

EXTECH DATA SYSTEMS

SERIES 2000i

USER'S GUIDE

VERSION: 07/30/2002

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Part Number 2000i-UG

Section 1 ... The Printer User Interface

Introduction

This guide summarizes the operation and maintenance features of Exttech **2000i** dot matrix impact printers.

Membrane Switch Functions (see Figure 1)

- **<ON>** The <ON> switch turns printer power on.
- **<FEED>** The <FEED> switch advances the paper at a fast rate.
- **<OFF>** The <OFF> switch turns the printer power off, or pauses and cancels the print process.
Note: In IrDA mode, press <FEED> momentarily, then <OFF>, to turn printer power off
- **<ADVN>*** The <ADVN> switch advances paper at a normal rate.
**Note: This switch function is not present with the MCR version*

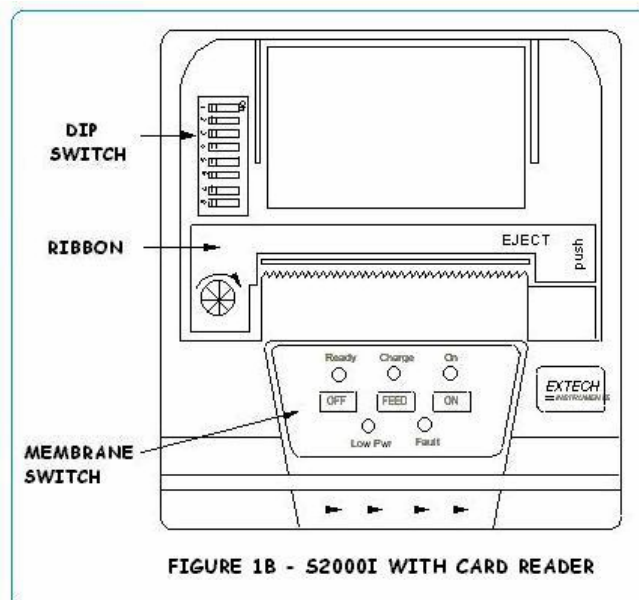
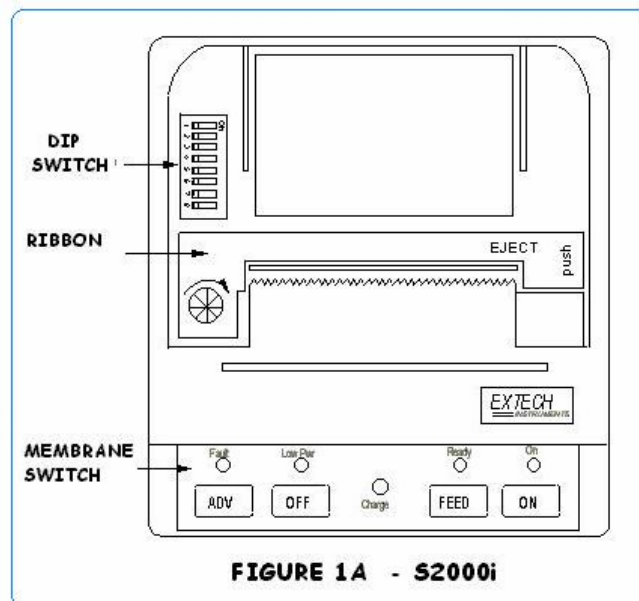
Front Panel Indicators (see Figure 1)

- **<ON>** **Green**
 - Illuminated when the printer is in operation.
 - In Serial mode: Extinguishes after 20 seconds when printer defaults to low power mode to minimize battery consumption.
 - In IrDA mode: the LED is on steady.
- **<READY>** **Green**
 - In IrDA mode: The LED is illuminated during Infrared communication; extinguishes after 20 seconds to minimize battery consumption.
 - In Serial Mode: the indicator is illuminated when the optional magnetic card reader is ready for swiping.
 - Flashes twice before going into Auto Sleep mode when connected to Host device and the Host RTS output is active.
- **<CHARGE>** **Yellow**
 - If illuminated the battery cartridge is accepting charge.
 - Turns off automatically at the end of the charge cycle.
- **<LOW PWR>** **Yellow**
 - If illuminated, the battery cartridge is depleted.
 - Recharge battery cartridge if LED is on.
 - **DO NOT PRINT IF THE LED IS ILLUMINATED.**

Front Panel Indicators (continued)

- **<FAULT>** **Red**
 - Indicates printer is out of paper.
 - Indicates error was encountered while reading the magnetic card.
 - The FAULT and LOW POWER LED on simultaneously, indicate the printer is unable to print due to low battery power.

