Chapter 3 Maintenance and Technical Specifications

Introduction

This chapter provides suggested scanner maintenance, troubleshooting, technical specifications, and signal descriptions (pinouts).

Maintenance

Cleaning the scan window is the only maintenance required. A dirty window can affect scanning accuracy.

- Do not allow any abrasive material to touch the window.
- Remove any dirt particles with a damp cloth.
- Wipe the window using a tissue moistened with ammonia/water.
- Do not spray water or other cleaning liquids directly onto the window.

Battery Maintenance

When batteries are stored over a year, battery cell manufacturers advise that some irreversible deterioration in overall battery quality may occur. To minimize this loss, they recommend storing batteries half charged in a dry, cool place between 41° and 77°F (5° and 25°C), the cooler the better, and removed from the equipment to prevent the loss of capacity. Batteries should be charged to half capacity at least once a year. In order to charge a battery to half capacity, take a fully discharged battery and charge it for 2 hours. If an electrolyte leakage is observed, avoid any contact with the affected area and properly dispose of the battery.

Troubleshooting

Table 3-1 *Troubleshooting*

Problem	Possible Causes	Possible Solutions
Scanner emits short low-short medium-short high beep sequence.	Scanner is powering up.	Normal when scanner battery is inserted.
Nothing happens when scan trigger is pressed.	No power to the scanner.	Check battery.
		Ensure that end cap to battery chamber is secured.
	Scanner is disabled.	For Simple Serial Interface (SSI), Synapse, or IBM-468x mode, enable the scanner via the host interface. Otherwise, call the Motorola Solutions Global Customer Support Center (see page xv) for contact information).
	If using RS-232 Nixdorf B mode, CTS is not asserted.	Assert CTS line.
Laser comes on, but scanner does not decode the bar code.	Scanner is not programmed for the correct bar code type.	Ensure the scanner is programmed to read the type of bar code being scanned.
	Bar code symbol is unreadable.	Check the symbol to ensure it is not defaced. Try scanning test bar codes of the same bar code type. See Appendix C, Sample Bar Codes for test bar codes.
	Bar code is out of range of the scanner.	Move scanner closer to or further from bar code.
Scanner emits four short high beeps.	Battery is low.	Charge the battery. See *Charging the Scanner Battery in the Cradle on page 1-8*.
Scanner emits a disconnect (short high-short low) beep sequence.	Scanner has disconnected from cradle because it is too far from the cradle.	Move closer to the cradle and listen for a reconnection beep (short low-short high).
	Scanner has disconnected from the cradle because the cradle has lost power or been placed in USB suspend mode.	Check power connections to cradle, and if using a USB cable, check to make sure PC has not entered a power save mode.

Table 3-1 *Troubleshooting (Continued)*

Problem	Possible Causes	Possible Solutions
Scanner emits four long low beeps after scanning a bar code.	Incorrect host interface cable is used.	Ensure that correct host interface cable is used.
	Interface/power cables to cradle are loose.	Ensure all cable connections are secure.
	Scanner is not paired to a cradle.	Scan the PAIR bar code on the cradle that is connected to the host that is to receive data.
	Scanner has disconnected.	See disconnect beep sequence above.
	A transmission error was detected.	Ensure the cradle's communication parameters match the host's setting.
	Cradle has not completed USB initialization.	Wait several seconds and scan again.
Bar code is decoded, but data is not transmitted to the host.	Scanner not paired to host-connected cradle.	Pair the scanner to the cradle (using PAIR bar code on the cradle).
	Cradle not programmed for correct host interface.	Check scanner host parameters or edit options.
	Interface cable is loose.	Ensure all cable connections are secure.
	Cradle has lost connection to host.	*In this exact order:* disconnect power supply; disconnect host cable; wait three seconds; reconnect host cable; reconnect power supply; reestablish pairing.
Five long low beeps sound after a bar code is decoded	A conversion error or format error has been detected.	Ensure the scanner's conversion parameters are properly configured.
Scanned data is incorrectly displayed on the host.	Cradle host communication parameters do not match host's parameters.	Ensure proper host is selected.
		For RS-232, ensure the cradle's communication parameters match the host's settings.
		For a Keyboard Wedge configuration, ensure the system is programmed for the correct keyboard type, and the CAPS LOCK key is off.
		Ensure editing options (e.g., UPC-E to UPC-A conversion) are properly programmed.
Scanner emits short high-short high-short high-long low beep sequence when it is not in use.	RS-232 receive error.	Normal during host reset. Otherwise, ensure the scanner's RS-232 parity setting matches the host setting.
Scanner emits long low-long high beep sequence during programming.	Input error or **Cancel** bar code was scanned.	Ensure the correct numeric bar codes, that are within range for the parameter being programmed, are being scanned.

