RST200

Configuration & Beam Management System Manual

Beam Communications Pty Ltd

Remote Satellite Systems
INTERNATIONAL

RST200
Configuration &
Beam Management
System Manual

Beam Communications Pty Ltd

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Configuring RST200

This chapter describes how to configure the RST200 at initial installation at a site as well as accessing specific Menu items of the unit during routine operation when required.

Accessing these menu items is best performed using the Beam Management System, BMS. This section covers most of the items that can be configured in the Supervisor Menu of the BMS.

The following section will cover:

1. Installation of the BMS software on your PC
2. Using the BMS
3. Configuration Menu Items

Beam Management System (BMS)

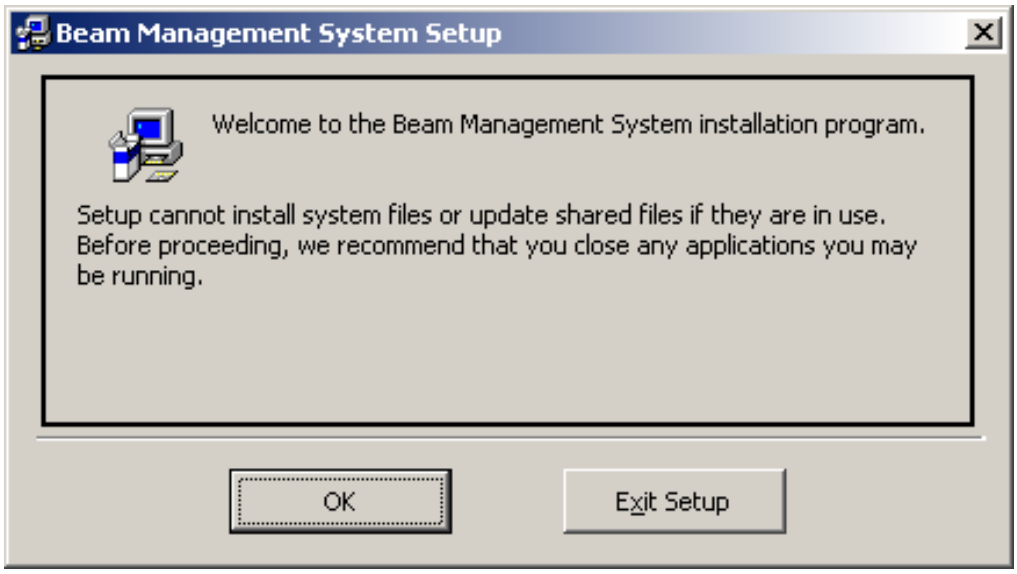
In order to configure the RST200 the Beam Management System, software must be installed on your PC/Laptop. Once the BMS is installed you will then connect from your PC to the LOG Port of the RST200

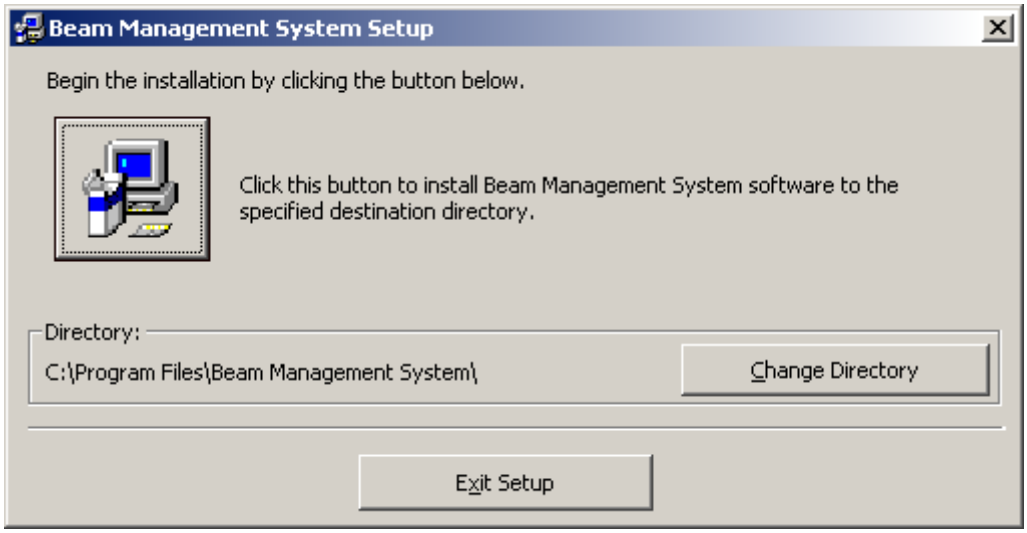
Installing the BMS Software on your Computer

The install package comes with 3 files:

