# SDU5500 FIRMWARE UPDATE

The AOR SDU5500 spectrum display unit contains a FLASH upgradable processor with a built-in facility to upgrade the firmware without the need to dismantle the unit and no special equipment is required other than a competent PC compatible computer

## Requirements
- ❍ SDU5500
- ❍ PSU for the SDU5500
- ❍ Personal Computer with RS232C (capable of 38400bps - minimum 486DX66)
- ❍ Terminal software for PC (such as Windows HyperTerminal)
- ❍ RS232C straight cable

## Terminal software set-up
- ● Baud rate:  38400bps
- ● Length of character: 8 bit
- ● Stop bit: 2 bit
- ● Parity: none
- ● Flow control: none

## RS232 connection lead
A straight pin-pin RS232 connection lead is required between the SDU5500 PC/IF rear panel port and your computer serial port.  The SDU5500 employs a conventional 9-pin female D-type socket requiring the corresponding 9-pin male plug termination from the computer.

Pin-outs are as follows:

| SDU5500 | PC 9-pin | PC 25-pin |
|---------|----------|-----------|
| 2 | 2 | 3 |
| 3 | 3 | 2 |
| 5 | 5 | 7 GROUND |
| 7 | 7 | 4 |
| 8 | 8 | 5 |

## Procedure
The following screen shots describe the use of Windows98 HyperTerminal, any competent terminal software capable of text ASCII transfer at 38400bps will be acceptable (although the setup procedure for the terminal software will differ).

## Caution
&#x1F4D6; Never disconnect the power from the SDU5500 while the deleting/updating sequence is in progress otherwise data corruption may occur.

&#x1F4D6; Always use a high quality reliable PSU to power the PC and SDU5500.

&#x1F4D6; This procedure is applicable to SDU5500 System Update Program Ver. 0.77 (firmware V1.005) and onwards.  To check the firmware version of your SDU5500, press and hold the DECIMAL KEY of the SDU5500.

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AOR® Ltd, 2-6-4 Misuji, Taito-Ku, Tokyo 111-0055, Japan
Tel: +81 3 3865 1695  Fax: +81 3 3865 1697  e-mail: post@aorja.com  www.aorja.com

**(1)** Leave the SDU5500 being switched off with the PSU disconnected from the a.c. supply.

**(2)** Connect the SDU5500 to a PC using a straight RS232C cable as described on page one of this manual.  The RS232C cable connects between the PC serial port and PCI/F socket of the SDU5500... ideally check that the PC RS232 works!

**(3)** Start the terminal software on the PC.  In the case of a Windows PC running HyperTerminal, select **HyperTerminal** from ***START/PROGRAMS/ACCESSORIES /COMMUNICATIONS*** (you may need to load the facility from your Windows98 CD-ROM if it is not already installed on your system.
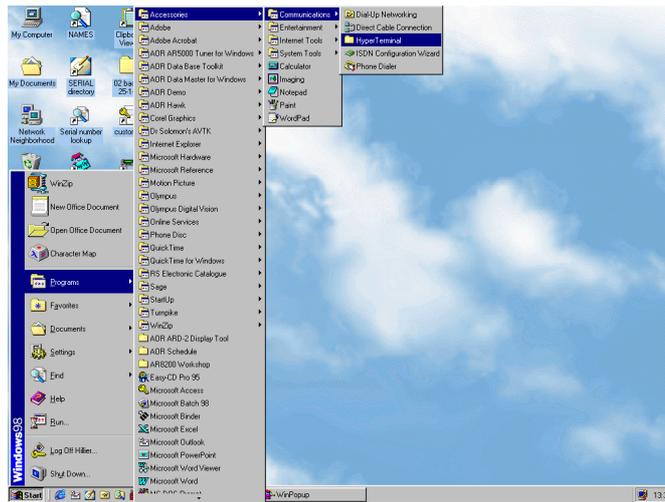
The HyperTerminal program group will be displayed.
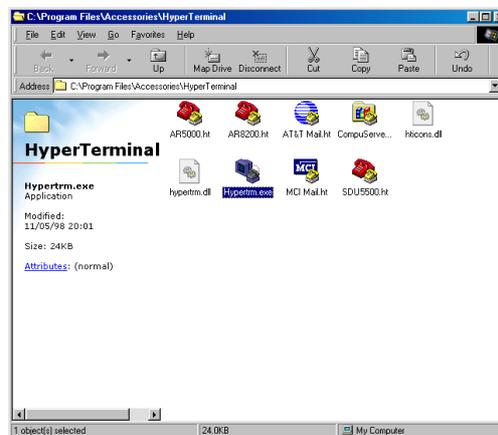
Select the **HyperTerminal** icon from the program group.  Either double-click it with your mouse or highlight it then press ENTER on your computer keyboard.  HyperTerminal launches:
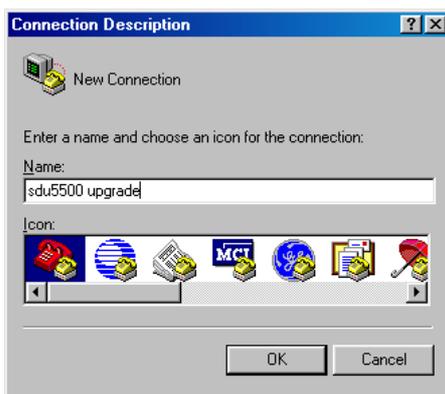
Type in a name for the connection, such as SDU5500 UPGRADE then click on OK



