

Product Specifications

«24V KIOSK Printer with simple presenter»

N P – K 3 0 5 3

N P – K 2 0 5 3

Revision 1.00 2011.03.09 1st edition

*Since this product is under development, specifications etc. described in this manual may change.

All specifications described are subject to change without prior notice.
Please contact us for double-checking if you find any descriptions unclear
or something which seems to be mistyped or mistranslated.

Nippon Primex Inc.

Head Office:

1-5-12 Unoki Ohta-ku Tokyo 146-8650 Japan

TEL :+81-3-3750-5817 FAX :+81-3-3750-4555

E-mail : overseas@primex.co.jp

URL : <http://www.primex.jp>

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PRECAUTION

Handling the product in a wrong way may decline its performance and also damage the product. Please read the notes below before handling the product. Since there are detailed precautions described other than this section, please read this product specifications carefully before using the product. Also, please sufficiently alert the user.

[FAILURE PRECAUTIONS]

Please comply with the following in order to use for many years to come and prevent troubles before happens.

STATIC-ELECTRICITY;

- Static discharge prevention or body grounding must be made for installation and removal of the product to prevent damage of heating element and IC etc. Connect it to the earth ground for ESD measures.

HANDLINGS;

- DO NOT apply excessive force to the input terminals.
- Use both hands when holding the product in order to prevent from dropping.
- Since it will cause damage of the heat elements, DO NOT scrabble or give impact to thermal head with sharp edge object or any hard materials.

INSTALLATION;

- This product is NOT protected against dust or dirt. If used in harsh environment like at dusty place, the thermal head may get damaged or paper feed may not run properly.
- When cooling the product with a fan, keep the air exhaust slit away from the printer's paper exit area so that dust or dirt may not get in the thermal head. It will be a cause for premature failure.
- This product is equipped with an infra-red reflection sensor. The product must be installed where there is NO direct sun light/infra-red light coming in, as otherwise, the sensor would not function properly.
- This product should NOT be installed where it could be exposed to static electricity easily, strong vibration, electromagnetic field, corrosive gas, rain, fog and direct sunlight.

MOVEMENT;

- Avoid printing with no paper loaded. It can damage thermal head and also shorten its life-time.
- Absolutely DO NOT manipulate platen release lever while printing and/or cutting movement. It may damage thermal head or cutter.
- DO NOT block the paper outlet while print movement. Also, DO NOT grab the paper while print movement.
- Although paper may slightly pass obliquely, there will be no problems in clamp and clamp release movement.

[SAFETY PRECAUTIONS]

Please comply with the following in order to use for many years to come and prevent troubles before happens.

- Make sure to turn OFF the power of the product when connecting or disconnecting the connector. Do not disconnect by pulling out the cable.
- This product is NOT protected from water or dew drop. DO NOT put water to the product nor handle it with wet hand because it may cause damage, heating, firing by short circuit.
- In order to prevent excessive current, please add an electrolytic capacitor and a fuse (refer to power supply specifications for details) to external 24V power line.
- Please DO NOT disassemble or modify the product.
- In case of disposal, please follow the regulations or rules of the local authorities.
- Use power supply in conformity with LPS standard.
- Turn OFF the power when not using for a long time.
- Regardless of during movement or stop of the cutter, DO NOT touch the cutter blade.

[QUALITY PRECAUTIONS]

Please comply with following in order to use without impairing performance for many years to come and prevent troubles before happens.

DATA;

- Movement when sending undefined control codes and commands to the product is not guaranteed.
- Since the print feed may jumble between the first 1 – 4 dot lines with such a print program that the print and paper feed gets interrupted temporarily in state of printer's data queuing from the host device, be cautious when graphics and the like are included in the print data.

PRINT MOVEMENT;

- The print may jumble at the first 1-2 dot right after the paper cut action.
- DO NOT touch the heating element part of the thermal head with a finger or hand etc., since it could degrade the print quality due to soil.
- In case of using print papers other than those specified in this document, print quality and lifetime of thermal head may not reach the level guaranteed by the manufacturer.
- DO NOT pull out the paper while the printer is in motion of printing, paper feeding or cutting.
- Please keep the following limitations in order to prevent failure due to over heat of the paper feed motor.

Usage environment temperature	Permissible continuous paper feed time	Drive ratio	Example of driving
25°C (normal temp)	under 6 min.	under 50%	Continuous 2 min. Stop 2 min.
50°C (max.)	under 3 min.	under 30%	Continuous 2 min. Stop 5 min.

- Continuous motor running for a long time generates heat and may affect the printer performance. Make sure to follow cutter tolerable frequency. When using beyond this limitation, cutter may break at the worst case.
- Set the paper straightened with no slack.
- A part of this product is made from coated steel plate. It does not affect the product's quality and performance at all even if the cut face of the steel plate get rusty after a long time period.

[OTHER PRECAUTIONS]

- This product is designed to use with general electronic devices. (Computer, PC, OA etc.) This product is not designed and guaranteed to use with devices that require extremely high quality and reliability, also to use with devices that those failures may directly endanger human body and life. (Atomic power control device, aerospace aircraft device, transportation device, traffic signal device, ignition control device, medical device and various safety devices: hereafter called as “Specific application”.) Users shall take full responsibility for using with such specific application.
- DO NOT conduct operation that is not suggested in this instruction. It may cause accident or failure.
- Data can not be long-term stored, permanently stored and saved since it is basically evanescent. Nippon Primex Inc is not responsible for any damages of data deletion or lost income due to breakdown, repair or inspection.
- When selecting RTS/CTS in serial flow control, make sure to connect RTS/CTS signal to the flow control signal of the host side, otherwise flow control will not function and may cause garble character or printing disarray.
- The coverage of warranty is limited within the product itself, Nippon Primex Inc is NOT responsible for anything induced by the defect of the product and DO NOT pay for any compensation that may occur.

Table of Contents

1. Overview	1
1.1 Overview	1
1.2 Features	2
1.3 Configurations	3
1.4 Option Parts	3
2. Specifications	4
2.1 Basic Specifications	4
2.2 Paper Specifications	6
2.3 Print Area	8
2.4 Cutter Specifications	9
2.5 Paper Sensor	10
2.6 Power Specifications	11
2.6 Power Specifications	11
2.7 Reliability Specifications	12
2.8 Environment Specifications	13
3. Configurations	16
3.1 Interface [USB(V2.0 FULL SPEED)]	16
3.2 Interface [SERIAL (RS-232C compliance)]	17
3.3 Connector Signal Details	18
3.3 Connector Signal Details	18
4. Functions	19
4.1 Function Setting	19
4.2 Error Handling	24
4.3 Buffer Full Print	25
4.4 Drive mode Selection	25
4.5 Print Selection of Full size / Half size	25
4.6 Operation Panel	26
4.7 How to set paper roll	27
4.8 How to remove the remained and jammed paper	28
4.9 Cleaning Method	29
4.10 Precautions upon installation	30
4.11 Frame Ground	31

Separate reference document (Please refer to document below for command and code page)

• Command reference [NP-K3053/NP-K2053] (D-F10072)

*The following code pages are described besides command in the command reference.

Domestic Character Code Table, Overseas Character Code Table, Code Page 858,
International Character Code Table, Code Page 1250, Code Page 1251, Code Page 1252,
Code Page 1254

• Kanji Code Table [JIS C 6226·1983] (D-F10068)

1. Overview

1.1 Overview

Basic model of this printer is categorized as follows.

NP- K3053D
(1) (2)

- 0 0 0 - *
(3)

(1) Paper width (Factory setting)

Standard

3 : 3 inch (80mm)

2 : 2 inch (58mm)

(2) Interface (Factory setting)

Standard

D : Dual Interface (SERIAL-RS232C and USB-V2.0 FULL SPEED) – select use

Conceivable specifications for production

U : USB (V2.0 FULL SPEED)

(3) OEM (Complies with separate specifications manual.)

1.2 Features

This printer is a module printer equips with our own printer mechanism and simple presenter as a standard accessory.

Since it only requires power supply (DC24V) and data supply for built-in to each device, it enables freer built-in by the user side.

