

# Product Specifications

2 inch Compact KIOSK Face Mount Printer

## NP – K 2 0 9 2

Revision 1.00 2011.10.24 1<sup>st</sup> edition

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.

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Record of Revision

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1.00	1		New release		Kobayashi 2011.10.25	Abe 2011.10.24

## [ VCCI Class A ]

This device is Class A information technology equipment. Using this device under home environment may cause interference. The user may be required to take an adequate measure in that case. VCCI-A

## [ FCC Class A ]

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

# 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 open the printer unit while printing or cutter movement. It may damage thermal head or cutter.
- Do not pull paper with close status of the printer unit.
- Do not block the paper outlet while print movement. Also, do not grab the paper while print 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 element for protection and a fuse (Please refer to power supply specifications for details).
- 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 for 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 in the first 1-2 dot right after cutter drive.
- Do not touch the heating element part of the thermal head with a finger or hand etc. It may degrade the print quality due to soil.
- In case of using 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 or paper feeding. When tearing partial cut or perforated paper, tear off by pulling either to the right or left.
- Continuous motor running for a long time generates heat and may affect the printer performance. To avoid this case, please limit the continuous motor running time to 6 minutes at maximum with the same interval time for each operation.
- Motor may produce heat by continuously driving cutter motor for a long time and it may not perform necessary functions. Make sure to follow cutter tolerable frequency. Use over the tolerable frequency may break cutter at the worst case.
- Set the paper straightened with no slack.
- A part of this product is made from plated sheet steel. It does not affect the product's quality and performance at all even if the cut face of the steel get rusty after a long time period.
- This product may occur scrape etc, to the print surface because of its structure.

## [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 garbled 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.

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

- Command reference [NP-K2092] (D-F10087)

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- K 2092 D**  
(1) (2) (3) (4)

**- M - \* \***  
(5) (6)

(1) Type (Fixed)

K : KIOSK type

(2) Mechanism (Fixed)

2 : 2 inch model

(3) Cutter Type (Fixed)

2 : with autocutter

(4) 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) only

R : SERIAL (RS232C) only

(5) Power Supply Voltage (Fixed)

Standard

M : DC12V (±5%)

(6) OEM (Factory setting)

No mark : Standard



## 1.2 Features

This printer is a module printer equips with our own printer mechanism and it is a KIOSK printer realized cost reduction by simplifying the structure.

Feature that can freely change paper roll position enables most suitable built-in to various devices.

- (1) Face mount printer that is directly mountable to the front surface panel.
- (2) Receipt is selectable either to eject print surface showing down or up. (Select when mount)
- (3) Easy paper load by cantilever shaft type paper holder.
- (4) Paper roll set direction is selectable either to the right or left. (Select when mount)
- (5) Paper roll position is selectable either to upper, middle or lower. (Select when mount)
- (6) Max. 100mm/sec (M type) <sup>\*NOTE1</sup>
- (7) Autocutter
- (8) Paper near end function
- (9) High Quality Printing
- (10)Interface : SERIAL and USB (selectable)
- (11)Supports various types of 1D barcodes.
- (12)Supports 2D QR code model 2.
- (13)Adaptation to various applications.
- (14)Driver (Windows XP(32bit) / Vista(32,64bit) / 7(32,64bit) / CE5.0 / CE6.0, Linux(sample)
- (15)Easy to re-write firmware <sup>\*NOTE2</sup> due to Flash Memory and 3 patterns of registration available with NV bit image.
- (16)Easy paper load due to auto loading function.

<sup>\*NOTE1</sup>: There are conditions to use with Max. 100mm/sec

Please refer to "5.1 Selection of receipt print surface and paper roll position"

<sup>\*NOTE2</sup>: Notation of [F/W] in the sentence hereafter indicates [Firmware]

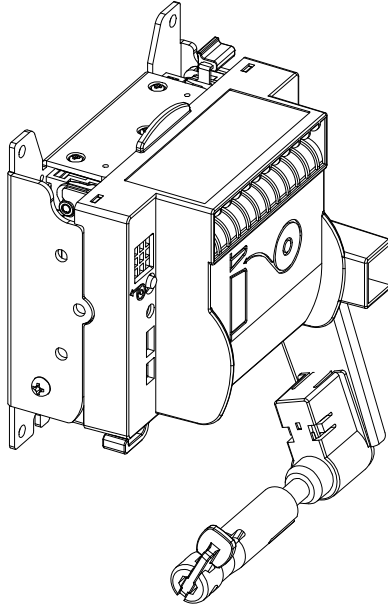
### 1.3 Configurations

1) NP-K2092D-M (standard)

Component parts of this product are as follows;

Component parts				NP-K2092D-M
No	Name	Specifications	Q'ty	
1	NP-K2092D-M	USB, SERIAL common use	1	○

\*There is no attached accessories. (Neither sample paper roll)



## 2. Specifications

### 2.1 Basic Specifications

No	Specifications	NP-K2092	
1	Print Head	1: Print Method	Line thermal dot
		2: Total dots	384 dots
		3: Dot density	8dot/mm
		4: Print width (MAX)	48mm
2	Printing	1: Print speed (MAX) <sup>*Note1</sup> Conditions	MAX.100mm/sec Head temperature at 35°C or more, Below 64dots, optimized drive. *except communication time
		2: Max. print digit	
		Font A (12×24)	32 digit
		Font B (9×17)	42 digit
		Kanji (24×24)	16 digit
3: Paper feed pitch	0.125mm		
3	Character Spec.	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		
	Underline		
4: Line feed Amount (Default)	4.25mm (1/6 inch)		

\*NOTE1: Printing speed varies on conditions.

There are conditions to use with Max. 100mm/sec

Please refer to “5.1 Selection of receipt print surface and paper roll position”

No	Specifications		NP-K2092
4	Print mode		Line 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 or R type)	RS232C compliance
		2:USB (D or U type)	V2.0 FULL SPEED compliance
7	Autocutter	1:Cut Mode	Partial cut / Full cut *Selectable by command
8	Receive buffer		Approx. 10K Byte
9	Alarm display		ALARM LED
10	Operation switch		FEED Switch RESET Switch
11	External Dimensions	*shipping form *w/o stopper, paper roll	Approx. 98.8(W) × 67.7(D) × 132.4(H)mm
12	Weight	*without paper roll	Approx. 450g
13	Mounting		Please refer to “5. Printer Installation”
14	Package	1:Individual carton size	Approx. 206(W) × 152 (D) × 146(H)mm
		2:Individual carton weight	Approx. 600g
		3:Master carton size	Approx. 479(W) × 432 (D) × 324(H)mm
		4:Master carton weight (includes 12 pcs)	Approx. 8.4kg

## 2.2 Paper Specifications

### 1) Paper width and thickness

	NP-K2092
Paper width	58 <sup>0-1</sup> mm
Paper thickness	59 ~ 75µm

- Please make sure to use axis core width same 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

[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 was 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 and near end sensor to the side surface equipped.
- Please do not use long-term stored paper roll because it may not perform satisfactory print quality.
- Please make sure to use paper roll with axis core.

