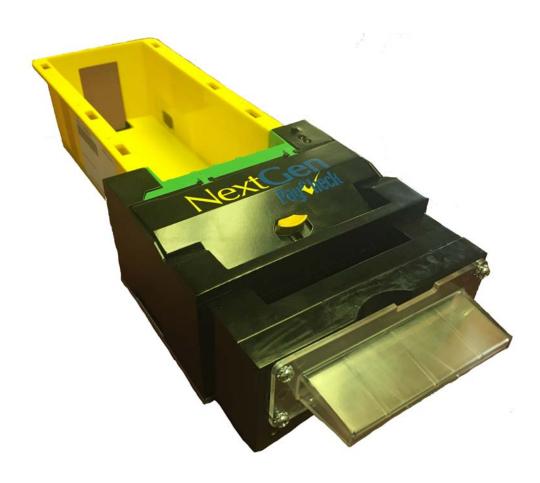




PayCheck™ NextGEN

Technicians Manual



NANOPTIX

October 18, 2017 Document # 720009-0000R



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Warning

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note

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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



Information to the User

This equipment must be installed and used in strict accordance with the manufacturer's instructions. However, there is no guarantee that interference to radio communications will not occur in a particular commercial installation. If this equipment does cause interference, which can be determined by turning the equipment off and on, the user is encouraged to contact Nanoptix Inc. immediately.

Nanoptix Inc. is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Nanoptix Inc. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

In order to ensure compliance with the Product Safety, FCC and CE marking requirements, you must use the power supply, power cord, and interface cable, which were shipped with this product or which meet the following parameters:

Power Supply

UL Listed power supply with standard 60Hz-50Hz, 100-240VAC input and 24VDC output equipped with AC line filtering, over-current and short-circuit protection.

Use of this product with a power supply other than the Nanoptix Inc. power supply will require you to test the power supply and Nanoptix Inc. printer for FCC and CE mark certification.

Communication Interface Cable

An approved Nanoptix interface cable must be used with this product. Use of a cable other than Nanoptix approved product will require that you test the cable with the Nanoptix Inc. printer and your system for FCC and CE mark certification.

Power Cord

A UL listed, detachable power cord must be used. A power cord with Type SVT marking must be used. For applications outside the North America, power cords that meet the particular country's certification and application requirements should be used.

Use of a power cord other than described here may result in a violation of safety certifications that is in force in the country of use.

Industry Canada (IC)

Radio Frequency Interference Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.



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About the Printer

1.1 Description of Printer

The Nanoptix PayCheck™ NextGen, is extremely fast, quiet, and very reliable. With thermal printing technology, there is no ribbon cassette to change, and paper loading is extremely simple. The printer is small enough to fit almost anywhere and is easy to use with the ticket exiting from the front.

