USER'S MANUAL

MODEL: **finpad 700f**

（**PI-13700-W**）

FURUNO SYSTEMS CO., LTD.

TABLE OF CONTENTS

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FOREWORDS

Congratulations and thank you for deciding and purchasing this unit.

Before start using the unit, read this manual carefully to operate it properly and derive full performance.

This manual explains very basic usages and important information (cautions, etc.) required when using the unit. For daily operations (key strokes for dialog with screen, etc.) specific to application programs, refer to the documentation for those programs which are published by the application vendors.

Always keep this manual in the place accessible from the operators.

> Before start using the unit, charge the Li-ion battery pack as explained in "5. Charging Li-ion Battery Pack".

Recycle wasted Li-ion battery pack

Li-ion

The battery pack contains recyclable Li-ion battery cells. Please reserve natural resource by recycling wasted battery packs. Return wasted battery packs to the vendor of your terminal unit. When shipping a battery pack, insulate its electrodes sufficiently with vinyl tape to prevent overheating/burning by short circuit. It is always a good practice to contain it in plastic bag. Feel free to contact the vendor of your terminal unit for any inquiry on this matter.

DISCLAIMER

This manual was edited very carefully and the information contained in this manual is thought to be correct in every respect, however, in no event FURUNO SYSTEMS be liable to you for any damages, including any lost profits, lost savings or consequential damages arising from incorrect and/or insufficient information in this manual. The entire risks are assumed by you.

The information in this manual may be revised without notice.

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LICENSES

Bluetooth

Bluetooth is used in this unit under the license from its owner.

PRECAUTIONS ON USING WIRELESS LAN

IMPORTANT: This concerns your privacy protection.

Wireless LAN uses radio signal (rather than wired one) for communication between equipment such as PC or wireless access point. This is great advantage in that you may LAN-connect to any station so long as you are within the wireless communication range. Because radio signal can sometimes reach outside beyond obstacles (wall,) this may cause below-listed problems unless security settings are done properly:

Outsider may spy your communication

Outsider may intentionally receive radio signal emitted from your equipment to spy invaluable information including various IDs, passwords, personal information like credit-card numbers, e-mails, etc.

Outsider may invade/hack into your personal or company's network to:

- Steal personal or secret information. (Leakage of Information)
- Impersonate someone else to communicate with another, and distribute harmful information. (Impersonation)
- Falsify intercepted information and distribute it. (Falsification)
- Destroy data/system by distributing computer virus, etc. (Destruction)

Generally security system is built in wireless LAN equipment or wireless access point, and proper setting of the security system minimizes the possibility of these problems.

Wireless LAN equipment is sometimes shipped without setting the built-in security system. For this reason it is vitally important to complete security settings on wireless LAN equipment before start using its LAN capability.

Due to the nature of wireless LAN, security may be broken by unpredictable special manner. Always bear this in mind when using wireless LAN equipment. If you have any question/problem in security settings, do not hesitate to call the vendor of this unit.

Always do security settings after you have understood everything completely. Again, the entire risks are always assumed by you.

FCC Manual Statement

FCC Manual Statement for 802.11b/g

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure to low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. [Handy Terminal (PI-13700-W)] has been tested and found to comply with FCC radiation exposure limits set forth for an uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. The maximum SAR levels tested for [Handy Terminal (PI-13700-W)] has been show to be 0.573 W/kg at Body.

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.
802.11b/g Module and Bluetooth module do not transmit simultaneously.

FCC Manual Statement for RF Exposure

This Handy Terminal (PI-13700-W) has been tested and meets the FCC RF exposure guidelines when used with the FURUNO SYSTEMS CO., LTD. accessories supplied or designated for this product. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

SAFETY LEVELS & MARKS

The following indications are used throughout this manual to show safety levels:

⚠ DANGER	Disobedience to the instructions in this column may <u>directly</u> result in serious injury or death.
⚠ WARNING	Disobedience to the instructions in this column may result in serious injury or death.
⚠ CAUTION	Disobedience to the instructions in this column may result in injury or damage of this unit.
NOTE	Notes or tips in using this unit fully.

The following marks clearly indicate if you <u>must do</u> something or if you <u>must not do</u> something:

🚫 You must do something indicated by this mark.

🚫 Action indicated by this mark is prohibited.

HANDLING PRECAUTIONS FOR THIS UNIT

When using this unit, follow the instructions given in this section. They will prevent danger to yourself or the people around you. They will also prevent failure of this unit.

⚠ DANGER
🚫 Never short-circuit the connector pins or electrodes of this unit or Li-ion battery pack. Short circuit may result in burst or burning.
❗ If the battery pack is replaced with wrong type, it may explode. Used battery pack must be handled as explained in its instruction manual.

⚠ WARNING
🚫 Never use the unit near flammable material such as gas, gunpowder, etc. The material may explode and the unit may burst or burn.
🚫 Never use the unit in the environment where strong shock or vibration is anticipated. The unit may burst or burn.
❗ When the liquid from the LCD display splashes into your eyes, wash the eyes with clean water then rush to a doctor.

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⚠ CAUTION

🚫	Never attempt to disassemble or modify the unit or antenna.
🚫	This unit is intended to use in walker's hand. This unit can not be used on vehicles like cart, forklift, car, etc. Abnormal shocks or continuous vibrations may damage this unit or lower the performance. To use the unit in such environment, sufficient measures (prevention of drop, cushion, shock absorber, etc.) must be taken to meet the environmental requirements. Consult the vendor of this unit.
🚫	This unit conforms to splash-resistant standard of IEC529 IPX4, however, do not use the unit in the environment where splash or rain is anticipated. The unit may be damaged, performance may lower, or life may shorten.
🚫	Never use or store the unit in abnormally hot environment such as in direct sunlight or near heater. The unit may be damaged, performance may lower, or life may shorten.
🚫	Never use the unit in the place where temperature changes frequently and condensing is anticipated. The unit may be damaged, performance may lower or life may shorten.
🚫	Never use the unit in strong magnetic field. The unit may be damaged, performance may lower or life may shorten.
🚫	Never hit the keyboard keys or laser triggers with sharp objects like ball-point pen, pencils, etc. Key tops may be scratched and key closures may be damaged.
🚫	Never leave the unit in dusty environment like desert or in the atmosphere of corrosive gas (such as exhaust gas). Metallic parts such as connector pins or electrodes may deteriorate, resulting in poor charging, communication errors, etc.
🚫	Never stick a label, seal, etc. onto the antenna. Transmitting and/or receiving performance may lower.
🚫	Avoid the environment where the unit is exposed to chemicals, solvent (alcohol, thinner, etc.), oil (mineral or vegetable), etc. The surface of the unit may melt, deform, whiten, crack, etc.

⚠ **CAUTION**
ⓘ Keep the terminals, connector pins, electrodes clean. Stain may cause poor contact, resulting in poor charging, power failure, etc.
ⓘ Wipe off the dirt on the plastic surface with soft cloth damped with a bit of solution of neutral cleanser thinned with clean water. Never use solvent such as alcohol, thinner, benzene, toluene, acetone, etc., or plastic parts (LCD screen, housing, keyboard, etc.) may melt, deform, whiten, etc.
ⓘ To avoid radio interference, make sure that obstacles (metallic objects, etc.) are not placed around the antenna of this unit.

NOTE
Communication range of this unit subjects to environmental condition including existence of obstacles. Wireless LAN of this unit uses 2.4 GHz ISM (Industry Science Medical) band which is shared by various kinds of ISM equipment including microwave ovens, high-frequency medical equipment, etc. For this reason, communication by this unit may be interfered from them. Also, communication by this unit may be interfered from adjacent electric/electronic equipment emitting radio wave or generating magnetic field, office equipment, or home electric appliances like TV.
This unit is provided with privacy-protection capability by means of SS system. However, this does not always mean that privacy is protected perfectly. Because radio wave is used for communication, outsider may spy your communication by using specially-designed equipment. When using this unit, always bear this in mind.
Before start using this unit, charge the Li-ion battery pack sufficiently. The unit can not be turned on if the battery pack is discharged.

HANDLING PRECAUTIONS FOR LI-ION BATTERY PACK

Improper handling may cause overheating, burning or burst, resulting in injury or failure of this unit and/or battery pack. Always obey the following instructions.

Even after the unit is turned off, internal electronics of this unit is partially kept alive to keep the condition directly before the turning-off and thus make next-time startup fast. For this reason, the battery pack is consumed (though slowly) even after you turn the unit off. If the unit is turned off with the battery pack charged fully, it keeps alive about one week.

If the unit is left unused for many days, a press of the [ON] key may not turn the unit on. This is not a fault of the unit. Replace the battery pack with a charged one, and the unit can be turned on. In this case startup will takes longer because the condition saved at the last turning off is lost.

Startup also takes longer if the battery pack has been removed for longer than about three minutes.

⚠ DANGER

🚫 For charging of the battery pack, always use the genuine charger and the method specified by FURUNO SYSTEMS. Use of improper charger (modified one, etc.) or charging method (abnormal ambient temperature, abnormal charging voltage/current, etc.) may cause overcharging, abnormal chemical reaction, etc., resulting in overheating, burning, burst, etc.

