



*Allen-Bradley*

*StrataSet  
Programming  
Software*

*(Cat. No. 2755-LHS-1)*

# Programming Guide



## Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:



**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

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Attention statements help you to:

- identify a hazard
- avoid the hazard
- recognize the consequences

**Important:** Identifies information that is critical for successful application and understanding of the product.

## Software Overview

### Preface

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# Preface

## Chapter Objectives

Read this chapter to familiarize yourself with the rest of the manual. You will learn about:

- contents of this manual
- conventions used in this manual
- intended audience
- related publications
- technical support

## Contents of this Manual

The following table describes the contents of this manual.

Chapter	Title	Contents
	Preface	Describes the purpose, background, and scope of this manual. Also specifies the audience for whom this manual is intended.
1	Software Overview	Provides an introduction for the use of the StrataSet Software.
2	Configuring Your Reader	Provides an overview of the configuration options available for the StrataScan Bar Code Readers.

## Conventions Used in this Manual

The following conventions are used throughout this manual.

- Bulleted lists such as this one provide information, not procedural steps.
- Numbered lists provide sequential steps.
- *Italic* type is used for emphasis.
- Text within square brackets **in this font** represents the keys you press.

## Intended Audience

No special knowledge is required to understand this document or use the StrataScan Bar Code Readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C and 2755-LHR-5BX1).



**ATTENTION:** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

## Related Publications

The following table lists an additional publication related to the StrataScan Bar Code Readers.

Publication Number	Title
2755-6.13	StrataScan Bar Code Readers User Manual
2755-921	Bar Code Basics

## Technical Support Services

If you have any questions about the StrataScan Bar Code Reader, please consult this manual first. If you can't find the answer, contact Rockwell Automation International Support:

Rockwell International  
 Technical Support  
 6680 Beta Drive  
 Mayfield Village, Ohio 36849

Contact your Allen-Bradley office or call (440) 646-6800 for hardware questions, (440) 646-7800 for software questions.

## Software Overview

### Introduction

The StrataScan bar Code Readers are all programmable through Allen-Bradley's DOS-based software entitled StrataSet. With StrataSet, you have the ability to program your reader or upload reader configurations without the need to scan any bar codes. Once the reader is connected by the proper RS-232 cable to an IBM-compatible PC XT, AT, or PS/2, you can choose reader configuration options from StrataScan's menus. After the desired parameters are chosen, the configuration settings can be downloaded from the PC to the reader. StrataSet also allows you to save configuration screens for later use and allows you to upload and save existing reader setups. With this method, programming a number of readers with the same parameters is much easier and eliminates the need to establish configurations by scanning a list of bar codes.

You will need the following items to use StrataSet:

- StrataSet diskette
- Windows 95 or Windows NT, MS-DOS, IBM PC XT, AT or PS/2 compatible (386 or greater is recommended)
- Available RS-232C serial port
- One of the previously mentioned Allen-Bradley readers with appropriate RS-232 cable setup (2755-LHC-11 or -12).

### Starting the StrataSet Program

To familiarize yourself with the StrataSet, access the StrataSet program and review the menus discussed on the following pages before entering Program Mode.

Before using StrataSet, make a backup copy of the diskette. You can run the StrataSet file from the floppy disk provided or you can copy the file to your hard disk. For faster processing time and greater free disk space, it is recommended that you copy the STRATCFG.EXE file to your hard disk, under a specified directory (e.g., C:\STRATCFG).

To avoid potential problems, do not power up the reader until the communication cable is secured to the host.

To start the Stratascan software:

1. Turn off power to PC and the reader.
2. Connect the communication cable provided, between the reader and the RS-232C serial port (COM 1 or COM 2) located on the PC.
3. Turn on the PC and the reader.
4. Change to the subdirectory where the STRATCFG.EXE file is stored.
5. At the DOS prompt, type STRATCFG and press **ENTER**.

**Note:** If you are using a monochrome monitor and are having difficulty seeing the highlighted menu choices, quit and restart the program by typing STRATCFG/B at the DOS prompt. If you are still experiencing difficulty seeing the highlighted menu choice, look for the blinking cursor.

## Using StrataSet Menus

All the choices needed to configure your reader are available through pop-up windows that appear when **ENTER** is pressed at any of the menu headings. At the Main Menu, highlight Configuration Screen (or press 1) and press **ENTER** to view the Configuration Screen.

Use the following method to view a pop-up menu:

1. Use the TAB, up, down, left, or arrow keys to move the highlight to the desired menu choice.
2. Once the menu choice is highlighted, press **ENTER**. A pop-up menu then appears with various option choices.

Use the following method to select item(s) from within the pop-up menu:

1. Use the PAGE UP, PAGE DOWN, up arrow or down arrow keys to position the cursor on the desired option.
2. If the menu is a multiple choice menu, such as the Interface menu, press **ENTER** to select the desired option. If the menu contains brackets [ ], then you may either select or deselect the particular option. Press the **SPACE BAR** to toggle the selection and then hit **ENTER** when all selections are complete.

## Keyboard Commands

The following keys perform a given function as described below.

Function Key	Description
<b>ENTER</b>	To display a list of options for a given vertical field within the Configuration Screen or to select a Main Menu screen choice, position the cursor on the desired field and press <b>ENTER</b> . <b>ENTER</b> will also allow you exit from a pop-up window menu.
<b>SPACE BAR</b>	Within the pop-up window menus, an option may have a left and right bracket before the menu choice. These options can either be enabled or disabled. To enable or disable an option, position the cursor on the menu choice and press the <b>SPACE BAR</b> key. When a check mark is within the brackets, the option is enabled.
<b>ESC</b> Exit	Escape will also allow you to escape out of most situations.
<b>F1</b> Help	For a brief description of the function of a vertical menu, position the cursor on the desired field and press <b>F1</b> . To exit help, press <b>ESC</b> .
<b>F3</b> Enter Program Mode or Create Choice File	<p>If you are within the Configuration Screen, hitting <b>F3</b> puts the reader into Program Mode.</p> <p>If you are at the Main Menu screen, <b>F3</b> allows you to generate a text file, listing all options a particular configuration file has enabled. For example, if you want a listing of all the enabled settings your reader has, refer to Program Mode, Getting Scanner Settings and Saving Settings to File. Select the filename from the file list, hit <b>F3</b> and a file listing all enabled choices within that file is created in your working directory. This file will share the same filename, except that it will have a .set extension.</p>
<b>F5</b> Program Scanner	After the desired parameters are selected in the Configuration Screen, press <b>F5</b> to program the reader to those same settings. (This assumes you have already entered Program Mode successfully.)
<b>F7</b> Save Parameters	To save the various parameters selected in the Configuration Screen, press <b>F7</b> . The settings are then saved in a file for future reference and programming. When assigning a filename, use the proper DOS convention. StrataSet automatically saves the file with the extension .TRK. The file is saved to the same drive and directory from which StrataSet is being run.
<b>F9</b> Return to Main Menu or Delete File	If you select File List from the Main Menu, you are able to delete files by hitting <b>F9</b> . You will be prompted to verify your selection ( <b>ESC</b> terminates the process). If you are <i>within</i> the Configuration Screen, pressing <b>F9</b> returns you to the Main Menu.

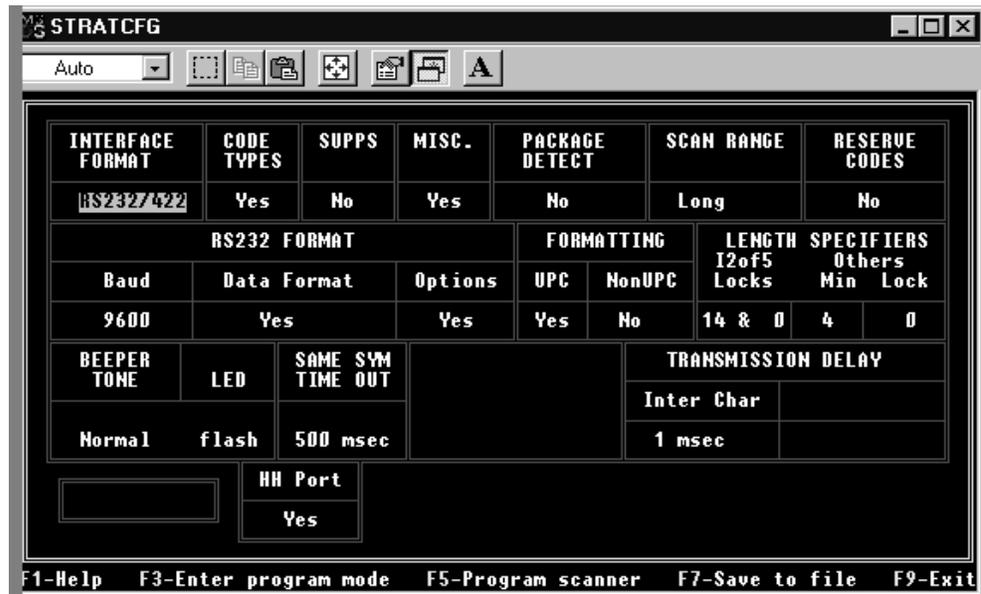
## StrataSet Main Menu

The following sections describe the menu choices available from the StrataSet Main Menu.



### Configuration Screen

Press 1 to activate this option, or move the cursor to this location and hit **ENTER**. By choosing this option, you will enter the Configuration screen, where custom reader configurations can be created.