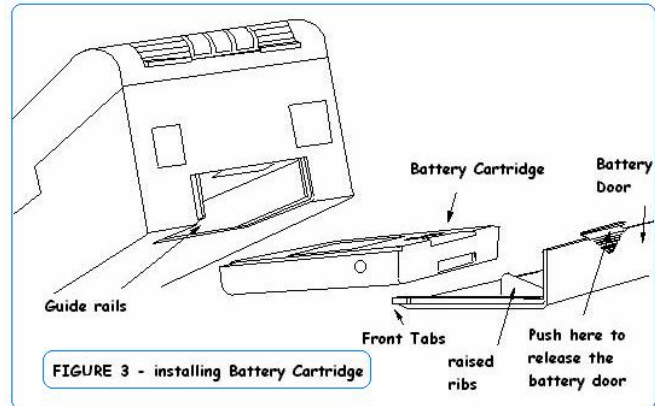
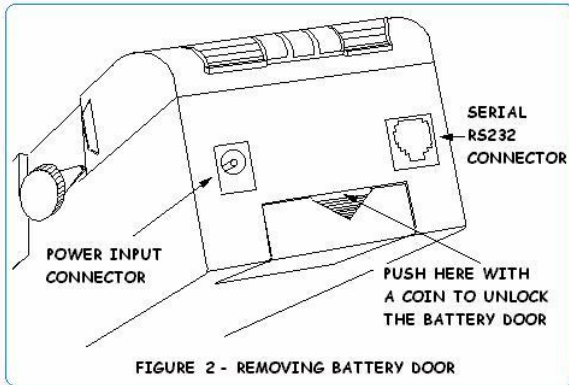
- **<READY, FAULT, LOW POWER>** **Flashing**
 - Indicates printer is paused. Press **FEED** to resume printing, or press **OFF** to cancel the current print and clear any data in print buffer.
 - Pressing the **OFF** switch while printing pauses the printer.



Section 2 ... Charging The Printer Battery

Charging the Battery Cartridge

- **Insert the battery Cartridge into the printer.**
 - Remove the battery door at the back of the printer, by placing a coin into the slot and pushing the cover to release the lock; (see Figure 2).
 - Install the battery cartridge in the battery compartment located at the back of the printer as shown in Figure 3.



- **Charge the battery cartridge before operating the printer.**
 - Plug the power adapter into an appropriate wall socket; then plug the power adapter cord into Power Input Connector at the rear of the printer (see Figure 2). The yellow **Charge** light will illuminate, to indicate battery is charging.
 - The Charge LED turns off when battery cartridge is fully charged. It takes 60 to 90 minutes to fast charge the battery pack.
 - To insure full charge, printer should not be operated while the battery is charging.

▪ **Important notes on charging the battery.**

- The model 2000i uses 9VDC/1A adapter to recharge the battery pack.
- Each time the power adapter is connected to the printer, the battery Fast-charge is initiated.
- Before the start of the fast recharge process, the fast-charge controller checks the battery's voltage and temperature.
- If the battery voltage or the temperature is outside of the fast-charge limits, the charger defaults to trickle charge at C/10 or 70mA rate.
- Optional external battery charger is available for Extech printers, a single bay fast rate charger and conditioner and four bay 12 hours trickle charger.

MODEL	ADAPTER VOLTAGE INPUT	AVERAGE PRINTING CURRENT	CURRENT DRAW IN STANDBY MODE	CURRENT DRAW IN SLEEP MODE
2000	9 TO 12 volts	~1amp	~35ma	~1 TO 5 ma
3000	9 TO 12 volts	~1amp	~35ma	~1 TO 5 ma
3000HS	13.6 volts	~1amp	~35ma	~1 TO 5 ma

Table 1 – Typical Printer Power Consumption

- Refer to the options addendum (**TABLE A**) for complete list of printer supplies and accessories and ordering part numbers.

