



IMAGETEAM™ 4600/4800

Retail / Commercial Area Imager



User's Guide





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 B Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Caution: Any changes or modifications made to this device that are not expressly approved by Hand Held Products, Inc. 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 B limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.



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 and the 73/23/EEC Low Voltage Directive.

Complies with:

EN55022:1998 (for ITE emissions)
EN55024:1998 (for ITE immunity), including CISPR 22B:1997
EN61000-4-2:1995
EN61000-4-3:1995

For further information please contact:

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5627 BT Eindhoven
The Netherlands

HHP shall not be liable for use of our product with equipment (i.e., power supplies, personal computers, etc.) that is not CE marked and does not comply with the Low Voltage Directive.

UL and cUL Statement

UL listed UL1950 and CSA 22.2 No.950. cUL listed UL1950 and CSA 22.2 No 950.

LED Safety Statement

This device has been tested in accordance with EN60825-1 LED safety, and has been certified to be under the limits of a Class 1 LED device.

TÜV Statement

TÜV or GS marked to EN60950 and EN60825-1.

C-Tick Statement

Conforms to AS/NZS 3548. C-Tick number: N10410.

Patents

Please refer to the IT4600/4800 packaging for a list of patents.

Solids and Water Protection

The IT4600 has a rating of IP41, immunity of foreign particles and dripping water.

The IT4800 has a rating of IP54, immunity of windblown dust penetration and splashing water.

Disclaimer

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Getting Started

The IMAGETEAM™ 4600 and 4800 mark a new performance level for hand held area imagers. The IT4600/4800 hand held area imagers are powered by HHP's Adaptus™ technology. The performance of Adaptus technology delivers aggressive read rates and depths of field on 1D, stacked linear, and matrix codes. This aggressiveness applies even in challenging reading environments where low lighting conditions and poor quality might make it difficult to read bar codes. Adaptus technology ensures your investment will continue to supply years of use by reading any bar codes you require, now or in the future.

Designed for today's demanding retail and commercial environments, the IT4600 offers superior image quality, speed, durability, and the ability to read poor quality bar codes. The IT4600 is comfortable to hold, easy to use, rugged, and excellent for retail applications, as well as for all general scanning and imaging applications.

The IT4800 hand held industrial area imager is the first industrial class area imager powered by Adaptus technology. The IT4800 has a similar ergonomic design as the IT4600, but has a more rugged housing, and is built to withstand your toughest industrial applications.

About This Manual

This User's Guide provides installation and programming instructions for the IMAGETEAM 4600/4800. Product specifications, dimensions, warranty, and customer support information are also included.

HHP's bar code imagers are factory programmed for the most common terminal and communications settings. If you need to change these settings, programming is accomplished by scanning the bar codes in this guide.

An asterisk (*) next to an option indicates the default setting.

Unpacking the Imager

After you open the shipping carton containing the IT4600/4800, take the following steps:

- Check to make sure everything you ordered is present.
- Save the shipping container for later storage or shipping.
- Check for damage during shipment. Report damage immediately to the carrier who delivered the carton.

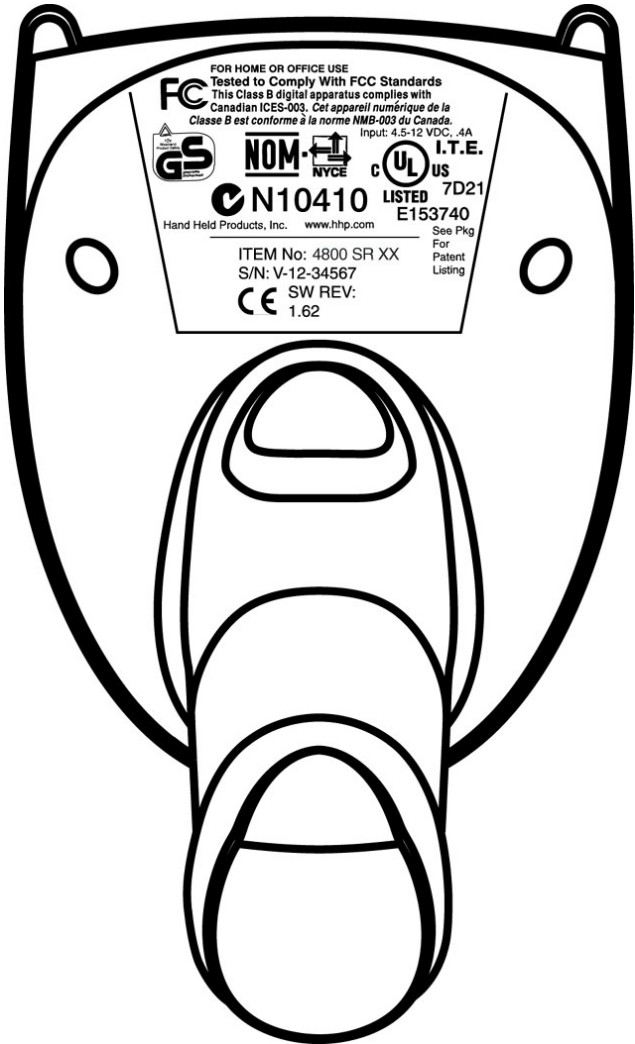
IT4600/4800 Models

There are three models of the IT4600/4800 imager, which may be used with many interfaces described in this manual. Refer to the chart below to determine the models that can be used with your interface.

The following interfaces apply to all IT4600/4800 focal distances and decoding options. Refer to [Chapter 6](#) for programming information regarding secondary interfaces.

Models	Primary	Secondary
4600XX00XX 4800XX00XX	TTL Level 232, USB COM port emulation	Lower Power HHLC
4600XX03XX 4800XX03XX	True RS-232, True RS-232 serial wedge	True RS-232
4600XX05XX 4800XX05XX	Keyboard wedge, TTL level 232, TTL level 232 serial wedge, IBM 4683, wand emulation, USB keyboard, USB HID, USB retail (IBM SurePOS), USB COM port emulation	Wand Emulation, TTL level 232

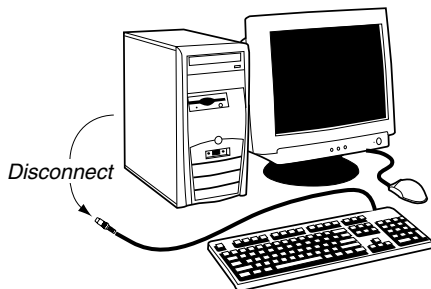
IT4600/4800 Imager Identification



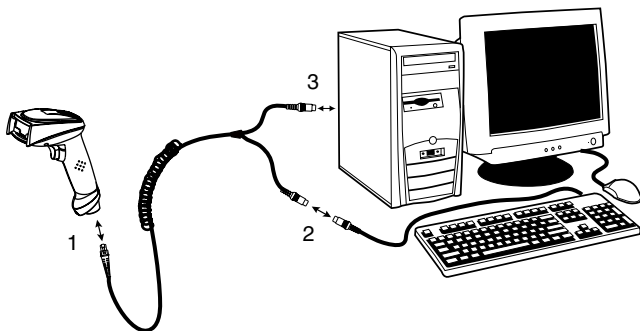
Connecting the Imager When Powered by Host (Keyboard Wedge)

A imager can be connected between the keyboard and PC as a “keyboard wedge,” plugged into the serial port, or connected to a portable data terminal in wand emulation or non decoded output mode. The following is an example of a keyboard wedge connection:

1. Turn off power to the terminal/computer.
2. Disconnect the keyboard cable from the back of the terminal/computer.



3. Connect the appropriate interface cable to the imager and to the terminal/computer.

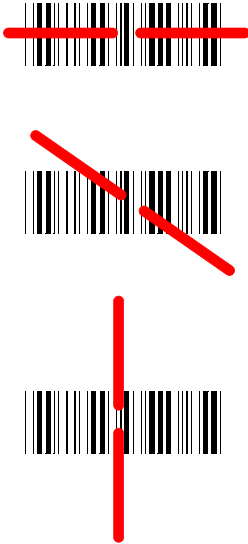


4. Turn the terminal/computer power back on. The imager beeps.
5. Verify the imager operation by scanning a bar code from the [Sample Symbols](#) in the back of this manual. The imager beeps once.

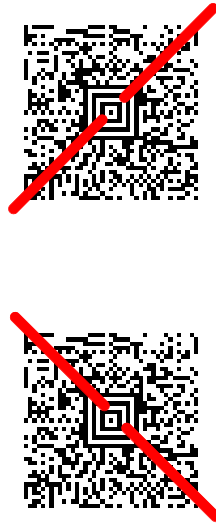
Reading Techniques

The imager has a view finder that projects a bright red or green aiming beam that corresponds to the imager's horizontal field of view. The aiming beam should be centered over the bar code, but it can be positioned in any direction for a good read.

Linear bar code



2D Matrix symbol



The aiming beam is smaller when the imager is closer to the code and larger when it is farther from the code. Symbologies with smaller bars or elements (mil size) should be read closer to the unit. Symbologies with larger bars or elements (mil size) should be read farther from the unit. To read single or multiple symbols (on a page or on an object), hold the imager at an appropriate distance from the target, pull the trigger, and center the aiming beam on the symbol. If the code being scanned is highly reflective (e.g., laminated), it may be necessary to tilt the code up 15° to 18° to prevent unwanted reflection.

Plug and Play

Plug and Play bar codes provide instant imager set up for commonly used interfaces.

Note: After you scan one of the codes, power cycle the host terminal to have the interface in effect.

Keyboard Wedge

Note: This interface applies to the 4600/4800SR050 model.

IT4600/4800 imagers are factory programmed for a keyboard wedge interface to an IBM PC AT with a USA keyboard. If this is your interface and you do not need to modify the settings, skip to [Chapter 3 - Output](#).

If you programmed the imager for a different terminal interface and you want to change to an IBM PC AT and compatibles keyboard wedge interface, scan the bar code below.



IBM PC AT and Compatibles
with CR suffix

Laptop Direct Connect

Note: This interface applies to the 4600/4800SR050 model.

For most laptops, scanning the **Laptop Direct Connect** bar code allows operation of the scanner in parallel with the integral keyboard. The following Laptop Direct Connect bar code also programs a carriage return (CR) suffix, and turns on [Emulate External Keyboard](#) (page 2-7).



Laptop Direct Connect
with CR suffix

RS-232

The **RS-232** Interface bar code is used when connecting to the serial port of a PC or terminal. The following RS-232 Interface bar code also programs a carriage return (CR) and a line feed (LF) suffix, baud rate, and data format as indicated below:

<u>Option</u>	<u>Setting</u>
Baud Rate	38400 bps
Data Format	8 data bits, no parity bit, 1 stop bit



RS-232 Interface

Wand Emulation Plug & Play

Note: The Wand Emulation interfaces apply to the 4600/4800SR050 model.

In Wand Emulation mode, the imager decodes the bar code then sends data in the same format as a wand imager. The Code 39 Format converts all symbologies to Code 39.

The Same Code Format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 without any changes, but converts all other symbologies to Code 39. 2D symbologies are converted to Code 128.

The **Wand Emulation Plug & Play Code 39 Format** bar code below sets the terminal ID to 61. The **Wand Emulation Plug & Play Same Code Format** bar code sets the terminal ID to 64. These Plug & Play bar codes also set the Transmission Rate to 25 inches per second, Output Polarity to black high, and Idle State to high. (If you want to change the terminal ID *only*, without changing any other imager settings, please refer to [Wand Emulation Connection](#) on page 2-13.)



Wand Emulation
Plug & Play
(Code 39 Format)



Wand Emulation
Plug & Play
Same Code

IBM 4683 Ports 5B, 9B, and 17 Interface

Note: This interface applies to the 4600/4800SR050 model.

Scan one of the following “Plug and Play” codes to program the 4600/4800SR050 for IBM 4683 Port 5B, 9B, or 17.

Note: After scanning one of these codes, you must power cycle the cash register



IBM 4683 Port 5B Interface



IBM 4683 Port 9B
HHBCR-1 Interface



IBM 4683 Port 17 Interface

Each bar code above also programs the following suffixes for each symbology:

<u>Symbology</u>	<u>Suffix</u>
EAN-8	0C
EAN-13	16
UPC-A	0D
UPC-E	0A
Code 39	00 0A 0B
Interleaved 2 of 5	00 0D 0B
Code 128	00 0A 0B



IBM 4683 Port 9B HHBCR-2 Interface

The IBM 4683 Port 9B HHBCR-2 Interface bar code also programs the following suffixes for each symbology:

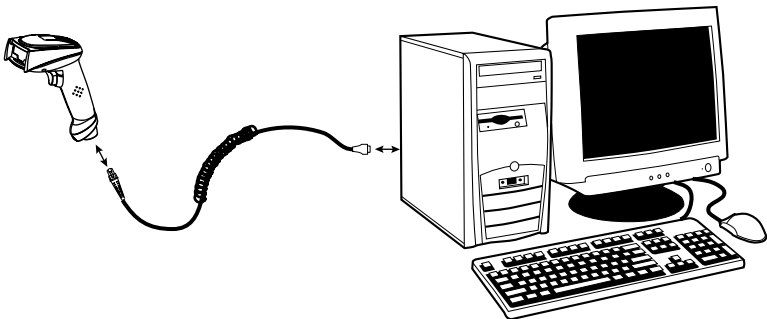
Symbology	Suffix
EAN-8	0C
EAN-13	16
UPC-A	0D
UPC-E	0A
Code 39	00 0A 0B
Interleaved 2 of 5	00 0D 0B
Code 128	00 18 0B

Connecting the Imager with USB

Note: This interface applies to the 4600/4800SR050 model only.

A imager can be connected to the USB port of a computer.

1. Connect the appropriate interface cable to the imager and to the computer.



2. The imager beeps.
3. Verify the imager operation by scanning a bar code from the [Sample Symbols](#) in the back of this manual.

Note: The following USB “Plug and Play” codes are supported on specific IT4600/4800 models. Refer to [IT4600/4800 Models](#) on page 1-2 to determine if this interface applies to your imager.

IBM SurePos

Scan one of the following “Plug and Play” codes to program the IT4600/4800 for IBM SurePos (USB Hand Held imager) or IBM SurePos (USB Tabletop imager).

Note: After scanning one of these codes, you must power cycle the cash register.



IBM SurePos
(USB Hand Held Imager)
Interface



IBM SurePos
(USB Tabletop Imager)
Interface

Each bar code above also programs the following suffixes for each symbology:

Symbology	Suffix
EAN-8	0C
EAN-13	16
UPC-A	0D
UPC-E	0A
Code 39	00 0A 0B
Interleaved 2 of 5	00 0D 0B
Code 128	00 18 0B

Note: The following USB “Plug and Play” codes (USB Keyboard - PC, USB Keyboard - Mac, and USB HID) are supported on specific IT4600/4800 models. Refer to [IT4600/4800 Models](#) on page 1-2 to determine if this interface applies to your imager.

USB PC or Macintosh® Keyboard

Scan one of the following codes to program the IT4600/4800 for USB PC Keyboard or USB Macintosh Keyboard. Scanning these codes adds a CR and LF, along with selecting the terminal ID (USB PC Keyboard - 124, USB Macintosh Keyboard - 125).



USB Keyboard (PC)



USB Keyboard (Mac)

USB HID

Scan the following code to program the IT4600/4800 for USB HID bar code imagers. Scanning this code changes the terminal ID to 131.



USB HID Bar Code Imager

USB COM Port Emulation

Scan the following code to program the IT4600/4800 to emulate a regular RS-232-based COM port. If you are using a Microsoft® Windows® PC, you will need to download a driver from the HHP website (www.HHP.com). The driver will use the next available COM port number. Apple® Macintosh computers recognize the imager as a USB CDC class device and automatically use a class driver. Scanning the code below changes the terminal ID to 130.



USB COM Port Emulation

Note: No extra configuration (e.g., baud rate) is necessary.

CTS/RTS Emulation



On



* Off

ACK/NAK Mode



On



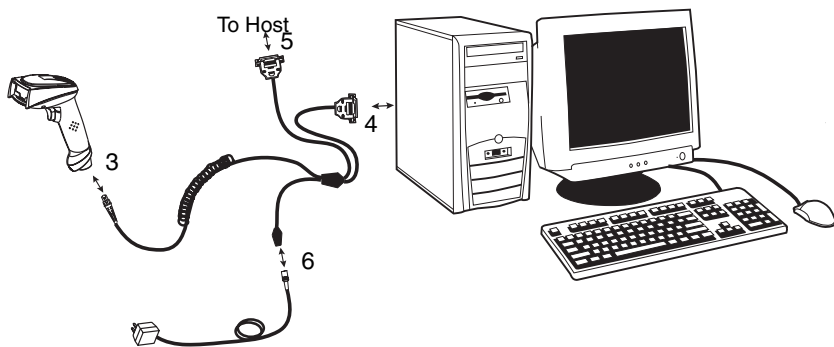
* Off

Connecting the Imager with Serial Wedge

The IT4600/4800 uses True and TTL signal levels to wedge into an RS-232 serial network. Use only IT4600/4800 serial wedge cables to prevent damage to the imager. Refer to [Connecting the Imager with RS-232 Serial Port](#) on page 2-9 to set the baud rate and communications protocol.

1. Turn off power to the computer.
2. Disconnect the existing serial cable from the computer.
3. Connect the appropriate interface cable to the imager.

Note: For the imager to work properly, you must have the correct cable for your type of computer.



4. Plug the serial connector into the serial port on your computer. Tighten the two screws to secure the connector to the port.
5. Plug the other serial connector into the host connection and tighten the two screws.
6. Plug the power pack cable into the receptor on the imager cable.
7. Plug the power pack into a power source.
8. Once the imager has been fully connected, power up the computer.

To set up the serial wedge terminal ID, use the serial terminal ID 050 and follow the instructions on [page 2-1](#). Set the port to which you want the scanned data to transmit. Port 1 corresponds to P1 on the output cable and Port 2 corresponds to P2 on the output cable. Choosing Both sends scanned data to P1 and P2. Default = P1.





Terminal Interfaces

Terminal ID

If your interface is not a standard PC AT, refer to [Supported Terminals](#) on page 2-2 through [page 2-3](#), and locate the Terminal ID number for your PC. Scan the **Terminal ID** bar code below, then scan the numeric bar code(s) from the [Programming Chart](#) inside the back cover of this manual to program the imager for your terminal ID. Scan **Save** to save your selection.

For example, an IBM AT terminal has a Terminal ID of 003. You would scan the **Terminal ID** bar code, then **0, 0, 3** from the [Programming Chart](#) inside the back cover of this manual, then **Save**. If you make an error while scanning the digits (before scanning Save), scan the **Discard** code on the [Programming Chart](#), scan the **Terminal ID** bar code, scan the digits, and the **Save** code again.



Terminal ID



Save

Note: After scanning one of these codes, you must power cycle your computer.