🚫 Never short-circuit across (+) and (-) electrodes with conductor. Do not hold or store the battery pack together with conductor such as necklace or hairpins. Short between the electrodes causes overcurrent, resulting in overheating, burst, burning, etc. Short-circuiting conductor will also be overheated.

🚫 Never throw the battery pack into fire or heat it, or internal insulating material will melt and gas will damage internal valves and/or safety mechanism. Also, internal electrolytic material may catch fire, resulting in overheating, burning, burst, etc.

🚫 Never use/leave the battery pack in high-temperature environment (near to fire, heater, in direct sunlight, etc).

If internal plastic separator is damaged by heat, the battery is short-circuited internally, resulting in overheating, burning, burst, etc.

🚫 Never put the battery pack in water or wet environment. If so done, the internal protection may be damaged, resulting in overheating, burning, burst, etc.

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	⚠ **DANGER**
🚫	Never sting the battery pack with a sharp object like a pin or nail. Never hit or press it strongly. If so done, it may be stressed, distorted or damaged, resulting in internal short i.e. overheating, burning, burst, etc.
🚫	Never attempt to disassemble or modify the battery pack. The battery pack contains various safety measures and protectors. Damage to those parts will cause overheating, burning, burst, etc.
🚫	Never charge the battery pack in high-temperature environment such as the place near to heater, under direct sunlight, etc. When heated, internal protector stops charging. If the protector is damaged, the battery is charged with overcurrent or overvoltage and abnormal chemical reaction occurs internally, resulting in overheating, burning, burst, etc.
🚫	Never add strong shock to the battery pack. Never throw, drop, hammer it. Never step on it. If internal protection is damaged, the battery will be charged with abnormal voltage/current and abnormal chemical reaction will occur internally, resulting in overheating, burning, burst, etc.
🚫	If any sign of damage or deterioration (flaw, crack, coloration, etc.) is found on the battery pack, stop using it immediately. If used continually, it may overheat, burn, burst, etc.
🚫	Never solder leads to the battery pack directly. If so done, heat will melt internal insulation material or damage gas-release valve, safety measures, etc., resulting in overheating, burning, burst, etc.
🚫	Never connect the battery pack to AC power outlet or car cigarette lighter. If high voltage is added, overcurrent may flow or the battery will be damaged, resulting in overheating, burning, burst, etc.
🚫	Never use the battery pack for devices other than this unit. If so done, performance of the battery pack may deteriorate, life is shorten, and in bad case abnormal current may cause damage, resulting in overheating, burning, burst, etc. due to abnormal chemical reaction.
❗	When charging the battery pack, strictly conform to the conditions specified by FURUNO. Otherwise (if ambient temperature is high, charging voltage or current is abnormally high, a locally-modified charger is used, etc.,) the battery pack may be charged excessively, charged with abnormal current, resulting in overheating, burning, burst, etc.

⚠ DANGER

❗	When liquid leaked from the battery pack splashes into eyes, wash the eyes with abundant clean water without rubbing, then rush to a doctor. Eyes may be injured if left without cure.
❗	Take care so that foreign objects (conductive material, dusts, etc.) may not enter inside.

⚠ WARNING

🚫	Never put the battery pack in a microwave oven, dryer, high-pressure container, etc. If so done, it may be heated quickly, seal is damaged, etc., resulting in overheating, burning, burst, etc.
🚫	Never use the battery pack near or in flammable material such as gas, gunpowder, etc.
🚫	If unusual signs (overheating, coloring, deforming, smelling, etc.) are observed when operating/charging/storing the battery pack, remove it from the terminal unit or charger. Never use it any more. If used, it may overheated, burn, burst, etc.
🚫	If the battery pack can not be charged up within rated time, stop charging it. Further charging may result in overheat, burning, burst, etc.
❗	When liquid leaks from the battery pack or odd smell is felt, immediately make sure that there is no fire nearby. Liquid or gas may catch fire, resulting in burning, burst, explosion, etc.
❗	If any abnormality is found with the battery pack, insulate its (+) and (-) electrodes with vinyl tape, etc. Do not use it any more.

⚠ CAUTION

🚫	Do not leave the terminal unit for a long time with the battery pack removed. If so done, the backup battery within the unit will be used up, resulting that the codition at last turning-off may be lost, etc.
❗	When handling the battery pack, never short-circuit its electrodes. It is best to carry it stored in the terminal unit or in a plastic bag.

⚠ CAUTION
❗ Always keep the terminals and electrodes clean. Stained terminals or electrodes may cause poor contact, open-circuit, insufficient charging, etc.

NOTE
When storing the battery pack for a long term (such as 3 to 4 months or longer,) keep it in dry and cool place. To prevent deterioration, it is recommendable to use it from time to time (such as several times a year).
If you feel that the battery pack discharges extremely quickly, it may be wasted (deteriorated). Replace it with new one.
Life of the battery pack shortens if it is used in adverse condition, such as ambient temperature below 0°C or above +40°C.
When charging the battery pack, you may feel it somewhat warm. This is not a fault.

PRECAUTIONS WHEN CHARGING LI-ION BATTERY PACK

When you start using this unit or when the battery power becomes low (power LED blinks in red color in this case,) the battery pack must be charged.

NOTE: For charging procedure, see "5. Charging Li-ion Battery Pack".

⚠ **DANGER**
🚫 Use the charger special to the Li-ion battery pack only. Never use the charger for another rechargeable batteries or dry cells.
🚫 Never short-circuit across the (+) and (-) electrodes of the charger or battery pack.
🚫 To avoid electric shock, never handle the charger when they are wet or splashed.
🚫 Never attempt to disassemble or modify the charger.
🚫 Do not add a strong shock to the charger by hitting with a hammer, by dropping, etc. Do not deform the charger by stepping on it, etc.
❗ Take care so that foreign objects (conductive material, dusts, etc.) may not enter inside.
⚠ **CAUTION**
❗ When the battery pack is charged up, remove it from the charger quickly.

NOTE
When charging, you may feel the charger or battery pack somewhat warm. This is not a fault.
Conduct charging in ambient temperature rage from +5° to +30°C.

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1. Features

finpad 700f（PI-13700-W）offers basic performance as communication terminal i.e. operability, applicability and expandability. In addition it features:

• Easy-to-operate, compact/light-weight body

  - Built-in structure eases operation in the field.
  - The built-in scanner reads a wide variety types of barcodes.
  - The compact body houses a large 2.8-inch TFT color LCD panel, laser scanner and SS transceiver, but weighs only 230 g approx.
  - It fits in hand, and may be used for many hours comfortably without strain.

• Keyboard layout intended for single-hand manipulation and
  powerful supports for service-oriented applications

  - Enter and laser-trigger keys placed closely each other
  - Three laser trigger keys provided on the head/left/right sides respectively to allow right/left-handed or normal/reverse-handed operations.
  - Flexible key assignment for various services
    * Function (PF) keys: [F1]/[F2]/[F3]/[F4]
    * Cursor keys: [▲]/[▼]/ [◄]/[►]
    * Function keys: [S1]/[S2]/[C]/[BS]/[SCAN]/[ENT]

• Easy-to-read LCD screen designed with service environment in mind

  - 240x320-dot, large LCD screen
  - Graphic presentation with 65000 (approx.) colors
  - Four fonts for rich expression and readability
  - Scalable font for readability of small to large letters

• Service-minded environmental specifications

  - Most light-weight in the class of this screen size
  - Durability against adverse environment and harsh handling:
    * Free fall from 2-meter height
    * Repeated drops from lower heights
    * Splash-proof complies with IEC529 IPX4
    * Static discharge of ±15 kV

• Power management for long-lasting operation

  One full charge offers day's work of about 10 hours, where scanning and wireless data transfer of 0.5 sec is assumed every 20 sec.

- Vibration and speaker ensure error-free operation

  - Vibration acknowledges input operation to eliminate possible mistakes.
  - Three speaker volume levels and multiple pitches are available to applications.
  - Sound may be also programmed to acknowledge barcode scanning or other operations.

- Bluetooth interface for quick, wireless connection to peripheral devices.

- SS Communication System (complies with IEEE802.11b/g)

  2.4 GHz band spectrum-spread (SS) communication system offers:
  - Long communication range up to 100 m (indoor) or 200 m (outdoor)
  - High transmission speed up to 54 Mbps per channel, and multi-channel concurrent communication
  - Auto-switchover among multiple wireless-LAN access points according to movement of terminals

  This unit is classified as specified low-power radio equipment which does not require license.

- Easy-to-use Application Developing Environment

  Various middleware which finpad provides offers high-level wireless communication, developing tools, etc. For further details refer to the documentations of the middleware.

2. System Configuration

This unit was designed considering expandability, flexibility and mobility so that it may be used in a wide variety of services. Typical configuration is shown below.