This screen also allows you to save and/or download configurations to the reader. The settings first displayed are the StrataSet RS232 default settings, not the reader settings. With the methods described under “Using the StrataSet Menus” you are able to move around this screen and change options. After configuring the screen for your particular application, you can save the screen to a file, download the settings to the reader, or both.

### Get Scanner Settings

Press **2** to activate this option, or move the cursor to this location and hit **ENTER**. This option lets you view the reader’s configuration by uploading the information from the reader through your PC’s COM port. You must first enter Program Mode to initialize communications between the PC and the reader. (See Enter Program Mode for more information). Once you have entered Program Mode and selected this option, the configuration screen displays the reader’s programmed parameters. The reader beeps once if it has successfully entered Program Mode. The reader beeps again (either 3 times for the 2755-LHR-3C or 5 times for the 2755-LHR-5B, 5C and 5BX1) when it has transmitted its configuration. You must exit Program Mode after getting the reader’s configuration, before you can resume normal scanning. (See Exit Program Mode for more information).

### File List

Press **3** to activate this option or move the cursor to this location and hit **ENTER**. By choosing this option, a list of .TRK files residing in the current directory is displayed. After highlighting a filename, you can hit **ENTER** and the file is transferred to the Configuration screen. You can delete the file by pressing **F9**, or hit **F3** to generate a .SET file listing all enabled reader options in that file.

### Select Com Port

Press **4** to activate this option, or move the cursor to this location and hit **ENTER**. This option allows you to select either Com1 or Com2. You may be prompted to select a Com Port during various steps of the programming or uploading sequence.

### Enter Program Mode

Press **5** to activate this option, or move the cursor to this location and hit **ENTER**. This function prepares the reader for communication interfacing. One long beep from the reader indicates a successful entry into program mode.

### Exit Program Mode

Press **6** to activate this option or move the cursor to this location and hit **ENTER**. This option causes the reader to exit programming mode. Three beeps from the reader indicates a successful exit from Program Mode. Note that if you program the reader from the Configuration screen, the program exits Program Mode if you press F5. Once you exit Program Mode, you are then able to resume normal scanning.

### Software Compatibility

Press **7** to activate this option, or move the cursor to this location and hit **ENTER**. This option returns the firmware version installed in the reader and specifies if it is compatible with existing StrataScan software. Hitting any key returns you to the current screen. To perform this test, it is not necessary to enter Program Mode first.

### Exit to DOS

Press **8** to activate this option, or move the cursor to this location and press **ENTER**. This option closes the program and returns you to the DOS prompt or Windows.

## Configuring your Reader

### Introduction

By selecting “Configuration Screen” from the Main Menu, you are able to access a menu screen from where you can setup custom reader configurations, save configurations to a file, and program your reader. This screen is divided into sections that let you customize your reader configuration. To provide you with easier programming, some of the parameters in the sections automatically change when you choose from the different interface types (RS232 or Wand Emulation). It is recommended that you review all the pop-down menu options, if interface types are changed.

To program your reader, you must first put the reader into Program Mode, in order to establish communications between the reader and your host. By pressing **F3** while in the Config screen you will enter the Program mode. Or you can enter the Program mode from the Main Menu. Make sure the program is selecting the same Com Port as the one to which you are connected. A successful entry into Program Mode is indicated by:

- a beep from the reader and
- the green LED begins to flash.

Once you have entered Program Mode, press **F5** to download the current configuration screen contents to your reader. Again, you will hear a series of beeps from the reader. Once the reader has completed its processing of the downloaded configuration, you will hear a 3-beep sequence. The green LED then stops flashing, signaling that the reader is ready to scan.

To save a configuration to a file, hit **F7**. You are then prompted for a filename. The filename automatically gets a .TRK extension. Follow normal DOS conventions for naming files. If the file already exists, you will be prompted as to whether you want to overwrite the existing file or not. If you need a printout of all the enabled options from a particular reader, get the reader’s settings and save the configuration to a file. Go to the main screen File List, highlight the appropriate filename, and hit **F3**. A text file is then created in your working directory listing all the enabled choices in that configuration. The file has the same filename as the one you selected, except for a .set extension. Use a text editor to print the configuration file.

Not all options listed within the Configuration Screen are currently supported by the reader. If an option is *not* supported, this document will specify what that option is.



## Configuration Options

The following sections describe the various StrataScan Configuration options available for the StrataScan Bar Code Readers.



### Interface Format

This upper left-hand corner of the Configuration Screen gives you the ability to specify the proper communications format, along with all of an interface's associated options. Specifying options is accomplished for communicating to your host device. And when you change between different interfaces, the Configuration screen changes accordingly. It lets you change all options supported by that interface and protects all those unsupported ones by means of cursor skip-over. The StrataScan line of Readers supports RS232/RS422 and wand emulation. Choose an interface that matches your host system requirements.

Select the RS232/RS422 option, if the reader is intended to be used with either RS-232  $\pm$  12V or RS422 serial output. StrataSet software uses this interface to configure your reader.

Select Wand Emulation if the reader is used in place of a wand. It provides Wand Emulation of each bar code scanned. Refer to the section about Wand Type interface format for specific information about Wand Emulation options.

The No Communication option is reserved for testing purposes. If no communication is selected, then the center of the left-hand side of your Configuration screen is empty.

## Code Types

This portion of the Configuration Screen lets you specify the various bar code types to enable or disable for your application.



Within the Codes Menu Screen, you may enable or disable the codes you want your reader to see or ignore. If a code is enabled, a check mark appears between the two brackets. Then the reader recognizes the enabled type of bar code. The types of codes are:

- All UPC/EAN
- Code 39
- Full ASCII Code 39
- Code 39 Mod 43 check digit required
- Code 93
- Code 128
- Codabar
- I2 of 5
- I2 of 5 Mod 10 check digit required
- EAN-8 disable, EAN-13 disable, UPC-E disable, UPC-A disable
- Paraf

### Supplementals

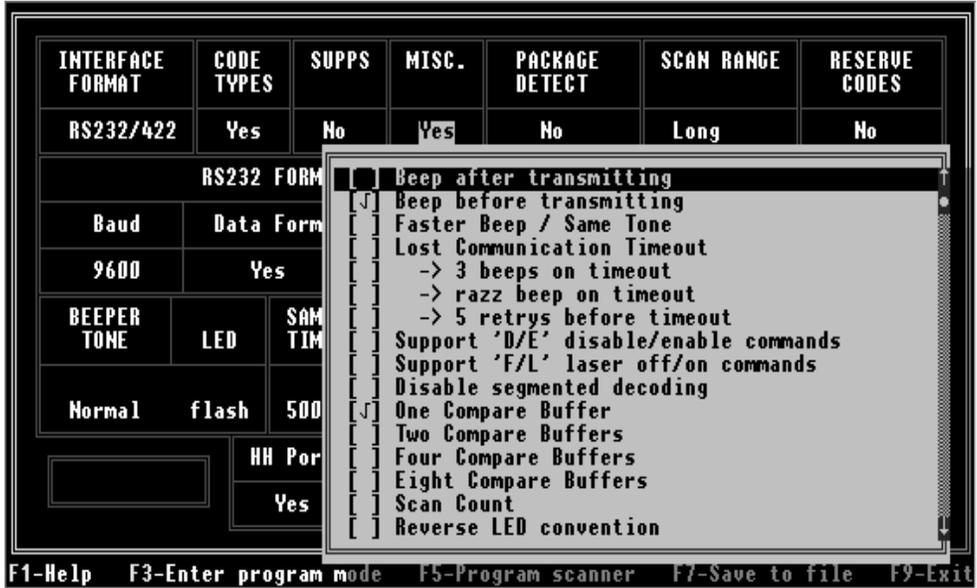
This box in the Configuration screen gives you the ability to select supplemental support options. Not all supplemental options are currently supported.



Supplemental Type	Description
2 Digit	When this option is enabled, the reader scans bar codes that have 2-digit supplementals.
5 Digit	When this option is enabled, the reader scans bar codes that have 5-digit supplementals.
977 (2-Digit)	When this option is enabled, the reader requires that a 2-digit supplement be attached to an EAN-13 bar code whenever the bar code begins with 977.
Bookland	When this option is enabled, the reader requires that a 5-digit supplement be attached to an EAN-13 bar code, whenever the bar code begins with 978.
Redundancy 2 Digits	When this option is enabled, the reader scans the bar code plus the 2-digit add-on twice, before accepting the data as valid information.
Redundancy 5 Digits	When this option is enabled, the reader scans the bar code plus the 5-digit add-on twice, before accepting the data as valid information.
Require Supps	When this option is enabled, all UPC/EAN labels that are scanned must have a supplement.
100 ms to find Supps	When this option is enabled, the reader looks for a supplement attached to a bar code, for a maximum of 100 msec.
200 ms to find Supps	When this option is enabled, the reader looks for a supplement attached to a bar code, for a maximum of 200 msec.
Code 128 Coupon Option	When this option is enabled, the reader scans UPC-A, followed by a Code 128 supplement attached.
Code 128 Coupon Conversion	When this option is enabled and when Code 128 coupon option is enabled, a ]C1 is transmitted between the UPC-A bar code and Code 128 supplement.
378/379 lock on supplement	When this option is enabled, all EAN-13 labels are expected to have a 5-digit supplement attached, when the bar code begins with a 378 or 379.
Remote supplement required	When this option is enabled, the host can enable/disable supplements required, with an 'R' (disable requirement) and an 'N' (enable requirement).