Select a spare serial port address on your computer, such as COM1 or COM2.



When you have selected the appropriate serial port, click on OK.
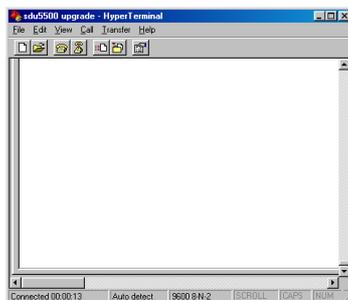


The terminal software launches, size the window to suit, you may need to make it wider or select full screen.
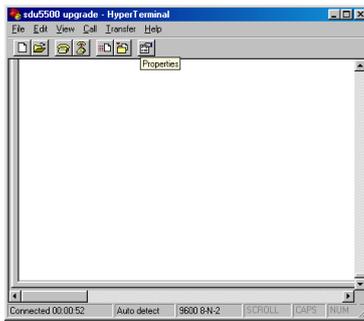
Select PROPERTIES.
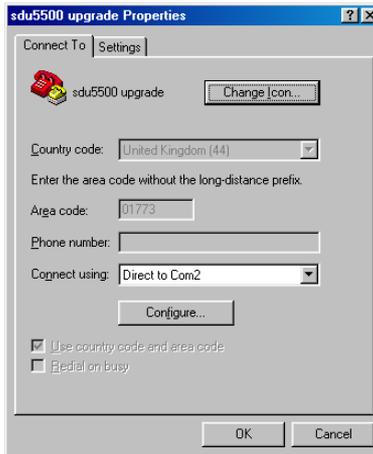


Ignore the 'settings' button but press CONFIGURE.
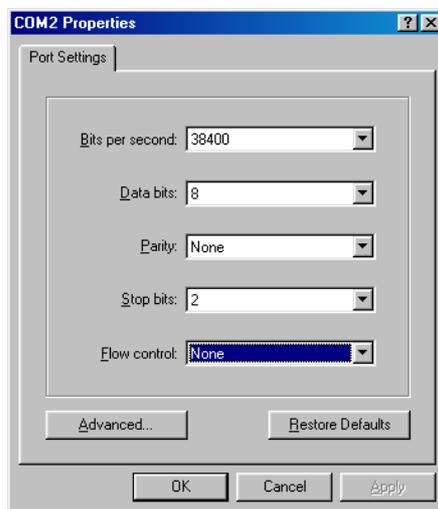


Set 'Bits per second' to 38400, set 'Date bits' to 8, set 'Parity' to None, set 'Stop bits' to 2 and set 'Flow control' to None.  Click OK.  *Remember, a PC of at least 486DX266 will be required for reliable transfer at 38400bps.*

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                Tel: +81 3 3865 1695   Fax: +81 3 3865 1697  e-mail: post@aorja.com  www.aorja.com
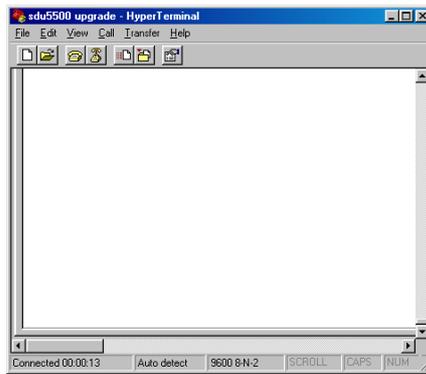
You will be returned to the standard terminal window.

