Operating Manual for the P301 Programmer

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1. Introduction

The P301 is a portable programmer for EPROMs, EEPROMs and Flash PROMs which is extremely simple to use. In Local operation, all functions are accessed directly from the Keypad in conjunction with menus and prompts displayed on the in-built LCD.

In Remote Mode using the supplied software, P301 can be controlled from either a Windows or DOS graphical environment. A choice of serial or IrDA interfaces may be used.

P301 may be powered from internal batteries which can be trickle charged from the supplied mains unit.

! The Unit should NOT be Powered up with a device in the socket.

1.1 Control Panel (keypad & LCD)

The Control Panel is located on the top of the P301. It consists of an LCD to display status, errors, edit data, etc. and a full hexadecimal keypad dedicated function keys and cursor keys.

The mains power unit plugs into a socket on the right hand side of the P301.

1.2 The keypad

POWER	powers up and powers down P301
CRC	calculates a Cyclic Redundancy Check of data in RAM.
CSUM	calculates the checksum of data in RAM..
DATA	Performs additional manipulation functions of data in RAM.
DEVICE	select a device by manufacturer and type.
EDIT	to manually edit data in RAM.
EMPTY	to perform an empty-check on a device.
ENTER	to accept a mode or function setting.
EXIT	to exit from a mode or function.
INPUT	to input data from the serial port into RAM.
I/O	to set all input/output parameters.
LIMITS	to over-ride the default limits for RAM and device data.
LOAD	to load data from a master device into RAM.
MISC	to perform miscellaneous additional functions and provide battery charge status information.
MODE	to set the bit-mode, e.g.: 8, 16 or 32.
OUTPUT	to output data from RAM to the serial port.
PROGRAM	to program data from RAM into a device.
SEQ	to set the programming sequence.
VERIFY	to compare data in RAM against data in a device.

The keys labelled 0-9, A-F are also used to enter numeric data when required.

↓	to scroll data up the screen.
↑	to scroll data down the screen.
←	to move cursor left or display previous option.
→	to move cursor right or display next option.

2. General Operating Instructions

2.1 Local Operation

All functions are menu driven. Use the ↑ and ↓ keys to select the required option, then press **ENTER**.

The option which will be selected is always the 2nd row on the display. This is indicated by the pointers to either side of the LCD

To abort from any menu:

EXIT

The pointing finger symbol denotes a dedicated function key press.

2.1.1 Device Selection

DEVICE

After DEVICE has been pressed:

the device code may be entered directly using 0-9, A-F. (The device codes are given in the Device Support List supplied with the P301 or any subsequent software upgrades).
To edit the code re-enter it from the beginning. When correct press ENTER.

OR

use the ↑ and ↓ keys to select the required manufacturer, then press ENTER.

Now use the ← and → keys to select the required family or size of device, then the ↑ and ↓ keys for the exact device, finally press ENTER.

See also Section 2.4.3 - Electronic Identifier.

2.1.2 Device limits

All device functions (e.g. Load or Program) have 3 associated parameters:

DEV START the device address from which the function should start;

DEV STOP the device address at which the function should stop;

RAM START the RAM address from which the functions should start;

These are also used when calculating the check sum and CRC, and can be altered by the user.

LIMITS

Enter the addresses (in Hexadecimal) using 0-9, A-F. When correct press ENTER.

If invalid addresses are chosen (e.g. DEV START higher than DEV STOP) the ENTER key will not let the user out of the function until valid addresses have been selected.

If the EXIT key is pressed the limits will not be changed from their previous values.

The default limits for a device (corresponding to its size) will be used when a new device is selected.

2.1.3 Setting up the I/O

An I/O port can be used to input and output data from the P301's internal RAM.
See also: Section 3.5 Transferring DATA via the Ports
Section 5 Remote Operation of P301.

2.1.4 Selecting and Setting Up a Port

 I/O

then select **PORT**
A list of parameters is displayed.
These can be scrolled up and down using the ↑ and ↓ keys.
the option - displayed on the second line - may be changed using the ← and → keys.
When the whole menu is set-up as required press ENTER.

PORT: The user has the choice of using Serial or IrDA. If the IrDA port is selected, the SPEED, PARITY and STOP BITS options have no effect. Note that the IrDA port may only be used in REMOTE operation and selecting this port will cause the programmer to enter REMOTE operation immediately.

SPEED: The serial port may be set to:1200, 2400,4800, 9600,19K2, 38K4 or 115.2K baud.

PARITY: Three options are available:EVEN parity with 7 data bits;
ODD parity with 7 data bits;
NONE i.e. no parity with 8 data bits.
Note that for binary transmissions(e.g. STAG BINARY)
NONE should be selected.

STOP BITS: The number of stop bits transmitted after each byte of data may be set 1 or 2.

2.1.5 Select Data Transfer Formats

This function enables the user to select the data format for input and output.

 I/O

then select **FORMAT**. A list of available I/O formats is displayed.

The list can be scrolled up and down using the ↑ and ↓ keys. Typically, you might have a choice between: STAG HEX, BINARY, STAG BINARY, ASCII HEX SPACE, INTEL 16 BIT, INTEL 32 BIT, MOTOROLA S-REC, TEK-HEX & extended TEK-HEX.

Select the required format using the ↑ and ↓ keys, then press ENTER.

2.1.6 Bleeper control

After each function the bleeper will sound to indicate pass or fail (2 bleeps for pass, 5 bleeps for fail). This function may be disabled or enabled.

I/O

then select **BLEEP**
Select disabled or enabled using the ← and → keys followed by ENTER.

You can also have the bleeper sound for each key press. Select disabled or enabled using the ← and → keys followed by ENTER.

2.2 Entering Remote Control

To put the unit into remote control:

I/O

then select REMOTE CONTROL

I/O

To quit from remote back into local mode, power down the unit, then power up with the EXIT key pressed.
see also Section 5 - Remote Operation of P301

2.3 Bit Mode

The user has the choice of bit modes.
If an 8-bit wide PROM is selected then you may choose between 8 BIT, 16 BIT and 32 BIT.
If a 16-bit wide PROM is selected then you may choose between 16 BIT and 32 BIT.
The bit mode is used in all device functions (e.g. Load or Program), and is also used when calculating the checksum and CRC.

then select required mode.

Note that if the device is 16 bits wide then two bytes of RAM are required to store each device word. This can be done either high byte first/low byte last (the default), or else low byte first/high byte last.
Having selected the bit mode as detailed subsequently you will then be asked to specify the byte order. To do this, use the ← and → keys to make the selection, then press **ENTER** when ready.

2.3.1 8 Bit Mode

In this mode, assuming no offset is used, each byte in RAM is programmed to a corresponding address in a single target device.

2.3.2 16-bit mode

Byte Wide Devices

In 16-bit mode the RAM data will be split into ODD and EVEN bytes.
When performing any device function (such as Load or Program) other than Empty Check, the P301 will ask the user which device is required.

Press 0 for the device corresponding to EVEN bytes and 1 for the device corresponding to ODD bytes.

Word Wide Devices

It is necessary to set whether the even bytes map to D0 - D7 or D8 - D15 of the device, i.e. which way round the bytes are ordered in the device.

2.3.3 32-bit Mode

This is similar to 16-bit mode.

Byte Wide Devices
Requires the operator to specify 0, 1, 2 or 3 for the device to be operated on.

Word Wide Devices
Requires the operator to specify 0 or 1 for the device to be operated on.

2.4 Programming Sequence

This allows the user to define what functions are performed when a device operation is required.


SEQ

Sub-menus are selected using the ↑ and ↓ keys, then pressing **ENTER**.

2.4.1 Pre Program Checks


SEQ

then select **PRE-PROGRAM**

Before a device is programmed, the device can be automatically checked with either an empty check or an illegal bit check or neither.
The empty check tests each location of the device (within the specified limits) to determine whether or not it is empty.
The illegal bit check tests each location of the device (within the specified limits) to determine whether it has bits which are programmed and required to be empty by the RAM data.

select using the ↑ and ↓ keys, then press **ENTER**.
see also section 2.5 - Displaying information about Failures.

2.4.2 Marginal Verify Testing


SEQ

then select **MARGINAL TESTING**

After programming, during illegal bit test, and when the **VERIFY** key is pressed, the device is verified with the RAM. This can either be done at the manufacturer's recommended Vcc voltages (Marginal verify disabled), or at 4.5V and 5.5V (Marginal verify enabled).
Note: Marginal testing also applies to empty testing and illegal bit testing.
Select the required option using ← and → then press **ENTER**.

See also Section 2.5 - Displaying information about Failures.

2.4.3 Electronic Identifier

 SEQ

then select **ELECTRONIC ID**

An Electronic Identifier exists in most EPROM and EEPROM devices. It can be used to check or select a device before load/verify/empty check or program.
Three options are given: check, automatic, none.

NONE	will not check the electronic identifier in any way.
CHECK	will check that the device in the socket is the same as that selected. If not, the error message WRONG PART will be displayed. If no signature can be read from the device the message SIGNATURE UNKNOWN will be displayed.
AUTOMATIC	will read the identifier and try to select the correct device code to match. It can only select devices of the same family as that already selected. If a different device is inserted then the error message MISMATCHED PARTS will be displayed. Select the required option using the ↑ and ↓ keys, then press **ENTER**.

2.4.4 Security Fuses

 SEQ

then select **SECURITY**

If the device has a security fuse or fuses to secure the data once programmed, the user can select to program them or leave them intact using the ← and → keys followed by **ENTER**. With devices that have more than one security fuse they can be selected using the ↑ and ↓ keys to display the other fuses, **ENTER** is then pressed once to enter all the fuses.
On some EEPROMs the security feature can be used to make them write protected.

! The security setting is reset to not secure when a new device is selected.

2.5 Displaying information about Failures

The display failures function must first be enabled if a failure log is to be displayed about a subsequent device function.

SEQ

then select **FAILURES**
then press ← or → to toggle the function on or off, then press **ENTER**.

If a device fails when the **VERIFY** key is pressed, the location and data of the failure can be displayed.
When enabled and a failure occurs, the following will be displayed:

VERIFYING
FAIL ADDR = aaaaaaa
RAM r l
DEV d l

where: aaaaaaaa is the address of the fail:
r l is the data in the RAM
d l is the data in the device;

All values are in hexadecimal.
The next fail is displayed by pressing ↓, or the function aborted by pressing **EXIT**.

! While the failures are being displayed the device is powered up and should not be removed from the socket.

2.6 Miscellaneous Set-ups and Functions

2.6.1 Machine's Statistics

MISC

then select **STATISTICS**

This function will show the following information:

FLASH software revision
(the boot block's software revision is displayed on power up);
the RAM size (in bytes);
the FLASH size (in bytes);

2.6.2 Saving and Restoring the Machine's Set-up

The following information is stored automatically on power down:
The device - manufacturer and type;
all I/O selections;
the mode;
the programming sequence selections.

These settings are automatically restored on power up.

2.6.3 Battery Status

MISC

then select **CHECK BATTERY**

This function will indicate the battery charge level.

2.6.3.1 Battery Charging and Management

P301 constantly monitors the charge state of its batteries when fitted. If the charge level becomes too low, P301 will automatically shut down to preserve the integrity of its RAM after issuing the following message:

WARNING !!
Batteries Low
Powering Down

Recharging the batteries is achieved by plugging the supplied charger into the socket on the side of the P301, and then connecting to the mains electricity supply. The batteries will then be trickle-charged.

2.6.4 Battery Removal

Should it become necessary to remove the battery pack, proceed as follows:

1. Ensure there is no device socketed
2. Ensure that data in RAM is not required
3. Power down unit and disconnect power unit, comms Cables, etc.
4. Invert unit and place face down on clean, smooth surface
5. Unclip battery pack and insert new one if required. Otherwise fit blank rear cover.

2.6.5 Updating the Software

The software is updated from data received over the serial port. Connect the programmer to a PC or other computer which can download the software.

MISC

then select **UPDATE**

Send the update data contained in the file FLASH127.sbn to the P301. The P301 will update its Flash memory with the received data. Should the update be unsuccessful the P301 will display "FLASH FAIL". See sections 6.12.7 and 7.10.6 for automated udate procedures.

2.6.6 Automatic Power Down If No Key-press

Selects the maximum time allowed between consecutive key presses before P301 automatically shuts down to conserve power.

MISC

then select **KEY TIMEOUT**
A list of time out values is displayed:

NEVER
5 MIN
10 MIN
15 MIN
2O MIN
25 MIN
30 MIN

This list can be scrolled using the ↑ and ↓ cursor keys.
Select the required option and press **ENTER**.

2.7 RAM Expansion

To add expansion RAM, proceed as follows:

1. Ensure there is no device socketed
2. Ensure that data in RAM is not required
3. Power down unit and disconnect power unit, comms cables etc.
4. Invert unit and place face down on clean, smooth surface
5. Remove the battery pack.
6. Insert the RAM expansion through the aperture in the bottom of the battery compartment ensuring the connectors are mated correctly.
7. Replace the battery pack.

3. RAM Functions

3.1 Editing the RAM

This section details the functions which allow the user to alter data in the P301's RAM.

3.1.1 Listing and Changing the RAM

EDIT

The editor displays 4 addresses in the following format:

aaaaaaaa hh ddd c

Where:

aaaaaaaa	is the RAM address in hexadecimal;
hh	is the hexadecimal value stored at the location;
ddd	is the decimal value stored at the same location;
c	is the ASCII for that byte if printable (if not, a □ Character is displayed).

The address can be changed using 0-9, A-F and by moving the cursor using ← and → .
To edit the data move the cursor right to the hexadecimal or decimal data fields, then overwrite the data. To edit the next or previous byte ↑ or ↓ .
When complete, press **ENTER** then **EXIT**.
Data can be listed by changing the address as above and then pressing **ENTER**, or by using the ↑ and ↓ to view the previous or next location. Press **EXIT** when finished.

3.2 RAM Data Manipulation

The following functions can be performed on the P301's internal RAM:

FILL RAM	BLOCK MOVE
INSERT BYTES	DELETE BYTES
COMPLEMENT RAM	STRING SEARCH

DATA

Select the function required using the ↑ and ↓ keys, then press **ENTER**.

3.2.1 Fill the RAM

This function allows you to fill the RAM between selected limits with a selected bit pattern.

