DT-970 Series

Hardware Manual

(Version 1.00)

Casio Computer Co., Ltd.

October 2013

Table of the Contents

Editorial Record

Version no.	Date edited	Page	Content
1.00	October 2013		Original version

1. Overview

1.1. Features

Platform

- μITRON 4.0

Communication Functions

- IrDA Ver.1.0
- Bluetooth® Version 2.1 + EDR (Class2)
- USB version 2.0 (host/client)

Size and Weight

- External dimensions : 54.0(52.0)×173.2×25.0(26.9) mm *Figures in () are for the grip
- Weight : Approx. 210 g

Impact and dust resistance

- Dropping strength : 2.0 m
- Dust and splash resistance : IP67 compliant

Scannable barcodes

- UPC-A / UPC-E / EAN8 (JAN8) / EAN13 (JAN13) /
  Codabar (NW-7) / Code39 / Interleaved 2of5 (ITF) / MSI / Industrial 2of5 /
  Code93 / Code128 (GS1-128 (EAN128)) / IATA /
  GS1 DataBar Omnidirectional (RSS-14) / GS1 DataBar Limited (RSS Limited) /
  GS1 DataBar Expanded (RSS Expanded) / GS1 DataBar Stacked (RSS-14 Stacked) /
  GS1 DataBar Expanded Stacked (RSS Expanded Stacked) /
  GS1 DataBar Truncated (RSS-14 Truncated) /
  GS1 DataBar Stacked Omnidirectional (RSS-14 Stacked)

CPU and Memory

- CPU : Renesas 32bit CPU
- Memory RAM : 8MB
  FROM : 32MB

1.2. **Model Configuration**

Table 1-1 Table of Model Configurations

Model No.	Scanner	Destination	Remarks
DT-970M51E	Straight	Europe, direct management	
DT-970M50E	Bent	Europe, direct management	
DT-970M51E-CN	Straight	China	
DT-970M50E-CN	Bent	China	

Table 1-2 List of Optional Configurations

Model No.	Content	Destination	Remarks
HA-N60IO	USB cradle	Europe, direct management	
HA-N60IO-CN		China	
HA-E60IO	USB cradle	Europe, direct management	HA-N64AT is required for equipping the DT-970
HA-E60IO-CN		China	
HA-N62IO	LAN cradle	Europe, direct management	
HA-N62IO-CN		China	
AD-S15050B-N5	AC adapter for the HA-E60IO	Europe, direct management	
AD-S15050B-CN		China	
AD-S42120C-N5	AC adapter for the HA-N62IO	Europe, direct management	
AD-S42120C-CN		China	
AC-CORD-EU	AC cable	Europe	
AC-CORD-TW		Taiwan	
AC-CORD-KR		South Korea	
AC-CORD-AU		Australia	
HA-N81USBC	USB cable for PC connection	Europe, direct management	
HA-N81USBC-CN		China	
DT-380USB-A	USB cable for cradle	Europe, direct management	
DT-380USB-A-CN		China	
HA-N50BN5	Contact scan attachment	Europe, direct management	Set of 5pcs.
HA-N50BN5-CN		China	
HA-N64AT	Cradle attachment	Europe, direct management	Kit for mounting the DT-970 in the HA-E60IO
HA-N64AT-CN		China	

Table 1-3 Accessories

Name	Quantity	Remarks
AA alkaline dry battery (LR6)	2	
Coin-type lithium cell (CR2032)	1	
Hand strap	1	
Chinese RoHS insert	1	Only for China
WEEE insert	1	Only to Europe, direct management
Europe battery ordinance insert	1	Only to Europe, direct management
Instruction manual (simplified version)	1	English, Chinese, German, Turkish, Russian