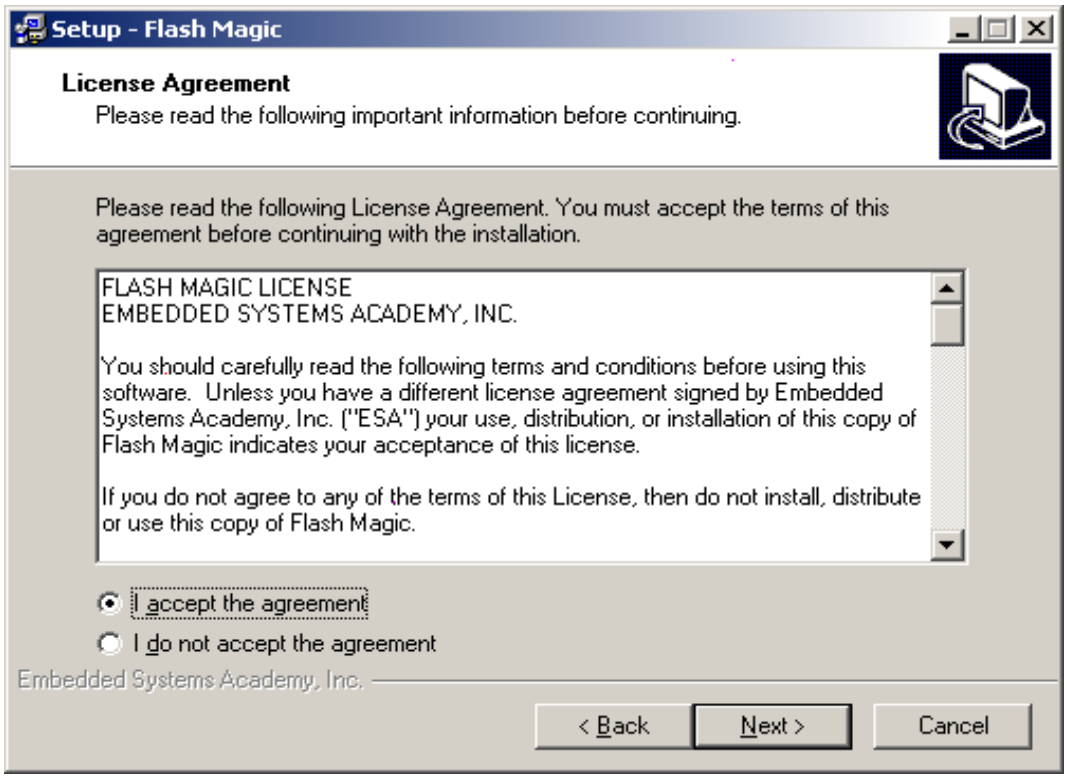
1. Setup.exe
2. BMS.CAB
3. Setup.lst

To start the install double click on Setup.exe

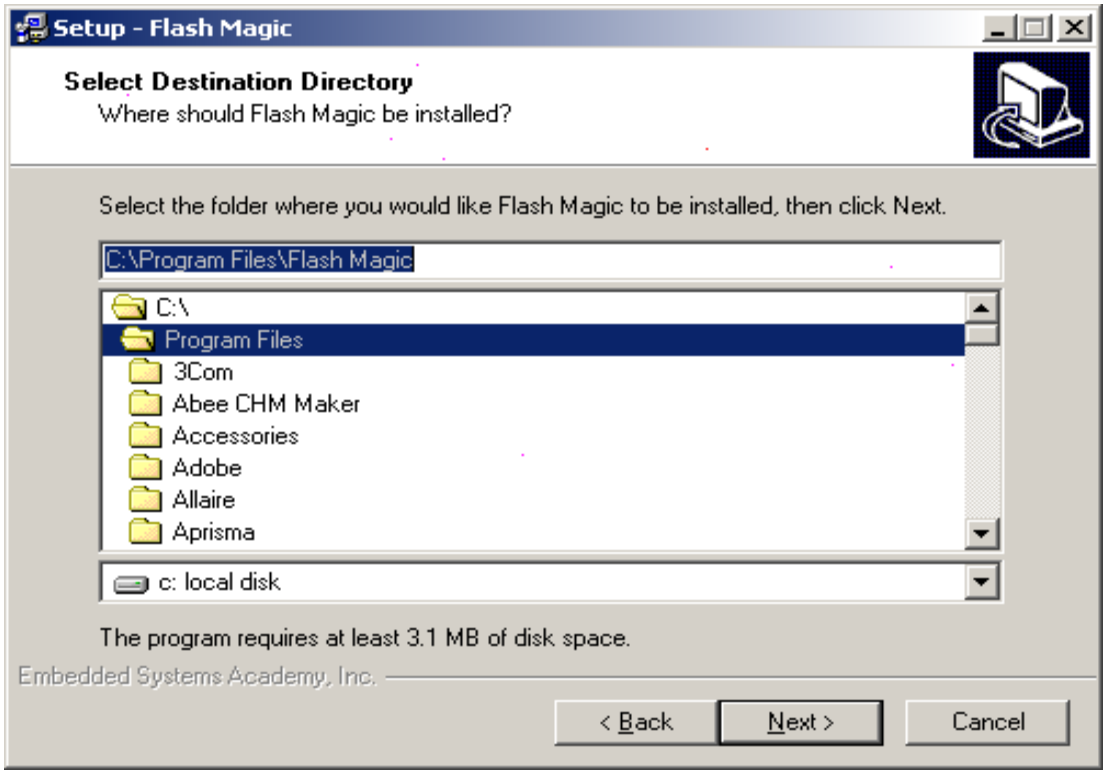




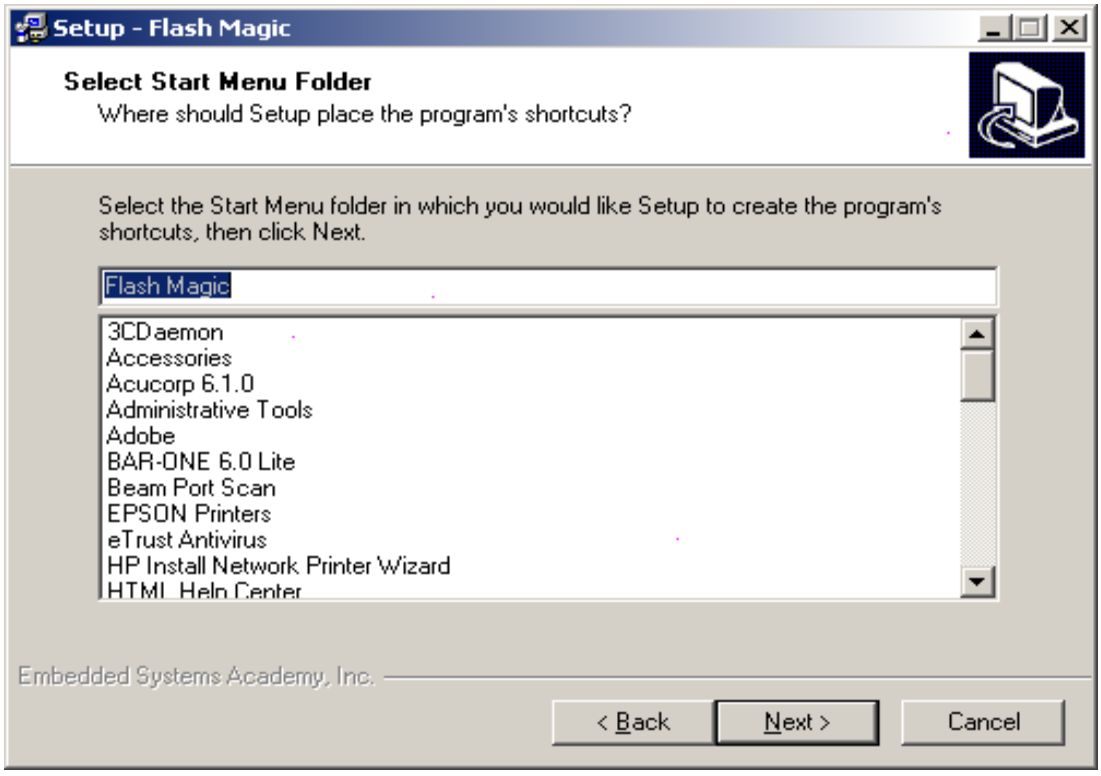
If flash magic is not already installed then the install will automatically start.



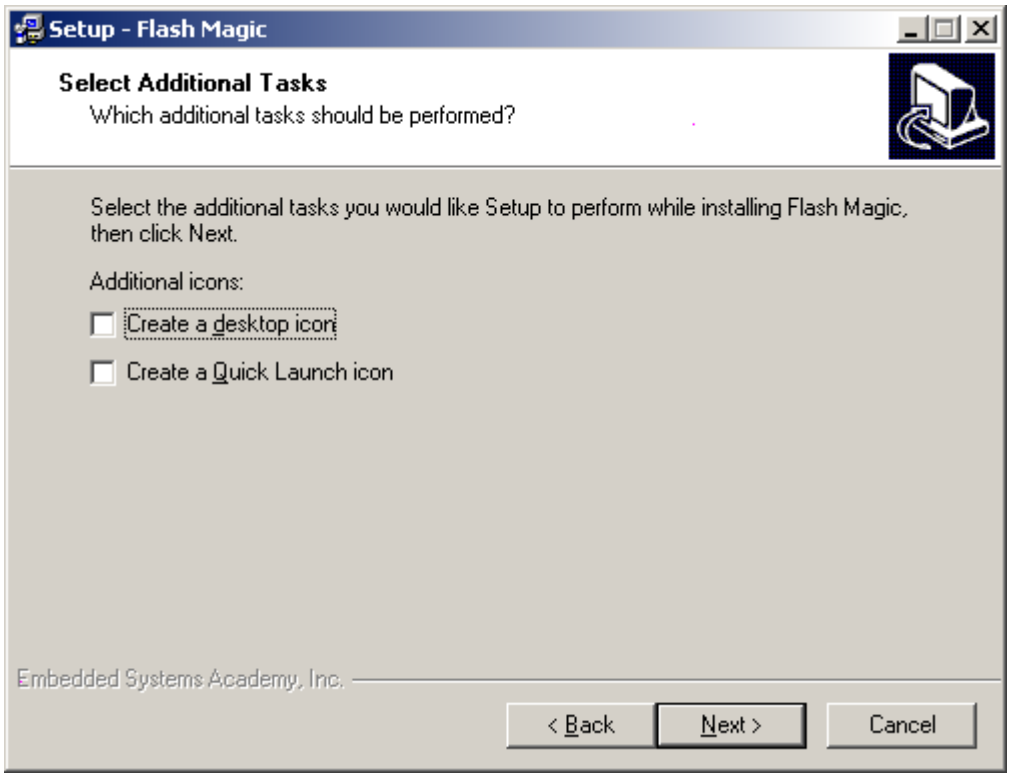
Accept the licence agreement



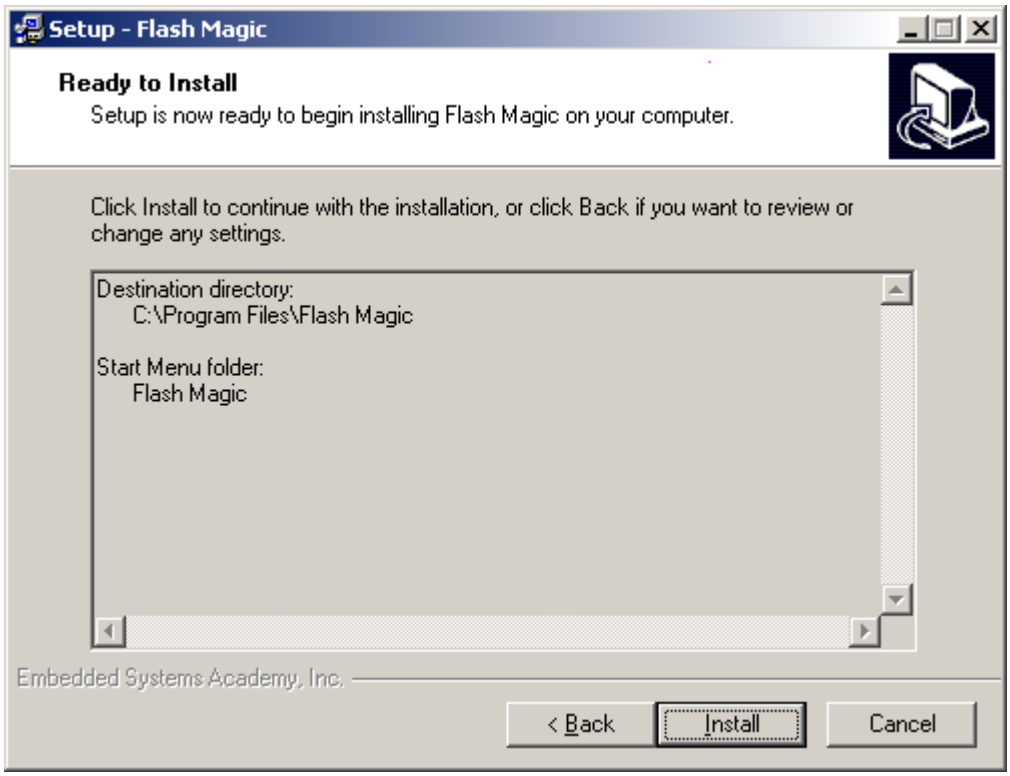
Select directory to install files



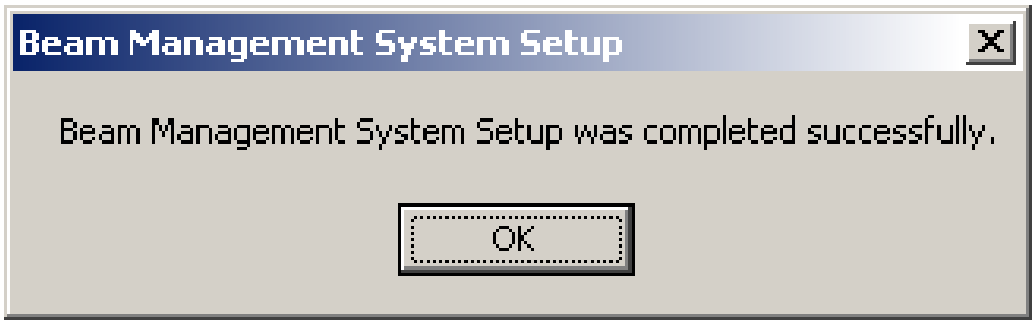
Select Start Menu folder



Do not create desktop or Quick Launch icon



Do not Launch Flash Magic or view the Release notes



OK to finish install

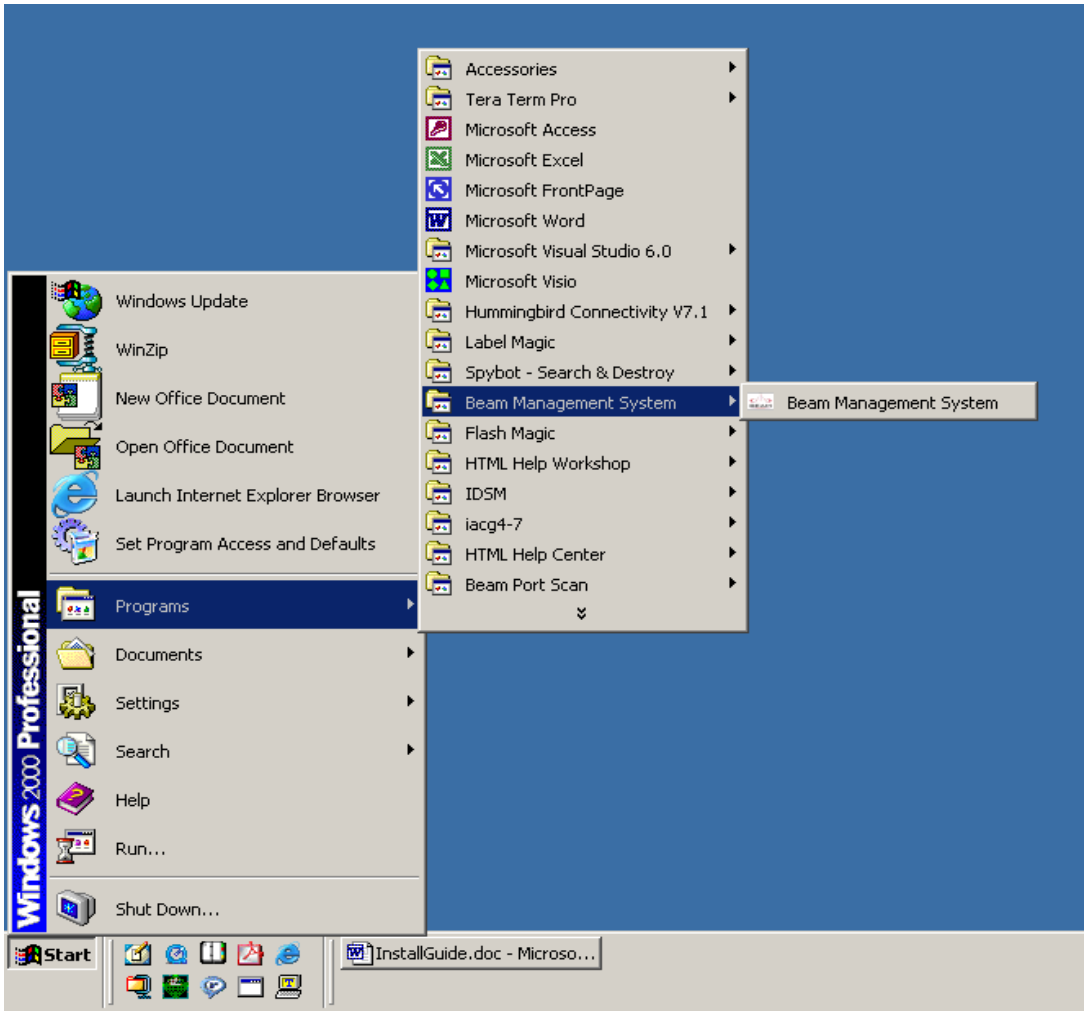
Launching BMS

From the Start Menu:

