Meter Reading

This allows the user to manually enter a meter reading. The time logged will be the time the reading is entered. Once the reading is entered and OK is clicked the meter entry will be flagged as 'Read' and removed from the drive-by list

Edit Meter / Logger Details

This allows the user to edit the details of a particular meter without reverting back to the main screen. Any changes made will immediately update in the database but the drive-by screen will only update when restarted. Enter the password 'radiotech' if prompted to access this dialog

Ignore

This moves the meter entry to the bottom of the drive-by list, allowing the next meter to begin downloading. This does not change the entries original sequence number so will be re placed if the drive-by window is restarted

RF Signal Strength Indication

When a logger sends a chirp to the USB Transceiver. The transceiver takes a measurement of the signal power for that chirp. This value can be used to assess the RF signal quality from an individual logger.

The scale of the RF strength value is between 0 – 100. The higher the signal value the stronger the signal strength. Any value over 50 is deemed to be a good enough signal for downloading.

The RF signal strength values are shown in 'RF Signal' column on the chirp list on the main form

Chirp list	Pulse Count	New Logger	RF Signal
109136	76187	Yes	44
109678	97887	Yes	73
109848	132602	Yes	100
111111	68	Yes	84
112124	45	Yes	26
12121212	62207	Yes	96
137072	595	Yes	58
138142	7	Yes	53
138146	629		100
147482	18298	Yes	76
152738	62207	Yes	76
152744	62207	Yes	30

Also on the drive-by screen in the 'Signal 'column

The 'Signal' value will only update when a chirp is received from that logger.

These values are for indication purposes only

RF Test Screen

To start the RF Test Screen click Tools->RF Test Screen

This screen allows the user to perform checks on the RF Communication between logger and USB Transceiver at either logger installation time or when performing diagnostic checks.

The RF Test Screen allows the user to view the incoming chirps from a particular logger. To begin type in the logger ID number to be tested into the menu bar Logger ID Text box.

Then click on 'Start Capture' to start viewing the incoming chirps. The chirp when received displays the following information

Logger ID — Logger ID that transmitted the chirp

Packet — The type of packet identified

Time — the time the chirp was received as hours:mins:secs,millisecs

Chirp Type – The type of chirp identified to indicate message size

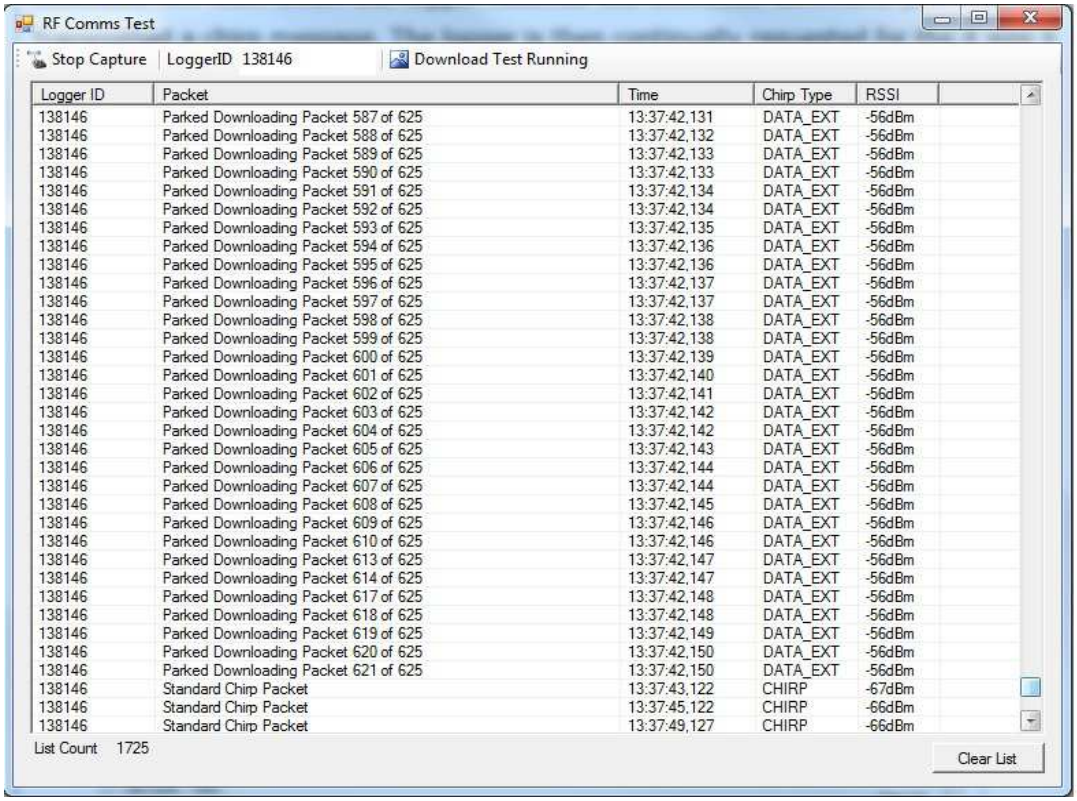
RSSI — the dBm value of the chirp received read by the USB Transceiver. To convert this to the 0-100 scaling factor (dBm value + 120). The scaling value is capped at 0 and 100