DATA

then select **FILL RAM**

On selecting 'FILL RAM' the following options are available:

Fill with Zeros	(fill the RAM with 00 hex)
Fill with Ones	(fill the RAM with FF hex)
Fill with Empty	(fill the RAM with the empty state of the selected device)
Fill with Pattern	(fill the RAM with a user defined pattern)

Select the option required using the ↑ and ↓ keys, then press **ENTER**.
If 'fill with pattern' is selected the desired pattern should be entered in hexadecimal using the keys 0-9 and A-F.
The ← and → keys may be used to move the cursor to edit the pattern. The ASCII value of the hexadecimal numbers is displayed underneath (if a printable value is entered).
When correct press **ENTER**.

! Note that patterns are only considered legal if they are 2, 4 or 8 hexadecimal characters long - according to selected bit mode.

All the options will then ask for the address range over which the fill is to take place.
The options are as follows.

ENTIRE MEMORY: This function fills the entire RAM with the specified pattern.

DEVICE LIMITS: This will only fill the RAM used for the selected part, taking account of the selected device limits (see Section 2.1.2) and mode (see Section 2.3).

ARBITRARY LIMITS: This function will enable the user to fill RAM between entirely arbitrary RAM limits. On selecting this option the address limits should be entered in hexadecimal using 0-9, A-F and ← → to move the cursor as required.

Select the option required using the ↑ and ↓ keys, then press **ENTER**.

3.2.2 Move a Block of Data

DATA

then select **BLOCK MOVE**

This function allows data to be moved from one section of RAM to another.
There are no restrictions on the positioning of either the source block or the destination block, other than that they must both fit within the physical available RAM. Source and destination blocks may even overlap, should this be required.

On selecting ' BLOCK MOVE' the RAM address of BLOCK START, BLOCK END and DESTINATION should be entered in hexadecimal using 0-9, and ↑ ↓ to move the cursor as required. When correct press **ENTER**.

3.2.3 Inserting Bytes into RAM

DATA

then select **INSERT BYTES**

This function allows a pattern of bytes to be inserted into RAM at a specific location.
All data at or beyond (i.e. at higher addresses than) the insertion will be moved upward in memory by the number or bytes inserted. No data bytes are overwritten at the insertion position - instead they move up to make room for the new data.

! As a result of this operation the very last bytes in RAM will be lost.

First enter the address in RAM to insert the first byte, use 0-9, A-F ← → to move the cursor. When correct press **ENTER**.

Then the desired pattern should be entered in hexadecimal using 0-9, A-F.
The ← and → keys may be used to move the cursor to edit the pattern. The ASCII value of the hexadecimal numbers is displayed underneath (if printable value is entered). Up to 32 characters may be entered.

When correct press **ENTER**.

3.2.4 Deleting Bytes from RAM

DATA

then select **DELETE BYTES**
This function allows a number of bytes to be deleted from RAM. All data at or beyond (i.e. at higher addresses than) the deletion address will be moved down in memory by the number of bytes specified.
Enter the address in RAM to delete the first byte and the number of bytes to be deleted (in hexadecimal), use 0-9, A-F, and ↑ ↓ to move the cursor. When correct press **ENTER**.

3.2.5 Complementing the RAM

 DATA

then select **COMPLEMENT RAM**

This function allows the data in RAM to be complemented between selected limits. This means that every binary 1 in the RAM data is changed to a binary 0, and vice versa. The address range over which the complement is to take place should then be selected. The options are:

ARBITRARY LIMITS
ENTIRE MEMORY
DEVICE LIMITS

Select the option required using the ↑ and ↓ keys, then press **ENTER**.
The three functions available are as follows:

ENTIRE MEMORY: This function complements the entire RAM.

DEVICE LIMITS: This will only complement the RAM used for the selected part, taking account of the selected device limits (see Section 2.1.2) and mode (see Section 2.3).

ARBITRARY LIMITS: This function will enable the user to complement RAM between entirely arbitrary RAM limits. On selecting this option the address limits should be entered in hexadecimal using 0-9, A-F and ↑ ↓ to move the cursor as required.

When correct press **ENTER**.

3.2.6 Search the RAM for a Data Sequence (STRING SEARCH)

This function allows you to search for a string of bytes within specified RAM limits.

DATA

then select **STRING SEARCH**

This desired pattern should be entered in hexadecimal using 0-9, A-F. The ← → keys may be used to move the cursor to edit the pattern. The ASCII values of the hexadecimal numbers are displayed underneath (if printable values are entered).
Up to 32 characters may be entered.
When correct press **ENTER**.
The address range over which the search is to take place should then be selected.
The options are:

ARBITRARY LIMITS
ENTIRE MEMORY
DEVICE LIMITS

Select the option required using the ↑↓ keys, then press **ENTER**.

The three functions available are as follows:

ENTIRE MEMORY: This function searches the entire RAM.

DEVICE LIMITS: This will only search the area of RAM used for the selected device, taking account of the selected device limits (see Section 2.1.2) and mode (see Section 2.3).

ARBITRARY LIMITS: This function will enable the user to search RAM between entirely arbitrary RAM limits. On selecting this option the address limits should be entered in hexadecimal using 0-9, A-F and keys to move the cursor as required.

When correct press **ENTER**.
If the string search is successful then the address of the first byte of the string will be displayed.
Press **ENTER** to search for the next occurrence of the string, or **EXIT** to return to the top level. If no further occurrences are found 'String not found' will be displayed, pressing any key will return you to the top level display.

3.3 Checksum of RAM Data

CSUM

This function will return the checksum of the whole RAM, the device's limits of RAM, or arbitrary limits defined by the user. Select the option required. If the device limits are chosen then a checksum will be displayed calculated according to the current bit mode.

3.4 Cyclic Redundancy Check of RAM Data

CRC

Cyclic Redundancy check provides an alternative representation of the RAM data than a checksum as it takes account of the order of the data.
The format is the same as checksum.

3.5 Transferring DATA via the Ports

Before loading or outputting data via the ports, it is first necessary to ensure the following:
the correct interface format is selected (see Section 2.1.5);
the correct port is selected (see Section 2.1.4);
and if the serial port is to be used, that the correct port set-up is selected (see Section 2.1.4).

When using the serial interface, it must be used with either hardware handshaking or the Xon/Xoff protocol.

See also Section 5.3 - Pinouts for Serial Port Connector, which contains information on pin assignments.

3.5.1 Receiving Data FROM the port

INPUT

On pressing INPUT, three further options may be entered:

OFFSET
RAM START
RAM STOP

These are used to define where in RAM to store the data. The OFFSET value is subtracted from the address of the incoming data and the RAM ADDRESS is added on. Data beyond the RAM STOP address will be ignored.
The display indicates that the data are being received.

3.5.2 Transmitting Data TO the Port

OUTPUT

On pressing **OUTPUT**, three further options may be entered:

OFFSET
RAM START
RAM STOP

OFFSET	is used to generate the first transmitted address
RAM START	gives the location to find the first byte of data, then the transmitted address and the RAM address are incremented until the RAM address equals RAM STOP

The Display indicates that data are being transmitted.

4. Device Functions

All device functions will perform a connect test to ensure that the device is present in the socket followed by a reverse part check to ensure that the device is the correct way round If a part is faulty it may also fail this test.
Devices should be inserted towards the front of the ZIF with pin 1 towards the rear of the machine. See the device notes regarding the positioning of 8 pin serial proms.

! Before a device function is executed the user should ensure that the device used is the same as that selected.

! Devices must be inserted into the socket with the lever UP; the lever must be lowered. The lever must be raised to remove the device from the socket.

! Devices must not be removed or socketed during a device function.

At the end of the function the display will indicate whether the function has passed or failed.

4.1 Loading the P301's RAM from a Master Device

The Master device should be placed in the socket.

LOAD

On pressing **LOAD** the data in the device will be copied into the P301's internal RAM. Remove master device from the socket.

4.2 Verify

This function compares the contents of RAM with the data in the device. Some devices will be verified twice at different Vcc values as directed by the manufacturer's specification. This will also happen if marginal verify is selected (see Section 2.4.2). If a device fails, and the function is enabled, failures will be displayed (see Section 2.5).

VERIFY

See also Section 2.5 - Displaying information about Failures.

4.3 Empty

This function will check that the devices are unprogrammed. If an electrically erasable part is selected, the part can be erased during programming, so new devices may not be shipped in their empty state.
Ensure device to be checked is socketed correctly

EMPTY

See also Section 2.5 - Displaying information about Failures.

4.4 Program

This function initiates the automatic programming sequence.

The device is first checked with the pre-program check (see Section 2.4.1), programmed with the data in the RAM to the manufacturer's specification, verified, then security fuses may be blown if applicable (see Section 2.4.4).

Ensure the device to be programmed is socketed correctly

PROGRAM

See also Section 2.5 - Displaying information about Failures

5. Remote Operation of P301

P301 may be controlled remotely through the serial port or through the IrDA interface. The unit is put into remote mode by a key sequence in local mode (see Section 2.2). On power down, the mode of operation is remembered so it will power back up still in remote, unless the self-test fails.

To return to local, either issue the Z command or power up with the EXIT key pressed.

5.1 Remote Control Commands

Remote control commands are case insensitive, and so may be transmitted in either upper, lower or mixed case. Spaces and tabs are ignored. (The only exception to these rules is the remote control 'D' command). In the following table, anything printed in UPPER CASE should be sent literally, while anything in lower case represents a parameter which you should substitute with an appropriate value. Some of these commands cause P301 to transmit information back to the host, others do not. In either case, P301's response is followed immediately by a carriage-return, line feed, status-code (see Section 5.2), carriage-return, line feed, prompt (a greater than symbol).

S0 manufacturer device Set the programmer for specified manufacturer and device. Each of the parameters consists of exactly three hexadecimal characters which can be found in the supplied device support list.

S1 format Set the I\O format. The parameter is a single ASCII character, and may be one of the following;

4 Intel 16 bit	5 Motorola S-Record
8 Stag- hex	9 ASCII-hex-space
A Stag Binary	D Binary
I Intel 32 bit	

Additional formats may be added to this list by Stag at a later date.

S3 security Set the security flags. The parameter is a hexadecimal number between 00 and FF. Each bit corresponds to one security bit for the currently selected device; bit 0 corresponds to fuse 0, through to bit 7 corresponding to fuse 7. Not all devices support these features.

S4 Fill the RAM between RAM-START and RAM-STOP with the device's unprogrammed state.

SM units sets width Set the bit- mode. The three parameters are each two - digit decimal numbers. Their meanings are as follows:

units numbers of units per set (a unit is a contiguous region of RAM consisting of a sequence of data - words, each being " width" bits wide);

sets	the number of identical copies of each unit;
width	the bit-mode-width, measured in bits. For 8-bit wide devices, legal combinations are: 010116 (16 BIT); 010132 (32 BIT).

SR ram_start Set the RAM-START address to the specified hexadecimal value. Note that this operation is not carried out immediately, but instead is deferred until after the SE command is issued - therefore you MUST supply these commands in the order SR followed by SE. It is legal to omit the ram_ start parameter if you do not wish to modify it but intend to use SE.

SE ram_ stop Set the RAM-STOP address to the specified hexadecimal value. Note that this command also makes permanent the RAM-START address specified by a previous SR command, therefore you MUST supply these commands in the order SR followed by SE. It is legal to omit the ram_stop parameter if you do not wish to modify it but intend to use SR.

SD device_start Set the DEVICE-START address to specified hexadecimal value. Note that this command also sets the DEVICE-STOP address to (DEVICE-START + (RAM-range / bit-mode-width)), so you MUST set the RAM-START, the RAM-STOP and the bit mode BEFORE using this command. It is legal to omit the device_start parameter if you do not wish to modify it but need to modify the device stop address (having previously modified the RAM range).

SO offset Set the I/O offset to the specified hexadecimal value.

ST margin_mode Set marginal testing to on (1) or off (0).

SY eid_mode Set the electronic identifier mode to OFF (0), CHECK (1) or AUTOMATIC (2).

R0 Read the manufacturer and device code. This command outputs a six character hexadecimal number consisting of the Stag manufacturer and device codes for the currently selected device.

R1 Read the interface format. This command outputs a single ASCII character representing the currently selected I/O format, which will correspond to one of the options available for the S1 command.

R3 Read the security fuse setting. This command outputs a two character hexadecimal number representing the current security fuse settings. Each bit corresponds to

	one security bit for the currently selected device: bit 0 corresponds to fuse 0, through to bit 7 corresponding to fuse 7.
R4	Read the CRC. This command outputs a four character hexadecimal number.
R5	Read the RAM size. The output is a six character hexadecimal number representing the topmost RAM address available.
R6	Read the FLASH software revision number. The output consists of the ASCII string "127-" (which identifies this product as the P301) followed by two (or sometimes three) fields consisting of decimal numbers. The fields are separated by a period character ('.').
R7	Read the checksum. This command outputs a four character hexadecimal number.
R9	Read device description. Output consists of three fields separated by a "/" character. The first field is the maximum possible (hexadecimal) device address; the second field is the (decimal) device width measured in bits; and the last field is the empty state of the device - ('0' meaning all zeros; '1' meaning all ones; and '2' meaning unknown or indeterminate).
RM	Read the current bit mode. Output consists of six digits which comprise three fixed-size fields with no separator. The first field (2 decimal digits) is the number of units per set; and the last field (2 decimal digits) is the bit-mode-width measured in bits - see also SM.
RR	Read the current RAM-START address. Output consists of six hexadecimal characters.
RE	Read the current RAM-STOP address. Output consists of six hexadecimal characters.
RD	Read the current DEVICE-START address. Output consists of six hexadecimal characters.
RO	Read the current I/O offset. Output consists of eight hexadecimal characters.
RT	Read the current marginal-test setting. Output is ASCII '0' for off, or '1' for on.
RY	Read current electronic identifier setting. Output is ASCII '0' for off, '1' for Check or '2' for Automatic.

RP — Read FLASH PROM size. Output is a six character hexadecimal number representing the amount of FLASH PROM currently installed in your machine.

P0 — Program device with pre-program illegal bit check.

P1 — Program devices with no pre-program check.

B0 — Read the battery condition. The response is two hex characters AB where

A = battery charge level
0 indicates battery low
A indicates battery OK

B = battery mode
0 normal discharge mode

L — Load device.