1.3. **User Interface Configuration**

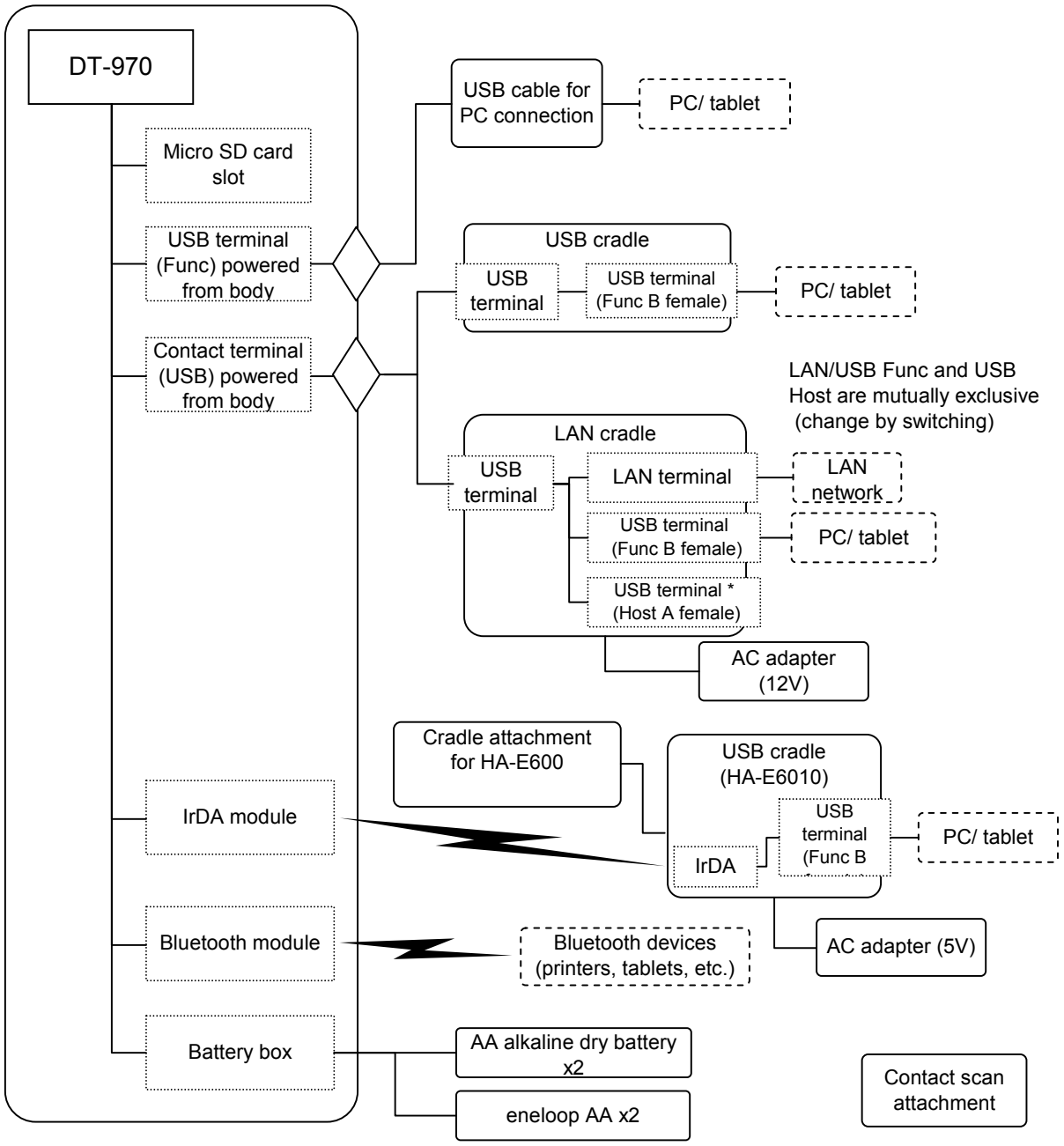


Figure 1-1 Interface Composition

1.4. Appearance

1.4.1. DT-970

The appearance of the unit is as follows:

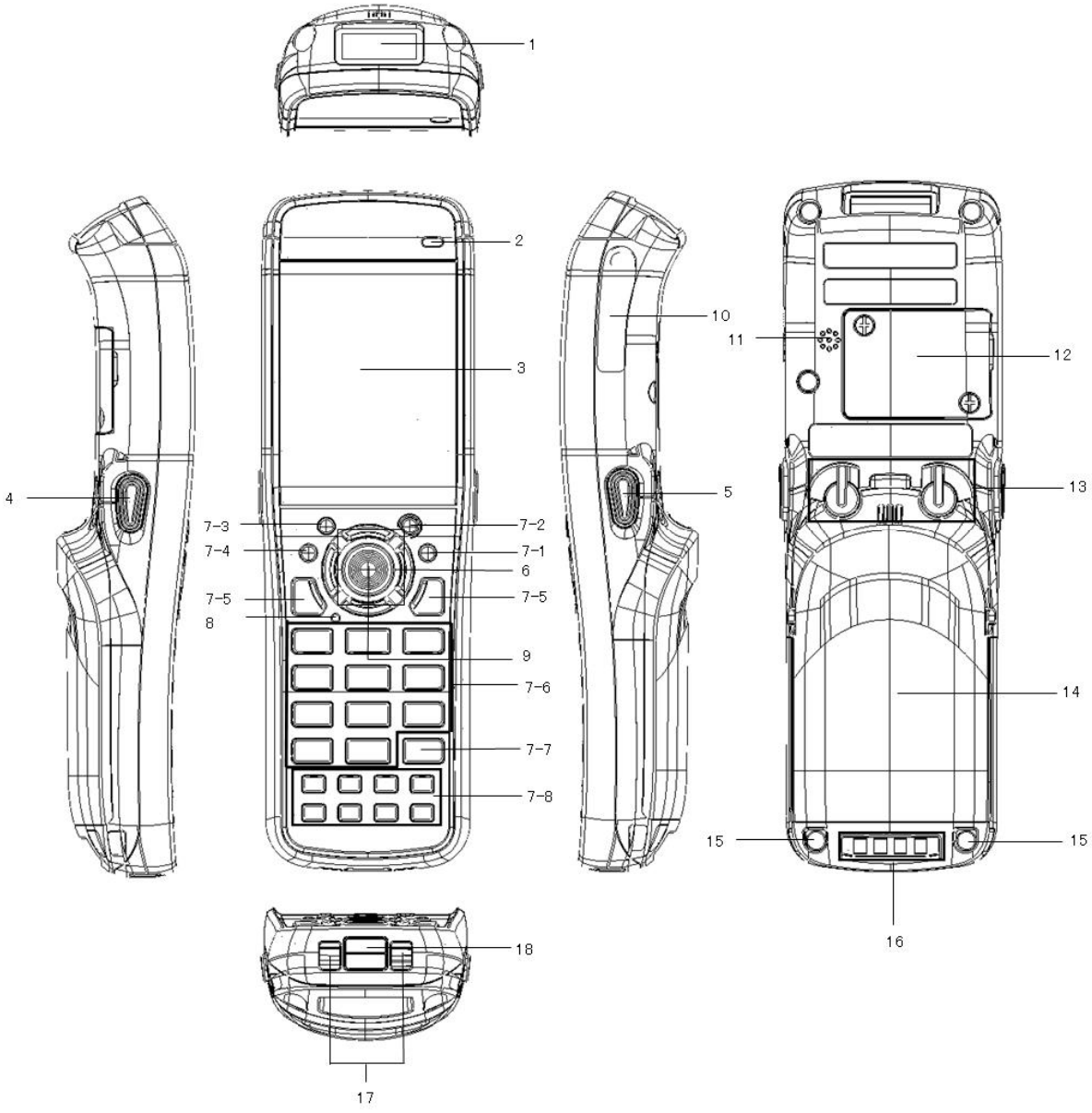


Figure 1-2 Appearance

Table 1-4 Part Names and Functions

No	Name		Content
1	Barcode scan hole		Laser light is emitted through this window to read barcodes.
2	Indicator		3-color LED (red, green, blue). Indicates action status and scan confirmation. Green : Scanning complete Red : Scan failed The indicator lighting can be set from the application.
3	Screen		This is the LCD display that displays content when a program runs.
4	L trigger key.		This is the barcode scan operation key.
5	R trigger key.		This is the barcode scan operation key.
6	Cursor keys		These are the cursor keys.
7	Key	7-1	CLR key: The key to cancel input.
		7-2	Power key: The key to turn power On/Off.
		7-3	BS key: The key to delete the character to the left of the cursor.
		7-4	S key: The key to switch between Text Input mode and Numeral Input mode. The mode is Text Input mode when "S" is lit on the LCD, and Numeral Input mode when it is not lit (if "S" display is set to On). Showing and hiding the "S" can be set from the application.
		7-5	Multi-Function keys (L/R): The key to set arbitrary functions.
		7-6	Numeral/ decimal point key: The key to switch the function between Numeral Input mode and Text Input mode. Numeral Input mode : Input 0-9 and the decimal point. Text Input mode : Input alphabetic and symbol characters.
		7-7	Enter Key. The input confirmation key.
		7-8	Function keys: F1(-) : Minus input F2(Left) : Cursor movement F3(Right) : Cursor movement F4(DEL) : Delete the character at the cursor position F5(SP) : Space input F6(Up) : Strengthen the contrast on the LCD display. F7(Down) : Weaken the contrast on the LCD display. F8(BL) : Turn backlight and key lighting On/Off
8	Reset switch		This switch is recessed in a small hole. It should be pressed in with an extended paper clip or thin pin to initialize (reset) the internal status of the unit.
9	Center trigger key		Barcode scan operation key.
10	USB port		Connect USB devices here.

Continue.

11	Buzzer	This emits sounds such as operation confirmation tones.
12	Backup battery holder	This holds the lithium battery used for memory backup.
13	Main battery cover lock switch	This lock switch makes sure the main battery cover does not come unfastened.
14	Main battery holder	This holds the main battery.
15	Hand strap attachment point	Attach the hand strap here.
16	Data communication terminal	Use this for communication with the cradle.
17	Power supply terminal	This is used to supply power from the cradle.
18	Infrared port	This is the contactless infrared communication part. It is used for communication with another DT-970 or cradle.

1.4.2. **USB cradle HA-N60IO**

The appearance of the USB cradle (HA-N60IO/HA-N60IO-CN) is as follows:

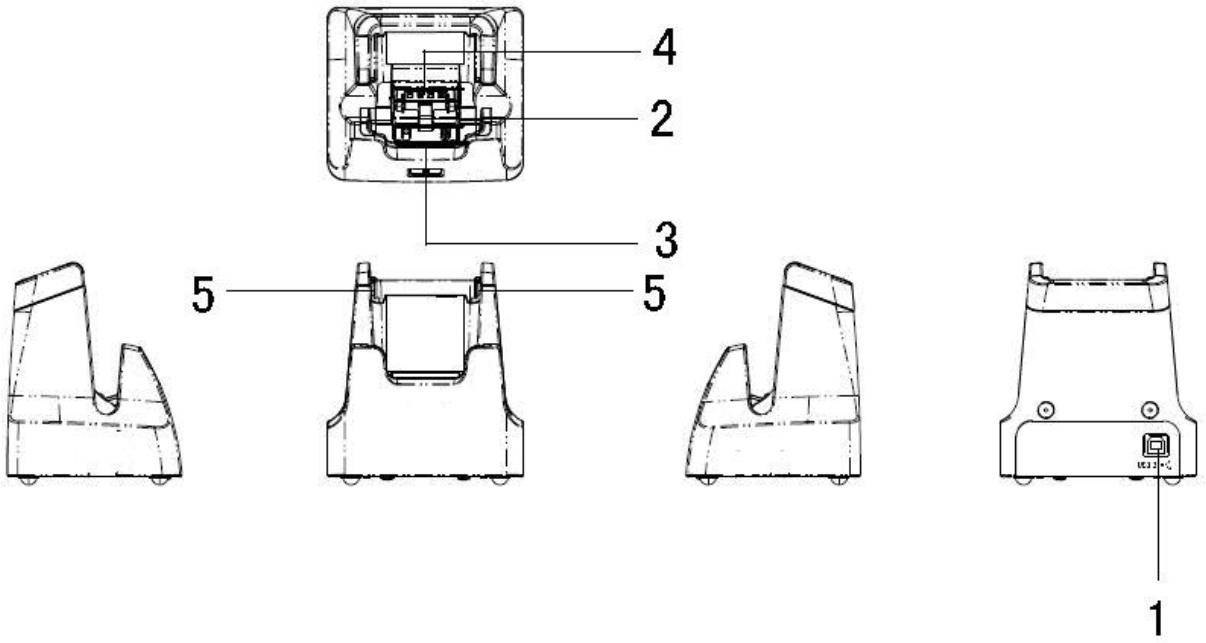


Figure 1-3 Exterior Views

Table 1-5 Part Names and Functions

No	Name	Content
1	Port for USB client	Use a USB cable (DT-380USB-A/DT-380USB-A-CN) to connect to the PC, then transfer system data and file data. Before connecting to a PC, it is necessary to install a specific driver on the PC side.
2	Switch for detecting unit placement	This switch detects that the DT-970 is connected correctly.
3	Power supply terminal	This terminal supplies power to the DT-970.
4	Data communication terminal	This is a terminal for data communications.
5	Hook for fastening the DT-970	This fastens the DT-970 in place.

1.4.3. LAN cradle HA-N62IO

The appearance of the LAN cradle (HA-N62IO/HA-N62IO-CN) is as follows:

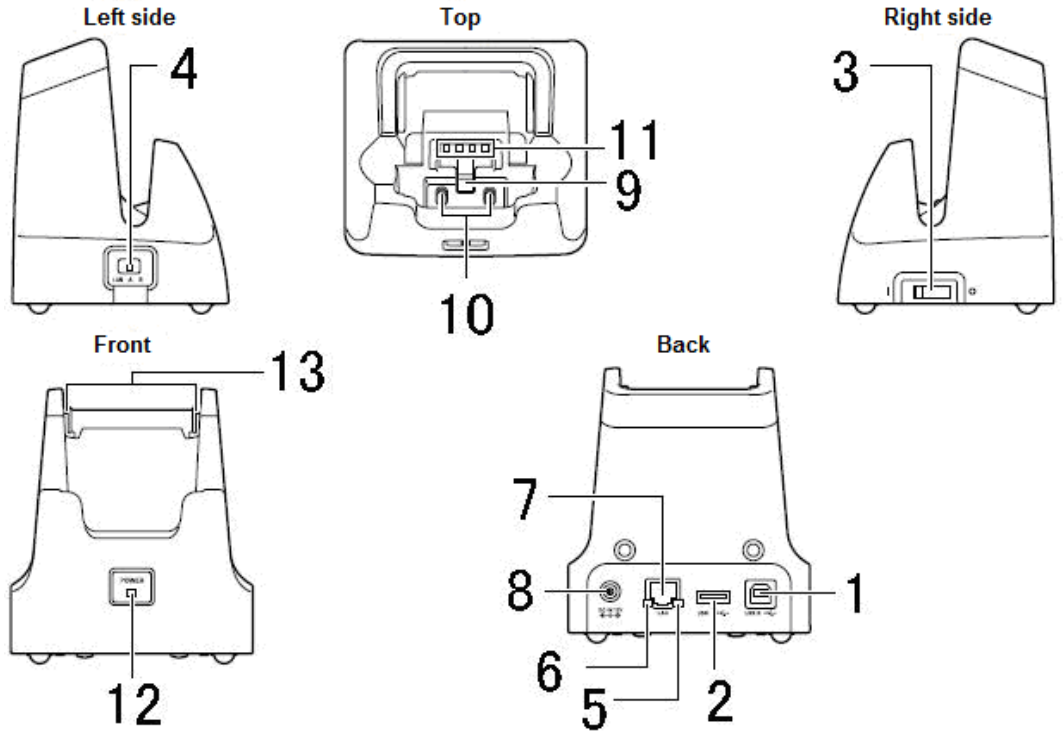


Figure 1-4 Exterior Views

Table 1-6 Part Names and Functions

No	Name	Content
1	Port for USB client	Use a USB cable (DT-380USB-A) to connect to a PC, then transfer system data and file data. Before connecting to a PC, it is necessary to install a specific driver on the PC side.
2	Port for USB host	Use this for connecting to compatible USB peripherals.
3	Power switch	This switch turns the power On/Off.
4	Toggle switch	This switch changes between USB and LAN. LAN : LAN A : USB host B : USB client
5	LAN connection status indicator LED	This displays LAN connection status. Light off : The LAN cable is not connected correctly. Lit in green : The LAN cable is connected correctly.
6	LAN communications status indicator LED	This displays LAN operation status. Light off : No communication in progress Lit in green : Communicating
7	LAN port	Use a LAN cable to connect to a PC or hub, then transfer system data and file data.
8	AC adapter jack	Connect an AC adapter (sold separately) to supply power
9	Switch for detecting unit placement	This switch detects that the DT-970 is connected correctly.
10	Power supply terminal	This terminal supplies power to the DT-970.
11	Data communication terminal	This is a terminal for data communications.
12	Power indicator LED	This indicates power status and the mounting status of the DT-970. Lit in red : Power On Lit in green : The DT-970 is mounted correctly.
13	Hook for fastening the DT-970	Fasten the DT-970.

2. Basic Specifications

2.1. DT-970

The basic specification of the DT-970 Series (all models) is as follows:

Table 2-1 Basic Specifications

Item		Specification	Remarks
CPU		Renesas 32-bit CPU	
Unit memory			
	RAM	8MB	
	FROM	32MB	
	SD card	Micro SD card slot, SDHC compatible	
Display			
	Method	Monochrome	
	LCD size	2.3 inch	
	No. of dots	128 dots W x 128 dots H	
	Dot pitch	Lateral 0.28mm × vertical 0.37mm	
	Gradations	2 gradations	
	Character types	ANK, kanji (JIS 1 and 2 levels), 128 external characters	
	Font size	12, 16, 20 dots	
	No. of dots	12 dots: Reduced ANK 21 columns x 20 rows Standard ANK 21 columns x 10 rows Kanji 10 columns x 10 rows 16 dots: Reduced ANK 16 columns x 16 rows Standard ANK 16 columns x 8 rows Kanji 8 columns x 8 rows 20 dots: Reduced ANK 12 columns x 12 rows Standard ANK 12 columns x 6 rows Kanji 6 columns x 6 rows	
	Backlight	LED, 2 colors (white, red)	
Indicator			
	LED	3-color (red, green, blue) LED x1	
Buzzer			
	Sound pressure	75dB or more	
Vibrator		Yes	

Continue.

Scanner			
	Method	Semiconductor laser	
	Spread	Straight : 20° Bent : 55°	
	Wavelength	645 – 664mm	
	Light output	Less than 1.0mW	
	Scan count	100±20 scan/sec	
	Minimum resolution	0.127mm	
	Scan PCS	0.45 or above	
	Scan depth	Straight : 40 – 550mm Bent : 45 – 550mm	
	Scan width	When scanning in contact: Maximum 37.29mm (1.0 x JAN13)	
	External light	Incandescent lamp, not exceeding 4,000Lux Fluorescent lamp, not exceeding 4,000Lux Sunlight, not exceeding 80,000Lux	
	Scannable codes	UPC-A / UPC-E / EAN8 (JAN8) / EAN13 (JAN13) / Codabar (NW-7) / Code39 / Interleaved 2of5 (ITF) / MSI / Industrial 2of5 / Code93 / Code128 (GS1-128 (EAN128)) / IATA / GS1 DataBar Omnidirectional (RSS-14) / GS1 DataBar Limited (RSS Limited) / GS1 DataBar Expanded (RSS Expanded) / GS1 DataBar Stacked (RSS-14 Stacked) / GS1 DataBar Expanded Stacked (RSS Expanded Stacked) / GS1 DataBar Truncated (RSS-14 Truncated) / GS1 DataBar Stacked Omnidirectional (RSS-14 Stacked)	
Key			
	Control keys	S key, BS key, CLR key, Power Supply key, Multi-Function keys (L/R), Up/down/left/right keys, Numerals and decimal point key, Enter key Function keys (F1 to F8), Reset switch	
	Triggers	Center trigger key Trigger keys (L, R)	
	Key backlight	Yes	
Infrared communication I/F (IrDA)			
	Standard	IrDA Ver.1.0 compliant	
	Communications Protocol	Semiduplex	
	Synchronization method	Asynchronous, frame synchronization	
	Transfer speed	2,400bps / 9,600bps / 19,200bps / 38,400bps / 57,600bps / 115,200bps	
	Communication range	0 (contact) to 0.2m	

Continue.