Logger ID	Packet	Time	Chirp Type	RSSI
138146	Standard Chirp Packet	10:22:00,164	CHIRP	-66dBm
138146	Standard Chirp Packet	10:22:03,180	CHIRP	-66dBm
138146	Standard Chirp Packet	10:22:06,180	CHIRP	-64dBm

RF Test Screen Cont'd

The RF Test Screen has the facility to perform a test download . This test is to continually request 4 week of data from the logger. This test will always download 4 weeks of data and will disregard the weeks value entered in the 'Options' dialog. This test can be used at either logger installation or diagnosing problems to ensure a robust data download.

To begin the test type the logger ID to be tested into the Logger ID text box and click 'Start Capture'. When chirps begin to be received click 'Download Test Stopped'. The



download will start when the logger receives the download command just after its transmitted a chirp message. The logger is then continually requested for 4weeks of data. To stop the test click 'Download Test Running' on the menu bar

The download test is considered good if most or all packets are received after each request. A poor download can be expected if a large percentage of packets are continually not being received with each request

Smartlog Configuration Screen

Smart Patrol now has the facility to change various Smartlog parameters whist the loggers are installed in the field.

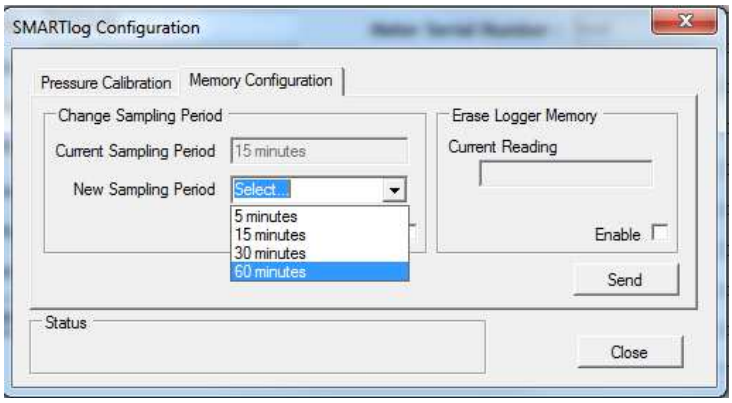
To change a Smartlog configuration. Ensure the USB Transceiver is connected. Open the Smartlog edit dialog by highlighting a Smartlog to be changed on the main database screen then click Edit->Edit logger / Meter Details. When asked for a password type "radiotech" disregarding the quotes

On the edit form click the SMARTlog configuration button to open the configuration dialog. Click yes to the "Are you sure?" message to confirm you want to make a change to that Smartlog

Below lists the various parameters currently available

1. Changing the Sample Rate

Smart Patrol can change the time period that the Smartlog stores a reading for the historical data download.



