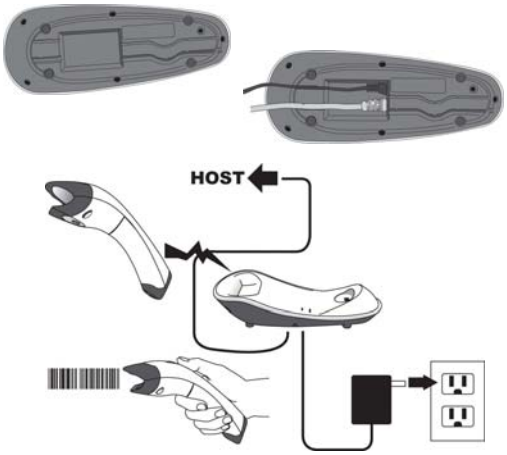
Installation

The MS350 Wireless Imager is easy to install and use. Please see the following figure showing the steps to perform the installation.

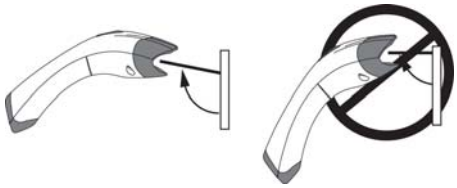
* **Note**: Turn off the host computer before installation.



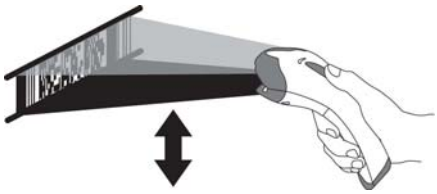
1. Connect the interface (I/F) cable to the cradle.
2. Connect the power cord to the cradle.
3. Route the I/F cable and power cord through the notch.
4. Connect the I/F cable to the host computer communication port.
5. Connect the AC adapter to the wall outlet.
6. Place the imager in the cradle and verify the charge LED is flashing. Charge the battery for at least 8 hours before the first use.
7. To verify operation, please link the imager with cradle first (Refer to “Wireless Connection” in page 5). Point the imager at the barcode and pull the trigger. The imager should emit a beep indicating that the barcode has been scanned and transmitted to the cradle successfully.

How To Scan

1. The imager must be pointed at slight angle to the barcode so that the light reflected off the barcode can be seen by the imager. Do not hold the imager perpendicular to the barcode.



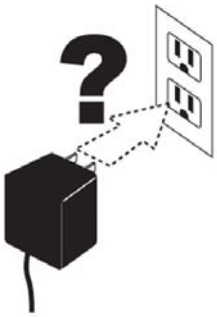
2. The scan line must cross the entire barcode. The imager can not read the barcode data without seeing the entire barcode.



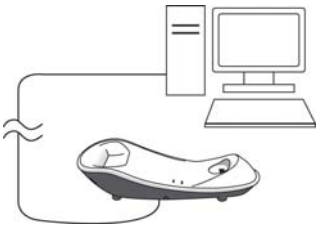
Troubleshooting

If the imager can not operate properly, the following checks should be performed:

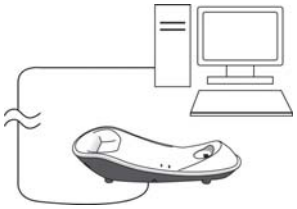
1. The cradle uses an external power supply and the external power supply has failed, the imager will not operate. Change the power supply with a known good power supply and reset the imager.



2. Verify the interface cable is securely connected to the host computer. Consult your technical support personnel or refer to your host system manual to verify the proper connection for the imager.



3. Verify the interface cable is securely connected to the cradle.



4. Check that the barcodes are of sufficient quality to be recognized by the imager. Wrinkled, smudged, or torn labels will cause the imager to not read at all. Scan a known good label to check the imager’s read operation.

5. Ensure that the cradle’s interface type is compatible with the host computer by consulting your host system manual.

Wireless Connection

Linking the imager with the cradle

Follow these instructions to link the two devices:

1. Connect power to the cradle. The radio LED (marked with a light symbol) will blink amber and the cradle will beep.

2. To ensure the cradle is unlinked from any other imager, check if the cradle send inquiry beep or not (see Inquiry Beep Control in page 18).

3. Read the link label on the bottom of the cradle with the imager. The imager will sound a good read beep and the LED will flash amber.

4. Re-place the imager in the cradle to continue the charge.

Once an imager is linked to a cradle, they will remain linked until specific action is taken to unlink them (see Unlinking). They will remain linked if the cradle is unplugged, if the battery is removed from the imager or if the entire charge is used up, and if the imager is taken out of range of the cradle. Under normal operation, scanning of the link label will only be required once in the life of the product.

