

**HAND HELD<sup>®</sup>  
PRODUCTS**  
a WelchAllyn<sup>®</sup> affiliate

*VALUETEAM™ 3060 / 80  
IMAGETEAM™ 3220*



*User's Guide*



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## Statement of Agency Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### FCC Class A Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**Caution:** Any changes or modifications made to this device that are not expressly approved by Hand Held Products may void the user's authority to operate the equipment.

**Note:** To maintain compliance with FCC Rules and Regulations, cables connected to this device must be shielded cables, in which the cable shield wire(s) have been grounded (tied) to the connector shell.

## Canadian Notice

This equipment does not exceed the Class A limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

**CE** The CE mark on the product indicates that the system has been tested to and conforms with the provisions noted within the 89/336/EEC Electromagnetic Compatibility Directive, EN55022:1998 Class A.

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# 1. Getting Started

The IMAGETEAM™ 3220 Mid-Range Linear Imager replaces traditional laser bar code scanners with a high speed scanner at a lower cost. Equipped with a new generation light intensifier and optical design, the IT3220 has a high intensity aiming line and captures bar codes from as far away as 8 inches (20.3 cm). The unique decoding engine gives the IT3220 exceptionally fast and accurate scanning capabilities. Since the built-in flash memory makes the IT3220 field-upgradable, the scanner's programming is always up-to-date.

The VALUETEAM™ 3060B and 3080B CCD scanners are ideal entry level bar code readers. They offer excellent reading performance with the most often used terminals and PCs for point-of-sale or general purpose applications. Both the VT3060B and VT3080B have Flash Memory, are compact in size, are comfortable to use, and have been designed to take the punishment of daily use.

## About This Manual

This User's Guide provides installation and programming instructions for both the IT3220 and the VT3060B/3080B. Customer support and warranty information is also included.

Hand Held Products' scanners are factory programmed for the most common terminal and communications settings. If you need to change these settings, programming is accomplished by either scanning the bar codes in this user's guide or by using HHP SET™, a Windows®-based utility that allows the user to perform on-screen configurations and software upgrades.

Please verify the information displayed on the product label matches the information on the outer box label. If any difference is found, please contact your vendor immediately.

**Outer Box Label**

**WelchAllyn®** **CE**

IMAGETEAM MID - RANGE LINEAR IMAGER , UNIVERSAL INTERFACE

----- *Description*

----- *Model Number*

----- *Serial Number*

FEDERAL COMMUNICATIONS COMMISSION U.S.A. N344 Made in Taiwan

**Product Label**

**WelchAllyn®** **CE**

N344 Made in Taiwan

P/N:3220-12  
S/N:A1210001

Complies with FCC Part 15 and Canadian ICES-003 Emission requirements. See User's Manual for details

**Outer Box Label**

**WelchAllyn®** **CE**

VALUETEAM 80mm BAR CODE SCANNER , UNIVERSAL INTERFACE

----- *Description*

----- *Model Number*

----- *Serial Number*

FEDERAL COMMUNICATIONS COMMISSION U.S.A. N344 Made in Taiwan

**Product Label**

**WelchAllyn®** **CE**

N344 Made in Taiwan

P/N:3080B-12  
S/N:A1220001

Complies with FCC Part 15 and Canadian ICES-003 Emission requirements. See User's Manual for details

The IT3220 and VT3060B/3080B models come with a main cable equipped with a RJ-45 phone plug, which can provide multiple host interface connections when combined with a host adapter cable. Please note that a separated cable adapter is needed to complete the cable connection for product installation.



To use the HHP SET with the IT3220, the user must have a serial adapter cable and a power supply. Please refer to Chapter 3 “Programming the Scanner” to understand all details of HHP SET. You will find HHP SET has totally changed the traditional ways of managing your bar code reading device.

## HHP SET™

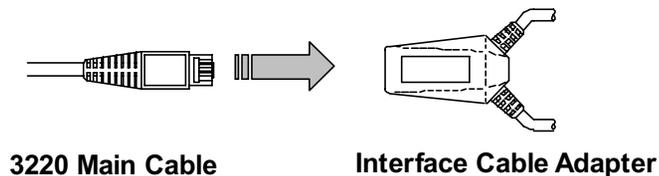
HHP SET is a unique software utility that has been designed to operate under Microsoft® Windows® 95/98, Windows NT®, and Windows® 2000, and provides the following functions:

- § User friendly on-screen configuration
- § Configuration download and upload
- § Program (Firmware) field upgrade
- § Check software revision
- § Full feature data editor



## 2. Terminal Interfaces

The IT3220 and VT3060B/3080B scanners are easily configured to work with a variety of interfaces by installing the desired cable adapter and by programming the selected terminal interface. After identifying the communication interface you will use and obtaining the suitable interface adapter cable, you plug the **RJ45 Phone Plug** of the IT3220 or VT3060B/3080B main cable into the connector of the selected interface cable adapter. Please make sure the connector clicks into place securely.



All scanners have been preset to the “**IBM PC/AT, PS/2 Keyboard Wedge**” interface. If you need to change the host interface, please refer to the “Host Interface Selection” described in Chapter 3 to find your desired interface. The following paragraphs provide the installation of the most popular host interfaces.

## Keyboard Wedge Interface

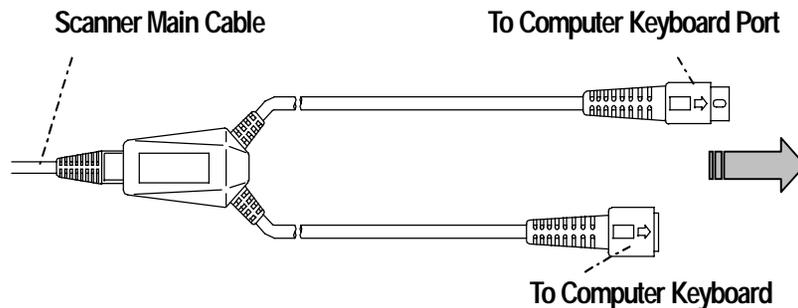
The keyboard wedge interface allows data transmission from the scanner to the host through the existing keyboard port as traditional keyboard input.



For the keyboard wedge solution, the scanner must work with the existing keyboard concurrently. If you want to link the scanner to a computer keyboard port without a PC/AT or PS/2 keyboard, please select “**Emulate External Keyboard.**” This selection instructs the scanner to perform the power-on handshaking and routine reply between computer and keyboard.

## Keyboard Wedge Installation

- § Turn off your computer system and unplug the keyboard.
- § Plug the RJ45 phone plug of scanner's main cable into the PC/AT or PS/2 cable converter.
- § Plug the male connector of the cable converter into the keyboard port of your computer.
- § Plug the male connector of keyboard into the female connector of the cable converter.
- § Turn on your computer system. Open a text program, such as Notepad or Microsoft Word and scan a bar code sample with the scanner and verify that correct data is displaying on the screen.



**PC/AT Keyboard Wedge Connection**

## F PS/2 Keyboard Wedge Connection

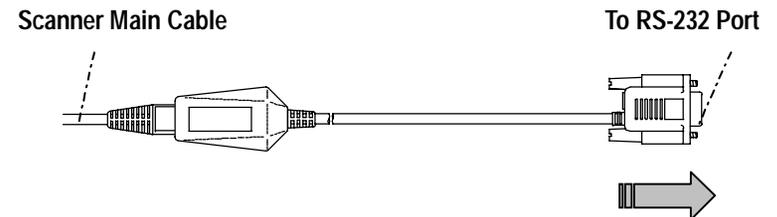
Plug the 5P DIN female connector of slave cable into the 5P DIN male connector of main cable of the scanner. Then connect the rest of the connectors to the computer keyboard port and PS/2 keyboard.

## F PC/AT Keyboard Wedge Connection

Plug the 6P Mini DIN male connector of slave cable into 6P Mini DIN female connector of main cable of the scanner. Then connect the rest of the connectors to the computer keyboard port and PC/AT keyboard.

## RS-232 Serial Interface

RS-232 Serial interface is among one of the most popular applications of bar code scanners. Before connecting your scanner to the RS-232 communication port of host machine, please follow the procedures illustrated below.



**RS-232 Serial Interface Connection**

## RS-232 Interface Installation

- § Verify the RS-232 port (COM1 or COM2) available on your computer system.
- § Plug the RJ45 phone plug of the main cable into the RS-232 cable adapter.
- § Plug the 9-pin or 25-pin D-sub connector of cable converter into the desired serial port on your system.
- § Attach the power outlet plug of the optional AC power adapter to the side power jack of the D-sub connector. You will hear the power-on beep twice to signal that the scanner is ready for bar code reading. Scan the “**RS-232 Serial Interface**” bar code to configure the scanner to perform the RS-232 serial interface operation.



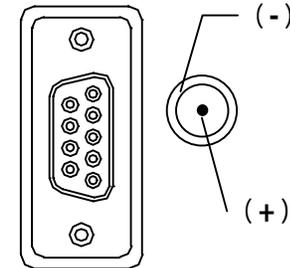
- § Scanning the RS-232 interface bar code above configures the scanner’s serial parameters to 9600 Baud, 8 data bits, no parity, and 1 stop bit, no handshaking.

Please note that the RS-232 settings of the host system must match the scanner’s RS-232 settings.

- § If you are in the Windows® environment, you may use the “**Hyper Terminal**” to test.

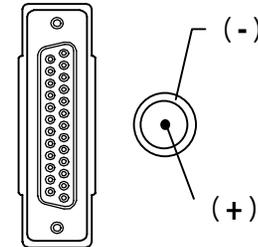
### Standard RS-232 Pinouts

- PIN-1: VCC (5V)
- PIN-2: TD
- PIN-3: RD
- PIN-4: NC
- PIN-5: GND
- PIN-6: NC
- PIN-7: CTS
- PIN-8: RTS
- PIN-9: VCC (5V)



### 9 Pin D-sub RS-232 Female Connector

- PIN-2: RD
- PIN-3: TD
- PIN-4: CTS
- PIN-5: RTS
- PIN-6: NC
- PIN-7: GND
- PIN-16: VCC (5V)
- PIN-25: VCC (5V)

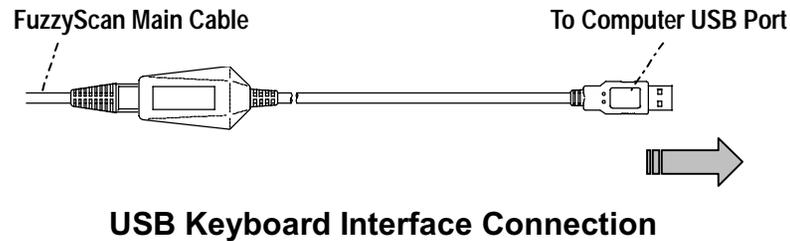


### Pin 25 D-sub RS-232 Female Connector

## USB Keyboard Interface

The USB interface is one of the common standard peripheral interfaces for today's computer system working under Windows® 98 and Windows® 2000 or above.

Scanning the following bar code will program for the USB interface.



- § Make sure your computer has a USB port and the operating system is Windows® 98, Windows NT® 5.0, and Windows® 2000 or above.
- § Plug the RJ45 phone plug of the scanner main cable into the USB keyboard cable converter.
- § Plug the 4-pin USB Type A connector into the desired USB port of your computer. You will hear the power-on beep twice to signal that the power-on routine of the scanner is completed.
- § Whenever the scanner's USB interface scanner is connected to any computer system for the first time, a string of "**USB Manufacturer ID Message**" will be prompted to register the scanner into the operating system.
- § Please scan the "**USB Keyboard Interface**" bar code to configure the scanner into USB keyboard interface mode. The scanner is now ready to use.

