Product Specifications

2 inch / 3 inch KIOSK printer equipped with printer module

ＮＰ－ＫＶ２０
ＮＰ－ＫＶ３０

2015.11.06   1st edition
2020.07.22   5th edition

All specifications described in this document are subject to change without prior notice.
Although we made assurance doubly sure in writing this product specifications,
please contact us if you find any suspicious points, errors or what you noticed.

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Manufactured by   **NIPPON PRINTER ENGINEERING INC.**

Revision History-1

Rev.	Descriptions			Approval	Person in charge
	Page	Item	Contents of Change		
1		Newly released		Hirano 2015.11.18	Abe 2015.11.06
2		Precautions	Reviewed and modified	Hirano 2016.01.22	Abe 2016.01.15
		Package	Modified in accordance with the size reduction		
		External dimensions	Adding: Marking		
3		NP-KV30	Adding (tentative specifications)	Hirano 2016.03.07	Abe 2016.02.22
4		VCCI, FCC	Acquiring: NP-KV30 (to be acquired)	Hirano 2016.07.07	Abe 2016.06.28
		Precautions regarding others	Adding: "Firmware and hardware upgrades will be charged."		
	7	Options 2)	Changing: PS8 to PS11		
	10	Package	Adding: NP-KV30		
	16	Cutter specifications	Reviewing partly		
	21	Lifetime	Deleting: NP-KV30 (under evaluation / consideration)		
	22	Operating environment	Deleting: NP-KV30 (under evaluation / consideration)		
			Adding: [Notes]		
	23	Standards	Deleting: NP-KV30 (to be acquired)		
	28	Interface USB	Updating: Driver version		
	30	Serial connection wiring and flow control	Adding		
5	2	1.2 Model description (2)	Deleting: Descriptions regarding NPT-306	Hirano 2020.08.03	Watanabe 2020.07.22
	4	1.4 Composition of deliverables 2), 3)	Deleting: Descriptions regarding NPT-306		
	5	1.4 Composition of deliverables 5), 6)	Deleting: Descriptions regarding NPT-306		
	7	1.5 Options	Changing: Descriptions in 1) to 6) Descriptions regarding NPT-306 Changing: [Notes] of the presenter partly Adding: UPH-U250		
	9	2.1.1 NP-KV*0*K	Descriptions regarding NPT-306		
	33, 34	3.4 Connector signal table	Descriptions regarding NPT-306 Changing: [Notes] of the presenter partly		
	44	4.2 Processing errors	Changing: [Notes] of the presenter partly		
	59, 60	Appendix 2: Installation external dimensions of options (reference)	Descriptions regarding NPT-306		

[VCCI Class A]

This device is a Class A information technology device. If this equipment is used in a home environment, radio disturbance may arise.
In this case, the user may be required to respond appropriately.   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.

Precautions

Incorrect handling will significantly reduce the performance of the product and may cause damage or injury. Please observe the following precautions. Since there are detailed precautions described in other sections, please read this specifications document carefully before using the product. Furthermore, the users should be warned to be careful sufficiently.

[Precautions regarding failures]

In order to use this product for a long time and prevent troubles before they occur, please observe the following strictly.

Regarding **static electricity**
● Prevention for static electricity and body grounding must be made for dealing this product in order to prevent any damage of electric heating element of the head or the IC, etc.
Please be sure to complete installing this product after connecting the frame ground of this product to the frame ground of the body of mating side for ESD measures, etc.

Regarding **handling**
● Please DO NOT apply excessive force to the input terminals.
● Please use both hands when holding the product in order to prevent dropping it.
● Please DO NOT scrape or give impact to the thermal head by the objects with sharp edge or any hard materials. They may damage the heat elements.
● Please DO NOT pour liquid or wet the product.
● Please DO NOT make foreign substances mixed.

Regarding **installation**
● This product is not protected against dust or dirt. When used in a dusty place, the thermal head may be damaged or paper feeding may not run properly.
● When cooling this product with a fan, please make sure that the printer's paper ejection slit does not serve an air intake or an exhaust port for the air. It will be a cause of premature failure by dust, etc.
● This product is equipped with an infrared reflection sensor. If the lights including infrared rays such as sunlight hits the sensor, malfunction may occur. This product must be installed in the place where ambient light does not affect this product.
● This product should NOT be installed in a place where static electricity is easily generated and where it is exposed to vibration, electromagnetic fields, corrosive gas, sea breeze, rain, fog, or direct sunlight.
● Please DO NOT install this product in a place where it will be splashed with liquids or it will be mixed with foreign substances.
● This product is designed for indoor use. Please use it after fully evaluating and verifying its operation if it is used otherwise.
● Since the cut paper may not fall due to sticking by static electricity, etc., please consider the mechanism, etc.
● Please make sure that the printer is connected to the power supply properly before supplying the power. When using an AC adapter, etc., please be sure to connect it to the printer before connecting the AC (primary) side. The same applies when supplying the power from the customer's system side.

Regarding **operation**
● Please avoid printing with no paper loaded. It can damage the thermal head and shorten its lifetime.
● Please NEVER open the thermal head cover while printing or cutting the paper. It may damage the thermal head or the cutter.
● Please DO NOT pull out the paper with the thermal head cover closed.
Please pull out the paper while pressing the head release lever.

● Please DO NOT block the paper ejection slit while doing printing operation. Furthermore, please DO NOT grab the paper during printing operation.

● When this product is installed in a customer's device, paper sticking may occur after ejecting the printing result due to environmental conditions such as static electricity.

In that case, please consult us, as there may be cases in which static elimination measures can be considered.

[Precautions regarding safety]

For using this product safely, please observe the following strictly.

● Please turn OFF the power before maintenance such as cleaning or removing jammed paper.
● Please turn OFF the power before connecting or removing connectors and NEVER disconnect it by pulling the cable without grabbing the connector body. Please DO NOT insert connectors, etc. diagonally, reversely or incorrectly. It will be a cause of failures.
● Since this product is not protected against water or dew drops, please DO NOT splash water on this product nor handle it with wet hands. They may be causes of damage, heat or fire due to the short circuit.
● In order to prevent excessive current, please add a protection element and a suitable fuse (please refer to the "Power supply specifications" for the capacity.) to 24V power supply line supplying the power to this product.
● Please DO NOT disassemble nor modify this product.
● In case of disposal, please follow the regulations or rules of the local authorities.
● Please use the power supply conforming to the LPS standard.
● Please turn OFF the power when it is not used for a long time.
● Please DO NOT touch the cutter blade when the cutter is in operation or not.

[Precautions regarding quality]

To use without spoiling the quality of this product, please be careful of the following.

Regarding **data**
● Operation is not guaranteed if an undefined control code or a command is sent to this product.
● With intermittent printing in which printing and paper feeding get temporarily interrupted due to data queuing from the host, etc., printing and paper feeding may jumble on 1-4 dots lines from the start. Please be careful especially when printing graphics, etc.

Regarding **printing operation**
● The print may be distorted at the first 1-2 dot(s) right after the paper cutting action.
● Please DO NOT touch the heating element part of the thermal head because the dirty head may degrade the printing quality.
● In case of using roll paper other than those specified in this document, printing quality and lifetime of thermal head may not reach the level guaranteed by us.
● Please DO NOT touch the paper, open the thermal head cover, and operate the head release lever while the printer is in motion of printing or paper feeding. When tearing off the perforated paper, please pull it to either right or left direction without too much force.
● Continuous feed motor running for a long time generates heat and may affect the printer performance. To avoid the case, it is necessary to limit the continuous motor running time to 6 minutes at maximum with the same interval time for each operation.
● If the cutter motor is driven continuously for a long time, the motor will generate heat and the required performance may not be achieved. Please always observe the allowable cutting frequency. If it is used beyond this, the cutter may break at the worst case. Even if the usage is less than the allowable frequency, continuous operation is limited to one minute at maximum and please take the interval time for the same duration as the cutter operation time.
● Please set the paper straightened with no slack.

[Precautions regarding others]

● This product is designed to use with general electronic devices (Computer, PC or OA etc.). This product is not designed and guaranteed to use with devices that require extremely high quality and reliability and to use with devices that their failures may directly endanger human body and life (atomic power control device, aerospace and aircraft device, transportation device, traffic signal device, ignition control device, medical device and various safety devices: hereafter called "specific application"). Users shall take full responsibility for using this product with such specific applications.

● Please DO NOT conduct operation that is not described in this document. It may cause accidents or failures.

● Data cannot be long-term stored, permanently stored and saved since it is basically evanescent.
NIPPON PRIMEX INC. is not responsible for any damage of data deletion or lost profits due to breakdown, repair or inspection.

● When selecting RTS / CTS in serial flow control, please be 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 characters or printing disarray.

● Specifications and shapes, etc. may be changed due to parts sharing or improvement of parts, etc.

● Firmware and hardware upgrades will be charged.

● The coverage of warranty is limited within the delivered product itself, and NIPPON PRIMEX INC. is not responsible for anything induced by the defect of the product and does not pay for any compensation for them.

● Since there is no galvanization coating on the end surface while this product uses the galvanized metal sheet, rust may occur on it. However, this does not impair the function.

Regarding the frequency band

・Bluetooth model (NP-KV*0B*)
This model is a radio device using 2.4GHz band.
A Bluetooth module conforming to the acquired radio equipment conformity certification.

The frequency band used for this model is used by industrial, scientific and medical equipment such as microwave oven. Furthermore, premises radio stations requiring licenses for , special small electric power radio stations not requiring licenses and nonprofessional radio stations requiring licenses are using this frequency band as well.

1. Before using this product, please check whether there is not a premises radio station for identifying the moving objects, a special small electric power radio station or a nonprofessional radio station.
2. Please turn OFF the power immediately if harmful radio wave interference occurs between this product and a premises radio station for identifying the moving objects,

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Reference materials other than this document (Please refer to documents below regarding the commands and the code tables.)

  ・Command Reference [NP-KV20 / KV30] (D-F10170)
      Following code tables are described in the Command Reference in addition to the commands.
      Domestic code table, Overseas code table, Code Page 858, International character code table,
      Code Page 1250, Code Page 1251, Code Page 1252, Code Page 1254

  ・Kanji code [JIS C 6226・1983] (D-F10068)

1.   Overview

   1.1   Application

      This document of product specifications is applied to "NP-KV20 and NP-KV30".

      [Notes]
            ・Please refer to the Product Specifications separately for the specifications of options.
              (Please note that they may differ from those for this printer.)
            ・Please refer to the printer driver related documents when using the printer driver.
            ・Please note that the usable roll paper, character types, the power supply and the
              environment, etc. may differ from those for other models.
            ・All specifications described in this document are subject to change for improvement of this
              product without prior notice.

1.2 Model description

Basic models of this printer are categorized as follows:

NP-KV20DK-**
     (1) (2) (3) (4)

(1) Mechanism (Factory default setting)
   2: 2 inch model (NP-KV20**)
   3: 3 inch model (NP-KV30**)

(2) Interface and options connectability (Factory default setting)
   U: Standard type
   D: High performance type
   B: High performance type and Bluetooth type
     (Specifications which can be considered for an OEM base)

		(2)		
		U	D	B
Interface	USB (conforming to V2.0 full speed)	Available	Available	Available
	Serial (conforming to RS-232C)	Unavailable	Available	Available
	Bluetooth (conforming to Specification Version 2.1 + EDR)	Unavailable	Unavailable	Available
Options connectability	Bezel without sensor: BEZ-220 / 230	Connectable	Connectable	Connectable
	Bezel with sensor: BEZ-221 / 231	Unconnectable	Connectable	Connectable
	LED bezel: BEZ-320 / 330	Unconnectable	Connectable	Connectable
	Presenter: NPT-308	Unconnectable	Connectable	Connectable

[Notes]
   ・Two or more interfaces and two or more options cannot be used simultaneously.

(3) Product form (Factory default setting)
   M: Printer module type
   K: KIOSK printer type equipped with a printer module above

(4) OEM (They will be described in the Product Specifications to be delivered separately.)
   No notation: Original

1.3   Features

This printer is a KIOSK printer with the newly developed printer module.
High-speed and high-quality printing and the cost reduction are realized.
Since installing this printer to each equipment can be finished only by the provision of the power supply (DC24V) and the data, this products' compact and simple design makes it possible for users to install this model freely.

1)   This printer can be used under environments with wide range of conditions.
2)   Since the modular design concept is adopted to this product, this printer model is composed of some units and it will be installed with various free layouts.
3)   Since this product can be installed with variable installing position angles, it can be installed more freely than other models.
4)   There are a [U] type which is inexpensive with simple functions, a [D] type and a [B] type available to be connected with options incorporates Bluetooth interface.
5)   High speed and high quality printing.
6)   Supporting USB and RS-232C interface.
        (Bluetooth is an optional interface which can be considered for an OEM base .)
7)   Various types of 1D barcodes are available.
        2D barcodes (QR code model2) are available.
8)   Applicable to various applications.
9)   A user-friendly paper holder with paper near end detection is attached.
10) Various printer drivers are available. [*2]
11) Various options are available. [*3]
12) Firmware (hereinafter F/W) can be rewritten since the flash memory is adopted.
        Up to 3 patterns of fixed bit image (logo, etc.) can be registered as well.
13) Supporting Japanese, Polish, Russian, Scandinavian and Turkish.
14) A presenter which is an optional paper transporting device can be used.
15) By using the optional LED bezel, it is possible to emit light at the leading edge of the paper ejection slit.
16) Roll paper can be replaced easily thanks to the auto-loading function.
17) Easy to do maintenance works since the thermal head can be opened.
        Easy to remove jammed paper.

*1: Please refer to [Appendix 1: Examples of other layouts].
*2: Verification of Linux (CUPS driver) has been carried out only for Ubuntu.
*3: Please refer to "1.5 Options" and "Appendix 2: Installation external dimensions of options (reference)".

1.4 Composition of deliverables

1) NP-KV20UK

Configured parts of this product are as follows.

No.	Name	Specifications	Quantity
1	NP-KV20UK	2 inch, USB 2-pin connector for power supply Multi-use cutter blade for partial cut and full cut	1
2	Pan head small screw M3x6	For fixing the printer module	4

[Notes]
・There are no sample rolls of paper or other accessories.
・This product is packed with the printer module unfixed to the base plate.
　Please refer to [1.4.1 Installing position types].

2) NP-KV20DK

Configured parts of this product are as follows.

No.	Name	Specifications	Quantity
1	NP-KV20DK	2 inch, USB and RS-232C interface 2-pin connector for power supply Multi-use cutter blade for partial cut and full cut Sensor bezel attachable LED bezel attachable NPT-308 attachable	1
2	Pan head small screw M3x6	For fixing the printer module	4

[Notes]
・There are no sample rolls of paper or other accessories.
・This product is packed with the printer module unfixed to the base plate.
　Please refer to [1.4.1 Installing position types].

3) NP-KV20BK

The components of this product are as follows.

No.	Name	Specifications	Quantity
1	NP-KV20BK	2 inch, USB and RS-232C interface 2-pin connector for power supply Multi-use cutter blade for partial cut and full cut Bluetooth interface available Sensor bezel attachable LED bezel attachable NPT-308 attachable	1
2	Pan head small screw M3x6	For fixing the printer module	4

[Notes]
・There are no sample rolls of paper or other accessories.
・This product is packed with the printer module unfixed to the base plate.
　Please refer to [1.4.1 Installing position types].

4) NP-KV30UK

The components of this product are as follows.

No.	Name	Specifications	Quantity
1	NP-KV30UK	3 inch, USB 2-pin connector for power supply Multi-use cutter blade for partial cut and full cut	1
2	Pan head small screw M3x6	For fixing the printer module	4

[Notes]
  ・There are no sample rolls of paper or other accessories.
  ・This product is packed with the printer module unfixed to the base plate.
    Please refer to [1.4.1 Installing position types].

5) NP-KV30DK

The components of this product are as follows.

No.	Name	Specifications	Quantity
1	NP-KV30DK	3 inch, USB and RS-232C interface 2-pin connector for power supply Multi-use cutter blade for partial cut and full cut Sensor bezel attachable LED bezel attachable NPT-308 attachable	1
2	Pan head small screw M3x6	For fixing the printer module	4

[Notes]
  ・There are no sample rolls of paper or other accessories.
  ・This product is packed with the printer module unfixed to the base plate.
    Please refer to [1.4.1 Installing position types].

6) NP-KV30BK

The components of this product are as follows.

No.	Name	Specifications	Quantity
1	NP-KV30BK	3 inch, USB and RS-232C interface 2-pin connector for power supply Multi-use cutter blade for partial cut and full cut Bluetooth interface available Sensor bezel attachable LED bezel attachable NPT-308 attachable	1
2	Pan head small screw M3x6	For fixing the printer module	4

[Notes]
 ・There are no sample rolls of paper or other accessories.
  ・This product is packed with the printer module unfixed to the base plate.
    Please refer to [1.4.1 Installing position types].
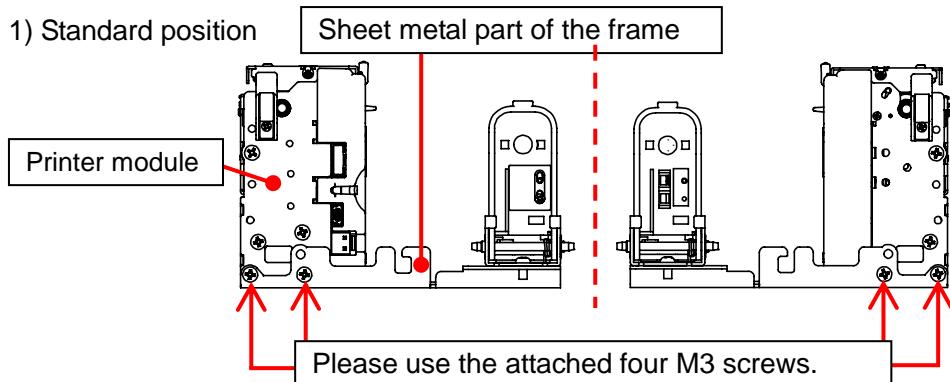
1.4.1   Installing position types

Since NP-KV*0*K is packed with the printer module unfixed to the base plate, this product can be installed with the position which fits the customer's printer using environment mostly. Please select one of the following installing position types and use it after fixing the printer module to the base plate part   by attached pan head   small screws.
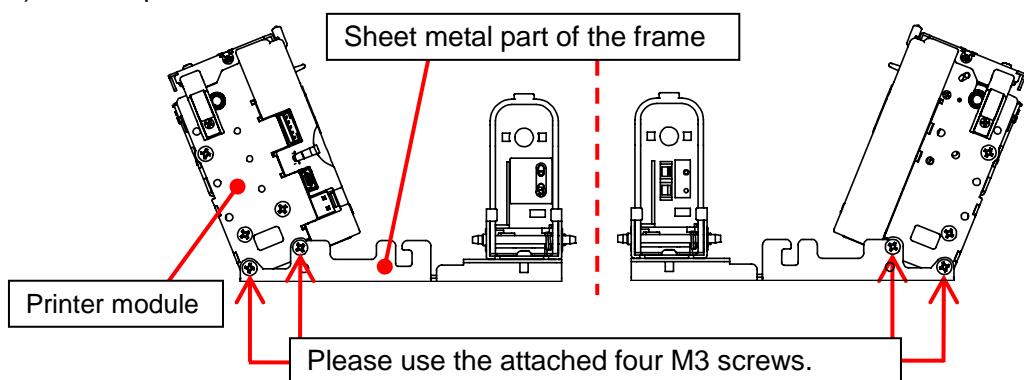
[Notes]
・Torque required for tightening screws is 0.7 N・m for reference.
・Since the screws (M3) are self-tapping screws, it may be felt rather heavy when trying to tighten this screw to mounting hole by a screw driver.
・Since the cable for the paper near end sensor is connected to the printer module, please be careful of handling. Please beware not to get the cables pinched.
・Please refer to [Appendix 1: Examples of installing positions].