- 1) Simple presenter is included as standard accessory and prevents jamming when receipt issue.
- 2) Super-compact, light weight and especially reduced low height design enable freer built-in to various devices.
 - Extremely low height (below 90mm including paper roll)
 - Less projection of connector (shallow depth)
 - Extremely light weight due to adoption of plastic made frame.
- 3) High Speed Printing & High Quality Printing
- 4) Easy paper loading
 - Adoption of drop-in type paper holder.
 - Designed paper insertion slit to the upper part.
 - Auto loading function.
- 5) Interface : SERIAL and USB
 - If the printer detects VBUS signal by connecting USB cable, interface of the printer will automatically switches to USB mode.
- 6) Adaptation to various types of barcodes
- 7) Adaptation to various applications.
- 8) Paper near-end detection.
- 9) Drivers for various OS.
Windows XP / Vista / 7 / CE5.0 / CE6.0 Linux (Sample)
- 10) Easy to re-write firmware^{*NOTE1} due to Flash Memory and 3 patterns of registration available with NV bit image.
- 11) Option parts are separately available.^{*NOTE2}

*NOTE1: Notation of [F/W] in the sentence hereafter indicates [Firmware]

*NOTE2: Please refer to "1.4 Option Parts"

1.3 Configurations

1) NP-K3053D-000 (standard)

Component parts of this product are as follows;

No	Name	Specifications	Q'ty	NP-K3053D-000
1	NP-K3053D-000	3 inch with presenter I/F : SERIAL, USB	1	○

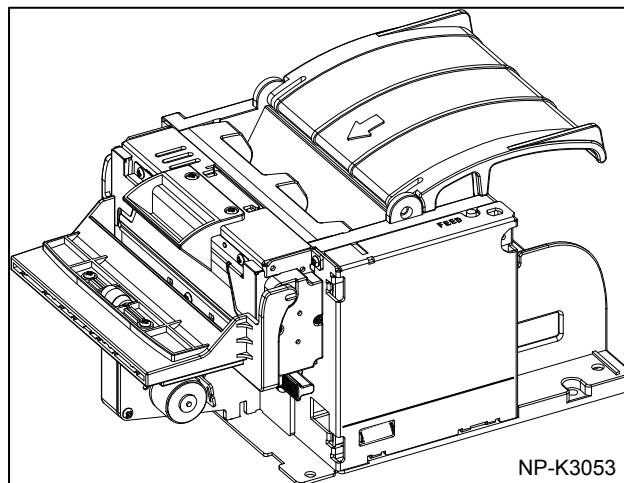
*No attachment (No sample paper roll as well.)

2) NP-K2053D-000 (standard)

Component parts of this product are as follows;

No	Name	Specifications	Q'ty	NP-K2053D-000
1	NP-K2053D-000	2 inch with presenter I/F : SERIAL, USB	1	○

*No attachment (No sample paper roll as well.)



1.4 Option Parts

There are option parts such as below for this product.

Since there are condition and restriction etc to use the option part, please consider upon reading each product specifications.

1) Power Supply PS8-*2

Power supply adapter is available.

Please consider upon reading product specification D-F10058.

2. Specifications

2.1 Basic Specifications

No	Specifications	NP-K3053	NP-K2053	
1	Print Head	1: Print Method		
		Line thermal dot		
		2: Total dots	576 dots	432 dots
		3: Dot density	8dot/mm	
2	Printing	4: Print width (MAX)		
		72mm	54mm	
		1:Print speed (MAX) ^{*Note1}		
		MAX.150mm/sec		
		Conditions		
		Head temperature at 35°C or more, optimized drive print ratio below 50% *except communication time		
		2:Max. print digit		
Font A (12×24)	48 digit	36 digit		
Font B (9×17)	64 digit	48 digit		
Kanji (24×24)	24 digit	18 digit		
3	Character	3: Paper feed pitch		
		0.125mm		
		1:Character size		
		Font A (12×24)	1.50×3.00mm	
		Font B (9×17)	1.13×2.13mm	
		Kanji (24×24)	3.00×3.00mm	
		2:Characters		
		Japanese	JIS C 6226·1983 (Full size) Katakana character set (Half size) Extended graphic character set (Half size) Code Page 858 (Half size) International character set (Half size)	
		Polish	Code Page 1250 (Half size)	
		Russian	Code Page 1251 (Half size)	
		Scandinavian	Code Page 1252 (Half size)	
		Turkish	Code Page 1254 (Half size)	
		3:Character Modifications		
Double width				
Double Height				
Quadruple				
Bold print				
Double strike				
Inverted				
90°clock-wise rotation				
Underlined				
4:Line feed Q'ty (Default)		4.25mm (1/6 inch)		

*NOTE1: Print speed fluctuates depending on the condition.

No	Specifications	NP-K3053	NP-K2053
4	Print mode	Line (ANK) mode, Barcode mode Bit image mode	
5	Barcode Specs.	1:1D Symbology	UPC-A UPC-E JAN-13(EAN-13) JAN-8(EAN-8) CODE39 ITF CODABAR CODE128
		2:2D Symbology	QR code model 2
6	Interface	1:SERIAL (D type)	RS232C compliance
		2:USB (D or U type)	V2.0 FULL SPEED compliance
7	Autocutter	1:Cut Mode	Full cut
8	Presenter	1:Deliverable paper length	60mm ~ 200mm ^{*NOTE2}
		2:Delivery speed	200mm/sec
9	Receive buffer	Approx. 15K byte	
10	Alarm display	ALARM LED	
11	Operation switch	FEED Switch RESET Switch	
12	Dimensions	*without paper roll	111.1 (W) × 167.7 (D) × 88.6 (H)mm
13	Weight	*without paper roll	Approx. 480g
14	Mounting ^{*NOTE3}	Horizontal Position	
15	Package	1:Individual carton size	Approx.210(W)×175(D) × 150(H) mm
		2:Individual carton weight	Approx. 690 g
		3:Master carton size (includes 12 pcs)	Approx.545(W)×435(D) ×325(H) mm
		4:Master carton weight (includes 12 pcs)	Approx. 9.3 kg

^{*NOTE2}: Since it will be hard to remove the paper roll, please beware paper length not to be below 60mm.

^{*NOTE3}: Please make sure to use this printer installed horizontally.

2.2 Paper Specifications

1) Paper width and thickness

	NP-K3053	NP-K2053
Paper width	80 ⁰⁻¹ mm	58 ⁰⁻¹ mm
Paper thickness	65 ~ 75μm	

- Please use the same shaft center width as the paper width.

2) Paper Shape

- Paper should be roll shape.

OD (Max.)	Axis Core ID	Axis Core OD
OD80mm	ID12.0mm	OD18.0mm
		OD22.0mm

[Precautions for paper roll]

- Please use thermal paper.
- Please do not stick end of paper with glue and scotch tape.
- The core of paper roll should not be deformed.
- The core should not be stuck out over the side of the paper roll.
- Please do not use paper that were stored under condition of high temp and humidity.
- Paper roll is not loosened.
- Printing surface shall be outer surface. Involute paper is not applicable.
- Sufficiently confirm when using preprinted paper. Especially, beware of the print side surface because there is a paper sensor equipped.
- Please do not use long-term stored paper roll because it may not perform satisfactory print quality.

3) Recommended Thermal Paper

Base Paper №	Paper Thickness	Manufacturer
PD160R	0.075mm	OJI Paper Co.
PD150R	0.075mm	OJI Paper Co.
TF50KS-E2D	0.065mm	NIHON Paper Co.

[CAUTION]

- Since print quality may decrease depending on temperature and humidity, determine print density setting upon confirmation of print quality under use environment.
Enables to set by [Print Density Setting] « GS ~ n » command.
- Printing at high print ratio under low temperature or high humidity environment causes the paper to be tainted or makes dew drops due to vapor occurred from the roll paper. Beware water not to drop to the thermal head. It may cause galvanic corrosion of thermal head. In case of dew drop, turn OFF and wait until the condensation disappears.
- Select thermal paper which has a low level of Na⁺ ion, K⁺ ion, Cl⁻ ion.
When using non-recommend type of paper, it should be well evaluated in reliability.

4)Paper Near End Setting

How to set;

Position of paper near end sensor is fixed and can not be removed.

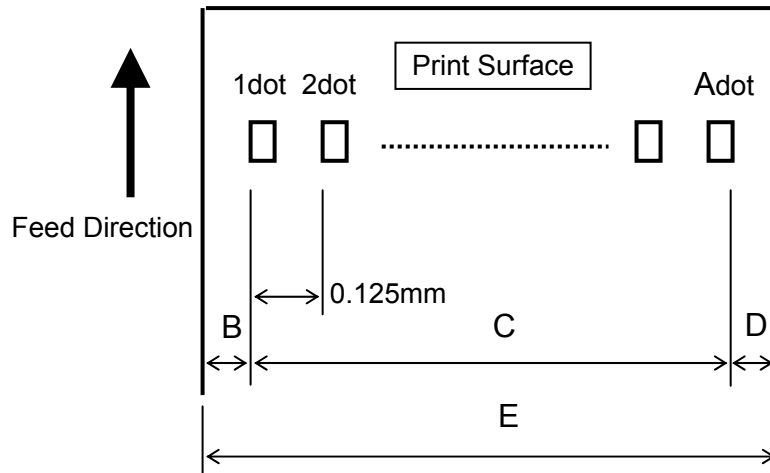
Following settings are available by “Memory Switch Setting”. Make sure to confirm core outer diameter of use paper roll.

