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SS-10

FIXED CELLULAR TERMINAL

USER MANUAL

Revision History:

Revision 01	Original document	2004
Revision 02	Cosmetic changes	12 February 2008
Revision 03	Auto Call termination and GUI	26 January 2009

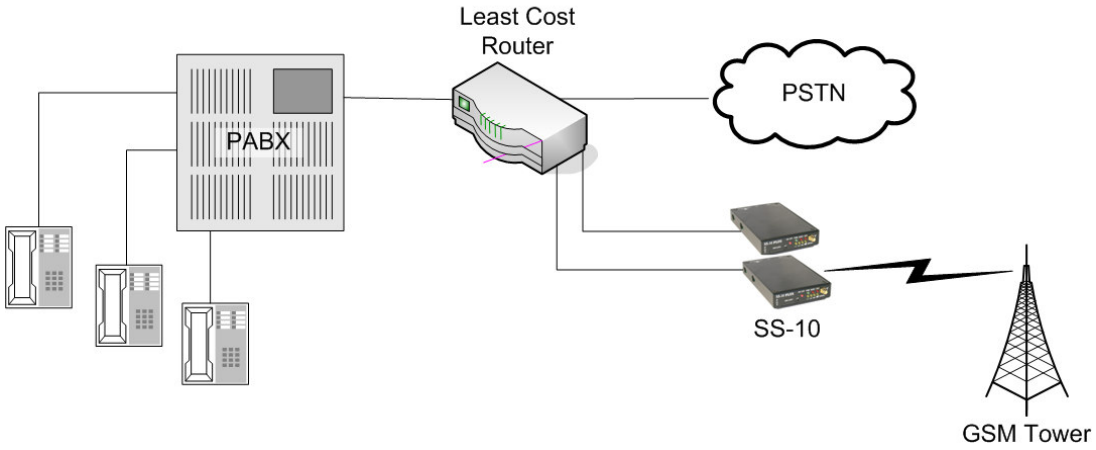
CONTENTS

1 INTRODUCTION

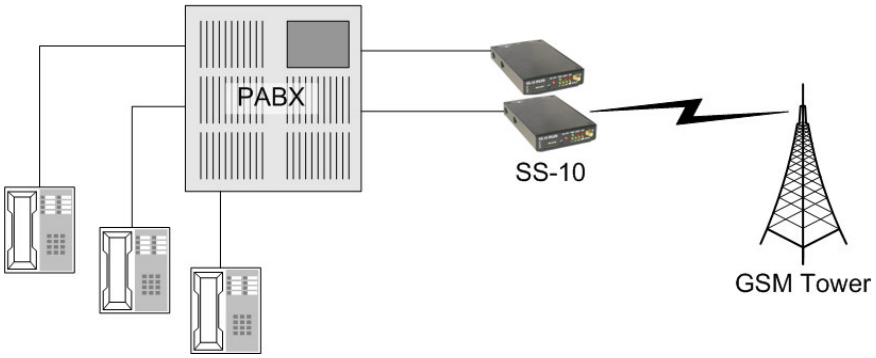
The purpose of the SS-10 Fixed Cellular Terminal (FCT) is to provide a means of making telephone calls where there is no fixed line infrastructure or where it may be more cost effective to use the GSM infrastructure for carrying the call.

ARCHITECTURE

Least Cost Routing



Rural Telephony



2 FEATURES

2.1 PHYSICAL FEATURES

- Matches to complex line impedance
- Power saving feed-bridge
- Signal level indicator LEDs
- Busy indicator
- Network indicator
- SMA antenna connector
- GSM On/Off switch allows Network Detach
- Power supply 300mA at 12 VDC
- RJ11 connector for telephone
- DB9 connector for programming
- 900 MHz or 1800 MHz operation

