

PHT-ME-16TPINST

REV NO
1.0
9712

HAND-HELD TERMINAL

INSTRUCTION MANUAL

(PHT-16TP)



Introduction

We thank you for your purchase of our Hand-held Terminal PHT-16TP.

This manual is intended to provide everyday users with explanations on how to use the hand-held terminal and precautions especially from the point of hardware.

So, for application and operation in business, please refer to the system manual available from your System Development Department. For information about the initial setting, diagnosis, and cross-development tools, see the separate manuals covering these topics.

Please read this manual carefully before operation and operate the hand-held terminal correctly so that it can function very efficiently.

FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does not harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

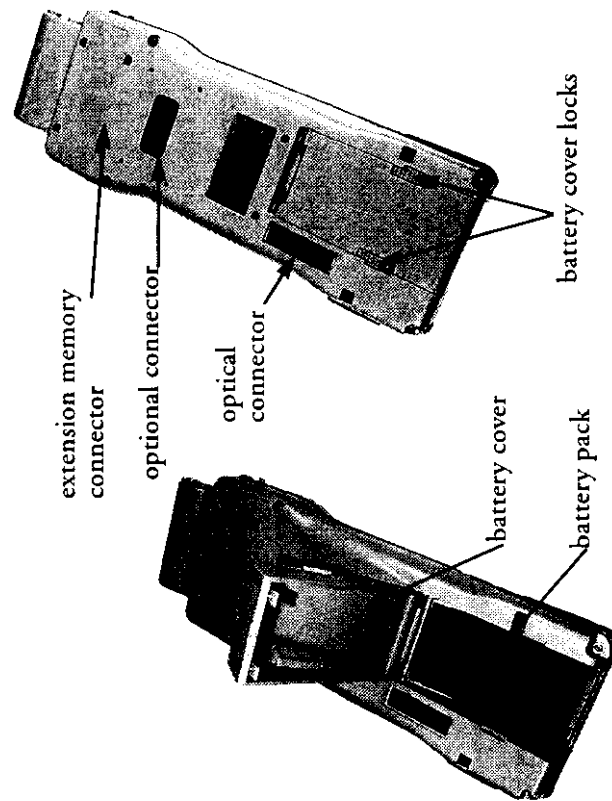
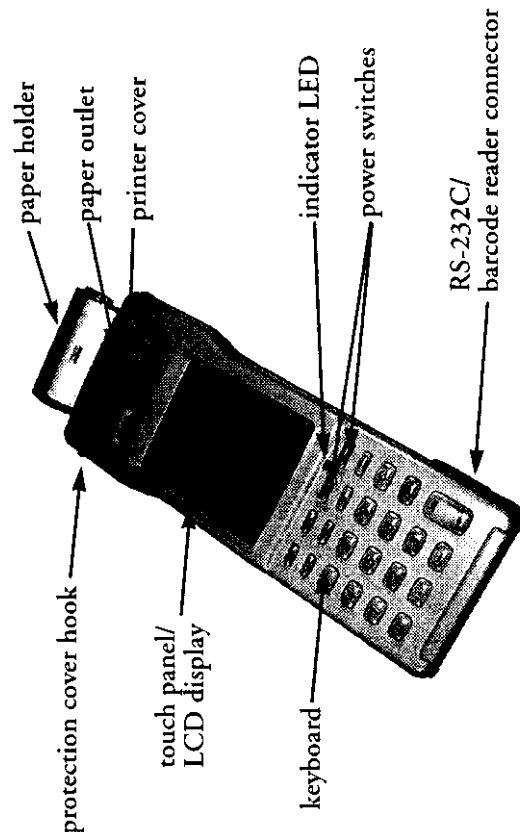
CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE MANUFACTURER FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

This product was tested for FCC compliance under conditions that included the use of the specific cable (PCB-16H-AT) between a Hand-held Terminal and a PC. It is important that you use the specific cable to reduce the possibility of causing interference to radio communications. You can obtain the specific cable from your dealer at no charge.

Contents

1. Appearance and Names of Each Part	4
2. Notes on Handling	5
3. Basic Operation	8
3-1. Keyboard	8
3-2. Touch Panel	9
3-3. Indicator LED	9
4. Before Use	10
4-1. Preparation of Batteries	10
4-2. Initial Setting of Hand-held Terminal	10
5. Charging Battery	11
5-1. Replacing Battery Pack	11
5-2. Charging Battery Pack	12
5-3. Charging Sub-battery	13
6. Connecting to External Equipment	14
6-1. Connecting by Optical Communication Adapter	14
6-2. Connecting by RS-232C Interface	15
7. Reading Barcode	16
8. Handling of Printer	18
8-1. Setting Paper into Printer	18
8-2. Protecting Printer from Liquid	19
9. Messages	20
10. Communication Cable Specifications	21
10-1. Optical Communication Adapter to PC Signal Cable (PCB-232C-AT)	21
10-2. Hand-held Terminal to PC Signal Cable (PCB-16H-AT)	22
10-3. Optical Communication Adapter Signal Cable (PCB-8PWM-HT)	23

1. Appearance and Names of Each Part



2. Notes on Handling



A Warning identifies conditions and actions that can result in personal injury or loss of life.