Axis Core OD	Memory Switch Setting	NE Detection Value	Factory Setting
OD18mm	MS2-6	OFF	○
OD22mm		ON	

[CAUTION]

- Refer to “4.1 Function Setting” for Memory Switch setting method.
- Since NE detection outer diameter value changes depending on paper type and thickness etc., handle as reference value.
- If you select 22mm outer diameter of Near End detection(MS2-5:OFF) and activate under any of the following conditions, it alerts Near End at 3-4mm larger diameter than 22mm prefixed value.
 - (1) If a smaller roll diameter than approx.26mm is newly loaded.
 - (2)If power turned off and returned as remaining roll diameter is lower than approx.26mm..

2.3 Print Area



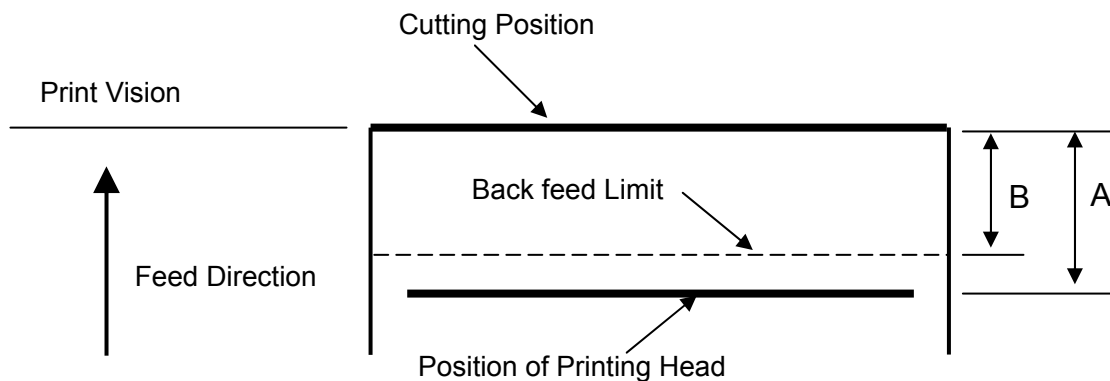
1) Name of Symbols

Symbol	Name
A	The number of dots for printing
B	Left Margin
C	Print Area
D	Right Margin
E	Paper Width

2) Relations between Paper Width and Print Area

Model	A(dot)	B(± 1 mm)	C(± 0.2 mm)	D(± 1 mm)	E($^0_{-1}$ mm)
NP-K3053	576	4	72	4	80
NP-K2053	432	2	54	2	58

2.4 Cutter Specifications



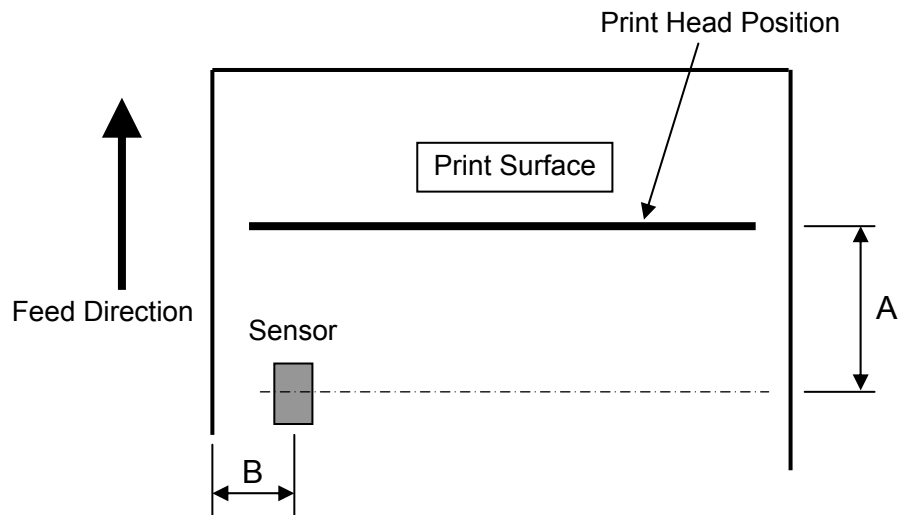
Symbol	Descriptions	Measure	
		NP-K3053	NP-K2053
A	Distance from print head to cut position	7.5±1mm	
B	Distance from back feed limit to cut position	4.5mm	

- (1) Cutting Method : Slide System
- (2) Cutting Mode : Full Cut
- (3) Allowance of Cutting Frequency : 20 cuts/minute
- (4) Paper Thickness : Refer to [2.2 Paper Specifications]

[CAUTION]

- Feed paper for more than 1mm (8 dot line) when printing after cutting operation in order to prevent crush of printing line head.
- Since there is automatic paper feed of approx. 2mm for paper jam protection after paper cut, the above cutting margin of "B" will be 9.5±1mm.
- Please do not operate such as narrow strip occur by cut. It will cause paper jam.

2.5 Paper Sensor



1) Name of Symbols

Symbol	Description
A	Distance from printer head to sensor position
B	Sensor position

2) Sensor Position

	A($\pm 1\text{mm}$)	B($\pm 0.5\text{mm}$)
NP-K3053	7.5	4.0
NP-K2053		3.0

2.6 Power Specifications

1) Power Input Connector

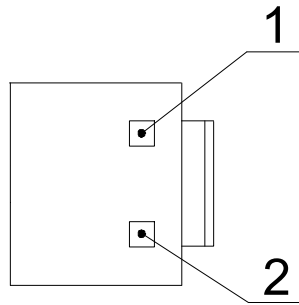
2-pin connector CN1

Printer side : S2P-VH (JST) or equivalent.

Host side : VHR-2N (JST) or equivalent.

PIN №	Signal Name	INPUT/OUTPUT	Function
1	VH	INPUT	DC+24V
2	GND	-	GND

Connector View (from mating surface)



2) Power Supply Voltage: DC24V±5%

3) Consumption Current

	Consumption Current (reference)	
	NP-K3053	NP-K2053
Standby	Approx. 50mA(typ)	Approx. 50mA(typ)
Print Ratio 25%	MAX. approx. 3A	MAX. approx. 3A
Print Ratio 100%	MAX. approx. 9.5A	MAX. approx. 9.5A

Condition : Simultaneous current-carrying dot numbers – 288dots.

[CAUTION]

- Since the printer may reach to degradation and breakage at once when power voltage exceeds absolute maximum rating even for a moment, DO NOT exceed absolute maximum rating under anytime of conditions.
- The current may be big at the peak time, depending on the power voltage and printing contents, power supply with enough capacity is required to secure a good print quality. Also, make sure to connect all of the wiring for power supply relations. Please have enough Attention to allowable current of wire material.
- Although current capacity of thermal head itself is [10.2A], current capacity of connector cable is not included to this, determine number of dots applied for simultaneous current-carrying within the current capacity.
- If power supply cable is excessively long, the operation may become unstable. Cable should be made as short as possible. If not possible, connect cables near the printer and place an electrolysis condenser of approx. 2200μ. Rating voltage is more than 32V.
- Make sure to set element for excessive current protection and appropriate fuse to the power line.
- Make sure to use power supply complied with LPS standard.

2.7 Reliability Specifications

1) Life time

(1) Presenter

Running distance : 100km
Number of prints : 0.5 million sheets (when receipt length of 200mm)

(2) Thermal Head

Anti-pulse Characteristics : 100 million pulse
Anti-abrasion characteristic : 100km

(3) Cutter Life : 0.8 million cut

(4) Life Definition

- Entering point of abrasion failure period.
- Condition to satisfy life is as follows;
 - Average Print Ratio : 12.5%
 - Medium (paper) : Refer to "2.2 Paper Specification section (2)"
 - Print Density : 100%
 - Environmental temperature/humidity : 20°C, 60%

*In case of using paper other than recommended paper, since life time will differ depending on paper quality, width and thickness, confirm with paper in actual use at the user's side.