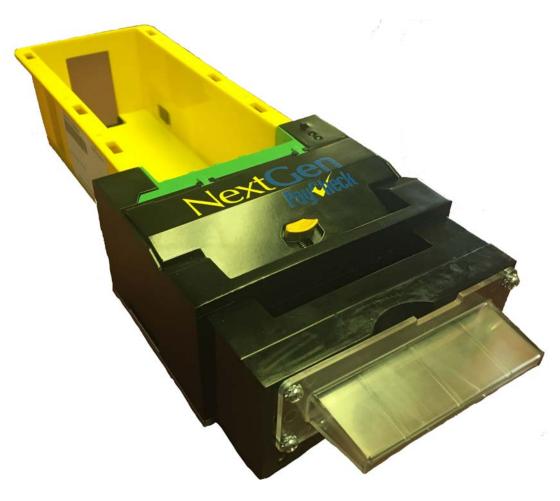


Figure 1: Nanoptix PayCheck™ NextGen Printer



1.2 General specifications

Print Method	Direct Thermal	
Resolution	8 dot/mm (203 dpi)	
Print Width	64mm	
Paper Width	65mm	
Cartridge Size	400, 600, 800	
Operating Temperature	0° to 60° C	
Storage Temperature	-20° C to 75° C	
Operating Relative Humidity	5% to 90% RH at 50C (non-condensing)	
Communication Interface Options	2 Bidirectional RS-232C	
•	3 USB 2.0 high speed host ports	
	2 USB 2.0 high speed device ports	
	(1 for maintenance)	
	HDMI output port, 1080p	
	Ethernet Port	
	Micro SD Card Reader	
Memory/Firmware	32 Gbit Flash, 4 Gbit Ram & 16 kbit EEPROM	
Resident Character Sets	Support 32 fonts Approx.	
	(16 resident 16 user defined)	
Integrated Bar Codes	UPC-A, UPC-E, interleaved 2 of 5, Code 39, Code	
	93, Codabar, EAN 8, EAN 13, Code 128.	
	Note: other bar codes can be programmed quickly	
Speed	Up to 200 mm (7.9 in.) per sec. (monochrome)	
	Up to 125 mm (5 in.) per sec. (two-color mode)	
Sensors	Last sheet paper low, adjustable paper low, paper	
	out, ticket taken, drawer open, cover open, ticket	
	jam	
Duty Cycle (max.)	5 tickets per minute	
Human Interface	Drop-in paper loading, status LEDs, paper feed	
	button	
Dimensions	65mm width x 112mm height x 286mm depth	
Weight	0.57 Kg (1.25 lbs)	
Immunity	EN 55024	
	Information Technology Equipment	
Emission Standards	United States - FCC Part 15 Subpart A	
	Canada - Industry Canada ICES-003	
	Europe – EN 55022	
	Class A emissions	
	Information Technology Equipment	
Safety	QPS Certified	
	Control Number: LRE1123	

Table 1: Specifications



1.3 Paper Loading

The paper stack should be changed when it is low or out.

Caution: The printer will not operate without paper, but it may continue to accept data from the host computer. Since the printer cannot print any transactions, the data may be lost.

The maximum stack that will fit in the ticket cartridge is 400, 600 or 800 tickets depending on the cartridge option that was purchased with the printer.

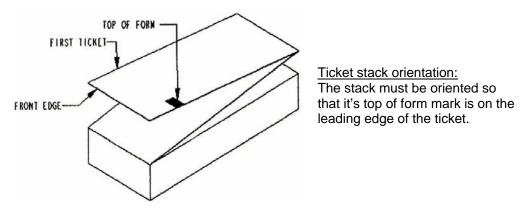
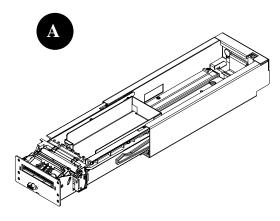
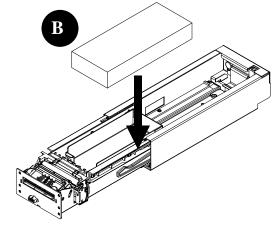


Figure 2: Ticket Stack Orientation

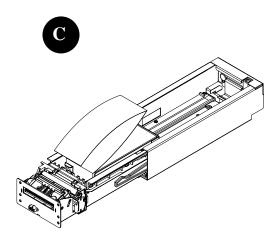




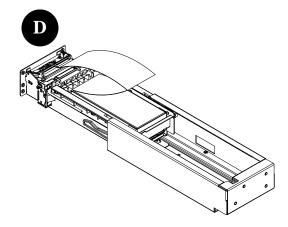
Open drawer. (if necessary)



Drop ticket stack into ticket cartridge.



Feed ticket into printer mechanism until resistance is felt.



Once paper has been aligned ticket is ready to print.

Figure 3: Loading Paper



1.4 Printer Interface

Identifier	Туре	Function	
Α	USB type B	USB communication	
В	14 pin "Molex mini fit"	Power & dual serial communication	
	Left jumper	Connects pin 5 to Pin 7 & 10 on port B	
С	Right jumper	Bezel control connected to pin 9 of port B	
Switch left position		Port B Aux port Netplex	
D	Switch right position	Port B Aux port RS232	
E	3 pin "JST PE"	Debug	

Note: For ESD protection, left jumper must be installed when switch D is set to Netplex

Table 2: Interface - left

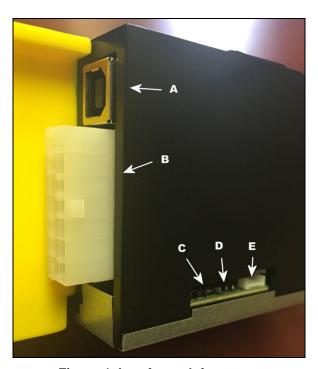


Figure 4: Interface – left



Identifier	Туре	Function	
F	USB type A	USB communication (expansion)	
G	RJ45	802.3 Network interface	
Н	Micro HDMI	Video, etc.	