2.2 SOFTWARE FEATURES

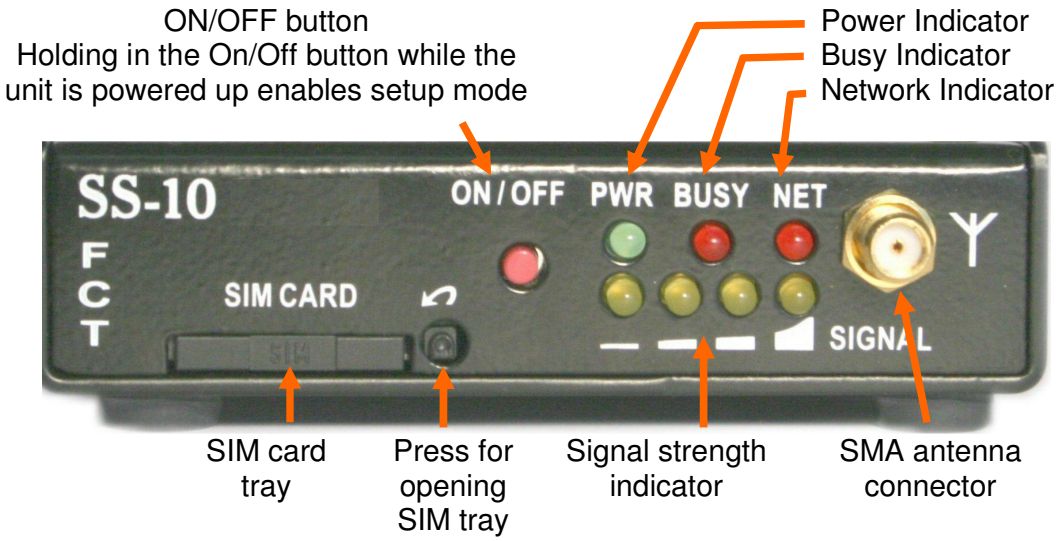
- Comfort Tone
- CLI restriction
- Settable digit count
- Settable dial timeout
- Automatic call termination
- Transmit & receive levels adjustable
- Optional reversal
- Optional line current break
- Optional periodic module reboot (Version 1.23 and above)
- Full rate, enhanced full rate & half rate operation
- Preferred network selection (Network locking) (Version 1.23 and above)
- SPM pulses at settable interval. 12 KHz or 16 KHz. (Version 1.17 and below)
- Dial-In modem functionality (Version 1.23 and above)
- 4 minute timer to reset GSM module if not registered on the network

2.3 MAINTENANCE FEATURES

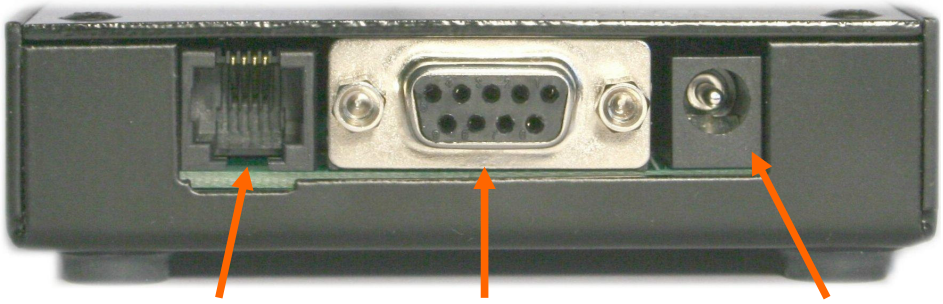
- Routine periodic SMS reports (Version 1.23 and above)
  - Feed bridge voltages
  - GSM voltage
  - Number of unanswered calls
  - Number of answered calls
  - Total duration of answered calls
- SMS report on zero traffic (no calls made for specified interval)
- Request reports
- Request setting information
- Change set-up information by SMS
- 2 authorized maintainers
- Programmable by serial port, telephone or sms

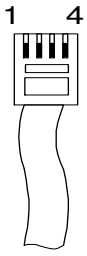
3 DESCRIPTION

3.1 FRONT VIEW



3.2 REAR VIEW





Line Connector
RJ-11 Connector

(Only pins 2 & 3 are used)

PC Connector
DB9 Female - Used for setup purposes
Use a standard PC serial cable for connecting the unit to a PC