2.8 Environment Specifications

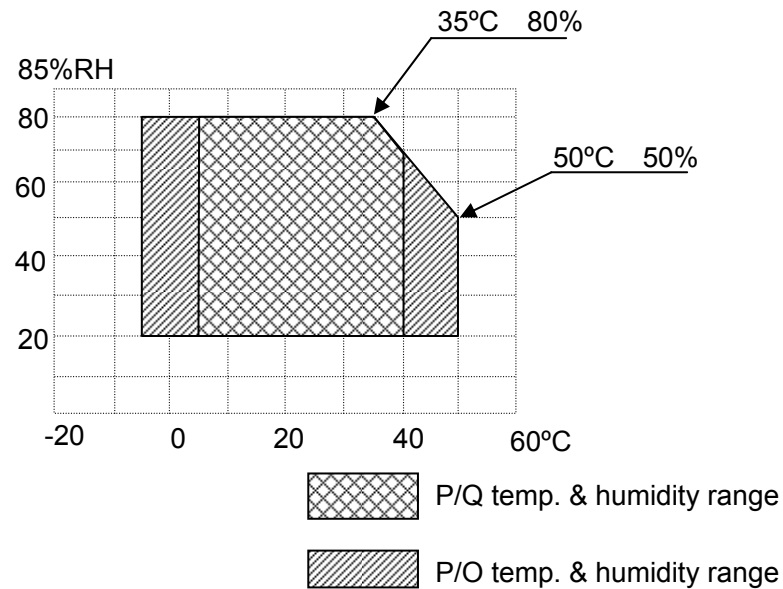
1) Operating Environment

Temperature : -5~ 50 °C

Humidity : 20 ~ 80%RH

Except, 35°C (no condensation) shall be worst value for 80%RH

*Warrant scope of Print Quality (P/Q) & Print Operable (P/O) range



2) Storage Environment (except for papers)

Temperature : -20 ~ 70°C

Humidity : 10 ~ 90%RH

Except, no condensation.

High temp and humidity: 40°C90%RH (no condensation) shall be the worst value.

2.9 Regulations

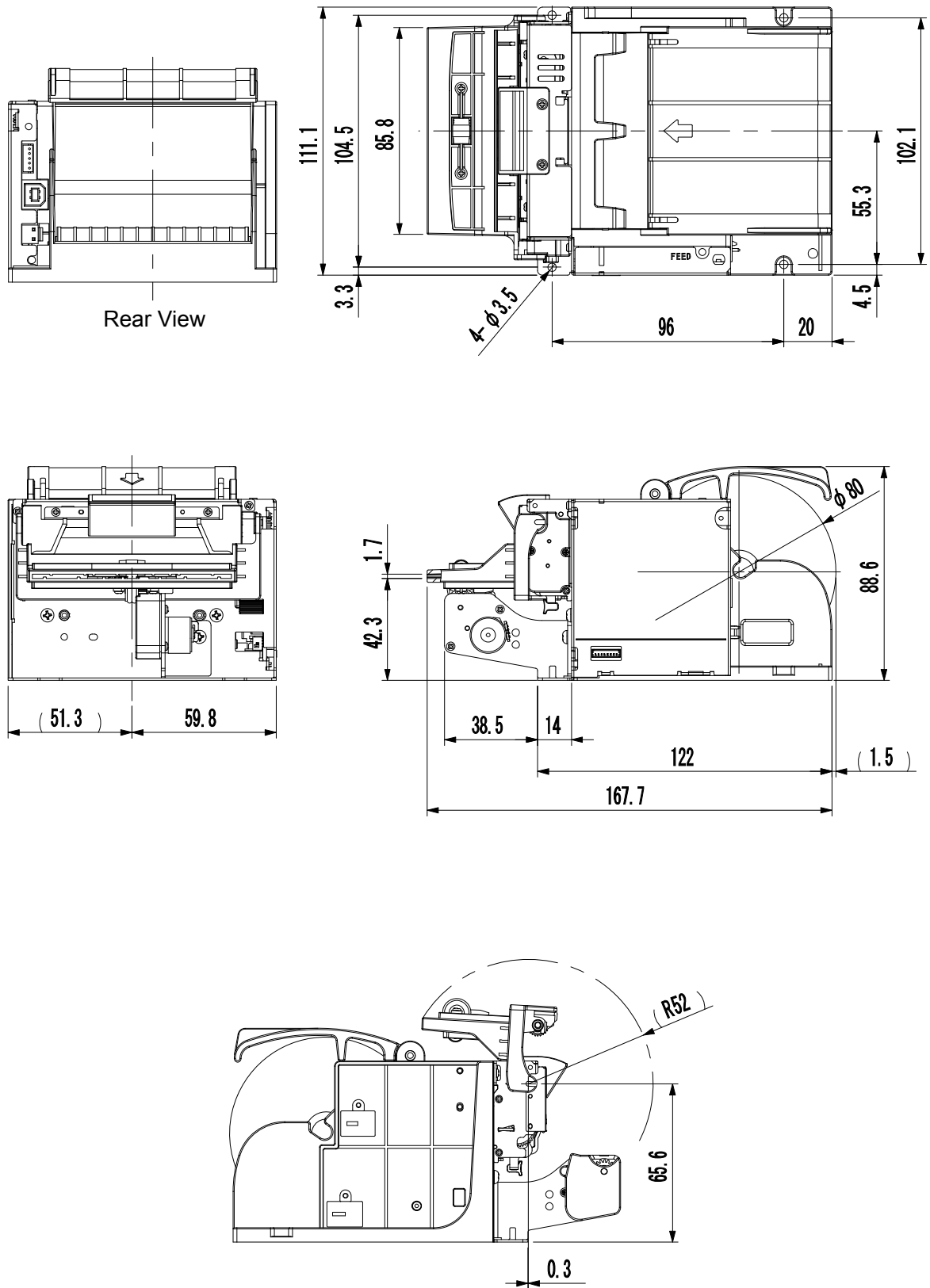
CE marking (Uncertified: plan to acquire)

VCCI : Class A(Uncertified: plan to acquire)

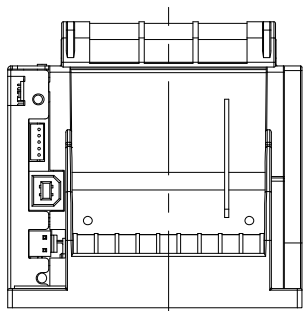
FCC : Class A(Uncertified: plan to acquire)

2.10 Extrenal Drawing

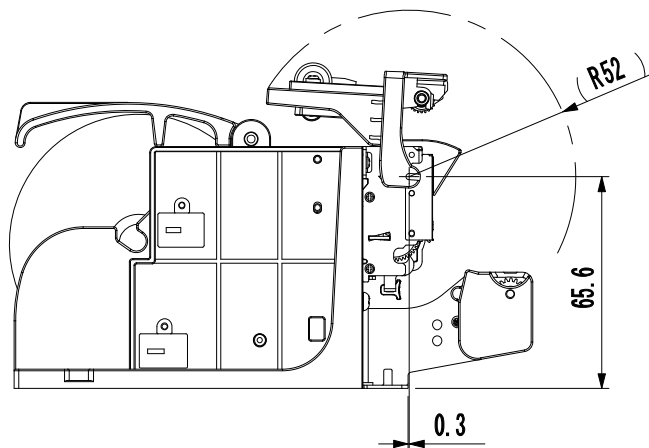
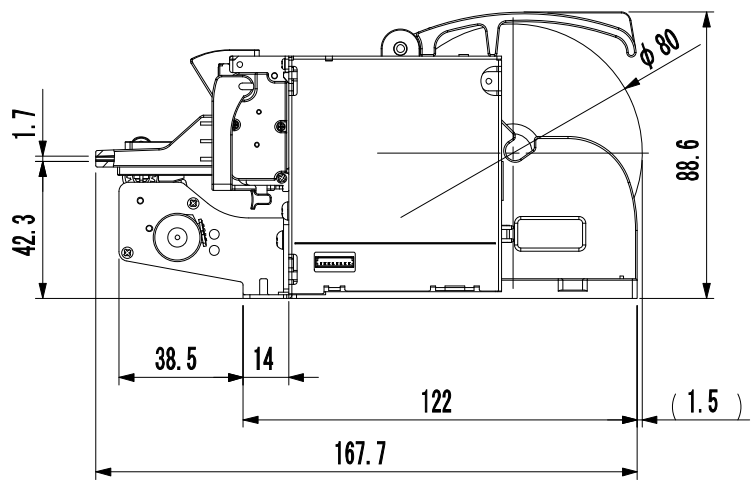
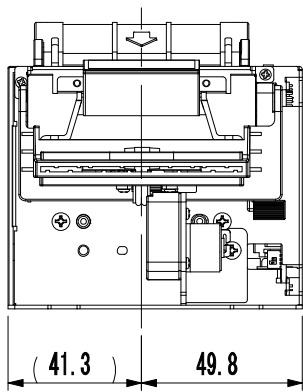
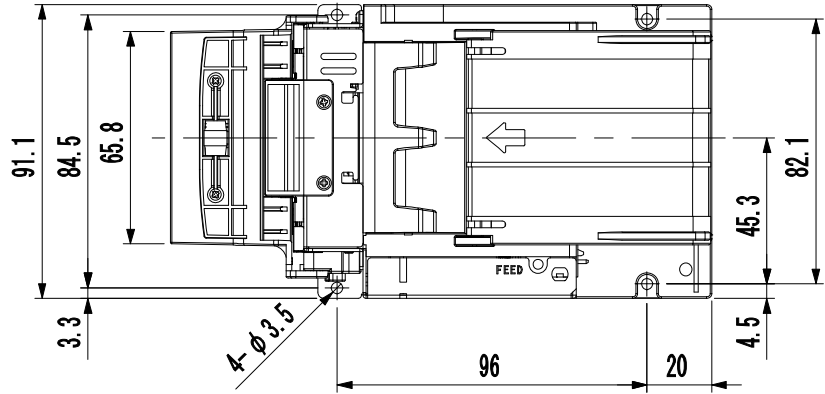
1) NP – K3053



2)NP – K2053



Rear View



3. Configurations

3.1 Interface [USB(V2.0 FULL SPEED)]

- 1) Version : V2.0 FULL SPEED (12Mbps)
- 2) Port : Upstream port (B jack)
- 3) Power Supply : Self Powered
- 4) RESET Function : Automatic RESET when USB cable inserted and removed.