1) Standard position

Sheet metal part of the frame

Printer module

Please use the attached four M3 screws.

2) Slanted position

Sheet metal part of the frame

Printer module

Please use the attached four M3 screws.

3) Vertical position

Printer module

Sheet metal part of the frame

Please use the attached four M3 screws.
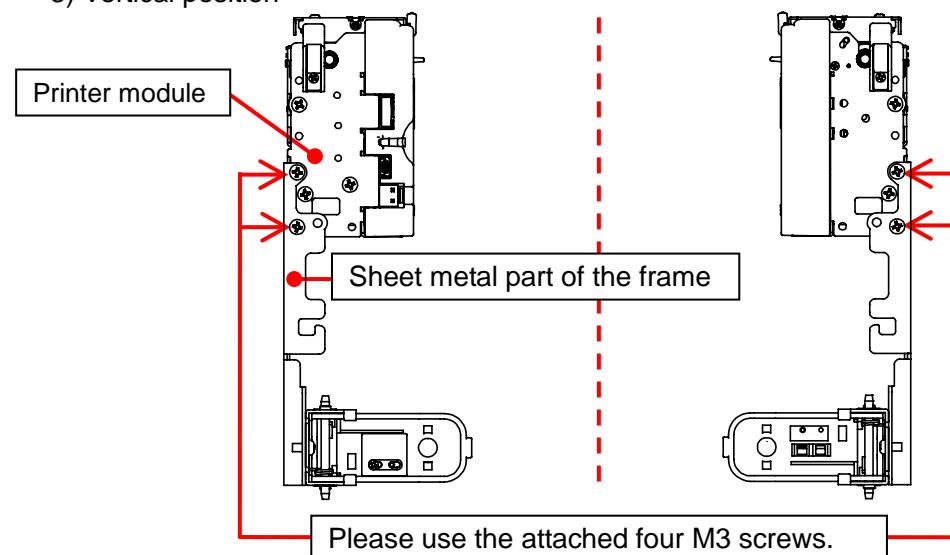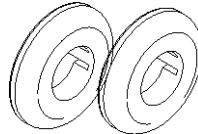
1.5 Options

1) Paper support

No.	Name	Specifications	Quantity
1	Paper support	For paper core inner diameter φ25.4mm	2

Paper support
　　　・Attachments for paper core inner diameter φ25.4mm ---- 2 pieces

The other options than above 1) are available which are described　below.
Since there are conditions and restrictions for using options, please read each Product Specifications and consider these options.
Please refer to "11) Extended functions (Options connectability) in "2.1.1 Basic specifications of NP-KV*0*K (KIOSK printer)" to find whether the options 3) to 6) are connectable.

2) Peak time current responsive type AC adapter PS11
　　　This is an adapter for DC24V output.
　　　Please refer to the Product Specifications D-F10183 and consider this option.

[Notes]
　　　・Please evaluate and verify it sufficiently with the actual machine before printing with a high printing rate.

3) LED lighting bezel BEZ-320 / 330 for 2 inches and 3 inches
　　　Two colors (red and blue) LED lighting bezels for 2 inches and 3 inches are available.
　　　Please refer to the Product Specifications D-F10059 and consider this option.

4) Bezels BEZ-220 / 221 / 230 / 231 for 2 inches and 3 inches
　　　Bezels for 2 inches and 3 inches with paper sensor (BEZ-221 / 231) or without paper sensor (BEZ-220 / 230) are available.
　　　Please refer to the Product Specifications D-F10056 and consider this option.

5) LED lighting presenter NPT-308
　　　Presenter with LED lighting is available.
　　　Please refer to the Product Specifications D-F10163 and consider this option.

[Notes]
　　　・When using the presenter NPT-308, the paper cutting mode will be full cut operation mode automatically.

6) Large roll paper (φ250mm) holder UPH-U250 for 2 inches, 3 inches and 4 inches paper width
　　　A stationary type paper holder applicable to φ250mm large size roll paper is available.
　　　Please refer to the Product Specifications D-F10234 and consider this option.

2. Specifications

  2.1 Basic specifications

    2.1.1 Basic specifications of NP-KV*0*K (KIOSK printer)

No.	Specifications		NP-KV20*K	NP-KV30*K
1	Head specifications	1: Printing method	Direct line thermal dot	
		2: Total dots/line	448 dots [*1]	576 dots
		3: Dots density	8 dots / mm	
		4: Printing width (max.)	56mm [*1]	72mm
2	Printing specifications	1: Printing speed (max.) [*2]	Max. 200mm / sec	
		Condition	Head temperature 35ºC or higher, optimized drive, printing rate 50% or less printing density setting 100% or less * Excluding communication time	
		2: Max. printing digits		
		Font A (12×24 dots)	37 digits [*1]	48 digits
		Font B (9×17 dots)	49 digits [*1]	64 digits
		Kanji (24×24 dots)	18 digits [*1]	24 digits
		3: Paper feeding pitch	0.125mm	
3	Character specifications	1: Character size		
		Font A (12×24 dots)	1.50×3.00mm	
		Font B (9×17 dots)	1.13×2.13mm	
		Kanji (24×24 dots)	3.00×3.00mm	
		2: Character types		
		Japanese	JIS C 6226·1983 (double byte characters) Domestic characters code (single byte characters) Overseas character code (single byte characters) Code Page 858 (single byte characters) International characters (single byte characters)	
		Polish	Code Page 1250 (single byte characters)	
		Russian	Code Page 1251 (single byte characters)	
		Scandinavian	Code Page 1252 (single byte characters)	
		Turkish	Code Page 1254 (single byte characters)	
		3: Character modifications	Double width Double height Double width and double height Bold printing Double strike Inverted 90°clock-wise rotation Underlined	
		4: Line feeding quantity (Default setting)	4.25mm (1/6 inch) [*3]	
4	Printing mode		Line mode Page mode	

  *1: It is required to change the digits by the command [Print area setting] 《GS W **n1 n2**》.
 *2: Printing speed fluctuates depending on the condition.
  *3: It can be changed by the command [Line feeding amount specifying at the smallest paper feeding pitch unit] 《ESC 3 **n**》.
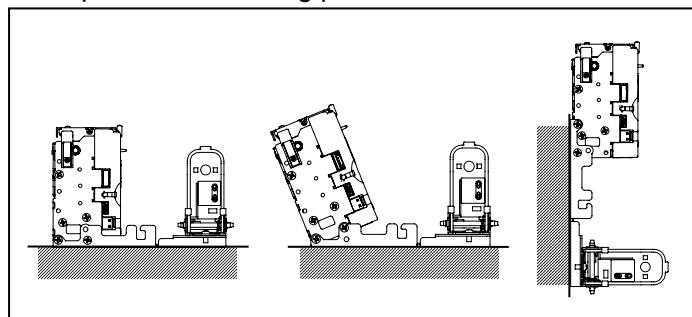
| No.	Specifications		NP-KV20*K	NP-KV30*K
5	Barcode specifications	1: 1D barcodes	UPC-A UPC-E JAN-13 (EAN-13) JAN-8 (EAN-8) CODE39 ITF CODABAR CODE128 CODE93 GS1 DataBar	
		2: 2D barcodes	QR code model2 Split QR codes model2 Micro QR code	
6	Interface	1: USB	Conforming to V2.0 full speed	
			NP-KV*0UK: Available NP-KV*0DK: Available NP-KV*0BK: Available	
		2: Serial	Conforming to RS-232C	
			NP-KV*0UK: Unavailable NP-KV*0DK: Available NP-KV*0BK: Available	
		3: Bluetooth	Conforming to Version 2.1 + EDR	
			NP-KV*0UK: Unavailable NP-KV*0DK: Unavailable NP-KV*0BK: Available	
7	Auto cutter	1: Cutting mode	Full cut Partial cut * It is selectable by the command [Full cut] 《ESC i》 and the command [Partial cut] 《ESC m》 .	
8	Receiving buffer		Approx. 10K bytes	
9	Alarm display		ALARM LED	
10	Operation switch		FEED switch RESET switch	
11	Extended functions (Options connectability)	1: Bezel without the sensor (BEZ-220 / 230)	BEZ-220	BEZ-230
			NP-KV20UK: Connectable NP-KV20DK: Connectable NP-KV20BK: Connectable	NP-KV30UK: Connectable NP-KV30DK: Connectable NP-KV30BK: Connectable
		2: Bezel with the sensor (BEZ-221 / 231)	BEZ-221	BEZ-231
			NP-KV20UK: Unconnectable NP-KV20DK: Connectable NP-KV20BK: Connectable	NP-KV30UK: Not connectable NP-KV30DK: Connectable NP-KV30BK: Connectable
		3: Bezel with LED (BEZ-320 / 330)	BEZ-320	BEZ-330
			NP-KV20UK: Unconnectable NP-KV20DK: Connectable NP-KV20BK: Connectable	NP-KV30UK: Not connecable NP-KV30DK: Connectable NP-KV30BK: Connectable
		5: Presenter (NPT-308)	NP-KV*0UK: Unconnectable NP-KV*0DK: Connectable NP-KV*0BK: Connectable	
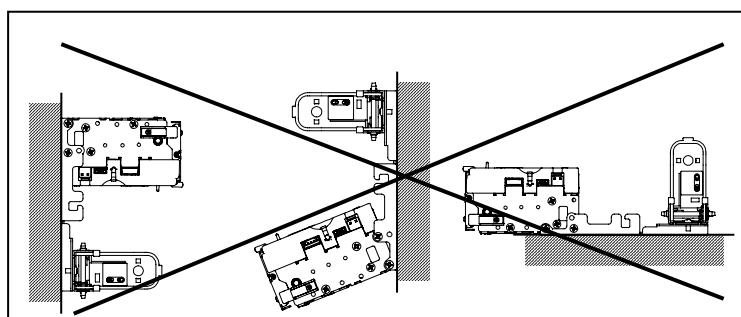
No.	Specifications		NP-KV20*K	NP-KV30*K
12	External dimensions	* Excluding connectors, roll paper and protruded parts roll paper	Approx. 97.6(W) x 118(D) x 81.4(H)mm	Approx. 119.6(W) x 118(D) x 81.4(H)mm
13	Weight	* Excluding roll paper	Approx. 500g	Approx. 580g
14	Mounting position		Horizontal [*4]	
15	Package	1: Individual carton dimensions	Approx. 175(W) x 130(D) x 110(H)mm	Approx. 175(W) x 155(D) x 110(H)mm
		2: Individual carton gross weight	Approx. 620 g	Approx. 720 g
		3: Master carton dimensions	Approx. 413(W) x 370(D) x 362(H)mm	Approx. 482(W) x 370(D) x 362(H)mm
		4: Master carton gross weight	Approx. 12.7 kg (including 18 pcs)	Approx. 14.5kg (including 18 pcs)

*4: This product can be used after changing the installing position to "slanted position" or "vertical position". Please refer to [Appendix 1: Examples of installing positions].

Example of the installing positions : Available

Example of the wrong installing positions

2.1.2 Basic specifications of NP-KV*0*M (printer module)

The following basic specifications are different from those of NP-KV*0*K (KIOSK printer).

No.	Specifications		NP-KV20*M	NP-KV30*M
1	External dimensions	* Excluding connectors, roll paper and protruded parts	Approx. 86(W) x 46(D) x 80.7(H)mm	Approx. 107(W) x 46(D) x 80.7(H)mm
2	Weight	* Excluding roll paper	Approx. 360g	Approx. 400g
3	Package		* Please contact the sales person in charge.	

2.2　Paper specifications

2.2.1　Paper width and thickness

|	NP-KV20**	NP-KV30**
Paper width	58^{+0}_{-1}mm	80^{+0}_{-1}mm
Paper thickness	59 to 145µm	
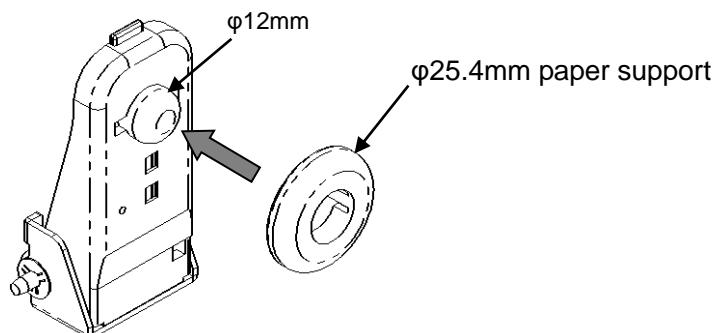
2.2.2　Form of roll paper

・Form has to be the roll one.

Maximum outer diameter	Paper thickness	Paper core inner diameter	Paper core outer diameter
φ90mm	59 to 85µm	φ12.0mm	φ18.0mm
φ90mm	100 to 145µm	φ25.4mm	φ33.4mm

[Notes]
- ・Please use the standard paper holder (PH-10).
  (Please consult us when using φ90mm or larger.)
- ・Please use the roll paper with the same paper core width as the paper width.
- ・When using the roll paper with paper core inner diameter φ25.4mm with PH-10, please attach the paper supports in options. (Please refer to the figure below.)
- ・Paper holder PH-10 is attached and the maximum outer diameter is φ90mm. Please contact us when using φ90mm or larger toll paper. (In that case, it may require taking measures for supporting the shaft and adding a shock absorber device.)

φ12mm

φ25.4mm paper support

[Precautions regarding paper]
- ・Please use thermal paper.
- ・Please DO NOT use the roll paper with the end of paper glued or taped.
- ・Please DO NOT use specially processed roll paper such as coreless paper or perforated paper.
- ・Please DO NOT use the roll paper with deformed paper core.
- ・Please DO NOT use the roll paper which has protruded paper core from the paper edge.
- ・Please DO NOT use the roll paper which has been stored in high temperature and high humidity environment.
- ・Please use the roll paper without loosening (slacks).
- ・Please use the roll paper whose external side is used for the printing side [revolute]. (Involute roll paper is not available.)
- ・Please evaluate and verify it sufficiently before using pre-printed paper. Especially, please beware that there is a paper-out sensor behind the non-printing side of paper in the printer.
- ・Please DO NOT use the roll paper which has been stored for a long time because printing quality will not be guaranteed.

2.2.3   Recommended thermal paper

Base paper model number	Paper thickness	Manufacturer	Recommended printing density setting
TF50KS-E2D	59μm	NIPPON PAPER INDUSTRIES CO., LTD.	100%
TF50KS-EY	61μm	NIPPON PAPER INDUSTRIES CO., LTD.	100%
P220VBB-1	75μm	Mitsubishi Paper Mills Limited	95%
PD160R	75μm	Oji paper Co., Ltd.	120%
PD450-145	145μm	Oji paper Co., Ltd.	120%

[Notes]
・Recommended thermal paper has been adjusted and confirmed for printing.
・When using paper other than recommended thermal paper, please evaluate and verify it sufficiently at the customers' own responsibility.
(Thermal paper containing less Na+ion, K+ion and Cl-ion suits well in order to prevent the galvanic corrosion.)
・Printing quality and printing density may decline depending on the paper thickness, the paper surface coating, the environment of temperature and humidity. Furthermore, tailing may occur if printing is performed at a high printing rate.
Please set the printing density after evaluating and verifying the printing quality and the printing density with the paper to be used and under the environment in which it will be used.
・If printing at a high printing rate is continued, some colors may come out at the upper part of the next line due to accumulated heat on the thermal head.
Please set the printing density after evaluating and verifying the printing quality and the printing density with the paper to be used and under the environment in which it will be used.
・Setting the printing density can be done by using the command [Printing density setting] 《GS~ **n**》.
(Please set the printing density at 130% at maximum.)
・When printing at a high printing rate under low temperature or high humidity environment, contamination on paper or condensation in this printer may occur due to vapors generated from the paper.
Please beware of water droplet not to drop on the thermal head. They may cause galvanic corrosion.
When condensation occurs, please keep turning-off the switch until dew disappears.

2.2.4　Paper near end

Equipped paper holder model	Paper core	Paper near end detection outer diameter	Printer model name
PH-10	Inner diameter φ12.0mm Outer diameter φ18.0mm	φ22.0±2.5mm	NP-KV*0*K (KIOSK printer)
	*1 Inner diameter φ25.4mm Outer diameter φ33.4mm	*2 φ37.0±2.5mm	

*1: When using the roll paper with paper core inner diameter φ25.4mm, please attach the paper supports in options.

*2: When using the roll paper with paper core inner diameter φ25.4mm, please change the paper near end sensor position. (Please refer to the figure below.)

[Notes]
・Please use the value of the paper near end detection outer diameter as a guide to the standard since it varies depending on the paper type and paper thickness, etc.