Table 3: Interface - right



Figure 5: Interface - right

Identifier Type		Function	
SD media card interface		MicroSD	
J	Molex microfit 3.0	Bezel illumination	
K	Mini USB type B	maintenance	
L	USB type A	USB communication (expansion)	

Table 4: Interface - front



Figure 6: Interface - front



1.5 Printer Controls

1.5.1 Printer Reset (Service use only)

The printer is reset by disconnecting and reconnecting the power/communication cable. Once connected, the printer goes through a startup routine and resets itself.



Figure 7: Printer Reset

1.5.2 Paper Feed Button

The paper feed button is used to advance the paper. Once the ticket removed, the printer will realign the paper to the ready position.



Figure 8: Paper Feed Button



1.5.3 DIP switches

DIP switch is available through the access hole of the bottom plate.

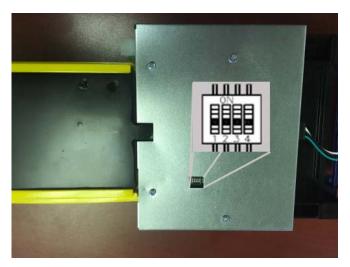


Figure 9: DIP Switch

Identifier Position		Function	
4	ON	Recovery mode	
'	OFF (default)	Run mode	
2 ON or OFF (default)		Spare	
3 ON or OFF (default)		Spare	
4	ON (default)	Watchdog enabled	
4	OFF	Watchdog disabled	

Figure 10: DIP Switch



1.5.4 LED

Two LEDs provide visual feedback of the operation of the printer.



Figure 11: LED Positions

Error LED (Red)	Status LED (Green)	Condition	
OFF	ON	Printer Ready	
ON	OFF	Paper Out	
MED BLINK	OFF Temperature Error		
SLOW BLINK	OFF	Voltage Error (Over 26.2 VDC)	
FAST BLINK	ON	Print Head Error	
FAST BLINK	ON	Missing Black Index Mark	
FAST BLINK	ON	Paper Jam	

Table 5: LED Information



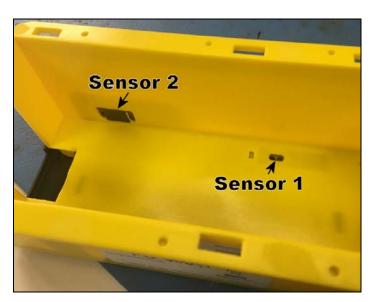
1.5.5 Paper Low

There are 4 paper low detection options. Paper low sensor 1 is only used when paper low sensor 2 is in the off position.

Detection quantity (sheets)	Paper low 2 position	
1	OFF	
50	HIGH	
35	MEDIUM	
15	LOW	

Table 6: Paper low

To change the paper low detection quantity. Turn the printer on its left side and remove the sensor cover. Using the alignment pins, place the sensor in the desired position. Then reinstall the sensor cover



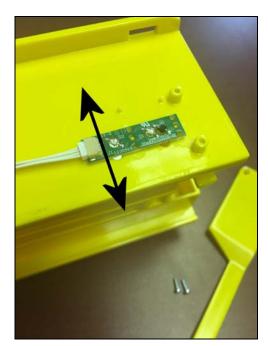


Figure 12: Paper low



1.6 Testing the Printer

1.6.1 Configuration Ticket

This test can be used to verify the correct operation of the printer. The test prints a resident ticket listing the current printer settings. This ticket can also be used to verify the printing quality. To print the test ticket, the printer must be powered "ON" while holding the paper feed button for approximately 5 seconds. A status ticket similar to below will be printed. Pressing the button again will result in blank tickets.