*When using with USB interface, make sure to use driver^{*NOTE1} we provide.

When direct transfer, make sure to monitor receive buffer remaining amount^{*NOTE2} and DO NOT transmit data exceeding this amount.

^{*NOTE1}: Please use either one of the following drivers or newer revision
(Recommended driver is NII EX driver).

Nii Ex Driver Ver.1.0

NiiPrinter_DS2.0

^{*NOTE2}: Receive buffer remaining amount's auto-reply format (when MS2-5: OFF)

[FF]h + [01]h + [00]h + [00]h + [00]h + n * [00 ≤ n ≤ 0F]h

n = Receive buffer remaining amount (0 ~ 15K byte)

3.2 Interface [SERIAL (RS-232C compliance)]

- (1) Synchronization : Asynchronous
- (2) Transmission Speed : 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200bps
(user selection)
- (3) 1 word consists of
 - Start bit : 1bit
 - Data bit : 7 or 8 bit (user selection)
 - Parity bit : odd, even or no parity (user selection)
 - Stop bit : more than 1 bit
- (4) Signal Polarity
 - RS-232C
 - Mark = Logic "1" (-3V -- -12V)
 - Space = Logic "0" (+3V -- +12V)
- (5) Receive Data (RXD signal)
 - Mark = 1
 - Space = 0
- (6) Transmit Data (TXD signal)
 - Mark = 1
 - Space = 0

XON/XOFF when controlled

- «DC1» [11]h code, XON : Possible to receive data ^{*NOTE1}
- «DC3» [13]h code, XOFF : Impossible to receive data ^{*NOTE2}

- (7) Receive-Control (RTS signal)
 - Mark : Impossible to receive data ^{*NOTE3}
 - Space : Possible to receive data ^{*NOTE1}
- (8) Transmit-Permission (CTS signal)
 - Mark : Impossible to transfer data
 - Space : Possible to transfer data.

*NOTE1: Occur after power ON or after self diagnostic print also after software reset or when releasing receiving buffer full and firmware rewrite.

*NOTE2: Occur when receiving buffer full or after receiving memory switch setting command also after receiving software reset command and firmware rewrite.

*NOTE3: Occur when power OFF or during self diagnostic print and software reset or when receiving buffer full or after receiving memory switch setting command and firmware rewrite.

3.3 Connector Signal Details

1) CN1: Power Input Connector

*Refer to [2.6 Power Specifications]

2) CN3: USB Data Signal Input Connector

Printer side : B jack DUSB-BRA42-T11(DDK) or equivalent

Host side : B plug or equivalent

Pin №	Signal	INPUT/OUTPUT	Function	Remark
1	VBUS	INPUT	Power line	Non twist power line
2	D-	INPUT/OUTPUT	Data line	Twist pair signal line
3	D+	INPUT/OUTPUT	Data line	Twist pair signal line
4	GND	–	Power line	Non twist power line
Shell	Shield	–		

*Use USB cable that conforms to the standard (FULL SPEED)

*Performance with a non-standard USB cable is not guaranteed.

3) CN2: SERIAL Data Signal Input Connector

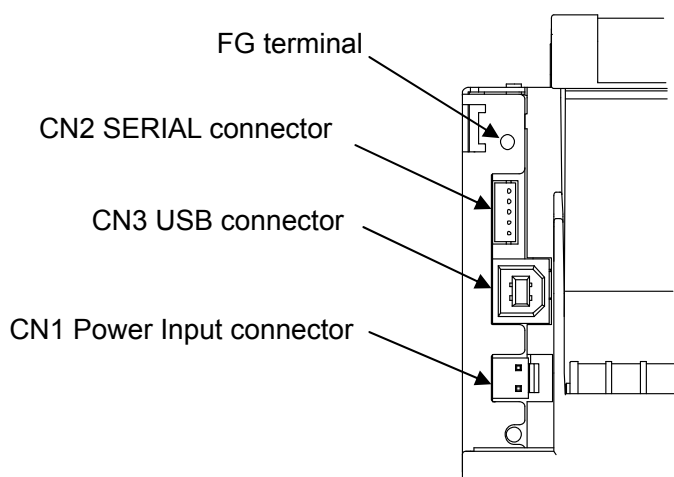
Printer side : B5B-PHK-S(JST) or equivalent

Host side : PHR-5 (JST) or equivalent

Pin №	Signal	INPUT/OUTPUT	Function	Remark
1	RXD	INPUT	Serial receiving data	
2	TXD	OUTPUT	Serial transmitting data	
3	RTS	OUTPUT	Receiving permission signal	
4	CTS	INPUT	Transmit permission signal	
5	GND	–	Ground for signal	

*Use shield cable for SERIAL cable and make sure to connect shield edge of printer side to FG terminal attached in below figure of the printer.

*In case of actual use, use after sufficient confirmation by the user's side.



4. Functions

4.1 Function Setting

4.1.1 Switch Setting

1) Memory Switch MS1

	Function	O N	OFF	Factory Setting	
				NP-K3053D NP-K2053D	NP-K3053U NP-K2053U
MS1-1	Communication Setting	Refer to table 1		OFF	OFF
MS1-2				OFF	OFF
MS1-3				OFF	OFF
MS1-4	SERIAL transmit speed	Refer to table2		O N	O N
MS1-5				OFF	OFF
MS1-6				O N	O N
MS1-7	SERIAL flow control ^{NOTE1}	XON/XOFF	RTS/CTS	OFF	OFF
MS1-8	Auto cutter control	INVALID	VALID	OFF	OFF

Table 1: Communication Setting

	Bit length	Parity setting	MS1-1	MS1-2	MS1-3	Factory Setting
SERIAL	8bit	NIL	OFF	OFF	OFF	○
			O N	OFF	OFF	-
		ODD	OFF	O N	OFF	-
		EVEN	O N	O N	OFF	-
	7bit	NIL	OFF	OFF	O N	-
		ODD	O N	OFF	O N	-
EVEN		OFF	O N	O N	-	
Reserved	-	-	O N	O N	O N	-

*Do not set as MS1-1=MS1-2=MS1-3=ON.

*About interface;

Even when setting as SERIAL, if the printer detects VBUS signal by connecting USB cable, interface of the printer will automatically switch to USB mode.

Even if USB cable is disconnected, interface of the printer will not automatically switch to serial mode.

Please turn the power OFF/ON when switching to serial mode.

SERIAL is not available in U-type.