**(4)**  With the SDU5500 still not connected to its power supply, switch depress the power switch on the SDU5500 as if it were being switched on.  Connect the PSU to its a.c. supply (but the lead still not plugged into the SDU5500).  Press and hold the 1, 4 and 0 keys simultaneously and with the other hand connect the power lead to the SDU5500 rear panel DC12V socket... its a gymnastic challenge but possible, get someone to help if necessary.

The following 'sign on' message will appear on the PC screen (not on the LCD of the SDU5500).
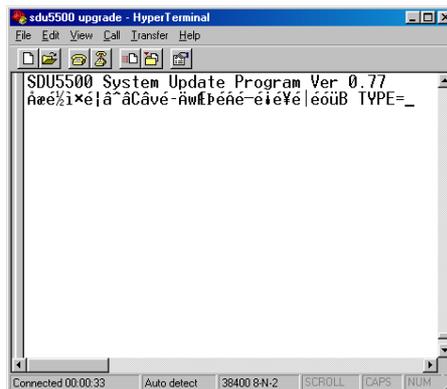


Look for the text string "SDU5500 System Update Program Ver 0.77 xxxxxx  TYPE=", if this does not appear then something is wrong with your connections, settings or gymnastic button pressing... check this out.

*Note:* The messages are written under a Japanese language environment here.  As a result, the message appears garbled, carefully compare the responses to the screen shots presented here.

**(5)**  When you have confirmed the message and noted that the cursor is flashing, press the PC ENTER key to delete the old ROM data.

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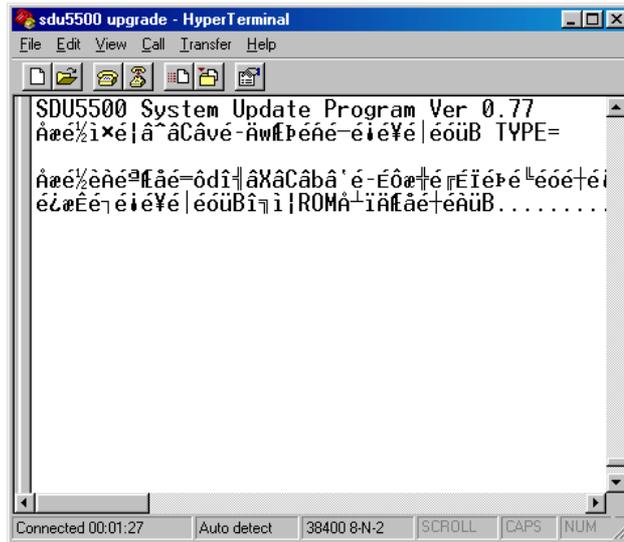
A new message will be displayed on the PC with a series of dots showing that deletion is in progress. This process will take about 15 seconds to complete.

**Note:** Never turn the power switch off while this sequence is in progress.

When the deletion process has completed, the following message will be displayed.
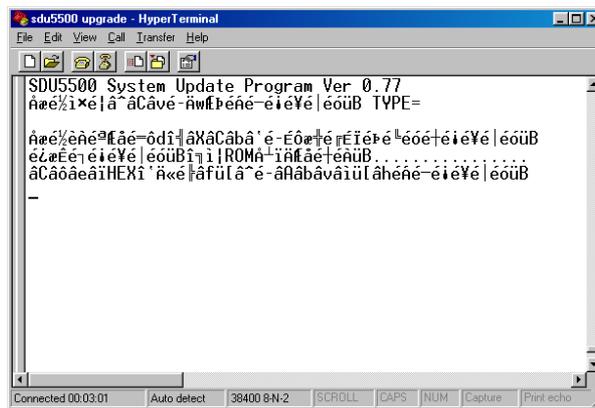