Table 3-1 *Troubleshooting (Continued)*

Problem	Possible Causes	Possible Solutions
Scanner emits short low-short high- short low-short high beep sequence while it is being programmed.	Out of ADF parameter storage space.	Erase all rules and re-program with shorter rules.
	Out of Synapse parameter storage space.	Scan **Set Synapse Defaults** code, from the appropriate *Synapse Interface Guide*, for cables no longer in use and re-program the scanner for the current host interface.
Scanner emits one short high beep when it is not in use.	In RS-232 mode, a <BEL> character is received and Beep on <BEL> option is enabled.	Normal when Beep on <BEL> is enabled and the scanner is in RS-232 mode.
Cradle does not work after following installation procedures.	Cradle is not receiving power.	Check system power.
	Cable connections are not secure.	Reinsert cables properly.
	The scanner is not inserted properly in the cradle.	Reinsert scanner.
	Cradle is not properly connected to the host.	Check that host settings are correct, and connect the cradle to the appropriate port on the host.
Battery does not charge.	Cradle is outside the charging temperature range.	Charge within the recommended temperature of 32° to 104° F (0° to 40° C) nominal, 41° to 95° F (5° to 35° C) ideal.

NOTE If problems still occur, contact the distributor or the Motorola Solutions Global Customer Support Center. See page xv for contact information.

Technical Specifications

Table 3-2 *Technical Specifications - Scanner*

Item	Description	
	LS3578-FZ	LS3578-ER
Battery	Rechargeable Lithium-Ion 2200 mAh (3.7V)	
Decode Capability	UPC/EAN, Bookland EAN, UPC/EAN with supplementals, Code 128, UCC/EAN 128, ISBT 128, Code 39, Trioptic Code 39, Code 93, Code 11, Interleaved 2 of 5, Discrete 2 of 5, Codabar (NW-7), MSI, GS1 DataBar.	
Beeper Operation	User-selectable: Enable, Disable	
Beeper Volume	User-selectable: Three levels	
Beeper Tone	User-selectable: Three tones	
Scan Repetition Rate	36 scans/second	
Yaw Tolerance	± 50° from nominal	± 60° from nominal
Pitch Tolerance	± 65° from nominal	± 65° from nominal
Roll Tolerance	± 20° from nominal	± 10° from nominal
Print Contrast Minimum	25% minimum reflectance differential, measured at 650 nm.	
Ambient Light Tolerance	Tolerant to typical artificial indoor and natural outdoor (direct sunlight) lighting conditions. Fluorescent, Incandescent, Mercury Vapor, Sodium Vapor, LED: 450 Ft Candles (4,844 Lux) Sunlight: 8000 Ft Candles (86,111 Lux) Note: LED lighting with high AC ripple content can impact scanning performance.	
Durability	6.5 ft (2.0 m) drops to concrete; 5 ft (1.5 m) at -4° F (-20° C)	
Operating Temperature	-4° to 122° F (-20° to 50° C)	
Storage Temperature	-40° to 158° F (-40° to 70° C)	
Charging Temperature	32° to 104° F (0° to 40° C) nominal, 41° to 95° F (5° to 35° C) ideal	
Humidity	5% to 95% (non-condensing)	
ESD	15 kV air discharge 8 kV contact discharge	
Weight	14.6 oz (414 grams)	14.8 oz (420 grams)
Dimensions: Height Width Depth	 7.34 in. (18.65 cm) 4.82 in. (12.25 cm) 2.93 in. (7.43 cm)	
Laser	650nm laser diode	
Laser Classifications	IEC 825-1 Class 2	