Unlinking

There are three ways to unlink an imager from a cradle:

Force imager to disconnect and sleep

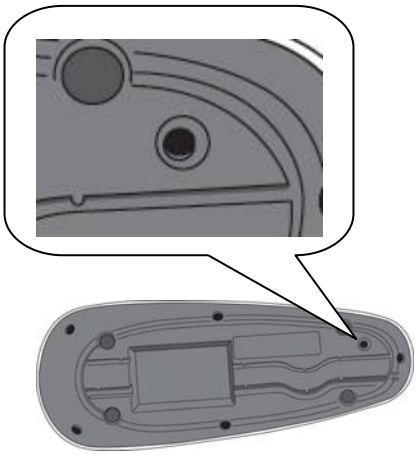
1. **Scan the "Force imager to disconnect and sleep" barcode** – Reading the unlink barcode above while the imager is in range of the cradle will break the link between the two devices and allow another imager to link to the cradle. It will also have the imager in **Deep Sleep Mode**. If the barcode is read when the imager is out of range of its linked cradle, the imager will unlink, but the cradle will remain linked to the imager and will not allow another imager to be linked to it. In this case, you may perform the item 2 below to link another imager.

2. **Scan the Link Label and put on the original cradle** – If the cradle is linked with an imager and the original pair was stopped by out of range of the cradle or out of battery of the imager, scan the link label of the cradle with a new imager and then put on the cradle, the cradle will drop the original pair and establish a new link with the new imager.

3. **Scan the Link Label on an alternate cradle** – Scanning the link label on a cradle will drop the link between the original pair and establish a link between the imager and new cradle. If the new link is performed within range of the old cradle, it is free to establish a link to the next imager that reads its link label. If it is done outside of the range of the old cradle, it retains its old link and will not allow a new imager to link to it until a new imager scan the link label and put on the cradle.

4. **Push the “Reset” button on the bottom of cradle** – If the cradle is linked with an imager and in range, pushing the “Reset” button (for about 2 seconds) on the bottom of cradle will drop the link between the devices. If the button is pushed while the imager is out of range, the cradle will unlink and make itself available to other imagers. The scanner will not drop its link with the cradle automatically, but can be linked to any other cradle by reading its link label.

* **Note**: If just push the button with a short time (less than one second), a “Paging” feature will be performed to page the imager which was linked with the cradle.



Battery Charging

The imager contains a 1000mAh Lithium-Ion rechargeable battery. A full charged battery will provide up to 15,000 scans over a 12 hours period. Actual charge life on the imager will depend on the configuration of how the imager is configured via the programmable feature in this manual; in particular, **Deep Sleep Mode** settings can impact battery life.

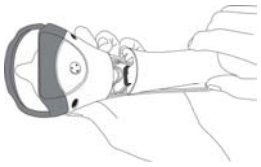
When the imager is placed in the cradle, the battery will automatically charge. While charging is taking place, the charging LED (marked with a battery symbol) will blink green. When the battery is fully charged, the charging LED will stay on a solid green.

If there is an error in charging either with a failure in the charging circuit or with a failure of the battery, the charging LED will flash red. When this happens, the battery needs to be replaced.

How to Change the Battery

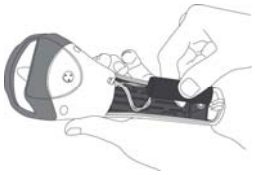
In case the contained battery inside the imager needs to be replaced, please follow the procedures below:

1. Loosen the screw at the bottom of the imager.



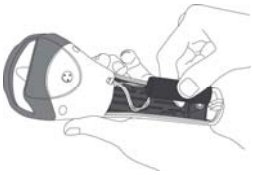
2. Take off the battery cover out of the imager.

3. Disconnect the battery cable connector from the main board.



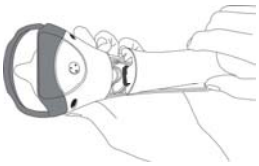
4. Remove the used battery from the battery container.

5. Use a new battery pack and replace the used one.



6. Place the new battery into the battery container.

7. Connect the battery cable connector to the main board.



8. Put the battery cover back to the imager handle.

9. Fasten the screw to the imager.

Note: DO NOT touch the PCBA inside the imager when replacing the battery. Improper operation may damage the imager.

Wireless Features

The MS350 Wireless model includes an imager and a cradle. When the imager and cradle are linked together, the imager will read and decode barcodes and transmit them via a Wireless radio to the cradle. The cradle will then transmit the barcode data to the host computer over the host cable. The host interfaces available from the cradle are RS-232, Keyboard wedge, and USB as a normal corded imager.

Auto Update

When this feature is enabled, an imager and its linked cradle can automatically ensure they stay in sync with regard to firmware and/or configuration. This is accomplished by the linked imager and cradle comparing firmware version number and configuration file check sum. If either is different, the cradle will automatically update the imager with its firmware/configuration.