### 3. Programming the Scanner

There are two ways to configure the IT3220 or the VT3060/3080 – either using HHP SET™ or the programming bar codes in this user’s guide.

#### Via HHP SET

HHP SET is a unique software utility designed to operate under Microsoft® Windows® 95, 98, NT or above. HHP SET offers a convenient and user-friendly way to program the scanner.

#### Via Bar Code Programming Menu

The bar code programming menu is designed for field programming convenience. Before you use the bar code programming menu, please take the time to review the command structure and various programming procedures.

### HHP SET

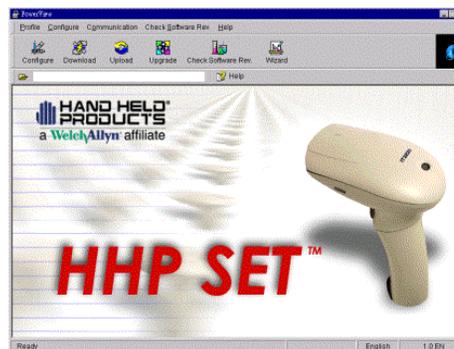
The innovative HHP SET utility provides the following features:

- § User Friendly On-screen Configuration
- § Configuration Download and Upload
- § Program (Firmware) Field Upgrade (Flash)

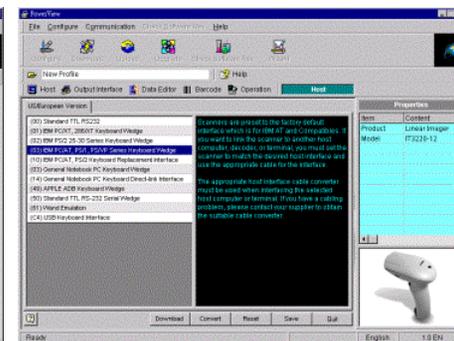
- § Check Software Revision
- § Full-featured Data Editor

These beneficial features are accomplished through outstanding software design and on-board advanced flash memory ASIC.

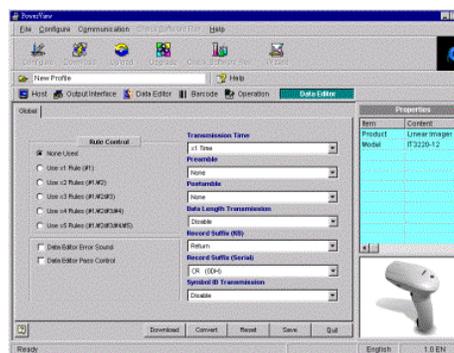
#### HHP SET at A Glance



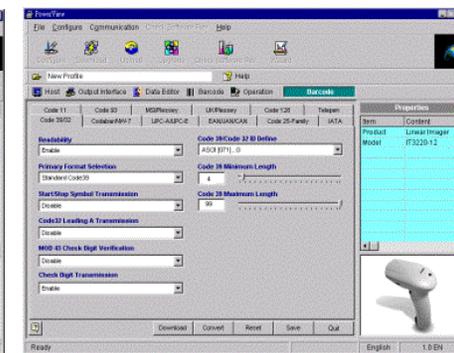
HHP SET Main Screen



Host Interface Screen



Data Editor Screen



Bar Code Screen

While you are asking HHP SET to do the “Download,” “Upload,” and “Diagnostic” with the scanner, HHP SET will ask you to use the scanner to scan the **Host Link Command** for initial handshaking with HHP SET and then perform your desired action.



### Software Installation

You may download HHP SET from the IT3220 or VT3060B/3080B product pages from our web site at [www.handheld.com](http://www.handheld.com).

### On-screen Configuration

Compared with the traditional configurations done via bar code menus, HHP SET provides a GUI interface that allows the user to easily configure the scanner. The **Save** feature allows the configuration to be saved as a file. The **Convert** feature consolidates all programmable parameters for a certain application and prints the configuration list.

### Configuration Download and Upload

You can retrieve (**Upload**) the configurations from the scanner or send (**Download**) new configurations to the scanner. Of course, duplicating preset configurations is as easy as 1-2-3.

### Program Field Upgrade

Internal program (firmware) change or modification is only one step away via the **Field Upgrade** feature of the utility.

### Check Software Revision

You can use the **Check Revision** feature to check the software revision number, to verify if the communication between your scanner and host system is good, and to check the operation of the beeper and the indicator light.

## Data Editor

Data Editor is an Artificial Intelligence-based **Expert System** used to format the scanned data before it is transmitted to the host system. The Data Editor **Condensed Version** has been embedded in the scanner. You gain access to desired Data Editor's functions via scanning the menu's bar code. The **Full-Feature** Data Editor is only available through HHP SET, which gives you the freedom of modifying the scanned data anyway you like, and allows you to integrate the scanner into any existing application.

### Data Format Editor

The ultra powerful data editing functions provided by Data Editor are controlled by user-defined rules. Through independent rules, users can easily get the following functionality:

#### § General Transmission Control

The available parameters include "Preamble," "Postamble," "Suffix," "Symbol ID and Data Length Transmission," and "Transmission Time Control."

#### § Advanced Data Verification

User can base the specific data format on the desired Bar Code Symbologies to select "Valid ASCII Domain," "Valid Data Length Domain" and "Matched Data Value" to establish any desired filtering algorithm. This feature not only provides an on-scanner data filter without application software modification, but also reduces the error reading rate and improves data capture reliability.

#### § Field Oriented Data Formatter

The Field Oriented Data Formatter allows user to flexibly divide scanned data by "Delimiter" or "Length." To use with "Added Field" and "Transmission Sequence Arrangement" features, the user can implement "**Insert**," "**Delete**," "**Replace**," "**Re-organize**" and other data editing capabilities beyond your imagination.

## Application Example

The bar code label is a 16-digit Code 39 that contains a 6-digit date code, a 6-digit serial number, and a 4-digit unit price (in that order). The scanner can do the following for you without software modification:

- § Check the bar code to see if it is Code 39 or not. Reject any codes that are not Code 39.
- § Check the bar code content to see if it is numeric or not. Reject any codes that are not all numeric as invalid.
- § Check the first two digits to see if they match "99." Reject any codes that do not match.
- § Output each of the three fields followed by a "TAB."
- § The date code output should skip "99" and replaced it with "AA."
- § The serial number output should be led with "S/N:."
- § The first 2 digits of unit price output should be skipped.
- § The output sequence should be unit price, date code, and serial number.
- § Actual Bar Code label : 9 9 1 0 2 5 1 2 3 4 5 6 9 8 7 6
- § Desired Output : 76[TAB]AA1025[TAB]S/N:123456[TAB]

Please use **HHP SET** to configure the full-feature Data Editor, and follow the procedures listed below.

## Configuration Procedure

- § Select "Using 1 Rule."
- § Set "Applied Bar Code" to "Code 39."
- § Set "Valid ASCII Range" to "Numeric."
- § Select "Using Match 1."
- § Set "Matched Data " to "99," and set "Start Position" to "1."
- § Set "Original Field" to "Divide scanned data into 4 fields."  
Set "Field Divided By" of F1 to "Fixed Length" for "2."  
Set "Field Divided By" of F2 to "Fixed Length" for "4."  
Set "Field Divided By" of F3 to "Fixed Length" for "6."  
Set "Field Divided By" of F4 to "Fixed Length" for "2"  
Then Data Editor assigns the remaining 2 digits as "Last Field (LF)" automatically. Please note that if the code 39 bar code label is printed with "Check Digit," the last field will have 3 digits.
- § Set "Added Field" to "Insert 3 Added Fields."  
Set "AF1" (Added Field 1) to "AA."  
Set "AF2" to "S/N:."  
Set "AF3" to "TAB (Hex 09)."
- § Set "Transmission Sequence" to "LF," "AF3," "AF1," "F2," "AF3," "AF2," "F3," and "AF3."

## Bar Code Programming Menu

The bar code commands are specially designed **Proprietary** bar code labels that allow you to set the scanner's internal programming parameters. There are **System Command**, **Family Code** and **Option Code** for programming purpose. Each programmable family and bar code command label is listed on the same page with major system commands. The detailed explanations and special programming flowchart are printed on facing or following pages. You can read the explanation and set the scanner concurrently.

A supplemental bar code command menu incorporates the bar code command labels of System Command and Option Code. As you set the scanner, open the bar code command menu to find the option code page. You may scan the desired family code and option code to set scanner. If you want to change the programming family for multiple settings, you need only turn over the programming page to the find next desired programming family.

### System Command

The System Command is the highest level bar code command that directs the scanner to perform immediate operations, such as entering programming mode (**PROGRAM**), exiting programming mode (**EXIT**), listing system information (**SYSLIST**), recovering to factory preset configurations (**M\_DEFAULT**), and so on. Please note that all system commands will take a few seconds to complete the operations. The user must wait for the completion beeps before scanning another bar code.

### Family Code

The Family Code is scanned to select the user desired programming family. More than one hundred programming families have been provided to meet any specific requirements.

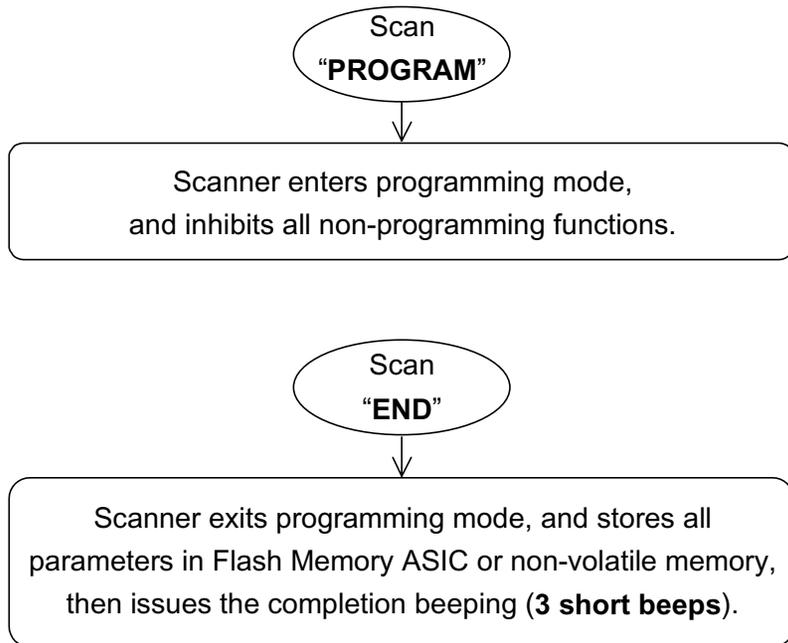
### Option Code

The Option Codes is a set of bar code commands represented by "0-9," "A-F," and finishing selection (**FIN**). For most settings, you must select at least one option code following the family code selection to set the desired parameter for the selected programming family.