MORS SERVER

APPLICATION SERVER

HUB

ETHERNET (LAN/PoE)

701

ACCESS POINT
WN-701-W
[OPTION]

[STANDARD]

finpad 700f

(PI-13700-W)

·Li-ion BATTERY PACK
 (BP-13000-W)
·HANDSTRAP

Li-ion BATTERY PACK
(BP-13000-W)(Spare)
[OPTION]

Bluetooth-compliant Devices
 - Printer
          [OPTION]

BATTERY
CHARGER
(BC-12000-W)
[OPTION]
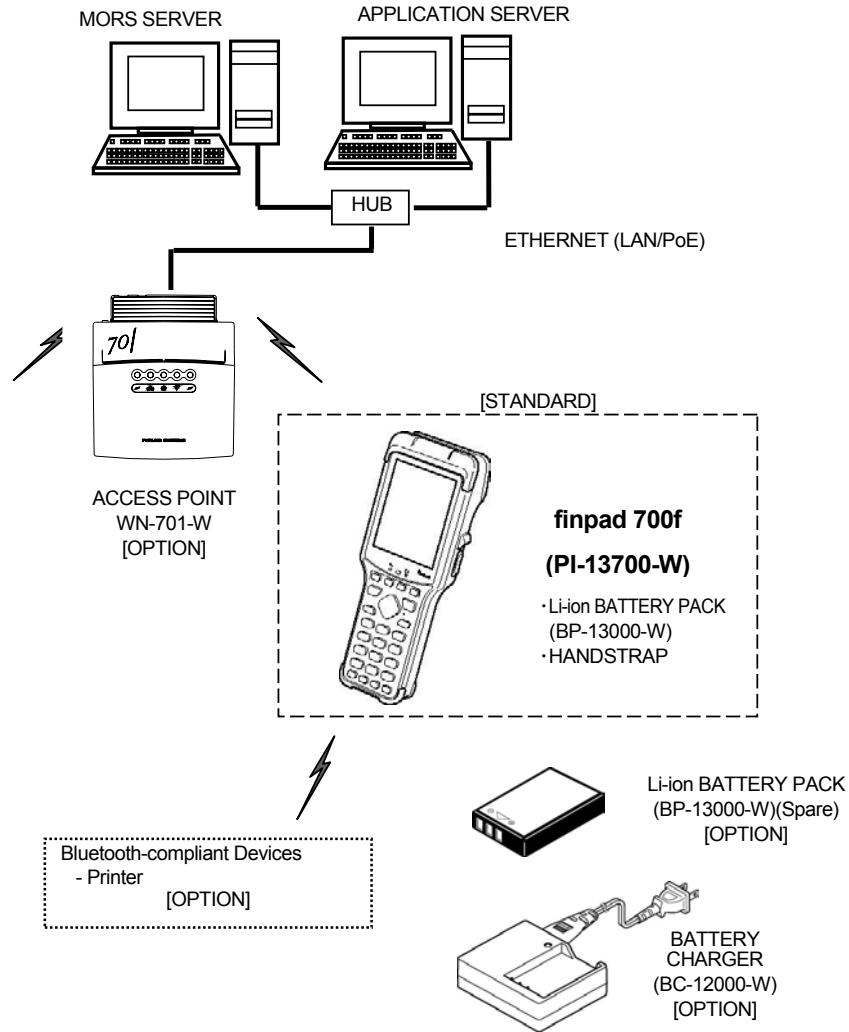
3. Controls & Switches

Terminal Unit

(Top View)   (Bottom View)
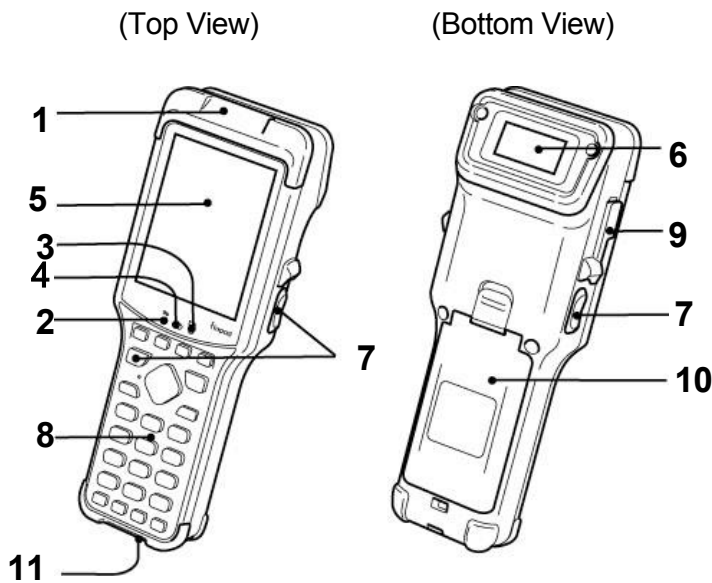
NO.	NAME	FUNCTION
1	SS Antenna	Antenna for spread-spectrum communication is built in.
2	TX/RX LED	Lit GREEN: Wireless reception Lit ORANGE: Wireless transmission
3	Power LED	Blinks GREEN: LCD screen OFF Blinks RED: Low battery power
4	User LED	GREEN/RED: Lit, blink or extinguished by application program ORANGE: Blinks when rewriting ROM.
5	LCD Screen (with backlight)	Displays text and graphics images.
6	Laser Scanner	A barcode scanner is built in.
7	Laser Trigger	Press to start barcode reading. (Three triggers are available on the head, left and right sides of the unit, respectively. Press either one.)

NO.	NAME	FUNCTION
8	Keyboard	Press keys to enter data or activate functions. Press [ON] and [OFF] keys for power-on and off, respectively. Press [3] while holding [ON] down to adjust the backlight through 4 steps.
9	USB Port	Used for maintenance.
10	Battery Cover	Li-ion battery pack is set under this cover. Unless existence of the cover is detected, the unit does not start operation.
11	Bluetooth Antenna	Antenna for Bluetooth communication is built in.

⚠ **DANGER**
🚫 Never short-circuit connector pins. Short can cause burst or burning.
⚠ **CAUTION**
🚫 While ROM is rewritten (the power LED blinks in orange color,) never remove the Li-ion battery pack from the unit. If so done, program will be lost and your unit may not start any more.

4. Li-ion Battery Pack

When handling the battery pack, never short-circuit its electrodes (illustrated below). It is best to carry it stored in the terminal unit or plastic bag.
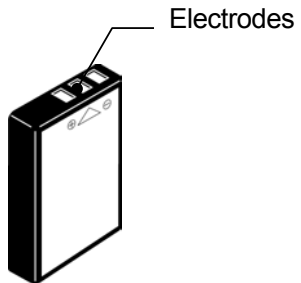
Electrodes

⚠ DANGER
🚫 Never short-circuit the electrodes of the battery pack. Short can cause burst or burning.
❗ Wasted battery packs must be handled as explained in its instruction manual. See "Recycle wasted Li-ion battery pack" at the front of this manual.

5. Charging Li-ion Battery Pack

When you start using this unit or when battery power becomes low (the power LED blinks in red color in this case,) the battery pack must be charged.

Charging Procedure

You will remove the battery pack from the terminal unit, and charge it by using the BC-12000-W battery charger as follows:

1 Shut down the power of the terminal unit.

2 Remove the battery pack from the unit as explained in "7. Replacing Li-ion Battery Pack".

3 Tie the AC cord of the battery charger into an AC outlet.

4 Set the battery pack in the battery charger, and the pilot lamp on the battery charger illuminates in red color.

5 When charging completes, the color of the pilot lamp turns green. Now, remove the battery pack from the charger.
NOTE: Charging completes typically in 3.5 hours in normal room temperature.

6 Unplug the AC cord of the battery charger from the AC outlet.

Li-ion Battery Pack

Pilot Lamp
Stand-by..........................Not lit
Charging..........................RED
Charging completed........GREEN
Charging abnormal..........Not lit

Battery Charger BC-12000-W
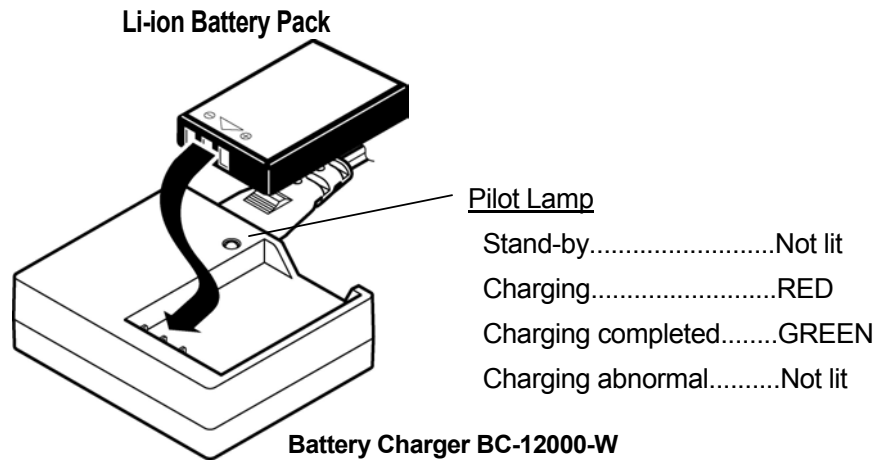
⚠ CAUTION

If the pilot lamp is extinguished with a battery pack set, the battery pack will be faulty. Stop charging immediately. Never charge or use a faulty battery pack any more.

6. Charging Backup Battery

This unit contains a rechargeable Lithium battery which backs up the internal condition of the unit when the Li-ion battery pack is removed.