Table 2: SERIAL transmission speed

SERIAL transmit speed	MS1-4	MS1-5	MS1-6	Factory Setting
115200	OFF	OFF	OFF	-
57600	O N	OFF	OFF	-
38400	OFF	O N	OFF	-
19200	O N	O N	OFF	-
14400	OFF	OFF	O N	-
9600	O N	OFF	O N	○
4800	OFF	O N	O N	-
2400	O N	O N	O N	-

NOTE1)

*Flow control when XON/OFF control

- (i) All of the statuses when XON/OFF control will be transmitted by ASCII conversion data in of 0xFF 0xFE 0x00.
- (ii) ASCII conversion method is;
 Higher 4 bits = 0x30 + higher-order 4 bits > 4
 Lower 4 bits = 0x30 + lower 4 bits
 thus, converts to the below mentioned values.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	10	20	30	40	50	60	70	80	90	:0	;0	<0	=0	>0	?0
1	01	11	21	31	41	51	61	71	81	91	:1	;1	<1	=1	>1	?1
2	02	12	22	32	42	52	62	72	82	92	:2	;2	<2	=2	>2	?2
3	03	13	23	33	43	53	63	73	83	93	:3	;3	<3	=3	>3	?3
4	04	14	24	34	44	54	64	74	84	94	:4	;4	<4	=4	>4	?4
5	05	15	25	35	45	55	65	75	85	95	:5	;5	<5	=5	>5	?5
6	06	16	26	36	46	56	66	76	86	96	:6	;6	<6	=6	>6	?6
7	07	17	27	37	47	57	67	77	87	97	:7	;7	<7	=7	>7	?7
8	08	18	28	38	48	58	68	78	88	98	:8	;8	<8	=8	>8	?8
9	09	19	29	39	49	59	69	79	89	99	:9	;9	<9	=9	>9	?9
A	0:	1:	2:	3:	4:	5:	6:	7:	8:	9:	::	::	<:	=:	>:	?:
B	0;	1;	2;	3;	4;	5;	6;	7;	8;	9;	::	::	<;	=;	>;	?;
C	0<	1<	2<	3<	4<	5<	6<	7<	8<	9<	:<	:<	<<	=<	><	?<
D	0=	1=	2=	3=	4=	5=	6=	7=	8=	9=	:=	:=	<=	=	>=	?=
E	0>	1>	2>	3>	4>	5>	6>	7>	8>	9>	:>	:>	<>	=>	>>	?>
F	0?	1?	2?	3?	4?	5?	6?	7?	8?	9?	:?	:?	<?	=?	>?	??

*Inside the table indicates character strings.

- (iii) Contents assigned in apply to all of the data including standard status, status header (0xFF).
- (iv) Printer ignores ESC s FEh command.
- (v) Do not issue ESC s FEh command from driver and tool.

2)Memory Switch MS2

	Function	O N	OFF	Factory Setting	
				NP-K3053D NP-K2053D	NP-K3053U NP-K2053U
MS2-1	Japanese Kanji code	Shift JIS	JIS	OFF	OFF
MS2-2	Reserved	–	–	OFF	OFF
MS2-3	Reserved	–	–	OFF	OFF
MS2-4	Paper NE detection	IN VALID	VALID	OFF	OFF
MS2-5	Receive buffer remaining size auto-reply (USB) ^{*NOTE1}	INVALID	VALID	OFF	OFF
MS2-6	Paper NE detection outer diameter value ^{*NOTE2}	OD26mm	OD22mm	OFF	OFF
MS2-7	Reserved	–	–	OFF	OFF
MS2-8	Reserved	–	–	OFF	OFF

*Make sure to turn OFF MS2-2, MS2-3, MS2-7, MS2-8.

^{*NOTE1}: In case of setting MS2-5:ON, beware since print failure such as garble character etc. may occur when transmitting large volumes of data at one time.
VALID only when USB interface.

^{*NOTE2}: In case of setting MS2-6:OFF, the near end happens after executing paper feed of approx. 2.3m from a position where the near end sensor detects.
Except, if the near end is detected right after the power ON or right after loading new paper roll after the near end happens, the near end is effective at that time.
This value is rough indication. Since the detective value fluctuates depending on the condition of the paper, please treat as reference value.

4.1.2 Memory Switch setting by manual

When setting (or changing) memory switch configuration manually, follow the instructions below under printable status.

(1) Shift operation to setting mode

- (i) Set paper (Platen arm CLOSE, Power OFF)
- (ii) FEED switch : ON (Hold switch down until (iii) (iv) finish.)
- (iii) Turn ON power (Confirm printer startup)
- (iv) Platen arm OPEN → CLOSE
- (v) FEED switch : OFF (Release hold.)
- (vi) Enters into setting mode and comments with “** MEMORY SW SETTING MODE **” , and for multiple lines will be printed and ALARM LED (red) lights OFF.

(2) How to set each switch

Sequentially set [ON][OFF] from MS1-1 to MS2-8 by confirming print under “Setting Mode” status.

Setting [ON]	Long press FEED switch (more than 1sec)
Setting [OFF]	Short press FEED switch (less than 1sec)

Setting finishes after repeating 16 times of the above operations. Prints out list of set contents right before automatically entering software reset movement.

*In case of stopping set procedure in the middle, OPEN platen arm and press FEED switch 1 time, then CLOSE the front cover to complete setting.
(Setting already completed at this moment becomes effective, while all MS remainders are automatically set as OFF.)

4.1.3 Memory Switch setting by on-line command

When setting (or changing) memory switch configuration in on-line command, make sure that paper is loaded and the printer is ready for on-line print, and set by the following commands from the host.

Once the printer normally receives set commands, it activates software reset after printing out setting contents and new settings become effective.

1) Setting command

[Memory Switch Setting and Printing] «GS M n d1 d2»

This command is to set the memory switches MS1/MS2 and also to print out the contents.

*Refer to “4.1.1 Memory Switch” for each MS content and [CAUTION].

*Refer to “5.3 ** [Memory Switch Setting and Printing]” for MS setting by command.

*It is also possible to transmit MS setting command by using NiiPrinterTool etc.

4.1.4 Self-diagnostic Print

1) Checkable points by self-diagnostic print

- Function of control circuit board
- Version of control F/W
- Setting statuses of Memory Switch (MS)
- Operation of paper end sensor (paper sensor)

2) Start / finish of self-diagnostic print

Turn ON the power while pressing FEED switch and release the FEED switch after initialization response from the printer mechanism. Then self-diagnostic print activates. Finishes after printing out prescribed printing patterns. During self-diagnostic printing, printer is in off-line status.

4.1.5 Paper Sensor

Paper detection sensor is attached to paper path inside the printer mechanism. This detects status when paper runs out. When detection, the printer transmits the paper end status and stops printing.

Please do not use a roll paper that is glued (or taped) to the core at the end of paper because that kind of a roll paper is impossible for the sensor to detect paper end status.

Please replace a paper roll as soon as paper-out status is detected.

4.2 Error Handling

1)Details of Error Detections

Item	Status	Status Information	ALARM Status	Release method
Communication Error	232C communication error Parity Overrun Framing	–	–	Rectify Communication Conditions
Normal	Normal status	–	OFF	
Print Start Status	Print start setting by command (not error)	bit7 1	OFF	Print finish setting by command
Presenter Clamp	Presenter or bezel is clamping the paper.	bit6 1	BLINK	Pull out the paper
Paper Detection Error	Unable to detect paper while presenter movement	bit5 1	BLINK	Open the bezel unit and close after removing error factor.
Auto Cutter Error	Cutter PaperJam	bit4 1	BLINK	Refer to [4.8 How to remove remaining paper and jammed paper]
Head Temperature Abnormal	Head temperature at over approx. 70°C~	bit3 1	BLINK	Auto recovery at approx. 65°C of head Temperature(*1)
Presenter Ejection Error	Presenter unable to eject			Pull out the paper from the presenter
Paper End	No paper	bit2 1	ON	Paper replenishment
Bezel Unit Open	Beze Unit Open	bit1 1	ON	Close bezel unit
Paper Near End	Detection of remaining paper Paper NE sensor detection (MS2-4: OFF)	bit0 1	BLINK	Paper replenishment

Printer stops all operations and turns ON error bit of the status information when detecting above errors except “Communication Error”, “Paper NE” and “Print start status”.

*1 When printing is restarted after auto-recovery of head temperature abnormal, it may cause the print density unevenness.

2)Recovery and release from error status

Remove factor of error status occurring and will recover by restarting the power ON or pressing the reset switch. If conducting recovery/release operation, it requires to set again because the printer will be initialized.

Please beware when data remains in buffer because it will be deleted.

4.3 Buffer Full Print

Printer prints preceding data automatically, if more data comes in after receiving data for 1-line capacity. Volume of data to make 1-line buffer full varies depending on types of data such as ANK, KANJI.

4.4 Drive mode Selection

Fixed partition drive (no partition, dual, three-way(K205) or four-way(K305)) or optimized partition.

Select the adequate drive mode depending on the power supply capacity and print duty.

1) Selection of partition drive

Please refer to [Partition Drive Selection] command.

4.5 Print Selection of Full size / Half size

Language Font	Selecting Method
Japanese	Command [FS &], [FS .] or shift JIS code switch
Polish	Fixed (only half size)
Russian	Fixed (only half size)
Scandinavian	Fixed (only half size)
Turkish	Fixed (only half size)

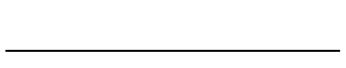
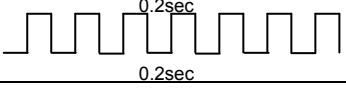
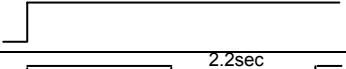
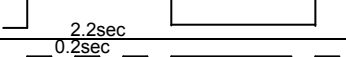

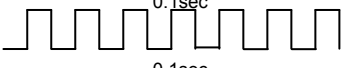
4.6 Operation Panel

The printer equips with the following operation parts.