If the units are linked, any changes made to the cradle's configuration through the scan utility software will automatically be sent to the imager at the completion of the programming session. By the same token, any changes made to the linked imager's configuration will be transmitted to the cradle at the end of the programming session.

The following options are available for Auto Update:

- **Enable configuration and firmware auto update** – Allows both configuration and firmware updating (**Default**).

- **Enable configuration auto update only** – Allows only configuration updating.

- **Enable firmware auto update only** – Allows only firmware updating.

- **Disable auto update** – No automatic updates will be performed.

Deep Sleep Mode

The WIRELESS imager can be placed into **Deep Sleep Mode** after this programmed duration (since the units' last scanning activity). Press its trigger to wake the imager form this mode.

- **Disable Deep Sleep Mode** (**Default**)

- **Duration 10 minute**s - Force imager into deep sleep mode if there is no barcode read in 10 minutes.

- **Duration 30 minute**s - Force imager into deep sleep mode if there is no barcode read in 30 minutes.

- **Duration 60 minutes** - Force imager into deep sleep mode if there is no barcode read in 60 minutes.

- **Duration 90 minutes** - Force imager into deep sleep mode if there is no barcode read in 90 minutes.

Handcuff Mode (Leash Alarm)

When enabled, the Leash Alarm will force the imager to sound an alarm for a preprogrammed length of time to notify if an imager is leaving the immediate vicinity of the cradle. This is especially useful in instances where the imager might inadvertently have been placed in a bag or cart.

- **Disable Handcuff Mode (Default)**

- **Alarm for 10 seconds when out of range**

- **Alarm for 30 seconds when out of range**

- **Alarm for 60 seconds when out of range**

Wireless Connectivity

The MS350 can be linked to any Bluetooth (BT) enabled device which can accept such a connection with other devices. To implement this feature, user should set the imager to “Cradle/Dongle connection auto detection” first. And then set the PIN code to 0000 assigned to the target Bluetooth device. In this case, the PIN code of the Bluetooth enabled device should be set to 0000 to be identical with your imager.

- **Cradle connection only** – The imager can be used only with cradle (**Default**).

- **Cradle/Dongle connection auto detection** – The imager can be linked to either a cradle or other Bluetooth enabled devices.

- **Set PIN code to 0000**

Note: The imager only support **“Serial Port Profile”** under “Dongle connection”

Wireless Connectivity (continued)

User is also allowed to set any four- to six-character PIN code assigned to the target Bluetooth device using the setting procedures below:

STATE	CODE
Cradle/Dongle connection auto detection	*$%-1AB01%%*
Program	*$%+PRO*
Begin PIN setting	*#PIN*
PIN no. (Set 4~6 character)	*/0* */1* */2* */3* */4* */5* */6* */7* */8* */9*
End PIN setting	*%$$*

Inquiry Beep Control

When the cradle is not linked to an imager, the Radio LED will blink amber and the cradle will beep. This beep can be disabled or reconfigured to sound for different durations by using the following programming barcodes.

- **Disable inquiry beep**

- **Inquiry beep continuously (Default)**

- **Inquiry beep every 10 seconds**

- **Inquiry beep every 20 seconds**

- **Inquiry beep every 30 seconds**

- **Inquiry beep every 40 seconds**

- **Inquiry beep every 50 seconds**

$%-5AJ05%%

- **Inquiry beep every 60 seconds**

$%-5AJ06%%

- **Inquiry beep every 70 seconds**

$%-5AJ07%%

Cradle Beep Loudness Control

The beep loudness of cradle can be defined with the following levels.

- **Cradle beep off**

$%-5AK00%%

- **Level 1**

$%-5AK01%%

- **Level 2**

$%-5AK02%%

- **Level 3 (Default)**

$%-5AK03%%

- **Level 4**

$%-5AK04%%

- **Level 5**

$%-5AK05%%

- **Level 6**

- **Level 7**

Additional Features

Here list three additional features of MS350 wireless imager for the convenience of use to users.

- **Download firmware from the cradle**

$%-+CP%%

- **Download configuration parameters from the cradle**

$%-+CC%%

- **Force cradle to reset the configuration** – This feature will also force imager to reset the configuration to factory default.

$%-+IC%%

Note: To meet the regulation of air transportation, the wireless imager should disconnect with the cradle during shipment. All MS350 wireless imagers are suggested to scan the following command before packaging into boxes and ship to customers.