Bluetooth communication			
	Standard	Bluetooth Ver.2.1 EDR or above	
	Transfer speed	115.2kbps	
	Communication range	Approx. 5m	Changes with electromagnetic conditions and the environment.
	Output	Max 3dBm (Power Class2)	
Cradle I/F			
	USB host	Full speed (12Mbps)	Low speed is not supported See terminal layout*1
	USB client	Full speed (12Mbps)	Low speed is not supported See terminal layout*1
	Power supply terminal		See terminal layout*1
Cable direct connection I/F (USB connector)		USB 2.0 Full speed 12Mbps (Function) USB Micro B-type receptacle connector	Low speed is not supported
Main battery		AA alkaline dry battery (LR6) x2 Or, eneloop AA x2	
Backup battery		Lithium cell x1	
Working time		Dry battery/ eneloop : 200 hours	2 scans in 10s, at normal temperature If the packaged dry batteries are used
		Dry battery/ eneloop : 175 hours	If key standby, calculations, and scanning are in the ratio 20:1:1, at normal temperature If the packaged dry batteries are used
Backup time			
	Backup battery only	20 days	If backed up by only the backup battery, at a normal temperature of 25°C
	Main battery + backup battery	5 months	If the main battery is new, at a normal temperature of 25°C

*1 See terminal layout

Back (with the screen underneath)　　Bottom (with the screen on top)

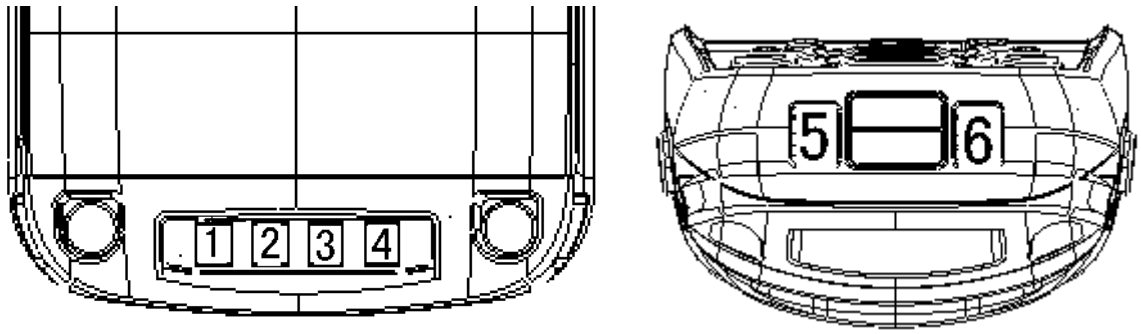


Figure 2-1 Terminal Layout

Table 2-2 Terminal Table

Terminal	Name	Function	Direction
1	V BUS	USB power supply	IN/OUT
2	USB_ID	USB host/client switch	IN
3	D-	USB D-	IN/OUT
4	D+	USB D+	IN/OUT
5	V CRADLE	Unit power supply	-
6	GND	GND	-

Dimensions and Weight

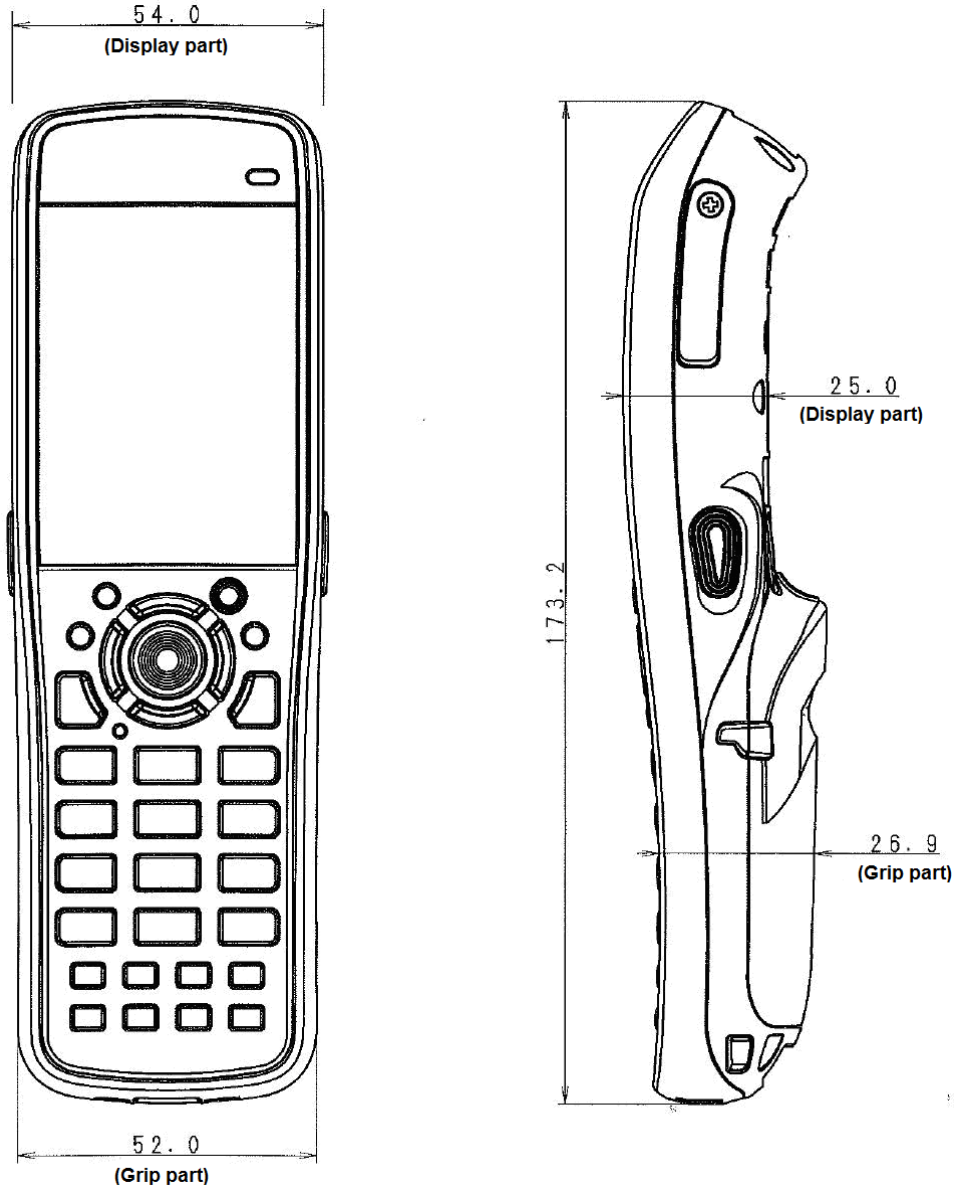


Figure 2-2 Dimension Diagram

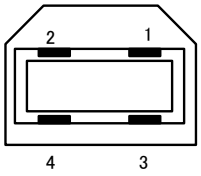
Table 2-3 Dimensions and Weight

Product	Specification	Remarks
Size (width x depth x height (mm))	54.0(52.0)×173.2×25.0(26.9)	Width and height are for the display Figures in () are for the grip Projections are not included
Weight	Approx. 210g	With AA dry batteries (LR6) fitted