Select Programs

Beam Management System

Select Beam Management System



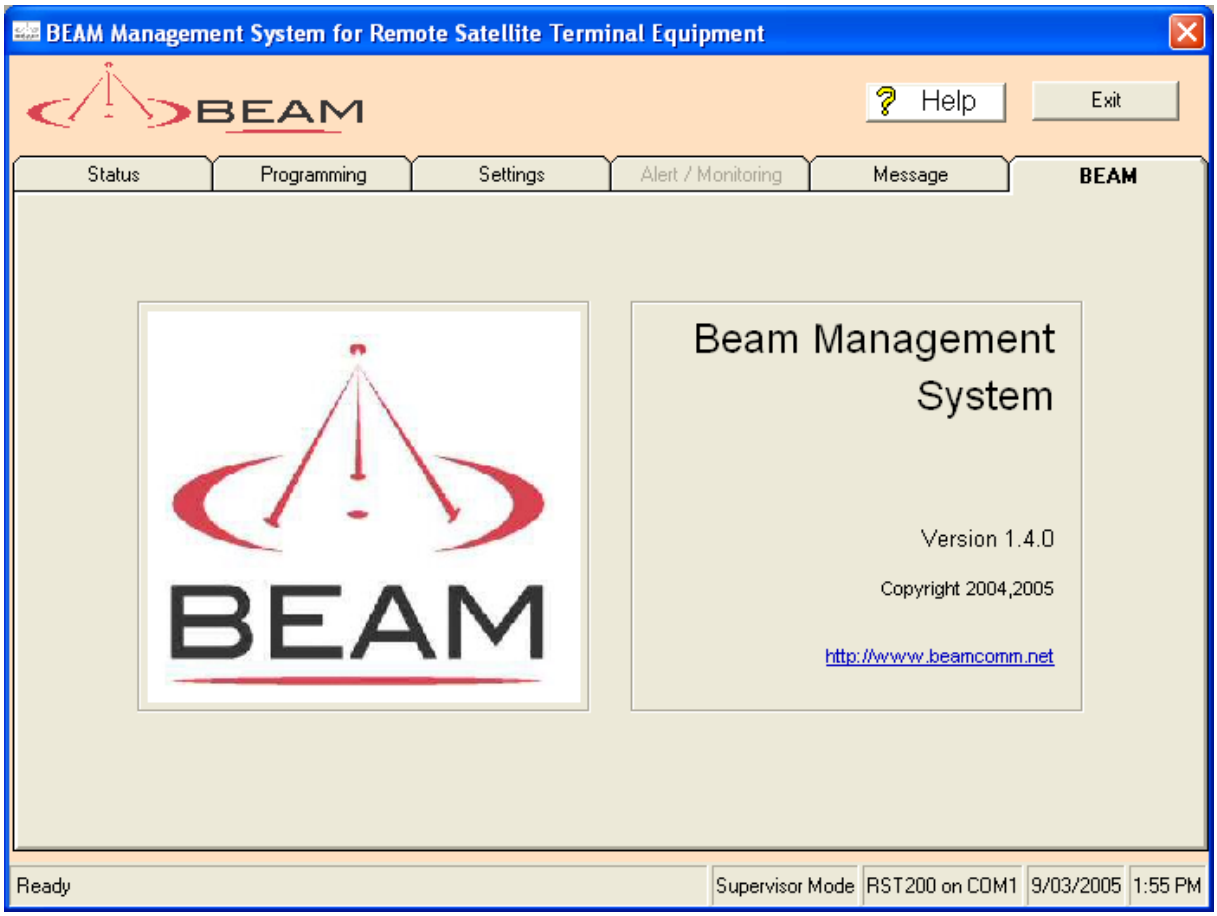
Start Using Beam Management System

Run the Beam Management System from the start bar.

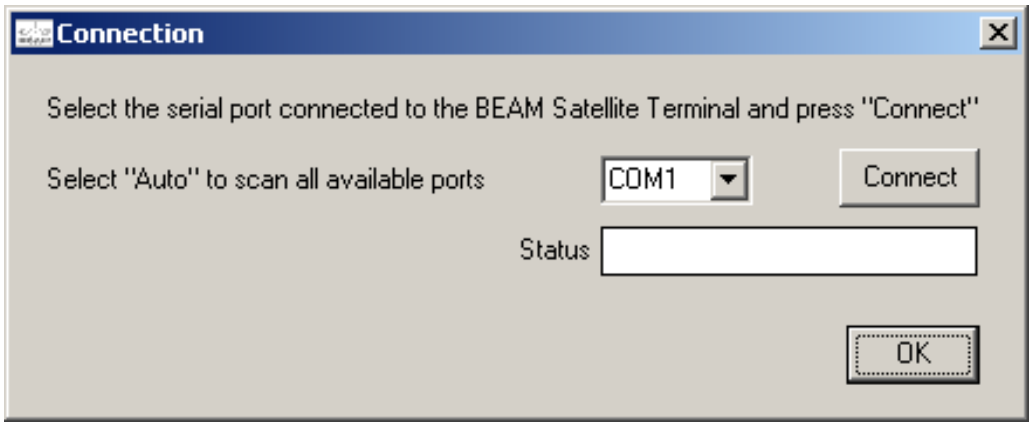
To access the Supervisor Menu of the terminal through the BMS follow these steps.

:

1. Reset the RST200 terminal pressing the red reset button on the unit, or alternatively power cycle the unit. This will ensure the PC recognises the terminal.



2. Open the BMS application on your PC



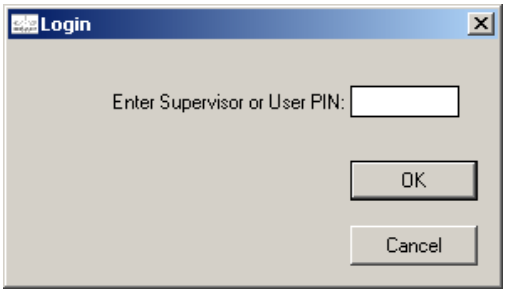
3. Once the application is running it should ask you to select the Comm. Port from which to operate, it may also allow you to select it automatically.

   From time to time you may need to restart your computer, as some Comm. ports on PC's are not as reliable as others.

4. Once the Terminal is found in the display window press OK you will then be able to access the terminal settings and configuration menus.
5. The BMS will request your **Supervisor PIN** in order to access this menu you must enter the default PIN of 3170 (unless it has been previously set to a non-default value).

Supervisor Menu

In order to configure the RST200 the Supervisor PIN must have been entered. This PIN is set at factory default to 3170. It is advisable for the PIN to be changed, however be sure to keep a record in a safe place.

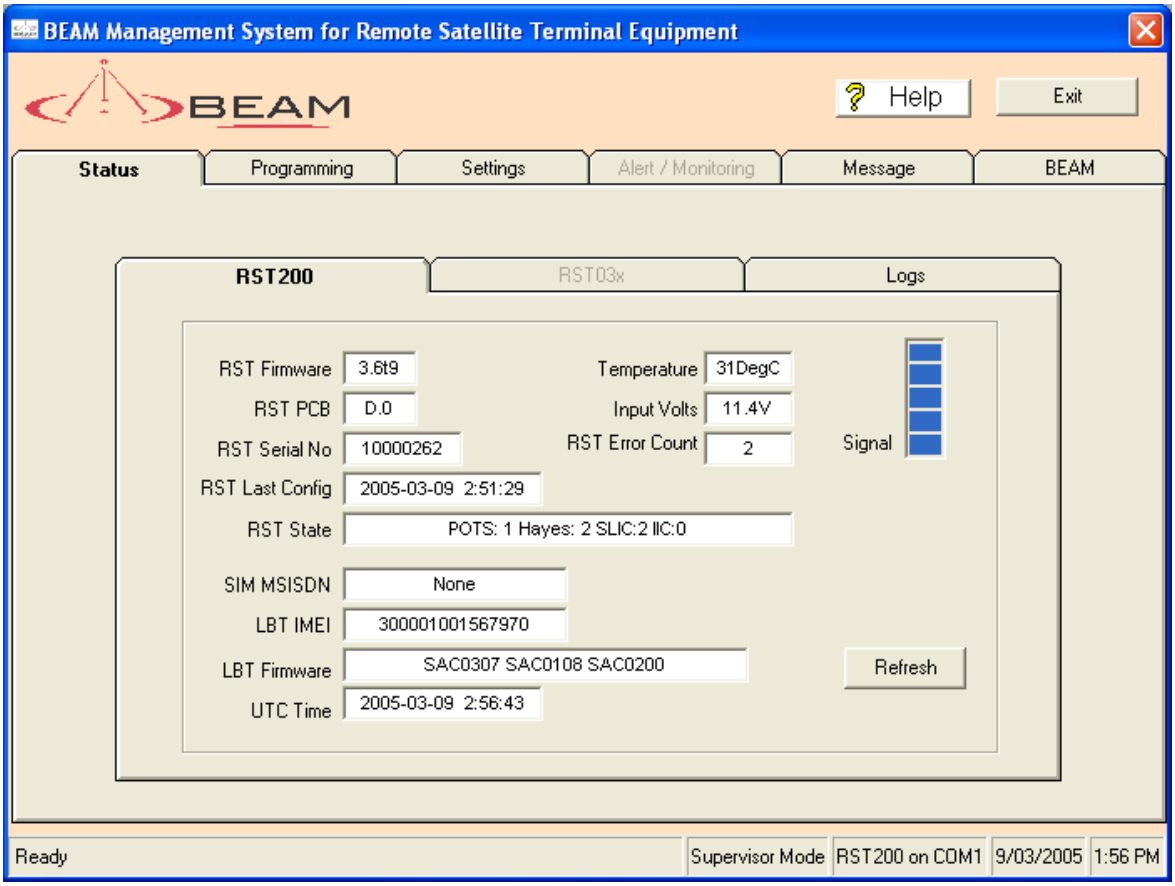


1. The Supervisor Menu should be restricted to authorised personnel to avoid inadvertent changing of setting or parameters contained within the unit. Many of the parameters if not configured correctly or in line with the purpose for which they are intended will affect the performance of the terminal.
2. The Supervisor Menu allows control and access to all the following Menu items.