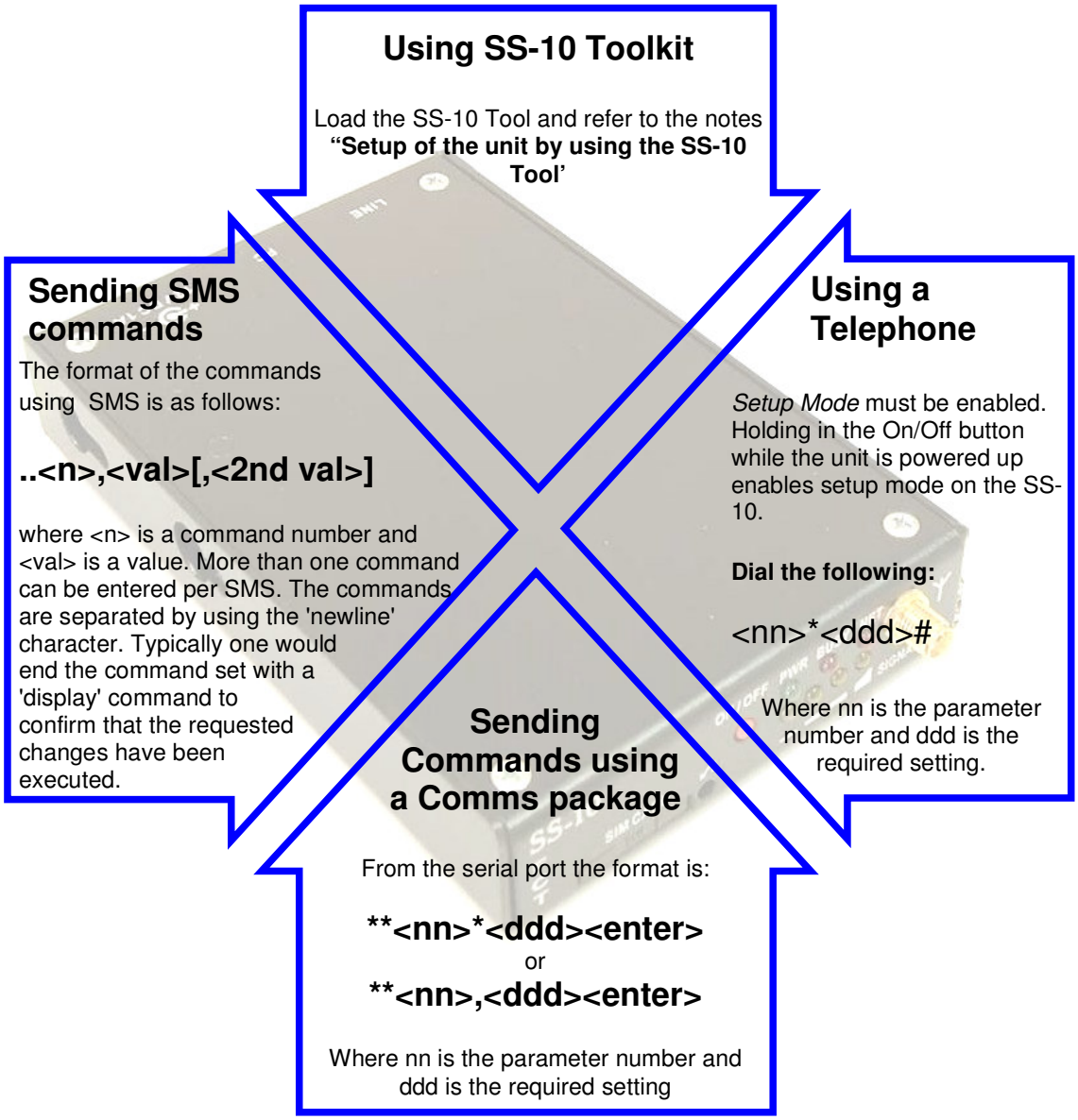
DC Connector
Connects a DC voltage between 12V and 18V to the unit

Pin	Description
Inside	DC positive voltage
Outside	GROUND

4 SETUP

Setup of the SS-10 can be done by using one of the following methods:

- **SMS Setup Method:** Sending SMS commands to the unit;
- **Telephone Setup Method:** Using a telephone connected to the SS-10;
- **PC Serial Port Setup Method:** Sending commands to the unit by connecting it to a PC and use a Comms package like HyperTerminal, or
- **PC Serial Port Setup Method:** Connect the unit to a PC using the **SS-10 Tool** package