### 3) Recommended Thermal Paper

Base Paper №	Paper Thickness	Manufacturer
TF50KS-E2D <sup>*NOTE1</sup>	59µm	NIHON Paper Co.
PD160R	75µm	OJI Paper Co.

<sup>\*NOTE1</sup>: There are conditions to use with Max. 100mm/sec.

Please refer to "5.1 Receipt print surface and paper roll position selection".

[ 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<sup>+</sup> ion, K<sup>+</sup> ion, Cl<sup>-</sup> 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 axis core outer diameter of use paper roll.

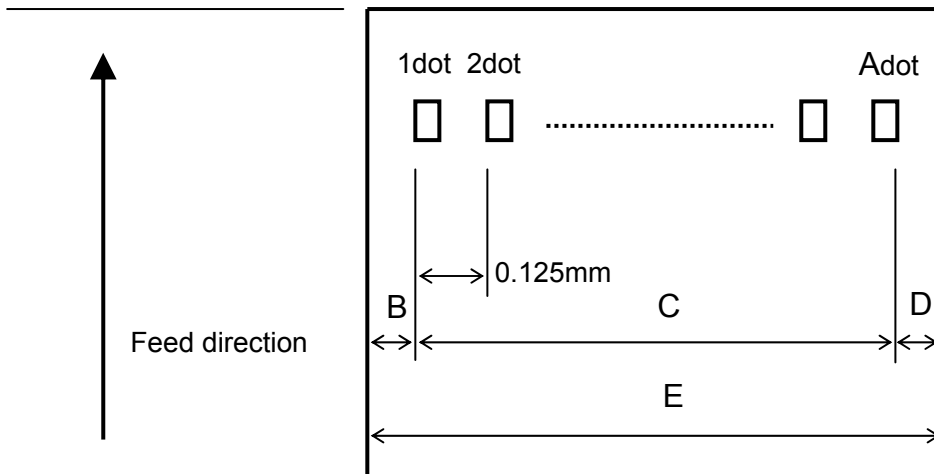
Axis Core OD	Memory Switch Setting	NE Detection Value	Factory Setting
OD18mm	MS2-6	OFF	○
OD22mm		ON	

#### [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 (MS2-6: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.28mm is newly loaded.
  - (2) If power turned off and returned as remaining roll diameter is lower than approx. 28mm.

## 2.3 Print Area

View from print face



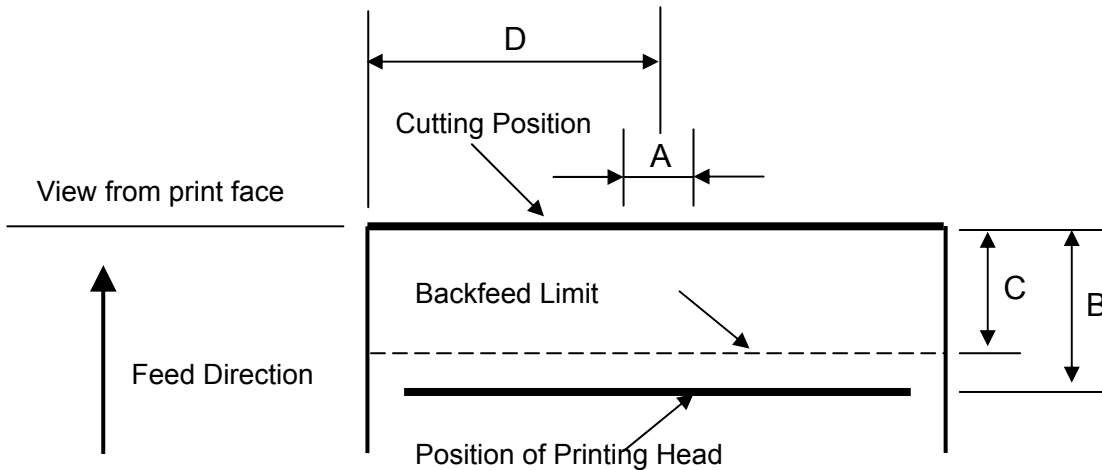
(1) Name of Symbols

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

(2) Relations between Paper Width and Printing Area

	A(dot)	B( $\pm 1$ mm)	C( $\pm 0.2$ mm)	D( $\pm 1$ mm)	E( $^{-1+0}$ mm)
NP-K2092	384	5	48	5	58

## 2.4 Specifications of Cutter



Symbol	Descriptions	Measure
A	Tab size on Partial Cutting	1.6±1.0mm
B	Position of printer head from cut position	7.5±1mm
C	Limit of Backfeed	4.5mm
D	Distance from paper edge to center tab on partial cut.	29mm

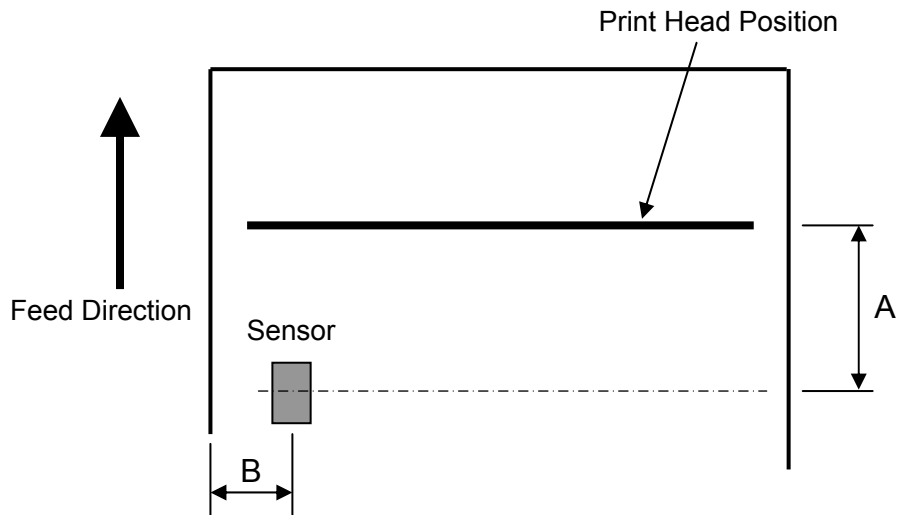
- (1) Cutting Method : Slide System
- (2) Cutting Mode : Full Cut / Partial Cut  
\*Selectable by command.
- (3) Allowance of Cutting Frequency : 20 cuts per minute
- (4) Paper Thickness : Please refer to “2.2 Paper Specifications”
- (5) Minimum cut length : 30mm