E — Empty check device.

V — Verify device.

I — Input data from the serial I/O port using the currently selected I/O format into the P301's RAM, using the currently selected RAM-START, RAM-STOP and I/O-OFFSET settings.

O — Output data from the P301's RAM to the currently selected port using the currently selected I/O format, and using the currently selected RAM-START, RAM-STOP and I/O - OFFSET settings.

F pattern — Fill RAM between the current RAM-START and RAM-STOP limits using the specified pattern. The pattern must consist of either 2, 4 or 8 hexadecimal characters.

H number — Sound the horn (beeper) the specified number of times. The single parameter should be a decimal number between 1 and 20.

Dstring — Display a string on P301's LCD. This is the only command for which spaces and tabs are not ignored and, for which, case is important. There should be no space between the D and the first character of the string. The string may not contain line feeds or carriage-returns - but it CAN however contain ANSI X3.64-1979 console escape sequences (so new line can be simulated by transmitting the two bytes $9B followed by $45).

K	Wait for any key on the P301's keypad to be pressed. There is no way of detecting which key is pressed.
Z	Exit remote control mode.

5.2 Status Codes

Status codes returned by the P301 consists of two hexadecimal characters.
The following responses may be obtained:

00	Command executed successfully
01	No Blow Device failed to program
02	Device failed to verify.
04	Device failed empty test.
05	Device failed connect test.
06	Device found to be reversed or faulty.
08	WARNING: Command executed successfully, but something minor went wrong.
09	Security bit(s) failed to program.
0A	Illegal or unrecognised command.
0B	Error in inputting data.
0D	RAM failure
11	Wrong part. Electronic identifier Check failed.
12	Mismatched parts. Different parts in different sockets.
13	Illegal or out of range address.
14	FLASH fail. Software in FLASH PROM has become corrupted.
15	No signature. Device could not be recognised by electronic identifier.
IC	Out of memory.
IE	Function aborted.
IF	Syntax error.

5.3 Pinouts for Serial Port Connector

Pin No.	Signal Name	Comment
1	DCD	carrier detect not used but pulled high
2	RXD	receive data
3	TXD	transmit data
4	DTR	data terminal ready
5	SG	signal ground
6	DSR	data set ready
7	RTS	request to send
8	CTS	clear to send
9	RI	ring indicator not used

6. StagCom Windows®

The StagCom Windows Application is an application that runs under the Microsoft Windows environment, and is designed to aid the use of device programmers designed by Stag.

The application utilises the remote control feature of the programmer, which allows the programmer to take operational commands from its I/O ports instead of its keyboard to provide a fully featured Windows front-end.

6.1 System Requirements

An IBM compatible - 80386 or higher processor
4 Mbytes of free memory (minimum).
MS-DOS 3.3 or later.
Microsoft Windows version 3.1 or later.
Hard disk with at least 1.5 Mb free.
An unused serial port.
A suitable hardware handshaking serial cable.

6.2 Interface Connections

6.2.1 Serial Cable Connections

For serial communications, the cable to be used depends on the type of connector that is used on the PC (either 9-pin or 25-pin).

! **Cables that use XON/XOFF handshaking are not suitable for use with StagCom Windows Application, a hardware handshaking cable as described in the README.1ST file is required.**

6.3 StagCom Windows Application Installation

Follow the instructions given in the file README.1ST on the distribution diskette to install the software in a group in the Windows Program Manager.

6.4 Programmer Configuration

The Windows package is shipped with default settings of COM2:38400,N,8,1. If these settings are acceptable to you then you will need to configure your programmer to the same settings as follows.

1. Plug in the supplied power cord to the rear panel socket.
2. Connect your programmer to the Personal Computer Interface using the appropriate cable (9-pin to 25-pin or 25-pin to 25-pin serial).
3. Apply power to the programmer from the mains power source.
4. Power up the programmer using the On/Off switch on the rear panel.
5. Press I/O key, select PORT item.
6. Enter the following serial interface parameters into your programmer:

Port:	Serial
Baud rate:	38400
Parity:	None
Stop Bits:	1

7. Press **ENTER** key.
8. Select **REMOTE CONTROL** item.
9. Enter the 'Remote' operating mode by pressing **I/O** key again.

6.5 Starting Up StagCom Windows Application

When the 'StagComWin' icon is double-clicked in the Program Manager, the Application will initialise itself and then attempt to establish communications with the programmer. This is done in the background while the Copyright message is displayed.
If communications are not established, then a dialog box will pop-up inviting you to change current serial port settings, or to quit the application.

If communication with the programmer fails, then there are several possible reasons:

The programmer is not switched on.
Make sure the programmer is powered up.

The programmer is not in remote control mode.
Put the programmer in remote control mode.

The connecting cable is loose.
Check the connections.

The cable is in the incorrect port.
Check the cable is in the correct port both on the programmer & PC.

The port is incorrectly selected.
Ensure that the correct port is selected on the programmer. Check that the correct port is selected on the PC by selecting the Options I programmer Comms option from the menu.

Incompatible serial port parameters selected.
Make sure the selected baud rate, parity, and stop bits are identical for the programmer and the PC.

Incorrect cable connections.
Make sure the cable used is wired in agreement with the README.1ST file

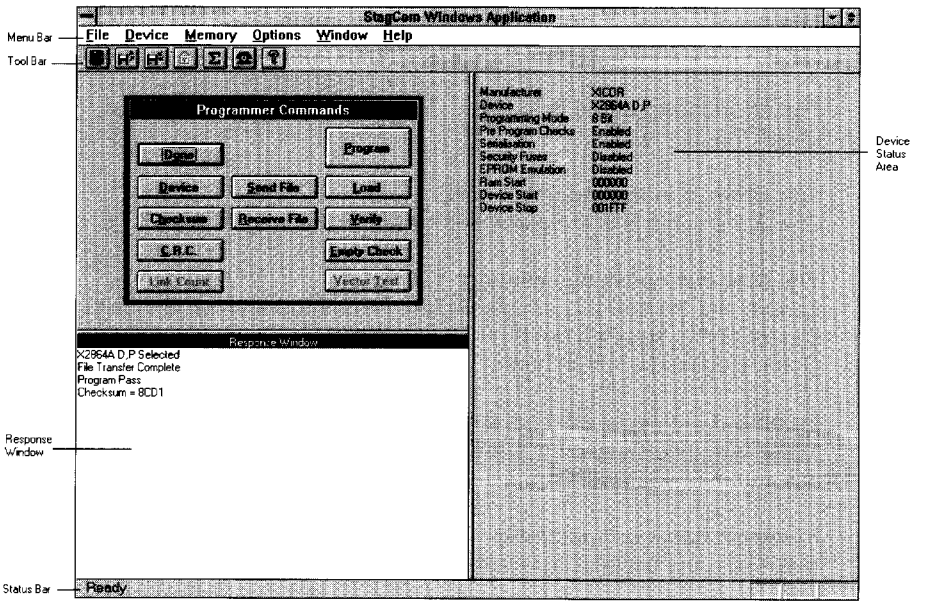
6.6 Leaving StagCom Windows Application

Leave the application by typing Alt+FX, Selecting File I Exit menu items, or by double clicking the mouse on the system button (located in the top left corner of the main window).

6.7 User Interface

This Section will familiarise you with the operation of the components of the StagCom Windows Application main screen. The main screen consists of the device status area, the menu bar, the toolbar, the response window and the status bar.

This Section also describes the use of the mouse and the operation of the keyboard keys that perform special functions within StagCom Windows Application. The general operation of the windows user interface is described in your windows documentation and will not be repeated here. Your Windows documentation describes the general conventions of the Windows Graphical User Interface (GUI) such as operation of the pull down menus, selection of file names, and operation of dialog boxes.



6.7.1 Main Screen

6.7.1.1 Menu Bar

The menu sections (Sections 6.9 through 6.14) describe the operation of each menu, and menu option. Each of these sections describes the options available in the menu. For each menu option described, the button for that option is also shown if one exists.

6.7.1.2 Toolbar

The Toolbar consists of a number of icons (pictures), each representing an operation or option which you can use on your programmable device.

To select an operation, move the cursor to the appropriate button in the Toolbar and press the mouse button once. The buttons that are not available for the currently selected device will appear greyed.

When the cursor is placed over a button in the toolbar and the mouse button is held down, a description of the selected button is displayed in the current selection indicator. If you do not want the button selected after viewing the button description, move the cursor away from the button before releasing the mouse button.

6.7.1.3 Status Bar

The status bar will display a description of the selected item. When the cursor is placed over a button in the button bar, or a menu item in the menu bar, and the mouse button held down, a description of the selected item is displayed in the status bar. If you do not want the item selected after viewing the item description, move the mouse away from the button bar / menu bar before releasing the mouse button.

6.7.1.4 Response Window

The programmer response window keeps a record of messages and responses received from the programmer. Scroll bars will appear once the list of responses has reached the bottom of the windows so that you can view previous responses once they have scrolled off the top of the window.

6.7.1.5 Device Status Area

The device status area is an area in the main application window that shows the status of various options which are valid for the currently selected device. Listed below are the options, followed by a short description

Manufacturer Currently selected manufacturer.

Device Currently selected device.

Programming Mode Shows the current bit mode that the programmer is set to. Current modes supported are 8 Bit, 16 Bit & 32 Bit for PROM type devices only. To change the current setting see Section 6.12.4 Options I Prog. Bit Mode.

Pre Program Checks If status shows Enabled then checks will be applied to the device before programming. If status shows Disabled then checks will not be applied. To change this setting see Section 6.12.2 Options I Pre Program Checks. Note: the actual tests applied will depend on the settings set in local mode using the **SEQ** Key + pre-program option.

Serialisation Shows Enabled if the serialisation feature has been enabled, otherwise shows Disabled. To change the status see Section 7.5 Serialisation.

Security Fuses Shows Enabled only if a valid security fuse has been set and enabled, otherwise Disabled is shown. To change the status for devices that do support security fuses, see Section 6.12.3 Options I Security.

Ram Start Shows the start address (in bytes) of the programmer's memory, where the first location of the device will be assigned. To change this address see Section 6.11.4 Memory I Limits.

Device Start Shows the start address of the device (in device addresses),where the first location of the programmer's memory will be assigned. To change this address see Section 6.11.4 Memory I Limits.

Device Stop Shows the last address of the device (in device addresses),where the last location of the programmer's memory will be assigned. To change this address see Section 6.11.4 - Memory I Limits.

6.7.2 Keyboard Shortcuts

Various keys on the keyboard perform special functions:

Arrow Keys	Control the movement of the cursor.
Backspace	Deletes the character to the left of the cursor.
Tab	Within a dialog box, Tab key moves the cursor forward to the next entry field or, if the Shift key is pressed simultaneously, back to the previous field.
Alt	With an underlined letter in a menu or dialog box in order to select the item.

6.7.3 Dialog Box

Some of the options within StagCom Windows Application function as simple commands which are executed as soon as you select them.

Many options, however, contain features that require the user to specify additional information. Whenever an option of this type (indicated by three periods after the option name in a menu) is selected, a dialog box is displayed on the screen. Dialog boxes control most of StagCom Windows Application's features.

The operation of the controls within a dialog box follows standard Windows conventions and, therefore, is not documented further here.

6.8 The Basics

For those who are new to StagCom Windows Application, you've come to the right place. This Section will not tell you everything there is to know about the Application, it will however, describe the basics of StagCom Windows Application.

6.8.1 Programming Device From File

Suppose we have an Intel 27C512 EPROM in DIP package, and you have a file on a floppy disk in Drive A: called '512.INT' which is stored in INTEL Hex format.

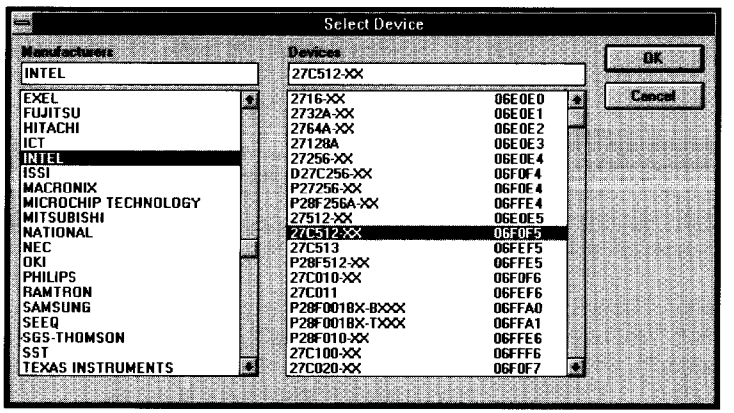
First of all make sure that your programmer is in remote mode, and run up the StagCom Windows Application. Assuming that you have the Application configured to the right port settings that match the programmer, after a few seconds, the copyright messages should clear away, and the response window should show the device used in the previous StagCom session.

6.8.1.1 Selecting Master Device

1. The first thing we need to do is select the device we want to program, in this case it is an Intel 27C512 in a DIP package

2. Click on the **Device** menu (or press **Alt+D** keys simultaneously).

3. Click on the **Select...** item. (or press **S** key).
   This will display the Select Device dialog box.



The dialog box is split up into two halves, The left half contains a scroll able list of manufacturers, and the right half contains a scroll able list of devices for the currently selected manufacturer of the left side.

4. Click on **INTEL** in the manufacturer list, (or use the cursor keys).

5. Click on **27C512-XX** in the device list. (or use the **Tab** key then cursor keys).

6. Finally click on the OK button (or press **Enter**) to close the dialog box.

The device is now selected, and a message in the response window should notify you of this fact. If you do not have the correct programmer adaptor fitted for this device, you may receive another message warning you that you have the wrong adaptor fitted. If this happens, place a suitable adaptor on the programmer.