[Changing the paper near end setting]
　　Please loosen M2 screw or remove it and change its position in order to move the paper near end sensor unit.
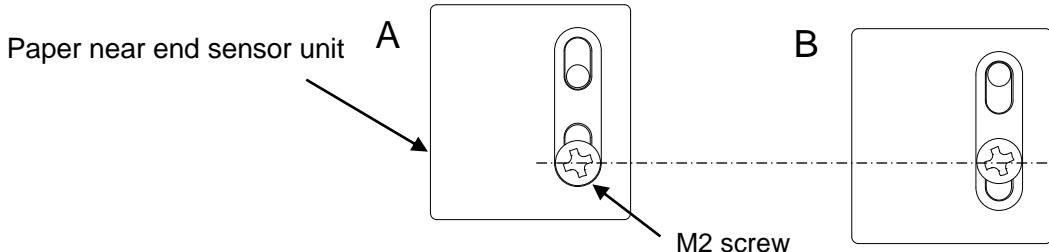
・Please loosen M2 screw and slide the paper near end sensor unit.
　(from A to B or from B to A in the figure below)

・Please remove M2 screw, change its position and move the paper near end sensor unit. (from A or B to C in the figure below.)

a. Paper core inner diameter φ12.0mm
　　Position A：Remaining roll paper outer diameter φ22.0±2.5mm (Default setting)
　　Position B：Remaining roll paper outer diameter φ24.0±2.5mm
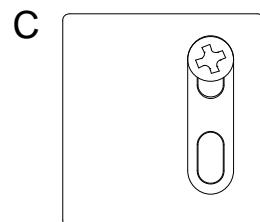
Paper near end sensor unit　A　　　B

M2 screw
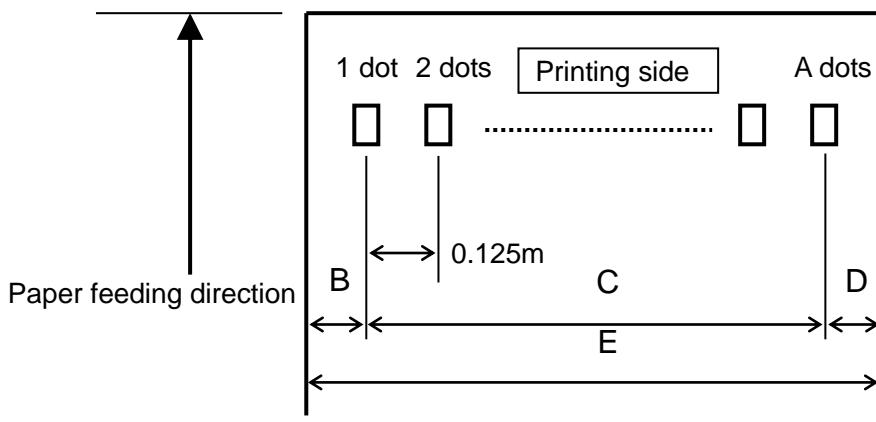
b. Paper core inner diameter φ25.4mm
　　Position C：Remaining roll paper outer diameter φ37.0±2.5mm
　　(Recommended position when using paper core with outer diameter φ33.4mm)

C

2.3   Print area

1) Code name

| Code	Descriptions
A	The number of dots to be printed
B	Left margin
C	Print area
D	Right margin
E	Paper width
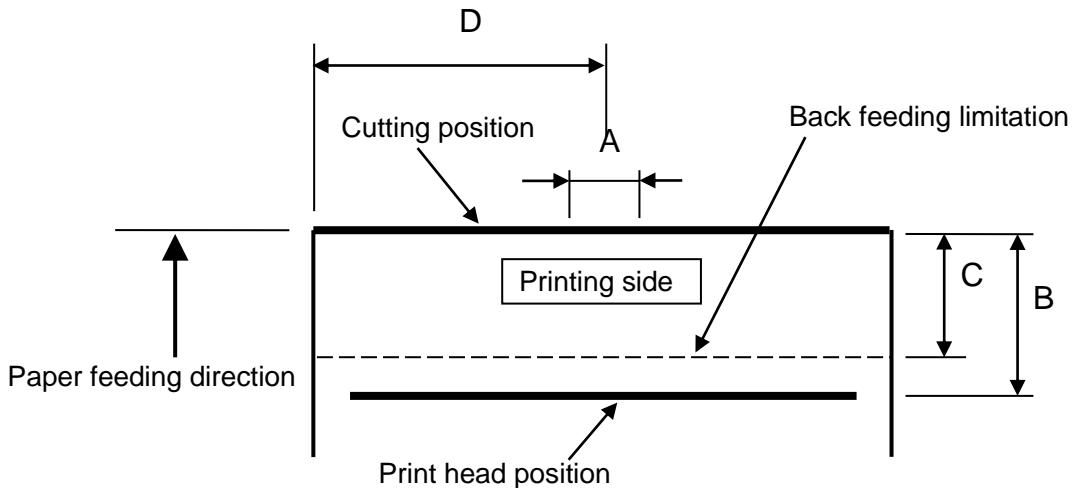
2) The relation between paper width and print area

	A (dot)	B (approx.)	C±0.2mm	D (approx.)	E$^{+0}_{-1}$mm	Factory default setting
NP-KV20**	432 dots	(2mm)	54mm	(2mm)	58mm	○
NP-KV30**	576 dots	(4mm)	72mm	(4mm)	80mm	○

[Notes]
・There is a left margin of approx. B and a right margin of approx. D for a paper width of E $^{+0}_{-1}$mm in a print area of C ± 0.2mm.
・The print area can be changed by using the command [Print area setting] 《GS W **n1 n2**》. When the margin is not enough, the printing may be off due to the paper deviation. (Taking 2mm or longer margin is recommended.)

2.4 Cutter specifications

Code	Descriptions	Measurements
A	Size of remaining uncut part at partial cut	Approx. 1.5mm
B	From the cutting position to the print head position	9.5mm
C	Back feed limitation	6.5mm
D	Position of remaining uncut part at partial cut	Paper center

1) Cutting system : Slide system

2) Cutting mode : Full cut / Partial cut

[Notes]
・It can be selected by using the command [Full cut] 《ESC i》 or the command [Partial cut] 《ESC m》.

3) Allowable cutting frequency : 30 cuts per minute (1 cut per 2 seconds)

4) Paper thickness : 59 to 145μm
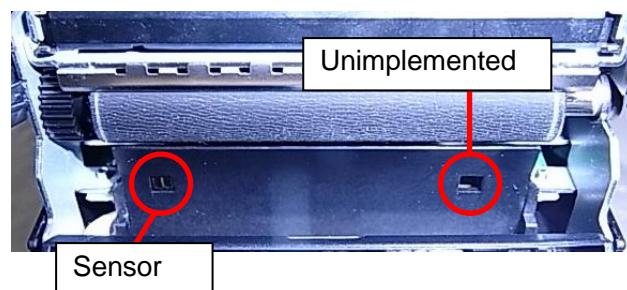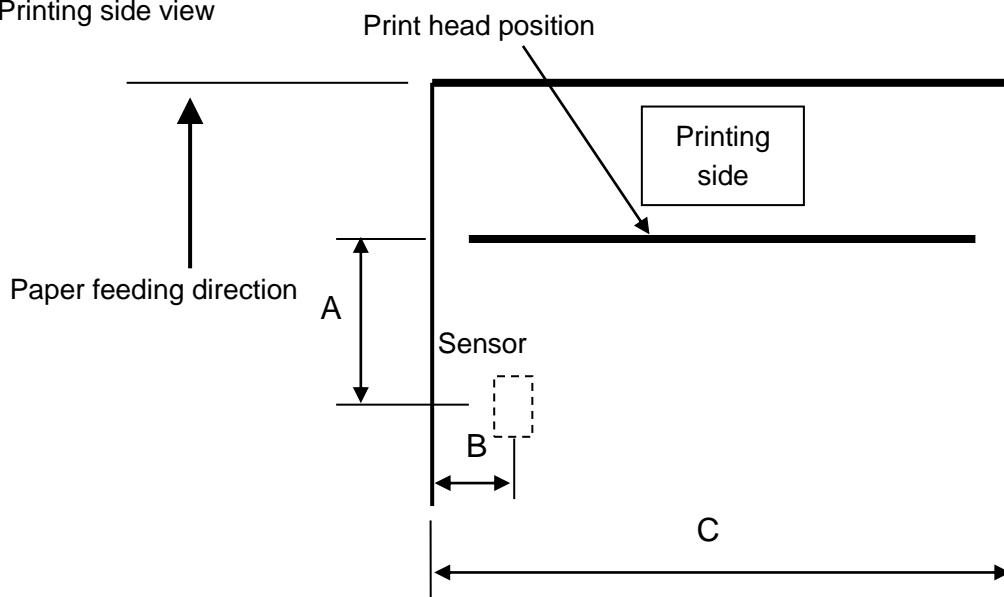
5) Minimum cutting length : 30mm

[Notes]
・Please note that the upper part of the next line may be deformed after the platen get heavily loaded by pulling the paper strongly after partial cut, etc.
・When the motion which brings the heavy load to the platen is done after partial cut, please feed the paper 1mm (8 dots) or longer in order to prevent the deformation of the upper part of the line.
・Please tear off the paper after partial cut by grabbing the tip of either left or right side of the paper, pulling it horizontally toward the outside direction to the grabbed side.
・Approx. 2mm paper feeding will be operated automatically after cutting in order to prevent paper jams. Therefore, measure of B in the above table will actually be 11.5±1mm.
・Please DO NOT use it in a way which produces paper strips shorter than 30mm by cuttings. It causes paper jams.
・When using the multi-use cutter blade for partial cut and full cut, paper strips may appear by cuttings. Please perform the cleanings periodically.

2.5 Paper-out sensor and black mark sensor (multi-use for the paper-out sensor and the black mark sensor)

Printing side view

Print head position

Printing side

Paper feeding direction

A

Sensor

B

C

Unimplemented

Sensor

[Notes]

・The sensor for detecting the paper is attached in the printer mechanism. (Please refer to the picture above.)
・Paper-out sensor detects whether the paper is completely exhausted (paper end).
・Printing is stopped when paper-out is detected.
・Please DO NOT use the paper with the end of paper glued to the paper core because it cannot detect the paper-out when using such roll paper.
・Please replace the paper as soon as it detects paper-out (paper end).
・The sensor is located behind the non-printing side of the paper.

1) Each code

Code	Descriptions
A	From the print head position to the sensor position
B	From the paper edge to the sensor position
C	Paper width

2) Sensor position

	A	B	C$^{+0}_{-1}$mm
NP-KV20**	14.3mm	(5.55mm)	58mm
NP-KV30**	13.75mm	(6.3mm)	80mm

[Notes]
  ・Please remove the dust and the wisps of paper adhering to the sensor periodically.
  ・Pre-printing with deep colors in the range of left and right 7.5mm from the sensor's standard position is prohibited. Please evaluate and verify it sufficiently on the customer's side before using pre-printed paper.
  ・In order to prevent the sensor malfunction, please DO NOT pre-print in vertical and horizontal direction of the black mark sensor if the black mark is printed.
  ・When a paper-out status continues for longer than 10mm paper during the paper feeding, a paper-out error will be detected and the printer operation will stop. When it continues for shorter than 10mm, it will be judged as a mark detection and the printer operation will not stop. If there is a paper-out status during standby, a paper-out error will occur immediately.

3) Specifications of black mark printing

Position of mark printing	The standard position shall be the center of the black mark sensor.
Mark width (min.)	Wider than 5mm left and right (totally minimum 10mm) from the standard position
Mark height (min.)	5mm
Black mark printing side	Non-printing side
PCS value	0.9 or more
Reflectance	7% or less in case of wavelength 900nm (Infrared)
Pre-print restricted area	Pre-printing is prohibited for the range of the black mark width described above. When using pre-printed paper, please refer to the precautions.

[Notes]
  ・Since the infrared reflectance varies by several percent in mark printing, please print the mark based on a reflectance of 4% so that the reflectance will be 7% or less including the value by the variation.
  ・For mark printing, overprinting is recommended in order to avoid the printed result with the light and shade.

2.6 Power supply specifications

1) Power supply input connector
   2-pin connector
   Please connect the adapter side connector described below to this connector (S2P-VH (LF)
   (SN)　J.S.T.MFG.CO., LTD. or equivalent) .
   Adapter side connector　　　　　: VHR-2N (J.S.T.MFG.CO., LTD.JST) or equivalent
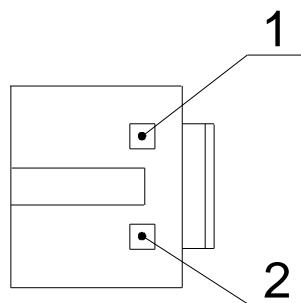
No.	Function
1	+24V
2	GND

Connector fig. (View from the mating surface)

2) Power supply voltage　　　　: DC 24V±5%

3) Consumption current

[Condition] Partition drive: optimized, Power-supply: DC24V, Temperature: 25 ºC,
        Printing density: 100%

	NP-KV20**		NP-KV30**	
Printing rate	Approx. 18% (Please refer to the print example.) ANK rolling 50 lines (Repeat "A to Z", "0 to 9") + paper feeding 5 lines + auto cutting	100% (Please refer to the print example.) Printing length 20mm	Approx. 18% (Please refer to the print example.) ANK rolling 50 lines (Repeat "A to Z", "0 to 9") + paper feeding 5 lines + auto cutting	100% (Please refer to the print example.) Printing length 20mm
Print contents	Font A 36 digits	Print width 54mm (432 dots)	Font A 48 digits	Print width 72mm (576 dots)
Print example	36 digits ABCD to WXYZ0123456789 ABCDEF to YZ0123456789 ABCDEFGH to 0123456789 : : : ABCD to WXYZ0123456789 ABCDEF to YZ0123456789 ABCDEFGH to 0123456789	54mm ■■■■■■	48 digits ABCD to 98ABCDEFGHIJKL MNOPQR to MNOPQRSTUVWX YZ012345 to 0123456789 : : : YZ01 to WXYZ0123456789 ABCDEF to ABCDEFGHIJKL MNOPQRST to OPQRSTUVWX	72mm ■■■■■■
Reference consumption current	Average : approx. 1.7A Peak : approx. 8.5A	Average : approx. 5.2A Peak : approx. 10.3A	Average : approx. 1.7A Peak : approx. 9.7A	Average : approx. 5.3A Peak : approx. 10.7A

[Notes]
   ・The print width and the partition drive are set to the default settings of this product.
   ・When printing more than 312 dots by NP-KV20** or more than 384 dots by NP-KV30**, please select optimization or dual partition drive printing.
   Furthermore, when performing the printing described above, the length should be within 100mm.
   ・Please DO NOT make the power supply voltage exceed the range of the power supply voltage under any conditions since it may lead to deterioration or destruction immediately if it exceeds the power supply voltage range even for a moment.
   ・Please use the power supply with sufficient capacity in order to secure the printing quality since large peak currents flow depending on the power voltage and printing contents. Furthermore, please be sure to connect all of the power supply relating wiring. Please use AWG #16 or others with the grade near to it for the wiring material.

・ Since operation may be unstable when the power-supply line is long (2m or longer), please shorten the power supply line. If it is not possible, please connect cables near the printer and place an electrolytic capacitor (electrostatic capacity 2200μF) between the power supply and GND for relaying near the printer. Please wire the power line and the signal line so that they are not electromagnetically affected by the other power lines. Withstand voltage to use is 35V or more.

・ Please use the power supply which acquired LPS standards.

・ Please DO NOT insert the connector diagonally, reversely or incorrectly. Furthermore, please DO NOT input nonstandard signals and even connect it. It will be causes of the failure.

・ Please DO NOT plug or unplug the active power supply cable.

2.7   Reliability specifications

1) Lifetime

(1) Thermal head
Anti-pulse resistance   : 150 million pulses
Anti-abrasion resistance   : 150km

(2) Cutter   : 1.5 million cuts

(3) Lifetime definition
・Lifetime means the point which the printer is about to enter abrasion failure period.
・Conditions to satisfy lifetime are as follows.
Average printing rate   : 12.5%
Lifetime guaranteed thermal paper : PD160R, TF50KS-E2D, TF50KS-EY
Printing density   : 100%
Environmental temperature and humidity : 20ºC, 60%

[Notes]
・Using the paper other than thermal paper with printer's lifetime guarantee may affect lifetime.
(Thermal paper with printer's lifetime guarantee is the thermal paper which has the warranty
by the head manufacturer's warranty or with which the durability test has been conducted.)

2.8   Environmental specifications
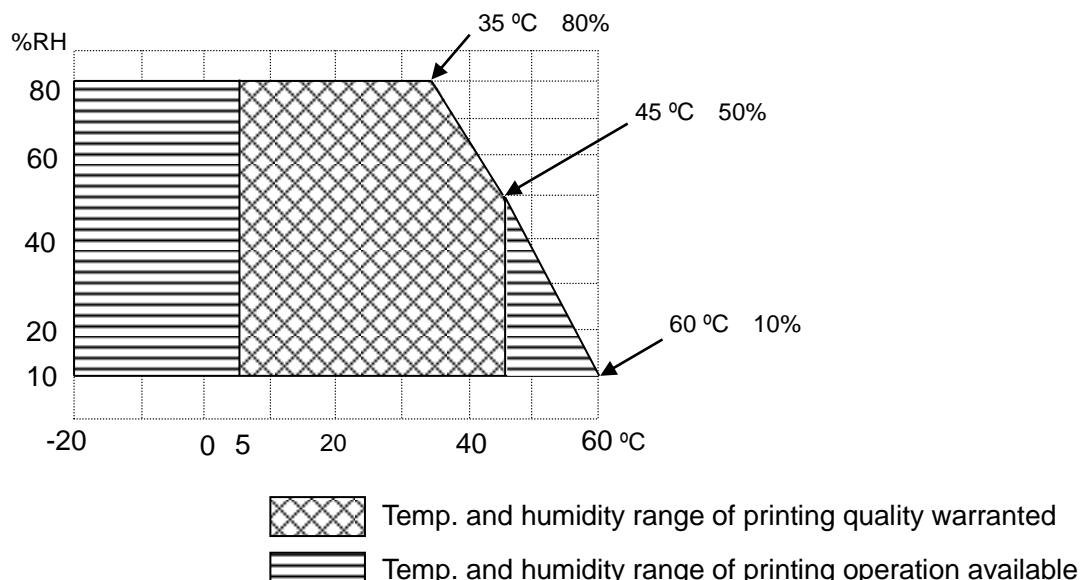
2.8.1   Operating environment

Temperature   : -20 to 60 ºC

Humidity   :   10 to 80%RH
                         This range is under the condition without condensation and 80%RH
                         has the premise that it is measured under 35ºC.

The range of printing quality warranted and the range of printing operation available are as below.

%RH

35 ºC   80%

45 ºC   50%

60 ºC   10%

-20   0 5   20   40   60 ºC

▨▨▨ Temp. and humidity range of printing quality warranted
▤▤▤ Temp. and humidity range of printing operation available

[Notes]
・When the paper is left in high temperature and high humidity environment with paper loaded, the paper may be deformed and printed dot lines may become out of alignment at the printing start. Please feed the paper by 8 dots or more when using such roll paper.

2.8.2   Storage environment (excluding the paper)

Temperature   :   -30 to 70 ºC
Humidity   :   10 to 90%RH
                         Under the condition without condensation
High temperature and high humidity   : The upper limit is 40ºC and 90%RH
                                         (without condensation).

2.8.3   Solder

Lead-free soldering is used for this product.

2.8.4   RoHS Directive

This product is conforming to RoHS2 Directive [(EU) 2015 / 863].