### [NOTE]

- \*When platen become overloaded with pulling paper hardly after partial cut etc, beware the possibility of character crash of the next print line head.
- \*Feed paper for more than approx. 1mm (8 dot line) when printing after cutting operation.
- \*Make sure to tear off paper after the partial cut by pinching either right or left side of the printed paper and pull to the hand held side.
- \*Since there is automatic paper feed of approx. 2mm for paper jam protection after paper cut, the above B cutting margin will be 9.5±1mm.
- \*Please do not conduct operation that paper strip by cut will occur. It causes paper jam.
- \*We recommend to use partial cut for this product. When full cut, depending on use environment, cut paper may stick because of static electricity etc., or may jam to ejection outlet etc., please use upon sufficient confirmation.



## 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-K2092	7.5mm	3.0mm

\*In order to prevent malfunction of the paper sensor, please do not pre-print to paper feed direction of sensor position  $\pm 5\text{mm}$  width.

## 2.6 Power Specifications

### 1) Power input connector

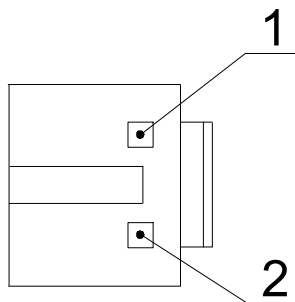
2-pin connector CN1

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

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

PIN №	Function
1	DC+12V
2	GND

Connector view from interdigitation side



### 2) Power Supply Voltage: DC12V±5%

### 3) Consumption Current

Condition	Consumption Current (reference)
Standby	Approx. 80mA (typ)
When printing (64 dot)	MAX.approx.3.6A

#### [NOTE]

- \* 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 pay an enough attention to allowable current of wiring material.
- \* Although current capacity of thermal head itself is [4.0A], current capacity of connector cable is not included to this, determine number of dots when current applying at the same time not to exceed 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 electrolytic capacitor of rated voltage 25v, electrostatic capacity of 2200μF between power supply and GND.
- \* Please set element for excessive current protection and appropriate fuse to the power line.
- \* We recommend to use power supply complied with LPS standard.

## 2.7 Reliability Specifications

### 1) Life time

#### (1) Thermal Head

Anti-pulse Characteristics : 100 million pulse

Anti-abrasion characteristic : 50km

(2) Cutter Life : 0.5 million cut

#### (3) 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 Specifications"

Print Density : 100%

Partial Drive : Optimization

#### [NOTE]

\* 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

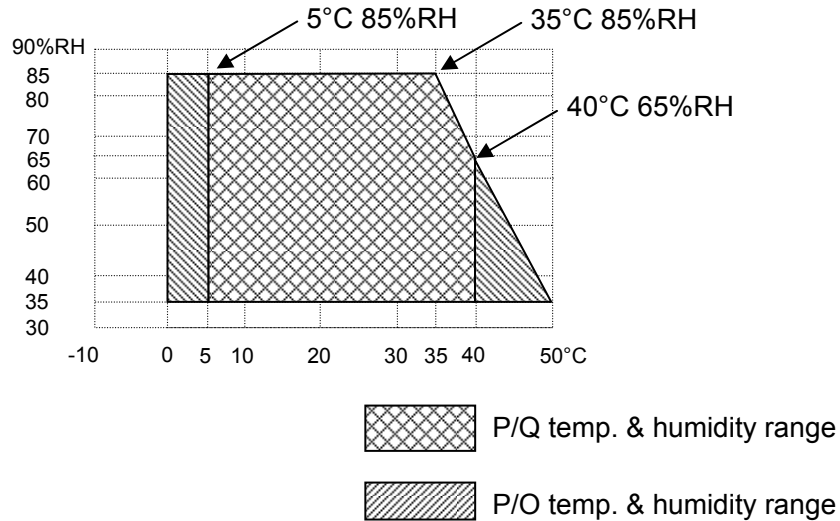
### 1) Operating Environment

Temperature: 0~ 50 °C (print warranty is 5 ~ 40 °C)