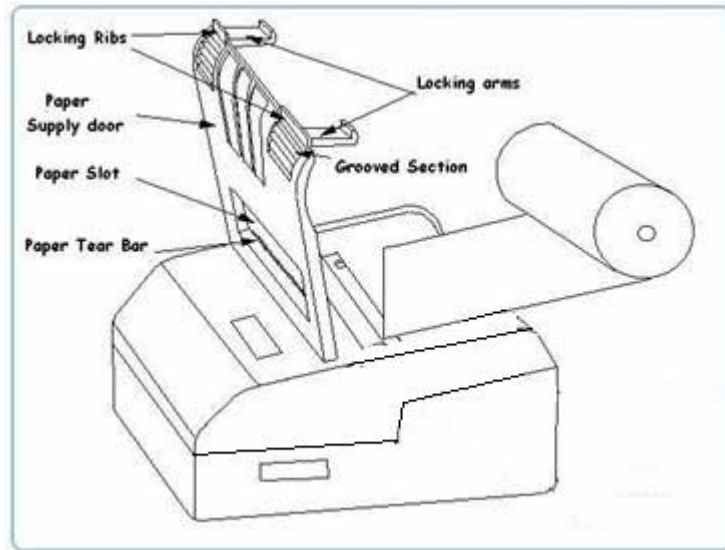
Section 3 ... Loading Printer Paper

Impact Printer 2000I - Manually Installing Paper and Ribbon

- Open the hinged paper supply door to load paper or replace the printer ink cartridge.
- To unlock the top hinged paper cover, hold the printer with both hands and place each thumb on the two locking ribs located below the grooved sections on the top cover.
- Push the locking ribs in-and-up to open the paper door.

FIGURE 4

Loading printer paper



Impact Printer 2000I - Manually Installing Paper

- Open the paper supply door by pushing up the locking ribs (figure 4).
- Turn on the printer by pressing the **ON** switch.
- Remove any paper remaining in the printer mechanism, using the **FEED** switch or pulling the paper in forward direction.
- Unroll a leader from the new roll (about 3 inches); do not place roll in the printer at this time.
- Place the straight edge of the leader just under the roller in the print head and feed about 3 inches of the new roll of paper into the print head using the **FEED** switch.
- Place paper roll in the printer.
- Feed the leading edge of the paper into the slot of the hinged cover.
- Lower the hinged cover and lock.
- Pull the 3 inches of paper forward against the teeth of the paper tear bar and pull to either side to tear off the paper.
- The printer is then loaded with paper and ready to use.
- **Caution**

- **Do not REVERSE pull the paper out of the 2000i printer mechanism; this will cause permanent damage to the print head.**

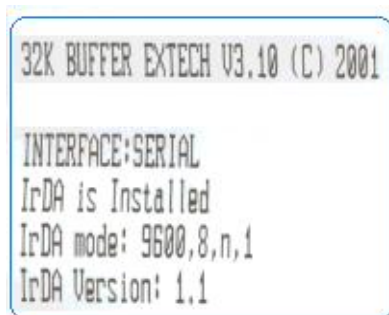
Impact Printer 2000I - Replacing the Inked Ribbon Cartridge (figure 1)

- Open the paper supply door to access the ribbon cartridge
- Remove the worn out ribbon cartridge by pressing with one finger at the location labeled “EJECT” on the ribbon cartridge.
- Insert the new ribbon cartridge in place and press at the extreme ends to secure it in place.
- Tighten the ribbon by rotating the ribbed wheel clockwise on the ribbon cartridge.
- Feed paper to insure that the paper passes through exposed ribbon and ribbon cartridge case.

Initial power up and self-test

Once the Battery is charged and the paper is loaded perform an initial power up self-test.