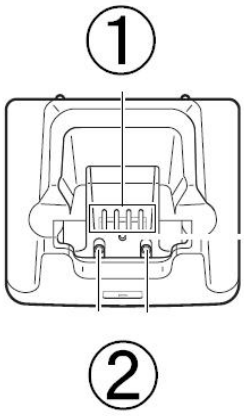
2.2. **USB cradle HA-N60IO**

The basic specification of the USB cradle (HA-N60IO/HA-N60IO-CN) is as follows:

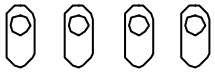
Table 2-4 Basic Specifications

Item		Specification	Remarks
Interface with the terminal			
	Standard	USB 2.0 Full speed	
	Communication speed	12Mbps (maximum)	
	Connector	Contact terminal	Power supply and communications to the unit See terminal layout*1
USB client			
	Standard	USB 2.0 Full speed	
	Transfer speed	12Mbps (maximum)	Low speed is not supported
	Connector	 USB connector B-type receptacle	1: VBus 2: -Data (D-) 3: +Data(D+) 4: GND

*1 See terminal layout



[1] Terminal layout (from left)



[2] Terminal layout (from left)

Figure 2-3 Terminal Layout

Table 2-5 Terminal Table

Terminal	Name	Function	Direction
1	D+	USB D+	IN/OUT
2	D-	USB D-	IN/OUT
3	USB_ID	USB host/client switch	OUT
4	V BUS	USB power supply	IN/OUT
5	V CRADLE	Unit power supply	-
6	GND	GND	-

Dimensions and Weight

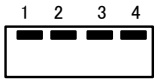
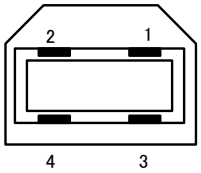
Table 2-6 Dimensions and Weight

Product	Specification	Remarks
Size (width x depth x height (mm))	94.0×83.9×106.6	Including rubber feet
Weight	Approx. 250g	Including rubber feet

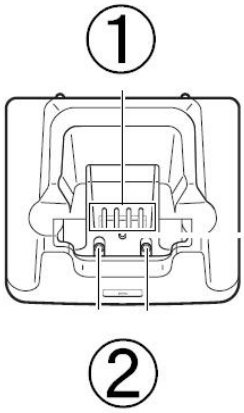
2.3. LAN cradle HA-N62IO

The basic specification of the LAN cradle (HA-N62IO/HA-N62IO-CN) is as follows:

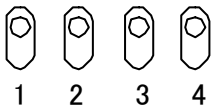
Table 2-7 Basic Specifications

Item		Specification	Remarks
Interface with the terminal			
	Standard	USB 2.0 Full speed	
	Communication speed	12Mbps (maximum)	
	Connector	Contact terminal	Power supply and communications to the unit See terminal layout*1
LAN			
	Communications protocol	IEEE 802.3 compliant	
	Media type	10base-T / 100base-TX, automatic switching	
USB host			
	Standard	USB 2.0 Full speed	
	Transfer speed	12Mbps (maximum)	Low speed is not supported
	Bus power output	5V±5%, maximum 500mA	
		 USB connector A-type receptacle	1: VBus 2: -Data (D-) 3: +Data(D+) 4: GND
USB client			
	Standard	USB 2.0 Full speed	
	Transfer speed	12Mbps (maximum)	Low speed is not supported
	Connector	 USB connector B-type receptacle	1: VBus 2: -Data (D-) 3: +Data(D+) 4: GND
AC adapter input			
	Input voltage	DC 12V±5%	
	Applicable AC adapter	AD-S42120C-N5/AD-S42120C-CN	

*1 See terminal layout



[1] Terminal layout (from left)



[2] Terminal layout (from left)

Figure 2-4 Terminal Layout

Table 2-8 Terminal Table

Terminal	Name	Function	Direction
1	D+	USB D+	IN/OUT
2	D-	USB D-	IN/OUT
3	USB_ID	USB host/client switch	OUT
4	V BUS	USB power supply	IN/OUT
5	V CRADLE	Unit power supply	-
6	GND	GND	-

Dimensions and Weight

Table 2-9 Dimensions and Weight

Product	Specification	Remarks
Size (width x depth x height (mm))	94.0×83.9×106.6	Including rubber feet
Weight	Approx. 280g	Including rubber feet

3. Quality Specification

This Chapter describes environmental performance, electrical specifications, mechanical specifications, reliability, applicable standards, etc. for the terminal and main options.

3.1. Environmental Performance

3.1.1. DT-970

The environmental performance of the DT-970 Series (all models) is as shown in the table below:

T 3-1 Environmental performance

Item		Standard	Conditions
Temperature	In operation	-20 to 50°C	0 to 40°C when connected to a cradle
	Not in operation	-20 to 70°C	
Humidity (humidity resistance)	In operation	10 to 80%RH	No condensation
	Not in operation	5 to 90%RH	No condensation
Dust and splash resistance		IP67 compliant	
Stored in packaging	Temperature	-20 to 60°C	
	Humidity (humidity resistance)	90%RH or less	

3.1.2. USB cradle HA-N60IO

The environmental performance of the USB cradle (HA-N60IO) is as in the table below.

T 3-2 Environmental performance

Item		Standard	Conditions
Temperature	In operation	0 to 40°C	
	Save	-20 to 60°C	
Humidity	In operation	30 to 80%RH	No condensation
	Save	10 to 90%RH	No condensation
Splash resistant		None	
Stored in packaging	Temperature	-20 to 60°C	
	Humidity	10 to 90%RH	No condensation

3.1.3. LAN cradle HA-N62IO

The environmental performance of the LAN cradle (HA-N62IO) is as in the table below.