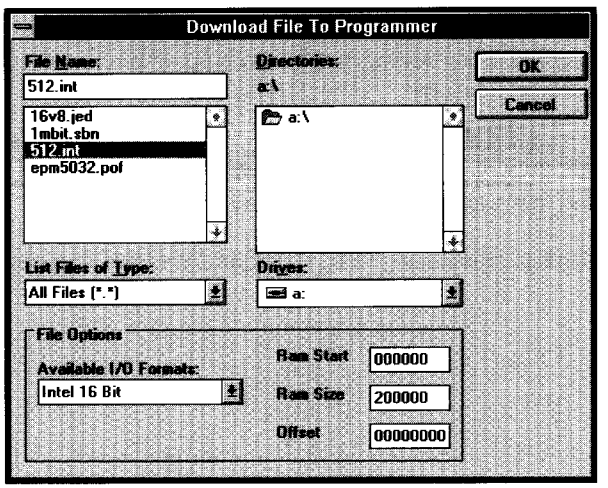
You will also have noticed that the device status area is now updated, displaying the status of various options which are valid for this device. If the Programming Mode status does not display '8 Bit' then see Section 6.12.4 Options I Prog. Bit Mode. to set it to 8 Bit Mode.

6.8.1.2 Download File To Programmer

Now that we have the correct device selected, the next thing to do is download the file which we have in Floppy Drive A: called 512.int.

1. Click on the **File** menu (or press **Alt+F** keys simultaneously).

2. Click on the **Send...** item. (or press **S** key). This will display the Download File To Programmer dialog box.



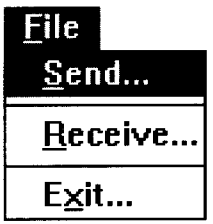
3. Select Intel 16 Bit from the available I/O formats list, by using the mouse or by using the **Tab** key and cursor keys.
4. Select Drive A: from drives list.
5. Select 512.int from the file name list.
6. select **OK** button, or press **Enter** key.

A message box will now appear during the file transfer to the programmer. Once the file is downloaded, a message in the response window will confirm that the file has been transferred successfully.

6.8.1.3 Program Device

Now that the data has been downloaded to the programmer, the 27C512 device can now be programmed. To program the device select Device | Program (or press **Alt D + P**). After completion, a message in the response window will confirm a successful program. To program more devices just repeat 6.8.1.3.

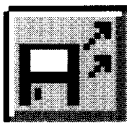
6.9 File Menu



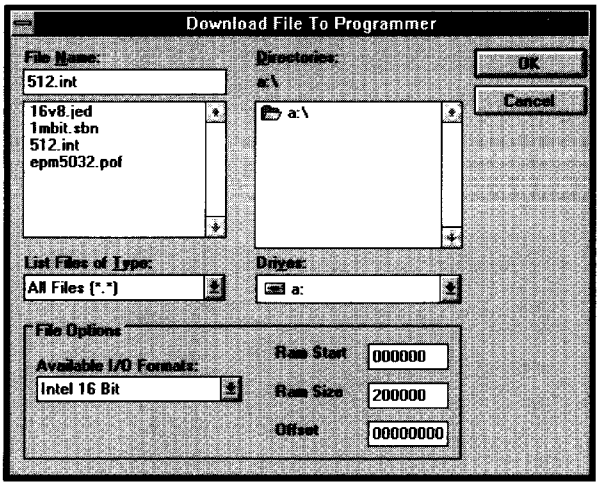
The File menu controls the flow of data into and out of programmer. The **File** menu provides three basic functions:

1. You can load data into the programmer from a file.
2. You can save data in the programmer to a file.
3. You can finish using (Exit) StagCom Windows Application.

6.9.1 Send



Click on the Send function button, The Download File To Programmer dialog box is displayed.



Use **Ram Start** to change the default programmer address to where the first byte of data will be sent. Note: this option is not available for PLD type devices.

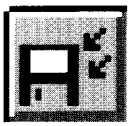
Use **Ram Size** to limit the number of bytes in the data file downloaded to the programmer. The default size is set to the size of RAM fitted in the programmer so that all data in the file will be stored in the programmer's RAM. Note: this option is not available for PLD type devices.

Use **Offset** to change the run address of the data sent to the programmer. The default run address is the same as the RAM address. Note: this option is not available for PLD type devices.

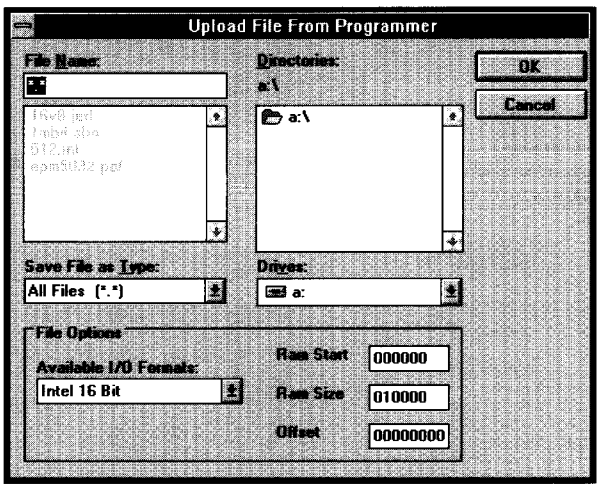
Use the **Available I/O Formats** list box to select the format of the data file that you want to send to the programmer. Note: this option is not available for PLD type devices.

Use the **Drives** and **Directories** list boxes to locate the desired data file.

6.9.2 Receive



Click on the Receive function button, The Upload File From Programmer dialog box is displayed.



Use **Ram Start** to change the default programmer address from where the first byte of data will be received. Note: This option is not available for PLD type devices.

Use **Ram Size** to change the default number of bytes uploaded from the programmer. The default size = ((device size in device addresses+1) * (current bit mode/8)-1). This equation covers the complete range of the selected device in any bit mode. Note: this option is not available for PLD type devices.

Use **Offset** to change the run address of the data received from the programmer. The default run address is the same as the RAM address.

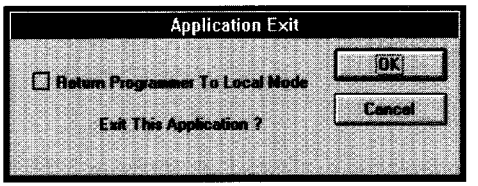
Use the **Available I/O Formats** list box to select the format of the data file that you want to receive from the programmer.

Use the **Drives** and **Directories** list boxes to locate the desired directory for the data file. When the name of the destination directory is shown in the **File Name** list box, enter a filename for the data in the **File Name** entry field, and click on the **OK** button.

6.9.3 Exit

Select this option to end the current StagCom Windows Application session and returns you to the Windows Program Manager. Use this option to exit StagCom Windows Application.

Select the **Exit** option in the **File** menu. The Application Exitdialog box is displayed.

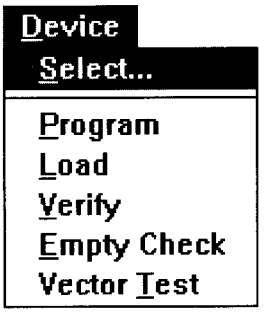


Use the **Return Programmer To Local Mode** check-box option if you want the programmer to come out of remote mode and enter stand-alone mode after the StagCom Windows Application has closed down. Leave the option unchecked if you want the programmer to remain in remote mode.

Click on the **OK** button if you want to terminate Your StagCom Windows Application Session.

Click on the **Cancel** button if you wish to continue with your StagCom Windows Application session.

6.10 Device Menu

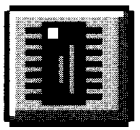


The **Device** menu controls the functions that can be applied to a device in the programmer socket. The **Device** menu provides six basic functions:

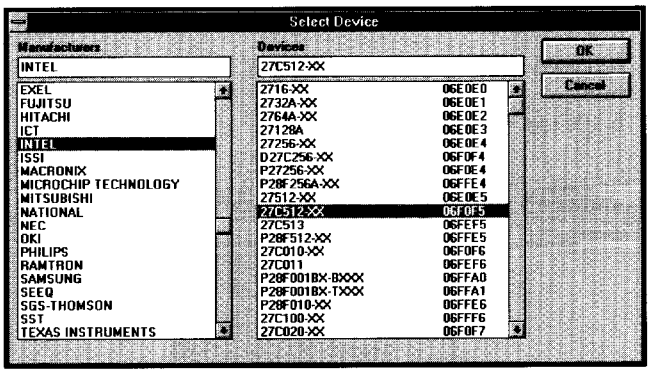
1. You can select the device for the programmer socket.
2. You can program the selected device from the programmer memory.
3. You can load the selected device into the programmer memory.
4. You can verify the selected device against the programmer memory.
5. You can check for the erased state of the selected device.

! **All the above functions are reproduced in the Programmer Commands dialog box. See Section 8.1 Prog. Commands, to activate this option.**

6.10.1 Select



Click on the **Select** function button, The Select Device dialog box is displayed.



There are two methods for selecting a device,

Method One:
Use the **Manufacturers** list box to locate and select the desired manufacturer.
Use the **Devices** list box to locate and select the desired device.
Click on the **OK** button to inform the programmer that this is the part that you want selected

Method Two:
Use the **Manufacturers** edit box to type in the manufacturer name, the nearest match will be selected in the list box.
Use the **Devices** edit box to type in the device name, the nearest match will be selected in the list box.

Notes:
The current manufacturer / device will be hi-lighted when the dialog box is opened.

A similar device will be hi-lighted when switching to a different manufacturer if there is one available; otherwise the first device in the device list box will be hi-lighted.

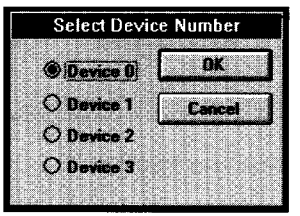
The six digit number displayed after the device name is the device code, you may use this code to cross-reference with the Device Support List if you are not sure which device you want selected.

6.10.2 Program

Select this option if you wish to program the selected device. Selecting this option will:

1. Apply pre-program checks (if they are enabled).
2. Program device from memory.
3. Apply verification checks.
4. Program security fuses (if enabled).
5. Apply test vectors (if enabled).

If the current programmer bit mode is wider than the selected device, then the Select Device Number dialog box will be displayed.



Select **Device 0,2** to program device with even address data.

Select **Device 1,3** to program device with odd address data.

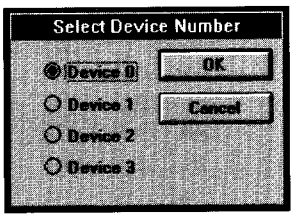
If the serialisation option is enabled, the Select Device Number dialog will not be displayed, instead the Insert Device dialog box will be displayed prompting you to Insert **device 0**, then on the next programming cycle, you will be prompted to Insert **device 1** et cetera.

Once programming is completed, the Response Window will be updated, indicating the status of the programming attempt.

6.10.3 Load

Select this option if you wish to load the contents of the selected device into the programmer memory.

If a programmer bit mode is selected which is wider than the selected device, then the Select Device Number dialog box will be displayed.



Select **Device 0,2** to load device into even addresses.

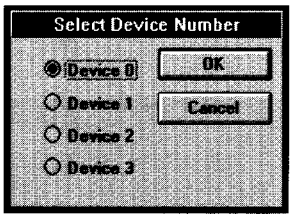
Select **Device 1,3** to load device into odd addresses.

Once the device has been loaded, the Response Window will be updated, indicating the status of the load attempt.

6.10.4 Verify

Select this option if you wish to verify the contents of the selected device against the programmer memory.

If a programmer bit mode is selected which is wider than the selected device, then the Select Device Number dialog box will be displayed.



Select **Device 0,2** to verify device against even address data.

Select **Device 1,3** to verify device against odd address data.

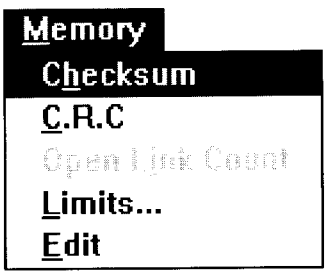
Once the device has been verified, the Response Window will be updated, indicating the status of the verify attempt.

6.10.5 Empty Check

Select this option if you wish to check the selected device against the erased state.

Once the device has been checked, the Response Window will be updated, indicating the status of the empty check attempt.

6.11 Memory Menu



The Memory menu controls the functions that can be applied to programmer's memory. The Memory menu provides five basic functions:

1. You can display the checksum of the data in the programmer's memory, within the currently set device limits.

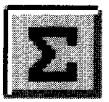
2. You can display the C.R.C. (Cyclic Redundancy Check) of the data in the programmer's memory, within the currently set device limits. This function is not available for PLD type devices.

3. You can display the Open Link Count of the data in the programmer's memory. This function is not available for non PLD type devices.

4. You can change the device addressing limits from the default. This function is not available to PLD type devices.

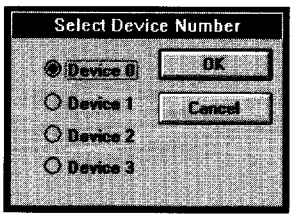
5. You can edit the contents of the programmer's memory. This function is not available for PLD type devices.

6.11.1 Checksum



Click on the **Checksum** function. Select this option if you wish to display the checksum of the programmer's memory.

If a programmer bit mode is selected which is wider than the selected device, then the Select Device Number dialog box will be displayed.



Select **Device 0,2** to display the checksum of data in even addresses.

Select **Device 1,3** to display the checksum of data in odd addresses.

Once the checksum has been calculated, the Response Window will be updated, indicating the new checksum.

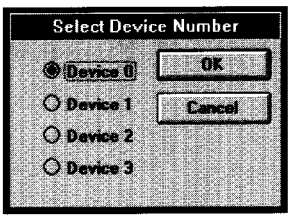
For non PLD type devices, the range of the calculation is determined by the device limits, which are displayed in the Status Area. To change these limits, see Section 6.11.4 Memory I Limits.

For PLD type devices, the range of the calculation is the fixed to the entire range of the device.

6.11.2 Cyclic Redundancy Check (C.R.C.)

Select this option if you wish to display the C.R.C. of the programmer's memory.

If a programmer bit mode is selected which is wider than the selected device, then the Select Device Number dialog box will be displayed.



Select **Device 0,2** to display the C.R.C. of data in even addresses.

Select **Device 1,3** to display the C.R.C. of data in odd addresses.

Once the C.R.C. has been calculated, the Response Window will be updated, indicating the new value.

Note: This function is not available for PLD type devices.

6.11.3 Open Link Count

Select this option if you wish to display the open link count of the programmer's memory, for the currently selected device.

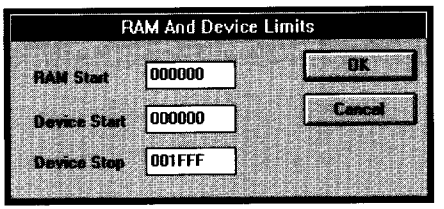
Once the open link count has been calculated, the Response Window will be updated, indicating the new value.