When start using this unit for the first time after shipment or after a long unused time, charge the backup battery as instructed below. It should be noted that the unit is shipped from the factory without charging.

Charging Procedure

Set a charged, ready-to-use Li-ion battery pack into the unit. In normal room temperature of 25°C, the backup battery is charged up to 70% in 12 hours and 100% in 24 hours.

NOTE: The backup battery could be charged even if the voltage of the Li-ion battery pack is lower than its normal operating voltage. In this case, charge the Li-ion battery pack soon.

Typical Backup Period by Backup Battery

Li-ion Battery Pack	Backup Period
Removed	About 3 minutes
Used (fully charged)	About 1 week

(Ambient Temperature: 25°C)

NOTE
In order to prevent discharge of the backup battery, make it a rule to always set the Li-ion battery pack in the unit.

7. Replacing Li-ion Battery Pack

When charging the Li-ion battery pack or when replacing it, remove it from the unit as instructed below. If you feel that the battery pack discharges extremely soon, it should be wasted or deteriorated. Replace it with new one.

> **BEFORE HANDLING THE BATTERY PACK, READ "HANDLING PRECAUTIONS FOR LI-ION BATTERY PACK" INCLUDED AT THE FRONT OF THIS MANUAL.**

Replacement Procedure

1 Shut down the power of the unit.

2 (1) As illustrated below, slide the knob in the arrowed direction to unlock the battery cover .
    (2) Lift up and remove the battery cover.
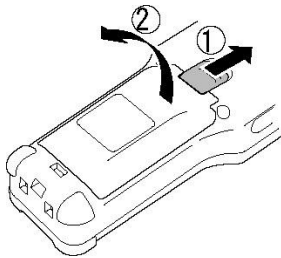
3 As the following figure illustrates, pull up the battery-pack ribbon to withdraw the battery pack.

Battery Pack

Ribbon
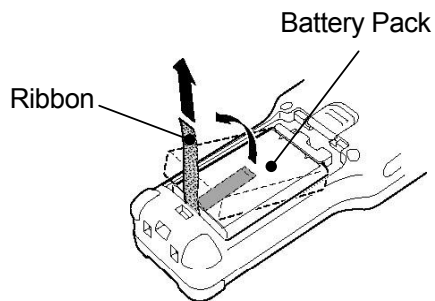
4 Install a charged battery pack in the reverse order (**3 2**).

⚠ CAUTION

🚫 When handling the battery pack, do not touch its electrodes or do not add strong force to it. Stain, flaw or deform of the electrodes cause poor contact.

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⚠ **CAUTION**
⚠ When installing a battery pack, set it in the unit with its name plate faced upward (visible) and electrodes mated to the receptacles within the unit.
⚠ When installing a battery pack, set it in the unit with its ribbon pulled out as shown in step **3**. Do not leave slacked ribbon under the battery pack.
⚠ When closing the battery cover, make sure that the ribbon is not caught.
⚠ Do not use the unit with the battery cover removed. Unless existence of the cover is detected, the unit does not start operation.

8. Power-ON/OFF

<table>
<tr><td colspan="2" align="center">⚠ CAUTION</td></tr>
<tr><td>❗</td><td>Before start using the unit, charge the Li-ion battery pack as explained in "5. Charging Li-ion Battery Pack". The unit does not function if the battery pack is empty.</td></tr>
<tr><td colspan="2" align="center">NOTE</td></tr>
<tr><td colspan="2">An application program may start in different way from the one explained here. It is up to application program. See the instruction manual for the application program in use.</td></tr>
</table>

To turn the unit ON, press the [ON] key. Both the Power, User and TX/RX LEDs will illuminate in orange color, and the buzzer will beep. Soon the application program runs.
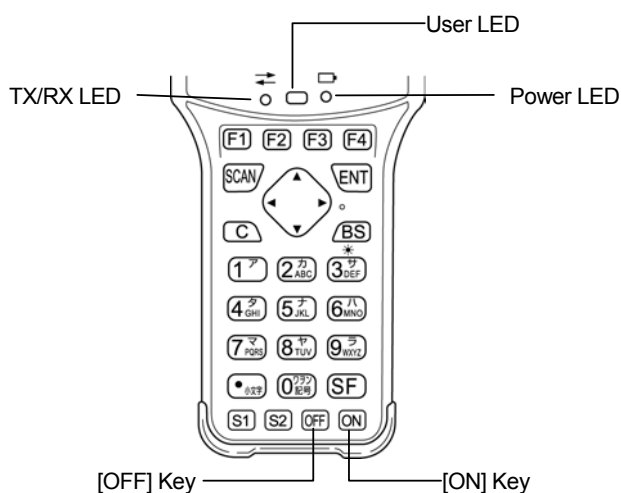
NOTE: An application program may start in another way. It is up to application program.

To turn the unit OFF, press the [OFF] key.

NOTE: Depending on the application program, [OFF] key is disabled and another key (or key combination) is assigned to power shut-down. Also, power may be shut down automatically if the unit is left without operation. Everything is up to application program.

For exact information on power-on/off procedure, refer to the manual of the application program in use.

9. Setup Utility

This unit incorporates setup utility which sets various functions

⚠ CAUTION
❗ Do not use the setup utility without understanding its function well. If the setup utility is used in improper manner, programs and/or data may be lost. Do not abuse the setup functions which are not documented here.

Starting Setup Utility
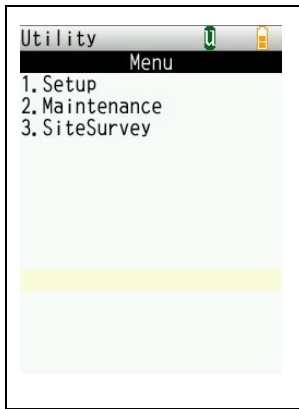
1 Keep pressing [ON] while holding both [ENT] and [0] down, until Utility Menu displays as shown left. (It takes a few seconds.)
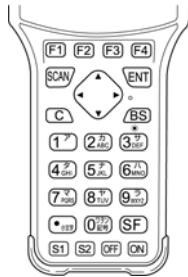
Next, Press [1] to call the top menu of "Setup".
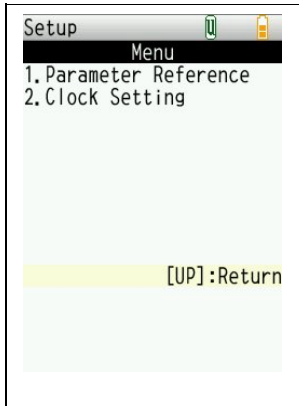
2 As a result Setup Menu (User Version) displays as shown left:
[1] Parameter Reference   See "**[1] Parameter Reference**".
[2] Clock Setting   See "**[2] Clock Setting**".

NOTE: To terminate the setup utility, press the [OFF] key.

[1] <u>Parameter Reference</u>

This menu displays currently-used parameter settings.
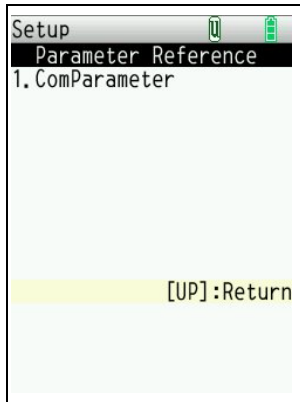
The left sub-menu displays when "[1] Parameter Reference" is selected on the top menu of Setup Utility.

1 Select an item by pressing a numeral key:
[1] Communication Parameters   See [1]-**[1]**.

When you are finished viewing parameters, press [↑] to recall the preceding menu e.g. top menu.

[1]-**[1]** Parameter Reference::**Communication Parameter**
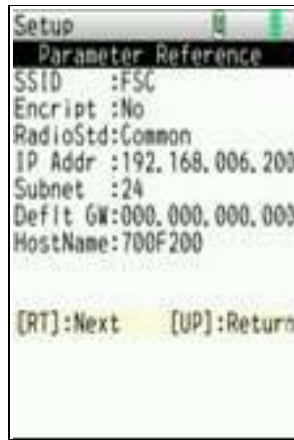
A series of parameter settings display like this.

The left screen is page 1. If you want to call page 2, press [→].

(If you want to return to the previous menu, press [↑].)

[→] | ↑ [←]
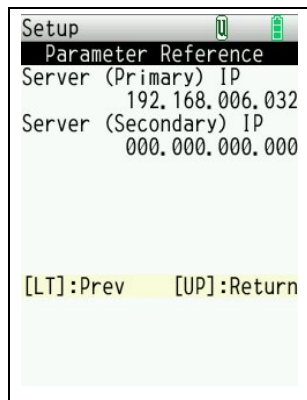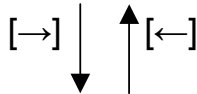
A series of parameter settings display like this.

The left screen is page 2. If you want to call page 1, press [←].

(If you want to return to the previous menu, press [↑].)

13

[2] Clock Setting

```
Setup              Ü    🔋
      Clock Setting
Present Time
     2000/01/06 15:27:37

     Date: ▮   /  /
     Time:    :  :



[ENT]:Set    [UP]:Return
```
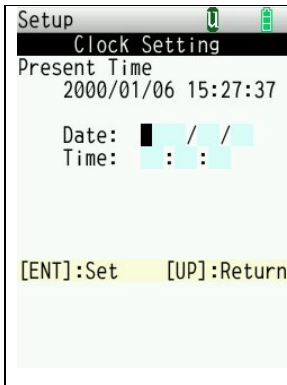
The current date/time display like this when "[2] Clock Setting" is selected on the top menu of Setup Utility.