2.9   Standards

The standards for this product are as follows.
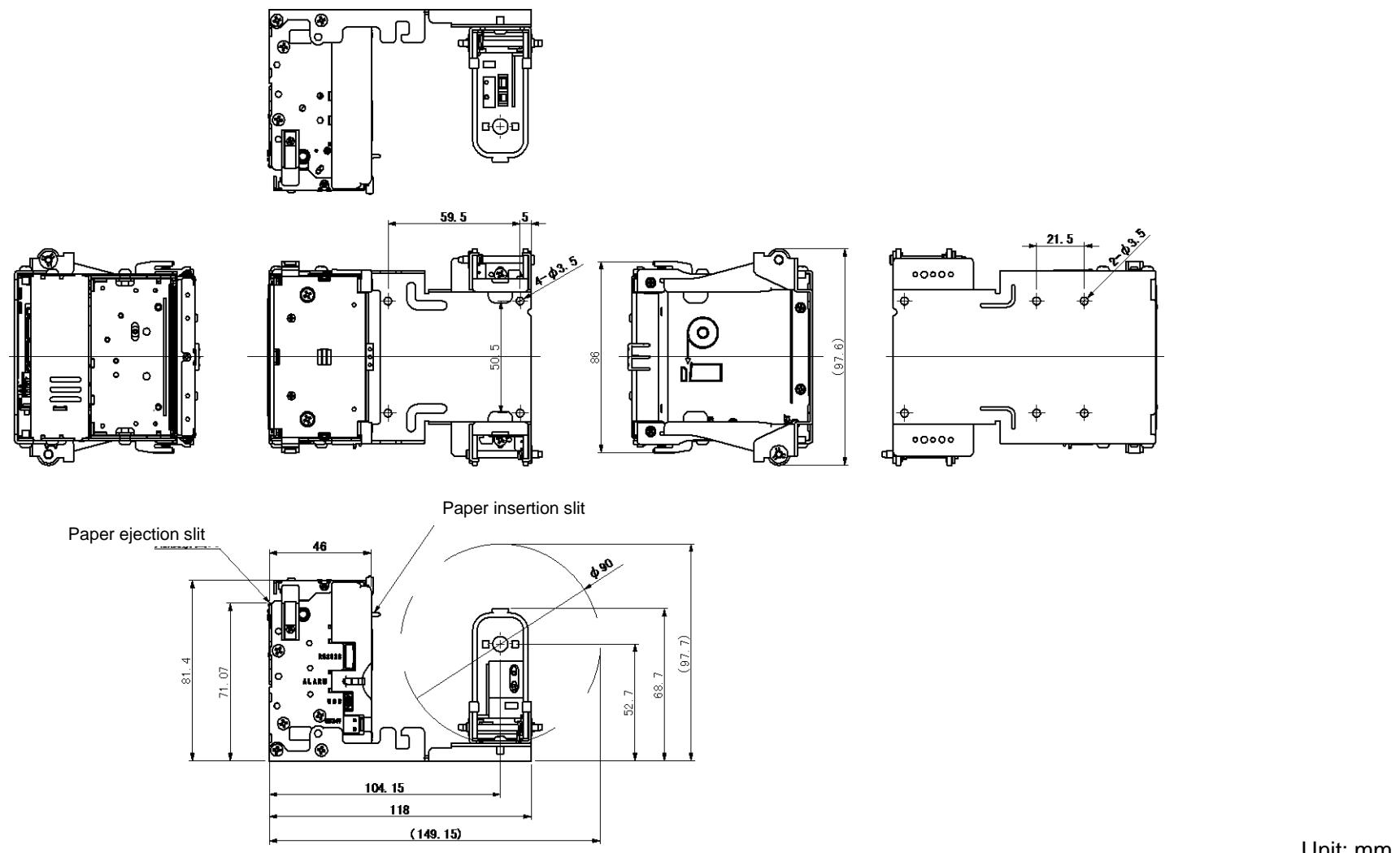
	NP-KV20**	NP-KV30**	Remarks
CE marking	Acquired	Acquired	
VCCI	Class A (acquired)	Class A (acquired)	
FCC	Class A (acquired)	Class A (acquired)	

[Notes]
・A standard model acquired the standards.

2.10   External dimensions
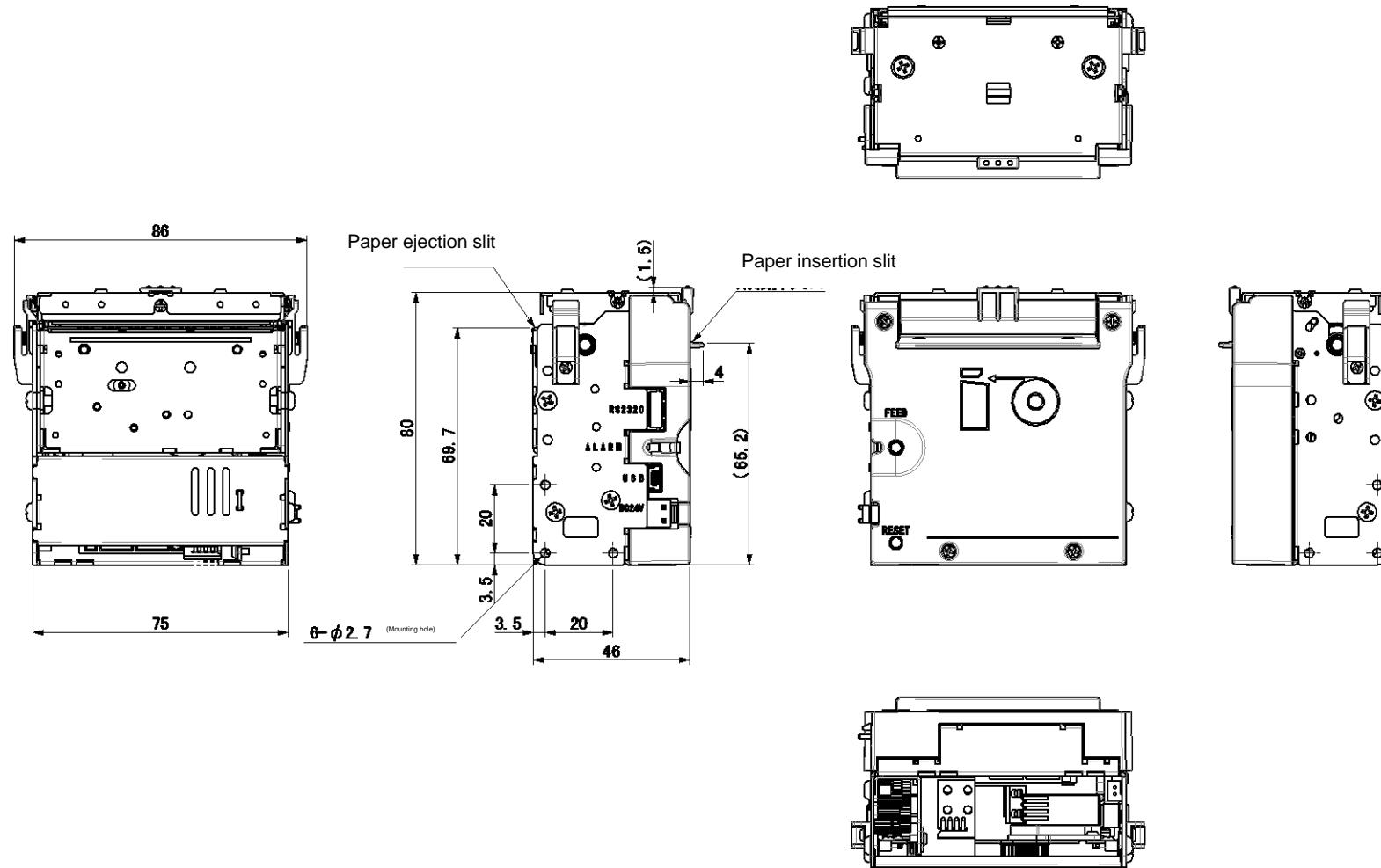
2.10.1   NP-KV20*K (KIOSK printer)

Paper insertion slit

Paper ejection slit

Unit: mm

[Notes]
・By parts sharing or improvement, a shape may be changed, except outer dimensions, the positions of mounting holes or outlets, etc. are specifically described.

![NPI]

2.10.2 NP-KV20*M (Printer module)
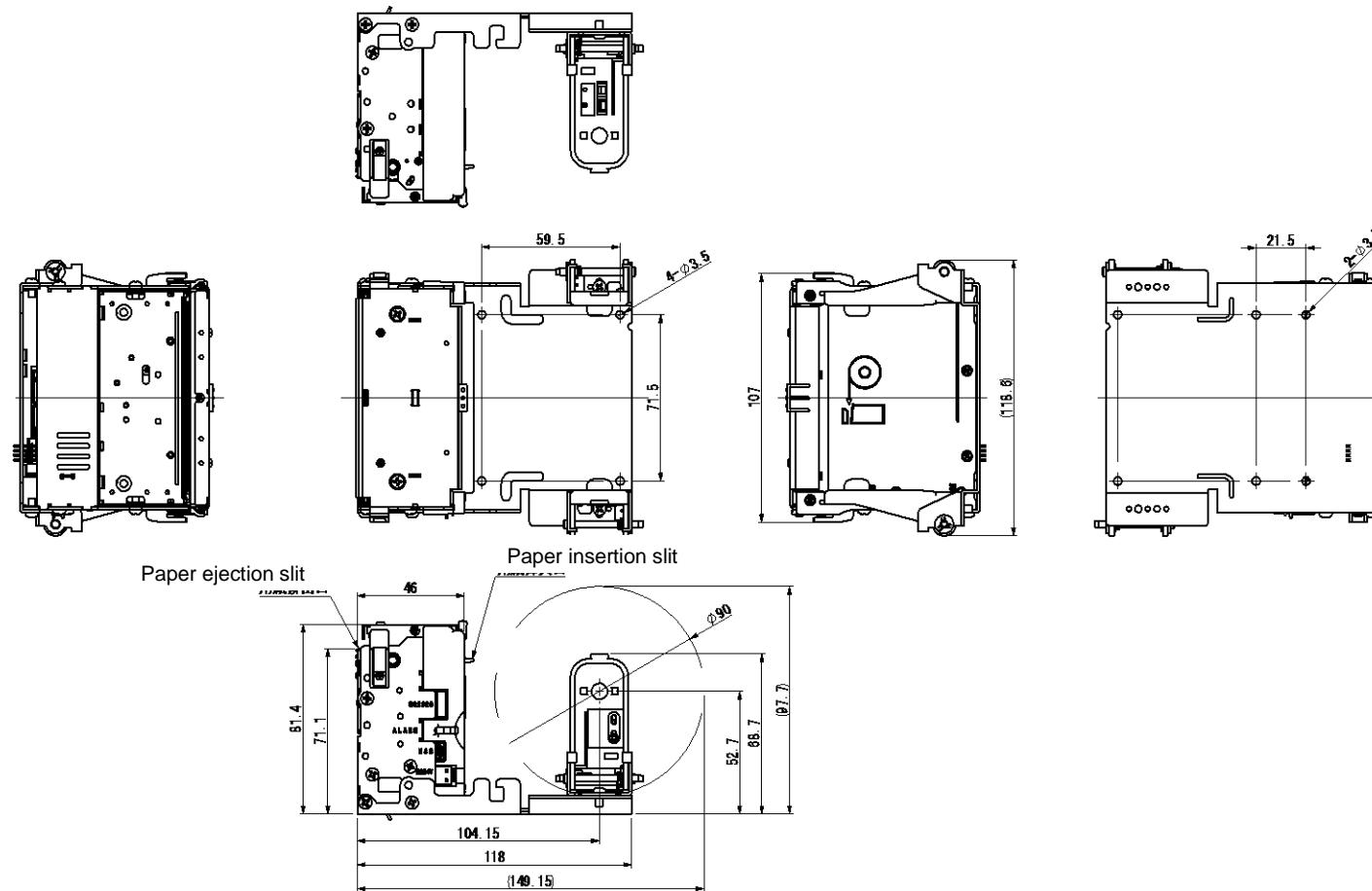
Paper ejection slit

Paper insertion slit

86

80

69.7

20

3.5

3.5

20

46

75

6−φ2.7 (Mounting hole)

(1.5)

4

(65.2)

RS232C

ALARM

USB

DC24V

FEED

RESET

Unit: mm

[Notes]
・By parts sharing or improvement, a shape may be changed, except outer dimensions, the positions of mounting holes or outlets, etc. are specifically described.
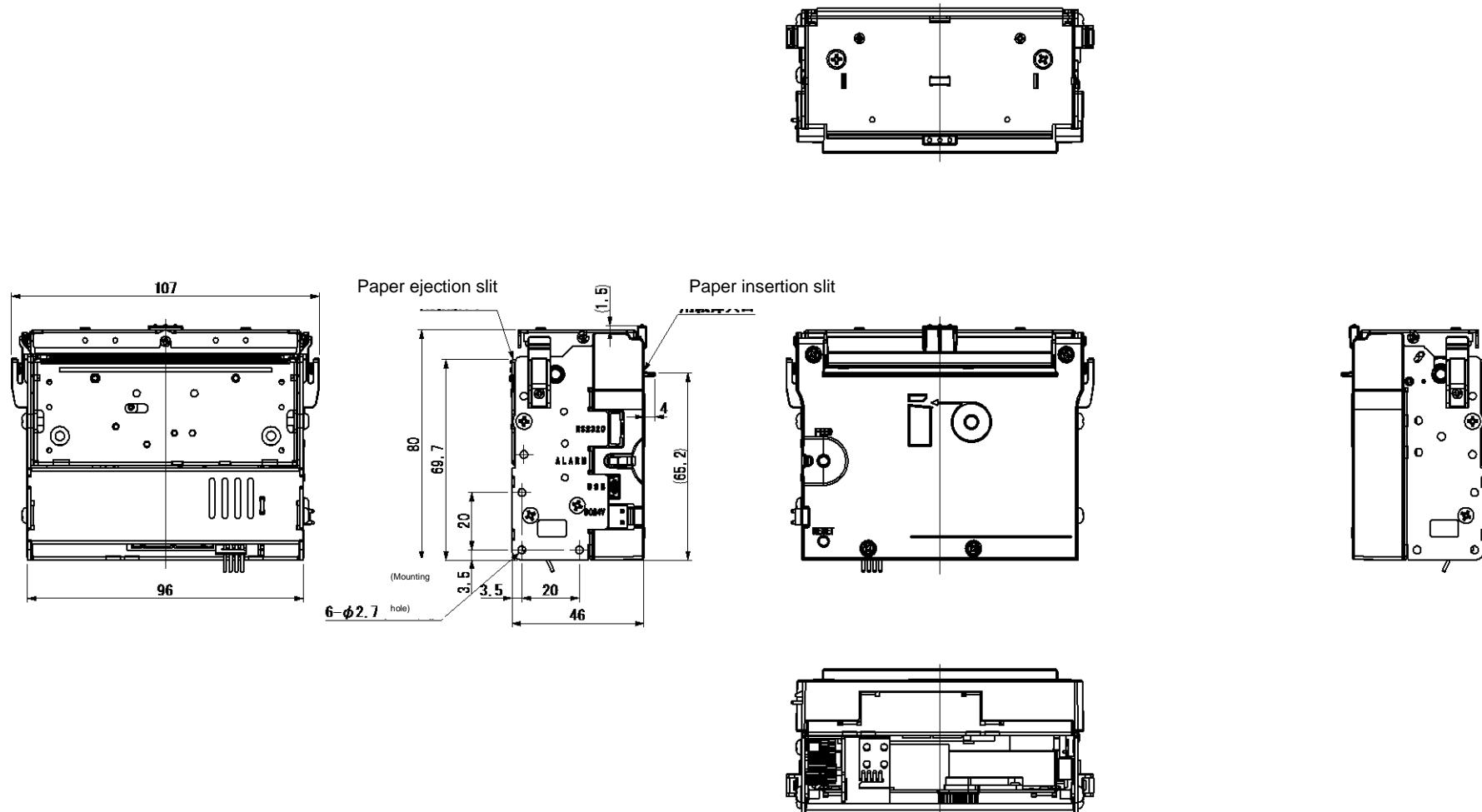
2.10.3   NP-KV30*K (KIOSK printer)


Paper ejection slit

Paper insertion slit

Unit: mm

[Notes]
・By parts sharing or improvement, a shape may be changed, except outer dimensions, the positions of mounting holes or outlets, etc. are specifically described.

2.10.4 NP-KV30*M (Printer module)

Paper ejection slit   Paper insertion slit

107

96

80

69.7

20

3.5

3.5   20

46

(1.5)

4

(65.2)

RS232C

ALARM

(Mounting hole)

6−φ2.7

Unit: mm

[Notes]

・By parts sharing or improvement, a shape may be changed, except outer dimensions, the positions of mounting holes or outlets etc. are specifically described.

3.   Interface

3.1   Interface [USB (conforming to V2.0 full speed)]

1) Version   : V2.0 full speed (12Mbps)

2) Port   : Upstream port (B jack)

3) Power supply   : Self power

4) Reset function   : Printer will be reset when the USB cable connected to the host is
                                        connected.

5) Data receiving
    USB data is received by a bulk-out transfer method. If the data is received even during
    printing and the remaining capacity of the receiving buffer becomes less than 1024 bytes,
    the NAK responses are continued until the processing proceeds and the remaining capacity
    of the receiving buffer reaches 1088 bytes or more. The maximum number of bytes that can
    be received in one packet is 64 bytes. Data is being received even when an error occurs.

6) Data transmitting
    USB data is transmitted by a bulk-in transfer method. Response data is temporarily stored
    in the transmission buffer and a response with status data is sent when the bulk-in packet
    request from the host is received. If a bulk-in packet request is received when there is no
    data to be transmitted, only status data is returned. The maximum number of bytes that can
    be transmitted in one packet is 64 bytes.

[Notes]
    ・Please use the drivers provided by us [*1] when using the USB interface.
    ・When performing the direct transmission, please monitor the remaining size of receiving
      buffer [*2] and DO NOT transmit the data whose size is beyond this.
    ・If using the direct communication without using our driver, please contact us.

    *1: Please use either one of the following drivers or the latest version driver of NPI drivers
        (NPI Integration Driver is recommended.).

            NPI Integration Driver Ver.1.0.3.0 or later
            NPI Printer_DS3.1 or later

    *2: Receiving buffer remaining size auto-reply format (in case of MS2-7: OFF)

        〔FF〕h＋〔01〕h＋〔00〕h＋〔00〕h＋〔00〕h＋n   ※〔00≦n≦0F〕h
         n＝ Receiving buffer remaining size (0 to 15K bytes)

3.2   Interface [serial (confirming to RS-232C)]

* This interface can be used only with the models supporting the serial interface.