Humidity : 35 ~ 85%RH

Except, 85%RH assumes 35°C for no condensation

\*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

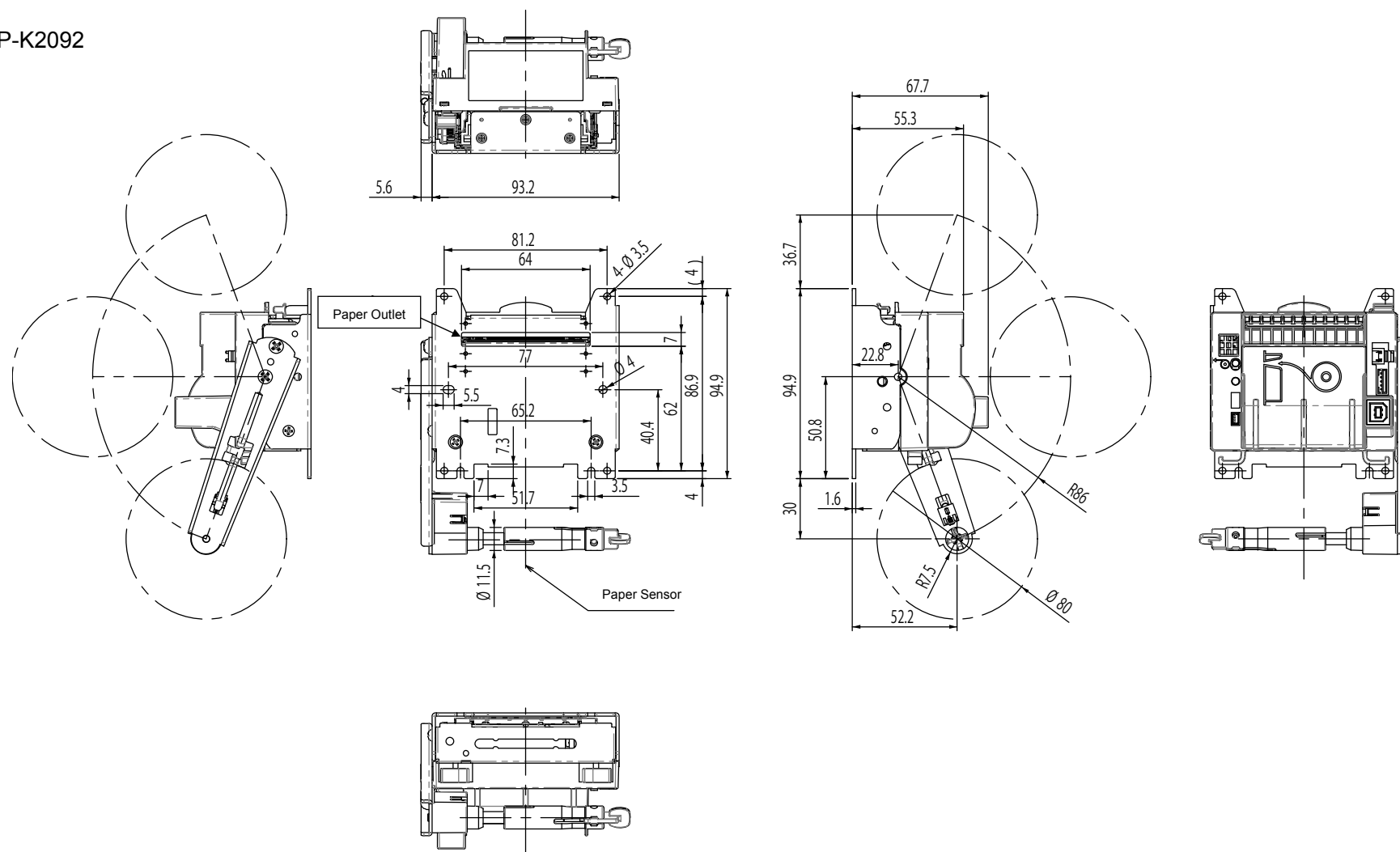
VCCI : Class A (Acquired)

FCC : Class A (Acquired)

CE marking: Acquired

## 2.10 External Dimension

### 1) NP-K2092



This drawing shows status when attaching paper holder to the right looking from paper inlet side.

(Paper load will be conducted from the left side.)

In case of attaching paper holder to the opposite side, it will be symmetry position against to "Paper Sensor" .

### 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 : Printer get Automatic RESET when USB cable connected to the host is inserted to printer side.

\*When using with USB interface, please make sure to use driver<sup>\*NOTE1</sup> we provide.  
When direct transfer, make sure to monitor receive buffer remaining amount<sup>\*NOTE2</sup> and do not transmit data exceeding this amount.

<sup>\*NOTE1</sup>: 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

<sup>\*NOTE2</sup>: 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" /OFF (-3V ~ -12V)
  - Space = Logic "0" /ON (+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 <sup>\*NOTE1</sup>
- «DC3» [13]h code, XOFF: Impossible to receive data <sup>\*NOTE2</sup>

- (7) Receive-Control (RTS signal)
  - Mark : Impossible to receive data <sup>\*NOTE3</sup>
  - Space : Possible to receive data <sup>\*NOTE1</sup>
- (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 (2 pin connector)

\*Please refer to [2.5 Power Specifications]

2) CN3: USB Data Signal Input Connector

Printer side : B jack CU02SCV1000 (CviLux) 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) CN4: SERIAL Data Signal Input Connector

Printer side : S5B-PH-K-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	

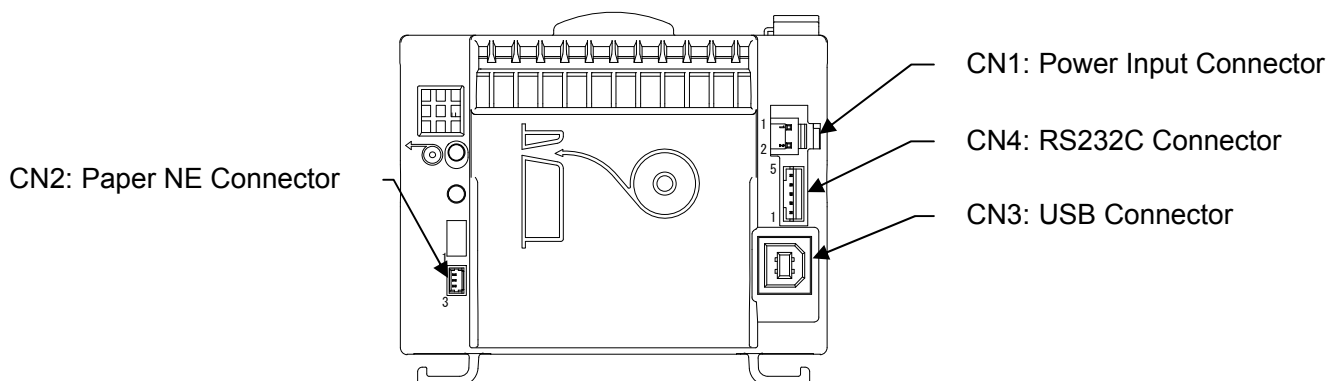
\*In case of actual use, use after sufficient confirmation by the user's side.

4) CN2: Paper Near End Connector

Connect to “Standard paper near end sensor”

[NOTE]

- Please do not connect other than “Standard paper near end sensor”
- Please valid memory switch MS2-4.





## 4. Functions

### 4.1 Function Setting

#### 4.1.1 Switch Setting

##### (1) Memory Switch MS1

	Function	O N	OFF	Factory Setting
				NP-K2092D/U/R
MS1-1	Communication Setting	Refer to table 1		OFF
MS1-2				OFF
MS1-3				OFF
MS1-4	SERIAL transmit speed	Refer to table 2		O N
MS1-5				OFF
MS1-6				O N
MS1-7	SERIAL flow control <sup>*NOTE1</sup>	XON/XOFF	RTS/CTS	OFF
MS1-8	Auto cutter control	INVALID	VALID	OFF

Table 1: Communication Setting

Interface	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-K2092 D/U/R
MS2-1	Japanese Kanji code	Shift JIS	JIS	OFF
MS2-2	Reserved	—	—	OFF
MS2-3	Reserved	—	—	OFF
MS2-4	Paper Near End detection <sup>*NOTE1</sup>	VALID	INVALID	O N
MS2-5	Receive buffer remaining size auto-reply (USB) <sup>*NOTE2</sup>	INVALID	VALID	OFF
MS2-6	Paper Near End detection correction <sup>*NOTE3</sup>	INVALID	VALID	OFF
MS2-7	Reserved	—	—	OFF
MS2-8	Reserved	—	—	OFF

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

\*NOTE1: In case of disconnecting PNE (standard is connect), make sure to turn MS2-4 OFF.