Note: this function is only available for PLD type devices.

6.11.4 Limits

Select this option to display the RAM And Device Limits dialog box.

The Limits option is not available for PLD type devices.



Use **Ram Start** to change the default programmer address from where the first byte of data will be accessed.

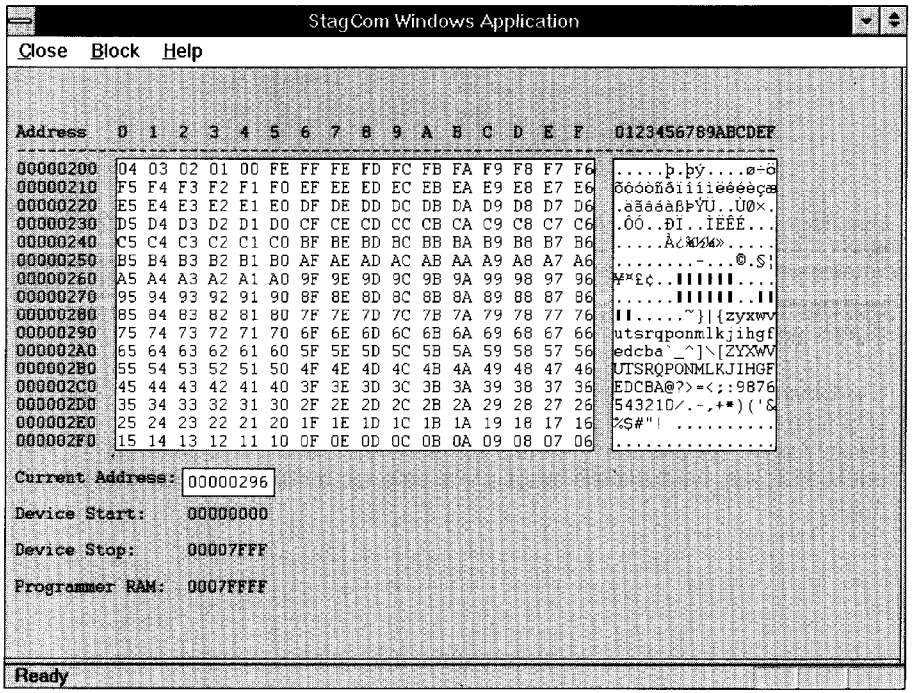
Use **Device Start** to change the default device start address from the device will be first be accessed.

Use **Device Stop** to change the last device address to be accessed. The default stop address is calculated as:
device start + ((device size in device addresses+1) * (current bit mode/8)-1). This equation covers the complete range of the selected device in any selected bit mode.

6.11.5 Edit

The **Edit** function allows you to modify the data stored in the Programmer. Note that this option is not available for PLD type devices.

Selecting the **Edit** function to display the Edit screen.



The edit screen replaces the main screen view.

The left section of the window shows the first programmer address, in hex, of each row of data. These addresses can be changed by typing the new address into the **Current Address** edit box, the edit box also displays the address currently being edited, that is; the caret position.

The middle section displays the programmer data in hex bytes that can be edited. To change the value of any data, simply click on the data by using the mouse, or use the cursor keys to move about the data field. Once you have selected the byte you wish to change, simply type in the replacement value. To move on to the next page of data, simply use the **PgUp & PgDn** cursor keys.

The right section displays the same data as ASCII characters. Characters that are not printable, are displayed as a full stop '.'. To edit the value of any data, simply

click on the data by using the mouse, or use the cursor / tab keys to move about the data field. Once you have selected the character byte you wish to change, simply type in the replacement character.

You cannot edit locations that are outside the range of the ram fitted inside the programmer, i.e. the last editable address is the address shown by the **Programmer RAM:** text.

Device Start shows the first programmer ram address that the device is mapped to.

Device Stop shows the last programmer ram address that the device is mapped to.

6.11.5.1 Edit I Exit

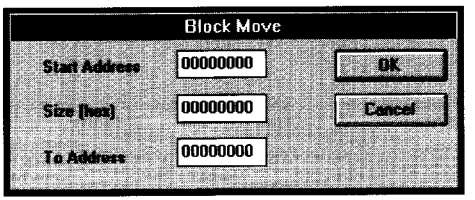
Selecting this function will close the editing session, and return to the main StagCom Windows Application main screen.

6.11.5.2 Edit I Block

6.11.5.2.1 Move

The **Move** function, allows you to copy a block of data from one location in the programmer's memory, to another location.

Selecting the **Move** option will display the Block Move dialog box.



Use **Start Address** to specify the first programmer address to copy from.

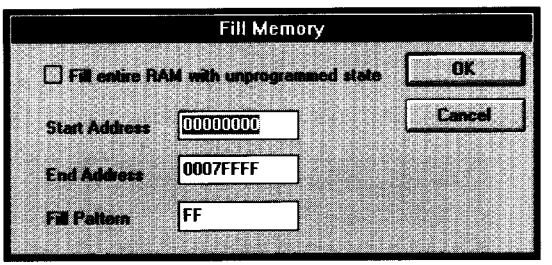
Use **Number Of Bytes** to specify the size of the data block to copy.

Use **To Address** to specify the first programmer address that will be over written.

6.11.5.2.2 Fill

The Fill function, allows you to fill a block of data with a known value.

Selecting the Fill option will display the Fill Memory dialog box.



Use **Start Address** to specify the first programmer address that will be over written.

Use **End Address** to specify the last programmer address that will be over written.

Use **Fill Pattern** to specify the data (in hex) that will be written to the programmer's memory.

Alternately, select the **Fill entire RAM with unprogrammed state** checkbox to set the ram in the programmer to the unprogrammed state for the currently selected device, in most cases this will be FFh.

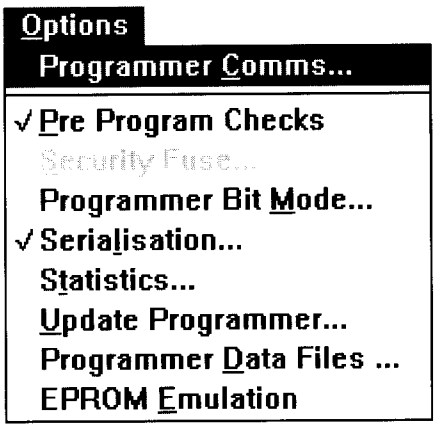
6.11.5.2.3 Goto

The Goto function, allows you to specify a new programmer address to edit.

Selecting the Goto option will display the Goto An Address dialog box.

Use Enter The Address field to enter (in hex) the new programmer memory address to edit. The maximum address allowed is the amount of RAM fitted to the programmer.

6.12 Options Menu



The Options menu controls the functions that define how other features and functions operate. The Options menu provides nine basic functions:

1. You can select and configure the serial port to which the programmer is connected.

2. You can enable and disable pre-program checks for the selected device.

3. You can select and enable security fuses.

4. You can define the programmer bit mode for the selected device.

5. You can select and configure device serialisation.

6. You can display programming statistics.

7. You can update the software in your connected programmer.

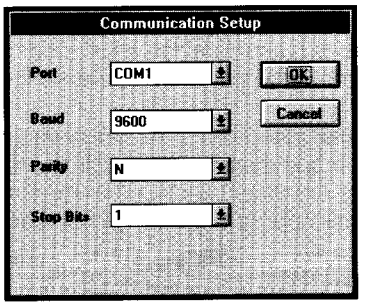
8. You can select a new device support data file.

9. You can enable and disable EPROM emulation.

6.12.1 Programmer Comms.

Select the **Programmer Comms** option to select and configure the serial port to which the programmer is connected.

Selecting **Programmer Comms** will display the Communication Setup dialog box



Use the **Port** drop-down box to select the serial port that the programmer is connected to. Valid ports are Com1 .. Com4.

Use the **Baud** drop-down box to select the same baud rate that the programmer is configured to.

Use the **Parity** drop-down box to select the same parity setting that the programmer is configured to. Note that if parity is enabled (i.e. set to even or odd) then only seven data bits are set. The consequence is that you will not be able to send or receive binary format files to or from the programmer. Configure this option to none (N) for complete functionality.

Use the **Stop Bits** drop-down box to select the same setting to which the programmer is configured.

6.12.2 Pre Program Checks

Select the **Pre Program** Checks option to enable, or disable pre program checks.

Selecting this option will toggle the state of the pre program checks. The current state (enabled or disabled) is constantly shown in the Device Status Area as discussed in Section 6.7.1.5.

If the **Pre Program Checks** menu item has a tick mark placed next to it, then selecting the item will remove the tick and disable the function.

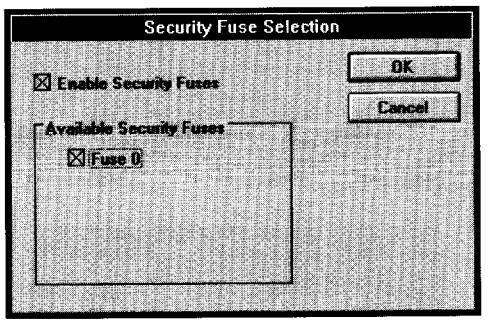
If the **Pre Program Checks** menu item does not have a tick mark placed next to it, then selecting the item will add the tick and enable the function.

Note that the actual checks applied depends on how the programmer is configured.

6.12.3 Security

Select the **Security** option to enable or disable security fuse programming and to define which fuses (from the available list) to program.

Selecting this option will display the Security Fuse Selection dialog box.



Check the **Enable Security** Fuses check-box to enable the Available Security Fuses check-boxes.

Use the check-boxes in the **Available Security Fuses** group to enable or disable a particular security fuse.

The number of available security fuses depends on the device selected, some devices have no security fuses at all, in which case the Security menu item will be greyed out.

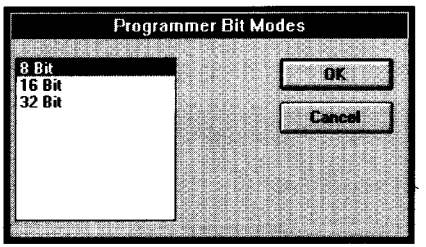
Note: For any security fuses to be actually programmed during the program cycle, both the **Available Security Fuse** check-box has to be checked, and also the **Enable Security Fuses** check-box has to be checked. When this occurs the Device status area will show Security Fuses Enabled, otherwise it will show Security Fuses Disabled.

! **Some devices use the security fuse option to support non-standard, miscellaneous features. Please consult the 'Device specific information' section in your programmer device support list for further details.**

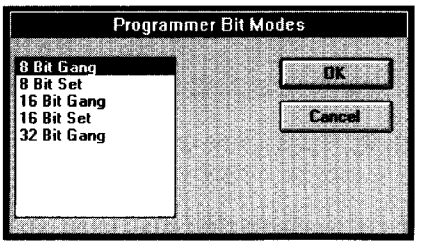
6.12.4 Prog. Bit Mode

Select the **Prog. Bit Mode** option to select a new programmer bit mode from the default setting for the device.

Selecting this option will either display the programmer Bit Modes dialog box for single socket programmers.



or for multi socket programmers ..



Use the list box to select the new mode required.
Note:

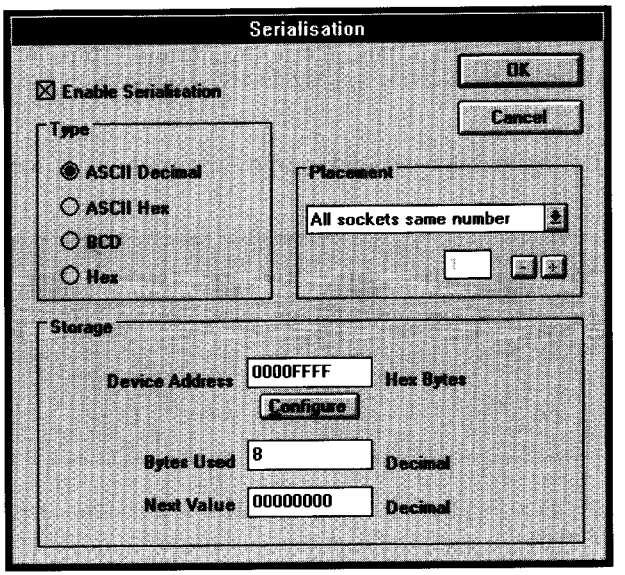
Select **Gang** mode to program all device with the same data
Select **Set** to program each device with consecutive memory blocks.

This option is not available for PLD type devices.

6.12.5 Serialisation

Select **Serialisation** option to enable and configure programming serialisation.

Selecting this option will display the Serialisation dialog box.



Use **Enable Serialisation** check-box to enable / disable serialisation function.

Use **Type** group radio buttons to define the type of the serial number.

Select **ASCII Decimal** to store one decimal digit per byte of memory in ASCII format.

Select **ASCII Hex** to store one hex digit per byte of memory in ASCII format.

Select **BCD** to store two decimal digits per byte of memory in Binary Coded Decimal format.

Select **Hex** to store two hex digits per byte of memory in hex format.

Use **Storage** group controls to specify the programmer addresses where the serial number digits will be stored.

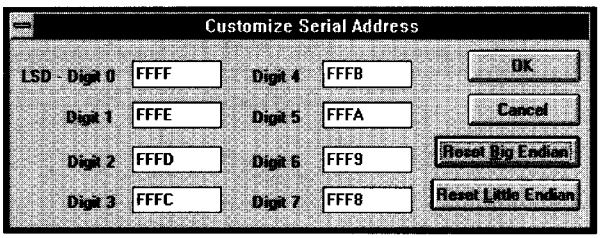
Use **Device address** to view the programmer address where the least significant digit will be stored.

Use **Bytes Used** to specify the number of the bytes reserved in the device for the serialisation data, bytes that are not in the current number range will be initialised to zero.

Use **Next Value** to define the next serial number to be programmed into the device. This value is automatically incremented after each successful programming cycle.

Use the **Configure** button to specify device addresses for the serial number digits.

Selecting the **Configure** button will display the Customize Serial Address dialog box.



Use each of the **Digit** edit boxes to specify a device address where that digit will be stored.

Use **Reset Big Endian** to configure all the digits such that the most significant digit is in the lowest device address (Motorola addressing).