PAYCHECK NextGen Model: Firmware: NPG-9.99Z (0x6D00) Printer Driver Ver: 1.0.1.1 **SETTINGS** COMMUNICATION NTL Protocol: Interface: Serial Serila Settings: 9600,8,NONE Handshaking: XON + RTS Print mode: Page **NETWORKING** 99.99.99.201 PRINT CONTROL 200 mm/sec Speed: BurnTime: 300 uS Motor Current: 58% PRINTER ENVIRONMENTAL CONDITIONS Voltage: 24.7 Volts 25 Celcius Temperature: SYSTEM RESOURCES FLASH Used=00000 Free=65535 LIBRARY INVENTORY (Satandard) Tpl: 0, 1, 2, 4, 4, 5,6,7,8,9,A,B Rgn 1, 2, 3, 4, 5, 6, 7, 8, h, 9, A, B, C, D, E, F, G, I, J, K, L, N, O, P, Q, R, S, T, U, Z, X, a, b, c, d, e, f, g, I, j, k, I, m, n, o, p, q Gfx: LIBRARY INFORMATION Board: 209022-0001R-04 Board ID: 5P00122 Printer ID: NG0003C Date Code: 20160505 *S|0|PAY-4.82H|@|@|@|||@|P|*

Figure 13: Sample Test Ticket



1.6.2 Printer Performance Metrics

(not implimented in all firmware versions)

This ticket lists the performance metrics recorded by the printer since the printer was installed. The test prints a resident ticket listing various errors and status. To print this ticket, <u>the printer must be turned "ON" and operating in normal "Run Mode". Press and hold the paper feed button for approximately 5 seconds.</u> A performance ticket similar to below will be printed.

PayChreck™

(B8D52E31) Performance Report (B8D52E31)

Nanoptix Paycheck USB printer Statistics

Printer ID: P4B3671

Model: PAYCHECK NextGen Firmware: NG000512Q (0x9D8A)

Power Cycles: Tickets printed: 2906 Jams: 2 Voltage errors: 0 TOF. Errors: 1 Drawer opened: 57 Paper low: 46 Paper out: 23 Platen open: 19 Paper in chute: 2845 Max tickets (1 m): 5 Max tickets (10 m): 10 Max tickets (1 hr): 10 Max tickets (24 hr): 10

Max temp.: 28 Celcius
Min temp.: 17 Celcius
Max voltage: 24.7 Volts

On time 0132D:08H:52M:43S

Figure 14: Sample Metrics Ticket



1.7 Clearing Jams

The Nanoptix PayCheck NextGen printer's paper guide and printing mechanism roller are easily removed, giving full access to the paper path.



Figure 15: Clearing Jams



2 Troubleshooting the Printer

2.1 Basic Printer Operation

Although the Nanoptix PayCheck™ printer is a complex device, its operation is fairly simple. The printer requires two consumables to operate, (1) a regulated 24 VDC power source and (2) approved thermal paper. The printer is equipped with eight communication interface ports

The printer is mounted using a slidding baseplate. This baseplate's home position is detected by a magnetic sensor. A reflective optical sensor (B) situated in bottom of the ticket tray is used to detect the last sheet of paper. In order to do this, paper low sensor (C) must installed in "disable" position. This paper low sensor (C) has 3 other mounting positions used to trigger a paper low condition at varying amounts of paper left in the tray. A third optical sensor (F) is used in the printing mechanism assembly to detect the presence of paper and start the feeder motor when loading paper. This sensor also works in conjunction with a fourth optical sensor (A) situated in the paper chute to realign paper back to its "ready" position.

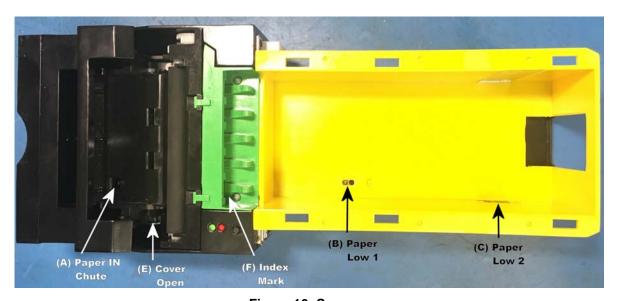


Figure 16: Sensors

Identifier	Function		
А	Paper in chute		
В	Paper low 1 (single sheet)		
С	Paper low 2 (3 height options)		
D	Printer closed (under bracket)		
E	Cover open		
F	Index (Top of form)		

Table 7: Bezel Interface



2.2 Communication Cables Pin-Out

2.2.1 Universal Communication interface

The table below describes the connection pin-out for the Universal Interface (14-pin "Molex" type)