- Turn off all LED lights by pressing the OFF switch twice.
- To start the self-test, press and hold the **FEED** switch then press **ON**
- The printer will start printing the self-test messages.
- Press the **OFF** or **FEED** to stop or cancel the self-test print.
- The first few lines of self-test show the printer firmware version, the current printer settings and a list of any optional or special features installed.
- Also sample demo lines are printed using internal printer fonts.



Printer Self-Test Sample print

Section 4 ... Auto Paper Load Operation

Auto Paper Load ... 2000i Printers (Option 1)

- Open the hinged paper door by pushing up the two locking ribs (figure 4).
- If the printer is not already on, turn it on by pressing the **ON** switch.
- Remove any paper remaining in the printer mechanism, using the **FEED** switch.
- Unroll a leader from the new roll (about 3 inches); do not place roll in the printer at this time.
- Trim the leading edge of the roll to a wedge shape.
- Place the wedge of the leader just under the roller in the print head; the printer will sense the paper and advance it through the print head. If you experience difficulty, press the <FEED> switch.
- Place the paper roll in the printer.
- Feed the leading edge of the paper into the paper slot on the hinged cover.
- Lower the hinged cover and lock.
- Press the **FEED** switch to advance the paper. Tear the paper by pulling it forward against the teeth of the paper tear bar, while pulling the paper to either side.
- The printer is then loaded with paper and ready to use.

Auto Paper Load ... 2000i Printers (Option 2)

- Turn on the printer
- Press the **FEED** or **ADVANCE** button. The red **ERROR** LED is illuminated and will remain on for 60 seconds.
- Insert paper to the print head. The auto-paper-load will feed the paper through for 2.00”.

▪ **Caution**

Do not REVERSE pull the paper out of the 2000i printer mechanism; this will cause permanent damage to the print head.

Section 5 ... Serial RS232, IrDA and XMODEM Communications

Select a serial RS232 or IrDA communication interface (see Figure1)

- The S2000i printers support Serial RS232 and IrDA compatible infrared communication interfaces.
- These interfaces are selected using DIP switches located on the printer control card, located on the side of the paper supply.
- Refer to Table 2 for Dipswitch settings.
- Dipswitch #8 in the **ON** position selects IrDA interface. In the **OFF** position, serial RS232 mode is selected.
- If RS232 interface is selected, connect the data connector and set the serial communication parameters: Baud rate, number of Data Bit and Parity.
- If using RS232 you also need a cable such as Extech part # 5892RJD9; this plugs into the serial connector at the rear of the printer shown in Figure 2.
- Printer drivers are available for Windows 95/98/NT/2000
- For Windows CE devices, PrinterCE control application is available from www.fieldsoftware.com.
- Steven's Creek PalmPrint Utility is recommended for Palm Pilot devices. www.stevenscreek.com.

Serial RS232C CONNECTIONS

- The RS232C Interface signals for the S2000i printer is terminated on a 6 PIN RJ25 type data connector located at the back of the printer.
- Six connections are provided from the Serial Interface to the host computer. The table below lists the Serial Interface signals and pin outs on the RJ25 connector.
- Pin locations are shown in Figure 1.A & 4. A minimum of two connections are required for operation, RXD-pin3 and Common-pin1.

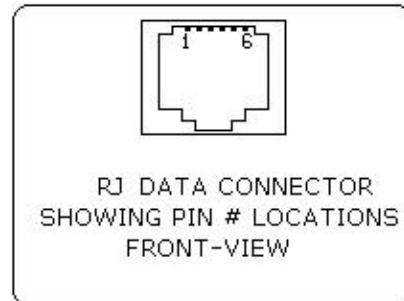


FIGURE 4 – Serial Connector

RJ25 CONNECTOR PIN #	FUNCTIONAL DESCRIPTION	SIGNAL NAME
3	RS232 from Host (INPUT)	RXD
2	RS232 from Printer (OUTPUT)	TXD
6	Request to send from Host (INPUT)	RTS
4	Clear to send from Printer (OUTPUT)	CTS
1, 5	Logic common	COM

RS232 Communication Interface - General notes & DIP switch settings

- Eight-position dipswitch, located to one side of the paper roll, is used to select and set the serial RS232 interface. The printer reads these switches once, on initial power-up. The functions assigned to each switch are listed in **Table 2**.
- Proper Baud Rate and protocol settings are required to communicate with a host computer. The standard factory setting is 19,200 BAUD, 8 DATA BITS, NO PARITY BIT, and one STOP BIT, all switches in off position.