Use **Reset Little Endian** to configure all the digits such that the least significant digit is in the lowest device address (Intel addressing).

Use **Placement** group controls for multi-socketed programmers to specify how the serial numbers will be stored in each device / socket.

Set **All socket same number** to specify that all devices/sockets have the same number programmed into them.

Set **All sockets unique number** to specify that each device/socket has a unique number, incremented from the previous socket/device.

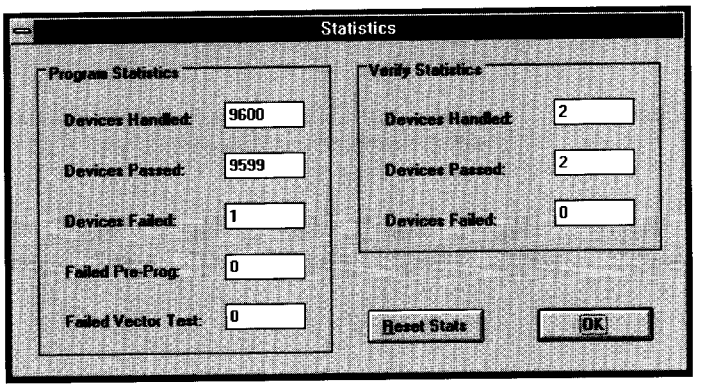
Set **One socket with number** to specify that only one device/socket will have a number programmed into it. Use the **Socket** edit box to specify the chosen socket.

Please note that all variables are saved to the SCOMWIN.INI file, and are reloaded in the next StagCom Windows Application session.

6.12.6 Statistics

Select **Statistics** option to display the programming and verification statistics for the currently selected device, that is the statistics are automatically reset to zero when a new device is selected.

Selecting this option will display the Statistics dialog box.



Program Statistics group displays statistics relating to the programming cycle.

Devices Handled: displays the total number of programming attempts not including device connection failures or other non-device errors.

Devices Passed: displays the number of devices that have successfully completed a programming cycle with no errors occurring.

Devices Failed: displays the number of devices that have not programmed correctly or have failed the post-program verify test.

Failed Pre-Prog: displays the number of devices that have failed before the programming starts. This is usually due to a part that is not erased,or unprogrammed before the programming cycle starts.

Failed Vector Test: This statistic is only relevant for PLD type devices, and shows the number of devices that have unsuccessfully passed the test vectors applied after the program cycle has finished.

Verify Statistics group displays statistics relating to the user selecting the verify function.

Devices Handled: displays the total number of verification attempts not including device connection failures or other non-device errors.

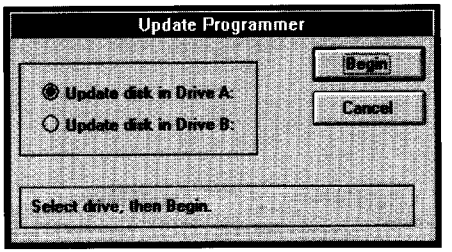
Devices Passed: displays the number of devices that have successfully verified against the programmer memory with no errors occurring.

Devices Failed: displays the number of devices that have failed to verify with the programmer memory.

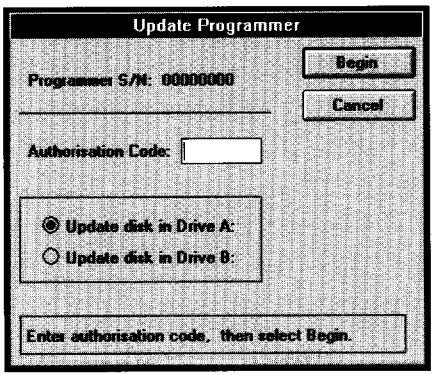
6.12.7 Update Programmer

Select **Update Programmer** option to update the programming algorithms in the connected programmer. New algorithms can be obtained from your Stag representative.

Selecting this option will display the following Update Programmer dialog box if your programmer does not have an internal serial number.



Otherwise, selecting this option will display the following Update Programmer dialog box if your programmer does have an internal serial number.



Use **Authorisation Code** edit box to enter the update authorisation code obtained from your Stag representative. When obtaining your authorisation code, you will need to quote the programmer serial number (Programmer S/N) for your programmer.

Use **Update disk** buttons to select the drive that the programmer update disk is located.

Use **Begin** to begin the programmer update process, if your update disk contains a programmer .DAT file, then this will be used to replace your existing one.

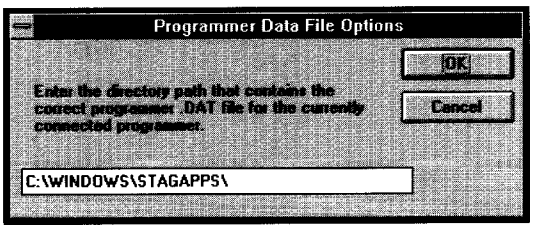
On the completion of the update process you will be prompted to quit the

application. Double clicking the StagCom icon in the Program Manager to restart the application.

6.12.8 Programmer Data Files

Select **Programmer Data Files** option to select the correct directory that contains the right .DAT for the connected programmer.

Selecting this option will display the Programmer Data Files Options dialog box.



Note: The .DAT file contains a list of devices that are supported by your programmer, and is used when you select a new device.

6.12.9 EPROM Emulation

Select the **EPROM Emulation** option to enable, or disable EPROM emulation in the connected programmer.

Selecting this option will toggle the state of EPROM emulation mode. The current state (enabled or disabled) is constantly shown in the Device Status Area as discussed in Section 6.7.1.5.

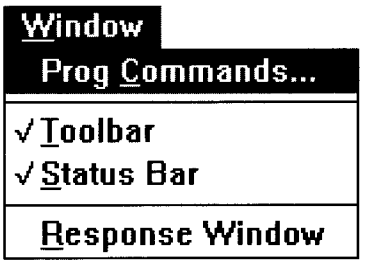
If the **EPROM Emulation** menu item has a tick mark placed next to it, then selecting the item will remove the tick and disable the function.

If the **EPROM Emulation** menu item does not have a tick mark placed next to it, then selecting the item will add the tick and enable the function.

Not all programmers support this function. If your programmer does not, then this option will not be available on the **Options** menu.

Please consult your Programmer Operating manual for further details regarding the functionality of this command.

6.13 Window Menu



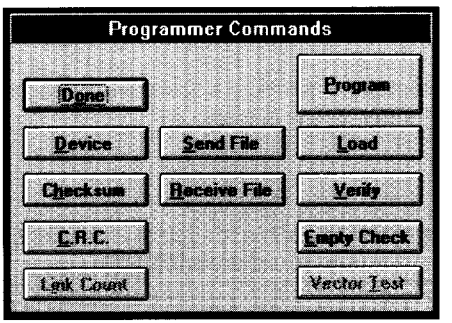
The Window menu controls the behaviour of the various user interface windows. The Window menu provides four basic functions:

1. Hide / Show Programmer Commands window.
2. Hide / Show Toolbar.
3. Hide / Show Status Bar.
4. Change characteristics of the Response Window.

6.13.1 Prog. Commands

Select **Prog. Commands** option to displays a window giving you access to commonly used programmer commands.

Selecting this function displays the Programmer Commands window.



Use this window to give you quick and easy access to the most commonly used programmer functions.

While the Programmer Commands window is active (displayed), the other features accessible via the menu bar are locked out. This feature gives you a basic level of security from accidentally changing the characteristics of functions that you did not intend to change.

Done	Disable (hide) Programmer Commands Window.
Device	Select a new device.
Program	Program a device from programmer memory.
Load	Load a device into programmer memory.
Verify	Verify a device against programmer memory.
Blank Check	Check device for erased state.
Vector Test	Apply vector test to PLD type device.
Send File	Download data file to the programmer's memory.
Receive File	Upload data file from programmer's memory.
Checksum	Calculate and display checksum of programmer's memory.
C.R.C.	Calculate and display C.R.C. of non PLD type device.
Link Count	Calculate and display Open Link Count of PLD type device.

6.13.2 Toolbar

Select the **Toolbar** option to enable, or disable the Toolbar (see Section 6.7.1.2).

Selecting this option will toggle the state (hidden or shown) of the Toolbar.

If the **Toolbar** menu item has a tick mark placed next to it, then selecting the item will remove the Toolbar from the display.

If the **Toolbar** menu item does not have a tick mark placed next to it, then selecting the item will add the Toolbar to the display.

6.13.3 Status Bar

Select the **Status Bar** option to enable, or disable the status bar (see Section 6.7.1.3).

Selecting this option will toggle the state (hidden or shown) of the status bar.

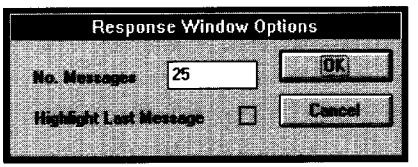
If the **Status Bar** menu item has a tick mark placed next to it, then selecting the item will remove the status bar from the display.

If the **Status Bar** menu item does not have a tick mark placed next to it, then selecting the item will add the status bar to the display.

6.13.4 Response Window

Select the **Response Window** option to change the visual characteristics of the Response Window.

Selecting the **Response Window** will display the Response Window Options dialog box.



As the Response window fills up with programmer response messages, scroll bars appear in the window, and previous messages scroll of the top of the window. These older messages can still be reviewed by using the scroll bars to scroll up the display.

Use **No. Messages** field to indicate the maximum number of message to keep within the scroll range

Use **Highlight Last Message** check-box to keep the latest entry in the Response window highlighted. Use this feature to give you a visual aid in keeping track of the most recent message received from the programmer.

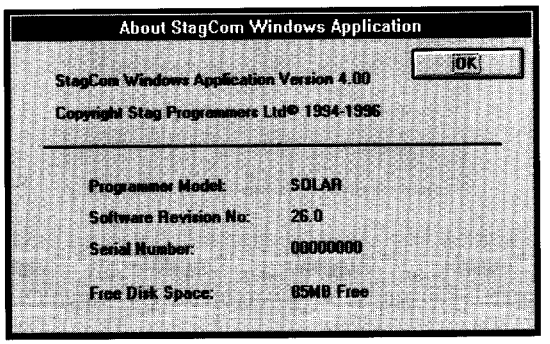
6.14 Help Menu

The **Help** menu gives you access to information about the StagCom windows Application and the Windows environment.

6.14.1 About StagCom

Select **About StagCom** option to display information about StagCom Windows Application.

Selecting the option displays the About StagCom Windows Application dialog box.



Programmer Model: displays the name of the currently connected programmer.

Software Revision No: displays the version of the programming software within the connected programmer.

Serial Number: displays the serial number of the connected programmer, use this number when contacting you stag representative for software updates.

Free Disk Space: displays the amount of free space on your primary hard disk. If you have less that 10MB free, the value is displayed in kilobytes otherwise it is displayed in Megabytes.

7. StagCom DOS

The StagCom DOS Application utilises the remote control feature of the programmer, allowing the programmer to take operational commands from the I/O ports instead of the keyboard to provide a fully featured DOS application.

7.1 System Requirements

An IBM compatible PC.
MS-DOS 3.2 or later.
A free serial port.
A suitable serial cable.

7.2 Interface Connections

7.2.1 Serial Cable Connections

For serial communications, the cable to be used depends on the type of connector that is used on the PC (either 9-pin or 25-pin).

! **Cables that use XON/XOFF handshaking are not suitable for use with StagCom DOS Application, a hardware handshaking cable as described in the README.1ST file is required.**

7.3 StagCom DOS Application Installation

! **An appropriate .DAT file for the Programmer that you intend to use must be placed in the same directory as the StagCom DOS Application for the application to function. This file can be found on your PROGRAMMER UPDATE DISK. If you do not have this disk, then consult your Stag representative.**

! **The ANSI.SYS driver is required to be installed from your CONFIG.SYS file for the application to display information on the screen correctly, please see your DOS documentation to install this driver correctly.**

No installation of the StagCom DOS Application is required; either run the application from the supplied floppy disk, or copy it onto your hard disk by using the DOS COPY or XCOPY commands

To execute StagCom DOS Application, type SCOMDOS from the DOS prompt.

7.4 Programmer Configuration

The DOS package is shipped with default settings of COM1:9600,N,8,1. If these settings are acceptable to you then you will need to configure the programmer to the same settings as follows.

1. Plug in the supplied power cord to the rear panel socket.

2. Connect your programmer to the Personal Computer Interface using the appropriate cable (9-pin to 25-pin or 25-pin to 25-pin serial).

3. Apply power to the programmer from the mains power source.

4. Power up the programmer using the On/Off switch on the rear panel.

5. Press I/O key, select PORT item.

6. Enter the following serial interface parameters into your programmer:

Port:	Serial
Baud rate:	9600
Parity:	None
Stop Bits:	1

7. Press **ENTER** key.

8. Select **REMOTE CONTROL** item, then press **I/O** key.

7.5 Starting StagCom DOS Application

When you execute StagCom.exe, the application will initialise itself and then attempt to establish communications with the programmer. If communications are not established within 10 seconds, the Application Options group will pop-up, inviting you to either change the port settings, or to exit the application.

If communication with the programmer fails, then there are several possible reasons:

The programmer is not switched on.
Make sure the programmer is powered up.

The programmer is not in remote control mode.
Put the programmer in remote control mode.

The connecting cable is loose.
Check the connections.

The cable is in the incorrect port.
Check the cable is in the correct port both on the programmer & PC.

The port is incorrectly selected.
Ensure that the correct port is selected on the programmer.
Check that the correct port is selected on the PC by pressing the **X** key.

Incompatible serial port parameters selected.
Make sure the selected baud rate, parity,
and stop bits are identical for the programmer and the PC.

Incorrect cable connections.
Make sure the cable used is correctly wired.