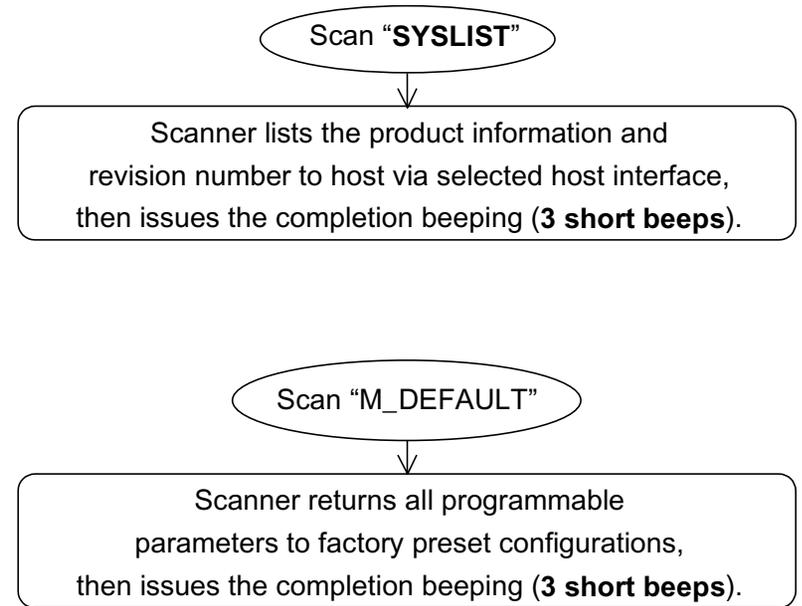
## **Programming Procedures**

As you scan the bar code command to select the desired parameters, this information is stored in the scanner's internal Flash Memory ASIC or non-volatile memory. If you turn off the unit, the Flash Memory ASIC or non-volatile memory retains all programmed settings.

## Program & End



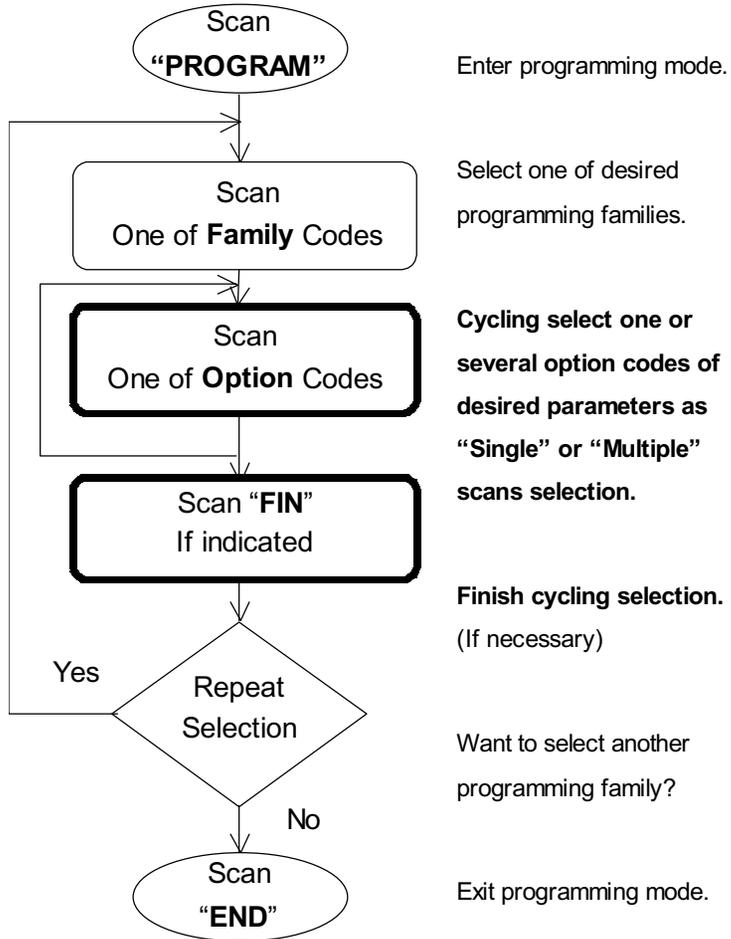
## System List & Master Default



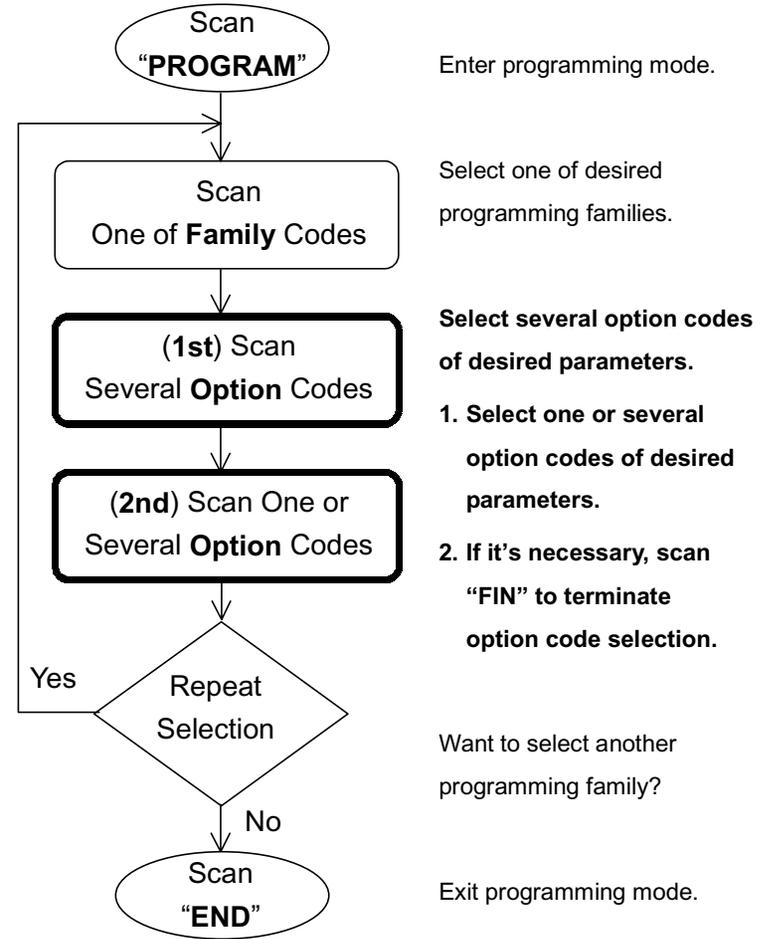
Please note that the scanner will take 3-4 seconds to store parameters in internal Flash Memory ASIC or non-volatile memory after you scan the "END." Please **do not** turn off the power before the completion beeping. It may destroy all configured parameters.

## Selection Flow Diagrams

**EXAMPLE 1**



**EXAMPLE 2**





## User Defined Code ID

This section allows the user to define and program a Code ID that is different from the Code ID default.

To specify a one-character Code ID, scan in the 2-digit hex value for that character. Then scan “END”. The hex value can be determined by referring to the HEX/ASCII Reference Table on page A-6.

To specify a two-character Code ID, scan the 2-digit hex values for each of the desired characters. Then scan “END.”

If you only want to assign a one-character Code ID for UPC-E or EAN-8, scan the two-digit hex code for the desired character. Then Scan “FIN” and “END” bar codes.

Note : To transmit the Code ID, you have to enable Code ID transmission in page 3-12.



**PROGRAM**

# Symbology Programming

◆ User Defined Code ID ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code	Option Code
<b>Symbol ID : 1 character</b> 	Code 128 (default= <b>B</b> )	00	Scan hex value (2 digits)
	UCC/EAN-128 (default= <b>C</b> )	01	Scan hex value (2 digits)
	UPC-A (default= <b>A</b> )	02	Scan hex value (2 digits)
	EAN/JAN/CAN-13 (default= <b>F</b> )	03	Scan hex value (2 digits)
	Codabar/NW-7 (default= <b>D</b> )	04	Scan hex value (2 digits)
	Code 39/Code 32 (default= <b>G</b> )	05	Scan hex value (2 digits)
	Code 93 (default= <b>H</b> )	06	Scan hex value (2 digits)
	Standard/Industrial 2 of 5 (default= <b>I</b> )	07	Scan hex value (2 digits)
	Interleaved 2 of 5 (default= <b>J</b> )	08	Scan hex value (2 digits)
	Matrix 2 of 5 (default= <b>K</b> )	09	Scan hex value (2 digits)
	China Postal Code (default= <b>L</b> )	10	Scan hex value (2 digits)
	German Postal Code (default= <b>M</b> )	11	Scan hex value (2 digits)
	IATA (default= <b>O</b> )	12	Scan hex value (2 digits)
	Code 11 (default= <b>P</b> )	13	Scan hex value (2 digits)
	MSI/Plessey (default= <b>R</b> )	14	Scan hex value (2 digits)
	UK/Plessey (default= <b>S</b> )	15	Scan hex value (2 digits)
Telepen (default= <b>T</b> )	16	Scan hex value (2 digits)	
<b>Symbol ID : 2 character</b> 	UPC-E (default= <b>E0</b> )	00	Scan hex value (2 or 4 digits) [FIN]
	EAN-8 (default= <b>FF</b> )	01	Scan hex value [2 or 4 digits] [FIN]

§ To determine the hex value for the “Character,” refer to the **ASCII/HEX Table** found in Appendix A.



PROGRAM

# Symbology Programming

## ◆ Code ID Transmission and Symbology Enable ◆



END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>Code ID Transmission</b> 	Disable symbology ID transmission $\cup$ Enable prefix symbology ID transmission Enable suffix symbology ID transmission Enable both prefix and suffix symbology ID transmission	0 1 2 3
<b>Symbology Enable</b> 	Automatic discrimination $\cup$ Code 128, UCC/EAN-128 UPC-A UPC-E EAN/CAN/JAN-13 EAN/CAN/JAN-8 Codabar/NW-7 Code 39/Code 32, HIBC Code 2 of 5 Family, IATA Code 93 Code 11 MSI/Plessey UK/Plessey Telepen	00 01 02 03 04 05 06 07 08 09 10 11 12 13

Remember to scan "**FIN**" to terminate this selection. But if you select the "**Automatic discrimination**," Scanner will terminate this selection **automatically**.

§ If your application is reading known, limited bar code symbologies, you may increase the reading speed and decrease the reading error possibility by enabling those known symbologies only. Furthermore, to add the "**Symbology ID**" into the transmitted data is also helpful for applications to identify the specific symbology ID. For example, to enable UPC-A and Code 39 only scan the following bar codes: "PROGRAM," "Symbology Enable," "0," "2," "0," "7," "FIN" and "END."

§ To further ensure fast, accurate readings, you can complete more complex configurations via full-feature **Data Editor**. To configure the full-feature Data Editor, you must use the **HHP SET** which is a Windows® 95/98/NT based software utility specially designed for the scanner.