Supported Terminals

<u>Terminal</u>	<u>Model(s)</u>	<u>Terminal ID</u>
DDC	3496, 3497, 122 key	005
DDC	3496, 3497, 102 key	071
DEC	VT510, 520, 525 (PC style)	084
DEC	VT510, 520, 525 (DEC style LK411)	104
Esprit	200, 400	005
Heath Zenith	PC, AT	003
Heath Zenith		090
HP	Vectra	003
HP	Vectra	023
IBM	XT	001
IBM	PS/2 25, 30, 77DX2	002
IBM	AT, PS/2 30–286, 50, 55SX, 60, 70, 70–061, 70–121, 80	003 *
IBM 102 key	3151, 3161, 3162, 3163, 3191, 3192, 3194, 3196, 3197, 3471, 3472, 3476, 3477	006
IBM 122 key	3191, 3192, 3471, 3472	007
IBM 122 key	3196, 3197, 3476, 3477, 3486, 3482, 3488	008
IBM 122 key	3180	024
IBM 122 key	3180 data entry keyboard	114
IBM DOS/V 106 key	PC & Workstation	102
IBM SurePOS	USB Hand Held Imager	128***
IBM SurePOS	USB Tabletop Imager	129***
IBM Thinkpad	360 CSE, 340, 750	097
IBM Thinkpad		106
IBM Thinkpad	365, 755CV	003
I/O 122 key	2676D, 2677C, 2677D	008
ITT	9271	007
Lee Data	IIS	007
NEC	98XX Series	103
Olivetti	M19, M200	001
Olivetti	M240, M250, M290, M380, P500	003
RS-232 True		000**
RS-232 TTL		000
Serial Wedge		050
Silicon Graphics	Indy, Indigoll	005

Supported Terminals

Terminal	Model(s)	Terminal ID
Telex 88 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1483	025
Telex 88 key	Data Entry Keyboard	112
Telex 102 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1483	045
Telex 122 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1482, 1483	046
USB COM Port Emulation		130
USB PC Keyboard		124***
USB Mac Keyboard		125***
USB HID POS		131***
Wand Emulation (Code 39 Format)		061
Wand Emulation (Same Code Format)		064

* Default for IT4600/4800-01 and IT4600/4800-05 models

** Default for IT4600/4800-03 model (applies to IT4600/4800-03 models only)

***Applies to IT4600/4800-05 model only. It is best to use the Plug and Play bar codes, beginning on [page 1-6](#), to program these interfaces, rather than scanning the terminal ID listed in this table.

Keyboard Country

Scan the appropriate country code below to program the keyboard for your country. As a general rule, the following characters are supported, but need special care for countries other than the United States:

@ | \$ # { } [] = / ' \ < > ~



* United States



Brazil



Czechoslovakia



Finland (Sweden)



Germany/Austria



Hungary



Belgium



Canada (French)



Denmark



France



Greece



Israel (Hebrew)

Keyboard Country (continued)



Italy



Netherlands (Dutch)



Poland



Romania



SCS



Spain



Switzerland (German)



Latin America



Norway



Portugal



Russia



Slovakia



Sweden

Keyboard Country (continued)



Turkey F



Turkey Q



U.K.

Keyboard Style

This programs keyboard styles, such as Caps Lock and Shift Lock. *Default = Regular.*

Regular is used when you normally have the Caps Lock key off.



* Regular

Caps Lock is used when you normally have the Caps Lock key on.



Caps Lock

Shift Lock is used when you normally have the Shift Lock key on (not common to U.S. keyboards).



Shift Lock

Automatic Caps Lock is used if you change the Caps Lock key on and off. The software tracks and reflects if you have Caps Lock on or off (AT and PS/2 only). This selection can only be used with systems that have an LED which notes the Caps Lock status.



Automatic Caps Lock

Autocaps via NumLock bar code should be scanned in countries (e.g., Germany, France) where the Caps Lock key cannot be used to toggle Caps Lock. The NumLock option works similarly to the regular Autocaps, but uses the NumLock key to retrieve the current state of the Caps Lock.



Autocaps via NumLock

Emulate External Keyboard should be scanned if you do not have an external keyboard (IBM AT or equivalent).



Emulate External Keyboard

Note: After scanning the Emulate External Keyboard bar code, you must power cycle your computer.

Keyboard Modifiers

This modifies special keyboard features, such as CTRL+ ASCII codes and Turbo Mode.

Control + ASCII Mode On: The imager sends key combinations for ASCII control characters for values 00-1F. Refer to [Keyboard Function Relationships](#), page 9-1 for CTRL+ ASCII Values. *Default = Off*



Control + ASCII Mode On



* Control + ASCII Mode Off

Turbo Mode: The imager sends characters to a terminal faster. If the terminal drops characters, do not use Turbo Mode. *Default = Off*



Turbo Mode On



* Turbo Mode Off

Numeric Keypad Mode: Sends numeric characters as if entered from a numeric keypad. *Default = Off*



Numeric Keypad Mode On



* Numeric Keypad Mode Off

Automatic Direct Connect Mode: This selection can be used if you have an IBM AT style terminal and the system is dropping characters. *Default = Off*



Automatic Direct
Connect Mode On



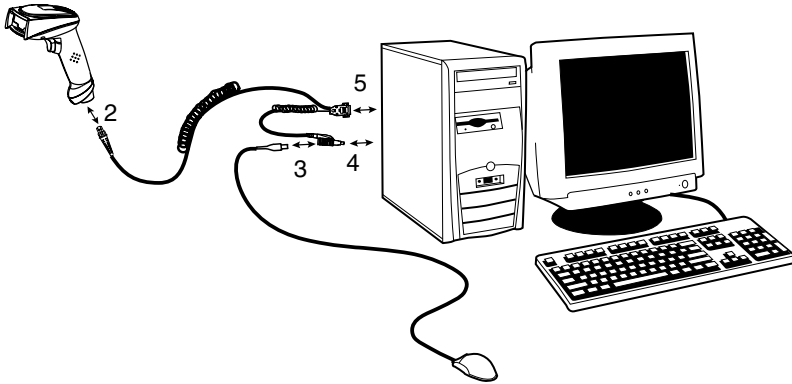
* Automatic Direct Connect
Mode Off

Connecting the Imager with RS-232 Serial Port

Note: These instructions are for use with the RS-232 power stealer cable.

1. Turn off power to the terminal/computer.
2. Connect the appropriate interface cable to the imager.

Note: For the imager to work properly, you must have the correct cable for your type of terminal/computer.



3. Unplug the mouse or keyboard from the computer. Plug the mouse or keyboard into the power tap on the imager cable.
4. Plug the power tap into the mouse or keyboard port.
5. Plug the serial connector into the serial port on your computer. Tighten the two screws to secure the connector to the port.
6. Once the imager has been fully connected, power up the computer.

All communication parameters between the imager and terminal must match for correct data transfer through the serial port using RS-232 protocol. Scanning the RS-232 interface bar code, programs the imager for an RS-232 interface at 38,400 baud, parity–none, 8 data bits, 1 stop bit, and adds a suffix of a CR LF.



RS-232 Interface

RS-232 Baud Rate

Baud Rate sends the data from the imager to the terminal at the specified rate. The host terminal must be set for the same baud rate as the imager. Default = 38,400.



300



1200



4800



19200



57,600



600



2400



9600



* 38400



115,200

RS-232 Word Length: Data Bits, Stop Bits, and Parity

Data Bits sets the word length at 7 or 8 bits of data per character. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications which require use of the full ASCII set, select 8 data bits per character. *Default = 8.*

Stop Bits sets the stop bits at 1 or 2. *Default = 1.*

Parity provides a means of checking character bit patterns for validity. *Default = None.*



7 Data, 1 Stop, Parity Even



7 Data, 1 Stop, Parity None



7 Data, 1 Stop, Parity Odd



7 Data, 2 Stop, Parity Even



7 Data, 2 Stop, Parity None



7 Data, 2 Stop, Parity Odd



8 Data, 1 Stop, Parity Even



* 8 Data, 1 Stop, Parity None



8 Data, 1 Stop, Parity Odd

RS-232 Receiver Timeout

The unit stays awake to receive data until the RS-232 Receiver Timeout expires. A manual or serial trigger resets the timeout. When an RS-232 receiver is sleeping, a character may be sent to wake up the receiver and reset the timeout. A transaction on the CTS line will also wake up the receiver. The receiver takes 300 milliseconds to completely come up. Change the RS-232 receiver timeout by scanning the bar code below, then scanning digits from the inside back cover of this manual, then scanning **Save**. The range is 0 to 300 seconds. *Default = 0 seconds (no timeout - always on).*



RS-232 Receiver Timeout

RS-232 Handshaking

RS-232 handshaking is a set of rules concerning the exchange of data between serially communicating devices. *Default = RTS/CTS, XON/XOFF and ACK/NAK Off*



RTS/CTS On



XON/XOFF On



ACK/NAK On



* RTS/CTS Off



* XON/XOFF Off



* ACK/NAK Off

Wand Emulation Connection

The Wand Emulation Connection bar codes should be used if you want to change the terminal ID *only*, without changing any other imager settings. We recommend using Wand Emulation Plug & Play bar codes to program your imager to emulate a wand reader. The Wand Emulation Plug & Play bar codes change other parameters, in addition to changing the terminal ID. Please refer to [Wand Emulation Plug & Play](#) on page 1-7 for further information.

In Wand Emulation mode, the imager decodes the bar code then sends data in the same format as a wand imager. The Code 39 Format converts all symbologies to Code 39.

The Same Code Format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 without any changes, but converts all other symbologies to Code 39. 2D symbologies are converted to Code 128.

The **Code 39 Format** bar code below sets the terminal ID to 61, and the **Same Code Format** bar code sets the terminal ID to 64. *Default = Code 39 Format.*



* Code 39 Format



Same Code Format

Wand Emulation

Note: Changing primary wand emulation settings also changes the secondary wand emulation settings (see [Secondary Code 39 Wand Emulation](#) on page 6-2).

Data Block Size

This transmits the data in smaller blocks to prevent buffer overflow. *Default = 60.*



Delay Between Blocks

This sets the delay time between data blocks. *Default = 50ms.*



Overall Checksum

When this option is turned on, a computed check character is added at the end of the entire message. The check character is the character which when Exclusive-OR'd with every preceding character of the message yields a result of 0x00 (00H). *Default = Off.*



Wand Emulation Transmission Rate

The Transmission Rate is limited by the terminal's ability to receive data without dropping characters. *Default = 25 inches/second.*



Wand Emulation Polarity

The Polarity can be sent as standard with black bars high, or reversed with white bars high. *Default = Black High.*



* Black High



White High

Wand Emulation Idle

The idle describes the state of the imager when no data is being transmitted. When in Wand Emulation mode, you must set the imager's idle state to match the idle state for the device to which the imager is connected. *Default = Idle High.*



* Idle High



Idle Low

Good Read Indicators

Beeper – Good Read

The beeper may be programmed **On** or **Off** in response to a good read. Turning this option off, only turns off the beeper response to a good read indication. All error and menu beeps are still audible. *Default = On.*



* On



Off

Beeper Volume – Good Read

The beeper volume codes modify the volume of the beep the imager emits on a good read. *Default = Medium for the IT4600, High for the IT4800.*



Low



Medium



High



Off

Beeper Pitch – Good Read

The beeper pitch codes modify the pitch (frequency) of the beep the imager emits on a good read. *Default = Medium.*



Low (1600 Hz)



* Medium (3250 Hz)



High (4200 Hz)

Beeper Duration – Good Read

The beeper duration codes modify the length of the beep the imager emits on a good read. *Default = Normal.*



* Normal Beep



Short Beep

LED – Good Read

The LED indicator can be programmed **On** or **Off** in response to a good read. *Default = On.*



* On



Off

Number of Beeps – Good Read

The number of beeps of a good read can be programmed from 1 - 9. The same number of beeps will be applied to the beeper and LED in response to a good read. For example, if you program this option to have five beeps, there will be five beeps and five LED flashes in response to a good read. The beeps and LED flashes are in sync with one another. To change the number of beeps, scan the bar code below and then scan a digit (1-9) bar code and the **Save** bar code on the [Programming Chart](#) inside the back cover of this manual. *Default = One.*



Number of Pulses

Reread Delay

This sets the time period before the imager can read the *same* bar code a second time. Setting a reread delay protects against accidental rereads of the same bar code. Longer delays are effective in minimizing accidental rereads at POS (point of sale). Use shorter delays in applications where repetitive bar code scanning is required. *Default = Short.*

Reread Delay only works when in [Presentation Mode](#) (see page 3-6)).



Short (500 ms)



* Medium (750 ms)



Long (1000 ms)



Extra Long (2000 ms)

User-Specified Reread Delay

If you want to set your own length for the reread delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**.



User-Specified Reread Delay

Good Read Delay

This sets the minimum amount of time before the imager can read another bar code. *Default = No Delay.*



* No Delay



Short Delay (500 ms)



Medium Delay (1,000 ms)



Long Delay (1,500 ms)

User-Specified Good Read Delay

If you want to set your own length for the good read delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**.



User-Specified Good Read Delay

Trigger Modes

Manual/Serial Trigger

You can activate the imager either by pressing the trigger, or using a serial trigger command (see [Trigger Commands](#) on page 11-4). When in manual trigger mode, the imager scans until a bar code is read, or until the trigger is released.

When in serial mode, the imager scans until a bar code has been read or until the deactivate command is sent. In serial mode, the imager can also be set to turn itself off after a specified time has elapsed (see [Read Time Out](#), which follows).



* Manual/Serial Trigger

Read Time Out

Use this selection to set a time out (in milliseconds) of the imager's trigger when using serial commands to trigger the imager, or if the imager is in manual trigger mode. Once the imager has timed out, you can activate the imager either by pressing the trigger or using a serial trigger command. After scanning the **Read Time Out** bar code, set the time out duration (from 0-300,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**. *Default = 0 (infinite, or no time out).*



Read Time Out

Manual Trigger, Low Power

The imager powers down until the trigger is pulled. When the trigger is pulled, the imager powers up and operates until there is no triggering for the time set with the **Low Power Time Out** bar code below. There is a delay of up to one second in operation when the imager is first triggered, but there is no delay when operating in low power time out mode.



Manual Trigger, Low Power

*Note: **Manual Trigger, Low Power** cannot be used with keyboard wedge applications.*

Low Power Time Out Timer

Scan the Low Power Time Out bar code to change the time out duration (in seconds). Then scan the time out duration (from 0-300 seconds) from the inside back cover, and **Save**. *Default = 120 seconds.*

If the unit remains idle during the low power time out interval, the unit goes into low power mode. Whenever the trigger is enabled, the low power time out timer is reset.



Low Power Time Out

Note: This time out does not begin until the imager time out setting has expired.

Scan Stand Mode

When a unit is in Scan Stand mode, it remains idle as long as it sees the Scan Stand symbol. (See **Scan Stand Symbol** that follows.) When a different code is presented, the Imager is triggered to read the new code.

Note: The imager automatically adjusts the illumination LEDs to the lowest light level possible to maintain a good lock on the Scan Stand symbol. When a symbol is presented, the imager's light levels adjust to the saved setting (see [LED Power Level](#) on page 3-8).



Scan Stand Mode

Scan Stand Symbol

Note: Scan Stand mode does not work when scanner is programmed for the HHLC interface.

When a unit is in Scan Stand mode, the LEDs shine at the Scan Stand symbol on the base of the stand which tells it to remain idle. When the Scan Stand symbol is covered, the imager turns the LEDs on at the configured power level (Default High) and attempts to find and decode bar codes in its field of view.



Scan Stand Symbol

Presentation Mode

Note: Presentation mode does not work when a imager is programmed for an HHLC interface.

This programs the imager to work in Presentation mode. The LEDs are either off or at the lowest power for ambient conditions until a bar code is presented to the imager. Then the LEDs turn on automatically to read the code. Presentation Mode uses ambient light to detect the bar codes. If the light level in the room is not high enough, Presentation Mode may not work properly.



Presentation Mode

Hands Free Time Out

The Scan Stand and Presentation Modes are referred to as “hands free” modes. If the imager’s trigger is pulled when using a hands free mode, the imager changes to manual trigger mode. You can set the time the imager should remain in manual trigger mode by setting the Hands Free Time Out. Once the time out value is reached, (if there have been no further trigger pulls) the imager reverts to the original hands free mode.

Scan the ***Hands Free Time Out*** bar code, then scan the time out duration (from 0-300,000 milliseconds) from the inside back cover, and **Save**. *Default = 5,000 ms.*



Hands Free Time Out

LED Power Level

This selection allows you to adjust LED and aimer brightness. **Off** is used when no illumination is needed. **Low** is used if low illumination is sufficient. **High** (the default) is the brightest setting.

If you have an aimer delay programmed (see [Aimer Delay](#) on page 3-9), the aimer will be at 100% power during the delay, regardless of the LED Power Level.

*Note: If you scan the **Off** bar code, both the aimer and illumination lights turn off, making it impossible to scan bar codes in low light. To turn the LED Power Level back on, move to a brightly lit area and scan either the **Low** or the **High** bar code below.*



Off



Low (50%)



* High (100%)

Illumination Lights

If you want the illumination lights on while reading a bar code, scan the **Lights On** bar code, below. However, if you want to turn just the lights off, scan the **Lights Off** bar code.

Note: This setting does not affect the aimer light. The aiming light can be set using [Aimer Mode](#) (page 3-10).



* Lights On



Lights Off

Imager Time Out

Imager Time Out powers down the imager after the unit has been idle for the specified time. To prevent the imager from powering down, set this time out to 0. Scan the bar code below, then set the time out by scanning digits (from 0 - 999,999 ms) from the inside back cover, then scanning **Save**.



Imager Time Out

Aimer Delay

The aimer delay allows a delay time for the operator to aim the imager before the picture is taken. Use these codes to set the time between when the trigger is pulled and when the picture is taken. During the delay time, the aiming light will appear, but the LEDs won't turn on until the delay time is over.



200 milliseconds



400 milliseconds



* Off (*no delay*)

Aimer Mode

This feature allows you to lower peak current during scanning by alternating the aimer and illumination LEDs. When the **Interlaced** bar code is scanned, the aimer and illumination LEDs are not allowed to be on at the same time. While this does limit peak current during scanning, the scanner performance may be slower. When the **Concurrent** bar code is scanned, the aimer and illumination LEDs are allowed to light at the same time. Select **Off** if you don't want to use either aimer mode.



Off



* Concurrent

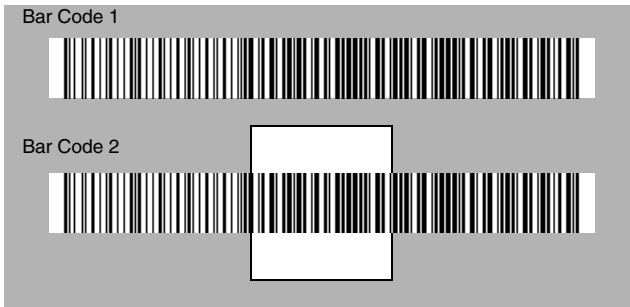


Interlaced

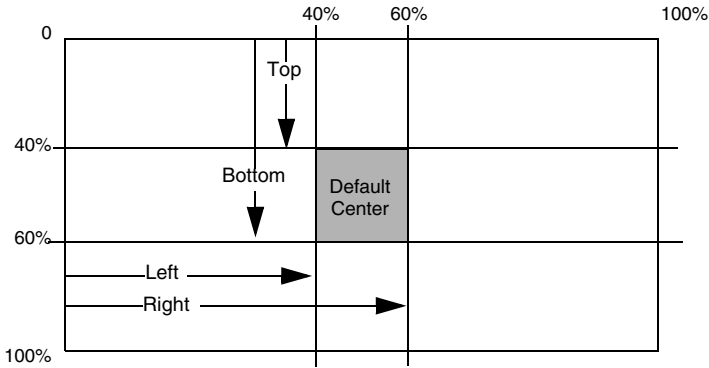
Centering

Use Centering to narrow the imager's field of view to make sure the imager reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, centering will insure that only the desired codes are read. (Centering can be used in conjunction with [Aimer Delay](#), page 3-9, for the most error-free operation in applications where multiple codes are spaced closely together. Using the Aimer Delay and Centering features, the imager can emulate the operation of older systems, such as linear laser bar code imagers.)