### Miscellaneous

This section provides you with the ability to select various miscellaneous functions including beep before/after transmit, communication timeouts, multiple scan buffers, and others.



Miscellaneous Type	Description
Beep after transmitting	When this option is enabled, the reader beeps after each bar code is transmitted. If ACK/NAK is enabled, the reader always beeps after receiving the ACK command.
Beep before transmitting	When this option is enabled, the reader beeps before each bar code is transmitted.
Faster Beep/Same Tone	When this option is enabled, the beeper tone remains the same, but the beep duration is approximately 1/2 normal duration.
Lost Communication Timeout	When this option is enabled, the reader automatically times out after 2 seconds, if unable to complete its data transmission to the host. This is only valid in modes where some type of handshaking is involved.
3 beeps on timeout	When this option is enabled, the reader beeps 3 times when communications have timed out. Lost communication timeout must be enabled for this option to be valid.
razz beep on timeout	When this option is enabled, the reader produces a razzberry tone when communications have timed out. Lost communication timeout must be enabled for this option to be valid.
5 retrys before timeout	When this option is enabled, the reader attempts to re-establish communications 5 times before timing out. Lost communication timeout must be enabled for this option to be valid.
Support 'D/E' disable/enable commands	When this option is enabled, the reader suspends scanning when it receives an ASCII 'D' from the host device. All timing functions continue. If the reader receives an ASCII 'd', scanning is again suspended, plus all buffers are cleared as well. Scanning resumes when the reader receives an ASCII 'E' or 'e'. This feature only works with RS-232 communication.
Support 'F/L' Laser off/on commands	When this option is enabled, an ASCII 'F' turns off the lasers and ASCII 'L' turns on the lasers.
Disable segmented decoding	This option disables UPC Split Code Algorithm. This feature allows for increased scanning accuracy in reading poor quality bar codes, but may slightly reduce the aggressiveness of the reader.

*Table continued on the next page.*

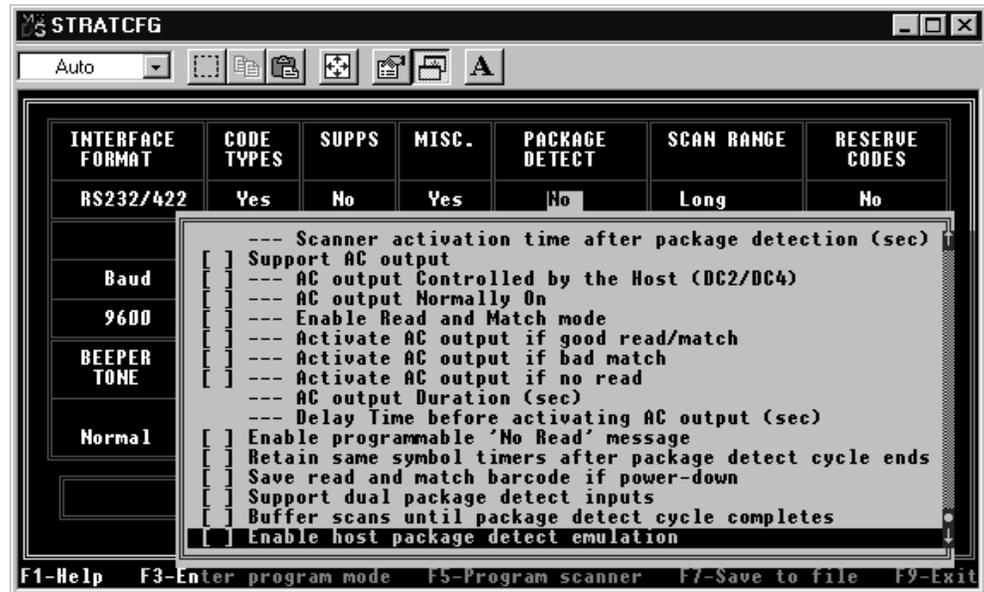
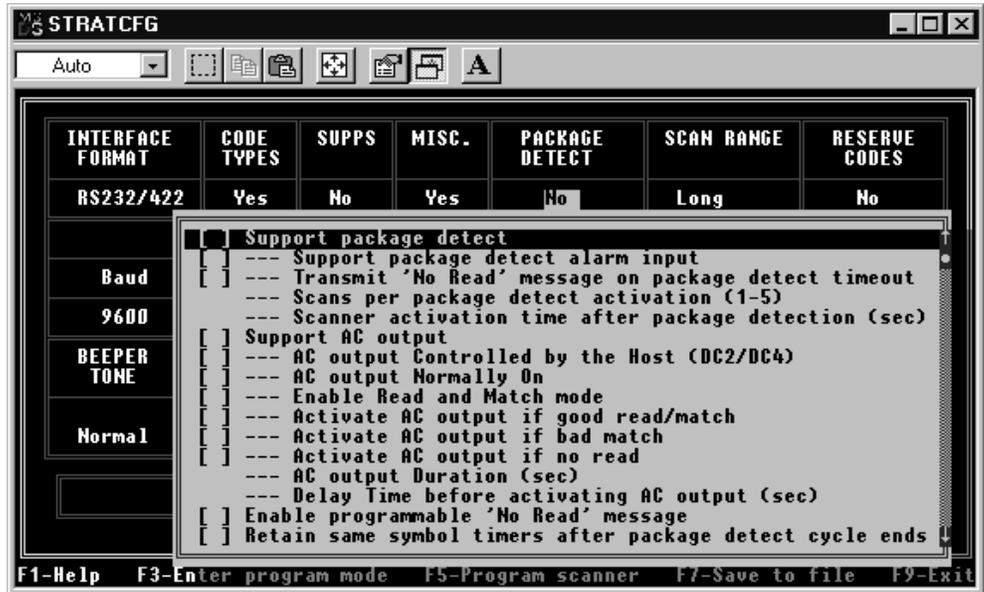
Miscellaneous Type	Description
1, 2, 4 and 8 Compare Buffers	The option selected here determines how many bar codes are buffered in reference to same symbol comparisons. This value should always be equal to or greater than the number of different bar codes you expect to scan on each package to avoid the potential of double reads.
Scan Count	When this option is enabled, the reader enters scan count test mode. Do not enable this feature unless instructed to do so by a Rockwell Automation representative.
Reverse LED convention	Normal LED convention calls for the red LED to signify power/ready to scan and the green LED for transmit indicator. When this option is enabled, the functions of the two LED's are switched.
Support multiple beep 'B'/ razz 'Z' commands	When this option is enabled, the reader recognizes a multiple beep/razz command from the host. The command is a number, from 1 to 9, followed by an ASCII 'B' or an ASCII 'Z'.
Support host BEL/CANCEL commands	When this option is enabled, the reader beeps when it receives a BEL (07H) command from the host. If ACK/NAK is enabled, a BEL command causes the reader to beep 3 times, if sent first after a bar code is transmitted. Or it will cause the reader to beep once if ACK/NAK is not enabled. If a CAN (18H) command is sent from the host, the reader exits out of its communication loop without a beep and clears all buffers.
Enter program mode only after power-up	Normally, you may enter Program Mode at any time. When this option is enabled, you are restricted to entering Program Mode, between initial power-up and before your first scan only. If you select this option and need to modify the reader parameters after several scans, merely power-down and power-up the reader again. Then enter into Program Mode before scanning again.
Enable status reporting	When this option is enabled, the host can initiate a status report download from the reader with a CTRL P command (10H). Status information includes motor status, laser status, decode board status, scan counts per field since last power-up, slave status and non-volatile memory status.
Number of good scans required (1-8)	This number, from 1 to 8, is a redundancy counter which refers to the number of times the reader must scan a bar code, before it considers it a good scan and transmits the bar code. The default of 1 is usually fine for most symbologies. Values greater than 1 may be needed when data integrity is most critical. Note that as the number of good scans required is increased, aggressiveness will decrease.

*Table continued on the next page.*

Miscellaneous Type	Description
Special code select	<p>When this option is enabled and the Enter key is hit on this choice, a custom reader parameters window appears. This window allows you to select up to 5 code and length-specific code selects. The reader only scans those codes at the programmed lengths entered here. When used in conjunction with Package Detect and multiple scans per activation, the reader scans and buffers the programmed bar codes. It transmits them in the order that they were programmed within the window. See Package Detect and Multiple Scans per activation for more details. Use the arrow keys to move around the screen. Use the Enter key to save the current code select choice and advance to the next choice. Use the backspace key to go back to the previous choice. Hit <b>F10</b> to save these settings and return to the configuration screen or hit <b>Escape</b> to exit without saving changes.</p>
Normal/Loud Volume	<p>Select the desired loudness with these 2 options.</p>
Support 'M/O' motor on/off commands	<p>When this option is enabled, the reader accepts 'M' motor on and 'O' motor off commands from the host. The motor off command causes the lasers to go off, the motor to shut down, and the power LED to go off. A motor on condition turns the motor back on and the power LED to come on. The lasers do not turn on until the motor comes up to full speed (approx. 45-50 seconds).</p>
Support non-decode hand-held port	<p>This option enables the reader to support an undecoded hand-held reader connected the hand-held port. When this option is enabled, the HH (Hand-Held reader option) window at the bottom of the configuration screen displays all currently supported Hand-Held options.</p>

## Package Detect

This section provides you with all the choices currently supported for Package Detect options. Special software is *not* required to support the following options. The appropriate hardware comes standard internal to the 2755-LHB-1 Interface Box and reader. The hardware interfaces with up to 2 Package Detect inputs and an Output/Alarm Output.