The RST200 is capable of being loaded with new firmware in the field so some items on the RST Supervisor Menu may change as software is upgraded. It is probable you will see new items appear on your RST that are not listed here, but the structure is self-explanatory. You can also refer to the HELP selection contained within the BMS to support you at anytime with the configuration and settings.

Status Menu

The Status menu option provides a current complete status of the RST200 terminal



The Status menu provides a full analysis of the following items. The data can provide a Refresh the status at anytime.

RST200 Status Menu

RST Firmware

Shows current Firmware Version of the RST200

RST PCB

Shows the PCB (Circuit Board) Revision inside the terminal

RST Serial Number

Shows the Serial Number of the terminal

RST Last Configuration

Shows last time Configuration changes were made

RST State

Fault Diagnostics

SIM MSISDN

Shows the Phone number if preset into the SIM Card

LBT IMEI

The IMEI (Serial Number) of the Transceiver module.

LBT Firmware

Shows the Firmware Version of the LBT module

UTC Time

Displays Current UTS Time

Temperature

Shows the current terminal temperature

Input Voltage

Shows the current input voltage to the terminal

RST Error Count

Counter of errors reported

Temperature

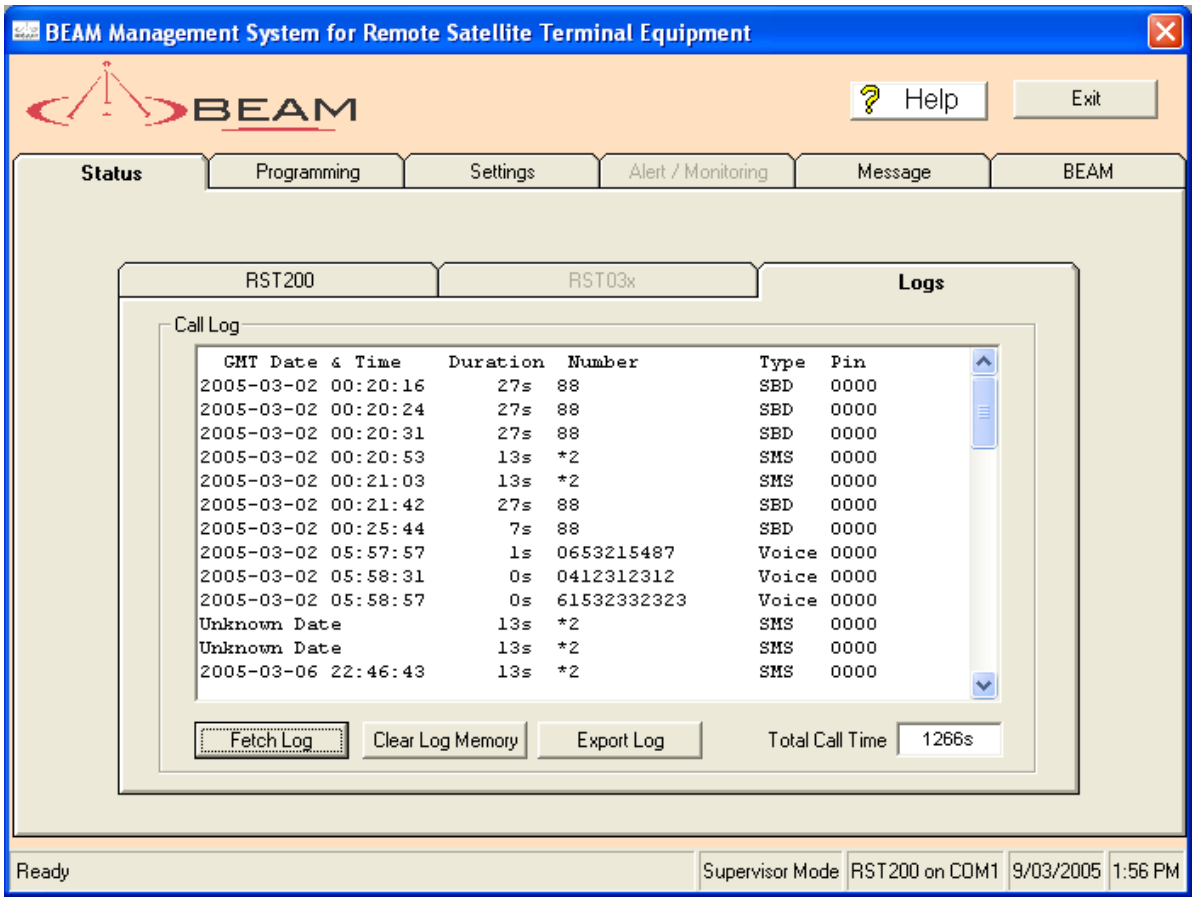
Shows the Firmware Version of the LBT module

Signal

Each Bar Represents signal rating out of 5

Logs

Within the Status Menu LOG Tab the call logs can be easily accessed, the call logs provide details of voice calls made from the terminal, as well as tracking any error messages or SMS messages sent from the terminal.



Fetch Log

The Call log can be cleared and retrieved from this menu option within the BMS. To get the Log press the Fetch Log button.

Clear Log

To Clear Log, Press the Clear Log Memory Tab

Export Log

Press the Export Log button to export the Log to a text file

Error Logs

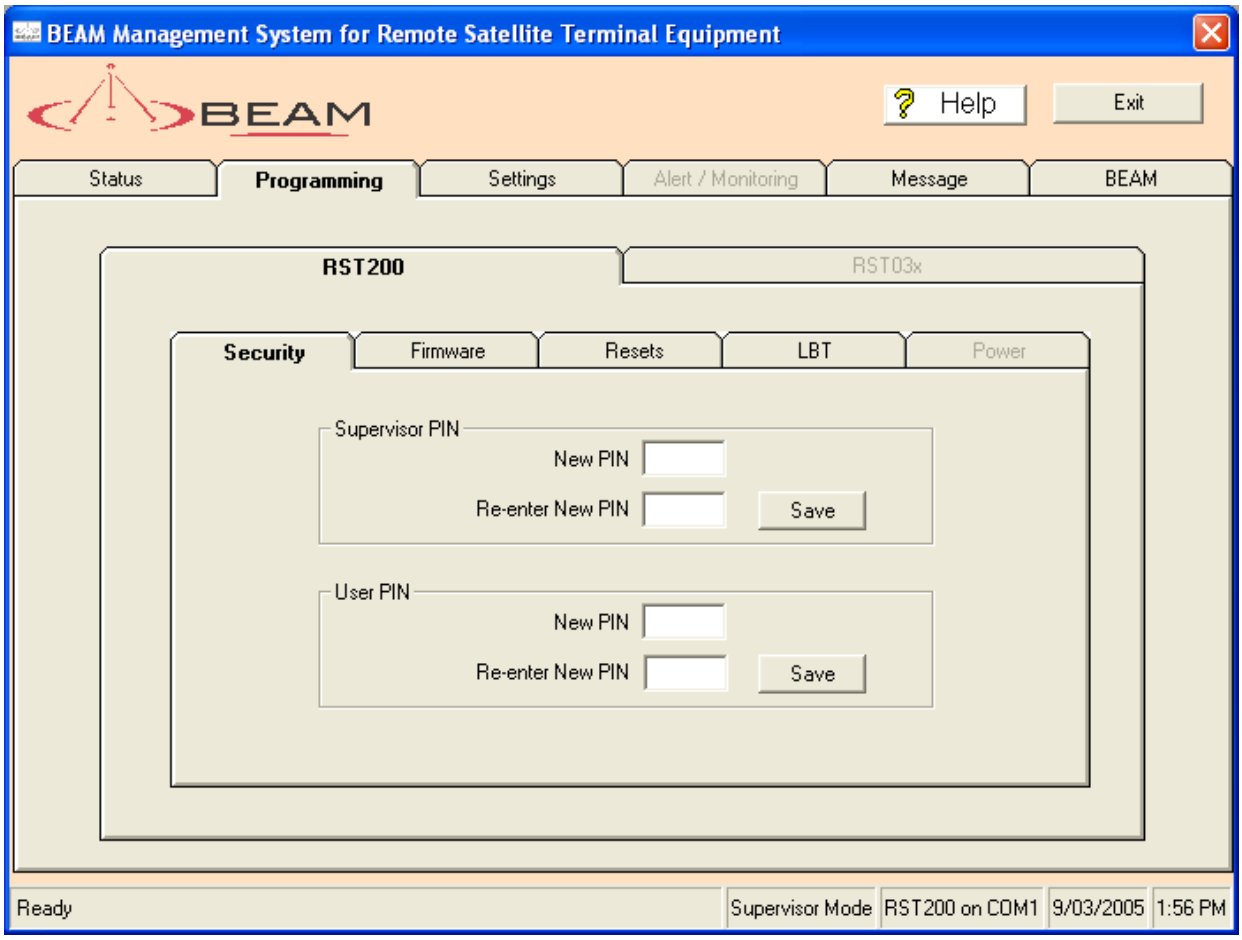
The Log also logs any unexpected errors that occur on the RST.

Error codes

The list of error codes are:

Error Code	Error Description
1	The non volatile memory on the RST was invalid on power-up. Parameters are defaults.
2	Some sort of SMS system error. Usually unimportant. SMS error code as PIN.
3	An equipment error reported from the LBT. ME error code as PIN.
4	Over-temperature alarm from RJ11 line interface.
5	ROM checksum error on RST firmware. Continued correct operation in doubt.
6	The RST has had to hardware reset the LBT due to a lack of response. Can occur if LBT serial port locks up.
7	Short Burst Data sending error. MO error as PIN.
8	Short Burst Data reception error. MT error as PIN.
9	Battery Flat/Fault error.

Programming Menu



Security Menu

Supervisor PINS

The supervisor can change the RST200 user PIN as well as their own. The user is able to change their own PIN, but the option is provided here in case the user PIN is forgotten or lost.

It is important that the Supervisor PIN is known by key people so that RST200 configuration or user PIN resetting can be performed, but also restricted since the Supervisor is able to fundamentally change the way the RST works.

Note that the Supervisor PIN can be used to change the operation of your RST200 remotely; so restricting physical access to the RST itself is insufficient security.

Always change your Supervisor PIN on installation if it is still set to the factory default to ensure your RST200 is secure or as directed by your Service Provider.

Change RST Supervisor PIN

Factory default as shipped is 3170. To change Supervisor PIN enter the New SupervisorPIN and then re-enter it again, then press save.

If you require Beam to access your RST200 as part of a support contract, Beam must be alerted to any Supervisor PIN changes.