1) Synchronization mode   : asynchronous mode

2) Baud rate   : 9600, 19200, 38400, 115200bps (selectable by users)

3) Composition of one word
    Start bit   : 1 bit
    Data bit   : 8 bits
    Parity bit   : an odd number, an even number or no parity (selectable by users)
    Stop bit   : more than 1 bit

4) Signal polarity
  RS-232C
    Mark   = logical"1" / OFF (-3V to -12V)
    Space   = logical"0" / ON (+3V to +12V)

5) Received data (RXD signal)
    Mark   =1
    Space   =0

6) Transmitted data (TXD signal) [*1]
    Mark   =1
    Space   =0

  During XON / XOFF control
    《DC1》［11］h code, XON   : Possible to receive data [*2]
    《DC3》［13］h code, XOFF   : Impossible to receive data [*3]

7) Receiving control (RTS signal)
    Mark   : Impossible to receive data [*4]
    Space   : Possible to receive data [*2]

8) Transmitting permission (CTS signal)
    Mark   : Impossible to transmit data
    Space   : Possible to transmit data

*1: Data transmission will not be operated during receiving data. In addition, data transmission will be operated after stopping receiving data when receiving data sequentially. Furthermore, the timing of data transmission may change depending on the conditions during printing or receiving data.
*2: It will occur after turning the power ON, finishing self-diagnostic printing or completing software resetting and when releasing receiving buffer full or the firmware is rewritten.
*3: It will occur when the receiving buffer is full, after receiving the command [Memory switch setting and printing] 《GS M **n d1 d2**》, after receiving the command [Software reset] 《DC1》 or when the firmware is rewritten.
*4: It will occur when turning OFF the power, self-diagnostic printing is executed, software resetting is performed or the receiving buffer is full, after receiving the command [Memory switch setting and printing] 《GS M **n d1 d2**》 or the firmware is rewritten.
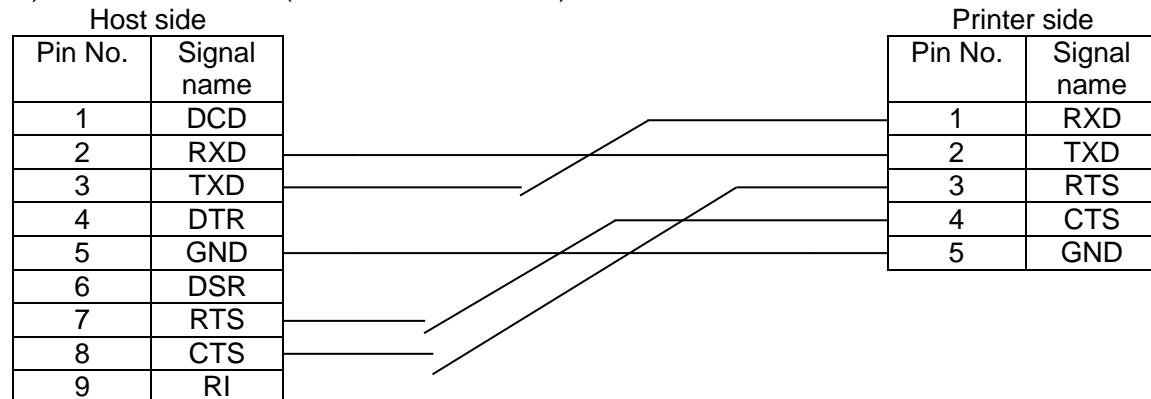
[Serial connection wiring and flow control]

(1) Connection wiring diagram
Connection examples to the host is describes below.
(AT compatible machines) JEC-9S (J.S.T.MFG.CO., LTD.) or equivalent
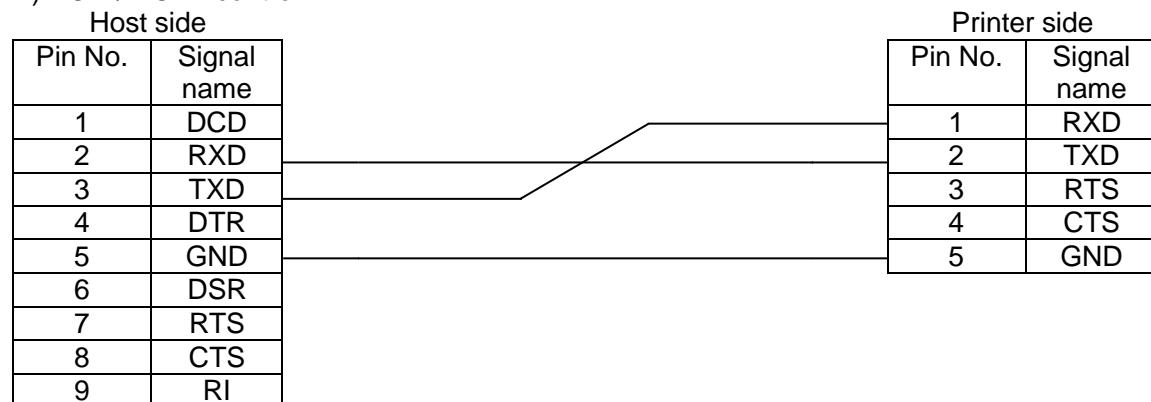
1) RTS / CTS control (hardware flow control)

Host side

Pin No.	Signal name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Printer side

Pin No.	Signal name
1	RXD
2	TXD
3	RTS
4	CTS
5	GND

2) XON / XOFF control

Host side

Pin No.	Signal name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Printer side

Pin No.	Signal name
1	RXD
2	TXD
3	RTS
4	CTS
5	GND

[Notes]
・The cable length must be within 3m.
・Please be sure to connect GND.
・Please be sure to shield the signal line. At that time, please DO NOT shield the power supply and signal lines together.
・Please check and verify this product sufficiently before using it actually.

(2) Flow control
1) RTS / CTS control (hardware flow control)
The RTS signal is marked and become unable to receive in the following cases.
・From power-on or resetting to the timing when the communication becomes possible after initialization processing.
・During self-diagnostic printing.
・When the receiving buffer is full.
・When defining / registering the data to the printer.

2) XON / XOFF control
XON / XOFF transmission timings are as follows.

XON transmission	・When the communication becomes possible after power-on or resetting.
	・When the receiving buffer full is released.
	・When data definition / registration to the printer are finished.
XOFF transmission	・When the receiving buffer is full.
	・When defining / registering the data to the printer.

3.3   Interface [Bluetooth (conforming to Specification Version 2.1 + EDR)]

* This interface can be used only with the models supporting the Bluetooth interface.

Printer models supporting Bluetooth interface can communicate with a device supporting Bluetooth like a PC, a PDA, a smart phone or a handy terminal.

1) Version   : Conforming to Bluetooth Specification Version 2.1 + EDR

2) Carrier wave frequency band   : 2400MHz to 2483.5MHz

3) Symbol rate   : 1 Mbps

4) Number of channels   : 79 ch

5) Output class   : Conforming to power class 2

6) Profile   : GAP, SPP

7) Output level   : 4 dBm or below

3.4 Connector signal table

1) CN1 : Power input connector
Please refer to [2.6 Power supply specifications].

2) CN3 : USB data signal input connector
Printer side : Mini-B UB-M5BR-S14B (J.S.T.MFG.CO., LTD.JST) or equivalent
Mating side : Mini-B or equivalent

Pin No.	Signal name	Input / Output	Function	Remarks
1	VBUS	Input	Power line	Non-twisted power line
2	D-	Input / Output	Data line	Twisted pair signal line
3	D+	Input / Output	Data line	Twisted pair signal line
4	N.C.	―		
5	GND	―	Power line	Non-twisted power line
Shell	Shield	―		

[Notes]
・Please use a USB cable which is conforming to the standard (full speed).
・Operations cannot be guaranteed if a nonstandard cable is used.

3) CN4 : Serial data signal input connector
Printer side : B5B-PHK-S (J.S.T.MFG.CO., LTD.) or equivalent
Mating side : PHR-5 (J.S.T.MFG.CO., LTD.) or equivalent

Pin No.	Signal name	Input / Output	Function	Remarks
1	RXD	Input	Serial receiving data	
2	TXD	Output	Serial transmitting data	
3	RTS	Output	Receivable signal	
4	CTS	Input	Transmitting permission signal	
5	GND	―	GND for signal	

[Notes]
・Please make sure that common current does not flow to the GND for signal.
・This connector is not equipped with models not supporting the serial interface.

4) CN2 : Paper near end sensor connector
Printer side : 53047-0310 (Molex, LLC) or equivalent
Mating side : 51021-0300 (Molex, LLC) or equivalent

Pin No.	Signal name	Input / Output	Function	Remarks
1	LED+	Output	For LED anode	Connecting LED anode
2	PNE	Input	With paper≧1.85V＞ without paper	Connecting photo transistor collector
3	GND	―	GND for signal	Connecting cathode and emitter

[Notes]
・Please use upon confirmation of sensor specification when connecting external paper near end sensor with non-standard paper holder.
・For NP-KV*0*K, this connector is equipped standard paper holder (PH-10).
・A standard paper holder (PH-10) is attached to NP-KV*0*K models.

5) CN12: Bezel sensor connector

Printer side : 53047-0810 (Molex, LLC) or equivalent

Mating side : 51021-0800 (Molex, LLC) or equivalent

Pin No.	Signal name	Input / Output	Function	Remarks
1	LED1+	Output	To the sensor LED 1	
2	Sensor 1	Input	From the sensor 1	
3	GND	—	GND for signal	
4	LED2+	Output	To the sensor LED 2	
5	Sensor 2	Input	From the sensor 2	
6	GND	—	GND for signal	
7	M+	Output	Output for motor driving	
8	M-	Output	Output for motor driving	

[Notes]

・The following options can be connected to this connector.

Bezel with LED lighting [BEZ-320 / 330]

Bezels with the bezel sensor [BEZ-221 / 231]

Please DO NOT connect anything which is not described above as options.

When using this connector for other purposes, failures may occur.

・When connecting [BEZ-221 / 231] with the bezel sensor or [BEZ-320 / 330] with LED lighting, "function A" or "function B" can be selected by the memory switch MS1-7 / MS1-8. (Please refer to [4.1 Function setting] for details.)

When using bezels, please make the receipt length not shorter than 55mm.

(When the paper length is shorter than 55mm, the paper may be difficult to be taken out from the bezel.)

・This connector is not equipped with models which does not support bezel sensors.

6) CN13: Presenter (NPT-308) connector

　Printer side　: 53047-1010 (Molex, LLC) or equivalent
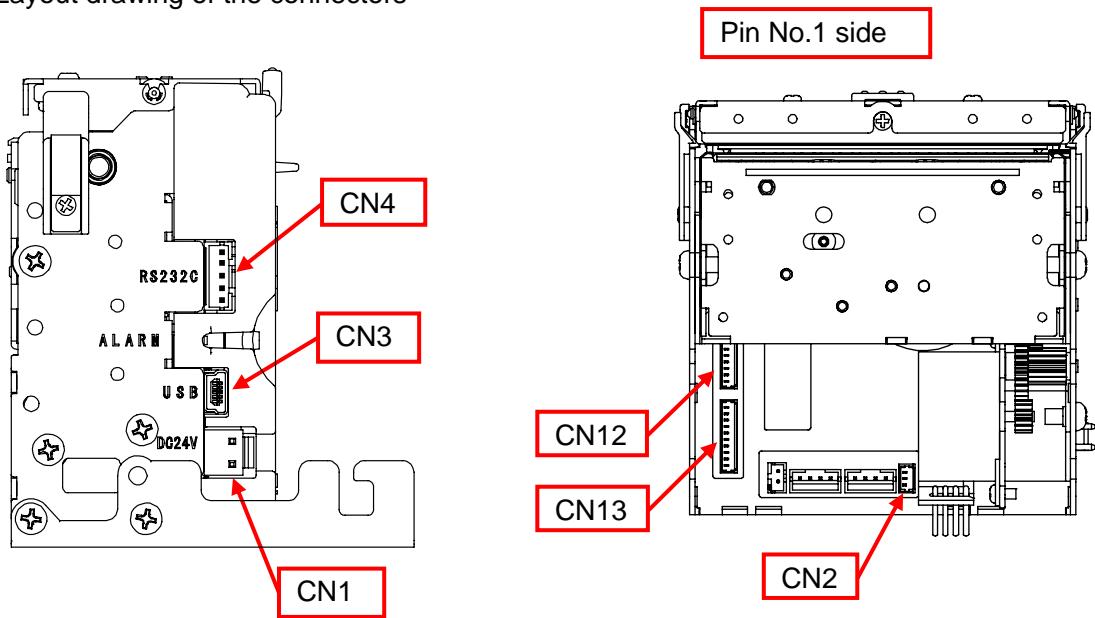
　Host side　　: 51021-1000 (Molex, LLC) or equivalent

Pin No.	Signal name	Input / Output	Function	Remarks
1	VPS1	Output	Sensor 1 LED anode	
2	PRS1	Input	Sensor 1 phototransistor collector	
3	PRS2	Input	NPT-308 automatic recognition signal	
4	GND	–	GND for signal	
5	LED1	Output	LED lighting signal 1	
6	LED2	Output	LED lighting signal 2	
7	A	Output	Output for motor driving	
8	/A	Output	Output for motor driving	
9	B	Output	Output for motor driving	
10	/B	Output	Output for motor driving	

[Notes]
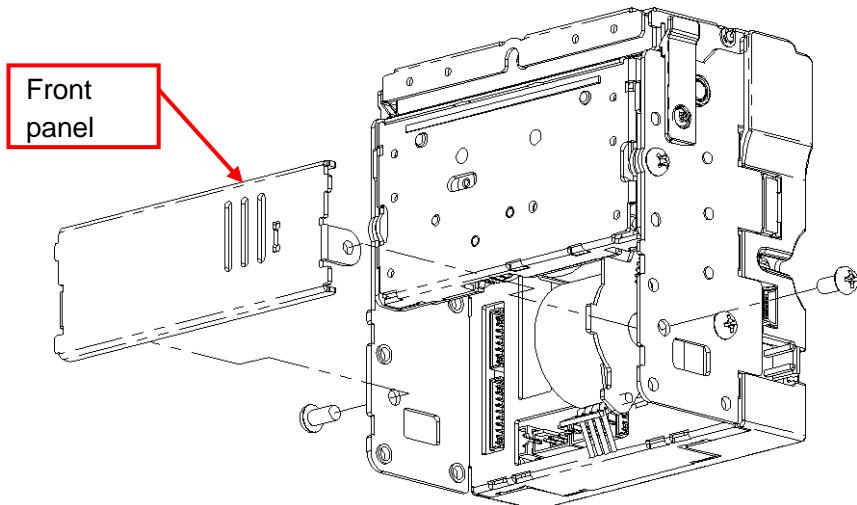
・LED lighting presenter NPT-308 can be connected.
Please DO NOT connect the presenter other than NPT-308.

・When using the presenter NPT-308, the paper cutting mode will become full cut automatically.

・This connector is not equipped with models which does not support the presenter NPT-308.

7) Layout drawing of the connectors

Pin No.1 side

CN4

CN3

RS232C

ALARM

USB

DG24V

CN1

CN12

CN13

CN2

[Notes]

・Please remove the front panel when plugging or unplugging into CN2, CN12 or CN13 connectors.

Front panel

4.   Function

  4.1   Function setting
  4.1.1   Switch setting
    1) Memory switch MS1

	Function description	O N	OFF	Factory default setting	
				NP-KV*0*K (KIOSK printer)	NP-KV*0*M (Printer module)
MS1-1	Communication setting	Please refer to the table 1.		OFF	OFF
MS1-2				OFF	OFF
MS1-3				OFF	OFF
MS1-4	Serial data transmission speed	Please refer to the table 2.		OFF	OFF
MS1-5				OFF	OFF
MS1-6	Serial flow control	XON / XOFF	RTS / CTS	OFF	OFF
MS1-7	Auto cutter / Bezel setting	Please refer to the table 3.		OFF	OFF
MS1-8				OFF	OFF

Table 1 Communication setting

Interface *1	Bit length	Parity setting	MS1-1	MS1-2	MS1-3	Factory default setting	
						NP-KV*0*K (KIOSK printer)	NP-KV*0*M (Printer module)
USB	-	-	OFF	OFF	OFF	〇	〇
Serial	8 bits *2	Nil	O N	OFF	OFF	—	—
		An odd number	OFF	O N	OFF	—	—
		An even number	O N	O N	OFF	—	—
		Nil	OFF	OFF	O N	—	—
			O N	OFF	O N	—	—
			OFF	O N	O N	—	—
Bluetooth	-	-	O N	O N	O N	—	—

  *1: Regarding interface
      Even during the serial commnication setting or the Bluetooth communication setting, printer's
      interface will become USB automatically when the printer detects VBUS signal after USB
      cable is connected. Since it will never return to the original setting automatically by
      unplugging the USB cable, please turn the power OFF / ON to get it back.
      Interface which is not supported by the printer model cannot be used.
      When USB communication is set and the cable is not connected, the setting will become
      "serial, 8 bits, without parity".
      When the Bluetooth setting is selected for the model which does not support Bluetooth
      communication, the setting will become "serial, 8 bits, without parity".
  *2: Regarding serial bit length
      Please contact us when using "bit length 7 bits".

Table 2 Serial communication speed

Serial baud rate	MS1-4	MS1-5	Factory default setting	
			NP-KV*0*K (KIOSK printer)	NP-KV*0*M (Printer module)
115,200 bps	OFF	OFF	〇	〇
38,400 bps	ON	OFF	—	—
19,200 bps	OFF	ON	—	—
9,600 bps	ON	ON	—	—

Table 3　Auto cutter / Bezel setting

Auto cutter setting	Bezel setting	MS1-7	MS1-8	Factory default setting	
				NP-KV*0*K (KIOSK printer)	NP-KV*0*M (Printer module)
Enable	Disable	OFF	OFF	○	○
Disable (Deactivate)	Disable	ON	OFF	－	－
Enable	Enable (Function A)	OFF	ON	－	－
Enable	Enable (Function B)	ON	ON	－	－

[Notes]

・Please refer to the table 4 regarding details of bezel function.

・LED lighting bezel lights and blinks when detecting the paper in the bezel sensor regardless of the bezel setting (enabled or disabled).

Table 4　Bezel sensor function

Common to function A and function B	When paper feeding amount after cutting is not more than 55mm, it will be cut after the paper is fed automatically until 55mm length.
Function A	"Status bit6" will become "1" when the bezel paper sensor detects the paper and "status bit6 will become "0" when no paper is detected. Printing will be performed by receiving the print data even when the paper is detected.
Function B	After the paper cutting operation, "status bit6" will become "1" when the bezel paper sensor detects the paper a and "status bit6 will become "0" when no paper is detected. Printing will not be performed by receiving the print data when the paper is detected. When no paper is detected after that, it will be released ("status bit6" will become 0",) and printing will be started.
	[Paper detection error function] If bezel paper sensor cannot detect the paper after the paper is cut and it is fed for 50mm or longer, it will become a paper detection error ("Status bit5" will become "1".).