In the example below, the gray area is the full imager field of view and the white area is the centering window. Bar Code 1 will not be read, while Bar Code 2 will be.



The default centering window is a 60 pixel square area in the center of the imager's field of view. The following diagram illustrates the default top, bottom, left, and right pixel positions, measured from the top and the left side of the imager's field of view, which is 640 by 480 pixels.



The centering window must intersect the center of the image. If a bar code is not within the predefined window, it will not be decoded or output by the imager. If centering is turned on by scanning **Centering On**, the imager only reads codes that intersect the centering window you specify using the **Top**, **Bottom**, **Left**, or **Right** bar codes.

Scan **Centering On**, then scan one of the following bar codes to change the top, bottom, left, or right of the centering window. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**. *Default Centering = 40% for Top and Left, 60% for Bottom and Right.*



Centering On



* Centering Off



Top of Centering Window



Bottom of Centering Window



Left of Centering Window



Right of Centering Window

Decode Search Mode

There are four selectable decode (scanning) modes:

Full Omnidirectional - Searches for bar code features beginning at the center of an image, and searches to the image's limits. This mode reads all symbologies (including OCR), in any orientation. The Full Omnidirectional search is very thorough which may slow performance time.

Note: This search mode is the default setting for the IT4800 and IT4600/48002D imagers.



Full Omnidirectional

Quick Omnidirectional - This is an abbreviated search for bar code features around the center region of an image. This mode quickly reads all symbologies in any orientation. The Quick Omnidirectional mode may miss some off-center symbols, as well as larger Data Matrix and QR Code symbols.



Quick Omnidirectional

Advanced Linear Decoding - Performs quick horizontal linear scans in a center band of the image. This mode is *not* omnidirectional, but does quickly read linear and stacked bar codes. Advanced Linear Decoding cannot read 2D, OCR, or Postal symbols.

Note: This search mode is the default setting for the IT4600/4800 point-and-shoot PDF imagers.



Advanced Linear Decoding

Output Sequence Overview

Require Output Sequence

When turned off, the bar code data will be output to the host as the Imager decodes it. When turned on, all output data must conform to an edited sequence or the Imager will not transmit the output data to the host device.

Note: This selection is unavailable when the Multiple Symbols Selection is turned on.

Output Sequence Editor

This programming selection allows you to program the Imager to output data (when scanning more than one symbol) in whatever order your application requires, regardless of the order in which the bar codes are scanned. Reading the **Default Sequence** symbol programs the Imager to the Universal values, shown below. These are the defaults. Be **certain** you want to delete or clear all formats before you read the **Default Sequence** symbol.

Note: To make Output Sequence Editor selections, you'll need to know the code I.D., code length, and character match(es) your application requires. Use the Alphanumeric symbols (inside back cover) to read these options.

To Add an Output Sequence

1. Scan the **Enter Sequence** symbol (see [Multiple Symbols](#), page 3-16).
2. **Code I.D.**
On the [Symbology Chart](#) on page A-1, find the symbology to which you want to apply the output sequence format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart (inside back cover).
3. **Length**
Specify what length (up to 9999 characters) of data output will be acceptable for this symbology. Scan the four digit data length from the Programming Chart. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.)
4. **Character Match Sequences**
On the [ASCII Conversion Chart \(Code Page 1252\)](#), page A-3, find the Hex value that represents the character(s) you want to match. Use the Programming Chart to read the alphanumeric combination that represents the ASCII characters. (99 is the Universal number, indicating all characters.)
5. **End Output Sequence Editor**
Scan **FF** to enter an Output Sequence for an additional symbology, or **Save** to save your entries.

Other Programming Selections

- **Discard**
This exits without saving any Output Sequence changes.

Output Sequence Example

In this example, you are scanning Code 93, Code 128, and Code 39 bar codes, but you want the imager to output Code 39 1st, Code 128 2nd, and Code 93 3rd, as shown below.

Note: Code 93 must be enabled to use this example.



A - Code 39



B - Code 128



C - Code 93

You would set up the sequence editor with the following command line:

SEQBLK62999941FF6A999942FF69999943FF

The breakdown of the command line is shown below:

SEQBLKsequence editor start command

62 code identifier for **Code 39**

9999 code length that must match for Code 39, 9999 = all lengths

41 start character match for Code 39, 41h = "A"

FF termination string for first code

6A code identifier for **Code 128**

9999 code length that must match for Code 128, 9999 = all lengths

42 start character match for Code 128, 42h = "B"

FF termination string for second code

69 code identifier for **Code 93**

9999 code length that must match for Code 93, 9999 = all lengths

43 start character match for Code 93, 43h = "C"

FF termination string for third code

Output Sequence Editor



Enter Sequence



Default Sequence

Require Output Sequence

When an output sequence is **Required**, all output data must conform to an edited sequence or the imager will not transmit the output data to the host device. When it's **On/Not Required**, the imager will attempt to get the output data to conform to an edited sequence, but if it cannot, the imager transmits all output data to the host device as is.

When the output sequence is **Off**, the bar code data is output to the host as the imager decodes it.

Note: This selection is unavailable when the Multiple Symbols Selection is turned on.



Required



On/Not Required



Off

Multiple Symbols

Note: This feature does not work when the Imager is in Low Power mode.

When this programming selection is turned **On**, it allows you to read multiple symbols with a single pull of the Imager's trigger. If you press and hold the trigger, aiming the Imager at a series of symbols, it reads unique symbols once, beeping (if turned on) for each read. The imager attempts to find and decode new symbols as long as the trigger is pulled. When this programming selection is turned **Off**, the Imager will only read the symbol closest to the aiming beam.



On



* Off

No Read

With No Read turned **On**, the Imager notifies you if a code cannot be read. If using a Quick*View Scan Data Window, an "NR" appears when a code cannot be read. If No Read is turned **Off**, the "NR" will not appear.



On



* Off

If you want a different notation than "NR," for example, "Error," or "Bad Code," you can edit the output message using the [Data Formatter](#) (page 5-5). The hex code for the No Read symbol is 9C.

Print Weight

Print Weight is used to adjust the way the imager reads Matrix symbols. If an imager will be seeing consistently heavily printed matrix symbols, then a print weight of 6 may improve the reading performance. For consistently light printing, a print weight of 2 may help. After scanning the **Set Print Weight** bar code, set the print weight (from 1-7) by scanning digits from the inside back cover, then scanning **Save**. *Default = 4.*



Set Print Weight



* Default

Video Reverse

Video Reverse is used to allow the imager to read bar codes that are inverted. The "Off" bar code below is an example of this type of bar code. If additional menuing is required, Video Reverse must be disabled to read the menu bar codes and then re-enabled after menuing is completed.

Note: Images downloaded from the unit will not be reversed. This is a setting for decoding only.



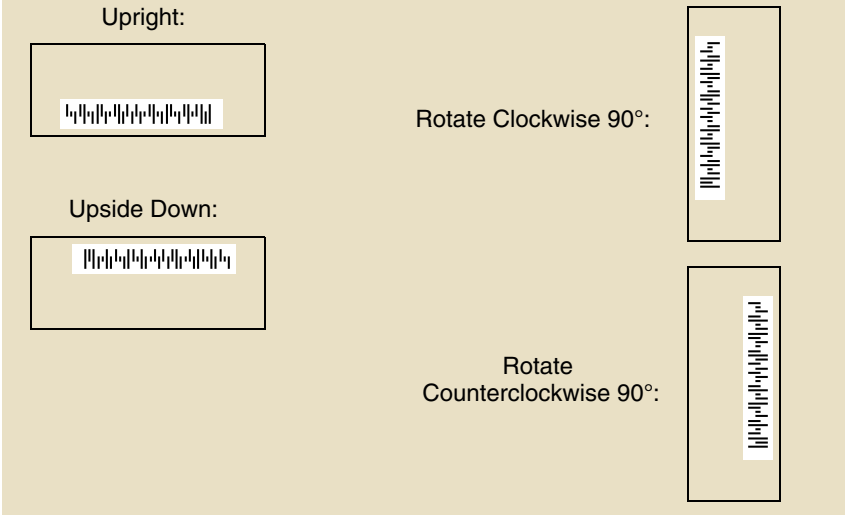
On



* Off

Working Orientation

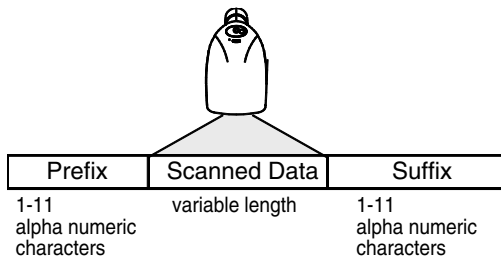
Some bar codes are direction-sensitive. For example, KIX codes and OCR can misread when scanned sideways or upside down. Use the working orientation settings if your direction-sensitive codes will not usually be presented upright to the scanner. *Default = Upright.*



Prefix/Suffix Overview

When a bar code is scanned, additional information is sent to the host computer along with the bar code data. This group of bar code data and additional, user-defined data is called a “message string.” The selections in this section are used to build the user-defined data into the message string.

Prefix and Suffix characters are data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. The following illustration shows the breakdown of a message string:



Points to Keep In Mind

- It is not necessary to build a message string. The selections in this chapter are only used if you wish to alter the default settings. *Default prefix = None. Default suffix = None.*
- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3, plus Code I.D. and AIM I.D.
- You can string together several entries for several symbologies at one time.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.

To Add a Prefix or Suffix:

- Step 1.** Scan the **Add Prefix** or **Add Suffix** symbol (page 4-4).
 - Step 2.** Determine the 2 digit Hex value from the Symbology Chart (included in [Appendix A](#)) for the symbology to which you want to apply the prefix or suffix. For example, for Code 128, Code ID is “j” and Hex ID is “6A”.
 - Step 3.** Scan the 2 hex digits from the [Programming Chart](#) inside the back cover of this manual or scan **9, 9** for all symbologies.
 - Step 4.** Determine the hex value from the [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3, for the prefix or suffix you wish to enter.
 - Step 5.** Scan the 2 digit hex value from the [Programming Chart](#) inside the back cover of this manual.
 - Step 6.** Repeat Steps 4 and 5 for every prefix or suffix character.
 - Step 7.** To add the Code I.D., scan **5, C, 8, 0**.
To add AIM I.D., scan **5, C, 8, 1**.
To add a backslash (\), scan **5, C, 5, C**.
- Note:* To add a backslash (\) as in Step 7, you must scan 5C twice – once to create the leading backslash and then to create the backslash itself.
- Step 8.** Scan **Save** to exit and save, or scan **Discard** to exit without saving.
- Repeat Steps 1-6 to add a prefix or suffix for another symbology.

Example: Add a Suffix to a specific symbology

To send a CR (carriage return) Suffix for UPC only:

- Step 1.** Scan **Add Suffix**.
- Step 2.** Determine the 2 digit hex value from the Symbology Chart (included in [Appendix A](#)) for UPC.
- Step 3.** Scan **6, 3** from the [Programming Chart](#) inside the back cover of this manual.
- Step 4.** Determine the hex value from the [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3, for the CR (carriage return).
- Step 5.** Scan **0, D** from the [Programming Chart](#) inside the back cover of this manual.
- Step 6.** Scan **Save**, or scan **Discard** to exit without saving.

To Clear One or All Prefixes or Suffixes:

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. When you Clear One Prefix (Suffix), the specific character you select is deleted from the symbology you want. When you Clear All Prefixes (Suffixes), all the prefixes or suffixes for a symbology are deleted.

Step 1. Scan the **Clear One Prefix** or **Clear One Suffix** symbol.

Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in [Appendix A](#)) for the symbology from which you want to clear the prefix or suffix.

Step 3. Scan the 2 digit hex value from the [Programming Chart](#) inside the back cover of this manual or scan **9, 9** for all symbologies.

Your change is automatically saved.

To Add a Carriage Return Suffix to all Symbologies

Scan the following bar code if you wish to add a carriage return suffix to all symbologies at once. This action first clears all current suffixes, then programs a carriage return suffix for all symbologies.



Add CR Suffix
All Symbologies

Prefix Selections



Add Prefix



Clear One Prefix



Clear All Prefixes

Suffix Selections



Add Suffix



Clear One Suffix



Clear All Suffixes

Function Code Transmit

When this selection is enabled and function codes are contained within the scanned data, the imager transmits the function code to the terminal. Charts of these function codes are provided in [Supported Interface Keys](#) starting on [page 9-3](#). When the imager is in keyboard wedge mode, the scan code is converted to a key code before it is transmitted. *Default = Enable.*



* Enable



Disable

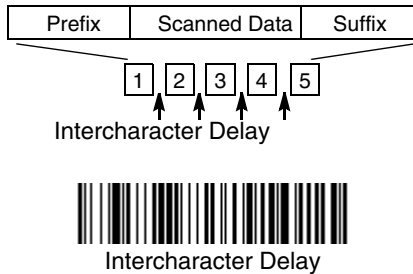
Intercharacter, Interfunction, and Intermessage Delays

Some terminals drop information (characters) if data comes through too quickly. Intercharacter, interfunction, and intermessage delays slow the transmission of data, increasing data integrity.

Each delay is composed of a 5 millisecond step. You can program up to 99 steps (of 5 ms each) for a range of 0-495 ms.

Intercharacter Delay

An intercharacter delay of up to 495 milliseconds may be placed between the transmission of each character of scanned data. Scan the **Intercharacter Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.



To remove this delay, scan the **Intercharacter Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.

User Specified Intercharacter Delay

An intercharacter delay of up to 495 milliseconds may be placed after the transmission of a particular character of scanned data. Scan the **Delay Length** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.

Next, scan the **Character to Trigger Delay** bar code, then the 2-digit hex value for the ASCII character that will trigger the delay [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.



Delay Length

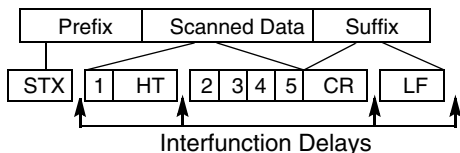


Character to Trigger Delay

To remove this delay, scan the **Delay Length** bar code, and set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.

Interfunction Delay

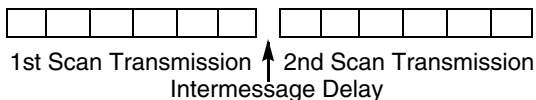
An interfunction delay of up to 495 milliseconds may be placed between the transmission of each segment of the message string. Scan the **Interfunction Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.



To remove this delay, scan the **Interfunction Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.

Intermessage Delay

An intermessage delay of up to 495 milliseconds may be placed between each scan transmission. Scan the **Intermessage Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.



To remove this delay, scan the **Intermessage Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart](#) inside the back cover of this manual.

Data Format Editor Introduction

You may use the Data Format Editor to change the imager's output. For example, you can use the Data Format Editor to insert characters at certain points in bar code data as it is scanned. The selections in the following pages are used only if you wish to alter the output. *Default Data Format setting = None.*

Normally, when you scan a bar code, it gets outputted automatically; however when you do a format, you must use a "send" command (see [Send Commands](#) on page 5-2) within the format program to output data.

Multiple formats may be programmed into the imager. They are stacked in the order in which they are entered. However, the following list presents the order in which formats are applied:

1. Specific Term ID, Actual Code ID, Actual Length
2. Specific Term ID, Actual Code ID, Universal Length
3. Specific Term ID, Universal Code ID, Actual Length
4. Specific Term ID, Universal Code ID, Universal Length
5. Universal Term ID, Actual Code ID, Actual Length
6. Universal Term ID, Actual Code ID, Universal Length
7. Universal Term ID, Universal Code ID, Actual Length
8. Universal Term ID, Universal Code ID, Universal Length

If you have changed data format settings, and wish to clear all formats and return to the factory defaults, scan the **Default Data Format** code on [page 5-5](#).

To Add a Data Format

Step 1. Scan the **Enter Data Format** symbol ([page 5-5](#)).

Step 2. Primary/Alternate Format

Determine if this will be your primary data format, or one of 3 alternate formats. (Alternate formats allow you "single shot" capability to scan one bar code using a different data format. After the one bar code has been read, the imager reverts to the primary data format. See [page 5-6](#).) If you are programming the primary format, scan **0** using the [Programming Chart](#) inside the back cover of this manual. If you are programming an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are programming.

Step 3. Terminal Type

Refer to [Supported Terminals](#) (page 2-2) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover to program the imager for your terminal ID (you must enter 3 digits). For example, scan **0 0 3** for an AT wedge.

Note: The wildcard for all terminal types is 099.

Step 4. Code I.D.

In [Appendix A](#), find the symbology to which you want to apply the data format. Locate the Hex value for that symbology and scan the 2 digit hex value from the [Programming Chart](#) inside the back cover of this manual.

Step 5. Length

Specify what length (up to 9999 characters) of data will be acceptable for this symbology. Scan the four digit data length from the [Programming Chart](#) inside the back cover of this manual. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.)

Step 6. Editor Commands

Refer to [Data Format Editor Commands](#) (page 5-2). Scan the symbols that represent the command you want to enter. 94 alphanumeric characters may be entered for each symbology data format.

Step 7. Scan **Save** from the [Programming Chart](#) inside the back cover of this manual to save your entries.

Other Programming Selections

- **Clear One Data Format**

This deletes one data format for one symbology. If you are clearing the primary format, scan **0** from the [Programming Chart](#) inside the back cover of this manual. If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are clearing. Scan the Terminal Type and Code I.D. (see [Supported Terminals](#) on page 2-2), and the bar code data length for the specific data format that you want to delete. All other formats remain unaffected.

- **Save** from the [Programming Chart](#) inside the back cover of this manual
This exits, saving any Data Format changes.

- **Discard** from the [Programming Chart](#) inside the back cover of this manual
This exits without saving any Data Format changes.

Data Format Editor Commands

Send Commands

F1 Send all characters followed by “xx” key or function code, starting from current cursor position. **Syntax = F1xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)

F2 Send “nn” characters followed by “xx” key or function code, starting from current cursor position. **Syntax = F2nnxx** (nn stands for the numeric value (00-99) for the number of characters and xx stands for the hex value for an ASCII code. See [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)

F3 Send up to but not including “ss” character (Search and Send) starting from current cursor position, leaving cursor pointing to “ss” character followed by “xx” key or function code. **Syntax = F3ssxx** (ss and xx both stand for the

hex values for ASCII codes, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)

- F4 Send “xx” character “nn” times (Insert) leaving cursor in current cursor position. **Syntax = F4xxnn** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3, and nn is the numeric value (00-99) for the number of times it should be sent.)
- E9 Send all but the last “nn” characters, starting from the current cursor position. **Syntax = E9nn** (nn is the numeric value (00-99) for the number of characters that will not be sent at the end of the message.)