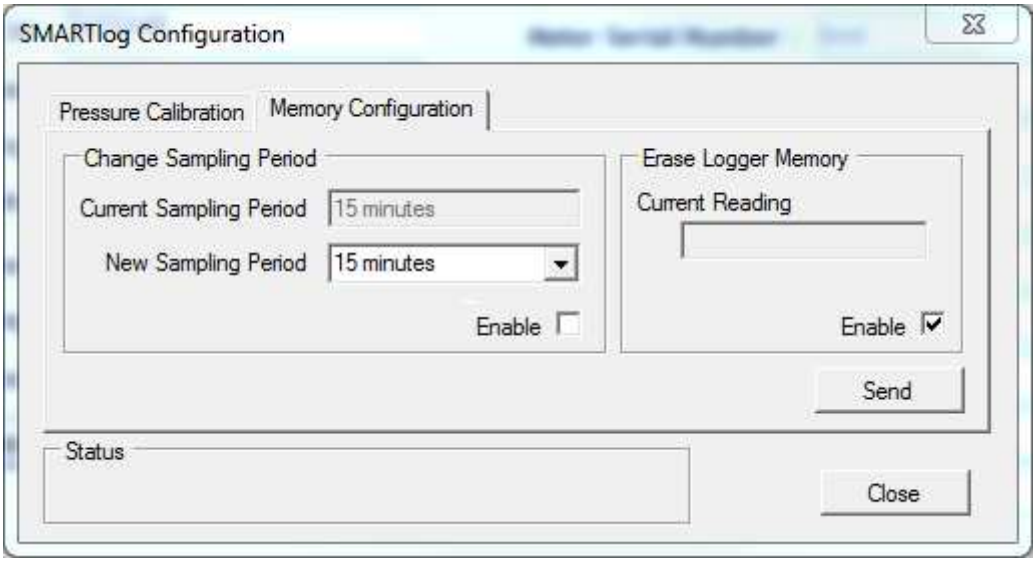
Select the Memory Configuration tab and then in "New Sample Period" select the desired sample period from the drop down list and click the "Enable" checkbox. Ensure the Erase Logger Memory Enable checkbox is **unchecked** if you do not wish to clear the SMARTlog memory in the same request when clicking the send button. Then click "send" to transmit the command. When the logger next chirps, the command will be sent to the SMARTlog. The "Current Sample Period" will change when the SMARTLog successfully changes it's sample rate.

If the sample period is changed without clearing the SMARTlog memory, you must wait until 48Hrs worth of data has been collected on the new sample rate before downloading

Smartlog Configuration Screen Cont'd

2. Erasing the SMARTLog History

Smart Patrol has the capability to erase the SMARTLOG history and set the logger reading to zero