5 SETTABLE PARAMETERS

5.1 BASIC SETUP

<table>
<tr><th>Parameter</th><th>Description</th><th>Notes</th></tr>
<tr><td>01</td><td>Total Digit Count
Sets the total number of digits required before dialing.
It is recommended that this parameter is set to 10.</td><td></td></tr>
<tr><td>02</td><td>Dial Timeout
Set dial timeout in 10^{ths} of a second. Normally 4 seconds
This is the time taken before the call proceeds when numbers shorter than the total digit count are dialed.</td><td></td></tr>
<tr><td>03</td><td>Call Progress Tones
Enable (1) disable (0) call progress tones.</td><td></td></tr>
<tr><td>04</td><td>Polarity Reversal Signalling
Set reversal time in 10^{ths} of a second. To enable reversal on answer, add 100 to the number input. E.g. 04*20 sets the time to 2.0 seconds without reversal on answer and setting 04*120 sets it to 2.0 seconds WITH reversal on answer.</td><td></td></tr>
<tr><td>05</td><td>Break Pulse Signalling
Set the break time in 10^{ths} of a second. Some PABX systems require a current break to indicate that the call has terminated. The SS-10 can provide such a break. If it is not required then set this parameter to 0.</td><td></td></tr>
<tr><td>06</td><td>Call Line Identification
Restrict CLI (1) or allow CLI (0).</td><td></td></tr>
<tr><td>07</td><td>Transmit Levels Set transmit levels 0-255 (64 normal)
<table><tr><th>Relative Level</th><th>Value</th><th>Description</th></tr><tr><td>-12 dB</td><td>32</td><td>Softer</td></tr><tr><td>-6 dB</td><td>64</td><td>Factory Setting</td></tr><tr><td>0 dB</td><td>128</td><td>Louder</td></tr><tr><td>+6 dB</td><td>255</td><td>Loudest</td></tr></table></td><td></td></tr>
<tr><td>08</td><td>Receive Levels Set receive levels 0-255 (64 normal)
<table><tr><th>Relative Level</th><th>Value</th><th>Description</th></tr><tr><td>-12 dB</td><td>32</td><td>Softer</td></tr><tr><td>-6 dB</td><td>64</td><td>Factory Setting</td></tr><tr><td>0 dB</td><td>128</td><td>Louder</td></tr><tr><td>+6 dB</td><td>255</td><td>Loudest</td></tr></table></td><td></td></tr>
</table>

5.2 REPORTING SETUP		
Parameter	**Description**	**Notes**
10	**No Call SMS Report** Set the interval, in minutes, after which a report may be sent by SMS if no calls have taken place. Set to 0 to disable 'no call reporting'.	
11	**Routine Reports** Set the interval, in minutes, between routine reports that will be sent by SMS to the pre-programmed destination. Set to 0 to disable routine reporting.	
12	**SMS Report Destination** Sets the destination number for SMS report. Please include country code. Eg. **+27**828221381	
13	**SS-10 Identity** This command is only available from the serial port. It is used to set a 16 character ID so that the SS-10 can identify itself in SMS messages that are sent.	

5.3 CALL DETAIL REPORTING		
Parameter	**Description**	**Notes**
20	**Call Record Prefix** Sets up a 2 digit number that will prefix call records that are output from the SS-10. The prefix is the line of the Extension or Trunk number to identify the SS-10 to which the CDR record belongs.	

5.4 SIM & NETWORK

Parameter	Description	Notes
30	**Sets the PIN** Sets the PIN (SimPin1). It is only needed if the SIM card has its PIN set. **Using a PIN locked SIM** The SIM can be loaded into the SS-10 using the command: ****30*nnnn<enter>** where nnnn is the PIN number. It is important to make sure that the PIN is entered correctly. If the PIN is not correct then the SS-10 will output a message on the serial port indicating this. It will also flash the IN USE and NETWORK LED's in an alternating pattern until it is powered down. Note that after 3 attempts the SIM will be blocked and the PUK will have to be used to unblock the SIM. This will need to be done using a normal GSM handset. **Using a BLANK SIM** If the SIM card is setup without a PIN, no further action needs to be taken, as the SS-10 will recognize that no PIN is required and it will automatically log onto the network.	
31	**Set Network Operator** 5 digit network code - use space for automatic network selection. **Vodacom**: 65501 | **MTN**: 65510 | **Cell C**: 65507	

5.5 AUTHORIZED USER

Parameter	Description	Notes
32	**Authorised User 1** Gives authorisation to user 1 for controlling access to the SS-10 unit via SMS by entering the user's numbers. Country code to be included, e.g. **+27**828221381	
33	**Authorised User 2** Gives authorisation to user 2 for controlling access to the SS-10 unit via SMS by entering the user's numbers. Country code to be included, e.g. **+27**828221381	

5.6	HARDWARE SETTINGS	
Parameter	**Description**	**Notes**
40	**On-Hook Voltage** The On-Hook voltage can be set with this command. The allowed range is from 20 volts to 40 volts. Nominal value is 35 volts.	
41	**Off Hook Voltage** The Off-Hook voltage is set using this command. It can be set from 18 to 30 volts. The nominal value is 25 volts. This allows power usage to be reduced during conversations, which reduces heating in confined spaces.	
42	**Peak Ring Voltage** Sets the peak ring voltage. The range is 40 to 60 volts. The factory setting is 50 volts; normally this setting will not require adjustment.	

5.7	METER PULSE GENERATION	
Parameter	**Description**	**Notes**
50	**12 KHz or 16 KHz** Set the frequency to 12KHz or 16KHz for Subscriber Private Metering.	***Only available in Ver 1.17***
51	**Pulse Interval** Sets the interval, in seconds, between SPM pulses. Setting a value of 0 will disable SPM.	