1)ALARM LED (red) [alarm lamp]

Indicates printer status by patterns of ALARM LED.

Patterns are as in below chart.

Display Pattern	Printer Status	Priority (9:High~1: Low)
<div style="display: flex; align-items: center;"> 1 0  </div>	Normal Print (receive) enable	1
<div style="display: flex; align-items: center;"> 1 0  </div>	Paper Near End	2
<div style="display: flex; align-items: center;"> 1 0  </div>	Paper out	3
	Bezel unit open status	4
<div style="display: flex; align-items: center;"> 1 0  </div>	Head temperature abnormal (approx. 70°C or more) or inappropriate head connection	5
<div style="display: flex; align-items: center;"> 1 0  </div>	Auto cutter error	6
	Paper detection erro	7
	Presenter clamp (Extraction sensor: paper detect)	8
<div style="display: flex; align-items: center;"> 1 0  </div>	F/W write mode	9

2)FEED Switch [Paper feed switch]

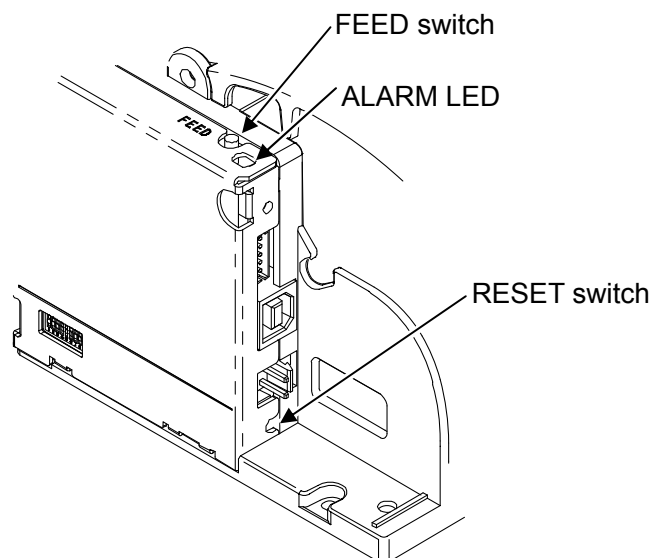
Switch to feed paper in the forward direction

Used also in self-diagnostic test, memory switch setting.

3)RESET Switch

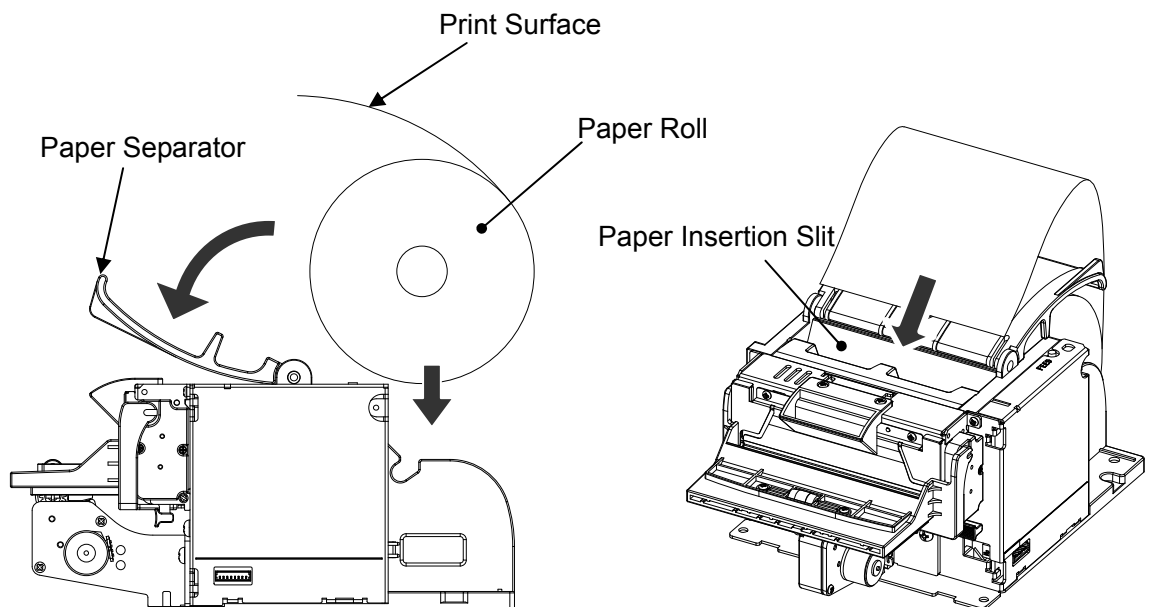
Printer returns to status when turning ON the power by activating RESET switch.

(Push it lightly with ballpoint pen edge etc and release.)



4.7 How to set paper roll

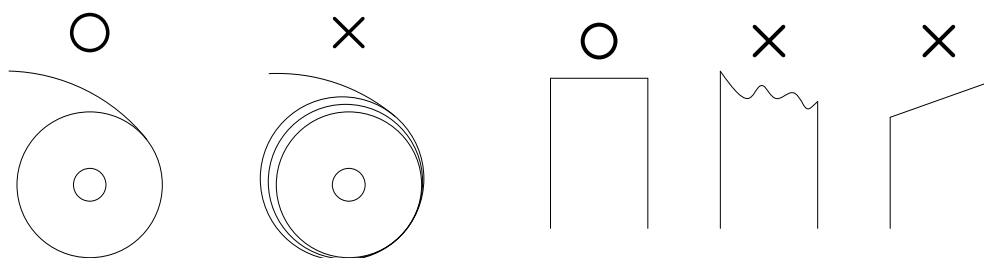
- Confirm power is turned ON.
- Open paper separator (upper cover).
- Check print surface and wound direction of paper roll and drop in to the paper roll holder.
- Pull paper for approx. 20cm and insert paper edge into the paper insertion slit.
- Paper sensor detects the paper and paper will be loaded automatically.
(Insert paper until loading movement starts.)
- It loads at constant length and becomes printable after cutting off extra paper.



[CAUTION]

- Remove axis core of the old paper roll before drop in new paper roll.
- Set paper roll with no play. (May cause paper jam.)
- Leading edge of paper must be straight and right angle. (Refer “Paper Edge Shape Drawing”)
- In the incident of inserted paper on the bias, open the head cover and straighten the paper.
- Since thermal head right after printing will be highly heated, please beware not to touch with your finger or hands etc.
- Please beware not to clamp your finger or hands etc.

Paper Edge Shape Drawing

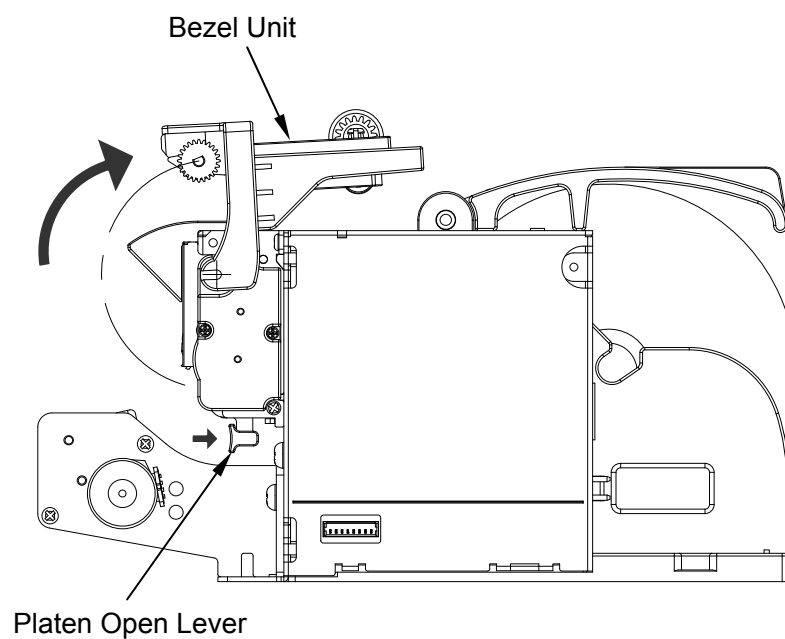


4.8 How to remove the remained and jammed paper

- (1) Turn OFF the power.
- (2) In case of platen cover does not open because of the cutter getting out from the unit, turn ON the power once and return cutter blade to the standby position.
- (3) Press platen open lever and open bezel unit.
- (4) Remove all of the paper on the path.
- (5) Close the bezel unit. (Press the center part and close for sure.)