Move Commands

- F5 Move the cursor ahead “nn” characters from current cursor position. **Syntax = F5nn** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved ahead.)
- F6 Move the cursor back “nn” characters from current cursor position. **Syntax = F6nn** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved back.)
- F7 Move the cursor to the beginning of the data string. **Syntax = F7.**
- EA Move the cursor to the end of the data string. **Syntax = EA**

Search Commands

- F8 Search ahead for “xx” character from current cursor position, leaving cursor pointing to “xx” character. **Syntax = F8xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)
- F9 Search back for “xx” character from current cursor position, leaving cursor pointing to “xx” character. **Syntax = F9xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)
- E6 Search ahead for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. **Syntax = E6xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)
- E7 Search back for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. **Syntax = E7xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)

Miscellaneous Commands

- FB Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands. When the FC command is encountered, the suppress function is terminated. The cursor is not moved by the FB command. **Syntax = FBnnxxyy . .zz** where nn is a count of the number of suppressed characters in the list and xxyy . .zz is the list of characters to be suppressed. (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)
- FC Disables suppress filter and clear all suppressed characters. **Syntax = FC.**

-
- E4 Replaces up to 15 characters in the data string with user specified characters. Replacement continues until the E5 command is encountered. **Syntax = E4nnxx₁xx₂yy₁yy₂...zz₁zz₂** where nn is the total count of both characters to be replaced plus replacement characters; xx₁ defines characters to be replaced and xx₂ defines replacement characters, continuing through zz₁ and zz₂.
- E5 Terminates character replacement. **Syntax = E5.**
- FE Compare character in current cursor position to the character “xx.” If characters are equal, increment cursor. If characters are not equal, no format match. **Syntax = FExx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Code Page 1252\)](#) on page A-3.)
- EC Check to make sure there is an ASCII number at the current cursor position. If character is not numeric, format is aborted. **Syntax = EC.**
- ED Check to make sure there is a non-numeric ASCII character at the current cursor position. If character is numeric, format is aborted. **Syntax = ED.**

Data Format Editor



Enter Data Format



Clear One Data Format



Save



* Default Data Format



Clear All Data Formats



Discard

Data Formatter

When Data Formatter is turned off, the bar code data is output to the host as read (including prefixes and suffixes). Choose one of the following options. *Default = Data Formatter On.*



* Data Formatter On,
but Not Required



Data Formatter Off

When Data Formatter is required, all input data must conform to an edited format or the imager does not transmit the input data to the host device.



Data Format On, Format Required

Alternate Data Formats

Alternate formats allow you “single shot” capability to scan one bar code using a different data format than your primary format. When data formats are programmed (see [page 5-1](#)), you must input whether you are programming the primary format, or an alternate format numbered 1, 2, or 3.

An alternate format is initiated by scanning one of the 3 alternate format bar codes below. The imager will scan the next bar code, formatting the data with the selected alternate format, then revert immediately to the primary format.



Alternate Data Format 1



Alternate Data Format 2



Alternate Data Format 3

Secondary Interface

By switching secondary interface cables, the IT4600/4800 imager can, for example, communicate with a portable data terminal (secondary interface) in addition to the host terminal (primary interface). See the table below for the secondary interfaces for each IT4600/4800 model. This table applies to all IT4600/4800 focal distances and decoding options.

Models	Primary	Secondary
4600XX00XX 4800XX00XX	TTL Level 232	Lower Power HHLC
4600XX03XX 4800XX03XX	True RS-232, True RS-232 serial wedge	True RS-232
4600XX05XX 4800XX05XX	Keyboard wedge, TTL level 232, TTL level 232 serial wedge, IBM 4683, wand emulation, USB keyboard, USB HID, USB retail (IBM SurePOS)	Wand Emulation, TTL level 232

The secondary interface can be programmed at any time.

You can temporarily disable the secondary interface, but still retain the secondary interface settings in the imager's memory by scanning the **Disable** bar code below. To re-enable the secondary interface, scan the Enable bar code. *Default =Disable.*



* Disable



Enable

Secondary RS-232 Connection

All communication parameters between the imager and terminal must match for correct data transfer through the serial port using RS-232 protocol.

RS-232 programmable selections are used by both the primary and secondary interfaces. Changing an RS-232 parameter (e.g., baud rate or parity), while in primary or secondary mode will affect both interfaces. If you want to change the RS-232 settings, refer to [Connecting the Imager with RS-232 Serial Port](#), page 2-9.



RS-232 Interface

Secondary Code 39 Wand Emulation

In Wand Emulation mode, the imager decodes the bar code then sends data in the same format as a wand imager. The Code 39 Format converts all symbologies to Code 39. The Same Code Format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 without any changes, but converts all other symbologies to Code 39. These codes set the transmission rate to 25 inches per second and the output polarity to black, high. *Default = Code 39 Format.*



Wand Emulation
Same Code Format



* Wand Emulation
Code 39 Format

Wand/Laser Emulation Multi Block

Note: Changing secondary wand emulation settings also changes the primary wand emulation settings (see [Wand Emulation](#) on page 2-14).

Delay Between Blocks

This sets the delay time between data blocks. *Default = 50ms.*



Overall Checksum

When this option is turned on, a computed check character is added at the end of the entire message. The check character is the character which when Exclusive-OR'd with every preceding character of the message yields a result of 0x00 (00H). *Default = Off.*



Wand Emulation Transmission Rate

The Transmission Rate is limited by the terminal's ability to receive data without dropping characters. *Default = 25 inches/second.*



Wand Emulation Polarity

The Polarity can be sent as standard with black bars high, or reversed with white bars high. *Default = Black High.*



Wand Emulation Idle

The idle describes the state of the imager when no data is being transmitted. When in Wand Emulation mode, you must set the imager's idle state to match the idle state for the device to which the imager is connected. *Default = Idle High.*



* Idle High



Idle Low

Data Block Size

This transmits the data in smaller blocks to prevent buffer overflow. *Default = 60.*



20



40



* 60



80

Secondary Laser Emulation

Use this selection when connecting to a secondary terminal with integral decoding. This also sets the transmission rate to 36 scans per second, the polarity to white high, and deletes all prefixes and suffixes.



Laser Emulation
Same Code Output

When you scan the Code 39 Output bar code, the scanner decodes and re-encodes the data and sends the data to the host as Code 39.



Laser Emulation
Code 39 Output

Laser Emulation Transmission Rate

The Transmission Rate is limited by the terminal's ability to receive data without dropping characters. *Default = 36 scans/second.*



* 36



100

Laser Emulation Polarity

The Polarity can be sent as standard with white bars high, or reversed with black bars high. *Default = White High.*



* White High



Black High

Laser Emulation Idle

The idle describes the state of the imager when no data is being transmitted. You must set the imager's idle state to match the idle state for the device to which the imager is connected. *Default = Idle High.*



Idle Low



* Idle High

Secondary Trigger Mode

Manual/Serial Trigger

You can activate the imager either by pressing the trigger, or using a serial trigger command (see [Trigger Commands](#) on page 11-4). When in manual trigger mode, the imager scans until a bar code is read, or until the trigger is released.

When in serial mode, the imager scans until a bar code has been read or until the deactivate command is sent. In serial mode, the imager can also be set to turn itself off after a specified time has elapsed (see [Read Time Out](#), which follows).



* Manual/Serial Trigger

Read Time Out

Use this selection to set a time out (in milliseconds) of the imager's trigger when using serial commands to trigger the imager, or if the imager is in manual trigger mode. Once the imager has timed out, you can activate the imager either by pressing the trigger or using a serial trigger command. After scanning the **Read Time Out** bar code, set the time out duration (from 0-300,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**. *Default = 0 (infinite, or no time out).*



Read Time Out

Note: Programming Read Time Out in the secondary interface also programs it in the primary interface.

Manual Trigger, Low Power

The imager powers down until the trigger is pulled. When the trigger is pulled, the imager powers up and operates until there is no triggering for the time set with the **Low Power Time Out** bar code below. There is a delay of up to one second in operation when the imager is first triggered, but there is no delay when operating in low power time out mode.



Manual Trigger, Low Power

*Note: **Manual Trigger, Low Power** cannot be used with keyboard wedge applications.*

Low Power Time Out Timer

Scan the Low Power Time Out bar code to change the time out duration (in seconds). Then scan the time out duration (from 0-300 seconds) from the inside back cover, and **Save**. *Default = 120 seconds.*

If the unit remains idle during the low power time out interval, the unit goes into low power mode. Whenever the trigger is enabled, the low power time out timer is reset.



Low Power Time Out

Note: This time out does not begin until the imager time out setting has expired.

Note: Programming Low Power Time Out in the secondary interface also programs it in the primary interface.

Scan Stand Mode

When a unit is in Scan Stand mode, it remains idle as long as it sees the Scan Stand symbol. (See **Scan Stand Symbol** that follows.) When a different code is presented, the Imager is triggered to read the new code.

Note: The imager automatically adjusts the illumination LEDs to the lowest light level possible to maintain a good lock on the Scan Stand symbol. When a symbol is presented, the imager's light levels adjust to the saved setting (see [LED Power Level](#) on page 3-8).



Scan Stand Mode

Scan Stand Symbol

Note: Scan Stand mode does not work when scanner is programmed for the HHLC interface.

When a unit is in Scan Stand mode, the LEDs shine at the Scan Stand symbol on the base of the stand which tells it to remain idle. When the Scan Stand symbol is covered, the imager turns the LEDs on at the configured power level (Default High) and attempts to find and decode bar codes in its field of view.



Scan Stand Symbol

Presentation Mode

This programs the imager to work in Presentation mode. The LEDs are either off or at the lowest power for ambient conditions until a bar code is presented to the imager. Then the LEDs turn on automatically to read the code. Presentation Mode uses ambient light to detect the bar codes. If the light level in the room is not high enough, Presentation Mode may not work properly.



Presentation Mode



Symbologies

This programming section contains the following menu selections. Refer to [Chapter 11](#) for settings and defaults.

- All Symbologies
- Australian Post
- Aztec Code
- British Post
- Canadian Post
- China Post
- Codabar
- Codablock F
- Code 11
- Code 128
- Code 16K
- Code 2 of 5
- Code 39
- Code 49
- Code 93
- Data Matrix
- EAN/JAN-13
- EAN/JAN-8
- EAN•UCC Composite Codes
- IATA Code 2 of 5
- Interleaved 2 of 5
- Japanese Post
- Kix (Netherlands) Post
- Korea Post
- Matrix 2 of 5
- MaxiCode
- MicroPDF417
- MSI
- PDF417
- Planet Code
- Plessey Code
- PosiCode A and B
- Postnet
- QR Code
- RSS Expanded
- RSS Limited
- RSS-14
- TCIF Linked Code 39 (TLC39)
- Telepen
- UPC-A
- UPC-A/EAN-13 with Extended Coupon Code

Linear Symbologies

All Symbologies

If you want to decode all the symbologies allowable for your imager, scan the **All Symbologies On** code. If on the other hand, you want to decode only a particular symbology, scan All Symbologies Off followed by the On symbol for that particular symbology.



All Symbologies On



All Symbologies Off

Message Length Description

You are able to set the valid reading length of some of the bar code symbologies. If the data length of the scanned bar code doesn't match the valid reading length, the imager will issue an error beep. You may wish to set the same value for minimum and maximum length to force the imager to read fixed length bar code data. This helps reduce the chances of a misread.

EXAMPLE: Decode only those bar codes with a count of 9-20 characters.
Min. length = 09 Max. length = 20

EXAMPLE: Decode only those bar codes with a count of 15 characters.
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes included in the explanation of the symbology, then scan the digit value of the message length and **Save** bar codes on the [Programming Chart](#) inside the back cover of this manual. The minimum and maximum lengths and the defaults are included with the respective symbologies.

Linear Symbolologies

Codabar

<Default All Codabar Settings>



Codabar



* On



Off

Codabar Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters.

Default = Don't Transmit.



Transmit



* Don't Transmit

Linear Symbolologies

Codabar Check Character

Codabar check characters are created using different “modulos.” You can program the imager to read only Codabar bar codes with Modulo 16 check characters. *Default = No Check Character.*

No Check Character indicates that the imager reads and transmits bar code data with or without a check character.

When Check Character is set to **Validate and Transmit**, the imager will only read Codabar bar codes printed with a check character, and will transmit this character at the end of the scanned data.

When Check Character is set to **Validate, but Don't Transmit**, the unit will only read Codabar bar codes printed **with** a check character, but will not transmit the check character with the scanned data.



* No Check Character



Validate Modulo 16, but
Don't Transmit



Validate Modulo 16
and Transmit

Linear Symbolologies

Codabar Concatenation

Codabar supports symbol concatenation. When you enable concatenation, the imager looks for a Codabar symbol having a “D” start character, adjacent to a symbol having a “D” stop character. In this case the two messages are concatenated into one with the “D” characters omitted. *Default = On.*



Select Require to prevent the imager from decoding a single “D” Codabar symbol without its companion. This selection has no effect on Codabar symbols without Stop/Start D characters.



* On



Off



Require

Codabar Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 2-60. Minimum Default = 4, Maximum Default = 60.



Minimum Message Length



Maximum Message Length

Linear Symbologies

Code 39

< Default All Code 39 Settings >



Code 39



* On



Off

Code 39 Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*



Transmit



* Don't Transmit

Linear Symbologies

Code 39 Check Character

No Check Character indicates that the imager reads and transmits bar code data with or without a check character.

When Check Character is set to **Validate, but Don't Transmit**, the unit only reads Code 39 bar codes printed with a check character, but will not transmit the check character with the scanned data.

When Check Character is set to **Validate and Transmit**, the imager only reads Code 39 bar codes printed with a check character, and will transmit this character at the end of the scanned data. *Default = No Check Character.*



* No Check Character



Validate, but Don't Transmit



Validate and Transmit

Code 39 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Linear Symbologies

Code 39 Append

This function allows the imager to append the data from several Code 39 bar codes together before transmitting them to the host computer. When this function is enabled, the imager stores those Code 39 bar codes that start with a space (excluding the start and stop symbols), and does not immediately transmit the data. The imager stores the data in the order in which the bar codes are read, deleting the first space from each. The imager transmits the appended data when it reads a Code 39 bar code that starts with a character other than a space. *Default = Off.*



On



* Off

Code 32 Pharmaceutical (PARAF)

Code 32 Pharmaceutical is a form of the Code 39 symbology used by Italian pharmacies. This symbology is also known as PARAF.

Note: Trioptic Code (page 7-34) must be turned off while scanning Code 32 Pharmaceutical codes.



On



* Off

Linear Symbolologies

Full ASCII

If Full ASCII Code 39 decoding is enabled, certain character pairs within the bar code symbol will be interpreted as a single character. For example: \$V will be decoded as the ASCII character SYN, and /C will be decoded as the ASCII character #. *Default = On.*

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

Character pairs /M and /N decode as a minus sign and period respectively. Character pairs /P through /Y decode as 0 through 9.



Full ASCII On



* Full ASCII Off

Linear Symbologies

Code 39 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [Code Page Mapping of Printed Bar Codes](#) on page A-5), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 39 Code Page

Interleaved 2 of 5

< Default All Interleaved 2 of 5 Settings >



Interleaved 2 of 5



* On



Off

Linear Symbologies

Check Digit

No Check Digit indicates that the imager reads and transmits bar code data with or without a check digit.

When Check Digit is set to **Validate, but Don't Transmit**, the unit only reads Interleaved 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

When Check Digit is set to **Validate and Transmit**, the imager only reads Interleaved 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default = No Check Digit.*



* No Check Digit



Validate, but Don't Transmit



Validate and Transmit

Interleaved 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Linear Symbolologies

Code 93

< Default All Code 93 Settings >



Code 93



* On



Off

Code 93 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Linear Symbolologies

Code 93 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [Code Page Mapping of Printed Bar Codes](#) on page A-5), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 93 Code Page

Code 2 of 5

<Default All Code 2 of 5 Settings>



Code 2 of 5



On



* Off

Code 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Linear Symbologies

IATA Code 2 of 5

<Default All Code IATA 2 of 5 Settings>



IATA Code 2 of 5



On



* Off

IATA Code 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Linear Symbolologies

Matrix 2 of 5

<Default All Matrix 2 of 5 Settings>



Matrix 2 of 5



On



* Off

Matrix 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Linear Symbolologies

Code 11

<Default All Code 11 Settings>



Code 11



On



* Off

Check Digits Required

This option sets whether 1 or 2 check digits are required with Code 11 bar codes.
Default = Two Check Digits.



One Check Digit



* Two Check Digits

Code 11 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Linear Symbolologies

Code 128

<Default All Code 128 Settings>



Code 128



* On



Off

ISBT 128 Concatenation

In 1994 the International Society of Blood Transfusion (ISBT) ratified a standard for communicating critical blood information in a uniform manner. The use of ISBT formats requires a paid license. The ISBT 128 Application Specification describes 1) the critical data elements for labeling blood products, 2) the current recommendation to use Code 128 due to its high degree of security and its space-efficient design, 3) a variation of Code 128 that supports concatenation of neighboring symbols, and 4) the standard layout for bar codes on a blood product label. Use the bar codes below to turn concatenation on or off. *Default =Off.*



On



* Off

Linear Symbologies

Code 128 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Code 128 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [Code Page Mapping of Printed Bar Codes](#) on page A-5), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 128 Code Page

Telepen

<Default All Telepen Settings>



Telepen



On



* Off

Linear Symbolologies

Telepen Output

Using AIM Telepen Output, the imager reads symbols with start/stop pattern 1 and decodes them as standard full ASCII (start/stop pattern 1). When Original Telepen Output is selected, the imager reads symbols with start/stop pattern 1 and decodes them as compressed numeric with optional full ASCII (start/stop pattern 2). *Default = AIM Telepen Output.*



* AIM Telepen Output



Original Telepen Output

Telepen Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-60. Minimum Default = 1, Maximum Default = 60.



Minimum Message Length



Maximum Message Length

UPC-A

<Default All UPC-A Settings>



UPC-A



* On



Off

Linear Symbologies

UPC-A Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. Default = On.



* On



Off

UPC-A Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will not transmit it. Default = On.



* On



Off

UPC-A Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-A data. Default = Off for both 2 Digit and 5 Digit Addenda.



2 Digit Addenda On



* 2 Digit Addenda Off



5 Digit Addenda On



* 5 Digit Addenda Off

Linear Symbolologies

UPC-A Addenda Required

When **Required** is scanned, the imager will only read UPC-A bar codes that have addenda. You must then turn on a 2 or 5 digit addenda listed on [page 7-20](#). *Default = Not Required.*



Required



* Not Required

UPC-A Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*



* On



Off

UPC-A/EAN-13

with Extended Coupon Code

Use the following codes to enable or disable UPC-A **and** EAN-13 with Extended Coupon Code. *Default = On.*



* On



Off

Linear Symbologies

UPC-E0

<Default All UPC-E Settings>



UPC-E0

Most U.P.C. bar codes lead with the 0 number system. For these codes, use the UPC-E0 selection. If you need to read codes that lead with the 1 number system, use [UPC-E1](#) (page 7-24). *Default = On.*



* UPC-E0 On



UPC-E0 Off

UPC-E0 Expand

UPC-E Expand expands the UPC-E code to the 12 digit, UPC-A format. *Default = Off.*



On



* Off

Linear Symbolologies

UPC-E0 Addenda Required

When Addenda Required is set to on, the imager will only read UPC-E bar codes that have addenda. *Default = Not Required.*



Required



* Not Required

UPC-E0 Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*



* On



Off

UPC-E0 Check Digit

Check Digit specifies whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



* On



Off

Linear Symbologies

UPC-E0 Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will not transmit it. *Default = On.*



* On



Off

UPC-E0 Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-E data. *Default = Off for both 2 Digit and 5 Digit Addenda.*



2 Digit Addenda On



* 2 Digit Addenda Off



5 Digit Addenda On



* 5 Digit Addenda Off

UPC-E1

Most U.P.C. bar codes lead with the 0 number system. For these codes, use [UPC-E0](#) (page 7-22). If you need to read codes that lead with the 1 number system, use the UPC-E1 selection. *Default = Off.*



UPC-E1 On



* UPC-E1 Off

Linear Symbolologies

EAN/JAN-13

<Default All EAN/JAN Settings>



EAN/JAN-13



* On



Off

EAN/JAN-13 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



* On



Off

Linear Symbologies

EAN/JAN-13 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-13 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*



2 Digit Addenda On



* 2 Digit Addenda Off



5 Digit Addenda On



* 5 Digit Addenda Off

EAN/JAN-13 Addenda Required

When Addenda Required is set to on, the imager will only read EAN/JAN-13 bar codes that have addenda. *Default = Not Required.*



Required



* Not Required

EAN/JAN-13 Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*



* On



Off

Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to [UPC-A/EAN-13 with Extended Coupon Code](#) (page 7-21).