User PINS

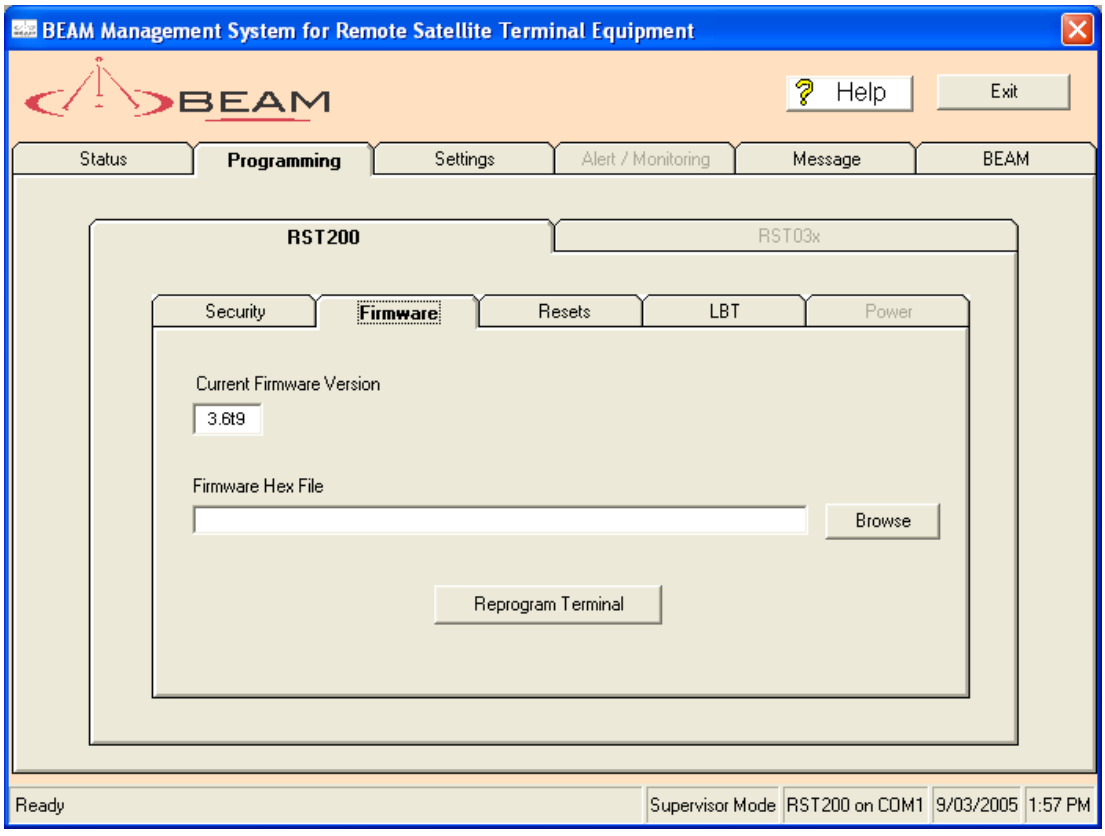
The User PIN is set at factory default to 9876. the user PIN gives limited access to a user to check the status of the terminal, send receive SMS messages and other basic functionality, however it is not possible for the User to access the Supervisor menu functions or configuration.

Change RST User PIN

Factory default as shipped is 9876. To change User PIN enter the New User PIN and then re-enter it again, then press save.

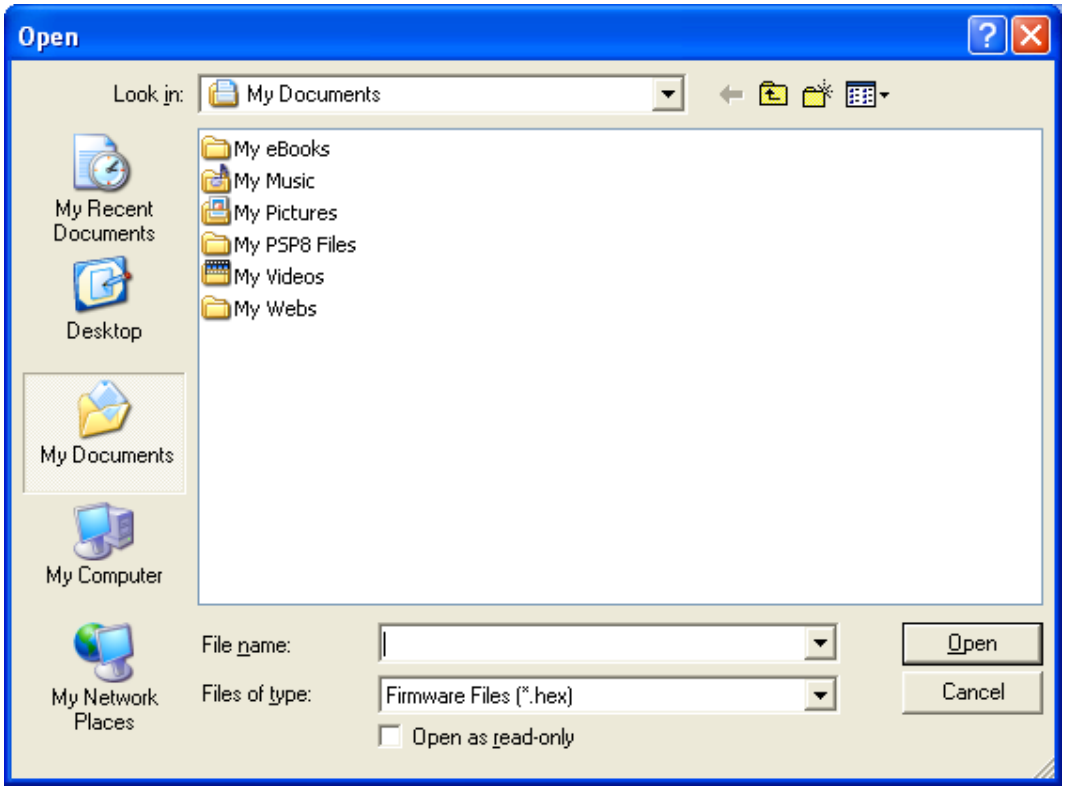
Firmware Menu

From the BMS it is possible to update the version of firmware operating in the terminal if required. This menu option allows you to simply update the firmware whilst connected to the terminal. The update should only be performed under instruction from your Service Provider or Beam Technical Support.



Flash Upgrade

Fill in the entry box with the path and filename of the firmware file you wish to load. You can browse for a file by pressing the “Browse” button.
Note: The file must be located in a writeable location. If you received your file on floppy disc or CD we recommend you first copy it to a folder on your hard disc.



Note: The computer must be connected directly to the RST in order to program it. If there is an RST030 or RST035 TrackALERT terminal connected or other peripheral then the connection will not be established. Connect directly to the Log port of the RST200

When you press the “Re-Program” button the software will launch a special utility called “Flash Magic” to perform the actual download to the BEAM terminal.

You should see the status message in the main window change to “Waiting for Flash Magic” and a command prompt window will appear showing the progress of the firmware update process. The update normally takes about 2 minutes to complete.

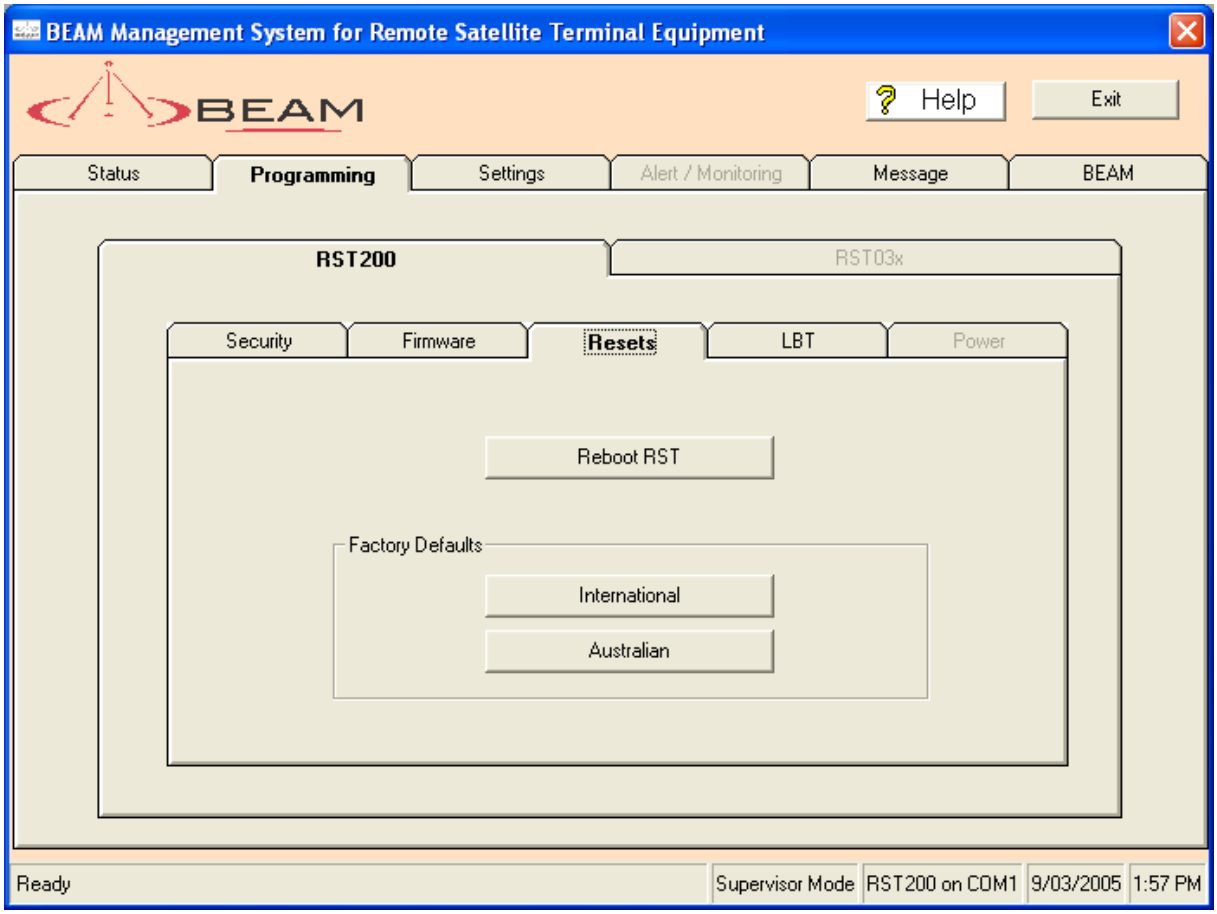
Resets Menu

Reboot RST

The Reset Menu of the BMS allows you to reboot the RST200 Terminal from the BMS system without having to remove the power or hit the reset switch. This is ideal when the terminal is installed in a secure or difficult to access location.