Output/Package Detect Type	Description
Support package detect	When this option is enabled, scanning is disabled until a Package Detect activation is detected. In the first mode, if the scan duration (see below) is set for less than 9 seconds, the reader is active for scanning for the programmed scan duration. In the second mode, if scan duration is set for greater than 9 seconds, the reader is active for scanning as long as the sensor remains active. After a scan cycle completes, the sensor must turn off momentarily before the next valid activation is recognized. In the third mode, dual line sensor support, this value is automatically set to 9.9 seconds.
Support package detect alarm input	When this option is enabled, the reader produces a steady stream of beeps, if the sensor alarm is activated.
Transmit 'No Read' message on package detect timeout	When this option is enabled, the reader transmits 'NO READ' if a no read condition occurs. If a custom message is desired, refer to programmable no read message (see below). This function also supports the following prefixes and suffixes: TAB prefix, CR, LF, ETX, STX, programmable prefixes and suffixes, and TAB suffix.
Scans per package detect activation (1-5)	This option allows you to determine how many different bar codes the reader expects to see per sensor activation. To avoid multiple reads of the same bar code, make sure the same symbol timeout is set accordingly and the number of scan buffers is equal to or greater than this number.
Scanner activation time after package detection (sec)	Support Package Detect must be enabled first before a value can be entered here. The value here determines how long the reader will look for a bar code before timing out. If the value is less than 9 seconds (minimum of .1 seconds), the reader will be active for this amount of time. If the value is greater than 9 seconds, the reader remains active as long as the Package Detect is active. If dual line sensor is enabled, this value is forced to 9.9 seconds.
Support AC output	When this option is enabled, the reader will activate the output according to the selections below.

*Table continued on the next page.*

Output/Package Detect Type	Description
AC output Controlled by Host (DC2/DC4)	When this option is enabled, the host assumes full control for activating and deactivating the Output. To turn the Output on, the host must send a CTRL R (12H) character. To turn the Output off, the host must send a CTRL T (14H) character. The support Output option must be enabled first in order to select this option.
AC output Normally On	The default mode of the reader is to have the Output normally off. When this option is enabled, the Output is normally on.
Enable Read and Match mode	This option is an Output function. Support Output must be enabled before this option is valid. When this option is enabled, the reader stores in memory the next bar code it reads after powering-up or after being programmed via StrataSet. The reader emits a unique beep sequence as an indicator that it's taking the bar code as a read and match bar code. From that point on, the Output operates according to whether output on good read/match is enabled or output on bad match is enabled. Normally, if this option is enabled, a new read and match bar code is stored after each power-up and after each StrataSet programming session. If desired, you may enable save read and match bar code (see below) to preserve the read and match bar code, if power is lost.
Activate AC output if good read/match	This option is an Output function. Support Output must be enabled before this option is valid. When this option is enabled, if read and match is enabled (see above), this feature reads "Output on a good match". The Output will turn on every time a scanned bar code matches the read and match bar code. If read and match is not enabled, the feature reads "fire Output on good read". The Output turns on every time the reader scans a good read.
Activate AC output if bad match	This option is a read and match function as well as an Output function. Both options must be enabled before this option is valid. When this option is enabled, the Output turns on every time a scanned bar code does not match the read and match bar code. See Enable read and match option above for details on setting up for read and match mode.
Activate AC output if no read	This option is a Package Detect function as well as an Output function. Both options must be enabled before this option is valid. When this option is enabled, the Output will turn on if a no read condition occurs. A no read condition occurs if the reader reaches a sensor timeout before a bar code is scanned (see support Package Detect) It also occurs if the line sensor turns off before a bar code is read (if scan duration is greater than 9 seconds).

*Table continued on the next page.*

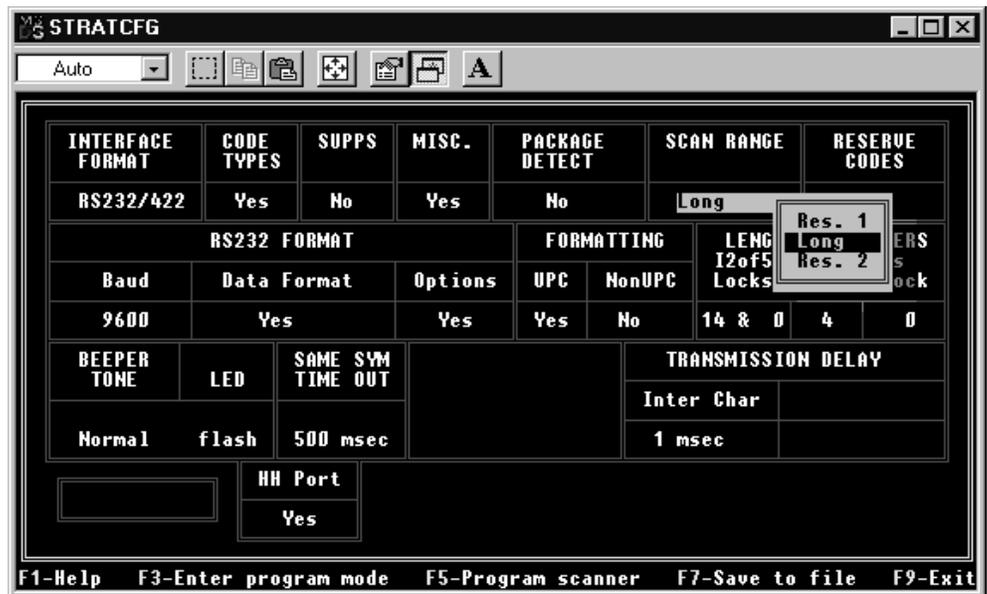
Output/Package Detect Type	Description
AC output Duration (sec)	The value entered here determines how long the Output/alarm output remains active.
Delay Time before activating AC output (sec)	The value entered here determines how long the reader delays after its normal activation time before activating the output. The default value of 0.0 should be sufficient for almost all applications. Use this option only if it is impossible to mount the reader at the Output location.
Enable programmable 'No Read' message	When this option is enabled, you will be able to program your own no read message. The message can be up to 10 characters long and can include any of the human readable ASCII set (20h to 7fh). Note that the message is right-justified when transmitted from the reader. If this option is being used with Wand Emulation output, the reader defaults to output as Code 39 so the message must be within the normal Code 39 range of characters.
Retain same symbol timers after package detect cycle ends	Under normal Package Detect support conditions, the reader resets scan buffers after a complete sensor cycle. Same symbol timers prevent multiple reads during the scan cycle. But as soon as the cycle completes and the next Package Detect is recognized, all buffers are cleared and the reader scans any bar codes in the field. When retain same symbol buffers with Package Detect is enabled, same symbol timers do not automatically reset after a completed sensor cycle. Rather, they reset after the same symbol timer times out. This feature can be useful under these 3 conditions: packages are spaced relatively closely, the bar codes on consecutive packages are the same and the possibility of a package triggering a Package Detect while the box is still in the scan field exists.
Save read and match bar code if power-down	Under normal operations, when read and match mode is used, a new read and match bar code is stored immediately after the reader has been powered-up or after the reader has been programmed through StrataSet. When save read and match bar code on power-down is enabled, the read and match bar code is saved during a power-down, and a new read and match is only accepted after programming the reader.
Support dual package detect inputs	When this option is enabled, the reader uses the current line sensor ALARM input as the second Package Detect input. The current line sensor input acts as the start of activation cycle, and the second Package Detect input acts as the end of activation cycle.

*Table continued on the next page.*

Output/Package Detect Type	Description
Buffer scans until package detect cycle completes	StrataScan Readers have the ability to buffer all bar codes as they are scanned (with Package Detect support enabled). If this option is enabled, all scanned bar codes are buffered during the active sensor cycle and are not transmitted, until the activation cycle has completed. This feature is supported with all 3 Package Detect mode options. If this feature is not enabled, all scanned bar codes are transmitted as they are scanned. This option does not apply to the special code select feature, which always buffers incoming bar codes.
Enable host package detect emulation	When this option is enabled, the host simulates the Package Detect input(s) by sending an 'S' (53h) character and an 'X' (58h) character. If dual Package Detects is enabled, the 'S' simulates the Package Detect input 1 and the 'X' simulates the Package Detect input 2. If a finite scan duration is being used, the 'S' character starts the cycle. If scan duration > 9 seconds (reader active until the sensor goes away), the 'S' starts the cycle and the 'X' ends the cycle.