$%-$ZZ%%

Force imager to disconnect and sleep

Default setting

For each barcode shown as below:

Code Type	Read Enable	Checksum Verification Enable	Checksum Transmission Enable	Code ID
UPC-A	V	V	V	A
UPC-E	V	V	V	E
EAN-13	V	V	V	F
EAN-8	V	V	V	FF
Code-39	V			*
Interleaved 2 of 5	V			i
Industrial 2 of 5		-	-	i
Matrix 2 of 5				B
Codabar				%
Code-128	V	V		#
Code-93		V two digits		&
Code-11		V One digit		O
MSI/Plessey		V		@
UK/Plessey		V		@
Telepen				S
Standard 2 of 5		V	V	i
China Post				t
Italian Pharmacode.				p
Code-16K		-	-	
PDF417	V	-	-	
EAN UCC Composite		-	-	RC
RSS-14				R4
RSS-Limited				RL
RSS-Expanded				RX
Micro-PDF		-	-	U

Specification

Unitech MS350	
Specification	Model MS350
Operational	
Light Source	630 nm Visible Red LED
Optical System	2048 pixel CCD (Charge-coupled device)
Depth of Scan Field	0~270mm (CODE 39, PSC=90%, 20mil) 0~180mm for 13mil 0~60mm for 5mil 5mm~50mm for 4mil
Scan Speed	300 scans/sec
Resolution	0.1mm (4mil) Code39, PCS=90%
Print Contrast	30% or more
Scanning Angle	Front: 60° Rear: 60° Yaw: 70°
Decode Capability	Auto-discriminates all standard barcodes and some 2D symbologies including PDF-417 and RSS code; Other symbologies can be ordered optionally
Beeper Operation	7 tones or no beep
Indicator on imager	Green & Red led
Mechanical	
Length	187 mm
Width-handle	35 mm
Width-head	75 mm

Depth-handle	33 mm
Depth-head	44 mm
Weight	Less than 200g (with a battery)
Case material	ABS (over molded at contact points)
Cushion material	Double injection
Cradle interface	RS232, Keyboard wedge, USB
Electrical	
Input Voltage (Cradle)	5 VDC ± 10% VDC
Power - Operating (Cradle)	5 VDC
Power – Standby (Cradle)	5 VDC
Current – Operating (Cradle)	120 mA
Current – Standby (Cradle)	120 mA
Charge Current (Cradle)	550 mA
Input Voltage (Imager)	3.4V ~ 4.2V
Power - Operating (Imager)	1073 mW
Power – Standby (Imager)	118 mW
Current – Operating (Imager)	290 mA
Current – Standby (Imager)	32 mA

Current – Sleep (Imager)	2 mA
Light Level	Up to 45000 Lux
Shock (Imager)	1.5m drop onto concrete
Shock (Cradle)	90cm drop onto concrete
Contaminants	Seals to resist airborne particulate contaminants (IP42)
Ventilation	None required
Programming	
Programming method	Manual (Reading special barcode)
Program upgrade	Enabled by built-in flash memory
Programmable characteristics	Code type selection, check digit selection Decoding option Decoding option Transmitted character delay, Header selection, trailer selection, message suffix, good read beep tone and volume, scanner trigger selection Keyboard emulation type (intermessage delay, keyboard type and keyboard language) Serial interface type (ACK/NAK, Xon/Xoff, RTS/CTS, good read LED control, start/stop bits)

Indications of MS350

Imager:

	Status	Green LED	Red LED	Orange LED	Beeper
LED	Link established	Blink once			A special beep
	Loss link (handcuff mode enable			Blink	Sound like grasshopper
	Loss link (handcuff mode disable)			Blink twice	A special beep
	Hardware fail		Flash		
	Program download	Flash			
	Program checksum fail		Flash		
	Data transmitting	ON			High freq. Beep for 300msec
	Data trans. Fail		ON for 300msec		Error beep
	Data trans. OK	ON for 200msec			Good beep
	Low battery (<3.2V) (Trigger is pressed)			Flash	

Cradle:

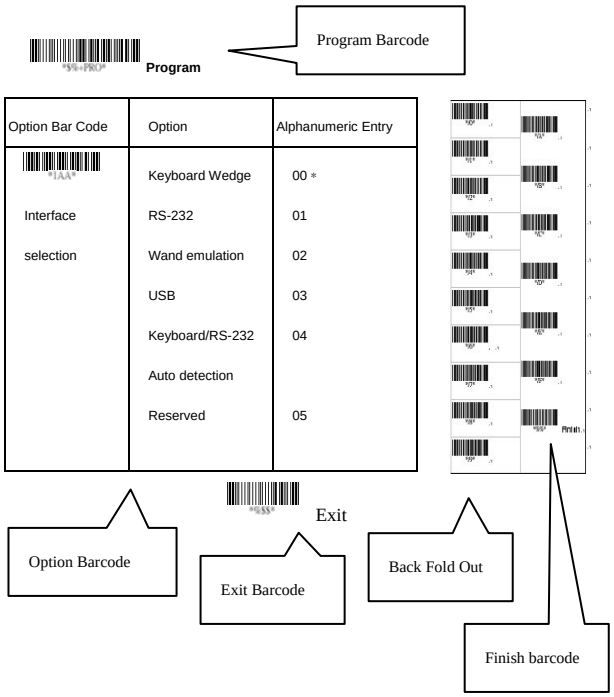
	Status	Green LED	Red LED	Orange LED	Beeper
RF status LED	Inquiry			Blink	Beeps once a second
	Connecting			Blink	
	Link established	ON			
	Hardware fail		Flash		
	Data receiving from the scanner			ON for 0.5sec	
	Barcode data proof or transmitted				Good beep
	Data send to the host Fail				Error beep
	Program download	Flash			
	Program checksum Fail		Flash		
Battery LED	Idle				
	Charging	Blink			
	Battery full	ON			
	Battery/charger Fail		Blink		