5.8	POWER DOWN TIME	
Parameter	**Description**	**Notes**
55	**Power Down Time** Time in minutes between forced network logoffs.	
56	**Automatic call termination** Time in minutes before call termination	

5.9	CALL BARRING	
Parameter	**Description**	**Notes**
60	**Incoming Calls** Prohibits incoming calls (1), allows incoming calls (0).	
61	**Display Number Table** Used to display the number list. An extra digit will precede the number. (2) Indicates an allowed number, (1) indicates a barred number. ***Note: Command will only work in serial setup mode***	
62	**Add Number** Add a '2' before the number to allow the number. Add a '1' before the number to bar the number.	
65	**Set 'Need Allowed'** When this is set to '1', all numbers will be barred by default and allowed numbers have to be explicitly enabled.	

5.10	MISCELLANEOUS	
Parameter	**Description**	**Notes**
80	**Clear Totals** Resets the report values	
81	**Set Report Timer** Sets the time interval for the report timer.	

5.11	SETUP INFORMATION	
Parameter	**Description**	**Notes**
96	**Reboot the GSM Module** Should be used after level changes.	
97	Sends a report back to originator.	
98	Sends SMS.	
99	Displays the settings.	

6 SERIAL PORT COMMANDS

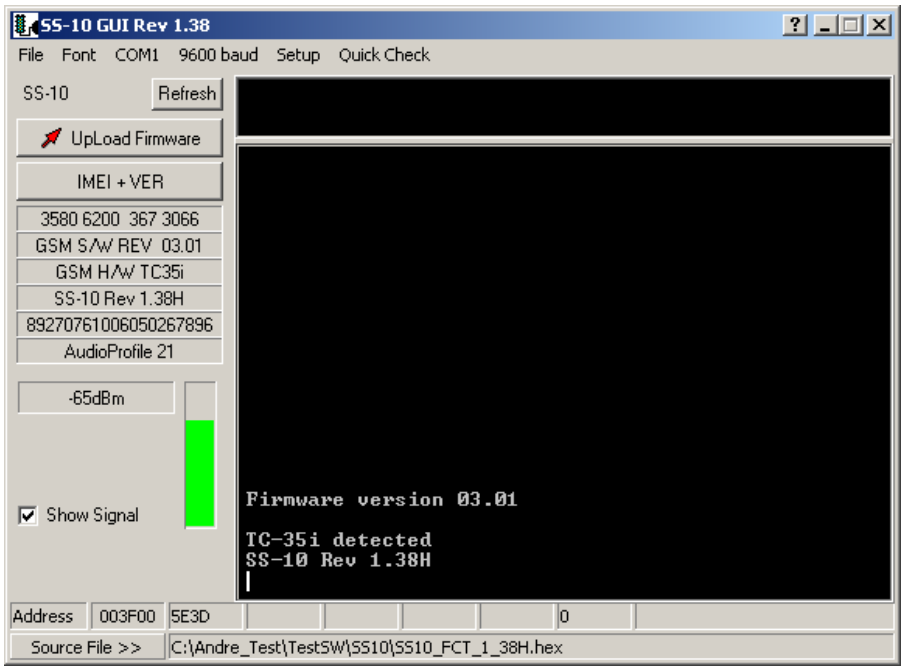
6.1 SIMPLIFIED SERIAL PORT COMMANDS

Simplified basic commands for entering via the serial port generally used for diagnostic or basic setup purposes.

Instruction	Description	Notes
DR<enter>	Gives a short report on state.	
AT<ddddddd><enter>	Sends the data dddd to the cell module.	
RESET<enter>	Resets the SS-10.	
DIAG<enter>	Toggles the diagnostic state of the SS-10.	
SMS<enter>	Sends a test SMS to the pre-programmed destination.	
****<nn>*<ddd><enter>**	Sets parameter nn to value ddd.	
SETID<sssss><enter>	Sets the ID of the SS-10 to sssss. This is used to identify the particular SS-10 (site name?) when automatic SMS messages are sent.	