1 Type date/time by pressing numeral keys if you want to modify.

2 When everything is ok on the screen, press [ENT]. As a result, your entry is accepted and the previous menu will redisplay.

If you want to cancel date/time entry, press [↑] to recall the previous menu.

14

10. Adjusting LCD Backlight

Adjust the LCD backlight for best visibility in accordance with ambient lighting condition. When you use the unit in bright environment, it is recommended to lower the LCD backlight to save battery power.

Adjustment Procedure

1 Turn the unit ON.

2 While holding the [ON] key down, tap the [3] key. The backlight brightness will change in the following cycle:

►Darkest→ Dark→ Medium→ Bright
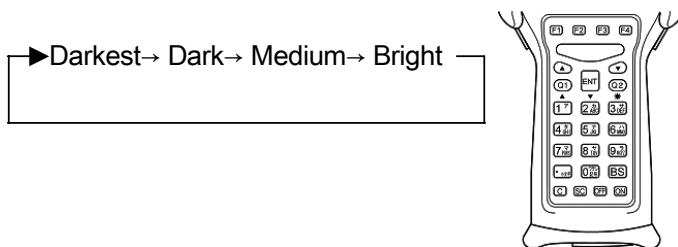
NOTE: In some cases the LCD backlight is controlled by application program to light up for only a limited time after a key pressing.

11. Using Laser Scanner

A barcode comprises a series of black stripes representing alphanumeric letters. To read this information properly, follow the instructions below:

⚠ **WARNING**
🚫 Laser beam is harmful to eyes. Never look into the laser beam aperture (head portion) of the unit. Never direct the aperture to someone else.
🚫 Use of controls adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
❗ When scanning labeled bottles or tubes containing medical material (such as medicine, reagent, or blood,) the barcode readout is vital. Always verify that the readout by the scanner agrees with the literal information on the label.

⚠ **CAUTION**
🚫 The laser scanner is a precision device. When a strong mechanical shock is added by mistake (dropped, hit etc.,) stop using it and call the vendor of this unit for checking/repair. Such a scanner may cause frequent read errors or may become completely inoperative while you are using it in a future.
🚫 Do not touch or mask the scanner aperture. Scratches or stain may cause read errors.
🚫 Do not scan barcodes with labels laid on striped pattern such as paper on which stripes are printed or grained wood, because the scanner may recognize them as barcodes.
❗ Puff the dusts piled on the scanner aperture. For the dusts sticking to the scanner aperture, wipe them out gently with wet cloth or wet applicator.
❗ If a barcode label is contained in a plastic bag, take it out before scanning.
❗ Scan a barcode with the label stretched properly. Before scanning, make the label surface clean.

NOTE
The scanner may not read barcodes in direct sunlight or in extremely bright environment.
If printing quality of a barcodes is poor or if barcode labels are stained, the scanner may fail in reading barcodes.

NOTE
The scanner will read barcodes without problem if the labels are oriented upside down.

The scanner may not read barcodes if the laser beam hits labels in extremely squint angle or in exact right angle. It is best to scan a barcode in a bit squint angle.

Scanning Procedure

When the laser trigger is pressed, the following sequence is performed automatically:

1   The built-in scanner is powered automatically.
2   Red laser beam is emitted through the scanner aperture arranged on the head of the unit.
3   The beam scans the barcode to read.
4   When the barcode is read out successfully, the unit beeps once.
     If failed, it beeps twice.

Barcode

Laser Trigger
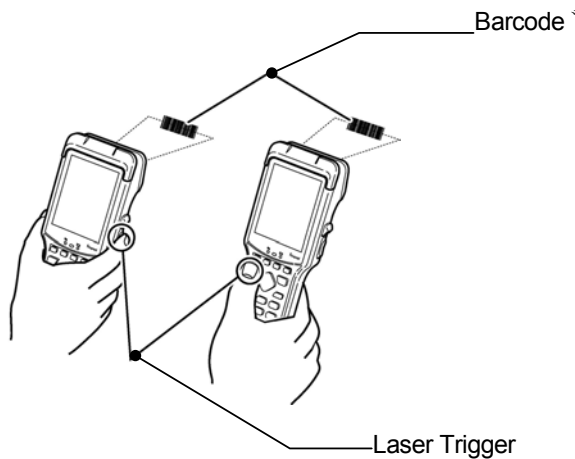
NOTE: If a barcode label is too away (exceeding "decode zone",) the scanner can not read it. For details of decode zone, see "16. Specifications for finpad 700f".

If a barcode can not be read for a long time, scanner power is shut down automatically.

The key assigned for laser trigger and/or alarm by buzzer may differ, depending on application program in use.

12. Bluetooth Communication

This unit is provided with Bluetooth interface to communicate with Bluetooth-compliant devices in wireless mode. For recommendable Bluetooth-compliant devices, call the vendor of the unit.

Bluetooth Antenna

Bluetooth-compliant Devices
 - Printer
           [Option]
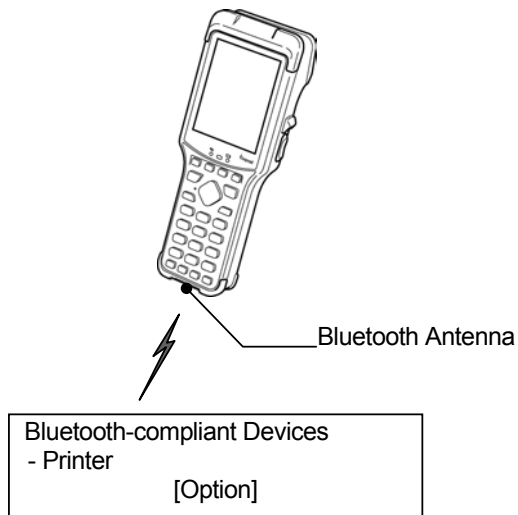
⚠ CAUTION
❗ Place this unit within 5-meter away from Bluetooth-compliant equipment. Make sure that there is no obstacle (such as wall) between the two. Communicating capability subjects to the distance or angle between them.
❗ After turning on and starting the Bluetooth-compliant device, turn this unit ON. If this unit is turned ON first, processing by this unit may delay due to recognition and connection.

13. Attaching Hand Strap

You may use a hand strap to prevent dropping the unit. It can be attached to the unit
as follows:

1   Pass the looped lead of the hand strap through the strap holder of the unit as illustrated
below.

2   Pass the strap through the loop as illustrated below.

1   **2**

Strap Holder
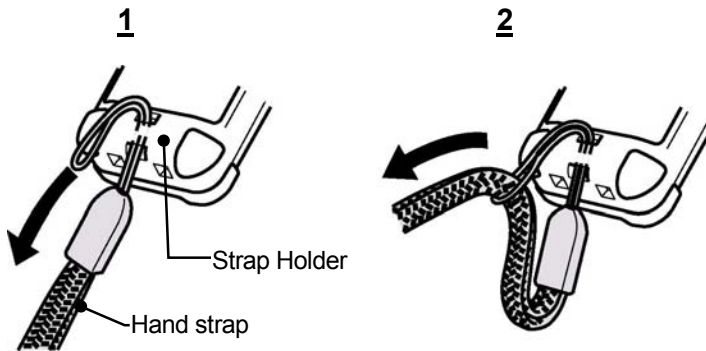
Hand strap

⚠ CAUTION	
🚫	Do not swing the unit by hand strap.
❗	Make sure that the hand strap is not frayed or damaged.

Barcode˚

Laser Trigger
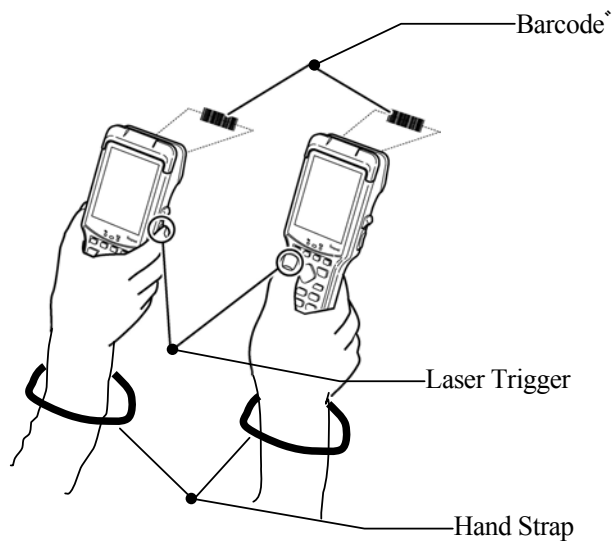
Hand Strap

NOTE: The hand strap is used for the fall prevention.

19

14. Daily Maintenance

Daily maintenance is essential to keep the unit ready for operation at full performance. Do maintenance from time to time as instructed here.

The keyboard or the plastic surface of the unit may be deteriorated (melte, deform, whiten, crack, etc.) if chemicals, solvent (alcohol, thinner, etc.,) oil (mineral or vegetable,) etc. stick. Do not use the unit in such environment.