T 3-3 Environmental Performance

Item		Standard	Conditions
Temperature	In operation	0 to 40°C	
	Save	-20 to 60°C	
Humidity	In operation	30 to 80%RH	No condensation
	Save	10 to 90%RH	No condensation
Splash resistant		None	
Stored in packaging	Temperature	-20 to 60°C	
	Humidity	10 to 90%RH	No condensation

3.2. Electrical Specification

3.2.1. DT-970

The electrical specification of the DT-970 Series (all models) is as follows:

Table 3-4 Electrical Specification

Item	Specification	Remarks
Power consumption	DC3V / 0.4A	

3.2.2. USB cradle HA-N60IO

The electrical specification of the USB cradle (HA-N60IO) is as follows:

Table 3-5 Electrical Specification

Item	Specification	Remarks
Power consumption	DC5V / 0.5A	

3.2.3. LAN cradle HA-N62IO

The electrical specification of the LAN cradle (HA-N62IO) is as follows:

Table 3-6 Electrical Specification

Item	Specification	Remarks
Power consumption	DC12V±5%	

3.3. Mechanical Specification

3.3.1. DT-970

The mechanical specification (dropping impact, vibration resistance) of the DT-970 Series (all models) is as follows:

Table 3-7 Mechanical Specification

Item	Specification	Conditions
Dropping impact	2.0m	6 sides and 4 corners, one time each, onto concrete Fit the packaged batteries (LR6) and eneloop batteries in place
Vibration resistance	1.5G or less	10 to 55Hz, XYZ directions, 30 minutes round trip Power On (display light only)

3.3.2. USB cradle HA-N60IO

The mechanical specification (dropping impact, vibration resistance) of the USB cradle (HA-N60IO) is as stated in the table below.

Table 3-8 Mechanical Specification

Item	Specification	Conditions
Dropping impact	75cm	6 sides, one time each, onto concrete
Vibration resistance	1.5G or less	10 to 55Hz, XYZ directions, 30 minutes round trip With power on but not communicating

3.3.3. LAN cradle HA-N62IO

The mechanical specification (dropping impact, vibration resistance) of the LAN cradle (HA-N62IO) is as stated in the table below.

Table 3-9 Mechanical Specification

Item	Specification	Conditions
Dropping impact	75cm	6 sides, one time each, onto concrete
Vibration resistance	1.5G or less	10 to 55Hz, XYZ directions, 30 minutes round trip With power on but not communicating

3.4. Applicable Standards

3.4.1. DT-970

The standards, directives, and requirements for the DT-970 Series are as in the table below.

Table 3-10 Applicable Standards M50E/M51E

Classification						Standard number (corresponding to each latest edition)	Acquired
Worldwide							
	Wireless standard/ R&TC	Bluetooth compliance authentication		Class 1		PRD 2.0	
				Class 2		PRD 2.0	Yes
	Dust and splash resistant					IEC60529 IP67	Yes
Europe							
	Safety standard/ safety	LVE ordinance (not applicable to the HT itself, but because it is subject to the R&TTE ordinance)				EN 60950-1	Yes
		Laser/ LED				EN 60825-1	Yes
	Electromagnetic standard/ EMC	EMC directive		EMI		EN 55022, EN61000-3-2, EN61000-3-3	Yes
				EMS		EN 55024	Yes
		Vehicle-mounted	Vehicle-mounted device			ISO7637	
		Vehicle directive	Vehicle-mounted device	E-mark		ECE Reg.10	
	Wireless standard	R&TTE directive					
		WLAN/BT		Discharge		ETSI EN 300 328	Yes
				EMC		ETSI EN 301 489-17	Yes
		EMF					
		EMF	WLAN			EN 62311 (A SAR trial is required for transmission power of 20mW or more, and for distance of 20cm or less)	
			BT			EN 62311 (as above)	Yes
			NFC			EN 50364 (as above)	
			WAN	GSM/ WCDMA		EN 62311 (as above)	
		SAR				EN62479 (body)	Yes
		GCF					
		WAN	GSM/ WCDMA	Protocol		GTCF-CC (WAN module only, compliance is not certified for the whole unit)	

Continue.

	Environmental standard	ErP directive			(2009/125/EC) Lot6 Standby power (AC product, AC adapter product)	Yes
					(2009/125/EC) Lot7 External power supply efficiency (AC adapter)	
Taiwan						
	Safety standard /safety	BSMI			CNS14336	Yes
	Electromagnetic standard /EMC	BSMI			CNS13438	Yes
	Wireless standard /R&TC	NCC				
		WLAN/BT	BT/11b/11g	1-11ch	Taiwanese Electromagnetic Wave Law LP0002 or RTTE02	Yes
		WAN	GSM		PLMN01	
	Environmental standard	Taiwanese Primary Battery Mercury Control Law			Taiwanese Waste Disposal Law (Dry Battery Law)	Yes
South Korea						
	Electromagnetic standard /EMC	KCC			RRL (authentication agency) notice	Yes
	Wireless standard /R&TC	KCC			RRL (authentication agency) notice	Yes
	Environmental standard	Energy Use Rationalization Act			Power efficiency (AC adapter, etc.)	Yes
		Quality Management and Industrial Product Safety Management Law			South Korean Autonomous Safety Standards (primary cells)	Yes
					South Korean Autonomous Safety Standards (Lithium secondary cells)	

Table 3-11 M50E-CN/M51E-CN

Classification					Standard number (corresponding to each latest edition)	Acquired
Worldwide						
	Wireless standard /R&TC	Bluetooth compliance authentication		Class 1	PRD 2.0	Yes
				Class 2	PRD 2.0	
	Dust and splash resistant				IEC60529 IP67	Yes
China						
	Safety standard /safety	CCC	safety		GB4943	Yes
	Electromagnetic standard /EMC	CCC	EMC		GB9254	Yes
				GSM EMI	YD-1032-2000	
				Harmonic	GB17625.1	Yes
	Wireless standard /R&TC	SRRC				
		WLAN/BT	BT/11b/11g	1-13ch	Ministry of Information Industry, Bureau of Radio Regulation standard [2002] 353	Yes
		WAN	GSM	Wireless standard	YD/T 1214-2006 & YD/T 1215-2006	
		NAL				
		WAN	GSM	Protocol authentication		

3.4.2. **USB cradle HA-N60IO**

The standard compliance, directives, and requirements of the USB cradle (HA-N60IO/HA-N60IO-CN) are as in the table below.