Restore Factory Defaults

The Restore Factory Defaults option should only be used when instructed from your support team. Restoring factory defaults may require you to reconfigure some of the RJ11/POTS settings for your equipment.



International Defaults

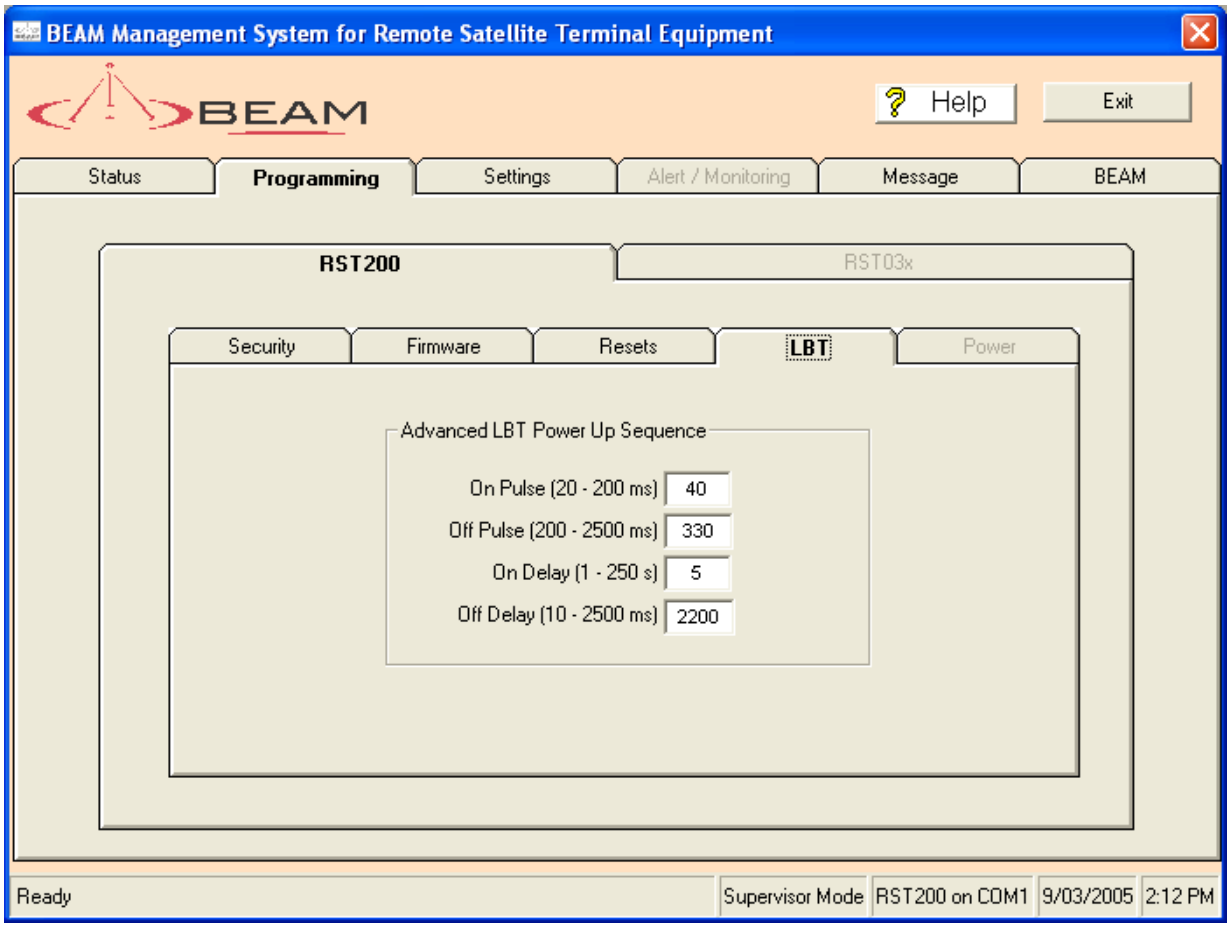
International Defaults will set the terminal in a common mode for use internationally

Australian Defaults

The Australian default setting is used for Australian based phone equipment

LBT Menu

The Start up parameters of the LBT as highlighted in this menu option should be left at the factory default. These should only be configured under instruction form your Service Provider or Beam Technical Support.



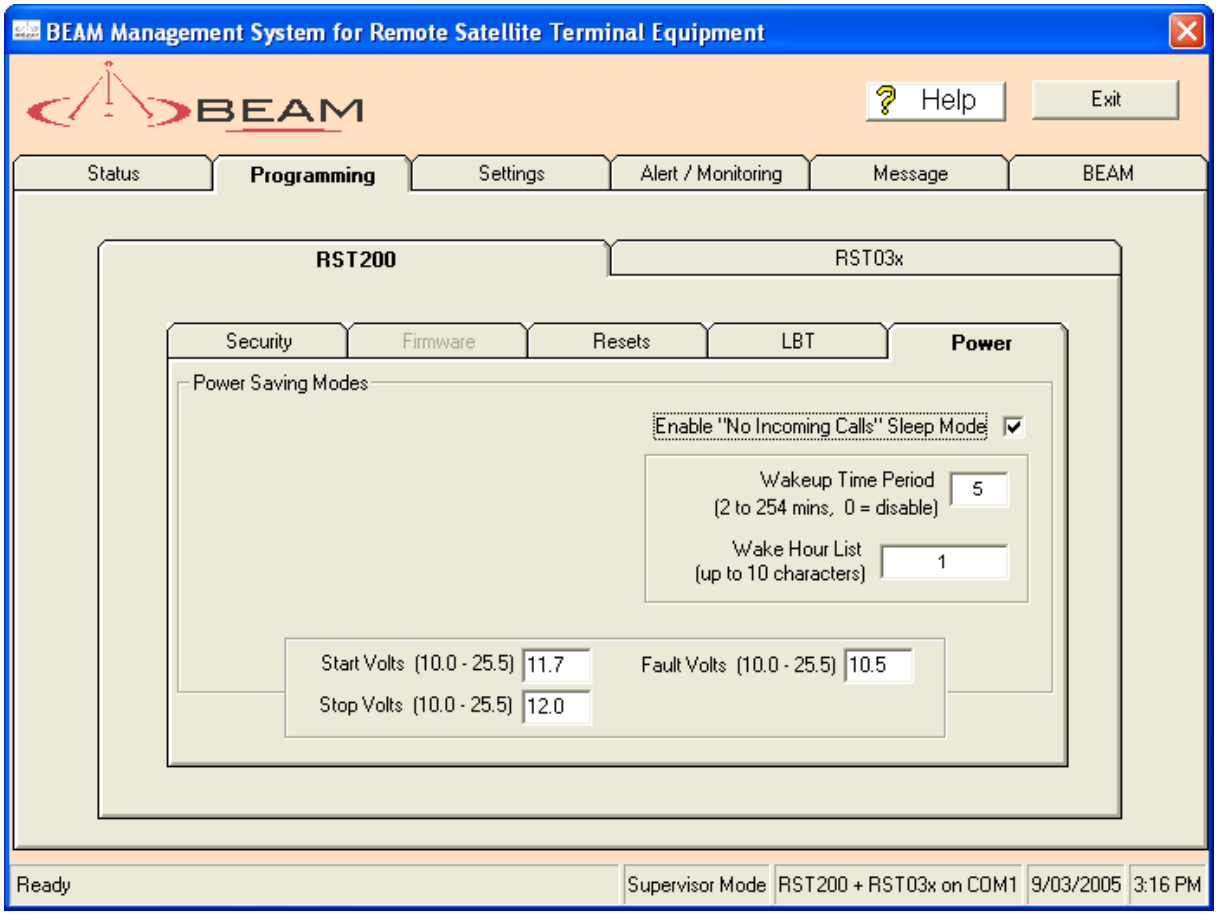
This tab exists to reprogram the power-up profile of a particular LBT if it should end up outside the defaults. It should not be modified from defaults without instruction from technical support.

DO NOT MODIFY WITHOUT TECHNICAL SUPPORT

Power Menu

The Power Menu option allows for specific configuration of the RST200 terminal to enable the unit to go into power saving modes. These modes may be desirable in some applications whereby the unit is being used in remote environments on Solar Power, and where incoming calls may not be required.

Modify these parameters only as directed by your by your Service Provider or Beam Technical Support. These will be used to optimise the performance of the terminal in certain applications.



Enable “No Incoming Calls” Sleep Mode

This power saving feature turns off the LBT except when calls are being made and at predefined times. Significant power savings can be made, but with the disadvantages of no incoming calls when off and a much longer outgoing call setup time. The wake time, in minutes, sets how long the LBT is to stay powered up when it is woken up. A call-in-progress or other activity will prolong this time. The periodic waking up of the LBT is specified in menu item A.

0 disables this power save feature and LBT is always powered.

Start V

The on-hook economy only engages after the input (battery) voltage drops below this value. If the batteries are under charge most likely the economy mode is not required.

Warning!: This value is set in 10ths of volts. ie. 100 is 10.0 Volts.

Stop V

After engaging the on-hook economy only disengages when the input (battery) voltage rises above this value. Note that Stop V should always be higher than Start V to allow some hysteresis. *Warning !:* This value is set in 10ths of volts. ie. 100 is 10.0 Volts.

Fault V

Log an error in the error log if the input (battery) voltage drops below this value. This is handy for remote monitoring of remote battery powered systems to check they are not consistently over-flattening the batteries potentially causing permanent damage. Set this value just above the threshold below which the batteries would be damaged if discharged further.
Warning!: This value is set in 10ths of volts. ie. 100 is 10.0 Volts.

Wake hour list

A string that specifies how often the LBT is to wake up the LBT when in No-Incoming power save mode. The string format is similar to unix cron style.

It is a comma separated list of absolute UTC hours (times) to wake up the LBT. In addition, a * followed by a digit N will wake up the LBT every N hours. If no digit N follows a **,** 1 (every hour) is assumed. Wake up rate (*) and absolute hours can be mixed.