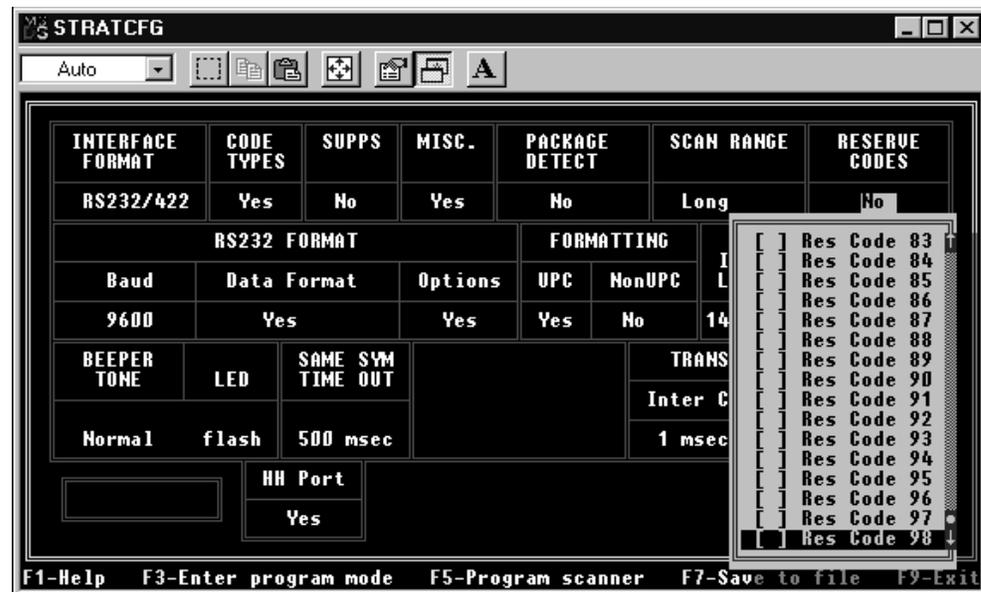
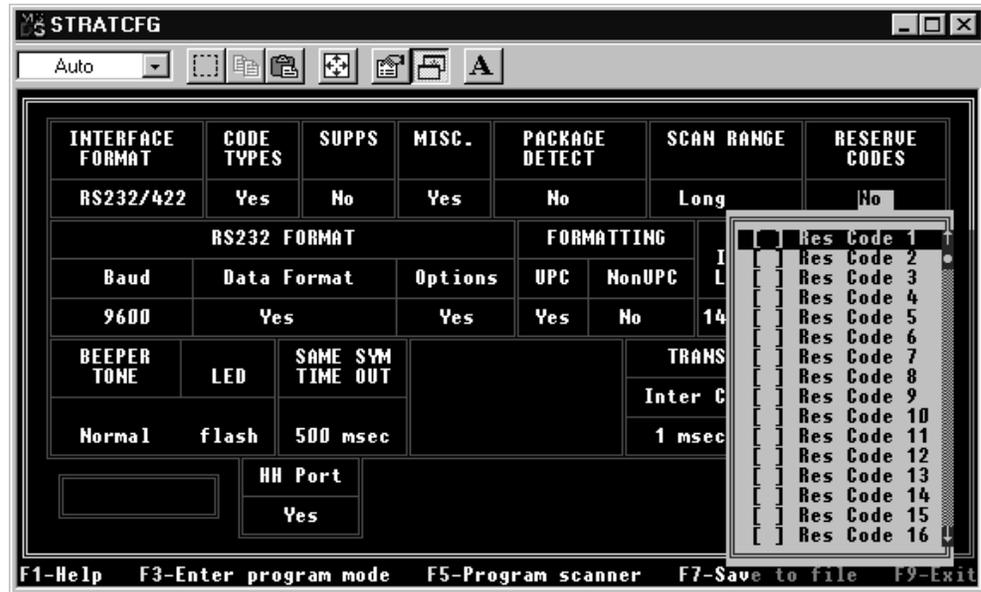
### Scan Range

This section provides depth of field options. Long depth of field should be enabled in all StrataScan Readers. The 2 reserved options are not currently supported and are reserved for future use.



## Reserve Codes

This section provides 98 reserved functions available to enable future special software features. Do not enable any reserve codes unless told to do so by a company representative.

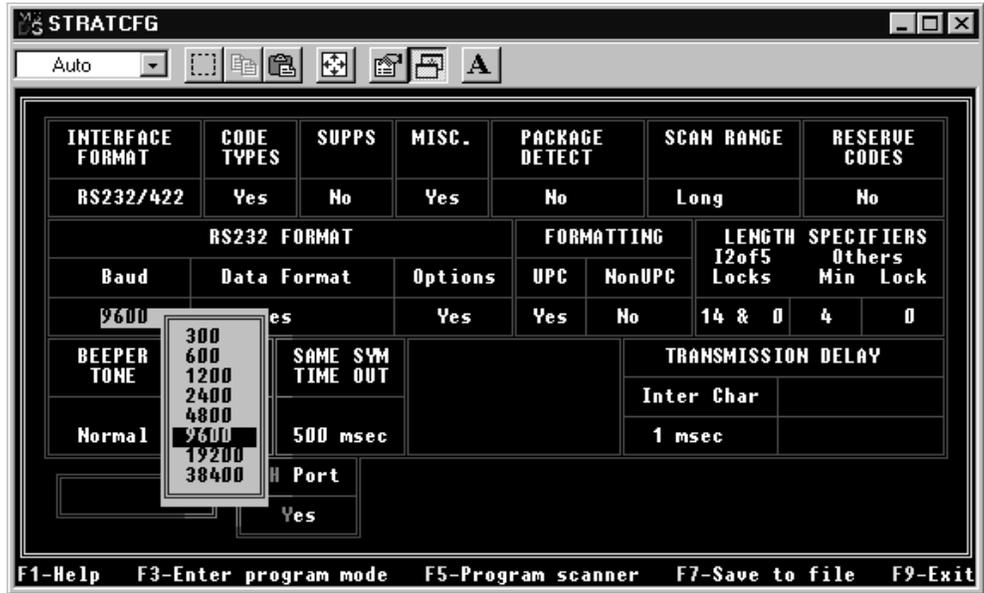


## RS232 Format

This section provides you with all the interface format-specific options. If RS232 is selected in the Interface Format menu, these menus are displayed as RS232 specific menus.

### Baud Rate

Rate	Description
Baud Rate	Data is transferred at either 300, 600, 1200, 2400, 4800, 9600, 19200, or 38400 baud.



### Data Format

These choices represent the parity of the data byte. Parity is an extra bit attached to the transmitted data byte and is used to catch potential single-bit data transmission errors. The reader's parity must match the host's parity.

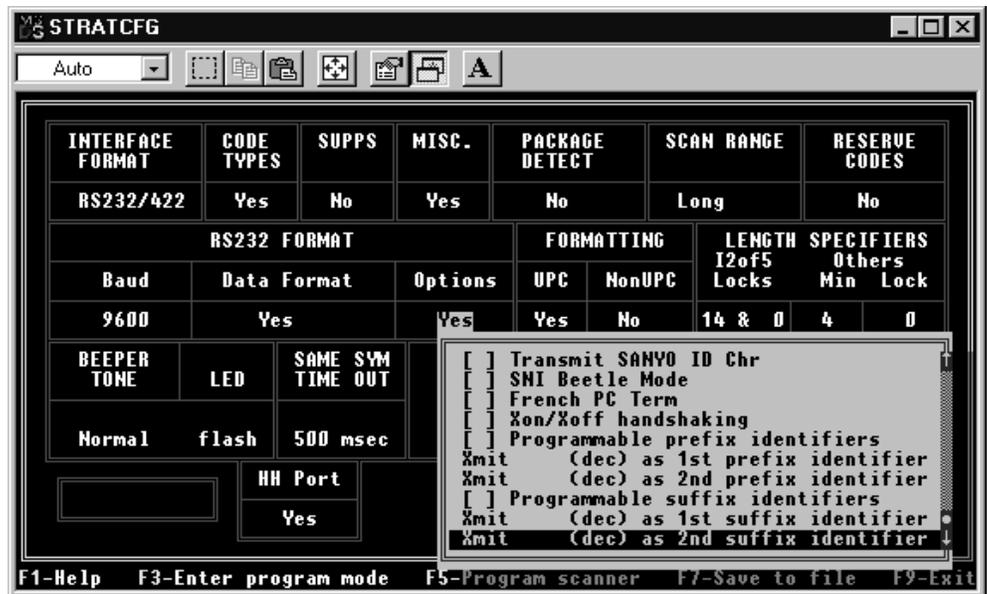


RS232 Type		Description
Data Format	Odd	Select odd to make the parity bit either a 0 or 1, to guarantee an odd number of ones.
	Space	Select space to make the parity bit always 0.
	Even	Select even to make the parity bit either a 0 or 1, to guarantee an even number of ones.
	Mark	Select mark to make the parity bit always 1.
	None	Select none and the parity bit time is skipped.
	7 or 8 Data Bits	Select between 7 and 8 data bits per data byte, depending on the requirements of your host.
	1 or 2 Stop Bits	Select between 1 and 2 stop bits per data byte, depending on the requirements of your host.

**Note:** The StrataScan line of Readers supports either 10 or 11 bit data words. You cannot choose a data byte format that is not either 10 or 11 data bits total (including 1 start bit). For example, you cannot select 7 data bits, 1 stop bit and no parity, since this would constitute a 9-bit data byte. You cannot choose 8 data bits, 2 stop bits and a parity bit, since this would constitute a 12-bit data byte, including 1 start bit.

### Further RS232 Options

RS232 Type		Description
Options	Reserved 1	This option is reserved for future use.
	Reserved 2	This option is reserved for future use.
	ACK/NAK	After a bar code is scanned and transmitted, if ACK/NAK is enabled, the reader waits for one of several host character commands to be sent from the host. If the host sends an ACK (06H) acknowledge command, the reader beeps and resumes scanning. If the reader receives a NAK (15H) negative acknowledge command, the reader re-transmits the bar code without a beep and does not resume scanning.
	CR	When this option is enabled, the reader transmits a Carriage Return after each bar code.
	LF	When this option is enabled, the reader transmits a Line Feed after each bar code.
	DTR Support	When this option is enabled, the reader requires a Data Terminal Ready (DTR) signal to be present before scanning.