Pin	Signal Name	Printer I/O	Host I/O	Printer Function
1	Reset	Input	Output	Resets Printer
2	PRT_AUX_RXD	Input	Output	Auxiliary Receive
3	VAUX	Input	Output	Auxiliary Power
4	PRT_AUX_TXD	Output	Input	Auxiliary Transmit
5	AUX_Ground (See note 1)	Signal / Frame	Signal / Frame	Signal / Frame Ground
		Ground	Ground	
6	24V	Power Input	n/a	Power Input
7	Signal / Frame Ground	Signal / Frame	Signal / Frame	Signal / Frame Ground
		Ground	Ground	
8	24V	Power Input	n/a	Power Input
9	Bezel_pwm (See note 2)	24V Output	n/a	Bezel Driver
10	Signal / Frame Ground	Signal / Frame	Signal/ Frame	Signal/ Frame Ground
		Ground	Ground	
11	PRT_RS232_RXD	Input	Output	Data Receive
12	PRT_RS232_TXD	Output	Input	Data Transmit
13	PRT_Status	Output	Input	Pinter Ready
14	PRT_RS232_RTS	Output	Input	Handshake

Note 1: Pin 5 is isolated from pin 7 & 10 unless ground jumper is present

Note 2: Bezel illumination control jumper must be present for bezel modulation to be present on pin 9

Table 8: 14 Pin RS232 Serial Interface

2.2.2 Illuminated bezel interface

The table below describes the connection pin-out for the front Bezel Connector (3-pin "Molex" type).

Pin	Signal	Printer I/O
1	Bezel PWM	Output
2	24VDC	Output
3	GND	GND

Table 9: Bezel Interface



2.3 Printing Problems

The table below can be used to determine the cause and resolution of the most common problems that may occur. If the information in this section does not correct the problem, contact a Nanoptix service representative.

Problem	Possible Causes	What to Do
Printer Does Not Function When Turned On	Printer not plugged in	Check that printer cables are properly connected at both ends Check that the host and power supply are getting power
	Tray not fully closed	Close the tray
	Flat cable incorrectly or not fully	Fully insert flat cable in the into
Denovion	inserted into receptacle	receptacle at both ends
Paper jam	Paper width out of specification	Test paper width for compliance
	Debris or partial ticket stuck in paper path	Open paper guide and detach roller, remove debris
	Paper's perforation burst strength out of spec	Test paper perforation for compliance
Noisy Feeder Motor (paper disengaged)	Printer is meant to be operated with paper engaged in the printing mechanism, failing to do so will cause gears to grind and slip, noise may result	Do not operate printer without any paper engaged in the printing mechanism Note: Never lubricate gears or any other part of the printer
Paper does not realign itself when a ticket is printed	Paper's alignment mark, (which is the black dot printed on the non-sensitive side of thermal paper) may be out of specification	The maximum reflectance of the alignment mark is 15% (infrared). Simply put, this means that the alignment mark's color should be an even/crisp black. If any white or gray is visible, it is an indication that the reflectance could be more than 15%
Line of print or section missing lengthwise on entire ticket	Paper's thermal coating inconsistent	Change the paper stack to make sure the thermal coating is not the source
	Thermal printing mechanism damaged	Contact customer service representative
Drint is light or anothy	Thermal print head is dirty	Clean print head by following recommended procedure (Section 6)
Print is light or spotty	Paper's thermal coating inconsistent	Change the paper stack to make sure the thermal coating is not the source

Table 10: Troubleshooting Printing Problems



2.3.1 Main Controller PCB Connector Layout

Α	J301	TPH groudning tab
В	N/A	Future
С	J401	Feeder motor
D	J500	Future
E	J600B	Index (Top Of Form)
F	J300A	Thermal print head
G	J800	Paper-in chute sensor & cover closed
Н	J701	Paper low – one sheet
I	J702	Paper low – 3 side options

Table 11: Connector Functions

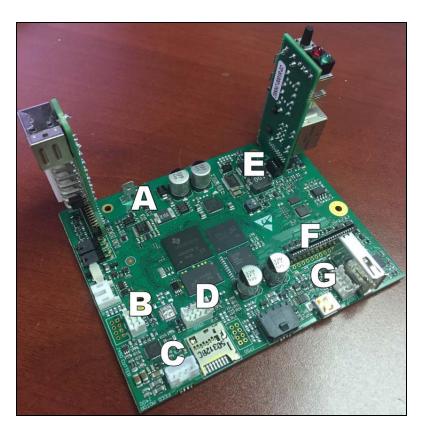




Figure 17: Connector Layout



3 Media and Supplies Guide

3.1 Thermal Paper Specifications

NOTE: Qualified thermal paper with the following specifications is required for proper operation.