A Caution identifies conditions and actions that may result in personal injury or damage the hand-held terminal.

Warning

- Avoid operating or storing the hand-held terminal in the location near fire or chemicals. It may cause a fire or you may get electrically shocked.
- Don't touch the head and the motor of the printer during / just after printing because of its high temperature. You may get burned.
- Don't short between terminals of the battery pack. It may cause a heat, a fire, or an explosion.
- Don't use the charger other than the special quick charger (PCG-16) to charge the battery pack. It may cause a heat, a fire, or an explosion.
- Don't fray or damage the power cord or signal cable. It may cause a fire or you may get electrically shocked.
- Use only the AC adapter included in the optical communication adapter package, and don't use the AC adapter with voltage other than the prescribed voltage. It may cause a fire or you may get electrically shocked.



- Don't disassemble or modify the hand-held terminal. Functions and safety of the hand-held terminal are not to be guaranteed.



- If you notice that something is wrong with the hand-held terminal, immediately turn off the power switch, remove the battery pack, and contact your dealer or sales representative.



- When the LCD display is damaged and the liquid crystal fluid has leaked out, don't lick or drink the fluid. If you lick or drink the liquid, consult a doctor immediately. If the liquid crystal fluid comes in contact with hands or clothing, wash hands or clothing with water immediately.

Caution

- Don't touch the cutter at the paper outlet directly. You may get injured.
- Prevent chemicals, rain, snow, oil, and dust from directly contacting the hand-held terminal. It may cause a fire or you may get electrically shocked.
- Don't place or drop anything on the top of the touch panel, and don't touch with a sharp object.
- Don't operate continuously for a long time in a location where the room temperature is high. The image on the LCD display may be distorted.
- Avoid operating and storing the hand-held terminal under direct sunlight, under an environment of extremely high or low temperature, and under strong vibrations. The hand-held terminal may be damaged.



- Use the hand-held terminal under the environment of temperature range from -5°C to $+50^{\circ}\text{C}$ and humidity range from 30% to 80% (no condensation and no freezing).

- Store the hand-held terminal under the environment of temperature range from -20°C to $+60^{\circ}\text{C}$ and humidity range from 10% to 90% (no condensation and no freezing, a location without direct sunlight).



- Insert a connector or a plug firmly until it is no longer wobbly, otherwise it may cause a fire or the hand-held terminal may be damaged.
- Wipe and clean your hand-held terminal with a dry soft cloth. Don't use alcohol, thinner, benzine or others.

- When the hand-held terminal is taken from the cold outdoors to a warm room, dew may appear on the hand-held terminal. In this case, before using the hand-held terminal, let it be in the warm room for one or two hours until dew has disappeared.



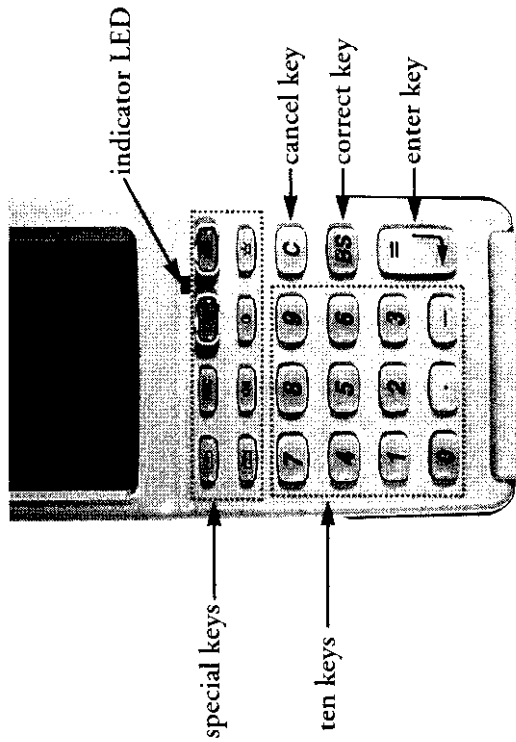
Notes on Operation and Storage of Hand-held Terminal