**(6)** Now you need to upload the firmware file from the terminal software (send text).
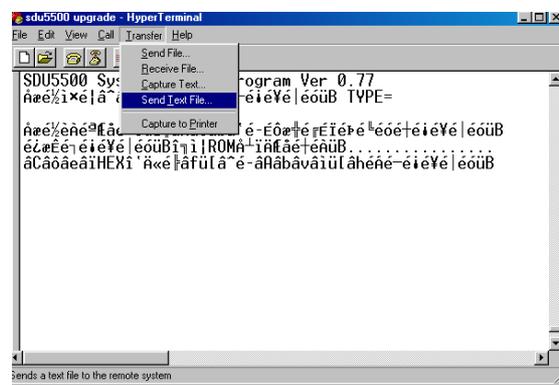
Select the file to be sent which ideally should have been copied to a temporary directory on your hard drive rather then being transferred from a floppy disk as transfer rates from the hard drive will be better.
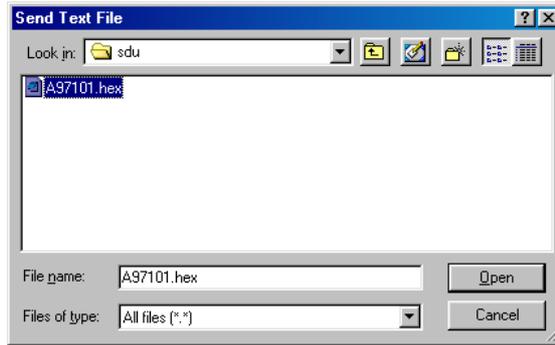


At the time of writing, the current stock firmware is V1.005 with the upgrade to V1.010 using the HEX file **A9701.HEX** which is 148kB in size dated 26 April 1999 21.45
Click on OK to start the file transfer to the SDU5500.  BE PATIENT as this process will take between three and three-and-a-half minutes.  In this time, there will be no visible activity in the PC window, you may see a flashing cursor.

**(7)** Upon completion of the sequence, another message is presented on the PC.
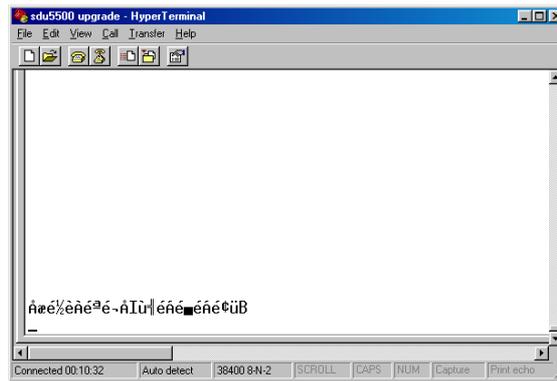


The back light of the SDU5500 LCD screen will extinguish to confirm the successful updating of the ROM firmware.

**(8)** Switch off the SDU5500 and disconnect the power plug.  Leave the SDU5500 for AT LEAST 10 seconds.

**(9)** Reconnect the power plug and switch the SDU5500 back on again.  Press and hold the [.] decimal key on the SDU5500 to confirm that the version number has changed.

The upgrade of firmware is complete.

**New RS232 features with V1.010 firmware**

Command pass through feature, *applicable to the AR5000 only.*

**Description:** The remote command with a preceded asterisk * will be regarded as a command directed to the AR5000 radio and will be transferred to the AR5000 directly. Such transfer will take place after the communications between the AR5000 and SDU5500 (if currently in progress) has been finished. The SDU5500 will wait for the response from the AR5000, then will respond by sending back to the PC the appropriate information with the preceded *, see the example which follows here:

**Example:**

Send :                                    *MD(CR) (LF)

Response (from AR5000):           *AU0 MD3(CR) (LF)

**Remarks:** Some commands may affect the correct operation of the SDU5500. For example, any command which is intended to alter the receive frequency or receive mode in the channel scope mode may upset the correct operation of the SDU5500.

**Addendum to the command list**

*Applicable to all radios in common:*

● Set-up of SPAN (WSSP) : Acceptable parameter range is 0 to 10000kHz

● Transfer of screen image (RVIM) : Bit image is sent in Hex characters spreading from top left towards bottom right followed by end mark X.

● Entry of CHANL receive frequency: Frequency for START, STEP and END is acceptable within the parameter range.

*Applicable to AR5000 only:*

● CENT FREQ. (WSCF): Acceptable parameter range is 0.005 to 2600(MHz).

● STEP (WUST): Acceptable parameter is 0.01 to 999.99(kHz).

### Applicable to AR3000A only:

- CENT FREQ. (WSCF):  Parameter range is 0.1 to 2036(MHz).

- STEP (WUST): Parameter is 0.05 to 999.95(kHz).

- Receive MODE (WUMD):  Parameter is

  1: WFM
  2: NFM
  3: AM
  4: USB
  5: LSB
  6: CW

### Applicable to ICOM radios:

- ATT (WUAT):  Attenuator position is not remote-controllable from SDU5500.

- Receive MODE (WUMD): Parameter is

  1: LSB
  2: USB
  3: AM
  4: AMW
  5: WFM
  6: FM
  7: FMN