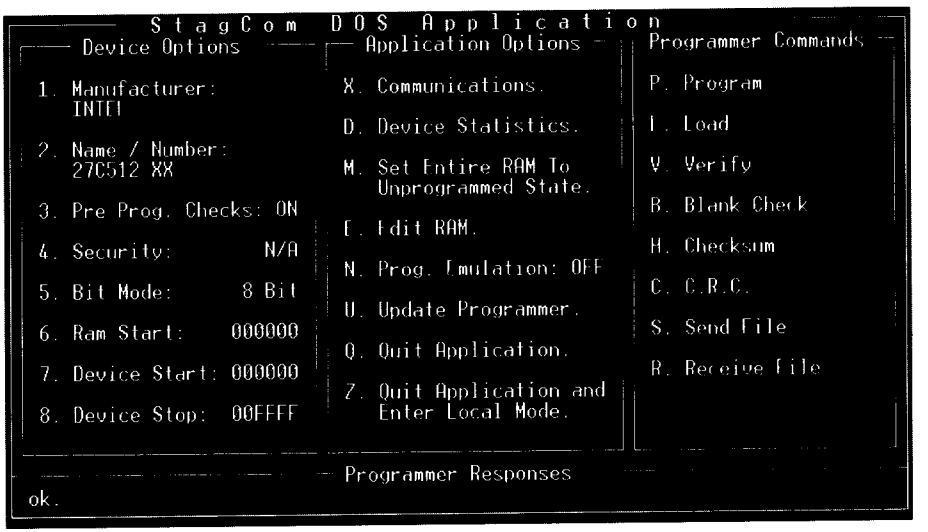
7.6 Leaving StagCom DOS Application

You may leave the application by typing **Q**, or if you want to take the programmer out of remote mode as well, type **Z**.

7.7 User Interface

This Section will familiarise you with the operation of the components of the StagCom DOS Application main screen. The main screen consists of the device options group, the application options group, the programmer commands group and the programmer responses area.

This Section also describes the use of the keyboard keys that perform special functions within the StagCom DOS Application. The general operation of the DOS command line interface is described in your DOS documentation and will not be repeated here.



7.7.1 Main Screen

7.7.1.1 Device Options Group

The Device Options menu, groups together all the application commands that allow you set-up options for the selected device. If a particular option is not applicable to the selected device then N/A will be shown and selecting the option will have no effect.
Select the required option by pressing the key on the keyboard shown to the left of the option.

7.7.1.2 Application Options Group

The Application Options menu, groups together all the application commands that allow you to set-up options that are not directly related to the selected device. If a particular option is not applicable to the mode that the programmer is in, or is not supported by the programmer at all, then the option will not be visible, and cannot be selected. Select the required option by pressing the key on the keyboard shown to the left of the option.

7.7.1.3 Programmer Commands Group

The Programmer Commands menu, groups together all the application commands that directly effect the selected device. If a particular command is not applicable to the selected device, then the command will not be visible, and can not be selected. Select the required command by pressing the key on the keyboard shown to the left of the command.

7.7.1.4 Programmer Responses Area

The Programmer Response area either displays the response to a programmer command received by the programmer, or will display a description of the option you are currently selecting.

7.7.2 Keyboard Shortcuts

Various keys on the keyboard perform special functions:

Arrow Keys Control the movement of the cursor (when visible).

Backspace Deletes the character to the left of the cursor.

Page Up Move to the previous page of a list.

Page Down Move to the next page of a list.

Esc Cancel Current operation.

7.7.3 Group Menus

Some of the options within StagCom DOS Application function as simple commands which are executed as soon as you select them.

Many options, however, contain features that require the user to specify additional information. Whenever an option of this type is selected, a group menu is displayed in the centre of the screen. Group menus control most of StagCom DOS Application's features.

7.8 The Basics

For those who are new to StagCom DOS Application, you've come to the right place. This Section will not tell you everything there is to know about the Application, it will however, describe the basics of StagCom DOS Application. The topics included in this Section are:

Programming a Master device from a file. This section shows you how to select your device, download a file to the programmer's memory, and lastly program the device with the pattern in the memory.

7.8.1 Programming Device From File

Suppose we have an Intel 27C512 EPROM in DIP package, and you have a file on a floppy disk in Drive A: called `512.INT' which is stored in INTEL Hex format.

First of all make sure that your programmer is in remote mode, and run up the StagCom DOS Application. Assuming that you have the Application configured to the right port settings that match the programmer, after a few seconds, the display should look similar to that shown at the start of Section 2.

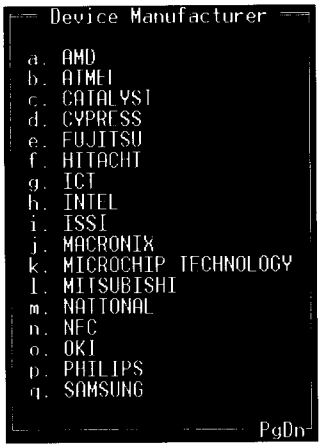
7.8.1.1 Selecting Master Device

The first thing we need to do is select the device we want to program, in this case it is an Intel 27C512 in a DIP package

Under Device Options group you should see **1. Manufacturer**, press **1** on the keyboard to select the option.

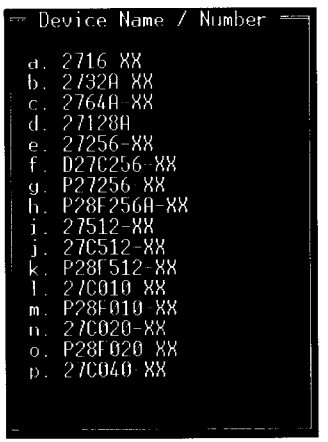
The Device Manufacturer group menu should now appear in the centre of the screen, (see fig. on next page) showing the list of valid manufactures.

Locate the entry marked Intel (use the **Page Up** / **Page Down** keys if required) and press the key shown to the left of the entry (h in this example).



The Device Name/Number group menu should now appear in the centre of the screen, showing the list of valid devices.

Locate the entry marked **27C512-XX** (use the **Page Up** / **Page Down** keys if required) and press the key shown to the left of the entry.



The Device is now selected, and a message in the response area should notify you of this fact. If you do not have the correct programmer adapter fitted for this device, you may receive another message warning you that you have the wrong adapter fitted. If this happens, place a suitable adapter on the programmer for the selected device.

You will also have noticed that the Device Options group has now updated, displaying the status of various options which are valid for this device. If the Programming Mode status does not display '8 Bit' then see Section 4.5 Bit Mode, to set it to '8 Bit'.

7.8.1.2 Download File To Programmer

Now that the correct device is selected, the next thing to do is download the file which we have in Floppy Drive A: called 512.int.

Under Programmer Commands group you should see S. Send File, press S on the keyboard to select the option.

The Send File To Programmer group menu should now appear in the centre of the screen.

Make sure that the **I/O Format** is set to Intel 16 bit. If it is not, then see section 6.8.

Press **e** to bring up the Open File menu.

Notice that Programmer Responses has been replaced by Current File Path, this shows the complete path to the currently shown directory.

Move to the directory where you wish to store the file by pressing a. **[..]** to move up the directory path, or by pressing the letter preceding the required sub-directory (shown with **[ ]** around there names).To access a new disk drive, press **a** key from the top (root) directory.

To select the file you want to download, press the letter preceding its name.

The Send File To Programmer group menu will now re-appear.

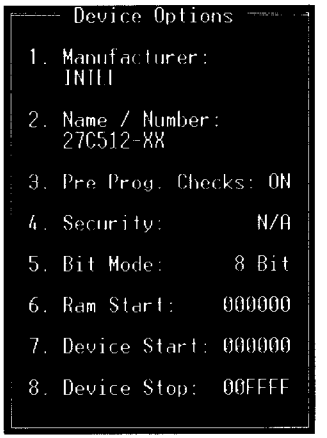
Press <Enter> to send the file.

During the file transfer to the programmer, the Programmer Responses area will show the percentage of file transferred. Once the file has downloaded, a message in the response window will confirm that the file has been transferred successfully.

7.8.1.3 Program Device

Now that the data has been downloaded to the programmer, the 27C512 device can now be programmed. To program the device simply press the **P** key on the keyboard. After completion, a message in the Programmer Response area will confirm a successful program. To program more devices, just press the **P** key again.

7.9 Device Options Group Menu



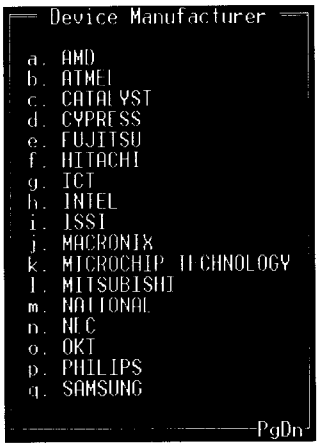
The **Device Options** group menu controls all options relating to the selected device. The Device Options group menu has five basic options.

1. Select a new device.
2. Enabling / disabling pre program checks.
3. Configuring security fuse options.
4. Configuring programmer bit mode.
5. Configuring memory and device limits.

7.9.1 Manufacturer

The Manufacturer entry displays the currently selected device manufacturer, select this option by pressing the **1** key to select a new manufacturer.

Press the **1** key to display the Device Manufacturer menu group



Use the **Page Up** and **Page Down** keys to locate the page with the manufacturer that you wish to select.

Press the key on the keyboard that precedes the manufacturer that you wish to select.

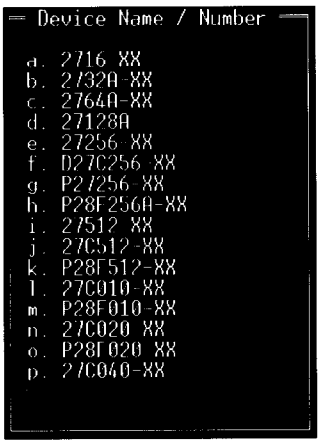
Press the **Esc** key to maintain the previous manufacturer selection.

Selecting a new manufacturer will display the Device Name / Number menu group.

7.9.2 Name / Number

The Name / Number entry displays the currently selected device name or number, select this option by pressing the **2** Manufacturer key to select a new device.

Press the **2** key to display the Device Name / Number menu group



Use the **Page Up** and **Page Down** keys to locate the page with the device that you wish to select.

Press the key on the keyboard that precedes the device name that you wish to select.

Press the Esc key to maintain the previous device selection.

7.9.3 Pre Prog. Checks

The **Pre Prog. Checks** option informs you whether pre program checks are enabled or disabled. If checks are enabled then the option will display ON, otherwise the option will display OFF.

Press the **3** key to toggle the state of the pre program checks that are applied to the device prier to the program cycle.

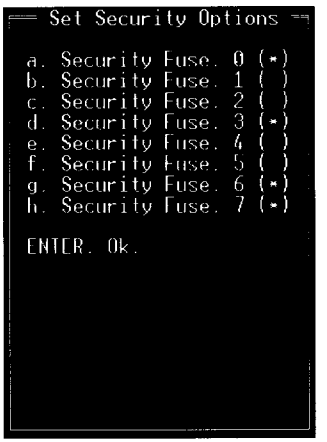
! **The actual checks applied depends on how the programmer is configured. These checks cannot be altered from within StagCom DOS application.**

7.9.4 Security

The **Security** option informs you whether security fuse programming is enabled or disabled. If any security fuses are enabled then the option will display ON. If no security fuses are enabled, then this option will display OFF.

If the selected device has no security fuses, then this option will display N/A.

Press the **4** key to display the Set Security Options group menu.



The menu will display the list of valid security fuses for the selected device. Security fuses that have been enabled will have an asterisk (*) following them, those that are disabled will not.

Use the letter preceding each security option to enable or disable that security fuse.

Press the <**Enter**> key to close the menu when you have finished making your changes.

Press the **Esc** key to cancel this menu.

! **The number of available security fuses depends on the device selected.**

! **Some devices use the security fuse option to support non-standard, miscellaneous features. Please consult the 'Device specific information' section in your programmer device support list for further details.**

7.9.5 Bit Mode

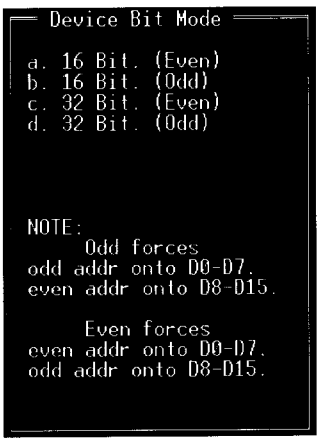
The **Bit Mode** option informs you which programming bit mode will be applied to the device. If the device is a 16 bit device (rather than 8 bit), then the order in which the bytes are mapped to the device is also shown. This option is only available for memory devices.

Press the **5** key to display the Device Bit Mode group menu.

Menu for 8 bit devices

or

Menu for 16 bit devices



To change the bit mode, press the letter preceding the new mode that you wish to select.

For 16 bit devices, selecting **Odd** bit modes will place data from odd addresses onto d0 to d7, and data from even addresses onto d8 to d15 of the device. Selecting **Even** bit modes will place data from even addresses onto d0 to d7, and data from odd addresses onto d8 to d15 of the device.

Press the **Esc** key to cancel this menu.

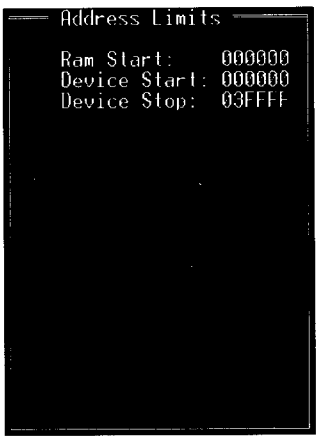
7.9.6 Ram Limits

The **Ram Start** option displays the programmer address (in bytes) from where the first byte of data will be accessed. This option is not available for PLD type devices.

The **Device Start** option displays the address (in device addresses) from where the device will be first be accessed. This option is not available for PLD type devices

The **Device Stop** option displays the address (in device addresses) of the last device address to be accessed. This option is not available for PLD type devices

Press the **6**, **7** or **8** key to display the Address Limits group menu.

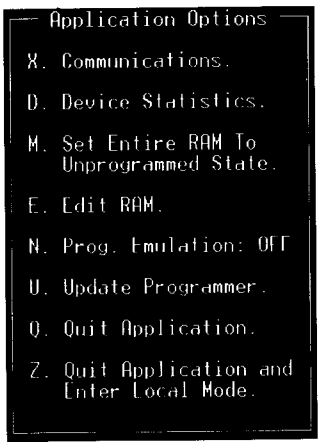


If key **6** was pressed, then the edit cursor will now appear over the Ram Start data field.
If key **7** was pressed, then the edit cursor will now appear over the Device Start data field.
If key **8** was pressed, then the edit cursor will now appear over the Device Stop data field.

Type in the new address and then press <**Enter**> to accept the new address.