Programming the MS350

To program the MS350, you must scan a series of programming barcode in the correct order. Fold out the back cover of this manual. You will see a table of alphanumeric barcodes, which are used to program the various options presented.

To program each option, you must:

1. Scan the **Program** barcode on the parameter setting part.
2. Enter the option mode by scanning the **Option Bar Code** (also on the Parameter setting part).
3. To the right of the option barcode, the necessary alphanumeric inputs are listed. Scan these alphanumeric entries from the **back fold out** page. To confirm above steps, you must scan the **Finish** barcode on the back fold out page.
4. Once you have finished programming. Scan the **Exit** barcode, listed on the lower right hand corner of each parameter setting part.


Program
Program Barcode
Option Bar Code
Option
Alphanumeric Entry
Interface
selection
Keyboard Wedge
00 *
RS-232
01
Wand emulation
02
USB
03
Keyboard/RS-232
04
Auto detection
Reserved
05
Exit
Option Barcode
Exit Barcode
Back Fold Out
Finish barcode

Interface Selection

This cradle comes in one model and supports interfaces such as keyboard wedge, RS232 serial wedge, and USB interface. In most of the cases, simply selecting an appropriate cable with a device code will work for a specific interface.

Interface selection: You can change factory interface default for other type interface. By plugging different cables, setting right interface, then the cradle will be changed to another interface. However, you must make sure which cable you need.

Keyboard/RS232/UBS Auto detection: By setting this function, it will automatically select the Keyboard wedge or RS-232 or UBS interface for user.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Interface selection	Keyboard Wedge	00
	RS-232	01
	USB	03
	Keyboard /RS232/USB Auto detection	04 *

Note: * -Default

Exit

Keyboard wedge

As a keyboard interface, the cradle supports most of the popular PCs and IBM terminals. The installation of the wedge is a fairly simple process without any changes of software or hardware.

Keyboard Type: Select keyboard type connector of your host computer. Cradle must be selected to the appropriate host interface cable converter.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
	IBM AT, PS/2	00 *
	Reserved	01
Keyboard type	Reserved	02
	Reserved	03
	Reserved	04
	Reserved	05
	Reserved	06

Exit

Keyboard wedge

Keyboard Layout: The selecting of keyboard layout supports many country languages other than USA keyboard layout. First you need to confirm country language that you desire. In DOS, using command “keyb” to select the desirable keyboard layout or in WINDOWS entry “Control” then pops “Keyboard” to select country at “language” item. For details, please refer to your DOS or WINDOWS user’s manual.

Keyboard Speed: By selecting, you can change output speed of data transmission to match with host computer. Generally, set 00 or 01 in working high speed. If some output characters of barcode have been lost, you may need to set 05 or 06 to match your host keyboard speed.

Function Key: Set Enable, imager can output code as pressing function-key in your application program while the barcode datas contain ASCII value between 01_{16} to $1F_{16}$. Refer to ASCII table.

Numeric Key: The Keypad has to be selected if your application program is only keypad numeric code acceptable. So, cradle will output code as press numeric keypad when it read numeric digit. (The keypad is in the right side of keyboard, and Num Lock control key is also on.) If Alt+Keypad is selected, the data characters will be transmitted as “Alt” + numbers. For example, when sending character “A”, the actual sending will be “Alt”+65. It is also useful when using non-English OS and keyboard layout.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***

2AB Keyboard layout	USA	00 *
	Belgium	01
	Danish	02
	France	03
	Germany	04
	Italian	05
	Portuguese	06
	Spanish	07
	Swedish	08
	Switzerland	09
	UK	10
	Latin American	11
	Japanese	12
2AC Keyboard speed	0-8	00-08
	0 : high clock rate	03 *
	8 : low clock rate	
2AD Function key	Disable	00
	Enable	01 *
2AE Alpha/Numeric key	Alphabetic key	00 *
	Numeric keypad (Num lock state only)	01
	Alt+Keypad	02

%$$ **Exit**

Keyboard wedge

Caps Lock: By selecting Caps lock”ON” or Caps lock”OFF”, imager can get Caps Lock status.