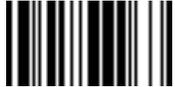
**PROGRAM**

# Symbology Programming

◆ Code 39/Code 32 Settings ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code
<p><b>Code 39 Family Setting</b></p> 	<p>Select Standard Code 39 <sup>u</sup></p> <p>Select Full ASCII Code 39</p> <p>Select Code 32 (Italian Pharmaceutical)</p> <hr/> <p>Disable start/stop symbol transmission <sup>u</sup></p> <p>Enable start/stop symbol transmission</p> <hr/> <p>Disable Code 32 leading A transmission <sup>u</sup></p> <p>Enable Code 32 leading A transmission</p> <hr/> <p>Disable MOD 43 check digit verification <sup>u</sup></p> <p>Enable MOD 43 check digit verification</p> <hr/> <p>Disable check digit transmission</p> <p>Enable check digit transmission <sup>u</sup></p>	<p>0</p> <p>1</p> <p>2</p> <hr/> <p>3</p> <hr/> <p>4</p> <hr/> <p>5</p> <hr/> <p>6</p> <hr/> <p>7</p> <hr/> <p>8</p> <hr/> <p>9</p> <hr/> <p>A</p>
<p><b>Code 39 Min. Length</b></p> 	<p>Default (04) <sup>u</sup></p> <p>Minimum length</p> <hr/> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b></p> <p><b>(2 digits)</b></p>
<p><b>Code 39 Max. Length</b></p> 	<p>Default (99) <sup>u</sup></p> <p>Maximum length</p> <hr/> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b></p> <p><b>(2 digits)</b></p>



**PROGRAM**

# Symbology Programming

## ◆ Codabar/NW-7 Setting ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code
<p><b>Codabar Setting</b></p> 	<p>Select Codabar standard format <math>\cup</math>                      Select Codabar ABC format                      Select Codabar CLSI format                      Select Codabar CX format</p> <hr/> <p>Disable start/stop symbol transmission <math>\cup</math>                      Enable ABCD/ABCD start/stop symbol transmission                      Enable abcd/abcd start/stop symbol transmission                      Enable ABCD/TN*E start/stop symbol transmission                      Enable abcd/tn*e start/stop symbol transmission</p> <hr/> <p>Disable check digit verification <math>\cup</math>                      Enable check digit verification</p> <hr/> <p>Disable check digit transmission                      Enable check digit transmission <math>\cup</math></p>	<p>0 1 2 3</p> <hr/> <p>4 5 6 7 8</p> <hr/> <p>9 A</p> <hr/> <p>B C</p>
<p><b>Codabar Min. Length</b></p> 	<p>Default (04) <math>\cup</math>                      Minimum length</p> <hr/> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Codabar Max. Length</b></p> 	<p>Default (99) <math>\cup</math>                      Maximum length</p> <hr/> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>



# Symbology Programming

## ◆ UPC-A & UPC-E Setting ◆



PROGRAM

END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>UPC Family Setting</b> 	Select UPC without supplement digits $\cup$	0
	Select UPC with only 2 supplement digits	1
	Select UPC with only 5 supplement digits	2
	Select UPC with 2/5 supplement digits	3
	Disable UPC-E expansion $\cup$	4
	Enable UPC-E expansion	5
	Disable UPC standardization $\cup$	6
	Enable UPC standardization	7
	Disable UPC numeric system	8
	Enable UPC numeric system $\cup$	9
	Disable UPC-A check digit transmission	A
	Enable UPC-A check digit transmission $\cup$	B
Disable UPC-E check digit transmission	C	
Enable UPC-E check digit transmission $\cup$	D	
Disable UPC "leading 1" portion $\cup$	E	
Enable UPC "leading 1" portion	F	

§ **UPC-E & EAN-8 Expansion** : Expand the 7-digit UPC-E and 8-digit EAN-8 to 12-digit UPC-A and 13-digit EAN-13.

§ **UPC-A/E Standardization** : Expand the 7-digit UPC-E and 12-digit UPC-A to 8-digit UPC-8 to 13-digit EAN-13 with 1 zero insertion.

§ **UPC Lead 1 Numeric System** : Enable to read UPC leading with the 1 numeric system, you must enable this option.

WPC Selection (UPC/EAN/JAN/CAN)	Basic Length	Disable Check Digit	Disable Numeric System	With 2-digit Addendum	With 5-digit Addendum	Enable Standardization	Enable Expansion
UPC-A	12	- 1	- 1	+ 2	+ 5	+ 1	0
UPC-E	7	- 1	- 1	+ 2	+ 5	+ 1	+ 5
EAN/JAN/CAN-13	13	- 1	NC	+ 2	+ 5	NC	0
EAN/JAN/CAN-8	8	- 1	NC	+ 2	+ 5	NC	+ 5



**PROGRAM**

# Symbology Programming

◆ EAN/JAN/CAN & IATA Setting ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code
<p><b>EAN/CAN/JAN Setting</b></p> 	<p>Select EAN without supplement digits <small>u</small></p> <p>Select EAN with only 2 supplement digits</p> <p>Select EAN with only 5 supplement digits</p> <p>Select EAN with 2/5 supplement digits</p> <hr/> <p>Disable EAN-8 expansion <small>u</small></p> <p>Enable EAN-8 expansion</p> <hr/> <p>Disable EAN-13 check digit transmission</p> <p>Enable EAN-13 check digit transmission <small>u</small></p> <hr/> <p>Disable EAN-8 check digit transmission</p> <p>Enable EAN-8 check digit transmission <small>u</small></p> <hr/> <p>Disable ISBN/ISSN Conversion reading check <small>u</small></p> <p>Enable ISBN/ISSN Conversion reading check</p>	<p>0</p> <p>1</p> <p>2</p> <p>3</p> <hr/> <p>4</p> <p>5</p> <hr/> <p>6</p> <p>7</p> <hr/> <p>8</p> <p>9</p> <hr/> <p>A</p> <p>B</p>
<p><b>IATA Setting</b></p> 	<p>Select 15-digit fixed length IATA checking <small>u</small></p> <p>Select variable length IATA</p> <hr/> <p>Disable check digit verification <small>u</small></p> <p>Enable check digit automatic verification</p> <p>Enable S/N checking digit verification only</p> <p>Enable CPN checking digit verification only</p> <p>Enable CPN, Airline and S/N check digit verification</p> <hr/> <p>Disable start/stop symbol transmission <small>u</small></p> <p>Enable start/stop symbol transmission</p> <hr/> <p>Disable check digit transmission</p> <p>Enable check digit transmission <small>u</small></p>	<p>0</p> <p>1</p> <hr/> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <hr/> <p>7</p> <p>8</p> <hr/> <p>9</p> <p>A</p>



PROGRAM

# Symbology Programming

## ◆ Code 2 of 5 Family & German Post Code Setting ◆



END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>Code 25 Setting</b> 	Select any Code 2 of 5 <sup>u</sup> Select Standard/Industrial 2 of 5 only Select Matrix 2 of 5 only Select Interleaved 2 of 5 only Select Interleaved 2 of 5 S Code only Select IATA only Select China Postal Code only <hr/> Disable check digit verification <sup>u</sup> Enable check digit verification <hr/> Disable check digit transmission Enable check digit transmission <sup>u</sup>	0 1 2 3 4 5 6 <hr/> 7 8 <hr/> 9 A
<b>Code 25 Min. Length</b> 	Default (06) <sup>u</sup> Minimum length <hr/> Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.	<b>FIN</b> <b>(2 digits)</b>
<b>Code 25 Max. Length</b> 	Default (99) <sup>u</sup> Maximum length <hr/> Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.	<b>FIN</b> <b>(2 digits)</b>
<b>German Postal Setting</b> 	Disable <sup>u</sup> Enable	0 1

§ The scanner can decode almost all Code 2 of 5 symbologies automatically. But we recommend that you select **only one** kind of Code 2 of 5 for reading, or set limited **maximum and minimum reading length** for reading, because the encoding algorithm of Code 2 of 5 is not very robust. To decode all Code 2 of 5 automatically or to read variable length Code 2 of 5 will increase the error reading rate.



**PROGRAM**

# Symbology Programming

## ◆ Code 11 & Code 93 Setting ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code
<p><b>Code 11 Setting</b></p> 	<p>Select 1-check digit verification                      Select 2-check digit verification <math>\cup</math>                      Disable check digit transmission <math>\cup</math>                      Enable 1-check digit transmission                      Enable 2-check digit transmission</p>	<p>0 1 2 3 4</p>
<p><b>Code 11 Min. Length</b></p> 	<p>Default (04) <math>\cup</math>                      Minimum length                      Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Code 11 Max. Length</b></p> 	<p>Default (99) <math>\cup</math>                      Maximum length                      Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Code 93 Setting</b></p> 	<p>Disable check digit transmission <math>\cup</math>                      Enable check digit transmission</p>	<p>0 1</p>
<p><b>Code 93 Min. Length</b></p> 	<p>Default (03) <math>\cup</math>                      Minimum length                      Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Code 93 Max. Length</b></p> 	<p>Default (99) <math>\cup</math>                      Maximum length                      Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>



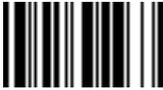
**PROGRAM**

# Symbology Programming

◆ MSI/Plessey, Code 128 & UCC/EAN 128 Setting ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code
<p><b>MSI/Plessey Setting</b></p> 	<p>Select MOD 10 check digit <math>\cup</math>                      Select MOD 10-10 check digit                      Select MOD 11-10 check digit</p> <p>Disable check digit transmission                      Enable 1-check digit transmission <math>\cup</math>                      Enable 2-check digit transmission</p>	<p>0 1 2 3 4 5</p>
<p><b>MSI/Plessey Min. Length</b></p> 	<p>Default (04) <math>\cup</math>                      Minimum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>MSI/Plessey Max. Length</b></p> 	<p>Default (99) <math>\cup</math>                      Maximum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Code 128/EAN-128 Setting</b></p> 	<p>Disable function code conversion <math>\cup</math>                      Enable function code conversion</p>	<p>0 1</p>
<p><b>Code 128/EAN-128 Min. Length</b></p> 	<p>Default (04) <math>\cup</math>                      Minimum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Code 128/EAN-128 Max. Length</b></p> 	<p>Default (99) <math>\cup</math>                      Maximum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>



**PROGRAM**

# Symbology Programming

## ◆ UK/Plessey & Telepen Setting ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code
<p><b>UK/Plessey Setting</b></p> 	<p>Select UK/Plessey Standard Format <math>\cup</math>                      Select UK/Plessey CLSI Format</p> <p>Disable Convert X to A-F <math>\cup</math>                      Enable Convert X to A-F</p> <p>Disable check digit transmission <math>\cup</math>                      Enable check digit transmission</p>	<p>0 1 2 3 4 5</p>
<p><b>UK/Plessey Min. Length</b></p> 	<p>Default (04) <math>\cup</math>                      Minimum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>UK/Plessey Max. Length</b></p> 	<p>Default (99) <math>\cup</math>                      Maximum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Telepen Setting</b></p> 	<p>Select Telepen Numeric mode <math>\cup</math>                      Select Telepen Full ASCII mode</p> <p>Disable check digit transmission <math>\cup</math>                      Enable check digit transmission</p>	<p>0 1 2 3</p>
<p><b>Telepen Min. Length</b></p> 	<p>Default (04) <math>\cup</math>                      Minimum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>
<p><b>Telepen Max. Length</b></p> 	<p>Default (99) <math>\cup</math>                      Maximum length</p> <p>Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.</p>	<p><b>FIN</b> <b>(2 digits)</b></p>



PROGRAM

# Keyboard Interface Control

## ◆ Keyboard Layout (Language) Setting ◆



END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>Keyboard Layout</b>   <div style="border: 1px solid black; padding: 5px; font-size: small;">                     The “<b>Universal Selection</b>” is only for PC/AT, PS/VP, PS/2 and compatible ones in <b>DOS</b> or <b>Windows</b> environment which can perform unique output <b>without</b> Caps Lock on/off (Output Style) concern. All transmitted data will follow the original full ASCII form. You also need not worry about the upper/lower case control.                 </div>	USA (QWERTY) <sup>u</sup>	00
	France (AZERTY)	01
	Germany (QWERTZ)	02
	United Kingdom - UK (QWERTY)	03
	Canadian French (QWERTY)	04
	Spain (QWERTY)	05
	Sweden/Finland (QWERTY)	06
	Portugal (QWERTY)	07
	Norway (QWERTY)	08
	Latin America (QWERTY)	09
	Italy (QWERTY)	10
	Netherlands (QWERTY)	11
	Denmark (QWERTY)	12
	Belgium (AZERTY)	13
	Switzerland-Germany (QWERTY)	14
	Iceland (QWERTY)	15
Universal (only available for IBM PC/AT, PS/VP in MS DOS and Windows Mode)	99	

§ Please refer to the **ASCII/HEX Table** listed in Appendix A to determine HEX codes for characters, symbols, and functions to be used as preamble or postamble.