RS232 Type		Description	
Options	Nixdorf ID	When this option is enabled, the reader transmits Nixdorf code identifiers before each bar code as follows:	
		<b>Code</b>	<b>Prefix Code</b>
		UPC-E	d
		UPC-A	c
		EAN-8	g
		EAN-13	h
		Code 39	b
		Codabar	a
		Code 93	i
		I 2 of 5	e
	Code 128	j	
	RTS/CTS handshaking	When this option is enabled, the reader outputs a Request To Send (RTS) signal and waits for a Clear To Send (CTS) signal before any data is transmitted.	
	RTS/CTS (character)	When this option is enabled, the reader activates and deactivates its RTS signal after each character it transmits.	
RTS/CTS (message)	When this option is enabled, the reader activates and deactivates its RTS signal after each message it transmits.		
ETX suffix	When this option is enabled, the reader transmits an End of Text after each bar code.		
STX prefix	When this option is enabled, the reader transmits a Start of Text before each bar code.		
Tab prefix	When this option is enabled, the reader transmits a TAB before each bar code.		
Tab suffix	When this option is enabled, the reader transmits a TAB after each bar code.		
UPC prefix	When this option is enabled, the reader transmits a prefix before any UPC/EAN bar codes. The prefixes are A (UPC A), E0 (UPC E), F (EAN 13), and FF (EAN 8).		
UPC suffix	When this option is enabled, the reader transmits a suffix after any UPC/EAN bar codes. The suffixes are A (UPC A), E0 (UPC E), F (EAN 13), and FF (EAN 8).		
Schlumberger/Shell format	When this option is enabled, the reader transmits an XOR'ed check digit of all the data characters at the end of the data stream.		

*Table continued on the next page.*

RS232 Type		Description	
Options	Transmit AIM ID Character	When this option is enabled, the reader transmits special AIM code identifiers before each bar code as follows:	
		<b>Code</b>	<b>AIM Code ID</b>
		UPC-E	]Z0
		UPC-E with 2-digit suppl.	]Z0
		UPC-E with 5-digit suppl.	]Z0
		UPC-A	]Z0
		UPC-A with 2-digit suppl.	]Z0
		UPC-A with 5-digit suppl.	]Z0
		EAN-8	]E4
		EAN-8 with 2-digit suppl.	]E4
		EAN-8 with 5-digit suppl.	]E4
		EAN-13	]E0
		EAN-13 with 2-digit suppl.	]E0
		EAN-13 with 5-digit suppl.	]E0
		Code 39	]A0
		Code 39 FA	]A4
		Code 39 with MOD 43	]A3
		Code 39 with MOD 43 plus transmit CD	]A1
		Code 39 Full ASCII with MOD 43	]A7
		Code 39 Full ASCII with MOD 43 plus transmit CD	]A5
		Codabar	]F0
		Codabar with start and stop characters	]F1
		Code 93	]G0
		I 2 of 5	]I0
		I 2 of 5 with MOD 10	]I2
I 2 of 5 with MOD 10 and transmit MOD 10	]I1		
Code 128	]C0		

Table continued on the next page.

RS232 Type		Description	
Options	Transmit Sanyo ID Character	When this option is enabled, the reader transmits special code identifiers before each bar code as follows:	
		<b>Code</b>	<b>Prefix Code</b>
		UPC-A	C
		EAN-8	A0
		EAN-13	B
		Code 39	A
		Codabar	M plus 2-digit hexadecimal representation of the character count
		Code 93	L plus 2-digit hexadecimal representation of the character count
		I 2 of 5	I plus 2-digit hexadecimal representation of the character count
	Code 128	K plus 2-digit hexadecimal representation of the character count	
	SNI Beetle Mode	This feature is not currently supported.	
	French PC Terminal Emulation	This feature is not currently supported.	
	Xon/Off handshaking	When this option is enabled, the reader does not transmit after an XOFF is received. Transmission resumes after an XON is received.	
	Programmable prefix identifiers	When this option is enabled, one or two programmable prefix ID characters can be assigned and added to the scanned data transmission. To assign the character, refer to the options Xmit (Transmit) as 1st prefix identifier or Xmit as 2nd prefix identifier below.	
	Transmit as 1st or 2nd prefix identifier	When the Programmable prefix identifiers option is enabled, a programmable prefix ID character can be entered in either of these 2 windows. (The decimal equivalent of the ASCII value of the key pressed is then displayed).	
	Programmable suffix identifiers	When this option is enabled, one or two programmable suffix ID characters can be assigned and added to the scanned data transmission. To assign the character, refer to the options Xmit (Transmit) as 1st suffix identifier or Xmit as 2nd suffix identifier.	
	Transmit as 1st or 2nd suffix identifier	When the Programmable suffix identifiers option is enabled, a programmable suffix ID character can be entered in either of these 2 windows. (The decimal equivalent of the ASCII value of the key pressed is then displayed).	

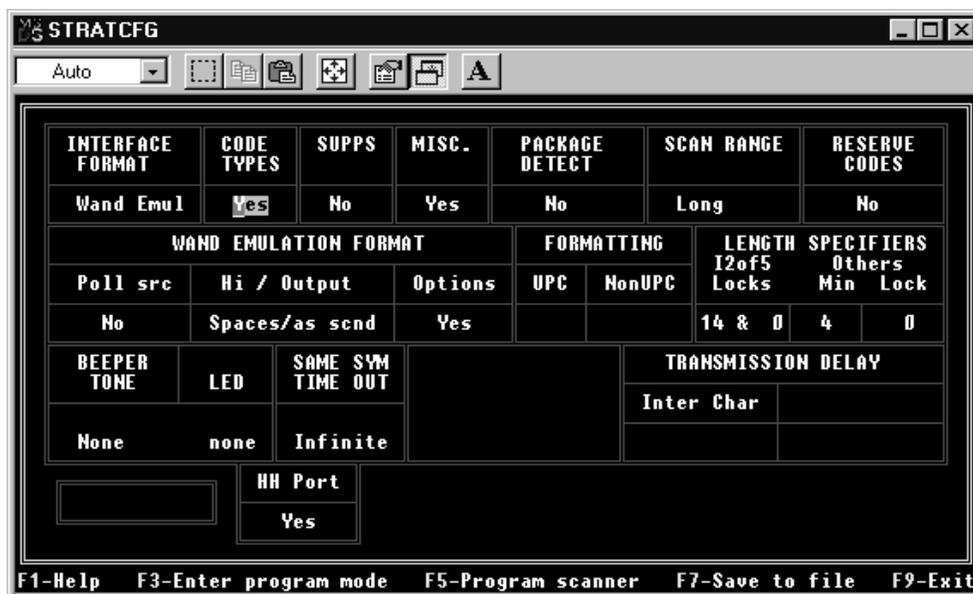
**Note:** The following table of 32 ALT characters can be used along with the above RS232 options as programmable prefix or suffix identifiers. For example, if you wanted to use the carriage return character (CR) as a programmable suffix identifier, select the Programmable suffix identifier as an RS232 choice in the OPTIONS pull-down menu. Then hold down the ALT key and type CTRL M.

**CONTROL CODES for ALT characters**

Character	Control Code						
NULL	CTRL 2	BS	CTRL H	DLE	CTRL P	CAN	CTRL X
SOH	CTRL A	HT	CTRL I	DC1	CTRL Q	EM	CTRL Y
STX	CTRL B	LF	CTRL J	DC2	CTRL R	SUB	CTRL Z
ETX	CTRL C	VT	CTRL K	DC3	CTRL S	ESC	CTRL [
EOT	CTRL D	FF	CTRL L	DC4	CTRL T	FS	CTRL \
ENQ	CTRL E	CR	CTRL M	NAK	CTRL U	GS	CTRL ]
ACK	CTRL F	SO	CTRL N	SYN	CTRL V	RS	CTRL 6
BEL	CTRL G	SI	CTRL O	ETB	CTRL W	US	CTRL _

**Wand Emulation Format**

If Wand Emulation format is selected in the Interface Format menu instead of RS232/422, then Poll Source, High Output and Options boxes display as Wand Emulation specific options.



Wand Type	Description
Poll Source	When poll source is enabled, the reader does not scan unless a 5-volt signal is seen on the poll source input.

Wand Type	Description
Hi/Output	Under this menu, you may program the reader to transmit as one of either Bars high as Code 39. Spaces high as Code 39. Bars high as scanned or Spaces high as scanned. Select the method that matches your host's requirements.



Wand Type	Description
Options	Extra Transition before Bar Code
	50x or 10x narrow element border
	1.0, 0.5, 0.3, 0.15 ms narrow element

If your host requires it, the reader can output an extra transition before each bar code.