Linear Symbolologies

ISBN Translate

This selection causes EAN-13 Bookland symbols to be translated into their equivalent ISBN number format. *Default = Off.*



On



* Off

EAN/JAN-8

<Default All EAN/JAN-8 Settings>



EAN/JAN-8



* On



Off

EAN/JAN-8 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



* On



Off

Linear Symbolologies

EAN/JAN-8 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-8 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*



2 Digit Addenda On



* 2 Digit Addenda Off



5 Digit Addenda On



* 5 Digit Addenda Off

EAN/JAN-8 Addenda Required

When Addenda Required is set to on, the imager will only read EAN/JAN-8 bar codes that have addenda. *Default = Not Required.*



Required



* Not Required

EAN/JAN-8 Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space.

Default = On.



* On



Off

Linear Symbologies

MSI

<Default All MSI Settings>



MSI



On



* Off

MSI Check Character

Different types of check characters are used with MSI bar codes. You can program the imager to read MSI bar codes with Type 10 check characters. *Default = Validate Type 10, but Don't Transmit.*

When Check Character is set to **Validate and Transmit**, the imager will only read MSI bar codes printed with the specified type check character, and will transmit this character at the end of the scanned data.

When Check Character is set to **Validate, but Don't Transmit**, the unit will only read MSI bar codes printed with the specified type check character, but will not transmit the check character with the scanned data.



* Validate Type 10, but Don't
Transmit



Validate Type 10 and Transmit

Linear Symbologies

MSI Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Plessey Code

<Default All Plessey Code Settings>



Plessey Code



On



* Off

Plessey Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Linear Symbolologies

RSS-14

< Default All RSS-14 Settings >



RSS-14



* On



Off

RSS Limited

< Default All RSS Limited Settings >



RSS Limited



* On



Off

Linear Symbologies

RSS Expanded

< Default All RSS Expanded Settings >



RSS Expanded



* On



Off

RSS Expanded Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 4, Maximum Default = 74.



Minimum Message Length



Maximum Message Length

Linear Symbolologies

PosiCode

<Default All PosiCode Settings>



PosiCode A and B



* On



Off

You have to have PosiCode A and B on to read any of the PosiCode symbolologies.



A and B On
(No Limited)



A and B and Limited A On
(Limited B Off)



* A and B and Limited B On
(Limited A Off)

PosiCode Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Stacked Symbolologies

Trioptic Code

Note: If you are going to scan Code 32 Pharmaceutical codes (page 7-8), Trioptic Code must be off.

Trioptic Code is used for labeling magnetic storage media.



On



* Off

Codablock F

<Default All Codablock F Settings>



Codablock F



On



* Off

Stacked Symbolgies

Codablock F Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.



Minimum Message Length



Maximum Message Length

Code 16K

<Default All Code 16K Settings>



Code 16K



On



* Off

Code 16K Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 0-160. Minimum Default = 1, Maximum Default = 160.



Minimum Message Length



Maximum Message Length

Stacked Symbolologies

Code 49

<Default All Code 49 Settings>



Code 49



* On



Off

Code 49 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-81. Minimum Default = 1, Maximum Default = 81.



Minimum Message Length



Maximum Message Length

Stacked Symbologies

PDF417

< Default All PDF417 Settings >



PDF417



* On



Off

PDF417 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-2750. Minimum Default = 1, Maximum Default = 2750.



Minimum Message Length



Maximum Message Length

MicroPDF417

< Default All MicroPDF417 Settings >



Stacked Symbologies

MicroPDF417



* On



Off

MicroPDF417 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-366. Minimum Default = 1, Maximum Default = 366.



Minimum Message Length



Maximum Message Length

EAN•UCC Composite Codes

Linear codes are combined with a unique 2D composite component to form a new class called EAN•UCC Composite symbology. EAN•UCC Composite symbologies allow for the co-existence of symbologies already in use.



On



* Off

Stacked Symbolologies

UPC/EAN Version

Scan the ***UPC/EAN Version On*** bar code to decode EAN•UCC Composite symbols that have a UPC or EAN linear component. (This does not affect EAN•UCC Composite symbols with a UCC/EAN-128 or RSS linear component.)



UPC/EAN Version On



* UPC/EAN Version Off

EAN•UCC Composite Code Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-2435. Minimum Default = 1, Maximum Default = 2435.



Minimum Message Length



Maximum Message Length

Stacked Symbolologies

EAN•UCC Emulation

The imager can automatically format the output from any EAN•UCC data carrier to emulate what would be encoded in an equivalent UCC/EAN-128 or RSS and Composite symbol. EAN•UCC data carriers include UPC-A and UPC-E, EAN-13 and EAN-8, ITF-14, UCC/EAN-128, and EAN•UCC RSS and Composites. Data from 2D symbols such as Aztec Code, Data Matrix, or QR Code, which encode a leading FNC1, also invoke EAN•UCC emulation. If UCC/EAN-128 Emulation is selected, the AIM Symbology Identifier is reported as “]C1”. If RSS Emulation is selected, the AIM Symbology Identifier is reported as “]e0.” Any application that accepts EAN•UCC data can be simplified since it only needs to recognize one data carrier type. *Default = No Emulation.*



RSS Emulation



128 Emulation



* EAN•UCC Emulation Off

TCIF Linked Code 39 (TLC39)

This code is a composite code since it has a Code 39 linear component and a MicroPDF417 stacked code component. All bar code readers are capable of reading the Code 39 linear component. The MicroPDF417 component can only be decoded if **TLC39 On** is selected. The linear component may be decoded as Code 39 even if TLC39 is off.



On



* Off

Postal Symbologies

Postal Codes

Note: For best performance when reading a postal symbology, all other postal symbologies should be turned off. The following postal codes can only be read by a 2D Imager.

Postnet



On



* Off

Planet Code



On



* Off

British Post



On



* Off

Canadian Post



On



* Off

Postal Symbologies

Kix (Netherlands) Post

Note: Kix code can misread when scanned sideways or upside down. Use [Working Orientation](#), page 3-18, if your Kix codes will not usually be presented upright to the scanner.



On



* Off

Australian Post



On



* Off

Japanese Post



On



* Off

Postal Symbologies

China Post

<Default All China Post Settings>



China Post



On



* Off

China Post Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Postal Symbologies

Korea Post

<Default All Korea Post Settings>



Korea Post



On



* Off

Korea Post Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

2D Matrix Symbologies

QR Code

Note: QR Code can only be read by an IT4600/4800 2D imager.

< Default All QR Code Settings >



QR Code



On



* Off

QR Code Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-3500. Minimum Default = 1, Maximum Default = 3500.



Minimum Message Length



Maximum Message Length

2D Matrix Symbologies

Data Matrix

Note: Data Matrix can only be read by an IT4600/4800 2D imager.

< Default All Data Matrix Settings >



Data Matrix



* On



Off

Data Matrix Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-1500. Minimum Default = 1, Maximum Default = 1500.



Minimum Message Length



Maximum Message Length

MaxiCode

Note: MaxiCode can only be read by an IT4600/4800 2D imager.

< Default All MaxiCode Settings >



MaxiCode



On



* Off

MaxiCode Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-150. Minimum Default = 1, Maximum Default = 150.



Minimum Message Length



Maximum Message Length

Aztec Code

Note: Aztec Code can only be read by an IT4600/4800 2D imager.

< Default All Aztec Code Settings >



Aztec Code



* On



Off

Aztec Code Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 7-2) for additional information. Minimum and Maximum lengths = 1-3750. Minimum Default = 1, Maximum Default = 3750.



Minimum Message Length



Maximum Message Length

Aztec Runes

Select **Enable Runes** if you are scanning Aztec runes, which are the smallest type of Aztec Code symbol with the ability to encode a very short license plate message.



Enable Runes



* Disable Runes

OCR Programming

Use this section to program the Imager for optical character recognition (OCR). The 2D IT4600/4800 reads 6 to 60 point OCR typeface.

Note: OCR is not as secure as bar codes. To enhance security in OCR applications, create an OCR template to match the data, and print an OCR check character.

The 2D IT4600/4800 will read the following fonts:

- OCR-A

```
0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZ
()<>/\+ -*$
```

- OCR-B

```
0123456789 ABCDEFGHIJKLMN0PQRSTUVWXYZ
()<>^+ -*$
```

- U.S. Currency Serial Number (Money)

```
I 07700277 F
*
```

- MICR E 13 B

```
0 1 2 3 4 5 6 7 8 9 : ; ' " "
```

- SEMI Font

```
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z - . 0 1 2 3 4 5 6 7 8 9
```

You can either select an OCR default, or create your own custom template for the type of OCR format you intend to read. See "OCR" on page 8-2 for programming codes that will enable your imager to read OCR-A, OCR-B, U.S. Currency, MICR E 13 B, or SEMI fonts. See "Creating OCR Templates" on page 8-4 if you want to create a custom "template," or character string that defines the length and content of OCR strings that will be read with your imager.

OCR

Default All OCR Settings turns off all OCR capability in the imager, so the imager will be able to scan linear, stacked, matrix, and composite bar codes, but not OCR fonts. In addition, any OCR templates you have created are erased. The 8 digit default templates are reinstated for any future use of the **OCR On** codes listed below.

< *Default All OCR Settings* >



OCR

Note: OCR symbols can misread when scanned sideways or upside down. Use [Working Orientation](#), page 3-18, if your OCR symbols will not usually be presented upright to the scanner.

Only one OCR symbology can be read at a time.

OCR-A On allows you to scan characters in the OCR-A font. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned (see [Creating an OCR Template](#), page 8-4).



OCR-A On

OCR-B On allows you to scan characters in the OCR-B font. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned (see [Creating an OCR Template](#), page 8-4).



OCR-B On

U.S. Currency

U.S. Currency On allows you to scan characters in the font used on U.S. currency. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned (see [Creating an OCR Template](#), page 8-4).



U.S. Currency On

MICR E13 B

MICR E13 B On allows you to scan MICR characters on a bank check. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned (see [Creating an OCR Template](#), page 8-4).



MICR E 13 B On

SEMI Font

SEMI Font On allows you to scan the SEMI font used in the semiconductor industry.



SEMI Font On

All OCR Off turns off all OCR capability in the imager, so the imager will be able to scan linear, stacked, matrix, and composite bar codes, but not OCR fonts. However, any OCR templates you have created will be retained in memory.



* All OCR Off

Creating OCR Templates

You can create a custom “template,” or character string that defines the length and content of OCR strings that will be read with your imager. There are several choices when creating a custom template for your application. You can create a template for a single format, you can string together several formats, and you can create a template for a user-defined variable. These choices are described in detail below.

Creating an OCR Template

A single template allows you to program the imager to read any combination of characters in the order you specify. Refer to examples that follow the Template Characters table below.

Template Characters

a	represents any alphanumeric character (digit or letter)
c	represents a check character position
d	represents any digit
e	represents any available OCR character
g	represents character from user-defined variable “g”
h	represents character from user-defined variable “h”
l	represents any uppercase letter
t	marks the start of a new template
r	multi row indicator
All other characters represent themselves. Spaces can be used.	

To Add an OCR Template

1. Begin building the template.
Scan the **Enter OCR Template** symbol ([page 8-9](#)).
2. Scan the characters for the string.
Use the Template Characters chart above to determine what characters you need to create your format. Use the OCR Programming Chart (after the Sample Codes in the back of this manual) to scan the characters for your template.

Example A: You need to read any combination of 8 digits. The template would be:

ddddddd

To create this template, you would scan the **Enter OCR Template** symbol (page 8-9), then scan the **d** from the OCR Programming Chart after the Sample Codes in the back of this manual 8 times. Scan **Save OCR Template** (page 8-9). This would let you read any string of 8 digits, for example:

37680981

3. Character Match Sequences

On the [ASCII Conversion Chart \(Code Page 1252\)](#), page A-3, find the Hex value that represents the character(s) you want to match. Use the Programming Chart (inside the back cover) to scan the numbers that represent these characters.

Example B: You need to read 3 digits, 3 specific characters (ABC), 3 digits. The template would be:

ddd414243ddd
 └───┘
 hex codes for
 letters A, B, and C

To create this template, you would scan the **Enter OCR Template** symbol (page 8-9), scan the **d** from the [Sample Symbols](#) (see page Prog Chart-4) 3 times, scan **414243** from the inside back cover (the hex characters for “A,” “B,” and “C”), then scan the **d** from the inside back cover 3 more times. Scan **Save OCR Template**, page 8-9. This would let you read any string of 3 digits, “ABC,” then any string of 3 digits, for example:

551ABC983

4. Adding Spaces

You may also need to put spaces in your template.

Example C: You need to read 3 digits, space, 3 specific characters (ABC), space, 3 digits. The template would be:

ddd2041424320ddd
 ↓ ↓
 hex code for a space

To create this template, you would scan the **Enter OCR Template** symbol (page 8-9), scan the **d** from the OCR Programming Chart after the Sample Codes in the back of this manual 3 times, scan **2041424320** from the Programming Chart inside back cover (the hex characters for “space,” “A,” “B,” “C,” “space”), then scan the **d** from the inside back cover 3 more times. Scan **Save OCR Template** (page 8-9). This would let you read any string of 3 digits, space, “ABC,” space, then any string of 3 digits, for example:

551 ABC 983

*Note: If using Quick*View to program, use the space bar to designate a space and not the hex value of 20.*

- Exit OCR Template Editor
Scan **Save OCR Template** to save your entries. **Discard OCR Template** exits without saving any OCR Template changes.

Stringing Together Multiple Formats (Creating “Or” Statements)

You may want to program the imager to accept many OCR formats. To do this, you would string together each format with a “t.” This tells the imager to read optical characters that match any one of the formats in the template.

Example D: You need to read any combination of 8 digits, *or* a combination of 4 digits, 2 uppercase letters, and 2 digits. The template would be:

dddddddtdddddlldd

To create this template, you would scan the **Enter OCR Template** symbol (page 8-9), scan the **d** from the OCR Programming Chart after the Sample Codes in the back of this manual 8 times, then scan the **t** to create the “or” statement. Then you would scan the characters for the 2nd template. Scan the **d** 4 times, scan **l** 2 times, then scan **d** 2 more times. Scan **Save OCR Template** (page 8-9). This would let you read either type of format, for example:

99028650
or
9902XZ50

You can string together as many templates as you need.

Creating a User-Defined Variable

You can create up to two of your own user variables for an OCR template. These variables will represent any OCR readable characters. The user-defined variables are stored under the letters “g” and “h.” Creating a user variable follows the same steps as creating a template, but instead of scanning the **Enter OCR Template** symbol, you scan the **Enter User-Defined Variable** symbol (page 8-9). The letters g and h can then be used in an OCR template to define the variable you specified.

Example E: You need a variable to represent the letters “A,” “B,” or “C.” The template for this variable would be:

414243

To create this template, you would scan the **Enter User-Defined Variable g** symbol (page 8-9). Scan **414243** from the inside back cover (the hex characters for “A,” “B,” and “C”). Scan **Save OCR Template** (page 8-9). This will let you read either A or B or C in any position where you place the g. For example, you could create the following template:

ddddddggg

This template would then let you read data that began with 6 digits, and had an A, B, or C trailing. So you would be able to read:

654321ABC
or
654321BAC
or
654321CCC

Reading Multi-Row OCR

The IT4600/4800 is capable of decoding multi-row OCR text. Consider the following example. This example shows serial commands as would be entered using Quick*View.

Example G: You need to read multiple rows of OCR data as shown below:

12345678
ABCDEFGHIH

To read the first row of OCR data, you would menu the following template:

OCRTMP"ddddddd".

This template is the default OCR template. If you wanted to read the second line of data, you would use the following template:

OCRTMP"IIIIII".

To read both lines of OCR at one time, use the variable *r* to indicate the start of a new row. All of the other templating variables for the individual rows work the same as previously described. For instance, in the above example, you would use the following template to read both rows:

OCRTMP"dddddddrrIIIIII".

To read the three rows below, you would use the template command "OCRTMP"dddddddrrIIIIIIrrIIIIddd".

12345678
ABCDEFGHIH
ABCD1234

Adding an OCR Check Character

You may want to print and verify a check character in order to enhance the security of your OCR application. The IT4600/4800 can be programmed for almost any type of check character. A number of presets are provided for common check character uses (e.g., modulo 10 and modulo 36).

Scan the **OCR Modulo 10** or **OCR Modulo 36 Check Character** bar code to specify the type of check character used in the OCR strings you're scanning. The imager will then only read OCR character strings with a valid check character. The IT4600/4800 transmits the OCR data without the check character data. You must specify the location of the check character in the template with a **c**.

Example F: You need to read any combination of 7 digits, with a modulo 10 check character in the 8th position. The template would be:

ddddddc

To create this template, you would scan the **Modulo 10 Check Character** symbol. Then scan the **Enter OCR Template** symbol, scan the **d** from the inside back cover 7 times, and scan the **c** once. Scan **Save OCR Template** (page 8-9). This template will let you read any combination of 6 digits with a correct check character after. (If the check character is invalid, the imager will issue an error beep.) For example, the following string could be scanned:

01234569

and the output would be: 0123456

OCR Modulo 10 Check Character

Scan this symbol to program the OCR template for a simple modulo 10 checksum of the digits 0 through 9.



OCR Modulo 10 Check Character

OCR Modulo 36 Check Character

Scan this symbol to program the OCR template for a simple modulo 36 checksum of the digits 0 through 9 and the letters A through Z.



OCR Modulo 36 Check Character

OCR Template Codes

Note: Reading more than three rows of OCR is not recommended. Contact the factory if you have an application that requires reading 4 or more rows of OCR.



Enter OCR Template †



Enter User-Defined
Variable "h" †



Enter User-Defined
Variable "g" †

† One or more two-digit numbers and **Save** are required after reading this programming symbol. Refer to the [Programming Chart](#) on the inside the back cover of this manual.

Exit Selections



Save OCR Template



Discard OCR Template



Interface Keys

Keyboard Function Relationships

The following Keyboard Function Code, Hex/ASCII Value, and Full ASCII “CTRL”+ relationships apply to all terminals that can be used with the imager. Refer to [page 2-7](#) enable Control + ASCII mode.