[Notes]

・Bezel sensor function is available with BEZ-330 (with LED lighting) or BEZ-231 (with the bezel sensor).

2) Memory switch MS2

	Function description	ON	OFF	Factory default setting NP-KV*0*K (KIOSK printer)	NP-KV*0*M (Printer module)
MS2-1	Japanese Kanji code	Shift JIS	JIS	OFF	OFF
MS2-2	Reserve	-	-	OFF	OFF
MS2-3	Reserve	-	-	OFF	OFF
MS2-4	Paper near end	Ineffective	Effective	OFF	ON
MS2-5	Automatic reconnection for iOS products	Effective	Ineffective	OFF	OFF
MS2-6	Bluetooth PIN code inputting	Effective	Ineffective	OFF	OFF
MS2-7	Paper setting message	Ineffective	Effective	OFF	OFF
MS2-8	Reserve	-	-	OFF	OFF

[Notes]

・Please be sure to set "Reserve: OFF".

4.1.2   How to set memory switch by manual operation

When setting (changing) the memory switch by manual operation, please conduct the following operations with the ready to print status after setting the paper.

1) Operation to enter the setting mode
   (1) Please turn ON the power.
   (2) Please load the paper by auto loading.
   (3) Please turn OFF the power.
   (4) Please keep pressing the FEED switch and turn ON it.
       (Please press and hold it until operation of (5) starts.)
   (5) Several lines of comments including "*** Memory SW setting mode ***" are printed and the setting mode will start. (The memory switch can be set.)

[Notes]
   ・Please note that the self-diagnostic printing will start if the FEED button is released too early (being kept pressed for less than 3 seconds).

2) How to set each switch
   Please make the "ON" or "OFF" settings sequentially by from "MS1-1" to "MS2-3" while checking the printing in the "Setting mode".

Setting "ON"	Please keep pressing the FEED button (more than 1 second).
Setting "OFF"	Please press the FEED button shortly (less than 1 second).

[Notes]
   ・Although the setting will be completed by repeating the above operation 11 times to complete the setting, the settings of the switches in "reserved" status cannot be changed. "RESERVED" will be displayed.
   ・After the setting is finished, it will be reset automatically.

4.1.3　How to set memory switch by online command operation

In order to set (or changing) memory switch setting by the online command, please set the paper and set it by using the following command from the host the online printing can be performed properly.

Once the printer receives the set command properly, it performs software reset after printing out the set contents and the latest settings become effective.

1) Setting command
The command [Memory switch setting and printing]《GS M **n d1 d2**》
MS1 and MS2 (memory switches) settings can be set and what have been set can be printed.

[Notes]
・For the contents and precautions regarding each memory switch, please refer to [4.1.1 Switch setting].
・Please refer to the command [Memory switch setting and printing]《GS M **n d1 d2**》 in the Command Reference for details regarding setting the memory switch by the command.

4.1.4 Self-diagnostic printing

1) Check items by self-diagnostic printing function.
- ・Function of controlling circuit
- ・Controlling F/W version
- ・Memory switch setting status
- ・Paper-out sensor operation
- ・USB serial No. [*1]

*1: The USB serial number is printed when it has been registered by using the command [USB serial No. setting] 《GS U **Dn**》.

2) Starting and finishing self-diagnostic printing
Self-diagnostic printing will be started by turning ON the power with the FEED button pressed and release the FEED button after printer mechanism initialization.
It will be finished after printing the preset printing patters. The printer is offline while the self-diagnostic printing is being printed.

[Notes]
- ・Please release the FEED button within 2 seconds. If it is pressed for more than 3 seconds, the memory switch setting mode will start,
- ・Please perform it with the paper loaded. When it is tried without the paper, the factory maintenance mode will start and self-diagnostic printing will not be performed.
Please turn OFF the power in this case.

4.2 Processing errors

1) Details of error detection

(1) Standard status

ALARM [*1] status	Name	Status	Status information	How to release it
-	Communication error	RS-232C communication error Parity Overrun Framing	-	Adjusting communication condition.
Off	Normal	Normal	bit0-7 "0"	
Off	Printing start status	Printing start setting by the command [Print start / finish setting] 《GS G **n**》 (This is not an error.)	bit7 "1"	Printing finish setting by the command [Print start / finish setting] 《GS G **n**》
Blink	Extended status 4 (bit4-7)	One of bits 4-7 of extended status 4 becomes "1".	bit6 "1"	5) Please refer to extended status 4.
Blink	Extended status 3	One of bits of extended status 3 becomes "1".	bit5 "1"	4) Please refer to extended status 3.
Blink	Extended status 2	One of bits of extended status 2 becomes "1".	bit4 "1"	3) Please refer to extended status 2.
Blink	Extended status 1	One of bits of extended status 1 becomes "1".	bit3 "1"	2) Please refer to extended status 1.
Light	Paper end	Paper-out	bit2 "1"	Setting the paper.
Light	Head cover open	Head cover open	bit1 "1"	Closing the head cover.
Blink	Paper near end	Detecting the remaining paper quantity Paper near end sensor detection (MS2-4: OFF)	bit0 "1"	Setting the paper.

(2) Extended status 1

ALARM [*1] status	Name	Status	Status information	How to release it
-	Unused	-	bit7 "0" (Always 0)	-
-	Unused	-	bit6 "0" (Always 0)	-
-	Unused	-	bit5 "0" (Always 0)	-
-	Unused	-	bit4 "0" (Always 0)	-
Blink	Abnormal temperature of the head	When the head temperature rises to above approx. 70 ºC	bit3 "1"	Automatically reset when the head temperature falls to below approx. 65 ºC
-	Unused	-	bit2 "0" (Always 0)	-
-	Unused	-	bit1 "0" (Always 0)	-
-	Unused	-	bit0 "0" (Always 0)	-

(3) Extended status 2

ALARM [1] status	Name	Status	Status information	How to release it
-	Unused	-	bit7 "0" (Always 0)	-
Blink	Presenter connection error	The presenter is connected to both CN12 and CN13.	bit6 "1"	Turning OFF the power and turning ON the power after checking connection.
Blink	Black mark detection error [3]	Unable to detect the paper during black mark detection	bit5 "1"	Please refer to [4.8 How to remove the remaining paper and the jammed paper].
Blink	Auto cutter error	Paper jam at the cutter	bit4 "1"	Please refer to [4.8 How to remove the remaining paper and the jammed paper].
-	Unused	-	bit3 "0" (Always 0)	-
-	Unused	-	bit2 "0" (Always 0)	-
-	Unused	-	bit1 "0" (Always 0)	-
-	Unused	-	bit0 "0" (Always 0)	-

4) Extended status 3

ALARM [1] status	Name	Status	Status information	How to release it
-	Unused	-	bit7 "0" (Always 0)	-
-	Unused	-	bit6 "0" (Always 0)	-
Blink	Paper detection error [3]	Unable to detect the paper during the presenter operation or the bezel sensor activated.	bit5 "1"	Please refer to [4.8 How to remove the remaining paper and the jammed paper].
-	Unused	-	bit4 "0" (Always 0)	-
Blink	Presenter ejection error [4]	Unable to complete operation of ejecting or retracting by the presenter	bit3 "1"	Removing the paper from the presenter. [5]
-	Unused	-	bit2 "0" (Always 0)	-
-	Unused	-	bit1 "0" (Always 0)	-
-	Unused	-	bit0 "0" (Always 0)	-

5) Extended status 4

ALARM [1] status	Name	Status	Status information	How to release it
-	Unused	-	bit7 "0" (Always 0)	-
Blink	Paper clamping [2]	The paper is detected by the presenter or the bezel sensor.	bit6 "1"	Removing the paper falling out of the presenter or the bezel.
-	Unused	-	bit5 "0" (Always 0)	-
-	Unused	-	bit4 "0" (Always 0)	-
-	Receiving buffer remaining capacity (USB communication)	Capacity of the remaining buffer for receiving the data	bit0-3	-

[Notes]
・The printer stops all operations when one of errors above except communication errors, paper near end or printing start status is detected. (Printing and paper feeding by the FEED button cannot be performed as well.)
・If the thermal head cover open is detected, auto loading will not be performed.
・Extended statuses can be obtained by the command [Printer information transmission]《ESC s n》 and the command [Auto-transmitting of printer status] 《GS v NUL》.
・An error bit in the status information is "1".

*1: Please refer to [4.7 ALARM lamp display and switching function] for the alarm lamp display patterns.
*2, *3: Error occurring condition differs depending on each option.
Regarding the bezel, please refer to "4.1.1 Table 4 Bezel sensor function" in [4.1 Function setting].
Regarding NPT-308, please refer to [Description for NPT-308 operation mode] in the Command Reference.
*4: Only when using NPT-308, errors will be detected.
*5: If the error is not cancelled after the paper is removed, please conduct sensor cleaning. Please refer to [5. Maintenance] in NPT-308 Product Specifications.
**6: If a bezel or a presenter is used, please remove all paper before replenishing the paper. If the paper remains, it may cause paper jam.

4.3 Buffer full printing

When one line of data is received[*1] in the line mode, the printer will operate the line feeding automatically based on the command [Line feeding amount setting at the smallest paper feeding pitch unit] 《ESC 3 **n**》 .

*1: The amount of buffer full data (maximum number of digits for printing) differs depending on the size of each ANK・Kanji (No. 2 Print specifications in 2.1 Basic specifications).

4.4　Drive selection

　　Fixed partition (no-partition, dual partitions) or optimization can be selected by the command [Partition drive selection] 《GS % **n**》.
Please select it after taking the consumption current by printing rate into consideration. (Please refer to "3) Consumption current" in 2.6 Power supply specifications.)

　1) Partition drive selection
　　Please refer to the command [Partition drive selection] 《GS % **n**》 in the Command Reference.

　[Notes]
　　　・When other than no-partition is selected, printing speed will be declined. Furthermore, max. one dot height space line at maximum may appear depending on the printing contents (patterns with printing rate changing, etc.).
　　　・When printing exceeding 384 dots, please select optimization or dual partitions for partition drive. Furthermore, when performing the above printing, the length should be within 100mm.

　2) Optimization
　　It switched the partition drive selection to no-partition or dual partitions according to total printing dot numbers per line.

No partition	Dual partitions
Equal to or less than 384 dots	Equal to or more than 385 dots

　[Notes]
　　　・When selecting optimization, printing speed changes depending on the printing rate and the sound during the printing may change.
　　　・When selecting optimization, one dot height space line at maximum may appear.
　　　Furthermore, when selecting optimization, the printing quality may deteriorate or the sound during the printing may change.

4.5　How to select double-byte characters and single-byte characters

Language font	How to switch
Japanese (JIS C 6226·1983)	The command [Kanji mode specifying]　《FS & 》, the command [Kanji mode releasing]　《FS .》 or Shift JIS code switching
Polish (Code Page 1250)	No switching (Only single-byte characters)
Russian (Code Page 1251)	No switching (Only single-byte characters)
Scandinavian (Code Page 1252)	No switching (Only single-byte characters)
Turkish (Code Page 1254)	No switching (Only single-byte characters)

4.6   ALARM lamp display and switching function

The following ALARM lamp and switching function are provided on the body of this printer.

1) ALARM LED (red) [ALARM lamp]
It lights or blinks when a printer error occurs.
It blinks, lights and then goes out when writing to the flash ROM is performed.
The display patterns of ALARM lamp are described in the following table.

ALARM lamp display patterns

Display patterns (repeating)	Printer status	Priority (8: high ~ 1: low)
O N / OFF _____ / Off	Normal / Printing (receiving) can be done.	1
O N ⊓⊔⊓⊔⊓⊔ 0.2sec / OFF ⊔⊓⊔⊓⊔ 0.2sec / Repeating approx. 0.2sec ON and approx. 0.2sec OFF	Paper near end	2
O N _____ / OFF / On	Paper-out	3
O N ⊓_____ 2.2sec ⊓____ / OFF ⊔ 2.2sec ⊔____ / Repeating approx. 2.2sec ON and approx. 2.2sec OFF	Abnormal head temperature (above approx. 70ºC), inappropriate head connection, or presenter ejection error	4
O N ⊓ 0.2sec ⊓⊔⊓ / OFF ⊔ 0.2sec ⊔ 1.0sec ⊔ / Repeating [approx. 0.2sec ON and approx. 0.2sec OFF] ×3, approx. 1 sec ON and approx. 0.2 sec OFF	Auto cutter error	5
	Paper detection error (The bezel sensor or the presenter)	6
	Black mark detection error	
	Paper clamping status (The paper is detected by the paper extraction sensor.)	7
O N ⊓⊓⊓⊓⊓⊓ 0.1sec ⊓⊓⊓⊓ / OFF ⊔⊔⊔⊔⊔⊔ 0.1sec / Repeating approx. 0.1sec ON and approx. 0.1sec OFF	F/W writing mode	8

[Notes]
・ If multiple conditions occur, only the one with the highest priority is displayed.

2) FEED button [for paper feeding switch]

The button for feeding the paper to the forward direction.

Furthermore, this button is also used for self-diagnostic printing and memory switch setting.

[Notes]
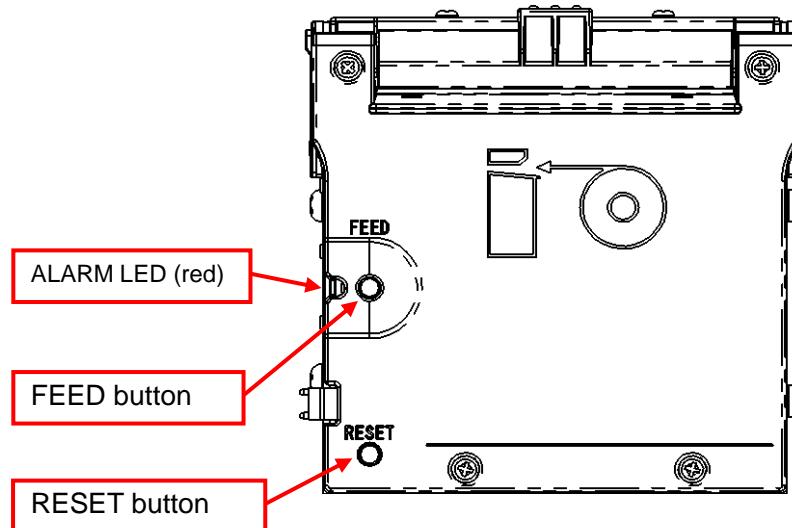
・Changeable to valid or invalid by the command [FEED button effective / ineffective]《ESC c 5》.

・When the FEED button is pressed and then released, paper is fed approx. 60mm and then full cut is performed. (Pressing the FEED button and keeping it pressed make the paper to be fed while it is kept pressed and releasing it performs full cut.)

3) RESET button [for resetting]

RESET button is equipped at the left side of the FEED button.

(Please push it lightly with a tip of ball-point pen ,etc. and then release it.)

If reset is executed, settings should be done again since the printer will return to the state in which it was at the power on timing. When the data remains in the buffer, please be careful of the data so as not to be deleted.

4.7   How to set the roll paper

1) Please set the roll paper to the paper holder (PH-10).
Please refer to this section when removing the paper as well.

(1) Please be careful of the printing paper surface and winding direction of the roll paper.
(2) With paper slightly tilted, please make the roll paper side touch the circular boss on the holder and open it outward.
(Please be careful not to apply excessive force beyond the stop position when opening the paper holder.)
(3)   With paper slightly tilted, please make the roll paper side touch the circular boss on the holder and open it outward.
(Please be careful of the printing paper surface winding direction of the roll paper.)
(Please be careful not to apply excessive force beyond the stop position when opening the paper holder.)
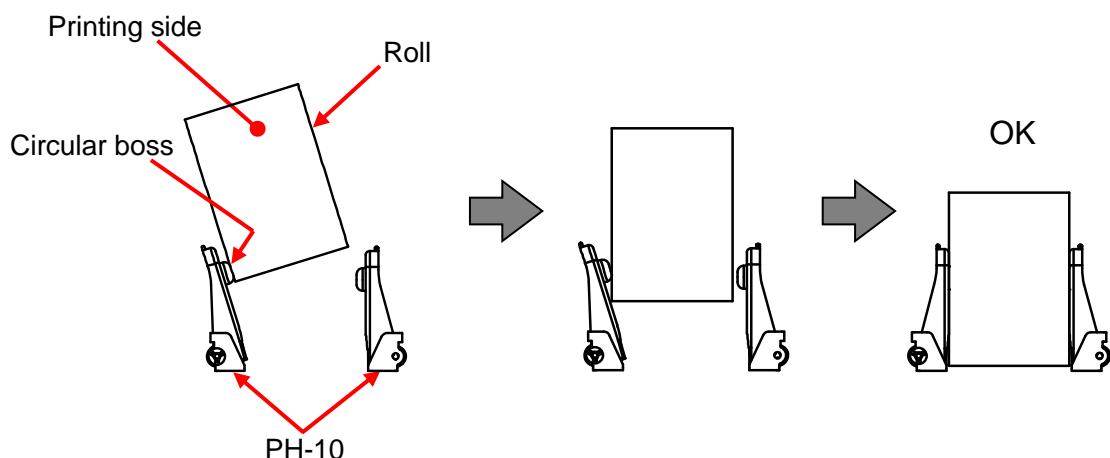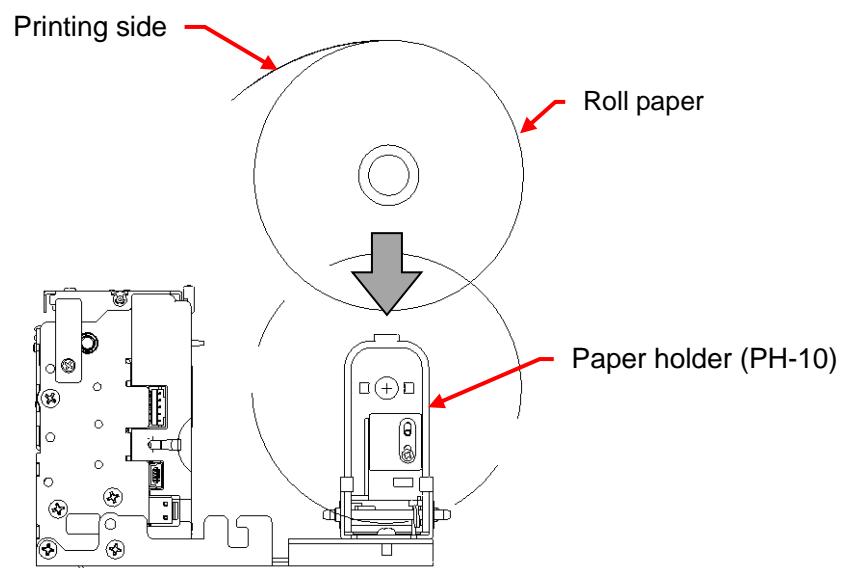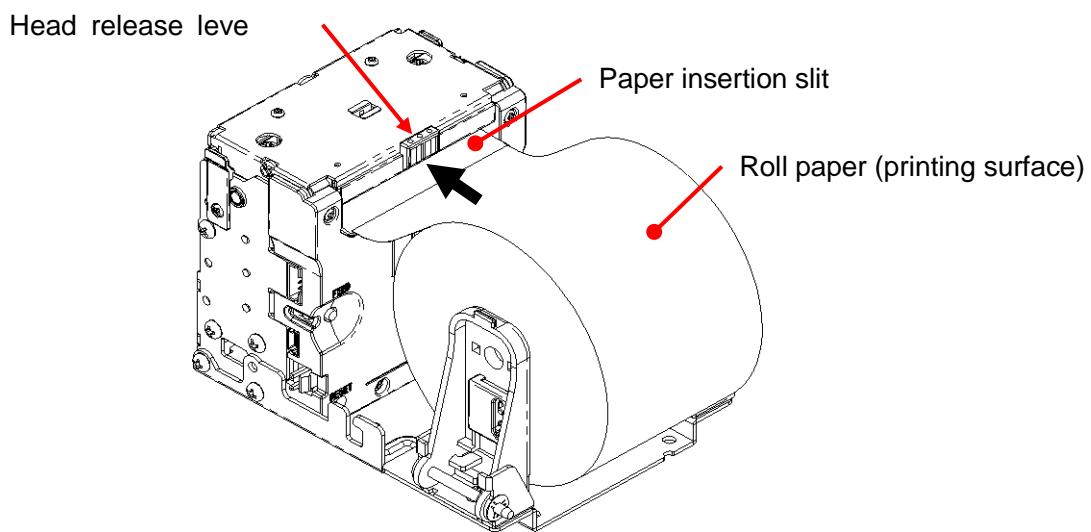
2) Setting the roll paper to the printer.
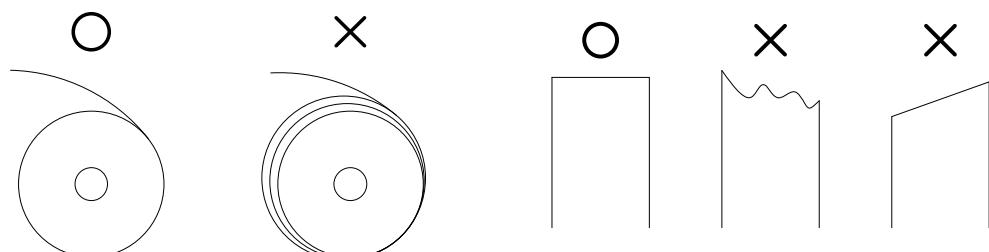
(1) Please turn ON the power.
(2) Please insert the tip of the roll paper into the paper insertion slit after setting the roll paper to the paper holder.
(Please be sure to insert it straight without bending by adjusting to the paper insertion guide.)
(3) Paper-out sensor will detect the paper and the paper will be pulled in automatically.
Please insert it until the paper starts to be pulled in.
(4) The paper will be pulled in, will be cut at a fixed length after printing the paper set checking message "TEST PRINT" and it will be ready for printing
(When the paper is inserted slantingly, please press the head release lever and make the paper straighten.