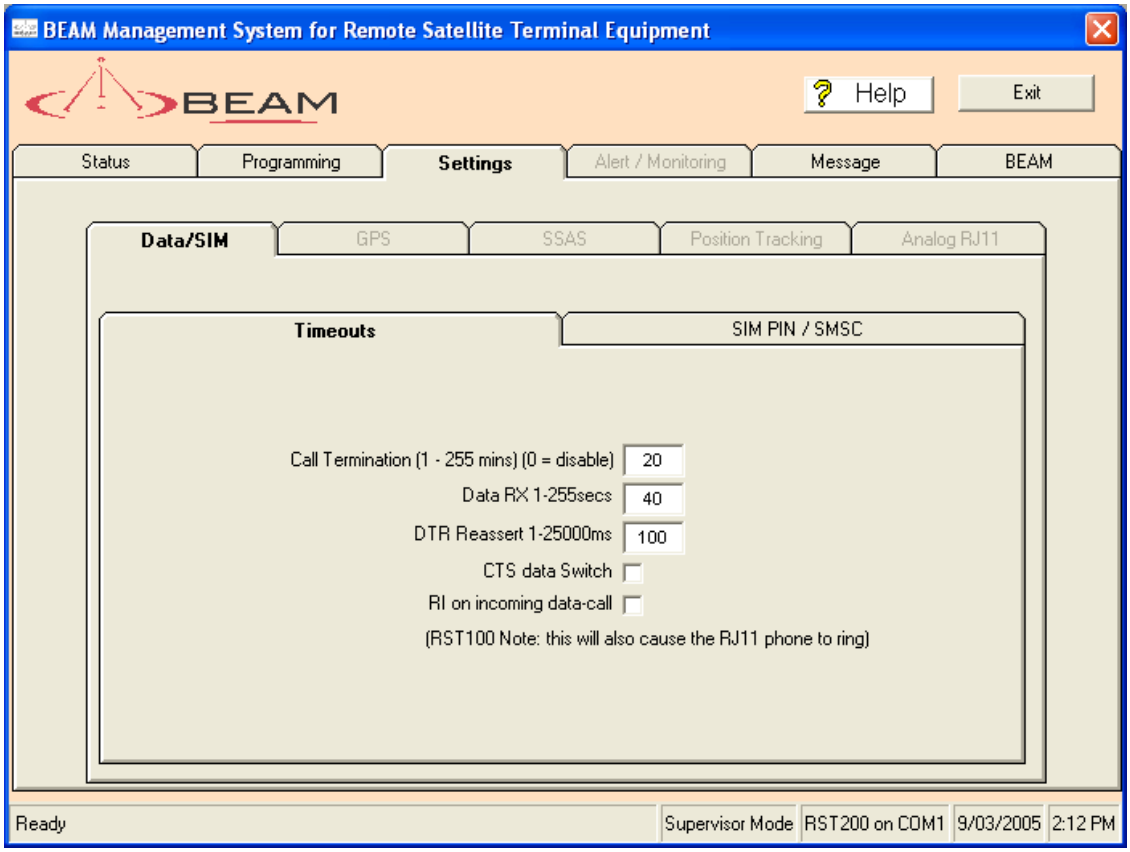
Eg. *6, 13, 14 will wake up the LBT at 00,06,12,13,14,18 hours UTC.

If the RST hasn't registered before going to sleep it will not have a valid UTC time so will not wake up at times in the wake hour list.

Serial port activity or lifting the receiver will also re-activate or keep activated the LBT for the wake time. When making an outgoing call you must wait for a dial tone to replace the no-network tone (which indicates the LBT is now registered and ready to place the call).

The wake hour list can be set remotely (assuming an initial wake time is long enough to receive incoming command SMS) to temporarily wake up more often a unit of interest or even turn off this power save mode. Battery charge will of course be sacrificed.

Settings Menu



Data / SIM Settings

Timeouts

Call Termination

The Call Termination parameter enables you to set how long to wait in minutes before terminating a terminal initiated call if there has been no voice or data activity on the line for the specified period of time. This field can be set to 0 to disable this feature and leave a call up forever. The following parameters can fine-tune what 'nothing heard' means, allowing the sensitivity and impulse immunity to be adjusted.

Data RX

New feature only available on hardware Revision H.0 onwards.

This you to set enables how long to wait in seconds for characters on the Data port when in AT command mode before reverting the RST to normal voice mode (so it can accept incoming calls or make voice calls).

Once a Data call has connected this timer is ignored. '0' disables this feature and will stay in AT command mode forever as long as DTR remains high.

If an incoming data call is received in voice mode and DTR remains high then the RST will switch back to data mode to allow a connected application to answer the data call. Default is 40s to allow for the ATD command.

DTR de-assert

The DTR De-assert sets how long to observe DTR is de-asserted on the Data port before we switch back to normal voice mode. Allows time to quickly switch between two data applications without reverting to voice mode and discarding the immediate AT set-up if required. Default is 3 seconds.

Handling of switching between Data Call and Voice Call mode.

The RST200 has the capability to switch between Voice and Data Sessions, even when the DTR signal is continuously being asserted by the Terminal program.

As a Data Session is started, the RST200 detects the assertion by the Terminal of the DTR signal (Data Terminal Ready). The RST200 will then switch the Internal Satellite Modem (ISM) to the Comm. Port (i.e. to the Data Session) if possible – switchover will be delayed if there is a voice call in progress or the ISM is busy. At this time there is also a Data Activity timer which starts, to detect whether the terminal data activity is ever absent for more than the timeout setting “Timeouts Data RX” (default is 40 seconds). During this timeout period, a busy tone will be heard if the phone is lifted. If this timeout expires the Comm. Port relinquishes the hold of the ISM, and switches back to allow the Voice port access. When the timeout expires, the Call LED is extinguished, and then a phone call then can be made

Consider the case where a Terminal is connected to the Comm. Port and the Data Activity timeout expires. If then the Data Terminal sends more AT data, the RST200 detects the data activity, and will switch back the ISM to the Comm. Port. During this short activity detection phase, the initial data sent is purged, but subsequent Terminal data will be transmitted to ISM as expected. Another way to re-activate the Comm. Port switch is by disconnecting (thus de-asserting the DTR signal) the Comm. cable, or by closing down the Terminal program.

The Data Activity timer is only in operation while the Data Session is in handshaking stage (i.e. the sending of AT commands, dialling commands, and connecting commands). Once the Data Session has connected to the remote Data Device (ISP, modem etc), then the DCD line (or Carrier Detect) is asserted, and this remains in place until the session is ended. While the DCD is asserted, the Activity timer is disabled and cannot affect the session. Once the Session is ended and DCD is de-asserted (but the Terminal may still be connected), the Data Activity timer will start again. Once this again expires the Call LED will extinguish, and a Voice call can be made.

During a data session connected to the Comm. Port, and a disconnection is made, another timer is activated (“Timeouts DTR de-assert”). The RST200 does not actually disconnect from the ISM until the timer expires. This gives the user a chance to reconnect (within the timer period) without dropping the data call if an accidental disconnect is made.
The DTR De-assert timer also allows programs to drop DTR for short periods (e.g. within 0 to 2 seconds) without losing access to, and current configuration of the ISM port.

The settings for the two timers mentioned can be configured in the Timeouts menu in Supervisor Mode:

Timeouts Data RX	Default = 40 seconds
Timeouts DTR de-assert	Default = 2 seconds

CTS de-assert

CTS behaviour is only configurable on Hardware revision H.0 or later. When the RST is in voice mode, either because DTR is de-asserted or a Data activity timeout has occurred (see Timeouts Menu), CTS can be programmed to be asserted or de-asserted. De-asserted is more technically correct since the Data port cannot handle characters at this time. This can be useful to hold-off applications that attempt to communicate with the AT port as soon as DTR is asserted. On the other hand, CTS asserted can be useful if the application doesn't ignore hardware handshaking in AT Hayes set-up/dialling mode (e.g. HyperTerminal), and you want to switch back to data mode by sending some AT commands

CTS Handling.

Whenever the RST200 is in Voice call mode, the CTS (Clear To Send) signal on the Comm.'s Port is de-asserted. This allows for data programs connecting to initially be held off until the port is switched to data call mode and is ready to accept data from program.

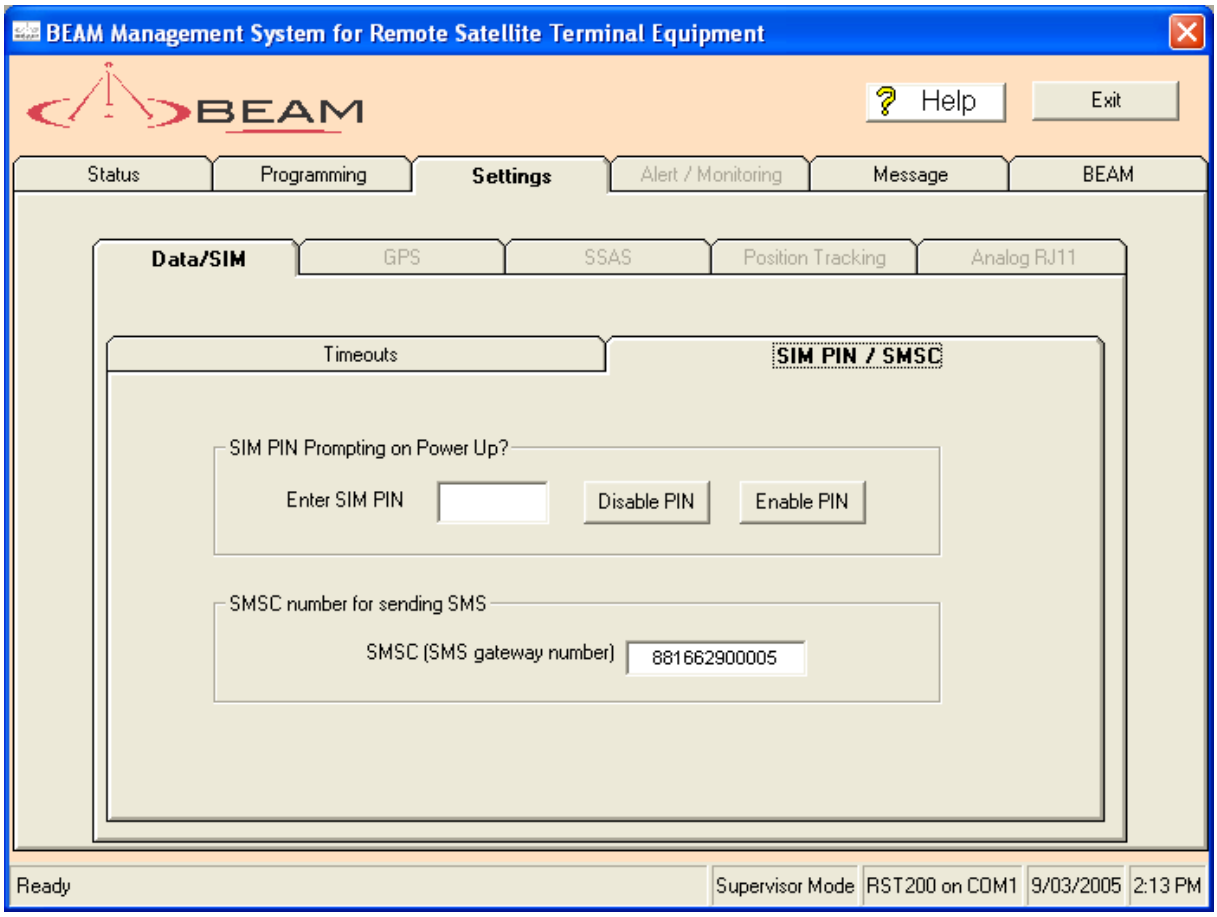
NOTE: If a Terminal program relies on the CTS to operate, AND hardware flow control cannot be disabled, then the Terminal program will need to be restarted, or the comm. cable to be plugged out then in. This condition can be observed if a Terminal program seemingly does not work properly, or AT commands do not transmit to the RST200.