Power-on simulation: All of the PCs check the keyboard status during power-on selftest. It is recommended to Enable function if you are working without keyboard installation. It simulates keyboard timing and pass keyboard present status to the PC during power-on.

Inter-character delay: This delay is inserted after each data characters transmitted. If the transmission speed is too high, the system may not be able to receive all characters. Adjust it and try out suited delay to make system work properly.

Block transmission delay: It is a delay timer between barcode data output. The feature is used to transfer continually with shorter barcode data or multi-field scanning.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Caps lock	Caps lock"ON" Caps lock"OFF"	00 01 *
 Power-on simulation	Disable Enable	00 * 01
 Inter-character delay	00-99 (msec)	00-99 02 *
 Block transmission delay	00-99 (10 msec)	00-99 10 *

Exit

RS-232

CTS: Clear To Send (Hardware Signal)
RTS: Request To Send (Hardware Signal)
Xon: Transmit On (ASCII Code 11_{16})
Xoff: Transmit Off (ASCII Code13_{16})

Flow control:
None-The communication only uses TxD and RxD signals without regard for any hardware or software handshaking protocol.
RTS/CTS-If the cradle wants to send the barcode data to host computer, it will issue the RTS signal first, wait for the CTS signal from the host computer, and then perform the normal data communication. If there is no replied CTS signal from the host computer after the timeout (Response Delay) duration, the imager will issue a 5 warning beeps.
Xon/Xoff- When the host computer is unable to accept data, it sends a Xoff code to inform the cradle to suspend data transmission, and Xon to continue.
ACK/NAK- When the ACK/NAK protocol is used, the cradle waits for an ACK (acknowledge) or (not acknowledge) from the host computer after data transmission, and will resend in response to a NAK.

Inter-character delay: It is delay time between data character's data output. It is also same as Inter-char. delay of keyboard wedge.

Block transmission delay: It is a delay time between barcode data output. It is also same as Block transmission delay of keyboard wedge.

Response delay: This delay is used for serial communication of the cradle to waiting for handshaking acknowledgment from the host computer.

$%+PRO **Program**

Option Bar Code	***Option***	***Alphanumeric Entry***
3AA Flow control	None RTS/CTS Xon/Xoff ACK/NAK RTS/CTS bracket mode	00 * 01 02 03 04
3AB Inter-character delay	00-99 (msec)	00-99 00 *
3AC Block transmission delay	00-99 (10 msec)	00-99 00 *
3AD Response delay	00-99 (100 msec)	00-99 20 *

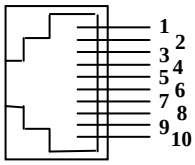
%$$ **Exit**

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Baud rate	300 BPS 600 BPS 1200 BPS 2400 BPS 4800 BPS 9600 BPS 19200 BPS 38400 BPS	00 01 02 03 04 05 * 06 07
 Parity	None Odd Even	00 * 01 02
 Data bit	8 bits 7 bits	00 * 01
 Stop bit	One bit Two bits	00 * 01

Exit

Pin Assignments



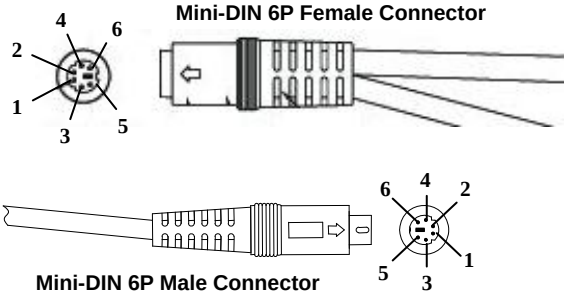
10-pin

AS Series 10-pin RJ-45 Connector

Pin	RS-232	Keyboard
1	I/F	I/F
2	NA	NC
3	TXD	NC
4	NC	CLK / PC
5	GND	DATA / PC
6	CTS	DATA / KB
7	RXD	NC
8	RTS	CLK / KB
9	GND	GND
10	NC	GND

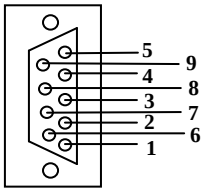
Keyboard Wedge PS/2 Connector (To Host Side):

Pin	Mini-DIN 6P Male	Mini-DIN 6P Female
1	DATA / PC	DATA / KB
2	NC	NC
3	GND	GND
4	VCC (+5V)	NA
5	CLK / PC	CLK / KB
6	NC	NC



RS-232 DB-9F Connector (To Host Side):

Pin	Definition
1	NC
2	TXD
3	RXD
4	NC
5	GND
6	NC
7	CTS
8	RTS
9	NC



Scan

Scanning mode:
Good-read off-The trigger button must be pressed to activate scanning. The light source of imager stops scanning when there is a successful reading or no code is decoded after the Stand-by duration elapsed.
Momentary-The trigger button acts as a switch. Press button to activate scanning and release button to stop scanning.
Alternate-The trigger button acts as a toggle switch. Press button to activate or stop scanning.
Timeout off-The trigger button must be pressed to activate scanning, and imager stops scanning when no code is decoded after the Stand-by duration elapsed.
Continue-Imager always keeps reading, and it does not matter when trigger button is pressed or duration is elapsed.
Test only-For test of scan performance only. It is improper to be utilized to check the accuracy of transmitted data.