§ To set preamble or postamble as function key output, you must enable the “**Function Key Emulation**” feature as listed in page 3-25 first.

§ **Keyboard Interface Message String :**

Preamble	Data Length	Prefix Symbol ID	Scanned Data	Suffix Symbol ID	Postamble	Record Suffix
1-15 characters	2-3 digits	1 or 2 characters	variable length	1 or 2 characters	1-15 characters	1 character



**PROGRAM**

# Keyboard Interface Control

◆ Record Suffix, Preamble, Postamble & Delay Setting ◆



**END(Exit)**

Family Code Selection	Parameter Selection	Option Code
<b>Record Suffix</b> 	None RETURN <sub>u</sub> TAB SPACE ENTER (Numeric Key Pad) User defined character (1 character)	0 1 2 3 4 5, (00-7F)
<b>Preamble</b> 	None <sub>u</sub> 1-15 characters  Maximum 15-character input; scan "FIN" to terminate this selection.	<b>FIN</b> [00-7F], [FIN]
<b>Postamble</b> 	None <sub>u</sub> 1-15 characters  Maximum 15-character input; scan "FIN" to terminate this selection.	<b>FIN</b> [00-7F], [FIN]
<b>Character Frame Control</b> 	None <sub>u</sub> 1-99 msec.  Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.	<b>FIN</b> (2 digits)
<b>Intermessage Delay</b> 	None <sub>u</sub> 1-99 (x5) msec.  Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.	<b>FIN</b> (2 digits)
<b>Intercharacter Delay</b> 	None <sub>u</sub> 1-99 msec.  Scan 2 digits from the option code chart in Appendix, then scanner will terminate this selection automatically.	<b>FIN</b> (2 digits)



PROGRAM

# Keyboard Interface Control

## ◆ Caps Lock Control & Emulation Setting ◆



END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>Caps Lock Control</b> 	“Caps Lock Off” State $\cup$ “Caps Lock On” State Auto Detect (PC/AT, PS/2, Keyboard Replacement and DOS/V Machines only)	0 1 2
<b>Function Key Emulation</b> 	Enable ASCII 00-31 code as keyboard function code output $\cup$ Ctrl-Output <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Refer to Appendix – Keyboard Function Code Table for details.</div>	0 1
<b>Key Pad Emulation</b> 	Disable key pad emulation $\cup$ Enable numeric output as key pad ( <b>Num Lock On</b> ) output	0 1
<b>Upper/Lower Case</b> 	Normal case (neglect the upper/lower case control) $\cup$ Inverse case (change all characters output to inverse case) Upper case (force all characters output as upper case) Lower case (force all characters output as lower case)	0 1 2 3

§ **Character Frame Control** is used to adjust timing gap between bytes within one character data output by the scanner. **Intercharacter Delay** is a time delay between data characters output by the scanner. These two parameters are used to synchronize data communication when : 1) the data transmission speed is too fast, characters may be skipped; 2) multitasking operation system or host computers in a network may slow down the keyboard handling; 3) various notebook or desktop PC systems require different timing parameter settings. Please always add one extra unit as safety margin when adjusting these two parameters.

§ **Intermessage Delay** is a time delay between messages output by the scanner. Increasing this delay will help host applications process the incoming data on time.

§ The function of “**Caps Lock Control**” and “**Key Pad Emulation**” are **only** available for IBM PC/AT, PS/VP, PS/2 series personal computers and compatible machines. While selecting the other host interfaces, these selections don’t perform the above functions.

§ Please check the **actual** Caps Lock state in use while software application is running. If the Caps Lock state is off, select “**Caps Lock Off**” state, then the scanner will perform normal data transmission. If the Caps Lock state is on, select “**Caps Lock On**” state. Select “**Auto Detect**,” the scanner will perform special transmission handshaking without changing the status of Caps Lock switch.



PROGRAM

# Serial Interface Control

◆ Record Suffix, Handshaking & Time Out Setting ◆



END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>STX/ETX Control</b> 	Disable STX/ETX transmission $\cup$ Enable STX/ETX transmission STX/ETX are two characters used to indicate the starting and ending of the total data frame transmitted via serial interface.	0 1
<b>Record Suffix</b> 	None CR (0DH) $\cup$ LF (0AH) CRLF (0D0AH) TAB (09H) SPACE (20H) EOT (04H) User defined character (1 character)	0 1 2 3 4 5 6 7, (00-7F)
<b>Preamble</b> 	None $\cup$ 1-15 characters Maximum 15-character input; scan "FIN" to terminate this selection.	<b>FIN</b> [00-7F],[FIN]
<b>Postamble</b> 	None $\cup$ 1-15 characters Maximum 15-character input; scan "FIN" to terminate this selection.	<b>FIN</b> [00-7F],[FIN]

§ **Serial Interface Message String :**

STX	Preamble	Data Length	Prefix Symbol ID	Scanned Data	Suffix Symbol ID	Postamble	ETX	Record Suffix
1 character	1-15 characters	2-3 digits	1 or 2 characters	variable length	1 or 2 characters	1-15 characters	1 character	1 character



PROGRAM

# Serial Interface Control

## ◆ Baud Rate & Data Frame Setting ◆



END(Exit)

Family Code Selection	Parameter Selection		Option Code	
<b>Handshaking Protocol</b> 	None (free running mode) $\cup$ RTS/CTS (hardware handshaking) ACK/NAK (software handshaking) Xon/Xoff (software handshaking)		0	
<b>Baud Rate (BPS)</b> 	38.4K BPS 19.2K BPS 9600 BPS $\cup$ 4800 BPS	2400 BPS 1200 BPS 600 BPS 300 BPS	0 1 2 3	4 5 6 7
<b>Data Frame</b> 	8, None, 1 $\cup$ 8, Odd, 1 8, Even, 1 8, Space, 1 8, Mark, 1 8, None, 2 7, Odd, 1 7, Even, 1	7, Space, 1 7, Mark, 1 7, None, 2 7, Odd, 2 7, Even, 2 7, Space, 2 7, Mark, 2	0 1 2 3 4 5 6 7	8 9 A B C D E
<b>Time Out Control</b> 	None 200 mseconds 500 mseconds $\cup$	1 second 2 seconds 5 seconds User defined value (seconds)	0 1 2	3 4 5 <b>6, (2 digits)</b>

§ When the **RTS/CTS Hardware Handshaking** option is selected, the **RTS** (request to send) and **CTS** (clear to send) signals will be issued before normal data communication. This option is very helpful to ensure the reliability of data communication.

§ When the **ACK/NAK Software Handshaking** option is selected, the scanner waits for an **ACK** (acknowledge) or **NAK** (not acknowledge) from the host computer after each data transmission. If the NAK is received, the scanner will re-send the data until receiving ACK.

§ The **Time Out Control** is a pre-defined delay time for the scanner to wait for handshaking, acknowledgment or non-acknowledgment from the host computer.



PROGRAM

# Wand Emulation Control

◆ Output Polarity, Singal State, Margin/Module Time, etc.◆



END(Exit)

Family Code Selection	Parameter Selection		Option Code	
<b>Output Polarity</b> 	High level (5Vdc) on Bar (low level on Space) $\cup$ Low level (0Vdc) on Bar (high level on Space)		0	
	<input type="checkbox"/> Determine the output voltage level for both bar and space.		1	
<b>Initial Signal State</b> 	High Level (5Vdc) $\cup$ Low Level (0Vdc)		0	
	<input type="checkbox"/> Determine the initial state of output voltage level.		1	
<b>Margin Time</b> 	10 mseconds 15 mseconds 20 mseconds $\cup$ 25 mseconds	30 mseconds 50 mseconds 100 mseconds <input type="checkbox"/> Delay time before data transmission	0 1 2 3	4 5 6
<b>Module Time</b> 	Extremely short Short Medium $\cup$	Long <input type="checkbox"/> Time base of minimum narrow bar	0 1 2	3
<b>Narrow/Wide Ratio</b> 	1:2 $\cup$ 1:2.5 1:3		0 1 2	
<b>Code 39 Emulation</b> 	Disable standard Code 39 emulation $\cup$ Enable standard Code 39 skip emulation Enable standard Code 39 replace emulation		0 1 2	

§ [ **Code 39 Skip** ] : When this option is selected, all scanned data will be translated as Standard Code 39 wand emulation output. If any lower case characters are read, they will be translated to upper case characters. Any other characters that are not available in Code 39 symbology set will be **skipped**.

§ [ **Code 39 Replace** ] : Any character not normally available in the standard Code 39 symbology set will be translated as **Space**.

# Trigger Modes

This section allows the user to select the trigger mode that is different from the Trigger Mode default. The operations of each trigger mode are described as below.

## Low Power Mode

When this operation mode is selected, the scanner goes into idle state after scanning the bar code. You must press the trigger to wake up the scanner for operation. While the scanner is in the idle state, there is only maximum 500uA standby current for the entire reading device. It is very helpful for mobile data collection and application, which are concerned with power savings, but please keep a minimum of 120 milliseconds debounce time to stabilize the power transition.

## Manual Trigger Mode

When this operation mode is selected, you must press the trigger to turn on the light source of the scanner before scanning the bar code. If you do not press the trigger, the light source will be turned off immediately. Please note that the scanner maintains standby current. You can adjust the debounce time to get faster triggering reading.

## Level Mode (Auto Power Off)

When this operation mode is selected, the scanner continues to turn on the light source of the scanner before a good read or pre-defined auto power off duration. If the scanner decodes a bar code successfully, it turns off the light source immediately. After the scanner turns off the light source, you must press the trigger to turn on the light source again. If there is no scanning operation performed during the pre-defined auto power off time, the scanner enters the idle state after the pre-defined auto power off duration.

## Alternative Mode

When this operation mode is selected, the scanner keeps the light source of the scanner turned on and disables the infrared sensor before the pre-defined auto power off duration. Because you do not have to press the trigger frequently, it is very convenient for multiple scanning. After each good read, the auto power off timer counter is reset. After the scanner turns off the light source, you must press the trigger to turn on the light source again. If there is no scanning operation in pre-defined auto power off duration, the scanner turns off the light source and enables the infrared sensor after the pre-defined auto power off duration

## Presentation Mode

When this operation mode is selected, the scanner flashes the light source of the scanner without using the trigger. If the scanner detects an image similar to a bar code, the scanner forces on the light source automatically and scans. If the scanner cannot detect a bar code, it resets the light source immediately to blinking. Adjusting the Pulse Driven Duty Cycle can change the frequency of the blinking.

## Auto Trigger Mode (Continued Power On)

When this operation mode is selected, the light source of the scanner is forced on for continued operation without pressing the trigger switch. This mode is convenient for high speed bar code reading.

## Toggle Mode (Repeat Reading)

The toggle mode is very similar to the Alternative Mode without the pre-defined auto power off duration concern. When this operation mode is selected, you must press the trigger to turn on the light source of the scanner. The scanner keeps the light source turned on until you press the trigger again.