\*NOTE2: 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.

\*NOTE3: In case of setting MS2-6:OFF, near end happens(detection signal ON) after executing paper feed of approx. 3.7m after detection by near end sensor.

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.

In case of setting MS2-6:ON, near end happens (detection signal ON) right after detecting with near end sensor.

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 unit 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.

##### (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 into software reset movement. The latest setting become effective.

- \*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 Switch Setting” for each MS content and [NOTE].
- \*Refer to [Memory Switch Setting and Printing]<GS M n d1 d2> 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) Check points by self-diagnostic print

- Function of control circuit board
- Version of control F/W
- Setting statuses of Memory Switch (MS)
- Movement 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 of 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 Detector (Paper Sensor)

Paper detection sensor is mounted on 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 end setting by command
Voltage Abnormal	Voltage abnormal	bit6 1	BLINK	Power OFF→ON after removing error factor
Auto Cutter Error	Cutter PaperJam	bit4 1	BLINK	Open printer unit and close after removing error factor.
Head Temperature Abnormal	Head temperature at over approx. 70°C~	bit3 1	BLINK	Auto recovery at approx. 60°C of head
Paper End	No paper	bit2 1	ON	Paper replenishment
Printer Unit Open	Printer Unit Open	bit1 1	ON	Close printer unit
Paper Near End	Detection of remaining paper Paper NE sensor detection (MS2-4: when PNE valid)	bit0 1	BLINK	Paper replenishment

- Printer stops all operations when detecting above errors except “Communication Error”, “Paper NE” and “Print start status”.
- Does not autoloading when detecting above errors except “Paper NE”, “Paper End” and “Print start status”.
- Turns ON error bit of status information.
- Please refer to “4.6 Operation Panel” for details about ALARM status.
- After solving paper near end, it full cuts after auto loading the paper.
- After solving platen open, it full cuts after feeding the paper.

### 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

Able to select fixed partition (no partition, 2 partition, triple partition, 6 partition), optimization by commad. Also select depending on a power supply, print DUTY.

1) Partition drive selection

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






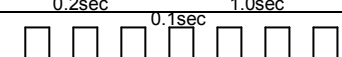
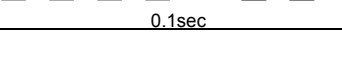
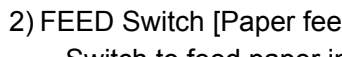
Printer equips with the following operation parts.

### 1) ALARM LED (red) [alarm lamp]

Indicates printer status by patterns of ALARM LED.

BLINK/ON/OFF when rewriting to Flash ROM.

\*ALARM LED patterns are shown in below chart.

Display Pattern	Printer Status	Priority (8:High~1:Low)
1 0 	Normal Print (receive) enable	1
1 0 	Paper Near End	2
1 0 	Paper out	3
1 0 	Printer unit open status	4
1 0 	Head temperature abnormal (approx. 70°C or more) or inappropriate head connection	5
1 0 	Auto cutter error	6
1 0 	Voltage abnormal	7
1 0 	F/W write mode	8

### 2) FEED Switch [Paper feed switch]

Switch to feed paper in the forward direction

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

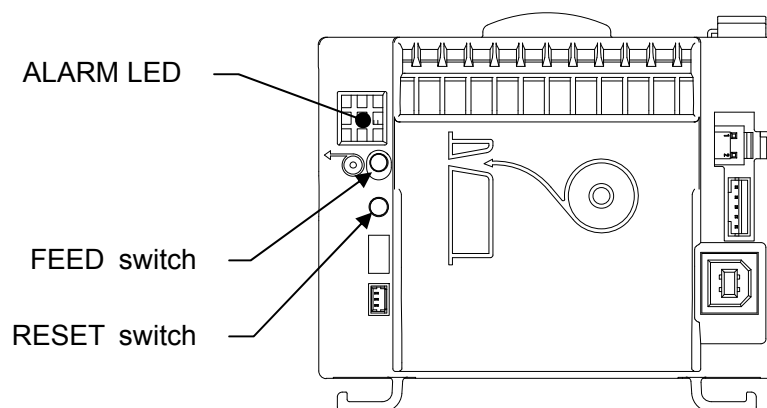
\*Switchable to valid or invalid by setting [FEED switch VALID/INVALID] <ESC c 5>command.

\*When conducting FEED switch, it full cuts after paper feed.

### 3) RESET Switch

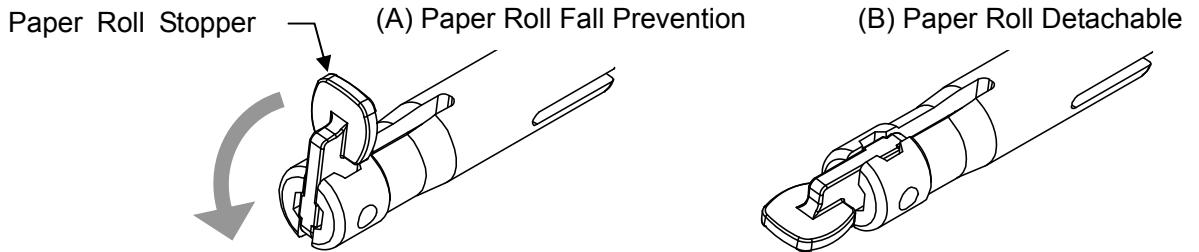
Printer returns to status when turning ON the power by activating RESET switch. Please beware data inside the buffer will be deleted. It can not be pressed by finger in order to prevent mis-operation.