The Exttech Extended XMODEM protocol

The *Exttech XMODEM software option* is designed to overcome the unreliability of data transmission using direct infrared interface. It is intended for host computers equipped with IrDA compatible physical interface and no IrDA software Stack.

The *Exttech XMODEM protocol* is supported via RS232 (RS-XMODEM) or IrDA (IR-XMODEM) interface. The XMODEM option and the communication parameters are set using on board dip switches, as summarized in the table below.

Communication Interface - S2000i DIP switch settings

TABLE 2 - S2000i DIP switch settings

Dip Switch	Function		SW1	SW2
1 & 2	Baud rate			
	<u>Standard Baud rate</u>	<u>Special Baud rate</u>		
	19,200	9,600	Off	Off
	9,600	4,800	On	Off
	4,800	2,400	Off	On
	2,400	1,200	On	On
3	No. of data bits		SW3	
	7 Data Bits		on	
	8 Data bits		Off	
4 & 5	Parity bit		SW4	SW5
	<u>Serial RS232 mode</u>	<u>Alternate mode with SW-8 ON</u>		
	No Parity	IrDA	off	off
	Odd Parity	Ir-Xmodem	on	off
	No Parity	Ir-Direct	Off	On
	Even Parity	RS232-XMODEM	on	on
6	Hardware Handshaking		SW6	
	Enable		On	
	Disable		Off	
7	Clock and Calendar		SW7	(OPTIONAL)
	clock set		On	
8	Communication Interface		SW8	
	RS232		Off	
	IrDA		On	

Section 6 ... Printer Control Codes and Resident Fonts

Character	Hex/Dec	CONTROL ACTION
EOT	04/04	End Of Text
BS	08/08	Back Space
HT	09/09	Horizontal Tab
LF	0A/10	Line Feed
VT	0B/11	Vertical Tab
FF	0C/12	Form Feed
CR	0D/13	Carriage Return
SO	0E/14	Shift Out – Select double wide print
SI	0F/15	Shift In – Clear double wide print
XON	11/17	Transmitter On.
AUXON	12/18	Printer on.
XOFF	13/19	Printer receiver is off
NORM	14/20	Return to default 42 column mode
AUXOFF	15/21	Printer to Host: printer is off
CANCEL	18/24	Cancel and reset printer buffer. Default to Standard font.
ESC	1B/27	Escape
EXTEND	1C/28	Extended print
EXTEND OFF	1D/29	Extended print off/Normal print
Status All		Report Buffer, power timer and battery status
Status buffer		Report number of characters received in buffer

Printer Command Strings	Printer Function
ESC+F+1 (default)	Standard ASCII and International character set
ESC+F+2	Hebrew ASCII and Hebrew character set
ESC+F+3	IBM PC ASCII and IBM PC character set
ESC+1+Null	SELECT 1 DOT SPACING
ESC+0+Null	SELECT 3 DOT SPACING (default)
ESC – G	Select 6-bit graphic print mode
The graphic character set	From character '?'(3FH) to TILDA (7EH), CR & LF
ESC - 'A'	Select Text Print Mode. Cancel Graphic mode.
ESC – 'P' – alpa	Time and date print and Format control
ESC – 'M' - '000' - cr	Disable the power down timer
ESC - 'M' - 'nn0' - cr	sets the power down timer to nn seconds
ESC – 'M' - 'C'	Reset Auto power down to 20 seconds
ESC – 'M' - 'nnm' - cr	Select optional Magnetic Card reader
^B	Request printer Status Report: Report Format Print buffer: <ESC> <4 ASCII digits><CR><LF> Battery Voltage: <ESC> <V><4 ASCII digits><CR><LF> Magnetic card reader:<ESC> <M><4 ASCII digits><CR><LF>