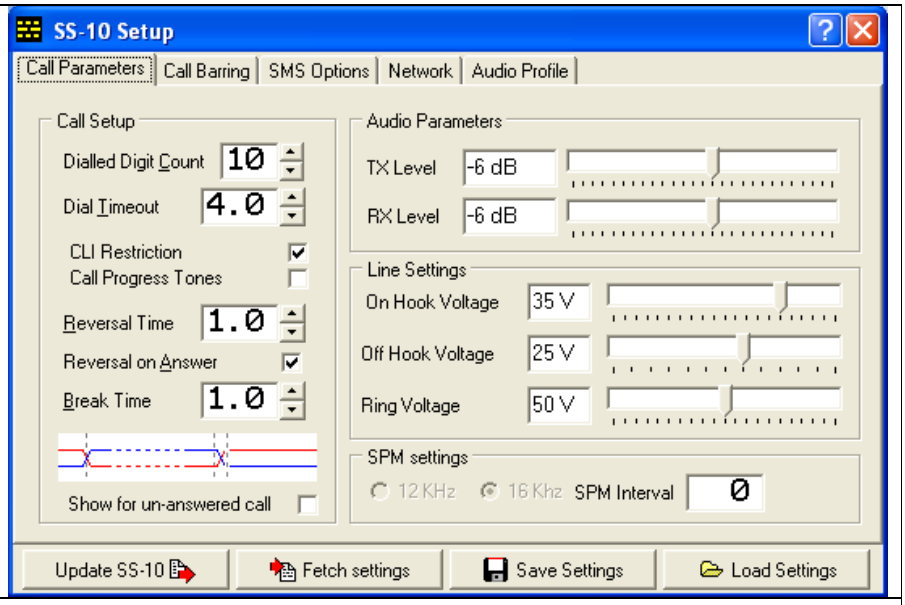
7 SETUP OF THE UNIT BY USING THE SS-10 TOOL

7.1 MAIN WINDOW

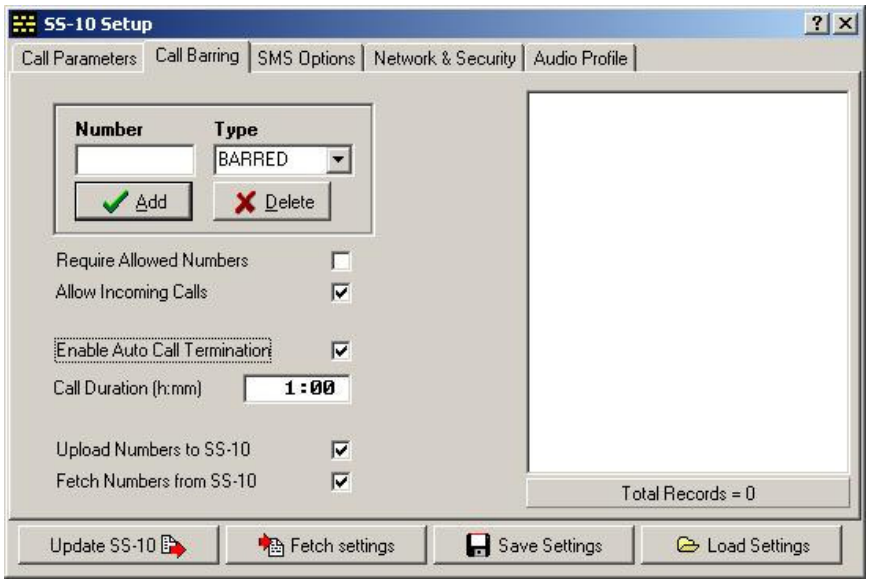
SS-10 Tool Main Window Load the SS-10 Tool Click on **COM1,** then click on **Refresh** to do automatic baudrate detection	
IMEI +VER	**Display the following:** IMEI, Software Revision and Hardware type of the GMS engine SS-10 Firmware revision number.
UpLoad Firmware	To update the firmware, load the Firmware file from the **File** Menu. Use **UpLoad Firmware** button to load the Firmware into the unit. Refer to the **Upgrade Firmware** section for the complete procedure.
Show Signal	Tick the Show Signal box for a visual and measured indication of the signal strength.

7.2 CALL PARAMETERS

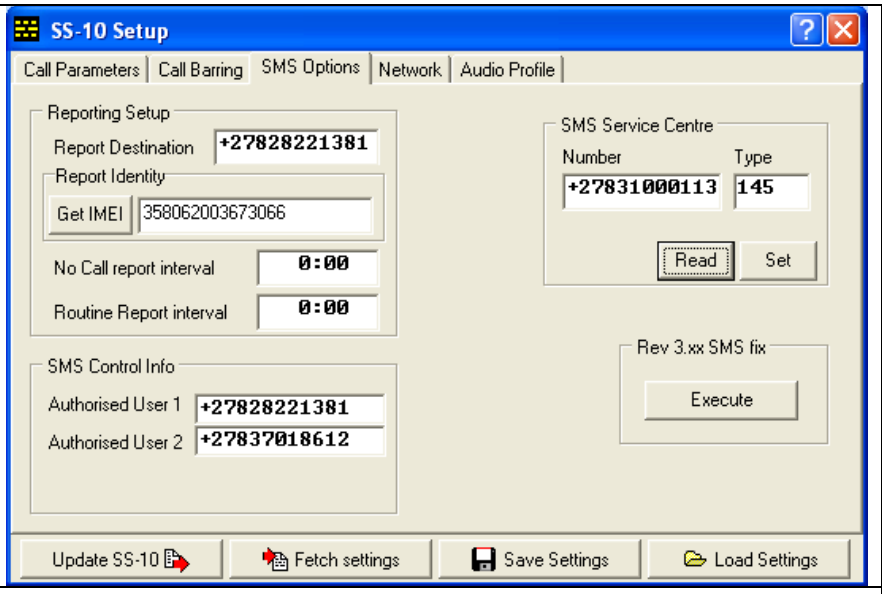
Click on SETUP to start with the setup of the SS-10.