Head release leve

Paper insertion slit

Roll paper (printing surface)

[Notes]
・Please DO NOT carry the printer with paper loaded.
・Please remove the old core before setting the new roll paper.
・When the old paper is left, please remove it by following the description in [4.8 How to remove the remaining paper and the jammed paper].
・Please set the paper correctly without loosening. (It causes paper jams.)
・Please set the paper straight and at right angles. (Please refer to below Fig. for the shape of the paper edge.)
・When the edge of the paper is fractured or cut diagonally, paper loading may not be operated.
・When the tip of paper is taped, please cut the taped part of the paper including the trace from which the tape was peeled off straight and with right angles by scissors, etc.
・The printing side must be external side and the paper has to be inserted with the printing surface upper.
・When setting "MS2-7: ON", paper setting message will not be printed.

The shape of the paper edge
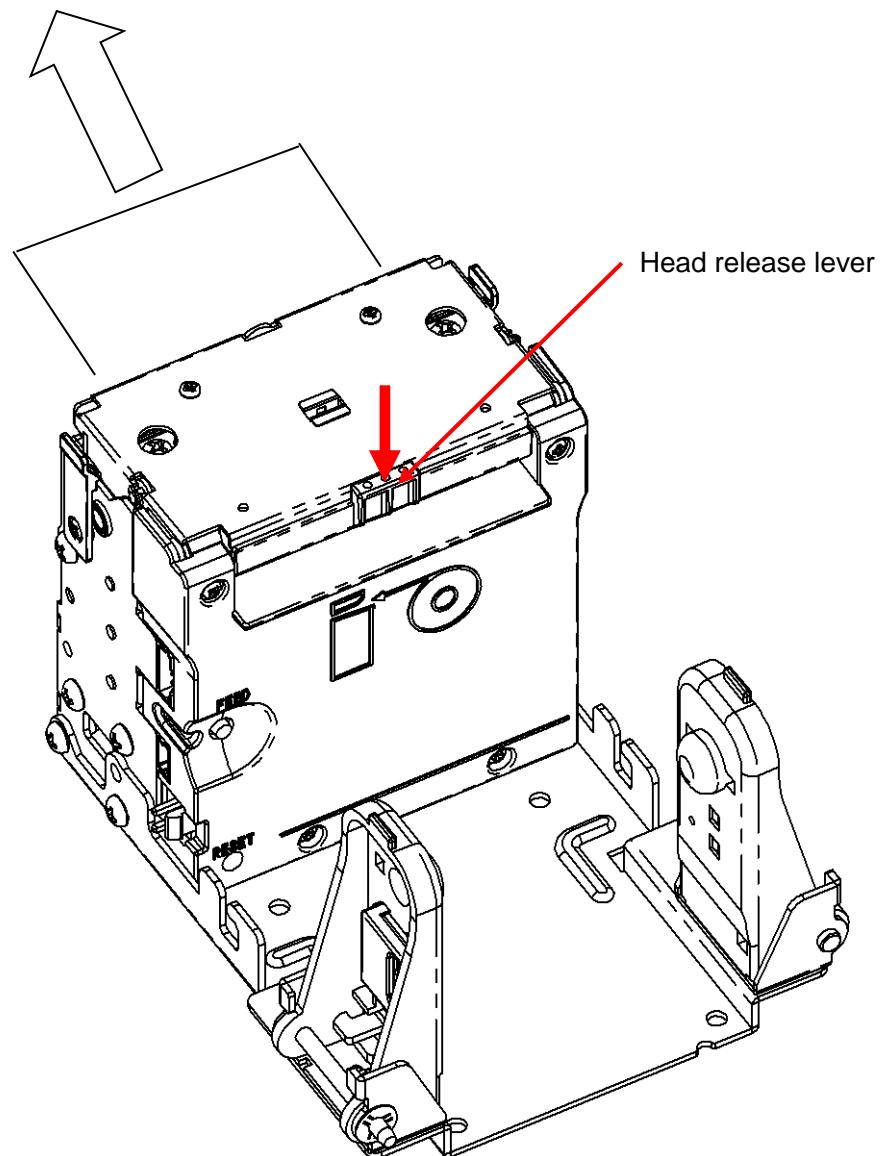
4.8　How to remove the remaining paper and the jammed paper

1) How to remove the remaining paper

(1) Please keep pressing the head release lever in the direction indicated by the red arrow and pull out the remaining paper.

Pulling out the paper to this direction

Head release lever
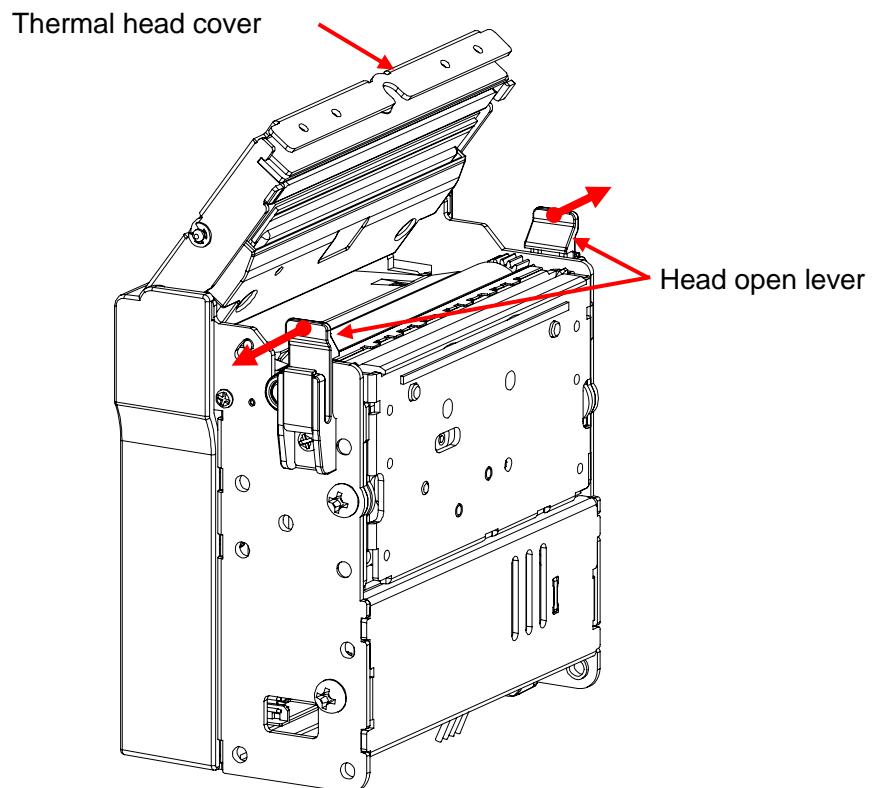
2) How to remove the jammed paper

    (1) Please be sure to turn OFF the power before removing the jammed paper.

    (2) Please operate the head open levers (2 positions) shown in the figure below to open the thermal head cover.

    (3) Please remove all the paper on the paper path.

    (4) Please completely close the thermal head cover until it clicks and locks after removing the jammed paper.

[Notes]

    ・Please be sure to turn OFF the power before opening the thermal head cover.

    ・Please DO NOT open the thermal head cover except it is needed to be opened for removing the jammed paper or the cleaning, etc.

    ・Since the thermal head may be highly-heated right after printing, please be careful not to touch it by your hand or fingers, etc.

    ・Please be careful not to touch the cutter blade by your hand or fingers, etc. at paper jam since　it may protrude from the unit.

    ・Please be careful not to apply excessive force beyond the stop position when opening the thermal head cover.

    ・Please be careful not to get your fingers or a hand pinched.

Thermal head cover

Head open lever

4.9   How to clean parts of the printer

In case wisps of paper etc. adhere to the heat element of the thermal head, printing quality may deteriorate. Furthermore, paper dust may adhere to the platen roller and the sensor.
In such cases, please turn OFF the power and clean them as described below.

(1) Please be sure to turn OFF the power before cleaning.
(2) Please operate the head open lever shown in the figure below to open the thermal head cover.
(3) Please completely close the thermal head cover until it clicks and locks after cleaning parts of the printer.

1) Thermal head
Please clean the surface of the heating element with a cotton swab moistened with ethanol or isopropyl alcohol (IPA). (Please beware not to touch the other parts.)

2) Platen roller
Please remove trash and dust, etc. on the surface by wiping the platen roller gently like rubbing with a dry cloth. (Please rotate the platen roller with your fingers in order to remove whole dust and dirt, etc.)

3) Paper-out sensor, paper near end sensor and their surroundings
Please remove trash and dust, etc. adhered to the sensor with a soft bristle brush or a cotton swab.
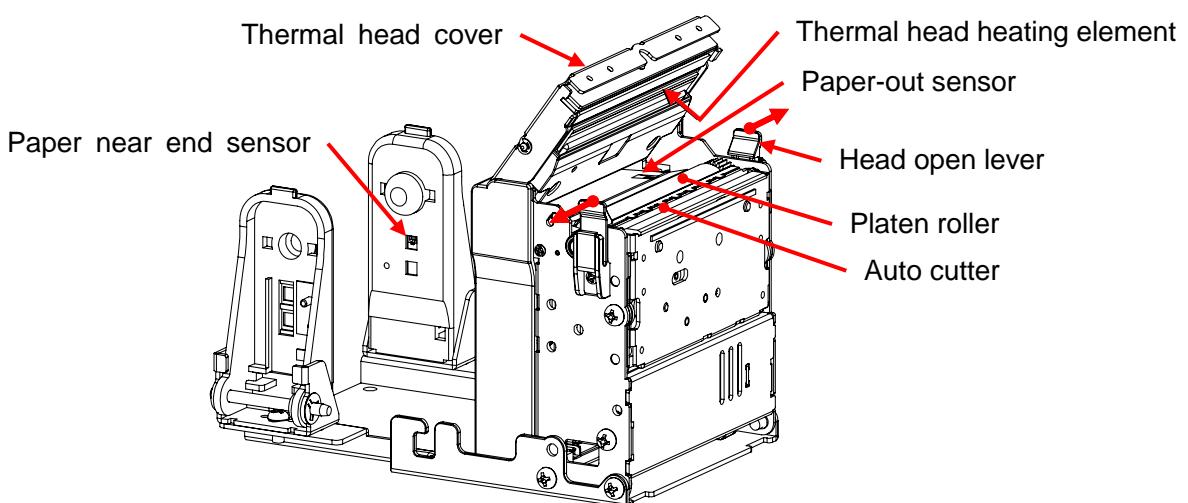
4) Auto cutter
Please remove trash and dust, etc. adhered to the cutter with an air blow.
(Recommended frequency: every 100,000 operations)
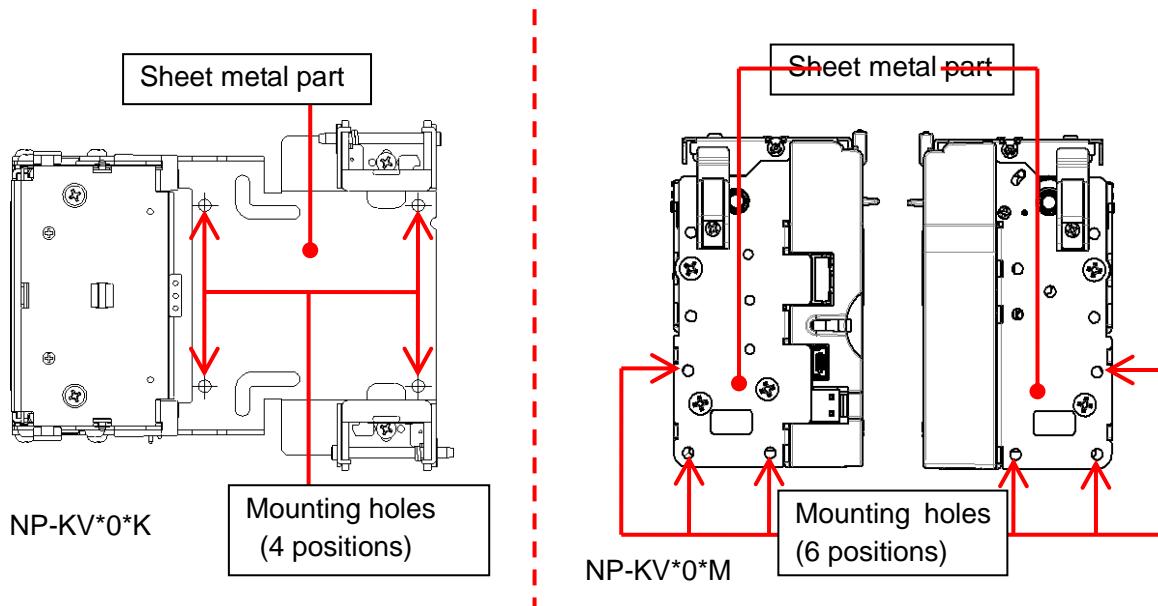
[Notes]
・Please be sure to turn OFF the power before opening the thermal head cover.
・Please DO NOT open the thermal head cover except it is needed to be opened for removing the jammed paper or the cleaning, etc.
・Since the thermal head may be highly-heated right after printing, please beware not to touch it by your hand or fingers etc.
・Please DO NOT touch the heating element of the thermal head directly by your hand or with metal, etc.
・Please be careful of static electricity while cleaning, because it may damage the thermal head.
・Since there is a case that paper dust easily appears depending on the paper, please clean it periodically.
・Please be sure to turn ON the power after ethanol or isopropyl alcohol (IPA) dries completely.
・Please be sure not to apply excessive force beyond the stop position when opening the thermal head cover.

Thermal head cover   Thermal head heating element
Paper-out sensor
Paper near end sensor   Head open lever
Platen roller
Auto cutter

4.10   Installation

Please install this product after connecting the frame ground (FG) of this product and the frame ground (FG) of the housing in order to prevent malfunctions and the damage to the thermal head and circuit board due to static electricity.

Sheet metal part

Sheet metal part

NP-KV*0*K

Mounting holes
(4 positions)

NP-KV*0*M

Mounting holes
(6 positions)

(1) When the mounting part of the housing is a frame ground (conductors such as sheet metal, etc.), please connect the frame ground by contacting the frame ground (sheet metal part) of this product with the frame ground of the mounting part of the housing.
(When installing this product, using toothed washers is recommended.)

(2) When the mounting part of the housing is an insulator such as plastic, please use a wire with the terminal (AWG#20 or thicker) and fix it to the frame ground of the housing. Please use one of the mounting holes to establish electrical conduction with the terminal of the wire and the screw.