Table 3-12 Applicable Standards HA60IO

Classification				Standard number (corresponding to each latest edition)	Acquired
Europe					
	Safety standard/ safety	LVE directive		EN 60950-1	
	Electromagnetic standard/ EMC	EMC directive	EMI	EN 55022, EN61000-3-2, EN 61000-3-3	Yes
			EMS	EN 55024	Yes
	Environmental standard	ErP directive		(2009/125/EC) Lot6 Standby power (AC product, AC adapter product)	Yes
				(2009/125/EC) Lot7 External power supply efficiency (AC adapter)	
Taiwan					
	Safety standard/ safety	BSMI		CNS14336	Yes
	Electromagnetic standard/ EMC	BSMI		CNS13438	Yes
	Environmental standard	Taiwanese Primary Battery Mercury Control Law		Taiwanese Waste Disposal Law (Dry Battery Law)	
South Korea					
	Electromagnetic standard/ EMC	KCC		RRL (authentication agency) notice	Yes
	Environmental standard	Energy Use Rationalization Act		Power efficiency (AC adapter, etc.)	

Table 3-13 HA-N60IO-CN

Classification			Standard number (corresponding to each latest edition)	Acquired
China				
	Safety standard/ safety	CCC	GB4943	
	Electromagnetic standard/ EMC	CCC	GB9254	
		Harmonic	GB17625.1	

3.4.3. LAN cradle HA-N62IO

The standard compliance, directives, and requirements of the LAN cradle (HA-N62IO/HA-N62IO-CN) are as in the table below.

Table 3-14 Applicable Standards HA-N62IO

Classification				Standard number (corresponding to each latest edition)	Acquired
Europe					
	Safety standard/ safety	LVE directive		EN 60950-1	
	Electromagnetic standard/ EMC	EMC directive	EMI	EN 55022, EN61000-3-2, EN 61000-3-3	Yes
			EMS	EN 55024	Yes
	Environmental standard	ErP directive		(2009/125/EC) Lot6 Standby power (AC product, AC adapter product)	Yes
				(2009/125/EC) Lot7 External power supply efficiency (AC adapter)	
Taiwan					
	Safety standard/ safety	BSMI		CNS14336	Yes
	Electromagnetic standard/ EMC	BSMI		CNS13438	Yes
	Environmental standard	Taiwanese Primary Battery Mercury Control Law		Taiwanese Waste Disposal Law (Dry Battery Law)	
South Korea					
	Electromagnetic standard/ EMC	KCC		RRL (authentication agency) notice	Yes
	Environmental standard	Energy Use Rationalization Act		Power efficiency (AC adapter, etc.)	

Table 3-15 HA-N62IO-CN

Classification			Standard number (corresponding to each latest edition)	Acquired
China				
	Safety standard/ safety	CCC	GB4943	
	Electromagnetic standard/ EMC	CCC	GB9254	
		Harmonic	GB17625.1	

4. Precautions

* Refer to precautions in the instruction manual, and observe them strictly.

4.1. Precautions for Handling and Operation

4.1.1. DT-970 Charging, Power Supply, and Batteries

- The main battery can be a dry battery or rechargeable battery. The setting is “dry battery" by default. The setting must be changed in order to use rechargeable batteries (eneloop).
- When using dry batteries, always use AA-sized alkaline dry batteries. The terminal may not function normally if the batteries are other than alkaline dry batteries.
- If the backup battery is removed when the main battery has been removed or is in a low battery state, data may be lost or altered. It is not possible to recover the lost data, so always keep a backup of important data.
- Use AA eneloop batteries by Panasonic as the rechargeable batteries. Do not use any other rechargeable batteries.
- Always use the specific charger for rechargeable batteries.
- The rechargeable batteries cannot be charged while they are in the DT-970.
- Read the manuals for eneloop batteries and their specific charger, and use them correctly.
- This product is designed so that it can be fitted with JIS-standard batteries, but the specifications written in this manual refer to the case in which the batteries (LR6) provided with it, and eneloop batteries are used. Performance is not guaranteed with all batteries.

4.1.2. Miscellaneous

- This product uses highly sensitive communications elements, so to facilitate good communication, do not use devices near it that emit electromagnetic waves (such as cellphones) while it is communicating.
  Such devices should be used at a distance from this product (at least 30cm for a cellphone).
- Do not use thinners, benzene, cosmetics or other volatile chemicals to clean this product.
- If it gets dirty, wipe it with a soft, dry cloth. Forceful wiping with a cloth can damage the display area.
- Clean the power supply terminals and communications terminals occasionally with a dry swab or similar implement. Dirt in those areas may cause poor connections.
- Handle chemicals with care. If this product comes into contact with thinners, gasoline, kerosene, solvents, oils, cleaners containing these substances, adhesives, paints, drugs, cosmetics or other such substances, the plastic case, cover, and other parts may break or be discolored.

4.1.3. The Cradles (HA-N60IO/HA-N62IO)

- Do not subject these products to vibration or impact during communication through the USB interface. Communication could be cut off.
- Always remove the handy terminal from the cradle before moving the USB interface switch. (For the HA-N62IO/HA-N62IO-CN)
- When placing the handy terminal in the cradle, make sure it is firmly in place. If it is not mounted correctly, it cannot charge or communicate.
- Never short the power supply terminals, as it could cause a breakdown. In case of inadvertent shorting, unplug the AC adapter from the jack of the cradle, then reinsert it. (For the HA-N62IO/HA-N62IO-CN)
- Use of LAN or USB communications with a PC of low electromagnetic noise resistance may cause malfunctions.
- Do not carry the handy terminal while it is mounted in a cradle. The cradle could drop off unexpectedly, causing damage or injury.

4.2. Storage

- Remove the batteries before long-term storage.
- Avoid storing in an environment that exceeds 70°C (such as leaving inside cars).

4.3. Safety Precautions

- Follow the precautions in the instruction manual.

5. Maintenance Points

- There are no parts or items that particularly require periodic inspection or replacement.

6. Installation Points

- Strictly observe precautions related to the terminal, and install and operate it accordingly.