Call Parameters: Call setup, Audio and Line levels can be changed in this window.	
Call Setup	
Dialed Digit Count	Sets the total number of digits required before dialing. It is recommended that this parameter is set to 10.
Dial Timeout	Sets dial timeout in 10^{ths} of a second This is the time taken before the call proceeds when numbers shorter than the total digit count are dialed. Nominal value is 4 seconds
CLI Restriction	Restricts or allows Call Line Identification.
Call Progress Tones	Enables or disables Call Progress Tones.
Reversal Time	Sets reversal time in 10^{ths} of a second.
Reversal on Answer	Enables or disables Reversal on Answer.
Break Time	Sets the break time in 10^{ths} of a second. Some PABX systems require a current break to indicate that the call has terminated. If it is not required then set this to 0.
Show for un-answered call	When ticked the graph will display the reversal sequence for an unanswered call.
Audio Parameters	
TX Level	Sets Audio Transmit level. Nominal value is -6 dB
RX Level	Sets Audio Receive level. Nominal value is -6 dB
Line Settings	
On-Hook Voltage	The allowed range is from 20 to 40 volts. Nominal value is 35 volts.
Off-Hook Voltage	It can be set from 18 to 30 volts. The nominal value is 25 volts. This allows power usage to be reduced during conversations, which reduces heating in confined spaces.
Ring Voltage	The range is 40 to 60 volts. The factory setting is 50 volts, normally this setting will not require adjustment
SPM Settings	
12KHz	Sets the frequency to 12KHz for Subscriber Private Metering. (***Only available in Ver 1.17)***
16KHz	Sets the frequency to 16KHz for Subscriber Private Metering. (***Only available in Ver 1.17)***
SPM Interval	Interval between SPM pulses.

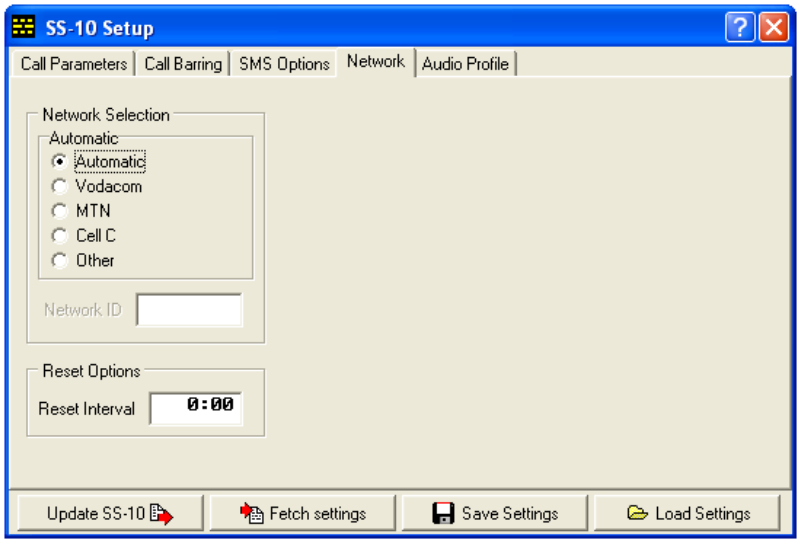
7.3 CALL BARRING

Call Barring: Calls can be barred or allowed	
Enter the first digits of the number needed to recognise the number type. Select the Type as BARRED or ALLOWED. Click on Add or Delete to enter or remove the number from the list.	
Require Allowed Numbers	If the block is not ticked it will allow all the numbers that are not barred.
Allow Incoming Calls	The SS-10 can be set to allow or ignore incoming calls
Auto Call Termination	The SS-10 can be set to terminate a call after a set duration