Width	65 mm +/-1 (2.56 IN)
Length	156 mm +/- 1 (6.14 IN)
Thickness	4.5 +0.1 -0.3 mil
Brightness	89%
Smoothness	2000 sec Avg.
Perforation burst strength	1.3 +/- 0.4 LBS (0.59 +/- 0.18 Kg.
Alignment Mark (TOF)	Optical Density 1.10 min.

Table 12: Paper Specifications

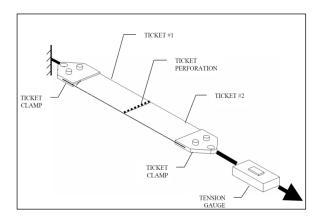


Figure 18: Perforation Test



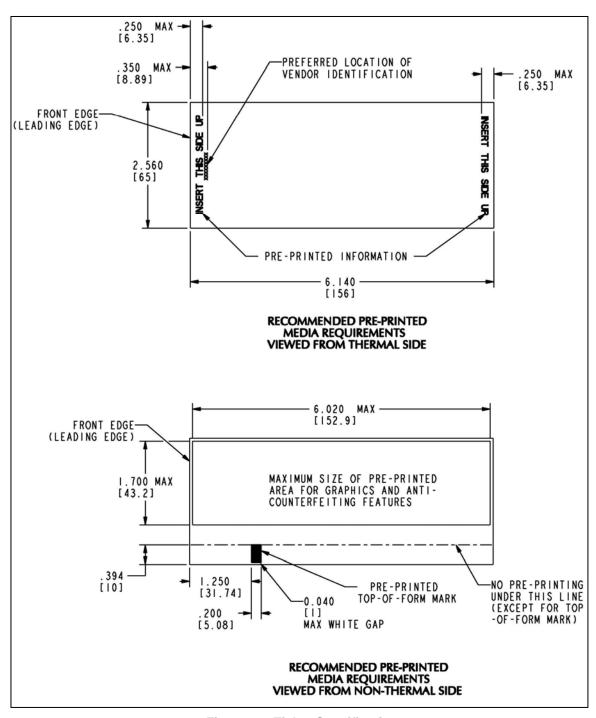


Figure 19: Ticket Specifications



3.2 Ordering Thermal Paper

The following paper grade produced by Appleton and Kanzaki Specialty Papers are recommended by Nanoptix. There are a number of paper converters qualified to supply this paper, provided they use the recommended grades listed in Table 13.

Paper qualification services are offered by Nanoptix for additional grades not listed below.

Manufacturer	Numbers	Nanoptix part no.	Paper Grade
Appleton Papers	Tel:920-991-8438	100505-3024 (200 stack) 100505-3025 (400 stack) 100505-3026 (600 stack) 100505-3027 (800 stack)	Royale 700-4.5
Kanzaki Specialty Papers (USA)	Tel:888-526-9254 Fax: 413-731- 8864	100505-3012 (200 stack) 100505-3013 (400 stack) 100505-3014 (600 stack) 100505-3015 (800 stack)	TO-381-N

Table 13: Ordering Thermal Paper

3.3 Ordering supplies & cables

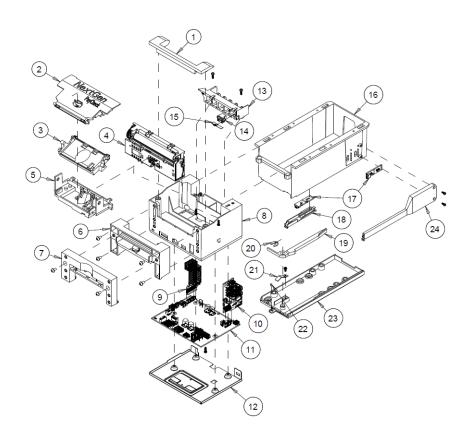
Contact your sales representative to order the communication cables listed in the table. The numbers are for reference only. Suppliers may use other numbers.