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

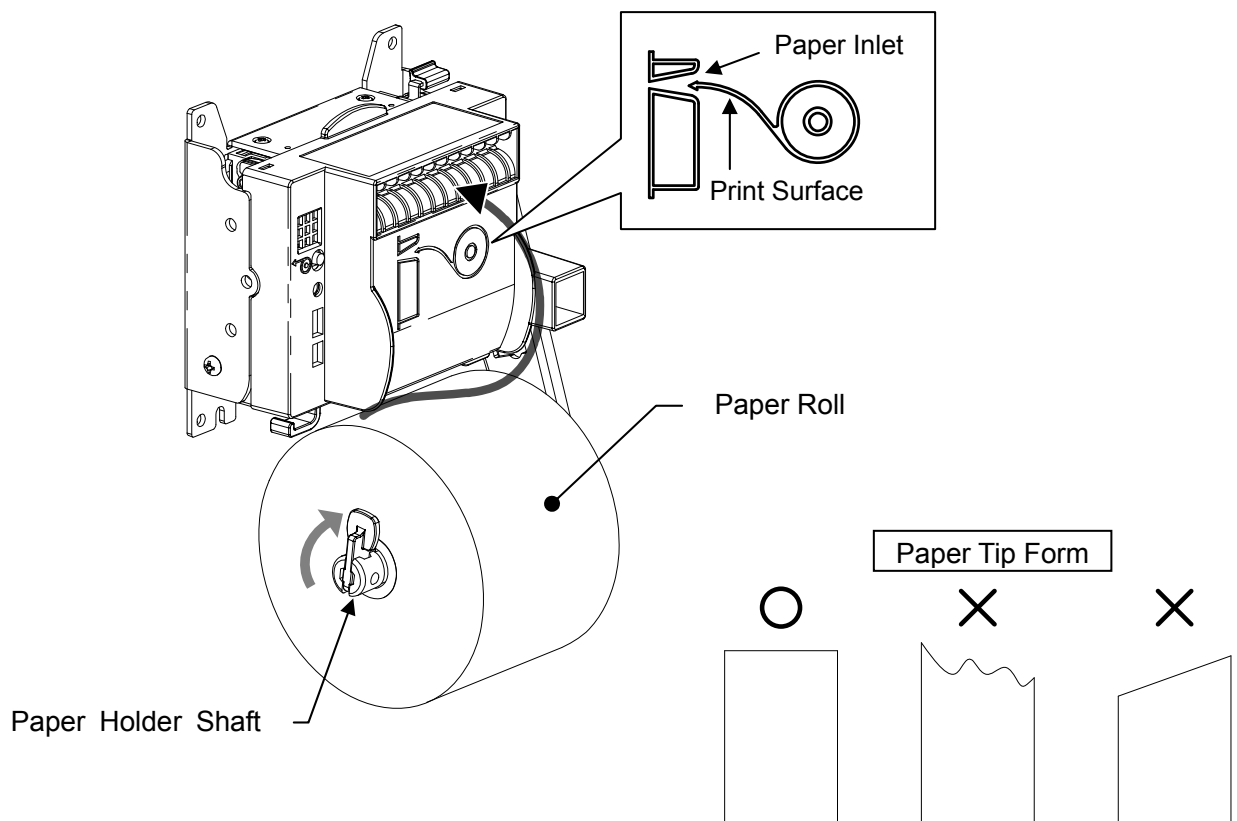


## 4.7 How to set paper roll

- Turn the power ON.
- Please convert paper roll stopper to (B) status.



- Confirm winding direction of the paper roll and put through the center hole into the paper holder shaft. (Please follow “figure” of the printer main body for paper roll winding direction).
- Bend down paper roll stopper at right angle.
- Straightly insert tip of the paper roll into the paper entrance.
- Paper sensor detects the paper and will automatically load the paper. (Please make sure to insert until loading operation starts.)
- Print operation becomes available after pulling constant length and cut.



### [CAUTION]

- Remove axis core of the old paper roll before drop in new paper roll.
- Please load paper roll without slack. (It causes paper jam.)
- Tip of paper must be straightened at right angle. (Please refer to “Paper Tip Form” drawing.)
- When inserting paper tip with fracture or bias status, it may not be able to conduct loading operation.
- 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.

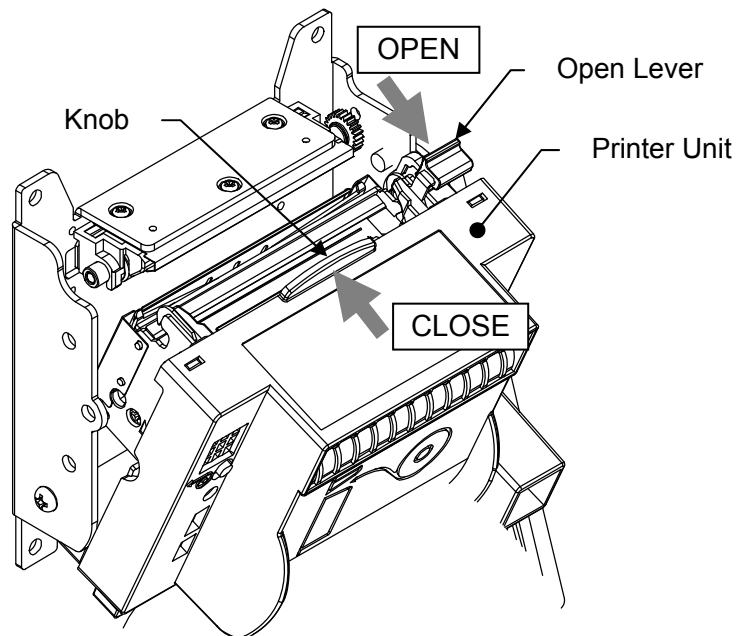


## 4.8 How to remove the remained and jammed paper

- Handle printer unit and open after converting open lever as shown in the figure.
- Please remove all of the paper on the paper path.
- When closing printer unit, push the knob part and make sure to lock until you hear the click sound.

### [CAUTION]

- In case of printer unit can not be opened because of cutter blade is sticking out, please let cutter blade return to the standby position by restarting the power.
- 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 printer unit is opened.
- In case of closing the printer unit, please push knob in the center part and close for sure.
- When opening the printer unit, please do not apply excess force by cross over stop position.
- Please beware not to clamp your finger or hands etc.



## 4.9 Cleaning Method for thermal head and others

Print quality may decrease by paper chaff etc. adhere to the heating element of thermal head. Also, paper dust may adhere to the platen or sensor part. In such case, turn OFF the power and open printer unit and follow cleaning instructions below. Please refer to “4.8 How to remove the remained and jammed paper” for printer unit open/close.

### 1) Thermal Head

Clean surface of heating element with a cotton swab moistened with ethanol or IPA. (Beware not touch to the other parts.)