[CAUTION]

- Since thermal head right after printing will be highly heated, please beware not to touch with your finger or hands etc.
- Please beware not to touch metal edge when platen arm is opened.
- Please press center part of platen arm when closing in order to prevent uneven clamping.
- Make sure not to apply excess angle when opening the head arm.
- Please beware not to clamp your finger or hands etc.



4.9 Cleaning Method

Print quality may decrease by paper chaff etc. adhere to the following parts.

In such case, turn OFF the power and open platen arm and follow cleaning instructions below.

1) Thermal Head

Clean surface of heating element with a cotton swab moistened with alcohols solvent (ethanol or IPA).

2) Platen

Remove trash and dust on the surface by wiping like rubbing slightly with dry cloth.

3) PE sensor, platen sensor, presenter sensor and its surrounding

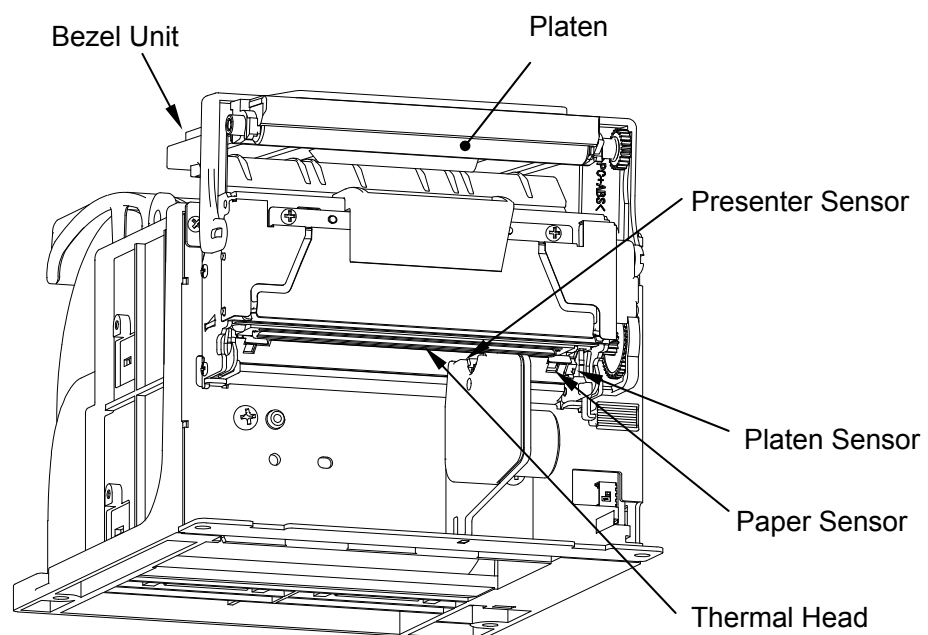
Remove trash / dust adhered to sensor with a soft-bristled brush or a cotton swab.

4) Auto-cutter

Remove dust etc. adhered by air-blower. (reference : every 100,000 times movement)

[CAUTION]

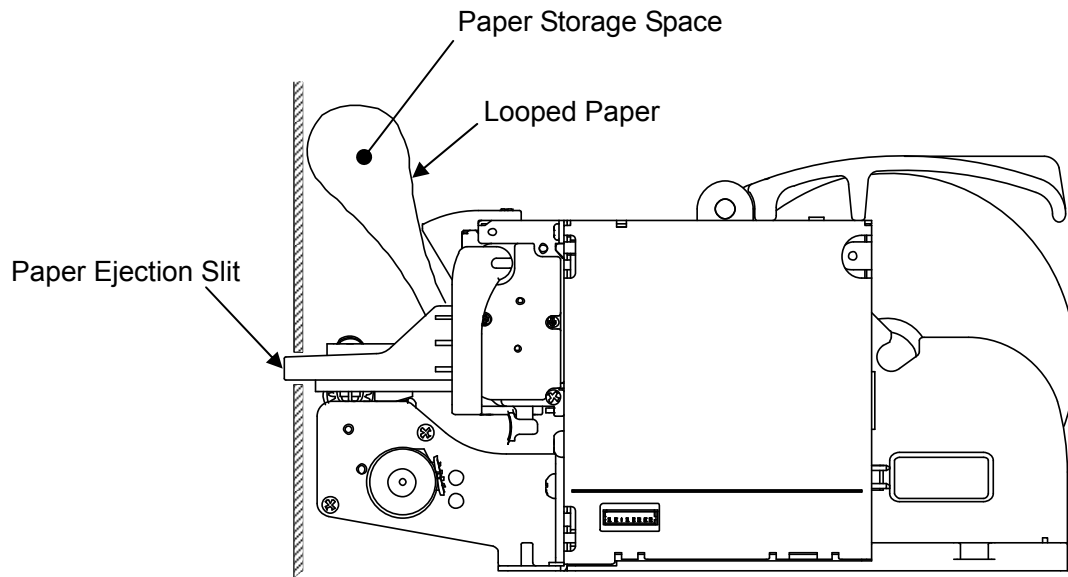
- Since thermal head right after printing will be highly heated, please beware not to touch with your finger or hands etc.
- Please do not touch directly with metal or by your hand to the heating element of the thermal head.
- Please beware of static electricity while cleaning because it may damage the thermal head.
- It may have a bloom of paper depending on papers, check at the period of maintenance and decide what kind of a paper to use.
- Please make sure to turn ON the power after its complete dry.
- Please do not apply excess angle when opening the bezel unit.



4.10 Precautions upon installation

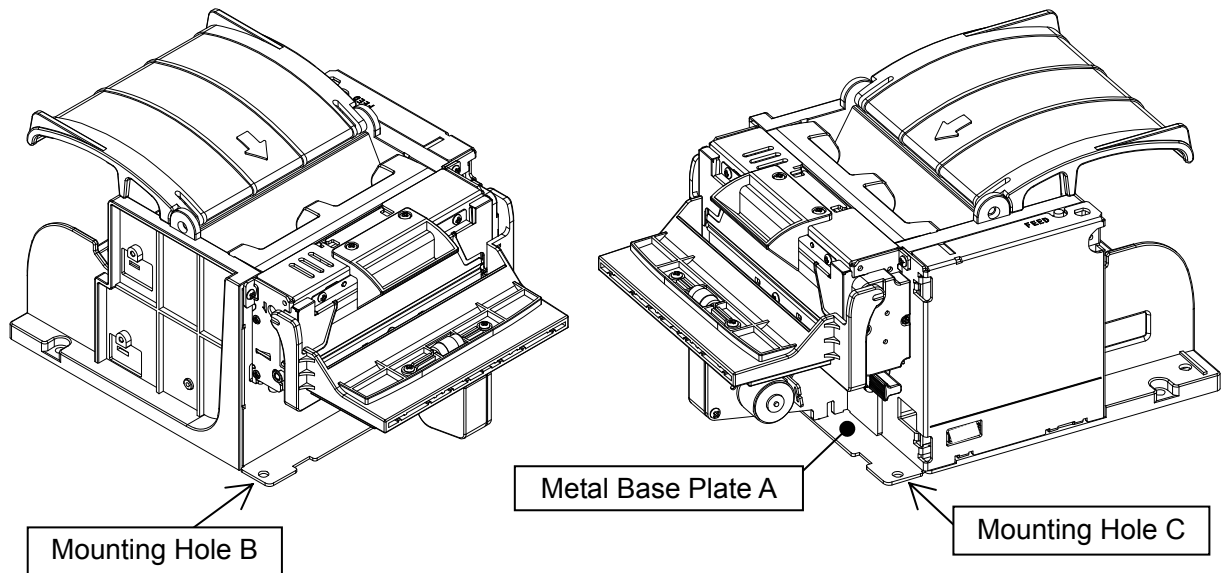
While printing, paper will temporarily placed by loop status as below figure and will be ejected after paper cut.

Please secure “paper storage space” depending on length of printing receipt.



4.11 Frame Ground

Please connect frame ground (FG) of this product and frame ground (FG) of mounting side chassis in order to prevent malfunction, breakage of thermal head and control board due to static electricity.



- (1) In case of mounting part of mounting side chassis is frame ground (metal plate);
Frame ground will be connected by connecting frame ground of this product (Metal Base Plate A) and frame ground of mounting part of mounting side chassis.

*Connection of frame ground will redouble strongly-fixed by using screws with toothed metal washer for “Mounting Hole B” and “Mounting Hole C” when mounting this product.

- (2) In case of mounting part of mounting side chassis is NOT frame ground;
Fix by screwing (recommend with toothed metal washer) frame ground of mounting side chassis and this product with using “Mounting Hole B or C” and connect frame ground with using electric wire of more than AWG#20 (recommended) at the shortest position.