Function Code	HEX/ASCII Value	Full ASCII “CTRL” +
NUL	00	2
SOH	01	A
STX	02	B
ETX	03	C
EOT	04	D
ENQ	05	E
ACK	06	F
BEL	07	G
BS	08	H
HT	09	I
LF	0A	J
VT	0B	K
FF	0C	L
CR	0D	M
SO	0E	N
SI	0F	O
DLE	10	P
DC1	11	Q
DC2	12	R
DC3	13	S
DC4	14	T
NAK	15	U
SYN	16	V
ETB	17	W
CAN	18	X
EM	19	Y
SUB	1A	Z
ESC	1B	[
FS	1C	\
GS	1D]
RS	1E	6
US	1F	-

The last five characters in the Full ASCII “CTRL”+ column ([\] 6 -), apply to US only. The following chart indicates the equivalents of these five characters for different countries.

Country	Codes				
United States	[	\	\]	6	-
Belgium	[	<	]	6	-
Scandinavia	8	<	9	6	-
France	^	8	\$	6	=
Germany		Ã	+	6	-
Italy		\	+	6	-
Switzerland		<	..	6	-
United Kingdom	[	¢	]	6	-
Denmark	8	\	9	6	-
Norway	8	\	9	6	-
Spain	[	\	\]	6	-

Supported Interface Keys

ASCII	HEX	IBM AT/XT and PS/2 Compatibles, WYSE PC/AT Supported Keys	IBM XTs and Compatibles Supported Keys	IBM, DDC, Memorex Telex, Harris* Supported Keys
NUL	00	Reserved	Reserved	Reserved
SOH	01	Enter (KP)	CR/Enter	Enter
STX	02	Cap Lock	Caps Lock	F11
ETX	03	ALT make	Reserved	F12
EOT	04	ALT break	Reserved	F13
ENQ	05	CTRL make	Reserved	F14
ACK	06	CTRL break	Reserved	F15
BEL	07	CR/Enter	CR/Enter	New Line
BS	08	Reserved	Reserved	F16
HT	09	Tab	Tab	F17
LF	0A	Reserved	Reserved	F18
VT	0B	Tab	Tab	Tab/Field Forward
FF	0C	Delete	Delete	Delete
CR	0D	CR/Enter	CR/Enter	Field Exit/New Line
SO	0E	Insert	Insert	Insert
SI	0F	Escape	Escape	F19
DLE	10	F11	Reserved	Error Reset
DC1	11	Home	Home	Home
DC2	12	Print	Print	F20
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Backfield/Back Tab
NAK	15	F12	Reserved	F21
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

* IBM 3191/92, 3471/72, 3196/97, 3476/77, Telex (all models)

Supported Interface Keys

ASCII	HEX	IBM, Memorex Telex (102)* Supported Keys	Memorex Telex (88)** Supported Keys
NUL	00	Reserved	Reserved
SOH	01	Enter	Enter
STX	02	F11	PF10
ETX	03	F12	PF11
EOT	04	F13	PF12
ENQ	05	F14	Reserved
ACK	06	F15	Reserved
BEL	07	New Line	New Line
BS	08	F16	Field Forward
HT	09	F17	Field Forward
LF	0A	F18	Reserved
VT	0B	Tab/Field Forward	Field Forward
FF	0C	Delete	Delete
CR	0D	Field Exit	New Line
SO	0E	Insert	Insert
SI	0F	Clear	Erase
DLE	10	Error Reset	Error Reset
DC1	11	Home	Reserved
DC2	12	Print	Print
DC3	13	Back Space	Back Space
DC4	14	Back Tab	Back Field
NAK	15	F19	Reserved
SYN	16	F1	PF1
ETB	17	F2	PF2
CAN	18	F3	PF3
EM	19	F4	PF4
SUB	1A	F5	PF5
ESC	1B	F6	PF6
FS	1C	F7	PF7
GS	1D	F8	PF8
RS	1E	F9	PF9
US	1F	F10	Home

* IBM 3196/97, 3476/77, 3191/92, 3471/72, Memorex Telex (all models) with 102 key keyboards

** Memorex Telex with 88 key keyboards

Supported Interface Keys

ASCII	HEX	Esprit 200, 400 ANSI Supported Keys	Esprit 200, 400 ASCII Supported Keys	Esprit 200, 400 PC Supported Keys
NUL	00	Reserved	Reserved	Reserved
SOH	01	New Line	New Line	New Line
STX	02	N/A	N/A	N/A
ETX	03	N/A	N/A	N/A
EOT	04	N/A	N/A	N/A
ENQ	05	N/A	N/A	N/A
ACK	06	N/A	N/A	N/A
BEL	07	New Line	New Line	New Line
BS	08	N/A	N/A	N/A
HT	09	Tab	Tab	Tab
LF	0A	N/A	N/A	N/A
VT	0B	Tab	Tab	Tab
FF	0C	N/A	N/A	Delete
CR	0D	New Line	New Line	New Line
SO	0E	N/A	N/A	Insert
SI	0F	Escape	Escape	Escape
DLE	10	F11	F11	F11
DC1	11	Insert	Insert	Home
DC2	12	F13	F13	Print
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Back Tab
NAK	15	F12	F12	F12
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

Supported Interface Keys

ASCII	HEX	Apple Mac/iMac Supported Keys
NUL	00	Reserved
SOH	01	Enter/Numpad Enter
STX	02	CAPS
ETX	03	ALT make
EOT	04	ALT break
ENQ	05	CNTRL make
ACK	06	CNTRL break
BEL	07	RETURN
BS	08	APPLE make
HT	09	TAB
LF	0A	APPLE break
VT	0B	TAB
FF	0C	Del
CR	0D	RETURN
SO	0E	Ins Help
SI	0F	ESC
DLE	10	F11
DC1	11	Home
DC2	12	Prnt Scrn
DC3	13	BACKSPACE
DC4	14	LSHIFT TAB
NAK	15	F12
SYN	16	F1
ETB	17	F2
CAN	18	F3
EM	19	F4
SUB	1A	F5
ESC	1B	F6
FS	1C	F7
GS	1D	F8
RS	1E	F9
US	1F	F10
DEL	7F	BACKSPACE

To Add a Test Code I.D. Prefix to All Symbologies

This selection allows you to turn on transmission of a Code I.D. before the decoded symbology. (See the Symbology Chart, included in the [Appendix A](#), page A-1) for the single character code that identifies each symbology.) This action first clears all current prefixes, then programs a Code I.D. prefix for all symbologies. This is a temporary setting that will be removed when the unit is power cycled.



Add Code I.D. Prefix to
All Symbologies (Temporary)

Show Software Revision

Scan the bar code below to output the current software revision, unit serial number, and other product information.



Show Revision

Show Data Format

Scan the bar code below to show current data format settings.



Data Format Settings

Resetting the Standard Product Defaults

If you aren't sure what programming options are in your imager, or you've changed some options and want the standard product default settings restored, scan the **Standard Product Default Settings** bar code below.



Standard Product Default Settings

The [Menu Commands](#) starting on [page 11-5](#) lists the standard product default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Test Menu

When you scan the Test Menu **On** code, then scan a programming code in this manual, the imager displays the content of a programming code. The programming function will still occur, but in addition, the content of that programming code is output to the terminal.

Note: This feature should not be used during normal imager operation.



On



* Off

Visual Menu 2003

Visual Menu 2003 provides the ability to configure an imaging device by connecting the imager to the com port of a PC. Visual Menu 2003 allows you to download upgrades to a imager's firmware, change programmed parameters, and create and print programming bar codes. Using Visual Menu 2003, you can even set up the configuration for a imager which is not attached to your PC. This enables one expert user to establish the configuration settings for all the devices your company uses, then save these configuration files for others. A configuration file can be e-mailed or, if you prefer, an expert user can create a bar code (or series of bar codes) which contains all the customized programming parameters, and mail or fax the bar code(s) to any location. Users in other locations can scan the bar code(s) to load in the customized parameters.

To communicate with a imager, Visual Menu 2003 requires that the PC have at least one available serial communication port and an RS-232 cable to connect the port to the device. A power supply, which plugs into the cable, is also required.

Note: If you already have a copy of Visual Menu, please note that older versions of Visual Menu will not work with the IT4600/4800. You must use Visual Menu 2003 with the IT4600/4800.

Visual Menu 2003 Operations

The Visual Menu 2003 program performs the following operations:

- Displays all configuration data, and saves the information to a file on your PC.
- Configures the device to meet your specific requirements. Visual Menu 2003 has all the programming parameters that are available via programming bar codes in this User's Guide.

-
- Creates and prints a clone bar code which contains the program and configuration data from one device. This bar code can then be used to program additional devices with the same parameters.
 - Selects a device from a list, then performs offline or online file configuration for that device.

Temporary Visual Menu 2003 Configuration

For quick download communication configuration, scan the **Visual Menu 2003** bar code to temporarily configure the imager for Visual Menu 2003 settings.

Note: If you have a unit capable of keyboard wedge mode, scan the bar code below and the unit will communicate in RS-232 mode, allowing it to work with Visual Menu 2003. To convert the imager back to keyboard wedge communication, cycle the power.



Visual Menu 2003

Note: If you download new software into a unit, the user-programmed parameters are retained. If you need to discard user-programmed settings, see [Resetting the Standard Product Defaults](#) on page 10-1.

Installing Visual Menu 2003 from the Web

1. Access the HHP web site at www.hhp.com.
2. Click on the **Search** text box and enter **Visual Menu 2003**.
3. Click on **Search**. Select **Software**.
4. Click on **Visual Menu 2003**.
5. When prompted, select **Save File**, and save the files to the **c:\windows\temp** directory.
6. Once you have finished downloading the file, exit the web site.
7. Using Explorer, go to the **c:\windows\temp** file.
8. Double click on the **Visualmenu2003.exe** file. Follow the screen prompts to install the Visual Menu 2003 program.
9. To start Visual Menu 2003, from the Start Menu click on **Programs, Visual Menu 2003, Visual Menu 2003**.

Note: If you wish, you can create a shortcut to the Visual Menu 2003 executable on your desktop.

Quick*View

Quick*View is a Microsoft Windows® program that displays decoded symbol messages and captures images (for instance, ID photographs) from the IMAGETEAM 4600/4800. Bar code information and images are displayed in the Quick*View window.

*Installing Quick*View from the Web*

1. Access the HHP web site at www.hhp.com.
2. Click on **Search** and enter **Quick*View**.
3. Click on **Search**.
4. Click on the entry for Software. Select **Quick*View Software Utility**.
5. When prompted, select **Save**, and save the files to the **c:\windows\temp** directory.
6. Once you have finished downloading the file, exit the web site.
7. Using Explorer, go to the **c:\windows\temp** file.
8. Double click on the **Quickview.exe** file. Follow the screen prompts to install the Quick*View program.
9. To start Quick*View, from the Start Menu click on **Programs, Quick*View, Quick*View**.

*Note: If you wish, you can create a shortcut to the Quick*View executable on your desktop.*

*Temporary Quick*View Configuration*

For a quick download communication configuration, scan the Quick*View bar code and the imager will be temporarily configured for Quick*View settings.

*Note: If you have a unit capable of keyboard wedge mode, scan the bar code below and the unit will communicate in RS-232 mode, allowing it to work with Quick*View. To convert the imager back to keyboard wedge communication, cycle the power.*



Quick*View

Serial Programming Commands

The serial programming commands can be used in place of the programming bar codes. Both the serial commands and the programming bar codes will program the IT4600/4800. For complete descriptions and examples of each serial programming command, refer to the corresponding programming bar code in this manual.

The device must be set to an RS-232 interface (see page 1-7). The following commands can be sent via a PC COM port using terminal emulation software.

Conventions

The following conventions are used for menu and query command descriptions:

parameter A label representing the actual value you should send as part of a command.

[*option*] An optional part of a command.

{Data} Alternatives in a command.

bold Names of menus, menu commands, buttons, dialog boxes, and windows that appear on the screen.

Menu Command Syntax

Menu commands have the following syntax (spaces have been used for clarity only):

Prefix Tag SubTag {Data} [, SubTag {Data}] [: Tag SubTag {Data}] [...] Storage

Prefix Three ASCII characters: **SYN M CR** (ASCII 22,77,13).

Tag A 3 character case-insensitive field that identifies the desired menu command group. For example, all RS-232 configuration settings are identified with a Tag of **232**.

SubTag A 3 character case-insensitive field that identifies the desired menu command within the tag group. For example, the SubTag for the RS-232 baud rate is **BAD**.

Data The new value for a menu setting, identified by the Tag and Sub-Tag.

Storage A single character that specifies the storage table to which the command is applied. An exclamation point (!) performs the command's operation on the device's volatile menu configuration table. A period (.) performs the command's operation on the device's non-volatile menu configuration table. Use the non-volatile table only for semi-permanent changes you want saved through a power cycle.

Query Commands

Several special characters can be used to query the device about its settings.

- ^ What is the default value for the setting(s).
- ? What is the device's current value for the setting(s).
- * What is the range of possible values for the setting(s). (The device's response uses a dash (-) to indicate a continuous range of values. A pipe (|) separates items in a list of non-continuous values.)

Tag Field Usage

When a query is used in place of a Tag field, the query applies to the *entire* set of commands available for the particular storage table indicated by the Storage field of the command. In this case, the SubTag and Data fields should not be used because they are ignored by the device.

SubTag Field Usage

When a query is used in place of a SubTag field, the query applies only to the subset of commands available that match the Tag field. In this case, the Data field should not be used because it is ignored by the device.

Data Field Usage

When a query is used in place of the Data field, the query applies only to the specific command identified by the Tag and SubTag fields.

Concatenation of Multiple Commands

Multiple commands can be issued within one Prefix/Storage sequence. Only the Tag, SubTag, and Data fields must be repeated for each command in the sequence. If additional commands are to be applied to the same Tag, then the new command sequence is separated with a comma (,) and only the SubTag and Data fields of the additional command are issued. If the additional command requires a different Tag field, the command is separated from previous commands by a semicolon (;).

Responses

The device responds to serial commands with one of three responses:

ACK Indicates a good command which has been processed.

ENQ Indicates an invalid Tag or SubTag command.

NAK Indicates the command was good, but the Data field entry was out of the allowable range for this Tag and SubTag combination, e.g., an entry for a minimum message length of 100 when the field will only accept 2 characters.

When responding, the device echoes back the command sequence with the status character inserted directly before each of the punctuation marks (the period, exclamation point, comma, or semicolon) in the command.

Examples of Query Commands

In the following examples, a bracketed notation [] depicts a non-displayable response.

Example #1: What is the range of possible values for Codabar Coding Enable?

Enter: **cbrena*.**

Response: **CBRENA0-1[ACK]**

This response indicates that Codabar Coding Enable (CBRENA) has a range of values from 0 to 1 (off and on).

Example #2: What is the default value for Codabar Coding Enable?

Enter: **cbrena^.**

Response: **CBRENA1[ACK]**

This response indicates that the default setting for Codabar Coding Enable (CBRENA) is 1, or on.

Example #3: What is the device's current setting for Codabar Coding Enable?

Enter: **cbrena?.**

Response: **CBRENA1[ACK]**

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on.

Example #4: What are the device's settings for all Codabar selections?

Enter: **cbr?.**

Response: **CBRENA1[ACK],**
 SSX0[ACK],
 CK20[ACK],
 CCT1[ACK],
 MIN2[ACK],
 MAX60[ACK],
 DFT[ACK].

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on; the Start/Stop Character (SSX) is set to 0, or Don't Transmit; the Check Character (CK2) is set to 0, or Not Required; concatenation (CCT) is set to 1, or Enabled; the Minimum Message Length (MIN) is set to 2 characters; the Maximum Message Length (MAX) is set to 60 characters; and the Default setting (DFT) has no value.

Trigger Commands

You can activate and deactivate the imager with serial trigger commands. First, the imager must be put in Manual/Serial Trigger Mode either by scanning the Manual/Serial Trigger Mode bar code (page 3-4), or by sending the Manual/Serial Menu Command (page 11-9). Once the imager is in serial trigger mode, the trigger is activated and deactivated by sending the following commands:

Activate: **SYN T CR**

Deactivate: **SYN U CR**

The imager scans until a bar code has been read, until the deactivate command is sent, or until the serial time out has been reached (see "Read Time Out" on page 3-5 for a description, and the serial command on page 11-9).

Resetting the Standard Product Defaults

If you aren't sure what programming options are in your imager, or you've changed some options and want the factory settings restored, scan the **Standard Product Default Settings** bar code below.



Standard Product Default Settings

The chart on the following pages lists the factory default settings for each of the menu commands (indicated by an asterisk (*) on the programming pages).

Menu Commands

Selection	Setting <i>* Indicates default</i>	Serial Command <i># Indicates a numeric entry</i>	Page
Factory Default Settings	Default	DEFAULT	11-4
<i>Terminal Interfaces</i>			
Terminal ID	003 (IT4600/4800/010 and 050 models) 000 (IT4600/4800/030 models)	TERMID###	2-1

Selection	Setting <i>* Indicates default</i>	Serial Command <i># Indicates a numeric entry</i>	Page
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EAN•UCC Emulation	RSS Emulation	EANEMU2	7-40
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	*EAN•UCC Emulation Off	EANEMU0	7-40

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Kix (Netherlands) Post	On	KIXENA1	7-42
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Japanese Post	On	JAPENA1	7-42
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China Post	Default All China Post Settings	CPCDFT	7-43
China Post	*Off	CPCENA0	7-43
	On	CPCENA1	7-43
China Post Msg. Length	Minimum (0 - 80) *4	CPCMIN##	7-43
	Maximum (0 - 80) *80	CPCMAX##	7-43
Korea Post	Default All Korea Post Settings	KPCDFT	7-44
Korea Post	*Off	KPCENA0	7-44
	On	KPCENA1	7-44
Korea Post Msg. Length	Minimum (2 - 80) *4	KPCMIN##	7-44
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QR Code	Default All QR Code Settings	QRCDFT	7-45
QR Code	On	QRCENA1	7-45
	*Off	QRCENA0	7-45
QR Code Msg. Length	Minimum (1-3500) *1	QRCMIN	7-45
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Selection	Setting <i>* Indicates default</i>	Serial Command <i># Indicates a numeric entry</i>	Page
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	Enter User-Defined Variable g	OCRGPG	8-9
	Enter User-Defined Variable h	OCRGPH	8-9
	OCR Modulo 10 Check Character	"OCRCHK0123456789"	8-8
	OCR Modulo 36 Check Character	"OCRCHK0123456789ABCDEFGHIJ KLMNOPQRSTUVWXYZ"	8-9

Imaging Commands

Image Snap - IMGSP

Image Snap is the command processor for image capture. There are three styles:

Decoding: This is similar to the current format for decoding, however, this processing allows a few frames to be taken until the exposure parameters are met. Then the last frame is available for further use.

Photo: This attempts to mimic a simple digital camera, and results in a visually optimized image.

Manual: This is an advanced style, and should not normally be used. It allows you the most freedom to set up the imager, and has no auto-exposure.

IMGSP Modifiers

P - Imaging Style: Sets the Image Snap style (see above).

- 0P Decoding Style
- 1P Photo Style (*default*)
- 2P Manual Style

D - Delta for Acceptance: The target for the white value setting (see “W” modifier). Delta is only available when using Photo Style. (*Default = 10*)

- nD* Range: 0 - 255.