## 8. Diagnostic Mode (Test Reading)

This operation mode is specifically designed for diagnostic purposes. When this operation mode is selected, the light source of the scanner is forced on without regard for other programmable parameters, such as double scan verification, redundancy, and so forth.

## Scanning Tolerance

### (Print Quality Control)

This parameter provides the user with a helpful tool to use when the printing quality of the bar code is poor. The regular image distortion acceptance of the scanner is designed to accept up to +/- 200% tolerance. With this feature you can increase the acceptable tolerance if you are using poorly printed or overly printed bar code labels. To reduce the error reading rate further, we also recommend that you limit the number of enabled symbologies to only those that you need to read, and to also limit the minimum and maximum reading of each enabled bar code symbology.



PROGRAM

# Operation Control

## ◆ Trigger Mode, Buzzer Tone, Scanning Tolerance ◆



END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>Operation Mode</b> 	Low Power mode (Low Power triggering) Manual trigger (External triggering) $\cup$ Level mode (Auto power off) Alternative mode (Periodic power off) Presentation mode (Pulse driven reading) Auto trigger mode (Continued power on) Toggle mode (Repeat reading) Diagnostic mode (Test reading)	0 1 2 3 4 5 6 7
<b>Buzzer Tone Adjust</b> 	Buzzer tone - mute Buzzer tone - low Buzzer tone - medium $\cup$ Buzzer tone - high Buzzer tone - extremely high Good-read beep before data transmission $\cup$ Good-read beep after data transmission Power-on beep $\cup$ No power-on beep	0 1 2 3 4 5 6 7 8
<b>Scanning Tolerance</b>  <b>(Printing Quality Control)</b>	Regular (standard) printing quality $\cup$ Poor (critical) printing quality Please note that if you select "Poor printing quality," you should limit " <b>Readable Bar Code Symbology</b> " and " <b>Minimum &amp; Maximum Reading Length</b> " of each symbology to avoid error reading.	0 1

§ The "Scanning Tolerance" is specially designed for the most popular symbologies, such as **Code 39**, **UPC**, and **EAN**.

# Advanced Operation Control

This section allows the user to program the following parameters for advance operation control. The definitions of each parameter are described below.

## Reread Delay

This feature is designed to inhibit the scanner from reading the same bar code within a certain period of time. The time period can be programmed for immediate, short, medium, or long time out duration. Another selection is Force Verification which will not allow reading of the same bar code twice even after a very long duration. It should also note that this feature is not available if you have selected Low Power Mode, Manual Trigger Mode, Level Mode or Diagnostic Mode.

## Scan Voting

Scan Voting is the number of times the same bar code is decoded before it is transmitted. This feature is useful when the bar codes being read are of poor quality. It should also be noted that this feature is not available if you have selected Low Power Mode, Manual Trigger Mode, Level Mode, or Diagnostic Mode.

## Auto Power Off Duration

The Auto Power Off Duration is a pre-defined power off time out counter for Level Mode and Alternative Mode. You can adjust this parameter to meet your own application requirement.

## Pluse Driven Duty

The Pulse Driven Duty is designed to control the flashing frequency of the light source. For example, the 1/2 duty cycle means that the scanner turns on the light source at a time equal to 1/2 the duty cycle. Generally speaking, the higher scan rate will take the higher duty.

## Debounce Time Control

In an effort to stabilize the sometime erratic signals that occur during power transition, a time delay is added. Increasing the debounce time decreases reading errors, but also reduces reading performance a little.



PROGRAM

# Operation Control

◆ Reread Delay, Scan Voting ◆



END(Exit)

Family Code Selection	Parameter Selection		Option Code	
<b>Reread Delay</b> 	Disable Immediate time out duration Short time out duration $\cup$ Medium time out duration	Long time out duration Force Verification	0 1 2 3	4 5
<b>Scan Voting</b> 	None 1 time 2 times $\cup$ 3 times	4 times 5 times	0 1 2 3	4 5
<b>Auto Power Off Duration</b> 	Short (around 2 seconds) Medium (around 3-4 seconds) Long (around 5-6 seconds) Extremely long (around 7-8 seconds) $\cup$		0 1 2 3	
<b>Pulse Driven Duty</b> 	1/2 duty cycle $\cup$ 2/3 duty cycle 3/4 duty cycle 4/5 duty cycle		0 1 2 3	
<b>Debounce Time Control</b> 	None $\cup$ 20 mseconds 50 mseconds 100 mseconds	120 mseconds 150 mseconds 200 mseconds 250 mseconds	0 1 2 3	4 5 6 7
<b>Dollar Sign Control</b> 	Dollar sign output as "\$" $\cup$ Dollar sign output as "Japanese Yen"		0 1 2	



PROGRAM

## Condensed Data Editor

◆ Preamble, Postamble, Data Length & Symbol ID Trans. ◆



END(Exit)

Family Code Selection	Parameter Selection	Option Code
<b>Preamble</b> 	None $\cup$ 1-15 characters (use hex value for each character) Maximum 15-character input; scan "FIN" to terminate this selection.	<b>FIN</b> [00-7F], [FIN]
<b>Postamble</b> 	None $\cup$ 1-15 characters (use hex value for each character) Maximum 15-character input; scan "FIN" to terminate this selection.	<b>FIN</b> [00-7F], [FIN]
<b>Data Length Transmission</b> 	Disable $\cup$ Enable 2-digits data length transmission If data length exceeds 99, 3-digit data length will be transmitted.	0 1
<b>Code ID Transmission</b> 	Disable Code ID transmission $\cup$ Enable prefix Code ID transmission Enable suffix Code ID transmission Enable both prefix and suffix Code ID transmission	0 1 2 3
<b>Data Pass Control</b> 	Disable $\cup$ Enable If data verifier is false, the original scanned bar code data will be transmitted.	0 1

§ The **Data Editor** is a very powerful, Artificial-Intelligence based data editing expert system provided specifically for the 3060B/3080B/3220 bar code scanners. Through the **Data Editor**, you can process the scanned data prior to transmitting in many ways, such as: **Insert, Delete, Match, Verify, Replace, Reorganize, and Repeat Transmission**. It also allow help you to arrange the transmission of scanned data to any specific format.

§ Due to the resources used by this system, the **Full-feature Data Editor** is only supported by **HHP SET**. Through **HHP SET**, all settings and configurations can be done on-screen, under Windows® 95/98/NT environment.

§ A **Condensed Version Data Editor** is provided here in the manual and is utilized by scanning the programming bar codes.



# Condensed Data Editor



## ◆ Data Formater ◆

PROGRAM

END(Exit)

Family Code Selection	Parameter Selection	Option Code	2nd Option Code
<b>Symbology Selection</b> 	Disable <sup>u</sup>	<b>FIN</b>	
	Select one bar code symbology	<b>(2 digits)</b>	automatic termination
	Select all bar code symbologies	<b>00</b>	automatic termination
<b>1st Insertion</b> 	Disable <sup>u</sup>	<b>FIN</b>	<b>Hex value for each character, (FIN)</b>
	Enable	<b>(2 digits)</b>	
	2-digits identified position; max. 3 insertion characters	position	1-3 characters to insert
<b>2nd Insertion</b> 	Disable <sup>u</sup>	<b>FIN</b>	<b>Hex value for each character, (FIN)</b>
	Enable	<b>(2 digits)</b>	
	2-digits identified position; max. 3 insertion characters	position	1-3 characters to insert
<b>3rd Insertion</b> 	Disable <sup>u</sup>	<b>FIN</b>	<b>Hex value for each character, (FIN)</b>
	Enable	<b>(2 digits)</b>	
	2-digits identified position; max. 3 insertion characters	position	1-3 characters to insert
<b>4th Insertion</b> 	Disable <sup>u</sup>	<b>FIN</b>	<b>Hex value for each character, (FIN)</b>
	Enable	<b>(2 digits)</b>	
	2-digits identified position; max. 3 insertion characters	position	1-3 characters to insert

§ The **Data Formater** is used to edit the scanned raw data prior to transmitting the data to the host computer or terminal. It allows you to select desired bar code symbologies for formatter control, and provides **Multiple Position Insertion** and **Multiple Character Insertion** (max three characters) in the identified position.

§ While the Data Formater is enabled, it arranges only scanned data without **Preamble, Postamble, STX, ETX, Data Length, Prefix/Suffix Symbology ID** or **Record Suffix**. All of the above programmable parameters perform the same function depending on your setting.

§ Regarding the “**Bar Code Selection**” and “**Position Calculation**” of data formater, please refer to page 3-37 for details.

§ To determine the hex value for the “**Character,**” refer to the **ASCII/HEX Table** listed in Appendix A.



# Condensed Data Editor



## ◆ Data Verifier Setting ◆

PROGRAM

END(Exit)

Family Code Selection	Parameter Selection	Option Code	2nd Option Code
<b>Verifier Control</b> 	Disable <input type="checkbox"/> Select one bar code symbology Select all bar code symbologies	<b>FIN</b> <b>(2 digits)</b> 00	automatic termination automatic termination
<b>Identified Data Length</b> 	Disable <input type="checkbox"/> Enable <input type="checkbox"/> Determine the identified data length for verification.	<b>FIN</b> <b>(2 digits)</b>	
<b>1st Identified Character</b> 	Disable <input type="checkbox"/> Enable <input type="checkbox"/> 2-digits checking position; 1 identified character	<b>FIN</b> <b>(2 digits)</b> position	[00-7F]
<b>2nd Identified Character</b> 	Disable <input type="checkbox"/> Enable <input type="checkbox"/> 2-digits checking position; 1 identified character	<b>FIN</b> <b>(2 digits)</b> position	[00-7F]
<b>3rd Identified Character</b> 	Disable <input type="checkbox"/> Enable <input type="checkbox"/> 2-digits checking position; 1 identified character	<b>FIN</b> <b>(2 digits)</b> position	[00-7F]

- § The **Data Verifier** is used to provide advanced verification for error-free scanning and to work as an **Embedded Data Transmitting Filter**.
- § All data must conform to the **Identified Bar Code Symbologies**, **Identified Data Length**, and one to three **Identified Characters** in the checking position. Otherwise, the scanner will not transmit the data to the host computers or terminals, but will instead issue **3 long beeps** for verification error and **skip** the scanned data.
- § The Data Verifier checks only scanned data without **Preamble**, **Postamble**, **STX**, **ETX**, **Data Length**, **Prefix/Suffix Symbology ID** or **Record Suffix**.
- § Regarding the “**Bar Code Selection**” and “**Position Calculation**” of Data Verifier, please refer to page 3-37 for details.
- § To determine the hex value for the “**Character**,” refer to the **ASCII/HEX Table** listed in Appendix A.



# Condensed Data Editor



## ◆ Data Replacer Setting ◆

PROGRAM

END(Exit)

Family Code Selection	Parameter Selection	Option Code	2nd Option Code
<b>Replacer Control</b> 	Disable <sup>u</sup> Select one bar code symbology Select all bar code symbologies	<b>FIN</b> <b>(2 digits)</b> 00	automatic termination automatic termination
<b>1st Replacement</b> 	Disable <sup>u</sup> Enable 2-digits identified position; 1 replacement character	<b>FIN</b> <b>(2 digits)</b> position	[ 00-7F ]
<b>2nd Replacement</b> 	Disable <sup>u</sup> Enable 2-digits identified position; 1 replacement character	<b>FIN</b> <b>(2 digits)</b> position	[ 00-7F ]
<b>3rd Replacement</b> 	Disable <sup>u</sup> Enable 2-digits identified position; 1 replacement character	<b>FIN</b> <b>(2 digits)</b> position	[ 00-7F ]

§ The **Data Replacer** is used to edit the scanned raw data prior to transmitting the data to the host computers or terminals. It allows you to select desired bar code symbologies for replacer control, and provides **Multiple Position Replacement** in the identified position.