### 2) Platen

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

### 3) Paper sensor and its surrounding

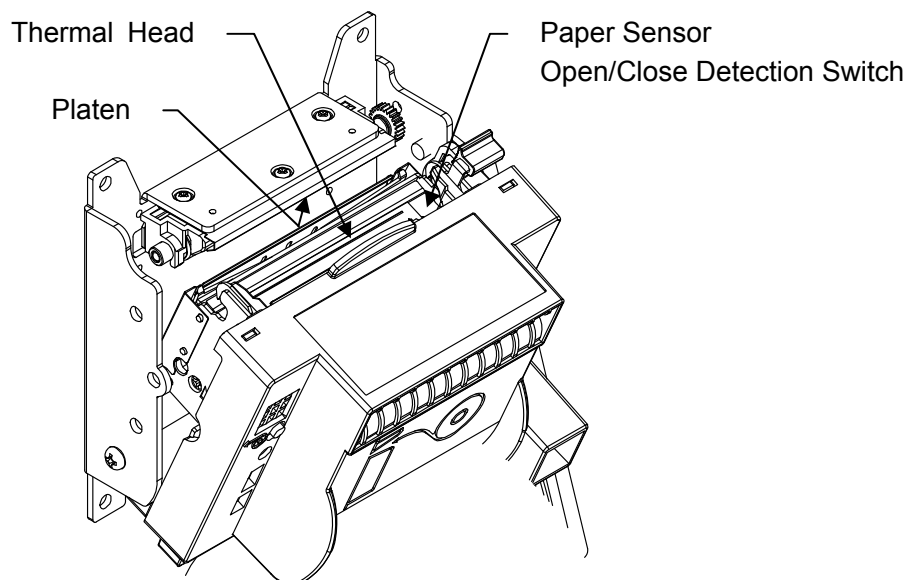
Remove trash / dust adhered to sensor with a soft-bristled brush or a cotton swab.

### 4) Auto-cutter

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

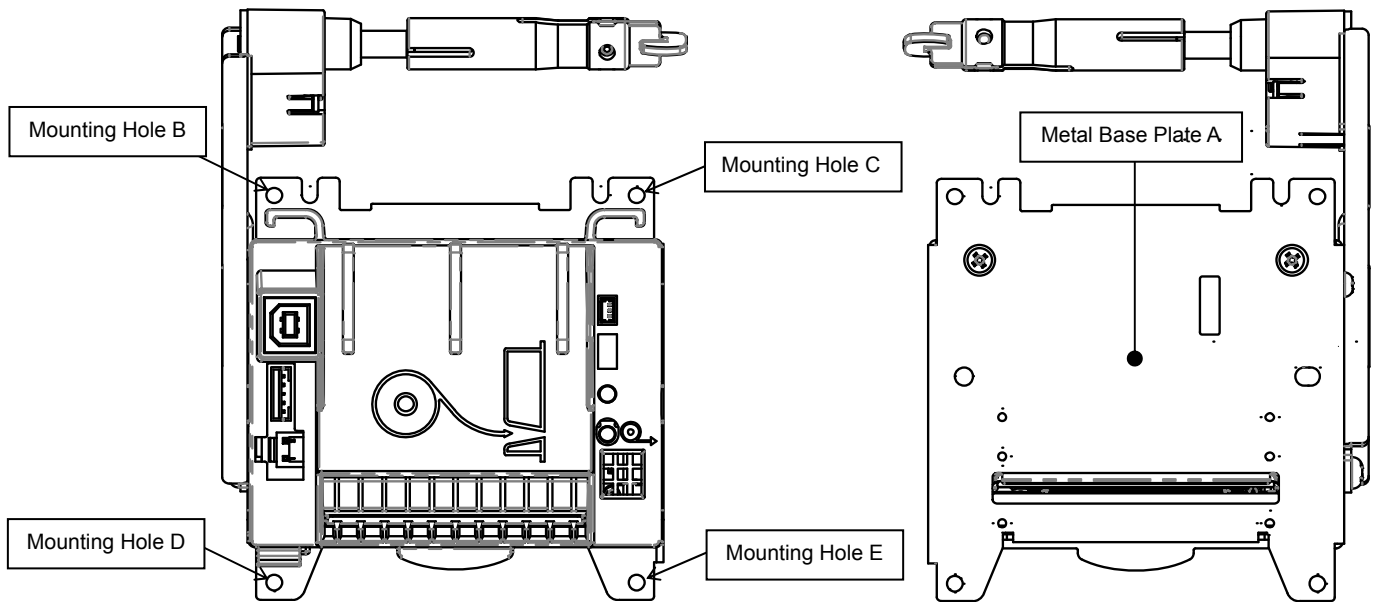
### [CAUTION]

- Since thermal head right after printing will be highly heated, please beware not to touch with your finger or hands etc.
- 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.
- Since it may have abnormal bloom of paper depending on papers, please check the period of maintenance after verifying paper and decide what kind of a paper to use.
- Please make sure to turn ON the power after ethanol or IPA is completely dried.



## 4.10 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.

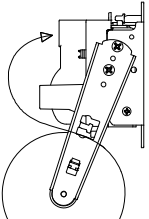
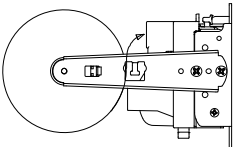
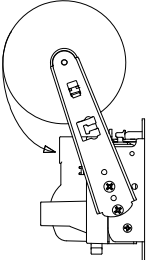
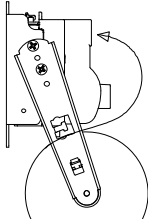
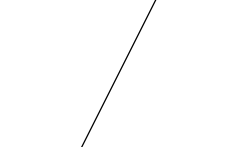
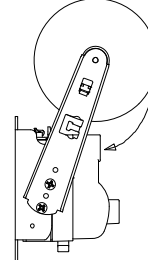
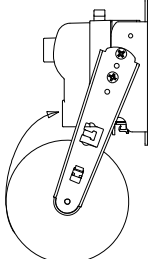
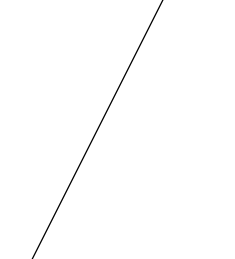
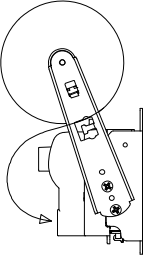
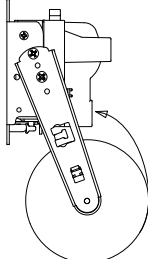
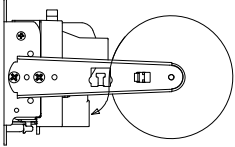
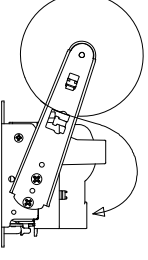
\*Connection of frame ground will redouble strongly-fixed by using screws with toothed metal washer for "Mounting Hole B, C, D and E" when mounting this product.