[Notes]
・When installing this product, using toothed washers will make the frame ground connection strong. (Please check whether there is conduction to the mating side device.)
・Please install this product so that excessive force, deformation or twisting is not applied to this product.
・If this product is deformed or twisted, it may cause deterioration of printing quality, thermal paper meandering, paper jams, noise or cutting failures.
・Please install this product on a flat surface where vibration does not occur easily.
・When fixing by screw tightening, please be careful not to damage lead wires, etc.
・Since there are power supply and communication connectors, please secure the space for connector connection.
・The cut paper may not fall even if full cut is operated. Please design the exterior so that paper can be taken out regardless of paper condition.
・Please design installation planning so that exterior parts do not interfere with this product. If external parts interfere with it, it will affect the printing or the paper cutting function, and they may be causes of the damage of this product.
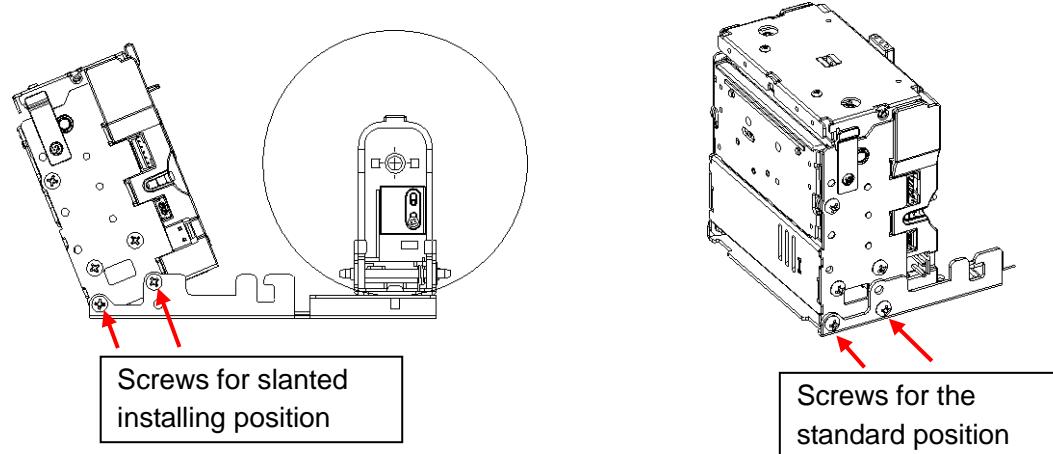
Appendix 1: Examples of installing positions

This product can be installed with the other installing positions than the standard position by changing the printer module part position.
Printer module part position can be changed as follows by changing the screws mounting hole's position. This product can change the layout by changing the position of the screws shown in the arrows below (There are screws on the opposite side as well.).

1) Slanted printer module installing position
This installing position is advantageous when the lower paper ejection slit is favorable or it is needed to make the cut receipt drop naturally.

Screws for slanted installing position

Screws for the standard position
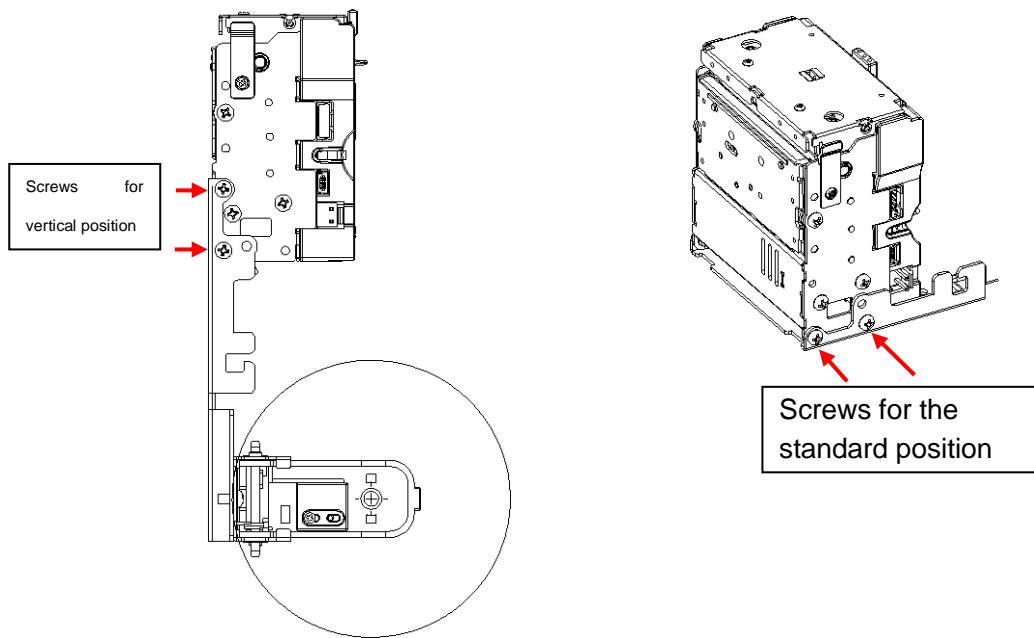
[Notes]
・The ejected paper may not drop depending on the printer using environment, etc.

2) Vertical printer module installing position
By this installing position, the printer can be attached to the door or the panel at the front side of the terminal.


Screws for vertical position

Screws for the standard position
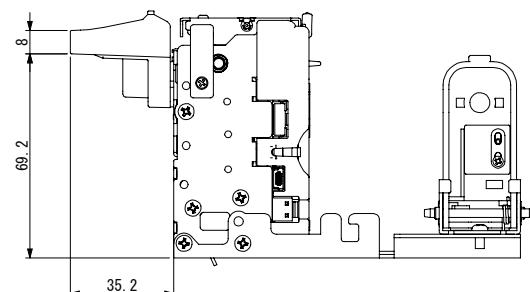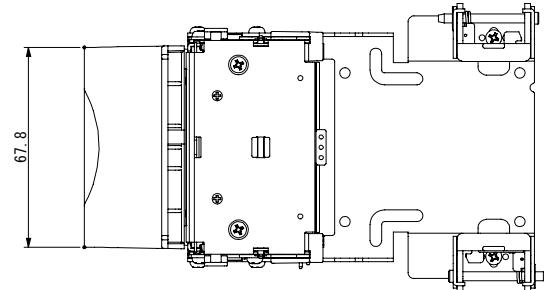
[Notes]
・Since the front panel cannot be removed after changing the printer module to this installing position, please attach the options before changing the installing position.
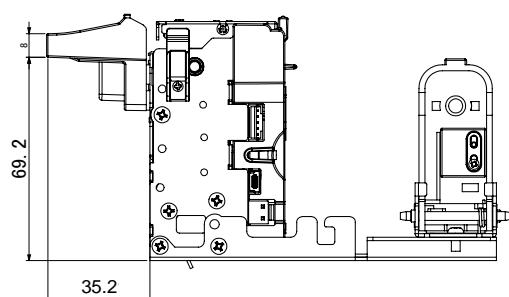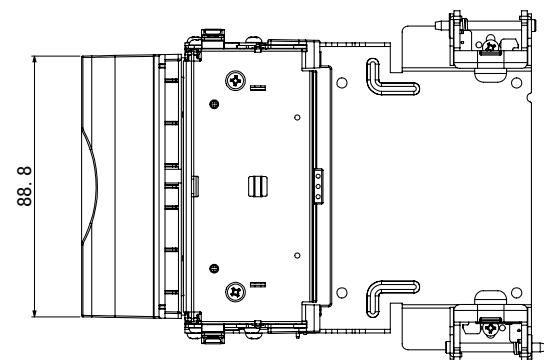
Appendix 2: Outer dimensions of the unit with an option attached (for reference)

1) Bezel BEZ-230 / 231 attached to NP-KV20
   Please connect BEZ-230 / 231 cable to CN12.
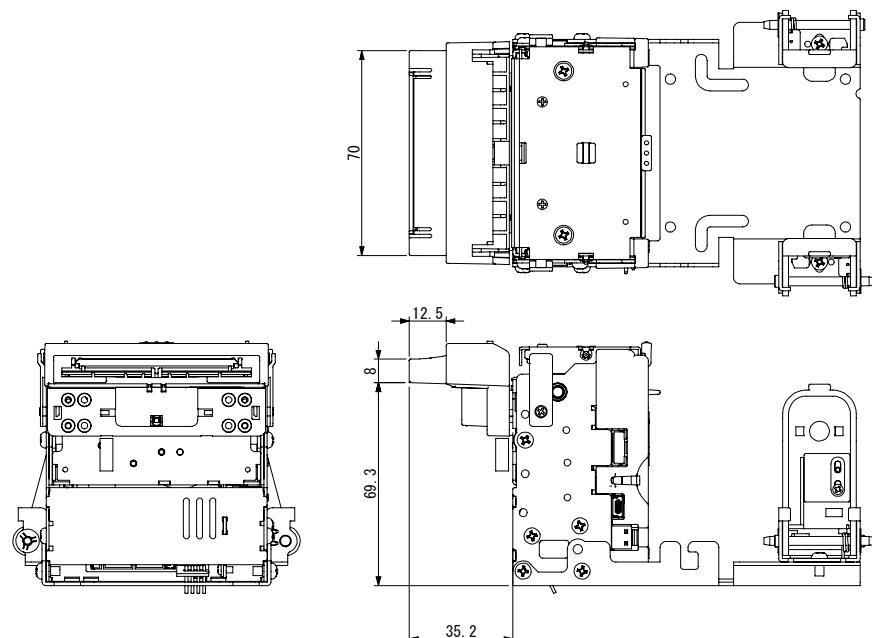
Unit: mm

2) Bezel BEZ-230 / 231 attached to NP-KV30
   Please connect BEZ-230 / 231 cable to CN12.
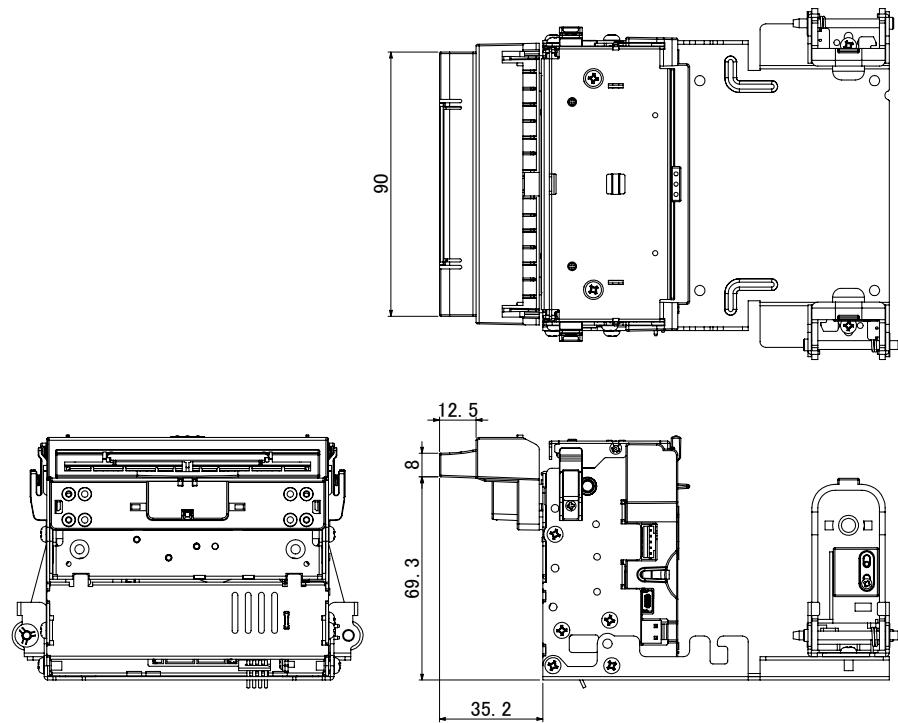
Unit: mm

3) Bezel [BEZ-320] with LED lighting attached to NP-KV20
   Please connect BEZ-320 cable to CN12.

70

12. 5

8

69. 3

35. 2
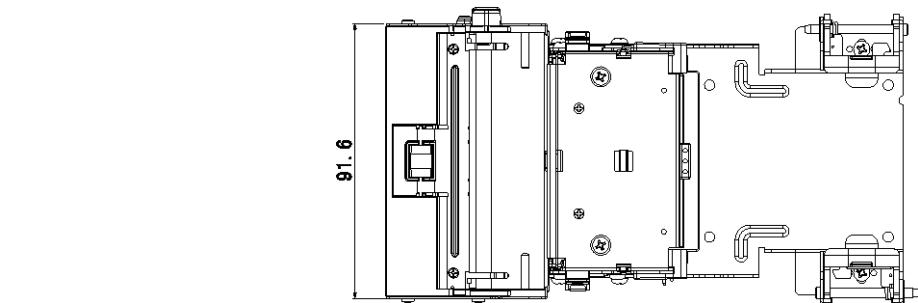
Unit: mm

4) Bezel [BEZ-330] with LED lighting attached to NP-KV30
   Please connect BEZ-330 cable to CN12.

90

12. 5

8

69. 3

35. 2
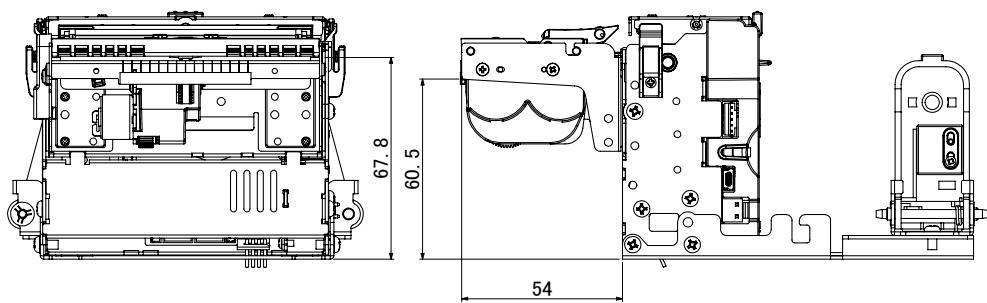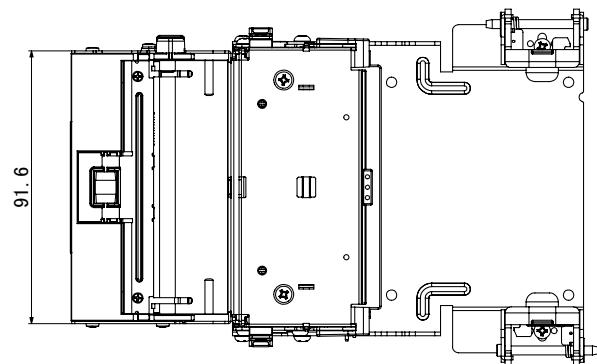
Unit: mm

5) Presenter [NPT-308] attached to NP-KV20
   Please connect [NPT-308] cable to CN13.

Unit: mm

6) Presenter [NPT-308] attached to NP-KV30
   Please connect [NPT-308] cable to CN13.
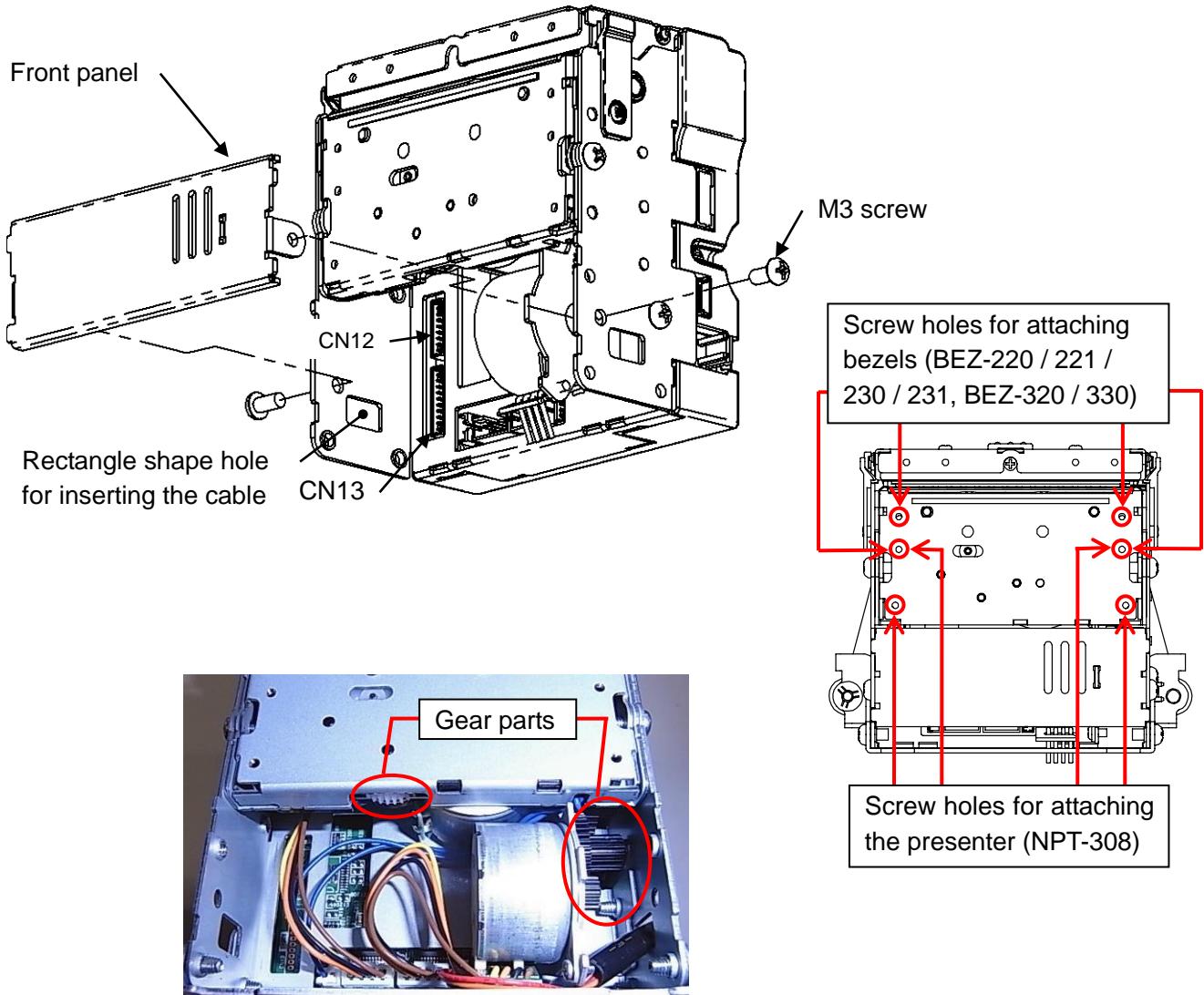
Unit: mm

7) How to attach options (summary)
   (1) Please remove the front panel when the cable is required to be connected.
       Please remove two M3 screws.
   (2) Please put the connector's jack part into the inside from the rectangle shape hole.
   (3) Please check the model name of the option and insert the connector jack into the right place.
   (4) Please attach the front panel after finishing the cable arrangement.
   (5) Please attach the option by using attached M2 screws.

[Notes]
   ・Please refer to the Product Specifications for each option for details.
   ・When changing the printer module installing position, please attach the options before changing it.

Front panel

M3 screw

CN12

Rectangle shape hole
for inserting the cable

CN13

Screw holes for attaching bezels (BEZ-220 / 221 / 230 / 231, BEZ-320 / 330)

Screw holes for attaching the presenter (NPT-308)

Gear parts

[Notes]
   ・Please wire the cables in order not to touch the gear parts.
   ・Options which can be attached to NP-KV20 (2 inch model) are BEZ-220 / 221, BEZ-320, and NPT-308.
   ・Options Which can be attached to NP-KV30 (3 inch model) are BEZ-230 / 231, BEZ-330, and NPT-308.