§ All data must conform to the **Identified Bar Code Symbologies**, and one to three **Identified Characters** in the identified position. While the Data Replacer is enabled, it arranges only scanned data without **Preamble, Postamble, STX, ETX, Data Length, Prefix/Suffix Symbology ID** or **Record Suffix**.

§ Regarding the “**Bar Code Selection**” and “**Position Calculation**” of Data Replacer, please refer to page 3-37 for details.

§ To determine the hex value for the “**Character**,” refer to the **ASCII/HEX Table** listed in Appendix A.



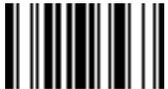
# Condensed Data Editor



## ◆ Data Organizer Setting ◆

PROGRAM

END(Exit)

Family Code Selection	Parameter Selection	Option Code	2nd Option Code
<b>Organizer Control</b> 	Disable $\cup$ Select one bar code symbology Select all bar code symbologies	<b>FIN</b> <b>(2 digits)</b> 00	automatic termination automatic termination
<b>1st Organization</b> 	Disable $\cup$ Enable  2-digits identified character position; Transmit data before/after this position	<b>FIN</b> <b>(2 digits)</b>  position	Direction : 0 (Before) $\cup$ 1 (After)
<b>2nd Organization</b> 	Disable $\cup$ Enable  2-digits identified position; Transmit data before/after this position	<b>FIN</b> <b>(2 digits)</b>  position	Direction : 0 (Before) $\cup$ 1 (After)
<b>Include/Exclude Control</b> 	Transmitted data excluding the data of identified position $\cup$ Transmitted data including the data of identified position	0 1	

§ The **Data Organizer** is used to edit the scanned raw data prior to transmitting the data to the host computers or terminals. It allows you to select desired bar code symbologies for organizer control, and provides maximum two identified positions to send the data **before** or **after**. It also allows you to control the transmitted data **including** or **excluding** the data of identification position. Please refer to the application example listed in the next page for details.

§ While the Data Organizer is enabled, it arranges only scanned data without **Preamble**, **Postamble**, **STX**, **ETX**, **Data Length**, **Prefix/Suffix Symbology ID** or **Record Suffix**.

§ Regarding the “**Bar Code Selection**” and “**Position Calculation**” of Data Organizer, please refer to the next page for details.

§ To determine the hex value for the “**Character**,” refer to the **ASCII/HEX Table** listed in Appendix A.

## Select a Bar Code Symbology

You can use the Condensed Data Editor for advanced transmission arrangement with one or all bar code symbologies. If you scan “00” to select all types, the scanner arranges all incoming data to meet your pre-defined format. If you want to select only one type bar code, please select one of the option codes listed below.

UPC-E : <b>03</b>	Telepen : <b>13</b>	Codabar/NW-7 : <b>06</b>
UPC-A : <b>02</b>	Code 128 : <b>01</b>	Code 25 Family : <b>08</b>
EAN/CAN/JAN-8 : <b>05</b>	UCC/EAN 128 : <b>01</b>	Code 11 : <b>10</b>
EAN/CAN/JAN-13 : <b>04</b>	Code 39 : <b>07</b>	UK/Plessey : <b>12</b>
Code 32 : <b>07</b>	Code 93 : <b>09</b>	MSI/Plessey : <b>11</b>

## Position Calculation

### [Data Formatter]

If there is a 5-character input data string, refer to the following to calculate the actual position for insertion:

	X		X		X		X		X	
00		01		02		03		04		05

### [Data Verifier, Data Replacer, Data Organizer]

If there is an 11-character data string, please refer to the following to calculate the actual position for identification.

X	X	X	X	X	X	X	X	X	X	X
00	01	02	03	04	05	06	07	08	09	10

## Application Example

§ The bar code label is an all-numeric 16-digit Interleaved 2 of 5, which includes the information of 6-digit date code, 6-digit serial number, and 4-digit unit price, in that order. The data code always starts with a “9.” If a scanned bar code meets the above criteria, the data will be separated into three fields. Each field should end with a “TAB.” The first digit of the date code, which is a “9,” should be replaced with an “A.” The serial number should start with SN. The first 2 digits of the unit price should be skipped.

§ Actual Bar Code read : 9 8 1 0 2 5 1 2 3 4 5 6 9 8 7 6

§ Desired Output : **A81025[TAB]SN123456[TAB]76[TAB]**

## Programming Procedure

### [Important Notice]

Please note that Condensed Data Editor will follow the preset working flow as below:

**Verifier** ▶▶ **Formatter** ▶▶ **Replacer** ▶▶ **Organizer**

Consequently when you set the identified position in the Data Organizer, you must consider the inserted data that you have already set via Data Formatter.

### [Data Verifier]

- § Scan “Program” to enter the programming mode.
- § Scan “Verifier Control” and set bar code symbology to “**08**” (Interleaved 2 of 5).
- § Scan “Identified Data Length” and set the length to “**16**.”
- § Scan “1st Identified Character” and set the identified position to “**00**,” then set the identified character to “**39**” (Hex value for 9).

### [Data Formatter]

- § Scan “Formatter Control” and set bar code symbology to “**08**.”
- § Scan “1st Insertion” and set the identified position to “**06**,” then inserted characters to “**09**” (Hex value for TAB), “**53**” (Hex value for S), “**4E**” (Hex value for N).
- § Scan “2nd Insertion” and set the identified position to “**12**,” then inserted character to “**09**.” Finally, you must scan the “**FIN**” (Finish) code to terminate this selection.
- § Scan “3rd Insertion” and set the identified position to “**16**,” then inserted character to “**09**.” Finally, you must scan the “**FIN**” (Finish) code to terminate this selection.

### [Data Replacer]

- § Scan “Replacer Control” and set bar code symbology to “**08**.”
- § Scan “1st Replacement” and set the identified position to “**00**,” then replaced character to “**41**” (Hex value for A).

At this point the data string is as following.

A81025[TAB]SN123456[TAB]9876[TAB]. We still need delete the 98 from the string to get the desired output.

### [Data Organizer]

- § Scan “Organizer Control” and set bar code symbology to “**08**.”
- § Scan “1st Organization” and set the identified position to “**16**,” then set the data transmission to “**0**” (before).

The character position, which counts the added “SN” and TABs, is identified as 00, 01, 02,... so the 16<sup>th</sup> character is “9.” The include/exclude control, which will be set to 0 for exclude in the last step of instructions below, determines that the “9” in the 16<sup>th</sup> position will not be sent. All of the characters before the 16<sup>th</sup> position will be transmitted.

- § Scan “2nd Organization” and set the identified position to “**17**,” which is “8,” in this case, then set the data transmission to “**1**” to transmit all of the characters after position 17. Whether position 17 gets transmitted along with the string is determined by the include/exclude control, which, in this case, will be excluded in the next step.

### [Include/Exclude Control]

- § Scan Include/Exclude Control.”
- § Scan “**0**” for transmitted data excluding the data of identified position.
- § Scan “**END**” (Exit) to terminate the programming.

## 4. Customer Service

### Obtaining Factory Service

Hand Held Products provides service for all its products through a service center located in Charlotte, North Carolina. To obtain warranty or non-warranty service, return the unit to Hand Held Products (postage paid) with a copy of the dated purchase record attached.

In the United States, please contact the Hand Held Products' Product Service Department at the address/telephone number listed below to obtain a Return Material Authorization number (RMA #).

### Main Office

Hand Held Products Service Department  
7510 East Independence Boulevard  
Charlotte, NC 28227  
Product Service Department  
Telephone: (800) 782-4263 or (704) 568-0536  
Fax: (704) 532-4191

For service in Europe, please contact your Hand Held Products' representative or your local distributor.

European Office  
Hand Held Products, Ltd.  
Hondsruglaan 87 D  
5628 DB Eindhoven  
The Netherlands  
Telephone: Int+31 40 242 4486  
Fax: Int+31 40 242 5672

### United Kingdom Office

Hand Held Products (UK) Ltd.  
Dallam Court  
Dallam Lane  
Warrington  
Cheshire WA2 7LT  
United Kingdom  
Telephone: Int+44 (0) 1 925 240055  
Or Int+353 1 216 0070  
Fax: Int+44 (0) 1 925 631280  
Or Int+353 1 295 6353

For service in Asia, please contact your Hand Held Products' representative or your local distributor.

### **Asia Pacific Office**

Hand Held Products  
10/F Tung Sun Commercial Centre  
194-200 Lockhart Road  
Wanchai, Hong Kong  
Telephone: Int+852-2511-3050 or 2511-3132  
Fax: Int+852-251-1355

For service in Japan, please contact your Hand Held Products' representative or your local distributor.

### **Japan Office**

Hand Held Products  
Bon Marusan 8F  
3-5-1 Kanda-Jinbocho  
Chiyoda-ku  
Toyko, 101, Japan  
Telephone: Int+81-3-5212-7392  
Fax: Int+81-3-3261-7372

For service in Latin America, please contact your Hand Held Products' representative (at the address that follows) or your local distributor.

### **Latin America Office**

Hand Held Products  
5117 Castello Drive  
Suite 1  
Naples, FL 34103  
Telephone: (941) 263-7600  
Fax: (941) 263-9689

### **Application Support**

If you need assistance installing or troubleshooting your scanner, please call your distributor or the nearest Hand Held Products' Application Support office listed below. You also can obtain assistance from our website at [www.handheld.com](http://www.handheld.com).

**North America:**

Telephone: (315) 685-2476 (8 a.m. to 6 p.m. EST)

Fax number:(315) 685-4960

E-mail: support@handheld.com

**Europe:**

Telephone-

European Ofc: Int+31 40 242 4486

U.K. Ofc: Int+44 1925 240055

E-mail: support@handheld.com

**Asia:**

Telephone: Int+852-2511-3050 or 2511-3132

E-mail: support@handheld.com



## 5. Limited Warranty

Welch Allyn Data Collection, Inc., d/b/a Hand Held Products (“HHP”) warrants its products to be free from defects in materials and workmanship and to conform to HHP’s published specifications applicable to the products purchased at the time of shipment. This warranty does not cover any HHP product which is (i) improperly installed or used; (ii) damaged by accident or negligence, including failure to follow the proper maintenance, service, and cleaning schedule; or (iii) damaged as a result of (A) modification or alteration by the purchaser or other party, (B) excessive voltage or current supplied to or drawn from the interface connections, (C) static electricity or electro-static discharge, (D) operation under conditions beyond the specified operating parameters, or (E) repair or service of the product by anyone other than HHP or its authorized representatives.

This warranty shall extend from the time of shipment for the duration published by HHP for the product at the time of purchase (“Warranty Period”). Any defective product must be returned (at purchaser’s expense) during the Warranty Period to HHP’s factory or authorized service center for inspection. No product will be accepted by HHP without a Return Materials Authorization, which may be obtained by

contacting HHP. In the event that the product is returned to HHP or its authorized service center within the Warranty Period and HHP determines to its satisfaction that the product is defective due to defects in materials or workmanship, HHP, at its sole option, will either repair or replace the product without charge, except for return shipping to HHP.