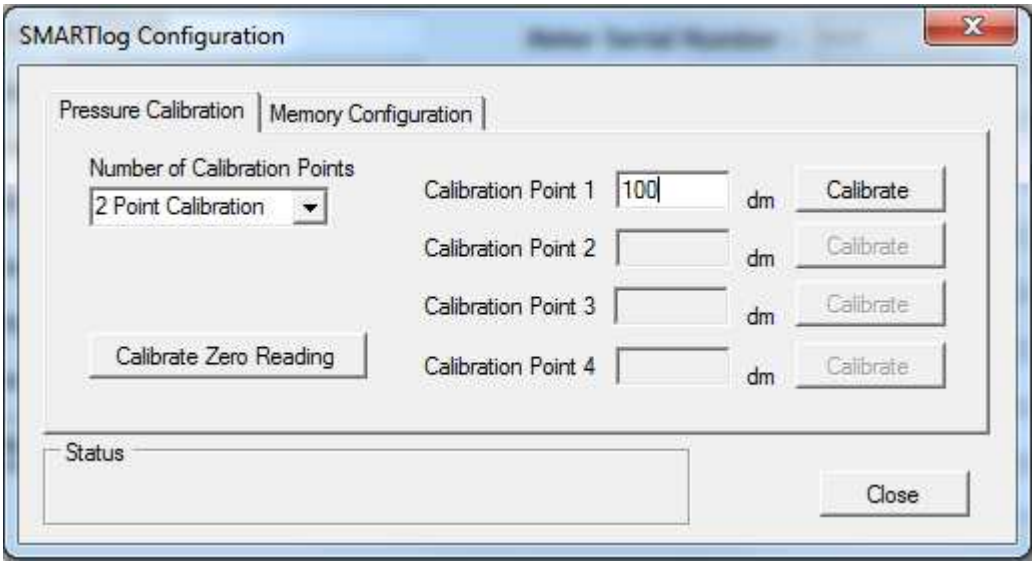


Select the Memory Configuration tab and then in the "Erase Logger Memory" select click the "Enable" checkbox. If you do not wish to change the Sample Period in the same request then ensure the Change Sample Period Enable check box is **unchecked** before clicking "Send". When the logger next chirps, the command will be sent to the SMARTlog. The Current Reading value will change to zero when the command is successful

Smartlog Configuration Screen Cont'd

2. Pressure Calibration

This feature is only for use with pressure SMARTlog. This feature allows the Smartlog to be calibrated on known pressure readings



Select the Pressure Calibration tab to view the calibration screen.

First select how many calibrations points to use. All Smartlogs must have a zero calibration and at least one calibration reference point. The reference point does not have to be the maximum pressure value expected but must be above zero . With the calibration readings as a reference all other readings will then be based on these readings

Example

If a known pressure level when calibrating was set to 100dm. Dropping the pressure by half with reference to zero will give a reading of 50dm

If the same pressure level when calibrating was set to 50dm. Dropping the pressure to the same half level will give a reading of 25dm

Smartlog Configuration Screen Cont'd

2. Pressure Calibration

To calibrate the zero value connect a pressure value of 0dm to the SMARTLog transducer, and then click Calibrate Zero Reading. The reading recorded on the transducer at that moment will be used as the zero reference for all other readings.

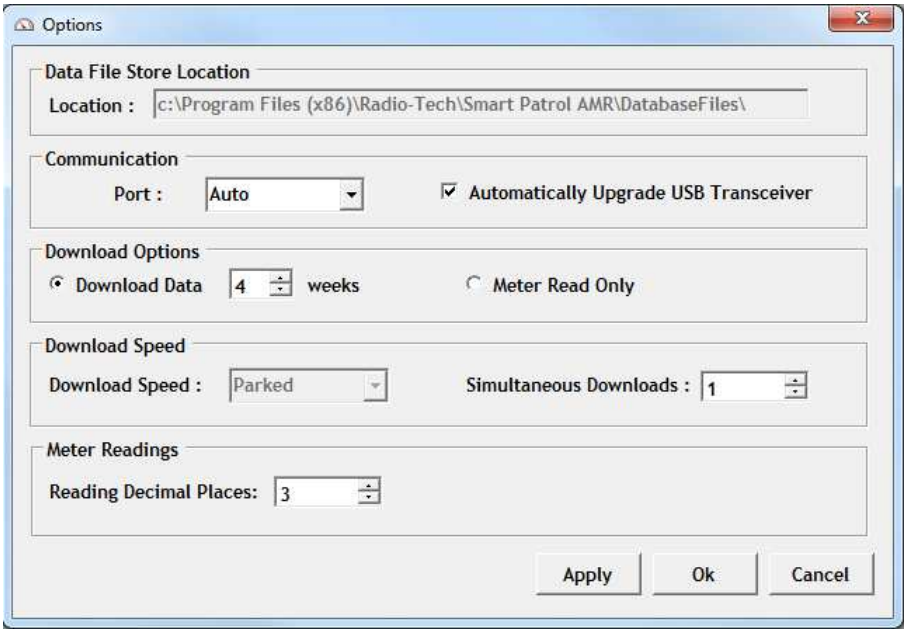
To calibrate at a given reference point, apply a known pressure onto the transducer, and then enter that value in decimetres into the calibration point . Click calibrate to use the current reading as a reference point.