!	"	#	\$	%	&	'	()	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?	
@	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	[\]	^	_
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á	í	ó	ú	ñ	Ñ	ª	º	¿	↑	↓	½	¼	¡	«	»	§	§	G	I	Á	À	À									
Φ	Ψ	α	Υ	δ	ε	ã	Ã	ζ	η	θ	κ	λ	ε	σ	ς	τ	v	Ê	Ë	È	Ψ	Í	Î	Ï	ω	ά	έ	ή	ώ	ì	□
Ó	β	Ô	Ò	õ	Õ	μ	ρ	√	-¹	Ù	ç	Ý	Ú	ý	Ú	β	±	θ	∞	Ω	Σ	Π	f	♥	♦	♣	♠	÷	■		

International Character Set

!	"	#	\$	%	&	'	()	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?		
@	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	[\]	^	_	
`	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	{		}	~		
Ç	ü	é	â	ä	å	ç	ê	ë	ì	í	î	ï	Ë	Ä	Å	æ	ø	ö	ó	ù	ü	ÿ	ö	Ü	ø	£	Ø	x	f			
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Ó	β	Ô	Ò	õ	Õ	μ	ρ	√	-¹	Ù	ç	Ý	Ú	ý	Ú	β	±	θ	∞	Ω	Σ	Π	f	♥	♦	♣	♠	÷	■			

PC Line Draw Character Set

Troubleshooting Guide

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>SOLUTION</u>
Printer will not turn on	Discharged Battery	Recharge battery overnight.
Charge LED not lighting when AC adapter is plugged in.	No AC power or AC adapter defective	Check AC outlet or adapter (note: battery pack may be fully charged)
Battery not charging.	Battery incorrectly installed or no AC. Battery dead	Check battery installation and AC adapter Change to a new battery
Paper not feeding.	Obstruction in paper path or paper improperly installed	Check the paper path. Verify installation Use paper of the correct specification
Fault LED on Steady	Print head lever is up Print mechanism jam Low Battery	Check print head lever Check paper supply; press <FEED> to clear. Charge battery; if problem persists, change battery.
Low-BAT LED on Steady	Low battery	Charge battery; if problem persists, change battery.
Prints illegible characters.	Improper baud rate and parity	Verify the printer and host settings. Use self-test to verify printer settings.
Printer will not print in IrDA mode	Obstruction of IrDA	Clear obstruction.
	IrDA mode is not selected	DIP switch #8 must be on.
	Will not connect to host device.	Limit the IrDA baud rate to 9600 on the host device.

TABLE A - Optional printer parts and supplies

Part Number	Description
757059	2000i paper pack (2.2" / 57.5 mm wide, 1.5" O.D. 5 rolls)
7A100005	2000i Battery Cartridge - 5 Cells – 1400mA
767700	External 4 bays charger for 2000i
767600	Single Bay Fast Charger
157120	Battery charger adapter 2000i 120VAC/9VDC/1A
157220	Battery charger adapter 2000i 220VAC/ 9VDC/1A
S2000i-UG.doc	User's Guide – 2000i
7A060028	Programmer's Guide – 2000i
Available from Extech Email	Windows 95/98/NT/2000/ Drivers printers@extech.com
Download & register "Extech"	Windows CE print Utility http://www.fieldsoftware.com/PrinterCE.htm
Download	Palm Pilot print Utility http://www.stevenscreek.com/pilot/dodownload.html
756996	2000i belt mount case
757995	2000i Rubber boot
756998	Belt Loop System
5892RJD9	Serial Data Cable – RJ to DB9 PC compatible

Regulatory Notes

FCC Part 15 Class B

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 too correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the 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/TV technician for help.

Warranty

This printer is warranted by Extech Data Systems to be free of defects in parts and workmanship for a period of one year from date of shipment. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties of merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, special, incidental or consequential damages. Extech's total liability is limited to the repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral is expressed or implied.

Warranty Service

A Return Authorization number must be issued before a unit is returned to Extech for repair. The customer is responsible for ensuring proper packing to prevent damage in transit. Once a unit has been properly returned to Extech, it will be repaired (estimates are provided first if the repair cost is estimated above \$100.00) and returned via UPS ground. The customer may elect a faster mode of transport at their cost.