EXCEPT AS MAY BE OTHERWISE PROVIDED BY APPLICABLE LAW, THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER COVENANTS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, ORAL OR WRITTEN, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

HHP’S RESPONSIBILITY AND PURCHASER’S EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT. IN NO EVENT SHALL HHP BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, AND, IN NO EVENT, SHALL ANY LIABILITY OF HHP ARISING IN CONNECTION WITH ANY PRODUCT SOLD HEREUNDER (WHETHER SUCH LIABILITY ARISES

FROM A CLAIM BASED ON CONTRACT, WARRANTY, TORT, OR OTHERWISE) EXCEED THE ACTUAL AMOUNT PAID TO HHP FOR THE PRODUCT. THESE LIMITATIONS ON LIABILITY SHALL REMAIN IN FULL FORCE AND EFFECT EVEN WHEN HHP MAY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH INJURIES, LOSSES, OR DAMAGES. SOME STATES, PROVINCES, OR COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

All provisions of this Limited Warranty are separate and severable, which means that if any provision is held invalid and unenforceable, such determination shall not affect the validity of enforceability of the other provisions hereof.

#### Limited Warranty Duration

The Limited Warranty duration for the IT3220 is 2 years.  
The Limited Warranty duration for the VT3060/80 is 1 year.

# Appendix A

This chapter gives the most up-to-date description of scanner accessories, including various Host Interface Cable Adapters, Beeping Indications, and Keyboard Function Code Table.

Also, all necessary bar code commands are printed in the fold out of the back cover of this manual.

# Interface Cable Converters

The following provides information about the most popular cable adapters, including:

- § PC/AT Keyboard Wedge Cable Converter
- § PS/2 Keyboard Wedge Cable Converter
- § General Notebook PC (PS/2) Direct Link Cable Converter
- § USB Type A Direct Link Cable Converter
- § APPLE ADB Keyboard Wedge Cable Converter
- § IBM ThinkPad Keyboard Wedge Cable Converter
- § IBM ThinkPad Direct Link Cable Converter
- § NEC 98xx Keyboard Wedge Cable Converter
- § RS-232 Serial Interface Cable Converter
- § RS-232 Serial Wedge Cable Converter
- § Wand Emulation Interface Cable Converter

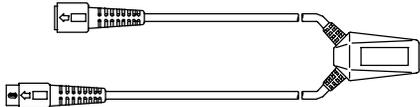
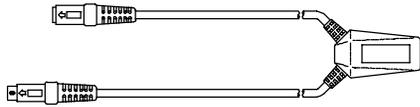
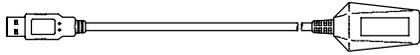
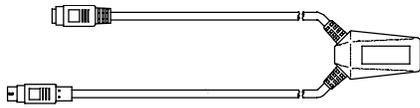
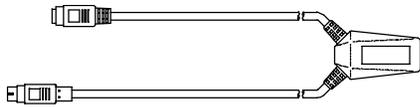
Illustration	Description
	<p><b>PC/AT KB Wedge Cable Converter</b></p> <ul style="list-style-type: none"> <li>- Desktop PC/AT KB Wedge</li> <li>- 5P DIN Male &amp; Female Connectors</li> </ul>
	<p><b>PS/2 KB Wedge Cable Converter</b></p> <ul style="list-style-type: none"> <li>- PS/2 KB Wedge</li> <li>- DOS/V KB Wedge</li> <li>- 6P Mini-DIN M&amp;F Connectors</li> </ul>
	<p><b>USB KB Cable Converter</b></p> <ul style="list-style-type: none"> <li>- USB KB Direct Link</li> <li>- 4P USB Type A Male Connector</li> </ul>
	<p><b>Apple ADB Keyboard Wedge Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 4P Mini-DIN M&amp;F Connectors</li> </ul>
	<p><b>Apple PowerMac ADB Keyboard Wedge Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 4P Mini-DIN M&amp;F Connectors</li> </ul>

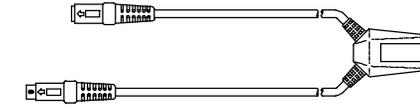
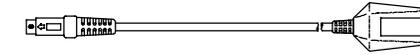
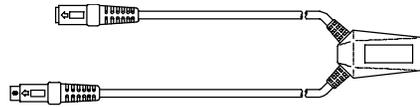
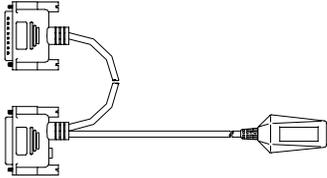
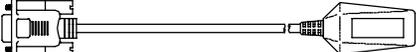
Illustration	Description
	<p><b>NEC 98xx Keyboard Wedge Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 8P Mini-DIN M&amp;F Connectors</li> </ul>
	<p><b>IBM ThinkPad Direct Link Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 6P Mini-DIN Male Connector</li> </ul>
	<p><b>IBM ThinkPad Keyboard Wedge Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 6P Mini-DIN M&amp;F Connectors</li> </ul>
	<p><b>RS-232 Serial Cable Converter</b></p> <ul style="list-style-type: none"> <li>- RS-232 Peer-to-Peer Interface</li> <li>- 25P D-Sub Female Connector</li> <li>- Embedded Power Jack</li> </ul>
	<p><b>RS-232 Serial Cable Converter</b></p> <ul style="list-style-type: none"> <li>- RS-232 Peer-to-Peer Interface</li> <li>- 9P D-Sub Femal Connector</li> <li>- Embedded Power Jack</li> </ul>

Illustration	Description
	<p><b>RS-232 Serial Wedge Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 25P D-Sub M&amp;F Connectors</li> <li>- Embedded Power Jack</li> </ul>
	<p><b>Notebook PS/2 Keyboard Direct Link Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 6P Mini-DIN Male Connector</li> </ul>
	<p><b>Wand Emulation Interface Cable Converter</b></p> <ul style="list-style-type: none"> <li>- 9P D-Sub Female Connector</li> </ul>

## Beeping Indications

No.	Descriptions	Beeping	Buzzer Tone
01	Internal or operation memory error	Repeated beeps	medium
02	Internal fatal error	Repeated beeps	medium
03	Beginning the normal operation	2 short beeps	high + low
04	Entering the programming mode (Program)	3 short beeps	high + low + low
05	Exiting the programming mode (End)	1 short beep	medium
06	Completing to store the parameters	3 short beeps	low + medium high
07	Starting the master default and group default	4 short beeps	high medium + high + medium
08	Completing the master default and group default	3 short beeps	low + high + low
09	Completing the system information listing	3 short beeps	medium + high + medium
10	Good reading	1 short beep	adjustable tone
11	Programming error (Invalid programming scan)	1 long beep	medium
12	Scanning "FIN" to finish programming selection	2 short beeps	medium + medium
13	Finishing the programming selection automatically	2 short beeps	medium + medium
14	Data verifier checking error	3 long beeps	medium + medium + medium
15	Memory buffer full	4 long beeps	medium + medium + medium + medium
16	Time out warning	2 long beeps	medium + medium
17	No CTS signal warning	1 long beep	medium
18	Record over-size warning	1 long beep	low

## Keyboard Function Code Table

No.	ANSI	ASCII	Key Function	No.	ANSI	ASCII	Key Function
00	NUL	00H	RESERVED	16	DLE	10H	F7
01	SOH	01H	CTRL (Left)	17	DC1	11H	F8
02	STX	02H	ALT (Left)	18	DC2	12H	F9
03	ETX	03H	SHIFT	19	DC3	13H	F10
04	EOT	04H	CAPS LOCK	20	DC4	14H	CTRL (Right)
05	ENQ	05H	NUM LOCK	21	NAK	15H	ALT (Right)
06	ACK	06H	ESC	22	SYN	16H	INS (Insert)
07	BEL	07H	F1	23	ETB	17H	DEL (Delete)
08	BS	08H	+ (Numeric Pad)	24	CAN	18H	HOME
09	HT	09H	TAB	25	EM	19H	END
10	LF	0AH	F2	26	SUB	1AH	PAGE UP
11	VT	0BH	F3	27	ESC	1BH	PAGE DOWN
12	FF	0CH	F4	28	FS	1CH	UP
13	CR	0DH	ENTER (Carriage Return)	29	GS	1DH	DOWN
14	SO	0EH	F5	30	RS	1EH	LEFT
15	SI	0FH	F6	31	US	1FH	RIGHT

To emulate the key functions above, program the scanner by using the corresponding ASCII hex value. For example, if you want to program in a suffix of a TAB, you would follow the directions for programming a suffix on page 3-21. For option code, scan **“09”** for a TAB.

## ASCII Input Shortcut

To configure the user definable parameters of the scanner via the programming bar codes, you will be asked to scan your desired ASCII value in **HEX** form. You have to refer to the “**HEX/ASCII Table**” for details.

### Example:

If you want the scanned data output leading with a Dollar Sign, you have to set the “Preamble” to “\$”. The configuration procedure is listed below for reference.

- § Scan the system command – **PROGRAM** listed on page 3-24 to enter programming mode.
- § Scan family code – **PREAMBLE** to select this family.
- § Refer to the **Hex/ASCII Table**, you will find the HEX value of “\$” is **24**.
- § Scan the option code – **2** listed on the fold out back cover.
- § Scan the option code – **4** listed on the fold out back cover.
- § Scan the system command – **FIN (Finish)** to terminate Preamble setting.
- § Scan the system command – **End** to exit the programming mode for normal operation.

## HEX/ASCII Reference Table

	0	1	2	3	4	5	6	7
0	NUL	DLE	SPACE	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	\$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	[	k	{
C	FF	FS	,	<	L	\	l	
D	CR	GS	-	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

Example : ASCII “A” → HEX “41”; ASCII “a” → “61”

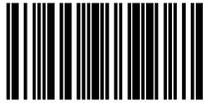
■ : High Byte of HEX Value

■ : Low Byte of HEX Value

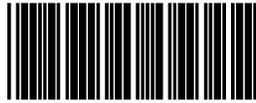
# Bar Code Command Menu

Option Code : "0 - 9", "A - F"			System Command
			
0	4	8	FIN (Finish)
			
1	5	9	END (Exit)
			
2	6	A	(System List) SYSLIST
			
3	7	B	(Master Default) M_DEFAULT
			
		C	D
			
		E	F

**Sample Bar Codes**



**Codabar**  
**A13579B**



**Code 39**  
**BC321**



**Interleaved 2 of 5**  
**1234567890**



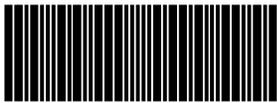
**Code 128**  
**Code 128**



**Code 93**  
**123456-9\$**



**Matrix 2 of 5**  
**6543210**



**Code 2 of 5**  
**123456**



**EAN 13**  
**9 780330 290951**



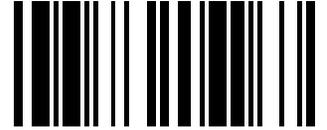
**UPC-A**  
**0 123456 7890 5**

# Bar Code System Command

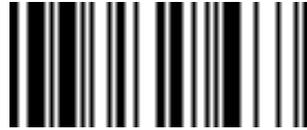
## Bar Code System Command Set



**PC/AT, PS/2 Keyboard Wedge**



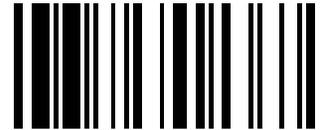
**System Information List (SYSLIST)**



**USB Keyboard Interface**



**Keyboard Replacement**



**Factory Default Setting (M\_DEFAULT)**



**RS-232 Serial Interface**



**HHP SET Host Link**





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**3060/80/3220/UG Rev A**