- (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, C, D and E" and connect frame ground with using electric wire of more than AWG#20 (recommended) at the shortest position.

## 5. Printer Installation

### 5.1 Receipt print surface and paper roll position selection

10 ways of installations in the below chart are selectable for this printer. Please refer to the chart below and select receipt print surface and paper roll position way that suits the most to build into the device.

		When setting paper roll to the rear (left), Attach paper holder unit to the "right surface"			When setting paper roll to the rear (right), Attach paper holder unit to the "left surface"		
		Paper Roll "Lower"	Paper Roll "Middle"	Paper Roll "Upper"	Paper Roll "Lower"	Paper Roll "Middle"	Paper Roll "Upper"
Print Surface Down (recommend)	Ex-factory setting position	 *NOTE1			 *NOTE1		
	Print Surface Up			 *NOTE1			 *NOTE1 Ex-factory setting position

[NOTE]

- We recommend to issue receipt with this printer showing print surface down.

Operability of paper insertion and paper jam release etc, are better than print surface up conversion.

- Please do not use at a tilt.

\*NOTE1 When using "TF50KS-E2D" paper with this mounting position, please use maximum print speed under MAX.90mm/sec that is default setting.

When using "PD160R" or with other mounting positions, it can be used under MAX.100mm/sec.

When using under MAX.100mm/sec, it requires to set by [Maximum Print Speed Setting] «GS S n» command.

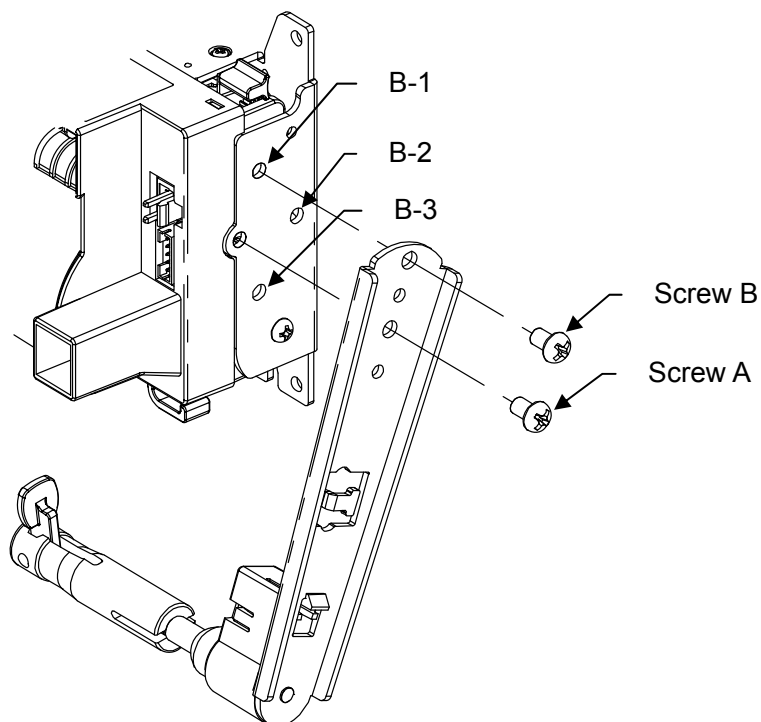
## 5.2 Position Change of Paper Holder

### 1) When changing position at the same surface (ex-factory surface)

- Unscrew screw B (M4)
- Loosen slightly screw A (M4) of rotation center
- Rotate the paper holder centering screw A and fix screw B at the desired position (B-1 ~ B-3)
- Tighten finally screw A

### 2) When switching to the other side of the surface

- Disconnect cable of PNE sensor.
- Detach paper holder by unscrewing screw A (M4) and screw B (M4)
- Attach paper holder by using screw A to the other side.
- Rotate the paper holder centering screw A and fix screw B at the desired position (B-1 ~ B-3)
- Tighten finally screw A



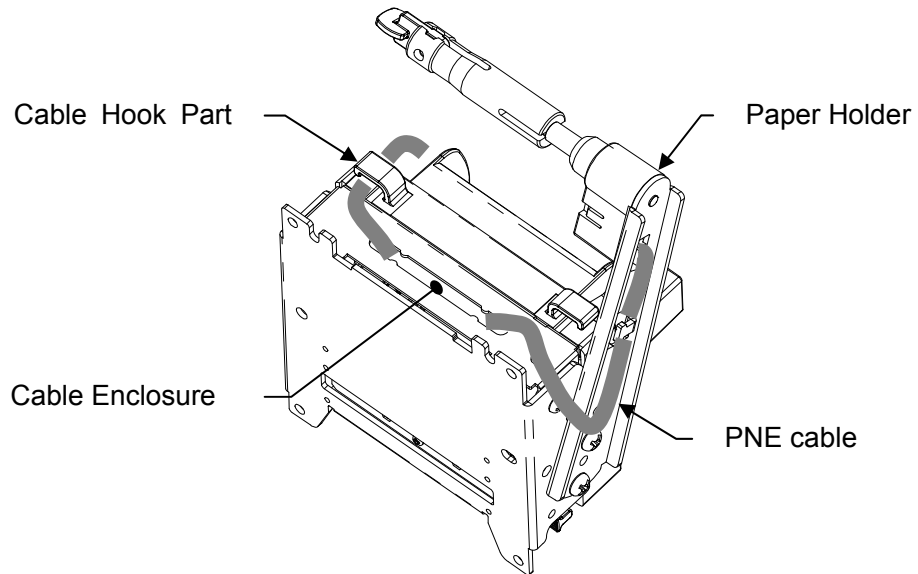
### [NOTE]

- Please handle cable of PNE sensor.
- Screws (M4) are self-tapping type. When screwing to the new attachment hole, you may feel the rotating force of the screw driver heavy.
- Although attaching positions of the paper holder are symmetric, there is no B-2 hole of left surface position. (2 holes in B-1, B-3)

### 5.3 How to handle each cable

#### 1) How to handle PNE cable

Depending on attaching position of the paper holder, PNE cable length may leave a leftover. There is "Cable Enclosure" equipped to the figure position below for storing extra wire length. Please use accordingly.



#### 2) Handling interface cable and power cable

Depending on paper holder attaching direction, paper roll position, handling of the cable changes. Please handle accordingly not to trouble when operating such as paper roll replacement etc. There is "Cable Hook Part" equipped to the figure position below. Please use when necessary.