Part	Part Number
Power supply, 24 Vdc	213005-0012R
Power cord (North America)	102080-0000R
Power cord (Europe)	102080-0001R
RS232 communication cable (14-Pin "Molex" type to DB-9)	210036-0004R
Second RS232 port, In-Line Cable	210036-0003R
USB Cable 2M (A to B)	100390-0001R

Table 14: Ordering supplies



3.4 Parts List



ITEM#	DESCRIPTION	QTY
1	HANDLE	1
2	TOP CHUTE COVER	1
3	BOTTOM PAPER GUIDE	1
4	PRINT MECHANISM	1
5	BOTTOM CHUTE HOLDER	1
6	BASE WITH ANTI-JAM	1
7	FRONT ANTI-JAM MODULE	1
8	FRAME	1
9	POWER BOARD	1
10	PAPER FEED BOARD	1
11	MAIN BOARD	1
12	BOTTOM COVER	1
13	MECH MOUNT	1
14	TOF SENSOR HOLDER	1
15	TOP OF FORM BOARD	1
16	TRAY	1
17	PAPER LOW BOARD	2
18	PAPER LOW HOLDER	1
19	LATCH	1
20	RETAINING RING	1
21	LOCKING SPRING	1
22	MAGNET	1
23	BASE	1
24	SIDE PAPER LOW COVER	1

Figure 20: Part List



Mechanical Drawings

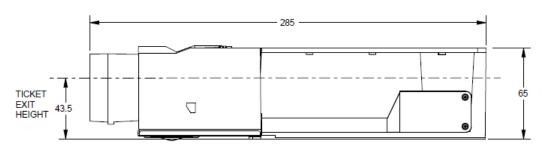


Figure 21: Mechanical Dimensions - Right

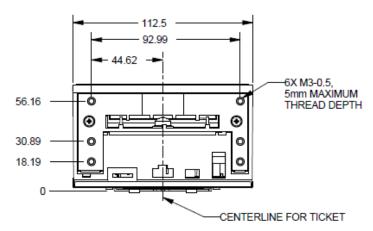


Figure 22: Mechanical Dimensions - Front

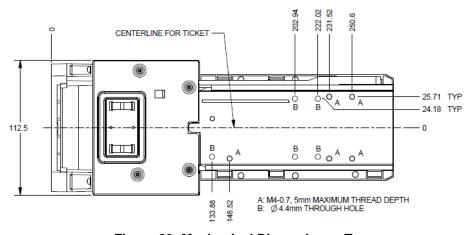


Figure 23: Mechanical Dimensions - Top



4 Spare parts replacement instructions



Use ESD protection (such as a wrist strap) anytime a PCB is exposed



Instruction A: Removal of printer from mounting bracket

- 1. Pull printer forward until resistance is felt, then move green lever all the way to the left
- 2. Pull printer further forward to separate from mounting bracket



Figure 24: printer mount

Instruction B: Removal of jam proof module

- 1. Remove 2 screws to remove the outer jam proof module
- 2. Remove 6 screws to remove the iner jam proof module





Figure 25: Jam Proof module



Instruction C: Removal of the base plate

1. Remove 4 screws then lift up to remove baseplate

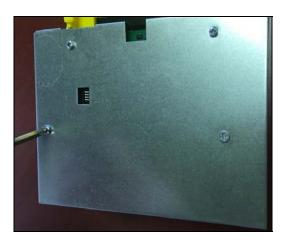


Figure 26: Base Plate

Instruction D: Removal of the circuit boards

- 1. Disconnect the 2 paper low harnesses
- 2. Lift board and disconnect the remaining harnesses
- 3. The 2 auxiliary boards are removed by lifting up



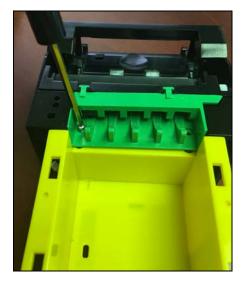


Figure 27: Circuit boards



Instruction E: Removal of ticket inlet & Index mark (TOF) sensor

- 1. Remove 2 mounting screws and lift ticket inlet
- 2. Remove sensor by pushing out the sensor holder