Table 3-2 *Technical Specifications - Scanner (Continued)*

Item	Description	
	LS3578-FZ	LS3578-ER
Minimum Element Width	5 mil (0.127 mm)	7.5 mil (0.191 mm)
Interfaces Supported	Keyboard Wedge, RS-232, USB, IBM 468X/469X, Synapse, 123Scan	
Radio	Bluetooth, Class 2, Version 1.2, Serial Port & HID Profiles 2.402 to 2.480 GHz Adaptive Frequency Hopping (co-existence with 802.11 wireless networks) Data rate: 720 kbps	
Electrical Safety	Certified Pending to UL1950, CSA C22.2 No.950. EN60950/IC950	
Input Transient Protection	IEC 1000-4-(2,3,4,5,6,11)	
EMI	FCC Part 15 Class B, ICES-003 Class B European Union EMC Directive, Australian SMA, Taiwan EMC, Japan VCCI/MITI/Dentori	

Table 3-3 *Technical Specifications - Cradles*

Item	Description	
	STB3508 and FLB3508	STB3578 and FLB3578
Power Requirements	4.75 - 14.0 VDC	
Typical Current Draw		
Not Charging:	35 mA @ 5V 45 mA @ 9V	80 mA @ 5V 85 mA @ 9V
Fast Rate Charge:	850 mA @ 5V 610 mA @ 9V	920 mA @ 5V 655 mA @ 9V
Slow Rate Charge:	400 mA @ 5V 275 mA @ 9V	440 mA @ 5V 310 mA @ 9V
Interfaces Supported	None	Keyboard Wedge, RS-232, USB, IBM 468X/469X, Synapse
Operating Temperature	-4° to 122° F (-20° to 50° C)	
Storage Temperature	-40° to 158° F (-40° to 70° C)	
Charging Temperature	32° to 104° F (0° to 40° C) nominal, 41° to 95° F (5° to 35° C) ideal	
Humidity	5% to 95% (non-condensing)	
ESD	15 kV air discharge 8 kV contact discharge	
Weight	10.5 oz (298 grams)	

Table 3-3 *Technical Specifications - Cradles (Continued)*

Item	Description	
	STB3508 and FLB3508	STB3578 and FLB3578
Dimensions: Height Width Depth	 9.5 in. (24.1 cm) 4.0 in (10.2 cm) 2.9 in (7.4 cm)	
Radio	N/A	Bluetooth, Class 2, Version 1.2, Serial Port & HID Profiles 2.402 to 2.480 GHz Adaptive Frequency Hopping (co-existence with 802.11 wireless networks) Data rate: 720 kbps
Electrical Safety	Certified Pending to UL1950, CSA C22.2 No.950. EN60950/IC950	
Input Transient Protection	IEC 1000-4-(2,3,4,5,6,11)	
EMI	FCC Part 15 Class B, ICES-003 Class B European Union EMC Directive, Australian SMA, Taiwan EMC, Japan VCCI/MITI/Dentori	

Scanner Signal Descriptions

The signal descriptions in *Table 3-4* apply to the 10-pin RJ connector on the cradle and are for reference only.

Table 3-4 *Cradle to Host Pin-outs*

Pin	IBM	Synapse	RS-232	Keyboard Wedge	USB
1	Reserved	SynClock	Reserved	Reserved	Jump to Pin 6
2	Power	Power	Power	Power	Power
3	Ground	Ground	Ground	Ground	Ground
4	IBM_A(+)	Reserved	TxD	KeyClock	Reserved
5	Reserved	Reserved	RxD	TermData	D +
6	IBM_B(-)	SynData	RTS	KeyData	Jump to Pin 1
7	Reserved	Reserved	CTS	TermClock	D -
8	Reserved	Reserved	Reserved	Reserved	Reserved
9	Reserved	Reserved	Reserved	Reserved	Reserved
10	Reserved	Reserved	Reserved	Reserved	Reserved

Figure 3-1 illustrates the positions of the cradle pins.

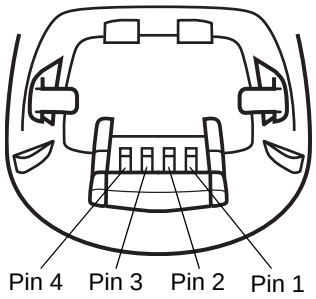

Figure 3-1 *Cradle Pin Assignments*

The signal descriptions in *Table 3-5* apply to the connector from the scanner to the cradle and are for reference only.

Table 3-5 *Scanner to Cradle Pin-outs*

Pin	Signal
1	VCC
2	CRADLE_TXD
3	CRADLE_RXD
4	GND