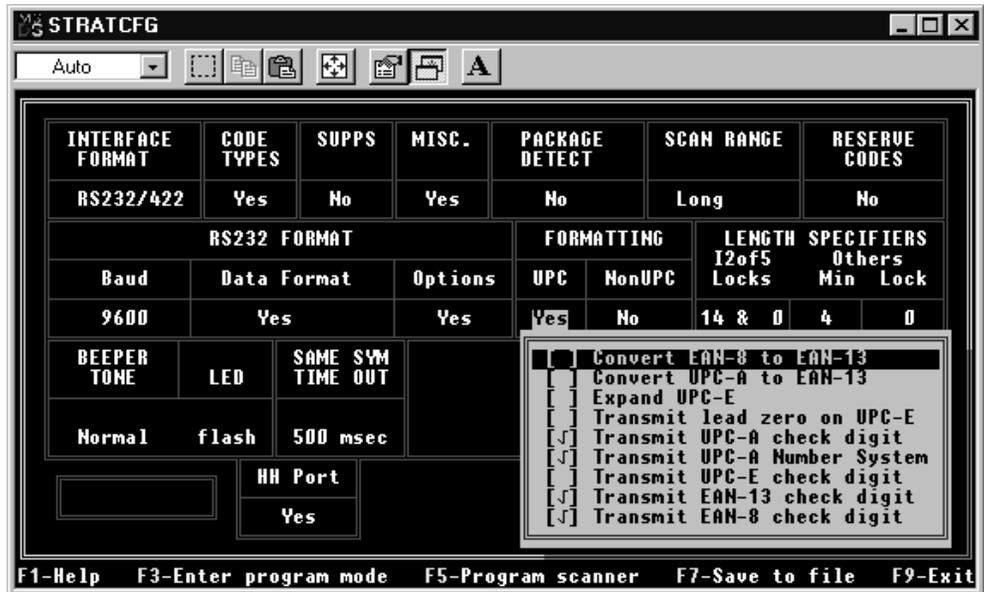
This option selects whether the borders on the transmitted bar code will be 10 or 50 times the size of a narrow element. This value is a function of the size of the narrow element selected below.

This option selects the size of the narrow element of the transmitted bar code. All other elements in the bar code are a direct function of this value as dictated by the symbology specification.

## Formatting

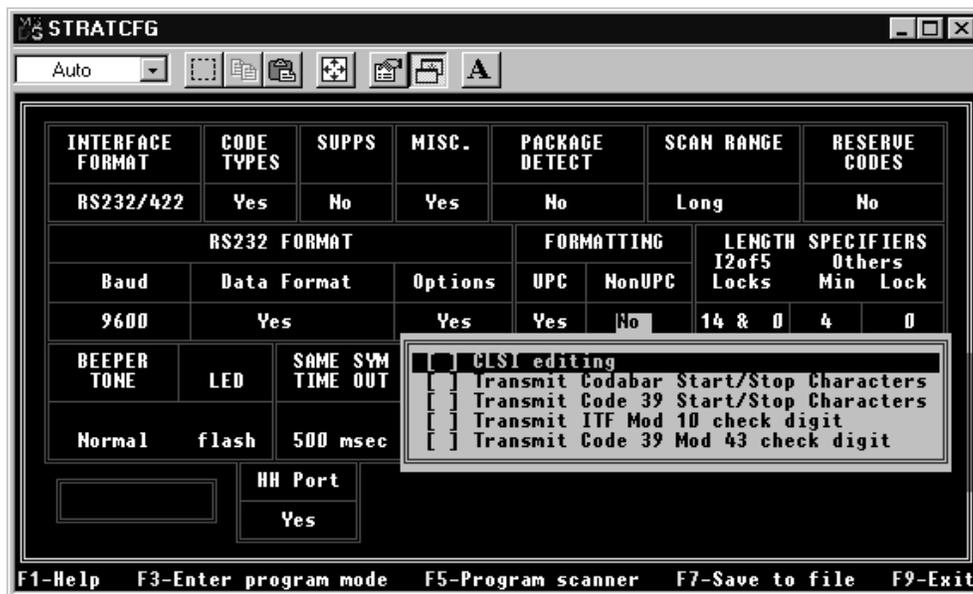
This section gives you several output format options for UPC/EAN and non-UPC bar codes. These menus are not supported if using Wand Emulation.

### UPC Formatting Types



Formatting Type	Description
Convert EAN-8 to EAN-13	When this option is enabled, the reader converts EAN-8 to EAN-13 by transmitting five zeroes before the bar code.
Convert UPC-A to EAN-13	When this option is enabled, the reader converts UPC-A to EAN-13 by transmitting a leading zero before the bar code.
Expand UPC-E	When this option is enabled, the reader expands UPC-E to the 12-digit equivalent UPC-A.
Transmit lead zero on UPC-E	When this option is enabled, the reader outputs a zero before each UPC-E bar code.
Transmit UPC-A check digit	When this option is enabled, the reader transmits the UPC-A check digit.
Transmit UPC-A Number System	When this option is enabled, the reader transmits the UPC-A number system character. <i>Duplicate numbers may result at the host end, when the reader is programmed not to transmit the UPC-A number system character.</i>
Transmit UPC-E check digit	When this option is enabled, the reader transmits the UPC-E check digit.
Transmit EAN-13 check digit	When this option is enabled, the reader transmits the EAN-13 check digit.
Transmit EAN-8 check digit	When this option is enabled, the reader transmits the EAN-8 check digit.

### Non-UPC Formatting Types



Non-UPC Formatting Type	Description
CLSI Editing	When this option is enabled, the reader performs CLSI library type editing before the information is transmitted to the host. This editing only works with 14-digit Codabar type labels.
Transmit Codabar Start/Stop Characters	When this option is enabled, the reader transmits Codabar's start and stop characters before and after each bar code. This menu choice works in conjunction with the Codabar option in the Codes section. Both must be enabled for this feature to work.
Transmit Code 39 Start/Stop Characters	When this option is enabled, the reader transmits Code 39's start and stop character. This menu choice works in conjunction with the Code 39 option in the Codes section. Both must be enabled for this feature to work.
Transmit I2 of 5 Mod 10 check digit	When this option is enabled, the reader transmits the Interleaved 2 of 5 (I2OF5) Mod 10 check character. This menu choice works in conjunction with the I2OF5 Mod 10 option in the Codes section. Both must be enabled for this feature to work.
Transmit Code 39 Mod 43 check digit	When this option is enabled, the reader transmits Code 39's Mod 43 check character. This menu choice works in conjunction with the Code 39 Mod 43 option in the Codes section. Both must be enabled for this feature to work.

## Length Specifiers

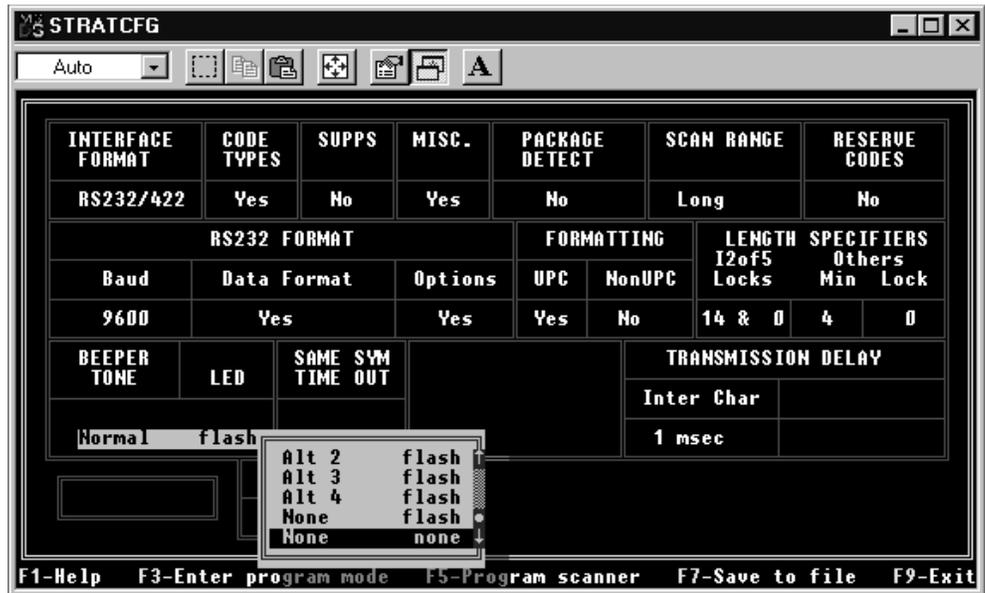
This section provides you the option of restricting the size of the bar codes that the reader accepts. The following are the options available from the Length Specifiers section. From the following menus, you can program the reader to scan only bar codes that meet your defined criteria.

**Note:** The length specifier options are available from the main configuration screen. As a result no pop-up menus are displayed here.

Length Specifiers Type	Description
I2 of 5 Locks (14 & 0)	The number of digits in the I2 OF 5 (Interleaved 2 of 5) bar codes that you are scanning are specified in this field. Two individual values, ranging from 1-50 can be selected via the two fields below the I2 OF 5 option. The first field can be set to zero if you wish to have the length variable. If you are only scanning one length of I2 OF 5 bar codes, enter that value into the first field and enter 0 in the second field. This causes a lock on the first value. If you are scanning I2 OF 5 bar codes, it is strongly recommended that you specify bar code lengths when possible, to help avoid misreads.
Others (Min 4)	The minimum number of characters in the bar codes that are scanned can be specified in this field. If, for example, Min is set to 4, the reader does not scan bar codes that have less than 4 characters. To change this option, position the cursor on the field, type in the new number, and press <b>ENTER</b> .
Others (Lock 0)	If the reader is always scanning bar codes of the same length, the length of accepted bar codes can be programmed into the reader with the Lock feature. For example, if all the bar codes to be scanned are seven-digit Code 39, a 7 can be entered in the Lock field. If all bar codes being scanned are variable lengths, type a zero in this field. If the Lock feature is used, be sure that Mn is not greater than the Lock value.