Body, Keyboard & Laser Scanner Aperture

⚠ CAUTION
🚫 Never use solvent such as thinner, benzene, toluene, acetone, etc., or plastic body may melt, deform, whiten, etc.
🚫 Do not rub the keyboard too strongly. Keytop marks may fade or key closure contact may deteriorate.
🚫 Do not rub the laser scanner aperture with hard cloth (gauze, etc.) strongly. Flaw on the aperture may cause errors in barcode reading.
❗ When wiping the body with damp cloth, squeeze out water well. If not, metallic parts such as connector pins or switch contacts may deteriorate, resulting in poor contact.

Maintenance Directions

Gently wipe off dirt or stain from the body by using soft cloth damped with a bit of clean water. To clean the surface of the laser scanner aperture or keyboard, use soft cloth damped with a bit neutral cleanser thinned with clean water.

USB Connector

Maintenance Directions

If the unit is left in high-humidity or corrosive atmosphere for a long time, the connector may be corroded, resulting in poor contact. To refresh the contact, repeat plug-in and out several times. (Note that too many plug-in/out operations may waste the contact.)

Terminals/Electrodes (Terminal Unit & Li-ion Battery Pack)

⚠ **CAUTION**
🚫   Always keep the terminals and electrodes clean.   Stained terminals or electrodes may cause poor contact, open-circuit, insufficient charging, etc.

Maintenance Directions

If the terminals or electrodes on this unit or battery pack are stained, wipe the stain off by using dry cloth, cotton swab, etc. If the stain is too stubborn to remove, damp the cloth or swab with slight alcohol.

CAUTION:

When you use alcohol, take utmost care so that the alcohol may not stick to the plastic parts of the unit or battery pack. If stuck, that part may be deteriorated (crack, etc.)

Do not use force when cleaning the terminals or electrodes, or they may be deformed. Wipe them repeatedly gently.

15. Before calling service

This unit is designed and manufactured carefully for trouble-free operation. However, if you think the unit is faulty, first perform the following checks. If the checks can not solve your problem, call the vendor of this unit.

⚠ CAUTION
🚫 Never disassemble this unit or touch internal electronics.

Symptoms & Checks

SYMPTOM	CHECK
Unit does not work at all. (No display/sound)	Did you press the [ON] key firmly? (In order to prevent unintended power-ON, this unit ignores a momentary pressing of the [ON] key. You have to press the key firmly until the unit is powered.)
	Is Li-ion battery pack charged sufficiently?
	Is Li-ion battery pack installed in the unit?
	Is the battery cover set and locked properly?
	Is application program loaded in the unit?
Nothing displayed, or poorly displayed.	Is the LCD backlight adjusted properly?
	Isn't the LCD screen viewed in extremely squint angle?

(Cont'd)

SYMPTOM	CHECK
No communication	Are communication parameters (IP address, SSID, encryption, etc.) set properly?
	Are you operating the unit as instructed in the manual for application program?
	Isn't the unit used out of the communication range of the access point?
	Isn't there any obstruct (metallic object, etc.) around the antenna of this unit?
Cannot read barcode	Isn't the aperture of the laser scanner stained?
	The barcode in question is the type that the application program accepts?
	Isn't the barcode label too distant (exceeding decode zone)?
	Isn't barcode label stained? Is barcode printed distinctly?
Power can not be shut down. ([OFF] key does not work.)	Is power shut-down allowed now by the application program? (Some application program intentionally disables power shut-down in some situation.)
Power shuts down by itself during operation.	Is Li-ion battery pack charged sufficiently?
	Hasn't the life of Li-ion battery pack expired?
	Wasn't automatic power shut-down performed? (Some application program shuts down the power automatically in some situation in order to save battery power.)
	Aren't the electrodes of the battery pack or this unit stained?

SYMPTOM	CHECK
Can't charge	Is the charger connected to AC outlet properly?
	Is the Li-ion battery pack set into the charger properly?
	Aren't the electrodes of the Li-ion battery pack or this unit stained?
	Hasn't the life of the Li-ion battery pack expired?

16. Specifications of finpad 700f （PI-13700-W）

GENERAL

Mainly hardware specifications are given in this section.
Some functions may be unavailable due to the limitations imposed by middleware in use.

Processor & Memories

CPU		PXA270
Operating System		Linux
Memories	ROM	58 MB (used by system)
	RAM	64 MB
Flash ROM Disk		6 MB (available to application program) (including the files for settings, etc.) CAUTION: Entire disk data may be lost if power fails due to abnormal shock like drop of the unit, etc. When designing your system, make it a rule to save important data in the host machine.

Wireless LAN

Compliance	IEEE802.11b/g
Spectrum Spreading	11b: DS (Direct Sequence Spread Spectrum) 11g: OFDM (Orthogonal frequency division multiplexing)
Baseband Modulation	BPSK/QPSK (CCK)/QAM
Communication Range	Outdoor:　　Max. 200 m　　(Outdoor.　No obstacle on line of sight) Open:　　　Max. 100 m　　(Indoor.　No obstacle on line of sight) Semi-open:　Max. 50 m　　(Indoor.　Medium between "Open" and "Closed") Closed:　　Max. 20 m　　(Indoor.　Enclosed in a compartment which reaches ceiling.) CAUTION: Communication range subjects to shorten due to objects around the antenna.
Radio Frequency	2.412 to 2.462 GHz
Frequency Deviation	20 ppm or less
Communication Control	CSMA/CA

No. of Wireless Channels	11b/g: 11 channels
Security	WEP (64/128bit)
Antenna Gain	1.35dBi

Wireless Peripheral Control

Compliance	Bluetooth Ver2.0
Spectrum Spreading	FH (Frequency-Hopping)
Communication System	Time Division Duplex
Transmission Speed	Max. 460 kbps
Baseband Modulation	GFSK, π/4-DPSK, 8-DPSK
Communication Range	Max. 5 m CAUTION: Communication range subjects to shorten due to objects around the antenna.
Radio Frequency	2.402 to 2.480 GHz
Frequency Deviation	20 ppm or less
Security	Link Key: 128 bits Encryption Key: 8 to 128 bits (changeable with 8-bit step)
Antenna Gain	2dBi

Display

Display Device	2.8-inch TFT Translucent Color LCD Panel (with 4-step adjustable backlight)
Display Size	56 x 42 mm
Display Resolution	240 × 320 dots (QVGA) CAUTION: Up to 0.01% of pixels may be lit or unlit permanently.
Dot Pitch	0.17 × 0.17 mm
Font Scalability	Scalable
Characters	GB2312-80, Alphabets, Numerals, Symbols , User-definable Fonts NOTE: Proprietary character codes of FURUNO SYSTEMS are used. Coexistence of different font sizes subjects to middleware specification.
Number of Lines	Number of lines subjects to middleware specification.

Keyboard

Number of Keys	Power Keys: 2 [ON], [OFF] Ten Keys: 12 [0] to [9], [.], [SF] PF Keys: 4 [F1] to [F4] Cursor Keypad: 1 [▲], [▼], [◄], [►] Function Keys: 5 [S1], [S2], [C], [BS], [ENT] Laser Trigger Keys: 3 (Left, Right, Head)
Keyboard Layout	See "19. Outline Drawings".
Key Click Peep	Enabled/disabled by application program. (Peep duration is also adjustable by application program.)

USB Port   Used for maintenance.

27

Speaker

Frequency	Multi-pitch (set by application program)
Volume	3 steps (High/Medium/Low) (set by application program)

Realtime Clock

Setting & Reading	By setup utility or application program
Items to set/read	Year/Month/Day/Hour/Minute/Second/Day of Week (24-hour format, automatic Christian calendar)
Accuracy	±50 ppm (Daily Rate: about ±5 sec/day)
Other features	Automatic Leap Year Adjustment 30-day and 31-day months

LED Indicators

Wireless Communication Indicator	Green: Lit when receiving Orange: Lit when transmitting
Battery Power Indicator	Green: Blinks when display is OFF for power-saving Red: Blinks when battery power is low.
User Indicator	Green: Set by application program. Red: Set by application program. Orange: Blinks when rewriting ROM.
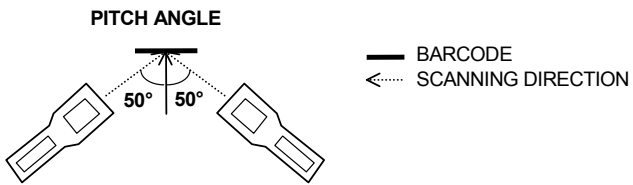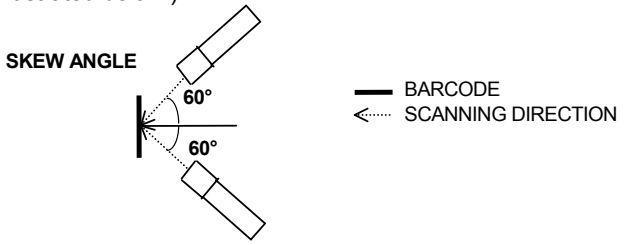
Li-ion Battery Pack (Main Battery)

Type	Rechargeable Li-ion Battery Pack
Voltage	3.7 V (Nominal)
Capacity	1950 mAh (Nominal)
Low-power Detection	Battery-power indicator blinks in red color when the battery power is below 5%. Blinking period varies in two steps: - 1st Step: 0.5 sec ON – 0.5 sec OFF - 2nd Step: 0.3 sec ON – 0.3 sec OFF CAUTION: Operational time after the low-power indication varies widely depending on operating condition. When the low-power indication begins, stop using the unit and replace the battery pack with charged one.
Battery Life	About 10 hours CAUTION: The above life time assumes repetitions of 20 seconds' typical functional pattern (laser-scanning, barcode-data transfer and idle time) with the LCD backlight kept in its darkest position.