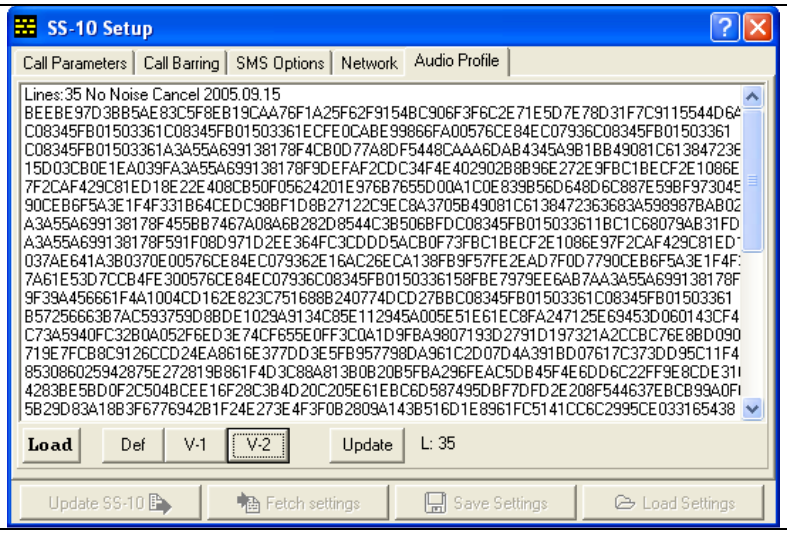
7.4 SMS OPTIONS

SMS Options: The SS-10 can be set to send fault reporting via SMS to a required destination number. It can authorise two users to control the unit via SMS.	
Reporting Setup	▪ Feed bridge voltages ▪ GSM voltage ▪ Number of unanswered calls ▪ Number of answered calls ▪ Total duration of answered calls
Report Destination	Destination number for reports to be sent. Country code to be included, e.g. **+27**828221381
Report Identity	Identity to be sent with report for identifying the unit. Click on **Get IMEI** to retrieve the number from the unit or use any custom text as the identity.
No Call Report Interval	A report will be sent if no answered calls have been made for this period of time.
Routine Report Interval	Fixed intervals between sending of reports.
SMS Control Info	
Authorised User	Give authorisation to two users for controlling the access to the SS-10 unit via SMS by entering the user's numbers. Country code to be included, e.g. **+27**828221381
SMS Service Centre	
Number	Enter the SMS service number for the network.
Type	After entering the service number, click on **Read** to automatically get 'type' from the network.

7.5 NETWORK

Network: Select the required Network and Reset Interval if needed	
Network Selection	When using 'Other', the 5-digit network operator code should be obtained from the local Network Operator.
Reset Interval	Set the interval in hours and minutes between forced network log-offs.

7.6 AUDIO PROFILES

Audio Profile: Audio updates can only be used on the TC-35i s/w revision 2.07 and later	
Load	This button is used to load new or alternative audio parameter files that may be released from time to time and are not yet included in the SS-10 Uploader program.
Def	This button loads the default parameter set that was shipped with the TC-35i s/w revision 02.07.
V-1	This will load the parameter set that provides echo cancelling and noise reduction functionality.
V-2	This loads the parameter set that provides echo cancelling without the noise reduction. This is the 'preferred' option to use, but in exceptional circumstances the other file can be used.
Update	Clicking on this button will initiate an update of the TC-35i. Basic checking is done to ensure that a TC-35i is present and that it is running s/w revision 02.07.

8 UPGRADE OF THE SS-10 FIRMWARE

Download Firmware

The latest firmware for the SS-10 is available from:
http://www.sstelecoms.com/

Connect unit to PC

Connect the SS-10 unit to the PC by using a serial cable and make sure it is switched on.

Upgrade the Firmware by using the SS-10 Tool

Load the SS-10 Tool Program:

- Click on **ComPort** to select the required COM.
- Set the **BaudRate** to 9600.
- From the **File** Menu choose **Open** and select the required Firmware file.
- Click the **UpLoad Firmware** button to upload the new firmware to the unit.
- Remove the serial cable from the unit after setup.

9 TECHNICAL SPECIFICATIONS

Housing	Black powder coated Aluminum 147 x 90 x 26 mm
LED indicators	POWER IN USE NETWORK SIGNAL STRENGTH
Connectors	PC connection: 9 way D-Type female LINE connectors: RJ11 POWER connection: 2.1 mm DC socket
Set-up	Set-up data is stored in non-volatile memory. Setup can be done by using a telephone or PC.
Compatibility	Compatible with most PABX's
Required voltage	10 VDC to 16 VDC
Current consumption	300 mA

10 CONTACT DETAILS

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