## Beeper/LED

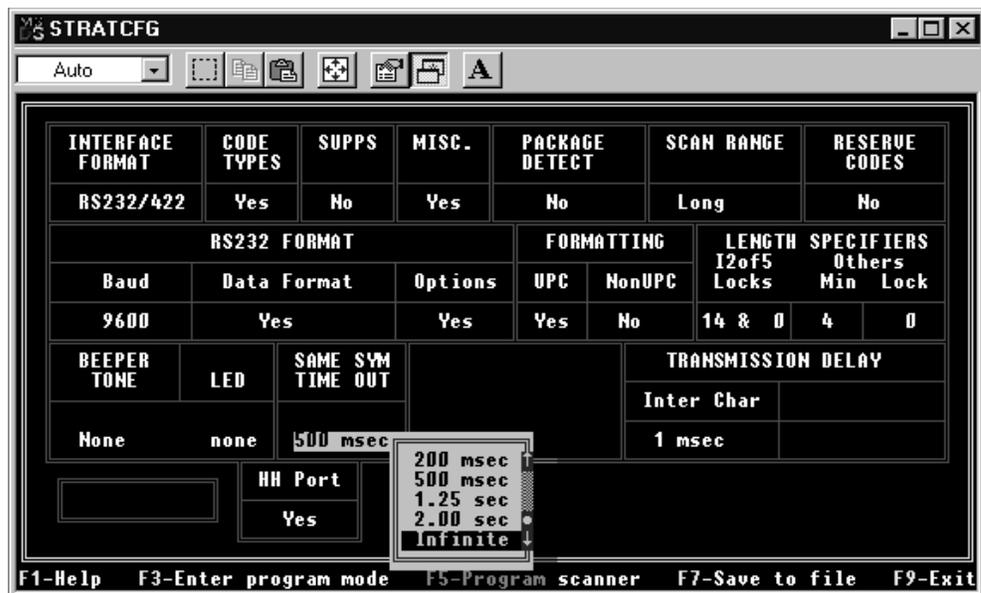
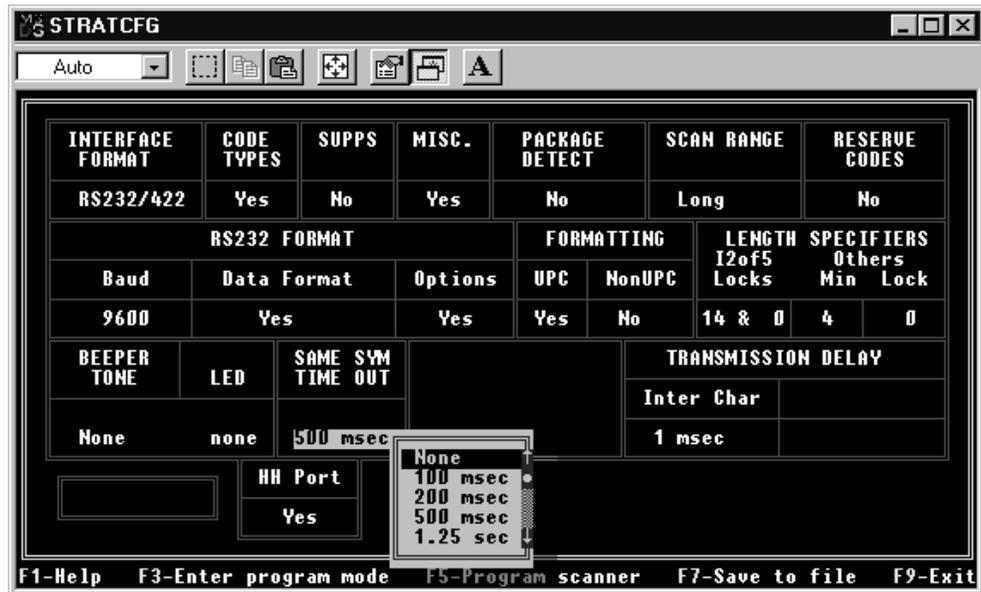
This section provides for all the supported beeper/LED options.



Beeper/LED Type	Description
Beeper Tone	The following beeper tone options are available: Normal, Alt 1, Alt 2, Alt 3, Alt 4, and no tone.
LED	Under normal conditions, the LED flashes upon good scan and transmit. You can disable the LED flash, if it is not necessary in your application (e.g., If the reader is to be used in an unmanned application, where the LED and beeper are not necessary). You may disable both functions and save the reader time in beeping and flashing.

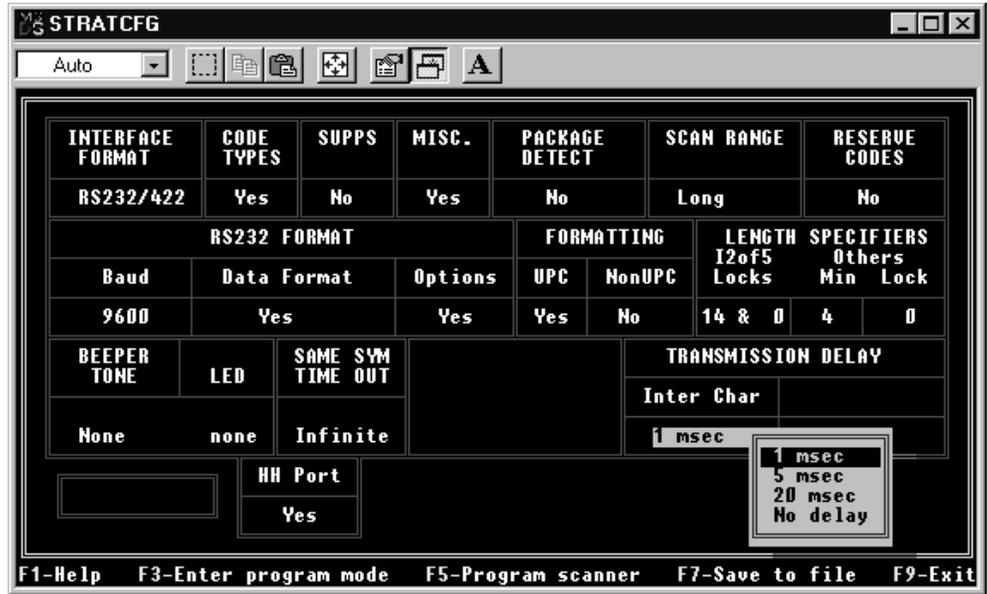
## Same Symbol Timeout

Same symbol timeout lists the amount of time to wait before a communication error is detected and a message retry occurs. Available choices are none, 100, 200 and 500 milliseconds, 1.25, 2.00 seconds and an infinite amount of time.



### Transmission Delay

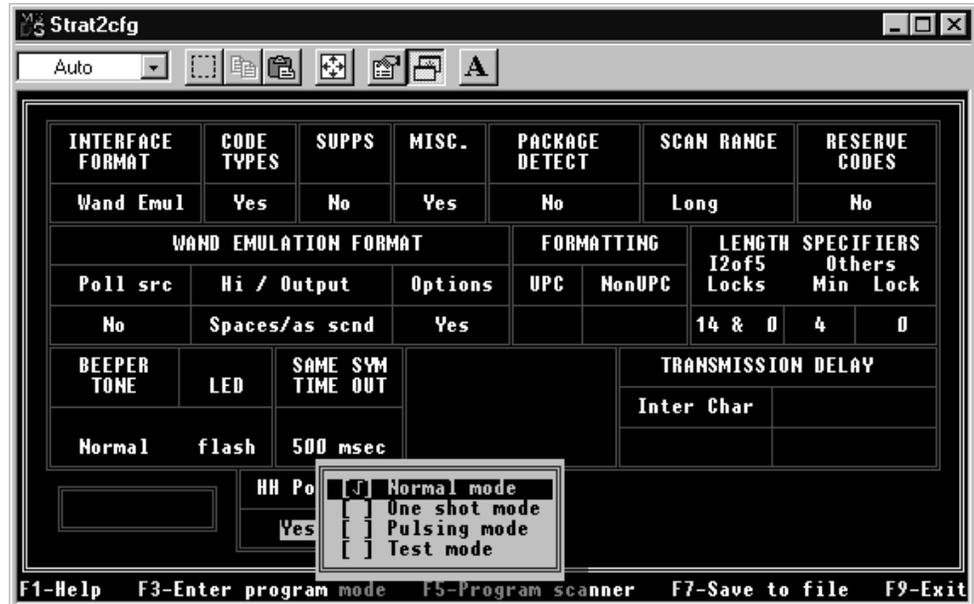
This option allows you to create standard inter-character transmission delays of 1, 5 or 20 milliseconds, in addition to no delay.



## Hand-Held Port

This feature provides you the option of scanning with a hand-held scanner. Any of the following 4 options for using the hand-held port are possible:

Hand-held Port	Description
Normal Mode	The laser comes on upon triggering or IR detect and will stay on for a minimum of 2.5 seconds, if no black/white transitions are detected. If transitions are continuously detected, it stays on for a maximum of 5 seconds.
One-shot mode	The laser comes on upon triggering or IR detect and stays on for approximately 1 second, whether transitions are detected or not.
Pulsing mode	The laser comes on upon triggering or IR detect and pulses on for a minimum of 3 times, if no transitions are detected. If transitions are detected, it pulses on for a maximum of 6 times.
Test mode	In this mode, the laser remains on at all times. This mode is strictly a test mode, and <i>for laser safety purposes</i> , should not be used during normal operation.



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