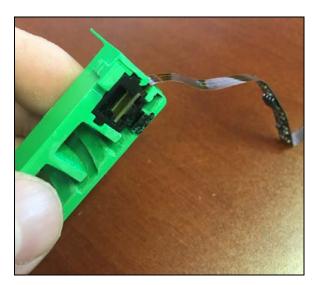


Figure 28: Ticket Inlet & Index sensor

Instruction F: Removal of ticket tray

1. Remove 2 mounting screws and lift ticket tray



Figure 29: Ticket Tray



Instruction G: Removal of front bar

1. Remove 2 mounting screws and lift bar



Figure 30: Front bar

Instruction H: Removal of printing mechnism assembly

1. Lift assembly up while guiding harnesses through their coresponding access holes

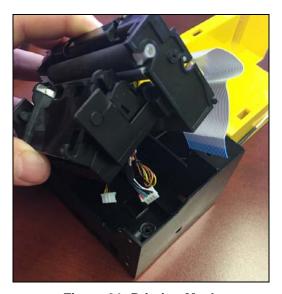


Figure 31: Printing Mech



Instruction I: Removal of paper guide assembly

1. Remove the mounting screw then slide the guide assembly up and away from printing mechanism

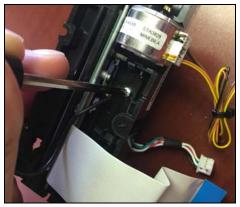


Figure 32: Paper guide

Instruction J: Removal of top paper guide from assembly

1. Push out on both lower paper guide tabs at the same time while slidding the top paper guide forward.



Figure 33: Top paper guide



Instruction K: Removal of chute sensor

1. Push front sensor mounting clip then lift sensor up.



Figure 34: Chute sensor

Instruction L: Removal of paper guide switch assembly

1. Remove mounting screw and lift up the assembly up



Figure 35: Guide switch



5 Printer Maintenance Instructions

Note: Under normal operating conditions, the minimum interval for cleaning the Nanoptix PayCheckTMNextGen printer is 3 months or 5 km of paper printed, which ever comes first.

1. Remove excess dust using a portable vacuum cleaner or wipe clean with a damp cloth

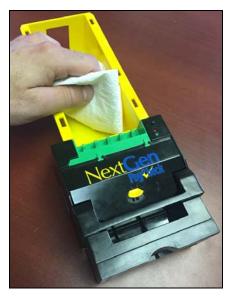


Figure 36: Remove excess dust

2. Remove top paper guide by pressing on yellow clip and lifting up. Then pull forward to unhinge.



Figure 37: Remove top paper guide



3. Remove roller by pressing down and rolling towards front of printer



Figure 38: Remove Roller

4. Clean the roller with a cotton swab and a mild soap solution.



Figure 39: Clean Roller

5. Clean paper guide sensor using cotton swab



Figure 40: Clean paper guide sensor using cotton swab



6. Clear dust off gears using compressed air



Figure 41: Clear dust off gears using compressed air

7. Clean the print line (black line on the print head) with a cotton swab and isopropyl alcohol.

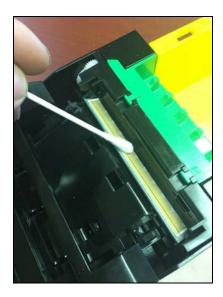


Figure 42: Clean Print Line



6 Service & Support

6.1 Returning printers back to Nanoptix for repairs (RMA)

- Send repair approval request to Nanoptix Inc. which should include:
 - Printer model #
 - Serial #
 - Brief problem description
- Ship defective products to Nanoptix Inc.
- Ensure that each package being sent is identified by the specified RMA number

<u>NOTE:</u> Make sure to place a blank ticket or a piece of paper between thermal print head and roller for shipping and storage.

United States of America

RMA # XXXXXX
Nanoptix Inc.
C/o Brunswick Brokers
48 Customs Loop
Houlton, ME, USA
04730

Canada and International

RMA # XXXXXX Nanoptix Inc. 699 Champlain St. Dieppe, NB, Canada E1A 1P6

NOTE: It is imperative to have every package clearly identified by an RMA number.