Backup Battery

Type	Rechargeable Lithium Battery
Voltage	3.0 V (Nominal)
Capacity	30 mAh (Nominal)
Charging Time	12 hours for 70% capacity 24 hours for full capacity (Charged from the main battery internally.)
Backup Period	About 3 minutes (in ambient temperature of 25°C) CAUTION: The backup battery is fully charged initially, and the backup period was measured with the main battery removed. If main battery is installed, backup battery does not discharge.

Laser Scanner

Light Source	Wavelength: 650 nm Visible semiconductor laser
Compliance	IEC60825-1 Class 2（IEC60825-1+A2:2001 Class 2）
Laser Emission Time	7 sec max. (Software-adjustable from 1 to 7 sec with step of 1 sec.)
Scanning Rate	100±20 scannings/sec
Scanning Direction	Bi-directional
Scanning Resolution	Bar width of 0.1 mm or more

Barcode Types
 	
( ) indicates maximum-readable digits for variable-length barcode.
	UPC-A, UPC-E, EAN/JAN-8, EAN/JAN-13, CODE 39, CODE 39 Full ASCII, CODE 93, CODE 128 [GS1-128], CODABAR [NW-7], ITF/DTF, RSS[GS1 DataBar].
	
	CAUTION: ITF/DTF
	        Reading of both code types may be enabled simultaneously.
	        For either code type, number of digits is not variable but must be fixed to some digit number between 0 and 50. Exactly the specified number of digits are decoded. If number of digits is set to zero for both ITF and DTF, code type will be identified automatically.

Acknowledgement Beep	Succeeded: 1 beep Failed: 2 beeps
Pitch Angle	±50° (A barcode must be placed within ±50° from the right angle in the horizontal section illustrated below.)
Skew Angle	±60° (A barcode must be placed within ±60° from the right angle in the vertical section illustrated below.)

(Cont'd)

	Decode zone is the range available for barcode reading. Generally decode zone reduces as barcode resolution (unit of bar width) becomes fine. The decode zones listed here were obtained by scanning our own standard barcodes under our own conditions. Decode zones may vary according to scanner unit in use.)		
Decode Zone	RESOLUTION (mm)	STANDARD BARCODE USED FOR DECODE ZONE MEASUREMENT (The barcode images below are illustrated ones.)	DECODE ZONE (mm)
	0.10	CODE39 (8 digits)　▓▓▓▓▓▓▓▓　0.1 0mm	45 to 70
	0.25	CODE39 (5 digits)　‖‖‖‖‖‖‖‖‖　0.25 mm	35 to 345
	0.5	CODE39 (3 digits)　‖‖‖ ‖‖‖ ‖‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖　0.5 mm	50 to 675
	1.0	CODE39 (2 digits)　‖ ‖‖ ‖ ‖ ‖ ‖ ‖　1.0 mm	65 to 700
			(PCS=0.9)

Physical Specifications

Dimensions	172 × 60 (46) × 38 (27) mm Values in ( ) are the size of gripping portion, excluding extruded parts.
Weight	230 g approx.
Outline	See "19. Outline Drawings".
Material	Housing:　　　　　ABS,PC／ABS and Elastomer (Rubber Cushion) Scanner Aperture: Acryl
Lifetime of Contacts	USB Connector:　　　5,000 times of plugging Li-ion Battery Pack:　　5,000 times of plugging Keyboard Keys:　　　1,500,000 times of pressings (These data are referred from the test reports from the manufacturers of the components.)

Environment

Ambient Temperature & Humidity	- 5 to +45°C 20 to 85%RH (without condensing) (Operating) -10 to +60°C 20 to 85%RH (without condensing) (Storage) 0 to +40°C (Charging) Once that condensed, performance can not be assured even if the unit is dried.
Free Fall	Withstands one time of free fall from 2.0 m height.
Static Discharge	±15 kV (Connector pins are excluded.) (Air Discharge) ±8 kV (Connector pins are excluded.) (Contact Discharge) Complies with: IEC 1000-4-2
Dusts	General shops or warehouses for logistics
Corrosive Gas	General shops or warehouses for logistics
Flammability	For outer housing, flammability UL94 HB is expected when considering the material or design employed.
Splashproof	Complies with: IEC529 IPX4
Compliance	IEC60950-1

NOTE: The above-listed data are not guaranteed values but the ones obtained by factory test in our own environment and under our own conditions.

The above-listed data may not be obtainable locally if test is performed in the environment (test facilities etc.) different from the factory.

17. Specifications of Li-ion Battery Pack BP-13000-W

⚠ DANGER
❗ For charging of the battery pack, always use the genuine battery charger (BC-12000-W) and the method specified by FURUNO SYSTEMS. Use of improper battery charger (modified one, etc.) or charging method (abnormal ambient temperature, abnormal charging voltage/current, etc.) may cause overcharging, abnormal chemical reaction, etc., resulting in overheating, burning, burst, etc.

General

Type	Rechargeable Li-ion Battery Pack
Voltage	3.7 VDC (Nominal)
Capacity	1950 mAh (Nominal)
Battery Charger	Use BC-12000-W only.
Ambient Temperature	0 to 40°C (Charging) -5 to +45°C (Discharging)

Physical Specifications

Dimensions	53 × 35.2 × 11 mm
Weight	44 g approx.
Outline	See "19. Outline Drawings".
Free Fall	Free fall from 1 m height. (No hazard) (This is not a guaranteed value but the one obtained under our own conditions.)

<u>Protections</u>

Over-current Protection	Power supply is shut down. (Reset when the battery pack removed from the unit.)
Over-discharge Protection	Operated when the voltage drops below the rated value. (Reset when the battery pack is charged.)
Over-charge Protection	Operated when the voltage rises above the rated value. (Reset when the voltage drops due to discharge.)

18. Specifications of Battery Charger BC-12000-W

GENERAL

Charging System	4.2 VDC - 0.63 A, Constant Voltage/Current Charging
AC Input	90 to 264 VAC 50 - 60 Hz 4.5 W approx.
DC Output	4.2±0.1 VDC, 630±70 mA (Rated) Charging is initiated when AC input is applied with Li-ion battery pack set. Charging is terminated automatically when abnormal charging occurs or when completion of normal charging is detected.
Charging Time	3.5 hours approx. (in normal room temperature)
Pilot Lamp	Charging: RED Charging completed: GREEN Charging abnormal: Not lit Idle: Not lit

Physical Specifications

Dimensions	80 × 65 × 25 mm
Weight	75 g approx.
Outline	See "19. Outline Drawings".

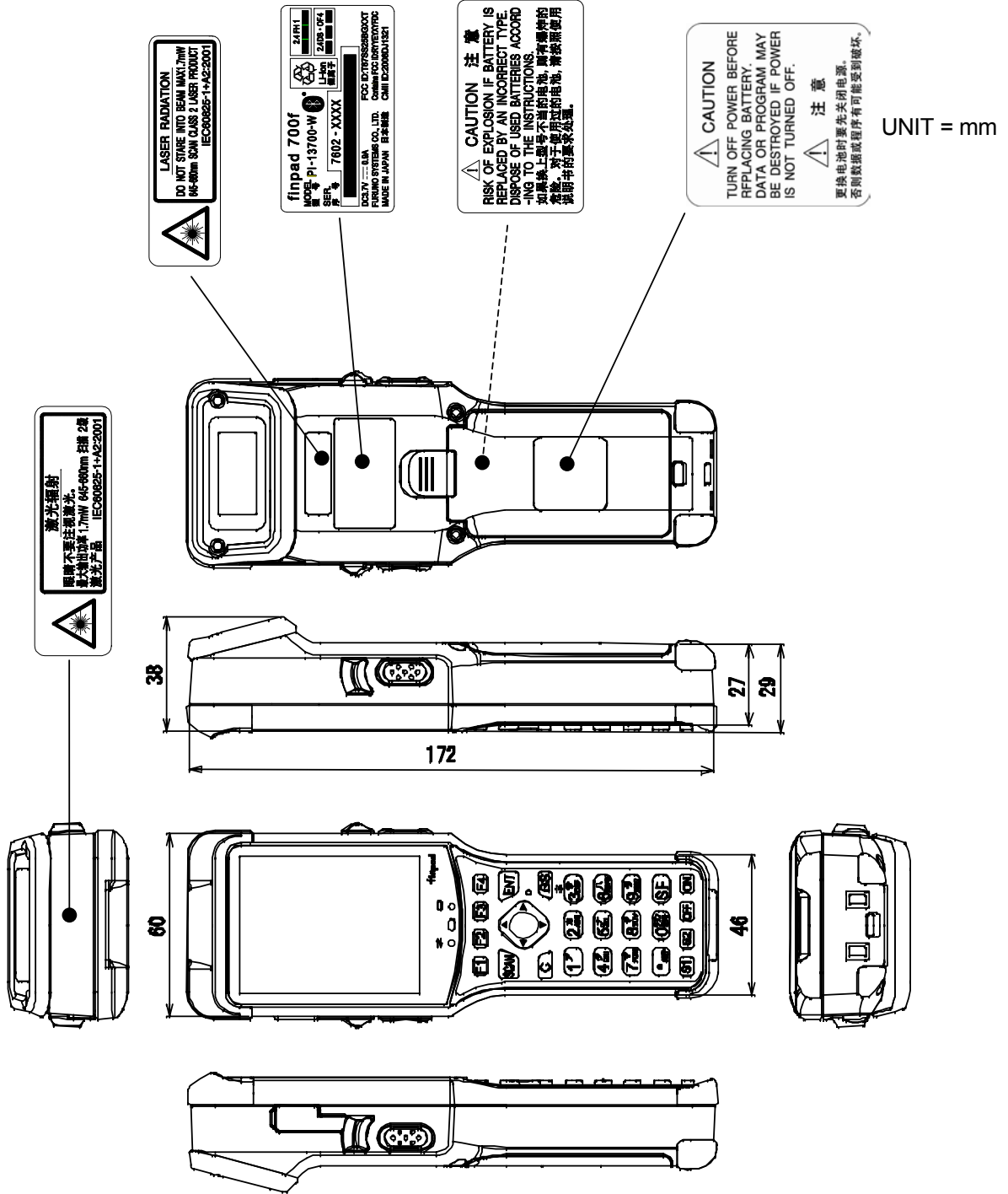NOTE: AC power cord comes with the charger unit.