L - LED State: Determines if the LEDs should be on or off, and when. LED State is not available when using Decoding Style.

- 0L Use ambient illumination, not the LEDs (*default*)
- 1L LEDs on

U - Update Tries: The maximum number of frames the imager should take to reach the Delta for Acceptance. Update Tries is only available when using Photo Style. (*Default = 4*)

- nU* Range: 1 - 5

W - Target White Value: Sets the target for the median grayscale value in the captured image. For capturing close-up images of high contrast documents, a lower setting, like 75, is recommended. Higher settings result in longer exposure times and brighter images, but if the setting is too high, the image may be overexposed. Target White Value is only available when using Photo Style. (*Default = 140*)

- nW* Range: 0 - 255

Image Ship - IMGSHIP

An image is taken whenever the trigger of the IT4600/4800 is pressed. The last image is always stored in memory. You may “ship” the image by using the IMGSHIP command.

IMGSHIP Modifiers

The image ship command has many different modifiers that can be used to change the look of the image output by the scanner. Modifiers affect the image that is transmitted, but do not affect the image in memory. Modifiers always begin with numbers and end with a letter (case insensitive). Any number of modifiers may be appended to the IMGSHIP command. For example, to get a full-sized JPEG image from the device with pixel compensation, use the following command (spaces optional):

IMGSHIP 1C 6F 1S

C - Compensation: Flattens the image to account for variations in illumination across the image.

- 0C Compensation disabled (*default*)
- 1C Compensation enabled

D - Pixel Depth: Indicates the number of bits per pixel in the transmitted image (KIM or BMP format only).

- 8D 8 bits per pixel, grayscale image (*default*)
- 1D 1 bit per pixel, black and white image

E - Edge Sharpen: Causes the transmitted image to be convolved with an edge sharpening filter. Available only with KIM grayscale format. Entering a 23E gives the sharpest edges, but also increases noise in the image.

- 0E Don't sharpen edges (*default*)
- xxE Sharpen edges (range of 0E to 23E)

F - File Format: Indicates the type of file format in which to save the image.

- 0F KIM format (*default*)
- 1F TIFF binary
- 2F TIFF binary group 4, compressed
- 3F TIFF grayscale
- 4F Uncompressed Binary
- 5F Uncompressed grayscale
- 6F JPEG image
- 7F Outlined image
- 8F BMP format

H - Histogram Stretch: Increases the contrast of the transmitted image. Not available with some image formats. Available only with KIM and BMP grayscale formats.

-
- 0H No stretch (*default*)
 - 1H Histogram stretch

I - Invert Image: Used to rotate the image around the X or Y axis in fixed mount applications where the imager is mounted upside down.

- 1IX Invert around the X axis (flips picture upside down)
- 1IY Invert around the Y axis (flips picture left to right)

J - JPEG Image Quality: Sets the desired quality when the JPEG image format is selected. Higher numbers result in higher quality. Smaller numbers result in greater amounts of lossy compression, faster transmission times, and lower quality. (*Default = 80*)

- n*J Image is compressed as much as possible while preserving quality factor of *n* (*n* = 1 - 100)
- 1J worst quality
- 100J best quality

K - Gamma Correction: The way the imager responds to light levels is matched to the way the human eye responds to light levels. This selection is used for text images. The optimal setting is 50K.

- 0K Ship image without gamma correction
- xxxK Ship image with gamma correction (range is 1K to 999K)

L, R, T, B, M - Image Cropping: Ship a window of the image by specifying the left, right, top, and bottom pixel coordinates. Device columns are numbered 0 through 640, and device rows are numbered 0 through 480.

- n*L The left edge of the shipped image corresponds to column *n* of the image in memory. Range: 000 - 640. (*Default = 0*)
- n*R The right edge of the shipped image corresponds to column *n* - 1 of the image in memory. Range: 000 - 640. (*Default = all rows*)
- n*T The top edge of the shipped image corresponds to row *n* of the image in memory. Range: 000 - 480. (*Default = 0*)
- n*B The bottom edge of the shipped image corresponds to row *n* - 1 of the image in memory. Range: 000 - 480. (*Default = all rows*)

Alternately, specify the number of pixels to cut from the outside margin of the image; thus only the center pixels are transmitted.

- n*M Margin: cut *n* columns from the left, *n* + 1 columns from the right, *n* rows from the top, and *n* + 1 rows from the bottom of the image. Ship the remaining center pixels. Range: 1 - 239. (*Default = full image*)

P - Protocol: Used for shipping an image. Protocol covers two features of the image data being sent to the host. It addresses the protocol used to send the data (Hmodem, which is an xmodem 1K variant that has additional header information), and the format of the image data that is sent.

- 0P None (raw data)
- 2P None (*default for USB*)
- 3P Hmodem (*default for RS-232*)

4P Hmodem compressed

S - Pixel Ship: Can be used to decimate the image by shipping only certain, regularly spaced pixels. For example, **4S** would transmit every fourth pixel from every fourth line. The smaller number of pixels shipped, the smaller the image. However, after a certain point, the image becomes unusable.

1S ship every pixel (*default*)

2S ship every 2nd pixel, both horizontally and vertically (*default*)

3S ship every 3rd pixel, both horizontally and vertically

U - Ultra Text Filters: Sharpens the edges and smoothes the area between the edges of the transmitted text image. Available only with KIM grayscale format. The optimal setting is 26U.

0U Don't sharpen edges (*default*)

xxxU Sharpen edges (range is 1K to 255K)

V - Blur Image: Causes the transmitted image to be blurred. Available only with KIM grayscale format.

0V Don't blur (*default*)

1V Blur

Intelligent Signature Capture - IMGBOX

Intelligent signature capture ships only part of an image to the host application. This method reduces transfer time and file size, while simplifying signature capture.

Below is an example of an intelligent signature capture application. In this example, the operator reads the bar code, which is then transmitted to the host application. Upon the receipt of the bar code data, the host application sends the IMGBOX command, which tells the scanner to output only the area of the image corresponding to the signature capture box. The scanner also automatically adjusts for aspect ratio and distortion, issues that arise due to scanner skew with respect to the bar code.

Align the aimers with the signature area (not with the bar code), then pull the trigger. Send the IMGBOX command string after the trigger pull.



An important aspect of intelligent signature capture is that all dimensions used in the application are measured as multiples of the minimum element size of the bar code. Using this method, intelligent signature capture always outputs the correct image size and resolution, no matter the distance at which the scanner is held from the bar code, assuming that the entire signature capture area is within the scanner's field of view.

The intelligent signature capture command string for this application is:

IMGBOX40S0X70Y190W100H1R0F

IMGBOX Modifiers

D - Pixel Depth: Indicates the number of bits per pixel in the transmitted image.

- 8D 8 bits per pixel, grayscale image
- 1D 1 bit per pixel, black and white image

F - File Format: Indicates the type of file format in which to save the image.

- 0F KIM format (*default*)
- 1F TIFF binary
- 2F TIFF binary group 4, compressed
- 3F TIFF grayscale
- 4F Uncompressed Binary
- 5F Uncompressed grayscale
- 6F JPEG image
- 7F Outlined image
- 8F BMP format

H - Height of Signature Capture Area: In the example, the height of the area to be captured is 1 inch, resulting in a value of $H = 1/0.01 = 100$. The value for H is slightly larger, to accommodate some extra image capture area outside of the signature capture box.

R - Resolution of Signature Capture Area: The number of pixels that the imager outputs per each minimum bar width. The higher the value for R, the higher the quality of the image, but also the larger the file size.

S - Bar Code Aspect Ratio: The ratio of the bar code height to the narrow element width. In the example, the narrow element width is .010 inches and the bar code height is 0.400 inches, resulting in a value of $S = 0.4/0.01 = 40$.

W - Width of Signature Capture Area: In the example, the width of the area to be captured is 1.90 inches, resulting in a value of $W = 1.9/0.01 = 190$. The value for W is slightly larger, to accommodate some extra image capture area outside of the signature capture box.

X - Horizontal Bar Code Offset: The horizontal ratio offset of the center of the signature capture area, in multiples of the minimum bar width. In the example, the horizontal offset is 0.

Y - Vertical Bar Code Offset: The vertical offset of the center of the signature capture area, in multiples of the minimum bar width. Negative numbers indicate that the signature capture is above the bar code, and positive numbers indicate that the area is below the bar code. In the example, the horizontal offset is 0.70 inches, resulting in a value for $Y = 0.7/0.01 = 70$.



Product Specifications

IT4600 Product Specifications

<i>Parameter</i>	<i>Specification</i>															
Dimensions (Typical):																
Height	6.2 inches (15.7 cm)															
Length	5.3 inches (13.5 cm)															
Width	3.2 inches (8.1 cm)															
Weight	6.5 ounces (184.3 g)															
Aimer:																
Illumination LEDs	626nm \pm 30nm															
Aiming LEDs	626nm \pm 30nm															
Image	VGA, 640x480. Binary, TIFF, or JPEG output.															
Scan Rate	270 scans per second in most usages															
Skew Angle	\pm 45 degrees															
Pitch Angle	\pm 45 degrees															
Horizontal Velocity	2 inches (5 cm) per second															
Scan Contrast	45% minimum for Matrix codes, 37.5% minimum for all others															
Voltage Requirements	4.5 - 12 VDC at imager															
Current Draw (Max): IT4600xx-000, -030, -050 @ 5Vdc:	<table border="1"> <thead> <tr> <th></th> <th>Scanning</th> <th>Standby</th> <th>Inrush</th> <th>Low Power</th> </tr> </thead> <tbody> <tr> <td> ALD</td> <td>325mA</td> <td>46mA</td> <td>225mA</td> <td>100μA</td> </tr> <tr> <td> Normal</td> <td>255mA</td> <td>46mA</td> <td>225mA</td> <td>100μA</td> </tr> </tbody> </table>		Scanning	Standby	Inrush	Low Power	ALD	325mA	46mA	225mA	100 μ A	Normal	255mA	46mA	225mA	100 μ A
	Scanning	Standby	Inrush	Low Power												
ALD	325mA	46mA	225mA	100 μ A												
Normal	255mA	46mA	225mA	100 μ A												
IT4600xx-000, -030, -050 @ 12Vdc:	<table border="1"> <thead> <tr> <th></th> <th>Scanning</th> <th>Standby</th> </tr> </thead> <tbody> <tr> <td> ALD</td> <td>150mA</td> <td>37mA</td> </tr> <tr> <td> Normal</td> <td>130mA</td> <td>37mA</td> </tr> </tbody> </table>		Scanning	Standby	ALD	150mA	37mA	Normal	130mA	37mA						
	Scanning	Standby														
ALD	150mA	37mA														
Normal	130mA	37mA														
Power Supply: Noise Rejection	Maximum 100mV peak to peak, 10 to 100 kHz															
Temperature Ranges:																
Operating	32° F to +122° F (0° C to +50° C)															
Storage	-40° F to +140° F (-40° C to +60° C)															
Humidity	0 to 95% non-condensing															
Mechanical Drop	Operational after 50 drops from 6 feet (1.8 m) to concrete															
Vibration	Withstands 5G peak from 22 to 300 Hz															
ESD Sensitivity	15 kV to any external surface															

Agency Compliance	FCC Class B, CE EMC Class B, CE Low Voltage Directive, IEC60825-1 LED Safety: Class 1, UL, cUL listed, TÜV
MTBF	per MIL-HDBK-217F Ground Benign exceeds 100,000 hours

IT4800 Product Specifications

<i>Parameter</i>	<i>Specification</i>															
Dimensions (Typical):																
Height	6.4 inches (16.3 cm)															
Length	5.3 inches (13.5 cm)															
Width	3.2 inches (8.1 cm)															
Weight	7.5 ounces (213 g)															
Image	VGA, 640x480. Binary, TIFF, or JPEG output.															
Scan Rate	270 scans per second in most usages															
Skew Angle	±45 degrees															
Pitch Angle	±45 degrees															
Horizontal Velocity	2 inches (5 cm) per second															
Scan Contrast	45% minimum for Matrix codes, 37.5% minimum for all others															
Voltage Requirements	4.5 - 12 VDC at imager															
Current Draw (Max): IT4800xx-000, -030, -050 @ 5Vdc:	<table border="1"> <thead> <tr> <th></th> <th>Scanning</th> <th>Standby</th> <th>Inrush</th> <th>Low Power</th> </tr> </thead> <tbody> <tr> <td> ALD</td> <td>325mA</td> <td>46mA</td> <td>225mA</td> <td>100µA</td> </tr> <tr> <td> Normal</td> <td>255mA</td> <td>46mA</td> <td>225mA</td> <td>100µA</td> </tr> </tbody> </table>		Scanning	Standby	Inrush	Low Power	ALD	325mA	46mA	225mA	100µA	Normal	255mA	46mA	225mA	100µA
	Scanning	Standby	Inrush	Low Power												
ALD	325mA	46mA	225mA	100µA												
Normal	255mA	46mA	225mA	100µA												
IT4800xx-000, -030, -050 @ 12Vdc:	<table border="1"> <thead> <tr> <th></th> <th>Scanning</th> <th>Standby</th> </tr> </thead> <tbody> <tr> <td> ALD</td> <td>150mA</td> <td>37mA</td> </tr> <tr> <td> Normal</td> <td>130mA</td> <td>37mA</td> </tr> </tbody> </table>		Scanning	Standby	ALD	150mA	37mA	Normal	130mA	37mA						
	Scanning	Standby														
ALD	150mA	37mA														
Normal	130mA	37mA														
Power Supply: Noise Rejection	Maximum 100mV peak to peak, 10 to 100 kHz															
Temperature Ranges:																
Operating	14° F to +122° F (-10° C to +50° C)															
Storage	-40° F to +140° F (-40° C to +60° C)															
Humidity	0 to 95% non-condensing															
Mechanical Drop	Operational after 50 drops from 6.5 feet (1.98 m) to concrete															
Vibration	Withstands 5G peak from 22 to 300 Hz															

ESD Sensitivity	15 kV to any external surface
Environmental Sealing	IP54 seal rating per EN60529
Agency Compliance	FCC Class B, CE EMC Class B, CE Low Voltage Directive, IEC60825-1 LED Safety: Class 1, UL, cUL listed, TÜV
MTBF	per MIL-HDBK-217F Ground Benign exceeds 100,000 hours

Depth of Field- IT4600 and IT4800SR

Minimum Bar Width	Maximum Near Field	Minimum Far Field (no ambient lighting)
8 mil Linear (.020 cm)	2.9 in (7.4 cm)	7 in (17.8 cm)
10 mil PDF417 (.025 cm)	2.5 in. (6.4 cm)	8.4 in. (21.3 cm)
13 mil UPC (.033 cm)	1.9 in. (4.8 cm)	11.9 in (30.2 cm)
15 mil PDF417 (.038 cm)	2.4 in (6.1 cm)	12.4 in (31.5 cm)
15 mil Data Matrix (.038 cm)	3.1 in (7.9 cm)	5.9 in (15 cm)
35 mil MaxiCode (.089 cm)	1.4 in (3.6 cm)	12.4 in (31.5 cm)

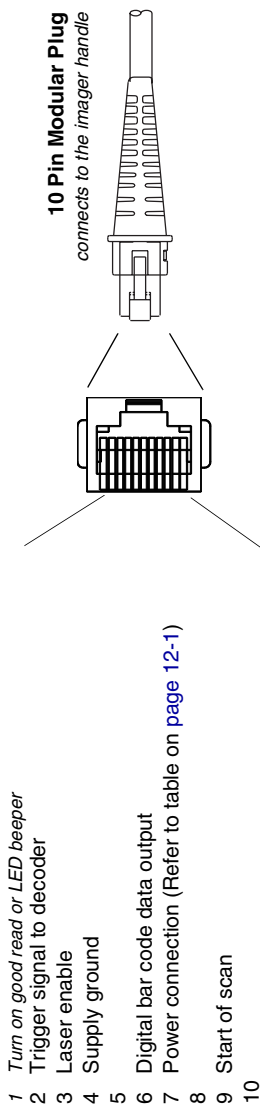
Depth of Field- IT4800SF

Minimum Bar Width	Maximum Near Field	Minimum Far Field (no ambient lighting)
6.6 mil PDF417 (.017 cm)	2.2 in 5.6 cm)	5.4 in (13.7 cm)
7.5 mil Linear (.019 cm)	1.9 in. (4.8 cm)	5.9 in. (15 cm)
10 mil Linear (.025 cm)	1.6 in. (4.1 cm)	7 in (17.8 cm)
13 mil UPC (.033 cm)	1.7 in (4.3 cm)	8.2 in (20.8 cm)
10 mil PDF417 (.025 cm)	1.6 in (4.1 cm)	7 in (17.8 cm)
15 mil Data Matrix (.038 cm)	1.7 in (4.3 cm)	5.3 in (13.5 cm)

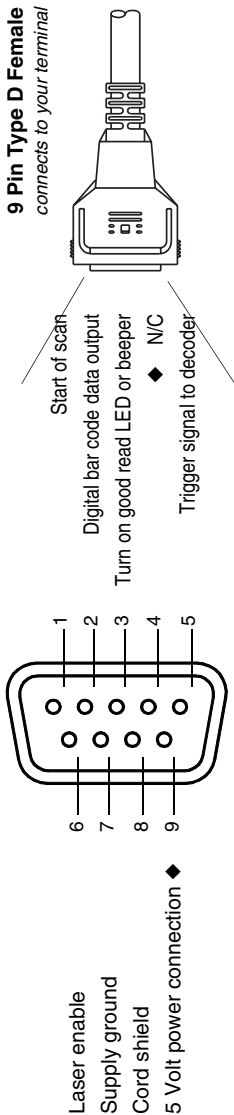
Standard Cable Pinouts

Laser Output Only (Laser Compatible Bar Image)

Conventional laser data format is provided at the modular connector in the imager handle. The interface cable is terminated with a 10 pin modular plug, and a 9 pin Type D (squeeze to release) connector that is compatible with all IT46/4800's terminals.



- 1 Turn on good read or LED beeper
- 2 Trigger signal to decoder
- 3 Laser enable
- 4 Supply ground
- 5
- 6 Digital bar code data output
- 7 Power connection (Refer to table on [page 12-1](#))
- 8
- 9 Start of scan
- 10

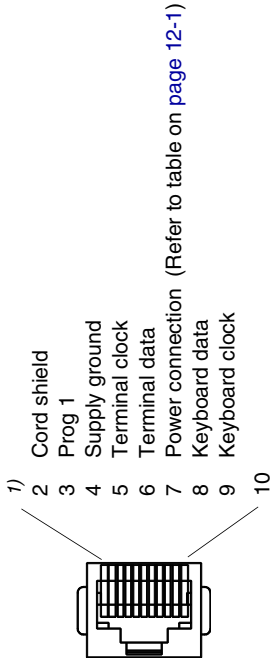


◆ Pins 4 and 9 are populated depending on power supply voltage option.