Double read timeout: The imager will require a several times successful decoding to confirm the data when enabled. The more confirming times required, the more inhibitive miss-reading code will be shown. The Multi field scan Enable function won't be able to work if set Double confirm.

Double confirm: If the barcode has been scanned twice, then only the first barcode will be accepted.

Supplement Check Counter: It will be more reliable to read the barcode with extension (supplement) like UPCE/A or EAN-8/13, but slow down the decoding speed when this counter is set more.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Scanning mode	Good-read off Momentary Alternate Timeout off Continue Test only	00 01 * 02 03 04 05
 Stand-by duration	01-99 (second)	00-99 06 *
 Double read timeout	01-99 (10 msec)	01-99 50 *
 Double confirm	00-09 (00: no double confirm)	00-09 00 *

Exit

Scan

Global min./max. code length: These are to define the min/max readable code length of all symbologies. Code length less than min. code length or more than max. code length will not be read. In popular, you can set the same value for both min. and max. reading length to force the fixed length barcode decoded. The values of setting have no effect on certain symbologies with fixed length. You can specify the settings for individual barcode by the min/max code length setting of each barcode.

Notes 1): Please set the min/max length if you have special demand for individual barcode.

2): Include the Check sum digits if you want to set Global min/max code length.

Inverted image scan: Set Enabled the imager will scan both black/white barcode with white/black background.

$%+PRO **Program**

Option Bar Code	*Option*	*Alphanumeric Entry*
7AF Global min. code length	00-99	00-99 04 *
7AG Global max. code length	00-99	00-99 99 *
7AH Inverted image scan	Disable Enable	00 * 01

%$$ **Exit**

Indication

Exit

Power on alert: After power-on the cradle it will generate an alert signal to indicate a successful self-test.

LED indication: After each successful reading, the LED above the imager will light up to indicate a good barcode reading.

Beeper indication: After each successful reading, the imager will beep buzzer to indicate a good barcode reading, and its Beep loudness, Beep tone freq. and Beep tone duration are adjustable.

Beep loudness/Beep tone freq./Beep tone duration: You can adjust Beep Loudness, Beep tone and Beep duration for a good reading upon favorite usage.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Power on alert	Disable Enable	00 01 *
 LED indication	Disable Enable	00 01 *
 Beeper indication	Disable Enable	00 01 *
 Beep loudness	00-07 (00 - off)	00-07 07 *
 Beep tone freq.	00-99 (100Hz)	00-99 26 *
 Beep tone duration	00-99 (10 msec)	00-99 08 *

Exit

UPCA

Format

Leading Zero	Data Digits (11 Digits)	Check Digit

Read: Enable or disable the read function.

Check-sum transmission: By setting Enable, checks sum will be transmitted.

Truncate leading/ending: The leading or ending digits of barcode data characters can be truncated when these values are set to non-zero. It will beep instead of reading anything when the truncate value is more than the barcode data digits or the value of Truncate Leading is overlapped with that of the Ending. The maximum value of truncate digits is 15.

Code ID setting: Code ID setting is a character used to represent the symbol upon a succeeding reading. A Code ID setting is prefixed to the data begin or end transmitted if the feature is selected. If you want application to transmit Code ID, you must set Code ID transmission to Enable first. Refer to Code ID transmission.

$%+PRO

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
NAA Read	Disable Enable	00 01 *
NAC Check-sum transmission	Disable Enable	00 01 *
NAF Truncate leading	0-15	00-15 00 *
NAG Truncate ending	0-15	00-15 00 *
NAH Code ID setting	00-ffH ASCII code	00-ffH < A > *

%$$

Exit

UPCA

Insertion group number selection: The imager offers max. two insertion groups for one symbology. By setting one or two digits to indicate which insertion group you want to insert. You may refer to Character insertion. The function is to insert specific characters as a group into transmitted data of selected symbologies. Enable the group insertion by selecting the group number.

Example: Group 2 → set 02 or 20.
Group 1 and 4 → set 14 or 41.

Notes 1): Group number set to “0” means that no group insertion required.
2): Details about the Insert Group settings please refer to page 117~120, and page 126 ASCII code table.

Supplement digits: The Supplement digits barcode is the supplemental 2 or 5 characters for WPC code.