Environment

Ambient Temperature & Humidity	0 to +40°C 20 to 85%RH (Without condensing) (Operating) (+5 to +30°C Recommended) -10 to +60°C 20 to 85%RH (Without condensing) (Storage) Once that condensed, performance can not be assured even if the battery charger is dried.
Free Fall	Free fall from 75 cm height. (No hazard)
Dusts	General shops or warehouses for logistics
Corrosive Gas	General shops or warehouses for logistics
Insulation Resistance	10 Mohms or more (500 VDC)
Dielectric Strength	1500 VAC (1 minute)
Compliance	IEC60950-1 (ed. 1), CCC

CAUTION: The above-listed data are not guaranteed values but the ones obtained by factory test in our own environment and under our own conditions.
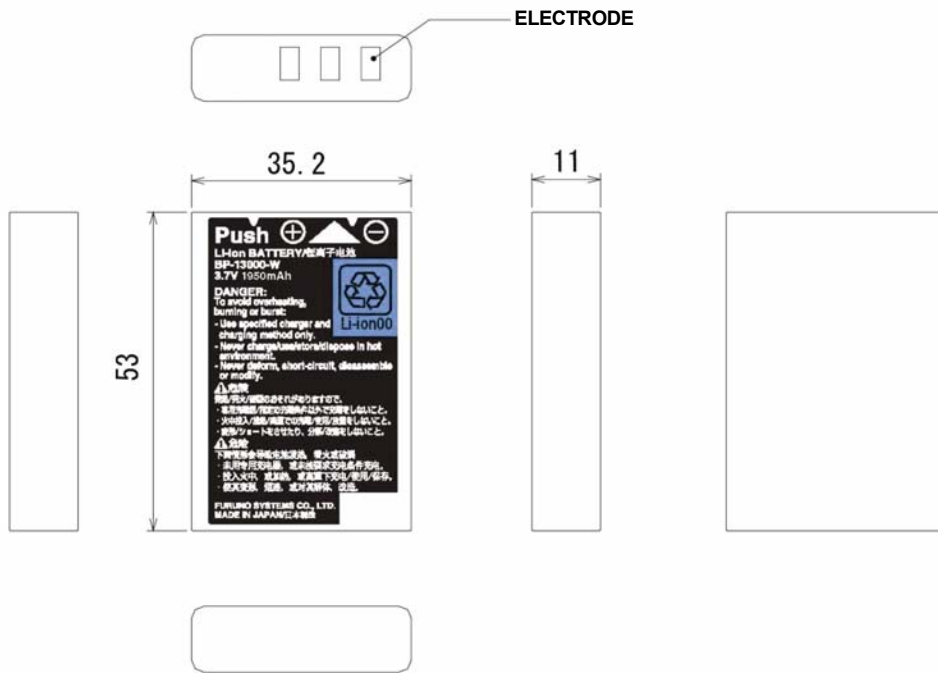
The above-listed data may not be obtainable locally if test is performed in the environment (test facilities etc.) different from the factory.
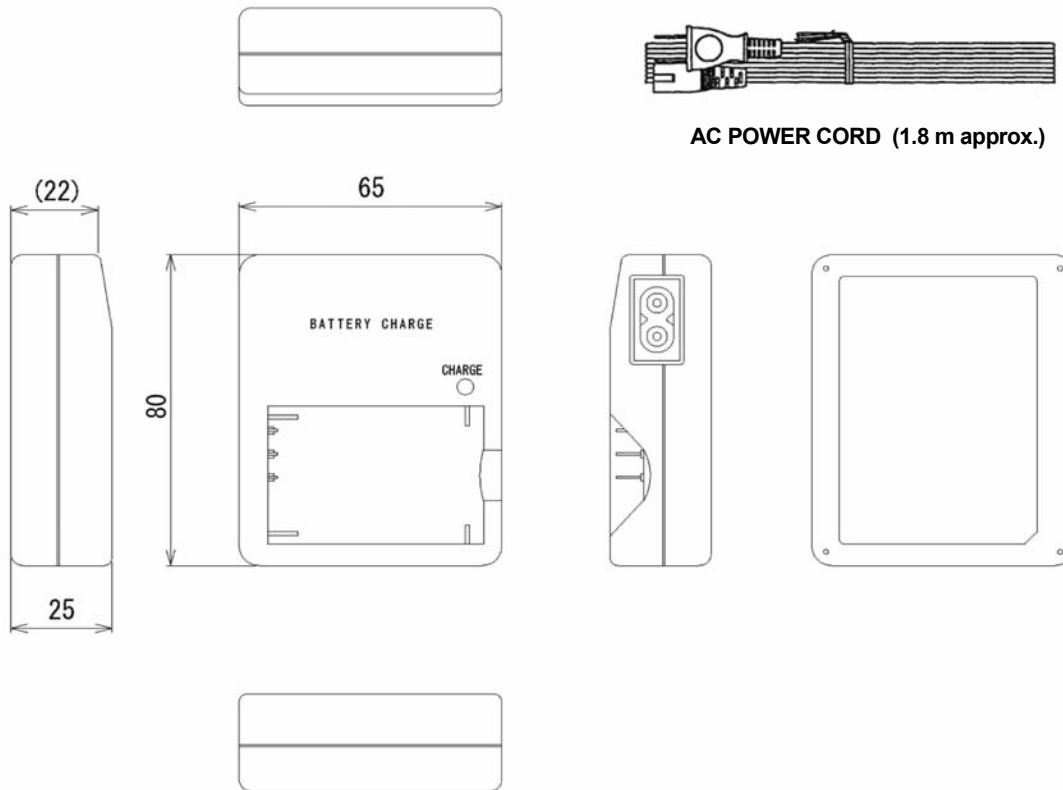
19. Outline Drawings

Terminal Unit "finpad 700f（PI-13700-W）"

UNIT = mm

Li-ion Battery Pack "BP-13000-W"

ELECTRODE

35. 2

11

53

Push ⊕ ▲ ⊖
LI-Ion BATTERY/锂离子电池
BP-13000-W
3.7V 1950mAh
DANGER:
To avoid overheating,
burning or burst:
- Use specified charger and
  charging method only.
- Never charge/use/store/dispose in hot
  environment.
- Never deform, short-circuit, disassemble
  or modify.

Li-ion00

FURUNO SYSTEMS CO., LTD.
MADE IN JAPAN/日本製造

Battery Charger "BC-12000-W"

AC POWER CORD (1.8 m approx.)

(22)

65

BATTERY CHARGE

CHARGE

80

25

UNIT = mm

38

20. Equipment List & Replacement Parts

Equipment List

	ITEM	MODEL	Q'TY	NOTE
Standard	Mobile Information Terminal	PI-13700-W	1	With Hand Strap
	Li-ion Battery Pack	BP-13000-W	1	
Option	Li-ion Battery Pack	BP-13000-W	1	
	Battery Charger	BC-12000-W	1	With 1.5 m AC Power Cord
	Hand Strap	N-02 Black L=185	1	
	Access Point	WN-701-W	1	

Replacement Parts

ITEM	MODEL	NOTE
Li-ion Battery Pack	BP-13000-W	Max. number of times of recharging: 500 times (reference only) IMPORTANT: If operating hours per charging become extremely short, life time of the battery pack will be expired. (Life time subjects to differ, depending on operating conditions.) If any abnormality is found with the battery pack, insulate its (+) and/or (-) electrodes with vinyl tape, etc. Do not use it any more.

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