To confirm the readings click the Memory Configuration tab and view the Current Reading value being transmitted from the SMARTlog. The current reading will update every 2 seconds for 60 chirps after the calibration command and then every 30 seconds thereafter.

USB Transceiver Upgrade

Smart Patrol has the facility to upgrade the USB Transceiver unit over the USB link. There are two ways that the upgrade can be started

1. Automatically upgrade on USB Connection



If the "Automatically Upgrade USB Transceiver" checkbox is checked in the Options dialog. Any USB Transceiver that connects to Smart Patrol, if the version number of the Transceiver is out of date then Smart Patrol will automatically upgrade the Transceiver to the latest version stored in that version of Smart Patrol.

USB Transceivers earlier than v11 do not have upgrading via USB capability. So to use a previous versions of Transceiver with the latest Smart Patrol ensure the "Automatically Upgrade USB Transceiver "is unchecked before connecting the Transceiver.

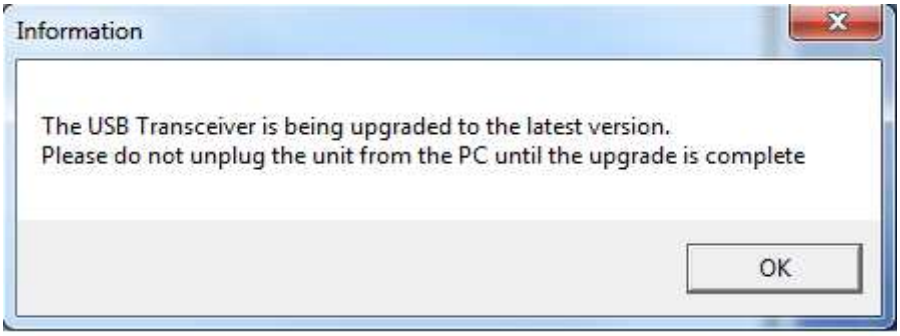
2. By Menu Selection

The USB Upgrade can also be started by menu selection in Tool->Upgrade USB Transceiver

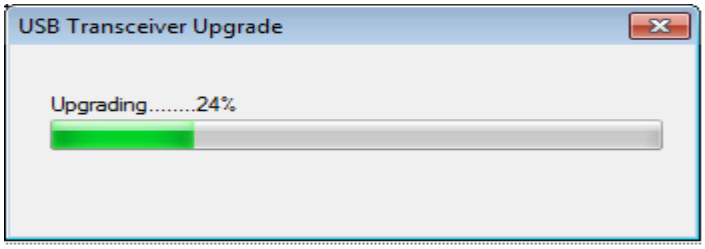
When selecting this menu option the 4 status Led's on the left hand side of the USB Transceiver will begin flashing and the USB link will disconnect. To start the upgrade ensure "Automatically Upgrade USB Transceiver" is checked in the Options menu in Smart Patrol as above and then connect the USB by clicking "USB Disconnected" icon

USB Transceiver Upgrade Cont'd

Upgrading Process



The upgrading process begins with a message notifying the user not to unplug the USB transceiver until the upgrade is complete. Click OK to confirm this message and the upgrade will begin.



Upgrade progress is then shown via the progress bar. The upgrading cannot be cancelled once the process has started. The user will be notified when the upgrade completes.

At the end of the upgrade process the Transceiver will restart automatically.