Format

Leading Zero	Data Digits (11 Digits)	Check Digit	Supplement Digits 2 or 5 or UCC / EAN 128

Truncation / Expansion: The leading “0” digits of UPCA data characters can be truncated when the function is enabled.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Insert group number selection	00-44	00-44 00 *
 Supplement digits	None 2 digits 5 digits 2,5 digits UCC/EAN 128 2, UCC/EAN 128 5, UCC/EAN 128 All	00 * 01 02 03 04 05 06 07
 Truncation/ Expansion	None Truncate leading zero Expand to EAN13	00 01 * 02

Exit

UPCE

Read: Format

Leading Zero	Data Digits (6 Digits)	Check Digits

Check-sum transmission: By setting Enable, checks sum will be transmitted.

Truncate leading/ending: Refer to Truncate leading/ending of UPCA.

Code ID setting: Refer to Code ID setting of UPCA.

$%+PRO

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
OAA Read	Disable Enable	00 01 *
OAC Check-sum transmission	Disable Enable	00 01 *
OAF Truncate leading	0-15	00-15 00 *

OAG Truncate ending	0-15	00-15 00 *
OAH Code ID setting	00-ffH ASCII code	00-ffH < E > *

%$$

Exit

UPCE

Insertion group number selection: Refer to page 51 Insertion group number selection of UPCA.

Supplement digits:

Format

Leading Zero	Data Digits (6 Digits)	Check Digit	Supplement Digits 2 or 5 or UCC/EAN 128

Expansion: The expansion function is used only for UPCE and EAN-8 code reading. It extends to 13-digits with “0” digits when the feature is enabled.

Example: Barcode “0123654”

Output: “0012360000057”

UPCE-1: Enable imager to read UPCE with leading digit 1.

$%+PRO **Program**

Option Bar Code	***Option***	***Alphanumeric Entry***
OAI Insert group number selection	00-44	00-44 00 *

OAJ Supplement digits	None 2 digits 5 digits 2,5 digits UCC/EAN 128 2, UCC/EAN 128 5, UCC/EAN 128 All	00 * 01 02 03 04 05 06 07
OAK Truncation/Expansion	None Truncate leading zero Expand to EAN13 Expand to UPCA	00 * 01 02 03
OAL Expansion	Disable Enable	00 * 01
OAM UPCE-1	Disable Enable	00 * 01

%$$
Exit

EAN-13

Read: Format

Data Digits (12 Digits)	Check Digits

Check-sum transmission: By setting Enable, checks sum will be transmitted.

Truncate leading/ending: Refer to Truncate leading/ending of UPCA.

Truncate leading zero: Refer to Truncation / Expansion of UPCA.

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Read	Disable Enable	00 01 *
 Check-sum transmission	Disable Enable	00 01 *
 Truncate leading	0-15	00-15 00 *

GAG Truncate ending	0-15	00-15 00 *

%$$

Exit

EAN-13

Code ID setting: Refer to page 51 Insertion group number selection of UPCA.
Insertion group number selection: Refer to Insertion group selection of UPCA.
Supplement digits:
Format

Data Digits (12 Digits)	Check Digits	Supplement Digits 2 or 5 or UCC / EAN 128

ISBN/ISSN: The ISBN (International Standard Book Number) and ISSN (International Standard Serial Number) are two kinds of barcode for book and magazines. The ISBN is 10 digits with leading “978” and the ISSN is 8 digits with leading “977” of the “EAN-13” symbology.

Example: Barcode “9789572222720” - Output: “9572222724”
Example: Barcode “9771019248004” - Output: “10192484”

Program

Option Bar Code	***Option***	***Alphanumeric Entry***
 Code ID setting	00-ffH ASCII code	00-ffH < F > *
 Insert group number selection	00-44	00-44 00 *

 *GAJ* Supplement digits	None 2 digits 5 digits 2,5 digits UCC/EAN 128 2, UCC/EAN 128 5, UCC/EAN 128 All	00 * 01 02 03 04 05 06 07
 *GAL* ISBN/ISSN conversion	Disable Enable	00 * 01
 *GAM* ISBN ID setting	00-ffH ASCII code	00-ffH < I > *


%$$

Exit

EAN-8

Read: Format

Data Digits (7 Digits)	Check Digits

Check-sum transmission: By setting Enable, checks sum will be transmitted.
Truncate leading/ending: Refer to Truncate leading/ending of UPCA.
Code ID setting: Refer to Code ID setting of UPCA.
Insertion group number selection: Refer to page 51 Insertion group number selection of UPCA.

$%+PRO **Program**

Option Bar Code	***Option***	***Alphanumeric Entry***
FAA Read	Disable Enable	00 01 *
FAC Check-sum transmission	Disable Enable	00 01 *
FAF Truncate leading	0-15	00-15 00 *