Press **Esc** to cancel this menu.

7.10 Application Options Group Menu



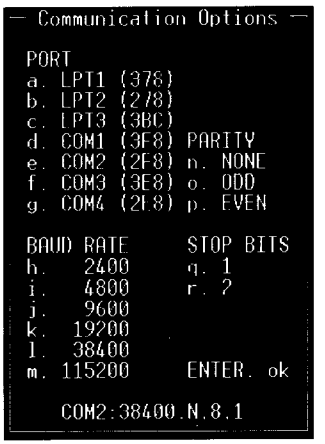
The **Application Options** group menu controls all options not relating to the selected device. The Application Options group menu has five basic options.

1. Set new programmer link options.
2. Set programmer ram to unprogrammed state.
3. Edit programmer ram.
4. Update device algorithms in the connected programmer.
5. Exit (quit) StagCom DOS Application.

7.10.1 Communications

The Communications option allows you change the port configuration that is used to link with the programmer.

Press the **X** key to display the Communications group menu.



Use the **Port** letters **a** .. **g** to select the communications port to which the programmer is connected. Valid ports are Com1 .. Com4, LPT1 .. LPT3.

Use the **Baud Rate** letters **h** .. **m** to select the same baud rate that the programmer is configured to. 115200 baud is highly recommended for the quickest programmer response times.

Use the **Stop Bits** letters **q** .. **r** to select the same setting that the programmer is configured to.

Use the **Parity** letters **n** .. **p** to select the same parity setting that the programmer is configured to.

! **If parity is enabled (i.e. set to even or odd) then only seven data bits are set. The consequence is that you will not be able to send or receive binary format files to or from the programmer. Configure parity option to None for complete functionality.**

The current configuration is shown at the bottom of the group menu, and get updated each time you change a setting.
Press **Enter** key to close the Communications group when you have finished.

7.10.2 Device Statistics

The **Device Statistics** option displays the programming and verification statistics for the selected device, that is the statistics are reset to zero when a new device is selected.

Press the **D** key to display the Communications group menu.

Program Statistics group displays statistics relating to the programming cycle.

Handled: displays the total number of programming attempts not including device connection failures or other non-device errors.

Passed: displays the number of devices that have successfully completed a programming cycle with no errors occurring.

Failed Pre-Prog: displays the number of devices that have failed before the programming starts. This is usually due to a part that is not erased, or unprogrammed before the programming cycle starts.

Failed Post-Prog: displays the number of devices that have not programmed correctly or have failed the post-program verify test.

Verify Statistics group displays statistics relating to the user selecting the verify function.

Handled:	displays the total number of verification attempts not including device connection failures or other non-device errors.
Passed:	displays the number of devices that have successfully verified against the programmer memory with no errors occurring.
Failed:	displays the number of devices that have failed to verify with the programmer memory.

To Reset the statistics data to zero, select the **R** key.

7.10.3 Set Ram To Unprogrammed State

The **Set Entire Ram To Unprogrammed State** option will set the entire memory in the programmer to the unprogrammed state of the currently selected device.

Press the **M** key to set the programmer memory to the unprogrammed state.

There are several advantages in clearing the ram before downloading a file, or loading a device into the programmer.

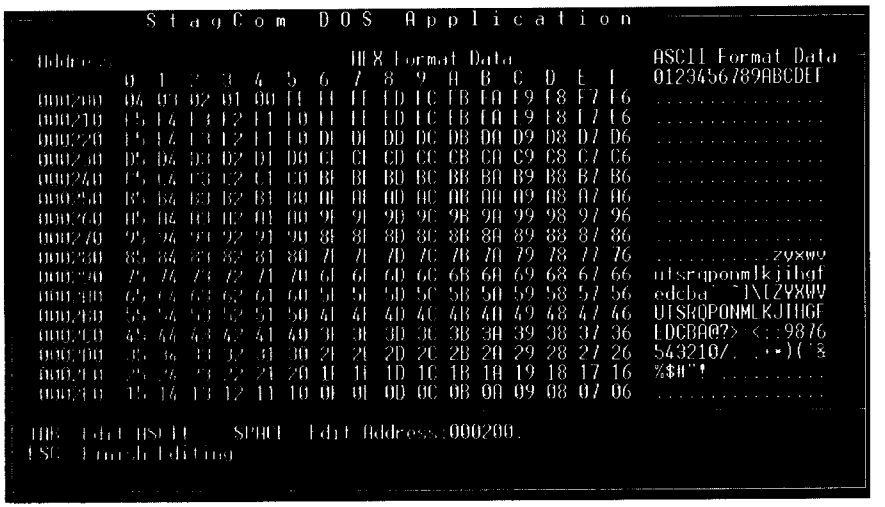
1. If you are creating a master device from a file that does not cover the full addressing range of the device that you wish to program, then there will be data programmed into the device of an unpredictable nature.

   If at a later date, you program another device from the same file, the checksums (and data content) of the second device will not match that of the master.

2. Unused areas of the device that are set to the unprogrammed state will not be programmed during the program cycle, hence the time required to program the device will be reduced.

7.10.4 Edit Ram

The Edit option, invoked by pressing the **E** key, allows you to edit the programmer memory.



The edit display is broken down into three main areas.

Address This column shows the programmer address for the first byte of data of each row.

Hex Format Data This area shows the data for the selected address in hexadecimal format.

ASCII Format Data This area shows the data for the selected address as ASCII characters.

Use the **SPACE** bar to select the first address of the page to be shown. Use the cursor keys to move around the hex format data area to access the data you wish to edit, the currently accessed address is shown at the bottom of the display. Use the PgUp & PgDn keys to display the next and previous page of data.

Use the **TAB** key to toggle between editing the data in hex form or as ASCII form

Note. If Programmer emulation is ON, then the data for the selected address is updated from the programmer as you move the cursor over the data. This is to ensure that the editor keeps up to date with dynamically changing data in the programmer. Pages where no editable ram is fitted in the programmer will not be displayed.

7.10.5 Programmer Emulation

The Prog. Emulation option informs you whether programmer emulation is enabled or disabled. If programmer emulation is enabled then the option will display ON, otherwise the option will display OFF.

Press the **N** key to toggle the state of the programmer emulation mode. Please see your programmer user manual for more information about emulation.

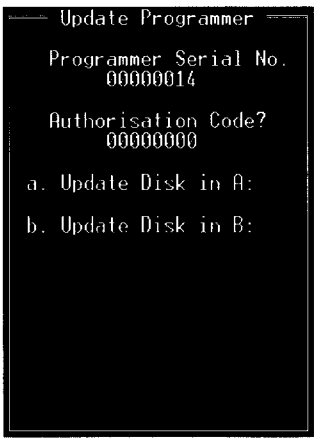
Note, This option will not be shown unless a memory device is selected and the programmer connected supports emulation via remote control.

7.10.6 Update Programmer

The **Update Prog.** option allows you update the software inside your programmer.

Programmer update disks are released regularly by Stag, contact your Stag representative for more information.

Press the **U** key to display the Communications group menu.



Use **Authorisation Code?** to enter the update authorisation code obtained from your Stag representative. When obtaining your authorisation code, you will need tc quote the programmer serial number (**Programmer Serial No.**) for your programmer.

> **! If the connected programmer does not have an internal serial number, then these items are not required and will not be displayed.**

Use **Update disk** options to select the drive in which the programmer update disk is located.

The programmer update process will now begin, if your update disk also contains a programmer .DAT file, then this file will automatically replace your existing one.

On completion of the update process the application will finish. Restart the application in the usual way.

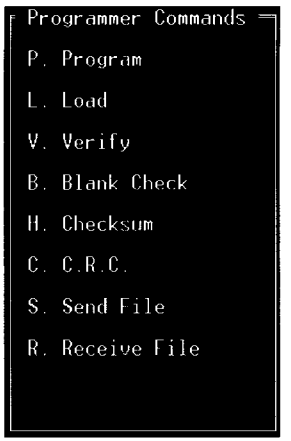
7.10.7 Quit Application

To finish your StagCom DOS Application session and leave the programmer in remote mode, press the **Q** key.

To finish your StagCom DOS Application session and return the programmer in local mode, press the **Z** key.

The screen will clear, and the DOS prompt will re-appear.

7.11 Programmer Commands Group Menu



The **Programmer Commands** group menu controls all commands relating to the selected device. The Programmer Commands group menu has ten basic options.

1. Program a device from the programmer memory.
2. Load a device into the programmer memory.
3. Verify a device against the programmer memory.
4. Check a device for the unprogrammed state.
5. Display checksum of the programmer memory.
6. Display the cyclic redundancy check of the programmer memory for memory devices.
7. Display the open link count of the programmer memory for PLD type devices.
8. Download a file to the programmer memory.
9. Upload programmer memory to a file.
10. Apply test vectors to PLD type devices.

7.11.1 Program

Press the **P** key if you wish to program the selected device with data from the programmer's memory.

Selecting this option will initiate the following:

1. Apply pre-program checks (if they are enabled).
2. Program device from memory.
3. Apply verification checks.
4. Program security fuses (if enabled).
5. Apply test vectors (if applicable).

If a programmer bit mode is selected which is wider than the selected device, then you will be prompted to specify which device within the set you wish to program.

Select **Device 0** to program device with even address data.

Select **Device 1** to program device with odd address data.

Once programming is completed, the Response Window will be updated, indicating the status of the programming attempt.

7.11.2 Load

Press the **L** key if you wish to load the contents of the selected device into the programmer's memory.

If a programmer bit mode is selected which is wider than the selected device, then you will be prompted to specify which device within the set you wish to load.

Select **Device 0** to load device into even addresses.

Select **Device 1** to load device into odd addresses.

Once the device has been loaded, the Response Window will be updated, indicating the status of the load attempt.

7.11.3 Verify

Press the **V** key if you wish to verify the contents of the selected device against the programmer memory.

If a programmer bit mode is selected which is wider than the selected device, then you will be prompted to specify which device within the set you wish to verify.

Select **Device 0** to verify device against even address data.

Select **Device 1** to verify device against odd address data.

Once the device has been verified, the Response Window will be updated, indicating the status of the verify attempt.

7.11.4 Blank Check

Press the **B** key if you wish to check the selected device against the unprogrammed state.

Once the device has been checked, the Response Window will be updated, indicating the status of the blank check attempt.

7.11.5 Checksum

Select this option by pressing **H** if you wish to display the checksum of the programmer's memory.

If a programmer bit mode is selected which is wider than the selected device, then you will be prompted to specify which device within the set you wish to checksum.

Select **Device 0** to display the checksum of data in even addresses.

Select **Device 1** to display the checksum of data in odd addresses.

Once the checksum has been calculated, the Response Window will be updated, indicating the new checksum.

For non PLD type devices, the range of the calculation is determined by the device limits, which are displayed in the Device Options group menu. To change these limits, see Section 4.6 Limits.

For PLD type devices, the range of the calculation is the fixed to the entire range of the device.

7.11.6 Cyclic Redundancy Check (C.R.C.)

Select this option by pressing **C** if you wish to display the C.R.C. of the programmer's memory.

If a programmer bit mode is selected which is wider than the selected device, you will be prompted to specify of which device within the set you wish to obtain the C.R.C.

Select **Device 0** to display the C.R.C. of data in even addresses.

Select **Device 1** to display the C.R.C. of data in odd addresses.

Once the C.R.C. has been calculated, the Response Window will be updated, indicating the new value.

Note: This function is not available for PLD type devices.

7.11.7 Open Link Count

Select this option by pressing **C** if you wish to display the open link count of the programmer memory, for the currently selected device.

Once the open link count has been calculated, the Response Window will be updated, indicating the new value.

Note: this function is only available for PLD type devices.

7.11.8 Send

Select this option by pressing **S** if you wish to download a file to the programmer.

Pressing **S** will display the Send File To Programmer group menu.

By pressing **a**, use the **I/O Formats** menu to select the format of the data file that you want to send to the programmer.

By pressing **b**, use **Ram Start** to change the default programmer address to where the first byte of data will be sent.
Note: this option is not available for PLD type devices.

By pressing **c**, use **Ram Size** to limit the number of bytes in the data file downloaded to the programmer. The default size is set to the size of RAM fitted in the programmer so that all data in the file will be stored in the programmer's RAM.
Note: this option is not available for PLD type devices.

By pressing **d**, use **Offset** to change the run address of the data sent to the programmer. The default run address is the same as the RAM address.
Note: this option is not available for PLD type devices.

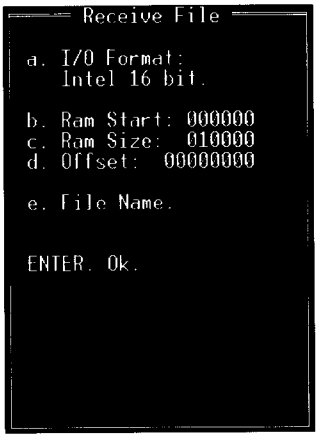
By pressing **e**, use the **File Name** menu to locate the desired data file.

Press **Enter** key to start the download process, the Programmer Response area also shows the progress of file transfer.

7.11.9 Receive

Select this option by pressing **R** if you wish to upload a file from the programmer.

Pressing **R** will display the Receive File group menu.



By pressing **a**, use the **I/O Formats** menu to select the format of the data file that you want to receive from the programmer.

By pressing **b**, use **Ram Start** to change the default programmer address from where the first byte of data will be retrieved.
Note: this option is not available for PLD type devices.

By pressing **c**, use **Ram Size** to change the default number of bytes uploaded from the programmer. The default size = ((device size in device addresses) * (current bit mode/8)). This equation covers the complete range of the selected device in any bit mode.
Note: this option is not available for PLD type devices.

By pressing **d**, use **Offset** to change the run address of the data received from the programmer. The default run address is the same as the RAM address.
Note: this option is not available for PLD type devices.

By pressing **e**, use the **File Name** menu to locate the desired data file.

Press **Enter** key to start the upload process, the Programmer Response area also shows the amount of data transferred.

7.11.10 Vector Test

Select this option by pressing **T** if you wish to apply test vectors to the selected device.

This option is only available for PLD type devices. Test vectors must also be downloaded to the programmer first, using a file containing test vectors.

Once the vectors have been applied to the device, the Response Window will be updated, indicating the status of the vector test attempt.