Standard Cable Pinouts

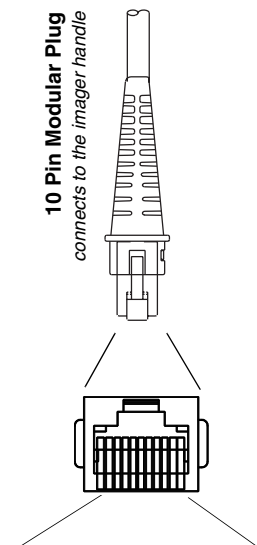
Keyboard Wedge

10 Pin RJ41 Modular Plug
connects to the imager handle

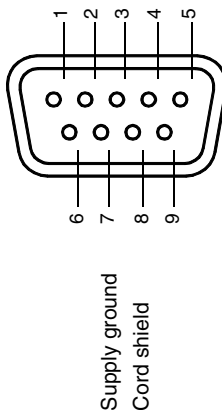
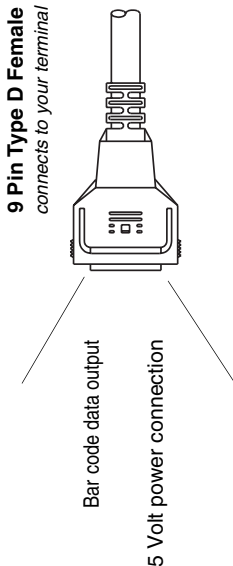


Standard Cable Pinouts

Wand Emulation



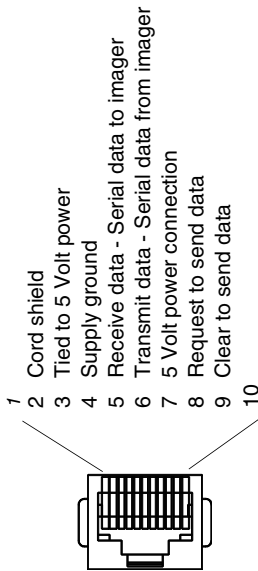
- 1 Cord shield
- 2 Tied to 5 Volt power
- 3 Supply ground
- 4 Bar code data output
- 5 5 Volt power connection
- 6
- 7
- 8
- 9
- 10



Standard Cable Pinouts (Primary Interface Cables)

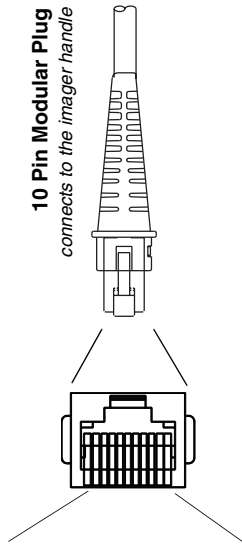
Serial Output

10 Pin RJ41 Modular Plug
connects to the Imager handle



Standard Cable Pinouts

USB



- 1
- 2 Data +
- 3 Tied to 5 volt power
- 4 Supply ground
- 5
- 6
- 7 5 volt power connection
- 8
- 9
- 10 Data -

Repairs

Repairs and/or upgrades are not to be performed on this product. These services are to be performed only by an authorized service center. See "Customer Support" on page 14-1 for further information.

Maintenance

The IT4600/4800 provides reliable and efficient operation with a minimum of care. Although specific maintenance is not required, the following periodic checks ensure dependable imager operation:

Cleaning the Imager's Window

Reading performance may degrade if the imager's window is not clean. If the window is visibly dirty, or if the imager isn't operating well, clean the window with a soft cloth or lens tissue dampened with water (or a mild detergent- water solution). If a detergent solution is used, rinse with a clean lens tissue dampened with water only.

The imager's housing may also be cleaned the same way.



Caution:

Do not submerge the scanner in water. Do not use abrasive wipes or tissues on the scanner's window – abrasive wipes may scratch the window.

Never use solvents (alcohol or acetone) on the housing or window – solvents may damage the finish or the window.

Inspecting Cords and Connectors

Inspect the imager's interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with imager operation. Contact your HHP distributor for information about cable replacement. Cable replacement instructions are on [page 13-2](#).

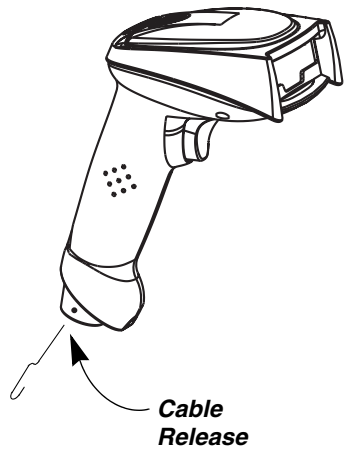
Replacing the Interface Cable

The standard interface cable is attached to the imager with a 10-pin modular connector. When properly seated, the connector is held in the IT4600/4800 imager's handle by a flexible retention tab. The interface cable is designed to be field replaceable.

- Order replacement cables from IT4600/4800 or from an authorized distributor.
- When ordering a replacement cable, specify the cable part number of the original interface cable.

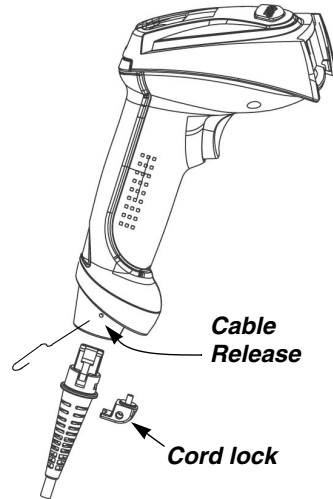
To Replace the IT4600 Interface Cable:

1. Turn the power to the host system OFF.
2. Disconnect the imager's cable from the terminal or computer.
3. Locate the small hole on the side of the imager's handle. This is the cable release.
4. Straighten one end of a paper clip.
5. Insert the end of the paper clip into the small hole and press in. This depresses the retention tab, releasing the connector. Pull the connector out while maintaining pressure on the paper clip, then remove the paper clip.
6. Replace with the new cable. Insert the connector into the opening and press firmly. The connector is keyed to go in only one way, and will click into place.



To Replace the IT4800 Interface Cable:

1. Turn the power to the host system OFF.
2. Disconnect the imager's cable from the terminal or computer.
3. Use a screwdriver to unscrew the cord lock from the base of the imager.
4. Locate the small hole on the side of the imager's handle. This is the cable release.
5. Straighten one end of a paper clip.
6. Insert the end of the paper clip into the small hole and press in. This depresses the retention tab, releasing the connector. Pull the connector out while maintaining pressure on the paper clip, then remove the paper clip.
7. Replace with the new cable.
Insert the connector into the opening and press firmly. The connector is keyed to go in only one way, and will click into place.
8. Screw the cord lock back in place over the cord.



Troubleshooting

The imager automatically performs self-tests whenever you turn it on. If your imager is not functioning properly, review the following Troubleshooting Guide to try to isolate the problem.

Is the power on? Is the red aiming illumination line on?

If the red aiming illumination line isn't illuminated, check that:

- The cable is connected properly.
- The host system power is on (if external power isn't used).
- The trigger works.

Is the imager having trouble reading your symbols?

If the imager isn't reading symbols well, check that the symbols:

- Aren't smeared, rough, scratched, or exhibiting voids.
- Aren't coated with frost or water droplets on the surface.
- Are enabled in the imager or in the decoder to which the imager connects.

Is the bar code displayed but not entered?

The bar code is displayed on the host device correctly, but you still have to press a key to enter it (the Enter/Return key or the Tab key, for example).

You need to program a suffix. Programming a suffix enables the imager to output the bar code data plus the key you need (such as "CR") to enter the data into your application. Refer to "Prefix/Suffix Overview" on page 4-1 for further information.

Does the imager read the bar code incorrectly?

If the imager reads a bar code, but the data is not displayed correctly on the host screen:

- The imager may not be programmed for the appropriate terminal interface. For example, you scan "12345" and the host displays "@es%."

Reprogram the imager with the correct Plug and Play or Terminal selection bar code. See [Chapter 1](#) and [Chapter 2](#).

- The imager may not be programmed to output your bar code data properly. For example, you scan "12345" and the host displays "A12345B."

Reprogram the imager with the proper symbology selections. See [Chapter 7](#).

The imager won't read your bar code at all.

1. Scan the sample bar codes in the back of this manual. If the imager reads the sample bar codes, check that your bar code is readable. Verify that your bar code symbology is enabled (see [Chapter 7](#)).
2. If the imager still can't read the sample bar codes, scan "All Symbologies" on page 7-2.

If you aren't sure what programming options have been set in the imager, or if you want the factory default settings restored, scan [Standard Product Default Settings](#) on page 11-4.

Obtaining Factory Service

HHP provides service for all its products through service centers throughout the world. To obtain warranty or non-warranty service, return the unit to HHP (postage paid) with a copy of the dated purchase record attached. Contact the appropriate location below to obtain a Return Material Authorization number (RMA #) before returning the product.

North America

HHP Corporate Offices
Telephone: (800) 782-4263, option 3
Fax: (704) 566-9904
E-mail: ProductService@hhp.com

Canada

HHP Repair Service available through:
National Service Center
Telephone: (800) 500-6421
Fax: (864) 676-4277
E-mail: canada.hhp.repair@nationalservicecenter.com

Latin America

HHP Latin America
Telephone: (941) 263-7600
Fax: (941) 263-9689

Mexico

HHP Repair Service available through:
National Service Center
Telephone: (800) 500-6421
Fax: (864) 676-4277
E-mail: mexico.hhp.repair@nationalservicecenter.com

Brazil

HHP Brazil
Telephone: +55 (21) 2494-7060
Fax: +55 (21) 2494-5033
E-mail: suporte@hhp.com.br

Europe, Middle East, and Africa

HHP Europe
Telephone: + 31 (0) 40 29 01 633
Fax: + 31 (0) 40 2901631
E-mail: EuroService@hhp.com

Asia Pacific

HHP Asia/Pacific
Telephone: +852-2511-3050
Fax: +852-251-13557
E-mail: chuie@hhp.com

Help Desk

If you need assistance installing or troubleshooting your imager, please call your Distributor or the nearest HHP technical support office:

North America:

Telephone:(315) 685-2476 (8 a.m. to 6 p.m. EST)
or in the U.S.(800) 782-4263
Fax number:(315) 685-4960
E-mail: *tech_support@HHP.com*

Europe:

Telephone-
European Ofc:+ 31(0) 40 29 01 600
U.K. Ofc:+44 1925 240055
E-mail: *euro_support@HHP.com*

Asia:

Telephone:+852-2511-3050
E-mail: *asia_support@HHP.com*

Latin America:

Telephone:(239) 263-7600
E-mail: *la_support@HHP.com*

Limited Warranty

Hand Held Products, Inc., d/b/a HHP ("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.

The limited duration of the warranty for the IMAGETEAM 4600 or IMAGETEAM 4800 is for three (3) years.



Appendix A

Symbology Chart

Symbology	AIM ID	Possible AIM ID Modifiers (<i>m</i>)	HHP Code ID (hex)
<i>All Symbologies</i>			(0x99)
Australian Post	]X0		A (0x41)
Aztec Code	]zm	0-9, A-C	z (0x7A)
British Post	]X0		B (0x42)
Canadian Post	]X0		C (0x43)
China Post	]X0		Q (0x51)
Codabar	]F <i>m</i>	0-1	a (0x61)
Codablock F	]O <i>m</i>	0, 1, 4, 5, 6	q (0x71)
Code 11	]H3		h (0x68)
Code 128	]C <i>m</i>	0, 1, 2, 4	j (0x6A)
Code 16K	]K <i>m</i>	0, 1, 2, 4	o (0x6F)
Code 32 Pharmaceutical (PARAF)	]X0		< (0x3C)
Code 39	]A <i>m</i>	0, 1, 3, 4, 5, 7	b (0x62)
Code 49	]T <i>m</i>	0, 1, 2, 4	l (0x6C)
Code 93 and 93i	]G <i>m</i>	0-9, A-Z, a-m	i (0x69)
Data Matrix	]d <i>m</i>	0-6	w (0x77)
EAN- 13	]E0		d (0x64)
EAN- 8	]E4		D (0x44)
EAN•UCC Composite	]e <i>m</i>	0-3	y (0x79)
EAN-13 with Extended Coupon Code	]E3		d (0x64)
Interleaved 2 of 5	]l <i>m</i>	0, 1, 3	e (0x65)
Japanese Post	]X0		J (0x4A)
KIX (Netherlands) Post	]X0		K (0x4B)
Korea Post	]X0		? (0x3F)
Matrix 2 of 5	]X0		m (0x6D)
MaxiCode	]U <i>m</i>	0-3	x (0x78)

Symbology	AIM ID	Possible AIM ID Modifiers (<i>m</i>)	HHP Code ID (hex)
MICR E-13B	]ZE		" (0x22)
MicroPDF417	]L <i>m</i>	3-5	R (0x52)
MSI	]M <i>m</i>	0	g (0x67)
OCR-A	]o1		O (0x4F)
OCR-B	]o2		O (0x4F)
OCR US Money Font	]o3		O (0x4F)
SEMI Font	]o3		O (0x4F)
PDF417	]L <i>m</i>	0-2	r (0x72)
Planet Code	]X0		L (0x4C)
Plessey Code	]P0		n (0x6E)
PosiCode	]p <i>m</i>	0, 1, 2	W (0x57)
Postnet	]X0		P (0x50)
QR Code	]Q <i>m</i>	0-6	s (0x73)
Reduced Space Symbology (RSS-14, RSS Limited, RSS Expanded)	]e <i>m</i>	0	y (0x79)
Straight 2 of 5 IATA (two-bar start/stop)	]R <i>m</i>	0, 1, 3	f (0x66)
TCIF Linked Code 39 (TLC39)	]L2		T (0x54)
Telepen	]B <i>m</i>	0, 1, 2, 4	t (0x74)
Trioptic Code	]X0		= (0x3D)
UCC/EAN-128	]C1		l (0x49)
UPC-A	]E0		c (0x63)
UPC-A with Extended Coupon Code	]E3		c (0x63)
UPC-E	]E0		E (0x45)
VeriCode	]X0		v (0x76)

Note: "m" represents the AIM modifier character. Refer to International Technical Specification, *Symbology Identifiers*, for AIM modifier character details.

Note: Prefix/Suffix entries for specific symbologies override the universal (All Symbologies, 99) entry.

Refer to [Data Editing](#) beginning on page 4-1 and [Data Formatting](#) beginning on page 5-1 for information about using Code ID and AIM ID.

ASCII Conversion Chart (Code Page 1252)

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	00	NUL	32	20		64	40	@	96	60	'
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	"	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	\$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27	'	71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	LF	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	+	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	CR	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	|
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	

Dec.	Hex	Char	Dec.	Hex	Char	Dec.	Hex	Char	Dec.	Hex	Char
128	80	€	160	A0		192	C0	À	224	E0	à
129	81	□	161	A1	¡	193	C1	Á	225	E1	á
130	82	,	162	A2	¢	194	C2	Â	226	E2	â
131	83	f	163	A3	£	195	C3	Ã	227	E3	ã
132	84	„	164	A4	¤	196	C4	Ä	228	E4	ä
133	85	...	165	A5	¥	197	C5	Å	229	E5	å
134	86	†	166	A6	¦	198	C6	Æ	230	E6	æ
135	87	‡	167	A7	§	199	C7	Ç	231	E7	ç
136	88	^	168	A8	¨	200	C8	È	232	E8	è
137	89	‰	169	A9	©	201	C9	É	233	E9	é
138	8A	Š	170	AA	ª	202	CA	Ê	234	EA	ê
139	8B	‹	171	AB	«	203	CB	Ë	235	EB	ë
140	8C	Œ	172	AC	¬	204	CC	Ì	236	EC	ì
141	8D	□	173	AD	-	205	CD	Í	237	ED	í
142	8E	Ž	174	AE	®	206	CE	Î	238	EE	î
143	8F	□	175	AF	¯	207	CF	Ï	239	EF	ï
144	90	□	176	B0	°	208	D0	Ð	240	F0	ð
145	91	‘	177	B1	±	209	D1	Ñ	241	F1	ñ
146	92	’	178	B2	²	210	D2	Ò	242	F2	ò
147	93	“	179	B3	³	211	D3	Ó	243	F3	ó
148	94	”	180	B4	´	212	D4	Ô	244	F4	ô
149	95	•	181	B5	µ	213	D5	Õ	245	F5	õ
150	96	—	182	B6	¶	214	D6	Ö	246	F6	ö
151	97	—	183	B7	·	215	D7	×	247	F7	÷
152	98	~	184	B8	¸	216	D8	Ø	248	F8	ø
153	99	™	185	B9	¹	217	D9	Ù	249	F9	ù
154	9A	š	186	BA	º	218	DA	Ú	250	FA	ú
155	9B	›	187	BB	»	219	DB	Û	251	FB	û
156	9C	œ	188	BC	¼	220	DC	Ü	252	FC	ü
157	9D	□	189	BD	½	221	DD	Ý	253	FD	ý
158	9E	ž	190	BE	¾	222	DE	Þ	254	FE	þ
159	9F	ÿ	191	BF	¿	223	DF	ß	255	FF	ÿ

Code Page Mapping of Printed Bar Codes

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, select the code page with which the bar codes were created. The data characters should then appear properly.

Note: The Code Page option is available for Code 39, Code 93, and Code 128.

Code Page	Standard	Description
1	CP ISO646	
2	ISO 2022	Automatic National Replacement Characters
3	CP Binary	
82	ISO 2022 11 Swe	Swedish Replacement Characters
83	ISO 2022 69 Fra	French/Belgium Replacement Characters
81	ISO 2022 25 Fra	French/Belgium Replacement Characters
84	ISO 2022 11 Ger	German Replacement Characters
85	ISO 2022 11 Ita	Italian Replacement Characters
86	ISO 2022 11 Swi	Swiss Replacement Characters
87	ISO 2022 11 UK	British Replacement Characters
88	ISO 2022 11 Dan	Danish Replacement Characters
89	ISO 2022 11 Nor	Norwegian Replacement Characters
90	ISO 2022 11 Spa	Spanish Replacement Characters



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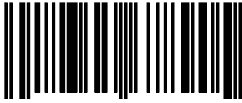
Wand Emulation, 2-14, 12-6
Wand Emulation Connection, 2-13
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Wand Emulation Plug & Play, 1-7
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Sample Symbols

UPC-A



0 123456 7890

Interleaved 2 of 5



1234567890

Code 128



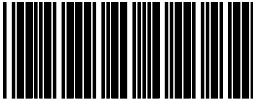
Code 128

EAN-13



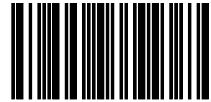
9 780330 290951

Code 39



BC321

Codabar



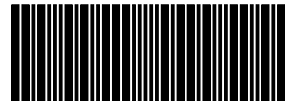
A13579B

Code 93



123456-9\$

Code 2 of 5



123456

Sample Symbols



6543210

PDF417



Car Registration

Code 49



1234567890

QR Code



Numbers

RSS-14



(01)00123456789012

Postnet



Zip Code

Data Matrix



Test Symbol

OCR-A Sample

55836540

OCR-B Sample

55836540

Sample Symbols

Aztec



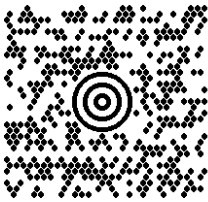
Package Label

Micro PDF417



Test Message

MaxiCode



Test Message

OCR Programming Chart



a



d



g



l



t



Discard



c



e



h



r



Save

Programming Chart



A



B



C



D



E



F



0



1



2



3

Programming Chart



4



5



6



7



8



9



Save



Discard

*Note: If you make an error while scanning the letters or digits (before scanning Save), scan Discard, scan the correct letters or digits, and **Save** again.*



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