RI on Incoming Data Calls

If this box is ticked is set then an incoming Data call will cause the phone to ring as well as "RING" being sent out the COMM port.

The main reason you may want to set this flag is so that the RI line on the COMM port is asserted for a Data call and this is tied to the POTS Ringer. Also applies for RST200 RI signal and external ringers.

SIM/SMSC Settings



Disables PIN lock

This function enables the SIM PIN request to be deactivated. This will then enable the terminal to register as soon as it is powered up without requesting the PIN be entered.

To **disable** PIN enter the current SIM PIN and then press disable

To **enable** the SIM PIN again enter the requested PIN and then press enable

SMSC (SMS Gateway Number)

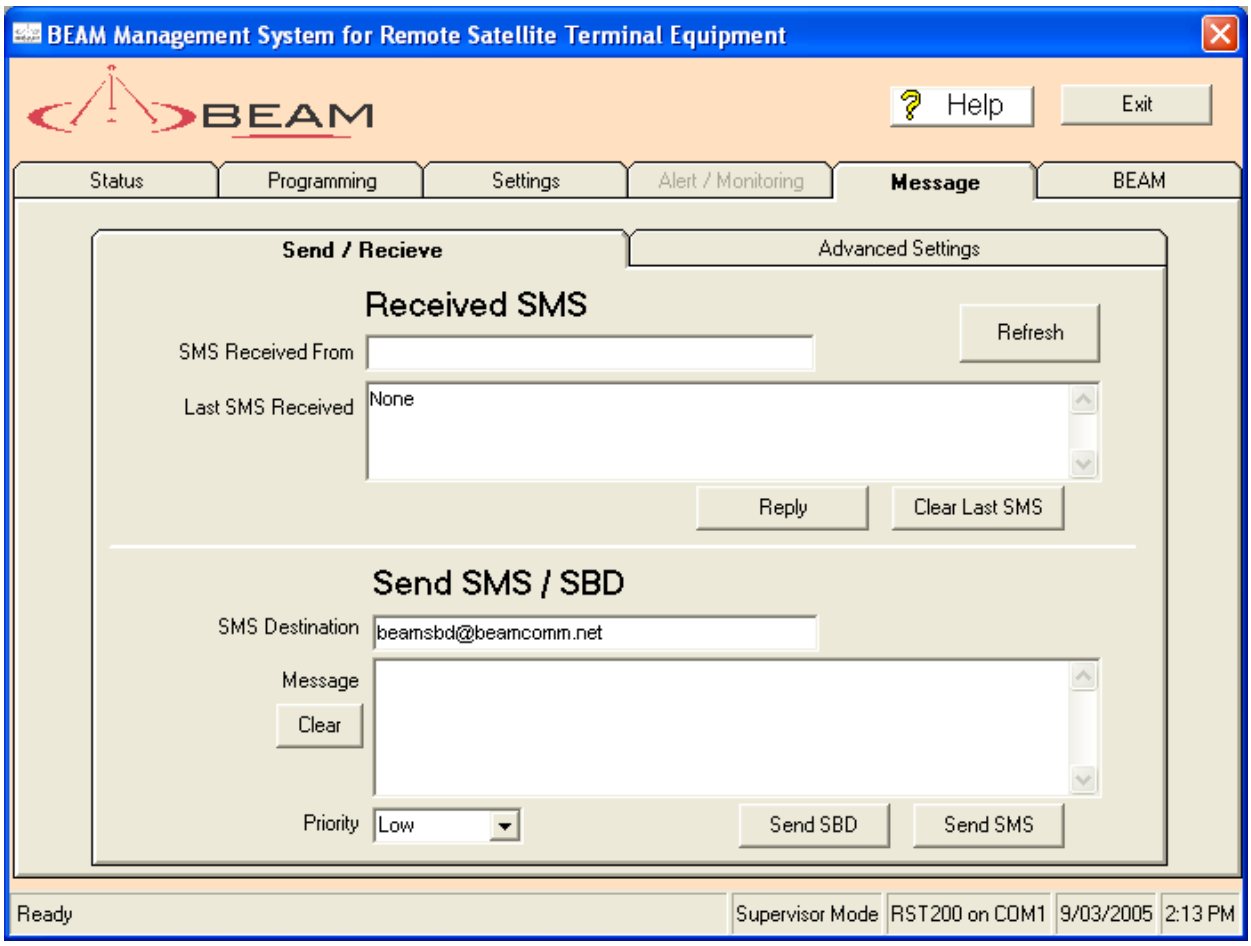
The SMSC settings are used by the RST when sending SMS's. This is not part of phone number processing. The number is read from and set directly to the SIM card. Consult your Service Provider for your SMSC number.

To send SMS to email addresses you must use the Iridium SMSC, whereas your service providers SMSC (e.g. Telstra) may be required for mobile SMS.

Message

Send Receive

This menu allows SMS messages to be sent to a phone or email destination, allows a Short Burst Data message to be sent to the network programmed SBD destinations or the last SMS received to be observed.



SMS destination

An International number format phone number (+ not required) or an email address for the SMS destination. Note that two or more email destinations can be used for 1 SMS by putting a ‘,’ delimiter between them. The total destination however must not exceed 50 characters.

Send SMS

Type in the SMS message followed by <cr>. The SMS will be sent to the SMS destination set above. A maximum of 160 characters allowed, and a few ASCII characters are not supported in the standard SMS alphabet (e.g. ~).

Send SBD

Type in the Short Burst message followed by <cr>. The SBD will be sent as an email attachment to the email address set-up when SBD is provisioned. A maximum of 1890 characters allowed. SBD will only be supported by terminals that have been provisioned by the Service Provider.

Priority

Relative priority on SMS or SBD message. If set to low a voice or data call in progress will not be interrupted. If “data” and a data call are in progress, it will be terminated in order to send the SBD or SMS. If “voice”, a data call will be terminated, and a voice call will be terminated to send an SBD (an SMS can be sent during the voice call).

Read Last SMS

Read the last SMS received. This does not include RST remote control messages or Voicemail messages.

Delete Last SMS

Delete the above last SMS from the SIM. Shortly after entering this command if there are still outstanding SMS messages, Read Last SMS will show the next SMS message.

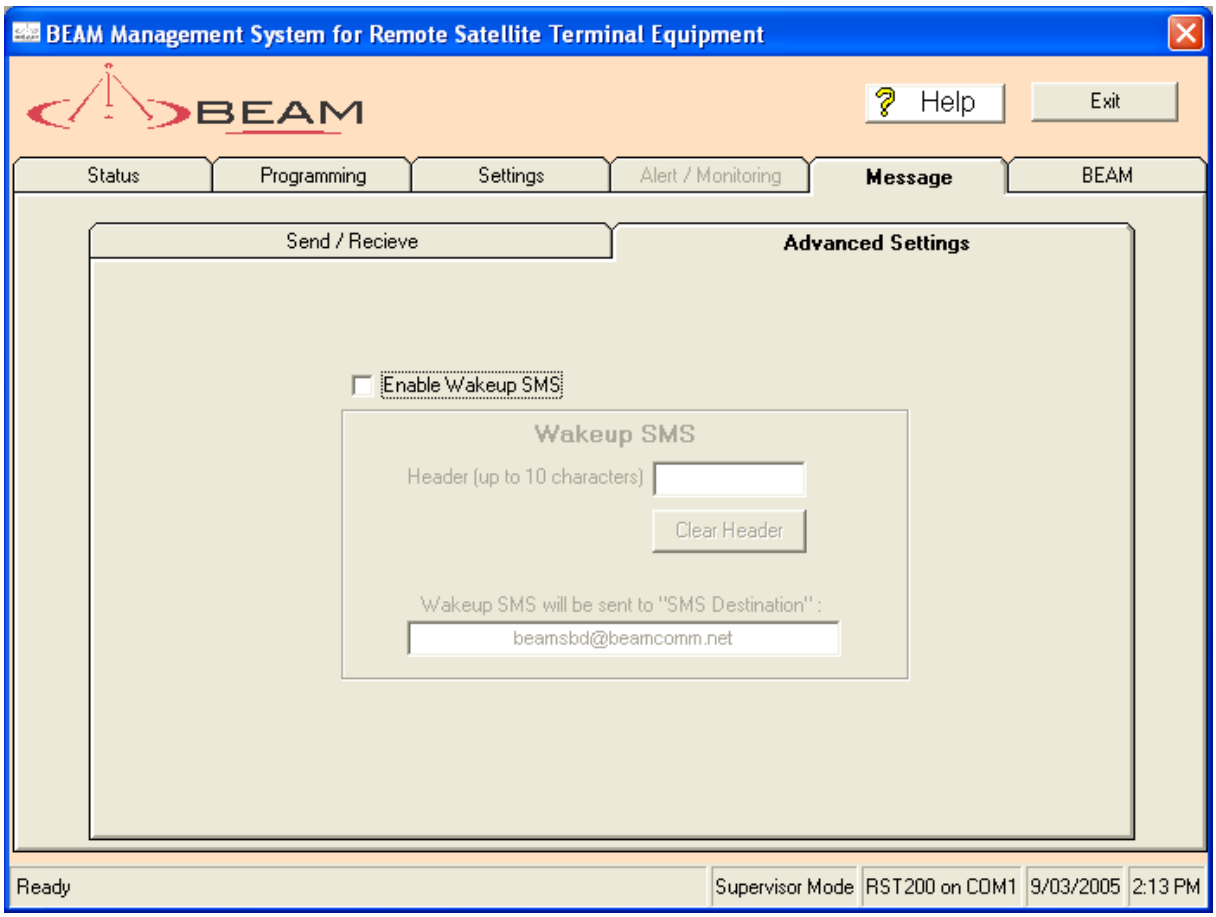
Advanced Message Settings

This tab enables specialised setting of a wake up SMS message for specific applications. When the Enable Wake up SMS is ticked every time the units is power cycled this will automatically send a status SMS message to the predetermined address/destination

The Destination address is the address that has been setting the message settings tab.

Wakeup Header

The wakeup header enables up to 10 characters to be entered at the start of the wake-up SMS. For example [Loc MELB01]



Sending Remote SMS or SBD

Remote Timeout

When Send SMS or send SBD commands are used remotely they behave a bit differently. The characters after the command instead of being sent back in the reply (pointless) are instead sent out the LOG port. The RST waits this timeout (in seconds) for a reply from an externally connected device on the LOG port and sends anything received up to a <cr> in the SMS or SBD.

In the SMS case with an SMS reply (RST SMS) to remote command the standard reply is overwritten with this new Log reply to give the maximum space (160 characters) for it. If an SBD reply is requested for the remote command (RST RMT), the LOG reply is simply part of the overall reply message.

Date

Tell me the current time and date as determined from the Iridium system. This time is very accurate so is included here as a standalone reply for timing applications.

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