- Be sure to charge the battery after use everyday. We recommend that you make a plan for operation, such as preparing a charge check sheet and choosing a person for charging.
- For care, use a soft cloth. Don't use a volatile liquid such as alcohol, thinner, and benzine or a wet duster.
- The internal timer of the hand-held terminal may generate an error in long term use or storage in winter or in a cold location. In this case, the administrator should reset the calendar.
- To use your hand-held terminal at its optimum performance, replace the battery pack which passed in approximately one year since was purchased. If you have stored your hand-held terminal for a long time, the sub-battery may have been discharged. Recharge the sub-battery at least eight hours before using the hand-held terminal.
- If the sub-battery has discharged, your application program and data stored in the RAM are lost, and the calendar stops. In this case, the administrator should perform the download of your application program and data, and reset the calendar again.

Notes on Operation of Self-diagnosis Program

- Since the self-diagnosis program of the hand-held terminal is used for examining trouble conditions and causes upon hardware trouble of the terminal, don't execute it under normal conditions.
- To execute the self-diagnosis program, operate it precisely in accordance with instructions of the administrator for hand-held terminal or our FE section.
- For starting procedure of the self-diagnosis program, refer to the separate manual, "BASIC LANGUAGE REFERENCE for PHT-16, Appendix A".

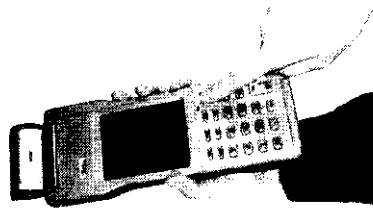
3. Basic Operation



3-1. Keyboard

Special keys

- (1) Power Switches **ON** **OFF**
Pressing the **ON** key turns on the hand-held terminal. Pressing the **OFF** key turns off it.
- (2) Function Key **FNC**
Pressing the **FNC** key displays the function menu on the LCD display.
- (3) Backlight Key **☒**
Pressing the **☒** key turns on and turns off the backlight for the LCD display and the keyboard alternately.
- (4) Brightness Adjustment Key **☉**
Pressing the **☉** key changes the brightness of the LCD display. Brightness can be adjusted in seven levels. When the **☉** key is pressed, the brightness of the LCD display becomes dark step-by-step, and becomes light step-by-step.



(5) Buzzer Volume Adjustment Key **☎**

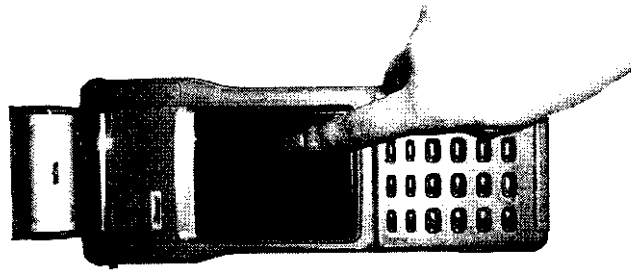
Pressing the **☎** key changes the buzzer volume. Buzzer volume can be adjusted in five levels, including silence. When the **☎** key is pressed, buzzer volume becomes loud step-by-step, and becomes low step-by-step.

(6) Paper Feed Key **☐** **☑**

Pressing the **☐** key feeds paper in forward direction, while pressing the **☑** key feeds paper in backward direction.

3-2. Touch Panel

If your application program supports the touch panel, you can operate the hand-held terminal by touching the screen with a finger.



3-3. Indicator LED

The red indicator LED blinks to warn that "the battery will be soon exhausted."

4. Before Use

Before starting to use the hand-held terminal, complete the following setup procedure. However, if it has been completed by the hand-held terminal administrator, this chapter can be skipped.

4-1. Preparation of Batteries

- (1) Charge the battery pack (main battery).
The new battery pack has not been charged, so be sure to charge it. For the charging procedure, see "5-2. Charging Battery Pack".
- (2) Set the charged battery pack to the hand-held terminal.
For the setting procedure of the battery pack, see "5-1. Replacing Battery Pack".
- (3) Be sure to charge the sub-battery before use.
In the new purchase, the charge for more than eight hours is necessary.
The sub-battery is charged by mounting the charged battery pack to the hand-held terminal. For the charging procedure, see "5-3. Charging Sub-battery".

4-2. Initial Setting of Hand-held Terminal

- (1) Clearing Memory (RAM and Flash ROM)
The memory of the hand-held terminal (RAM and Flash ROM) must be cleared to assure its normal operation. For the clearing procedure, refer to the separate manual, "BASIC LANGUAGE REFERENCE for PHT-16, Appendix A".
- (2) Setting Calendar
It is necessary to initialize the calendar correctly. For the initializing procedure, refer to the separate manual, "BASIC LANGUAGE REFERENCE for PHT-16, Appendix A".

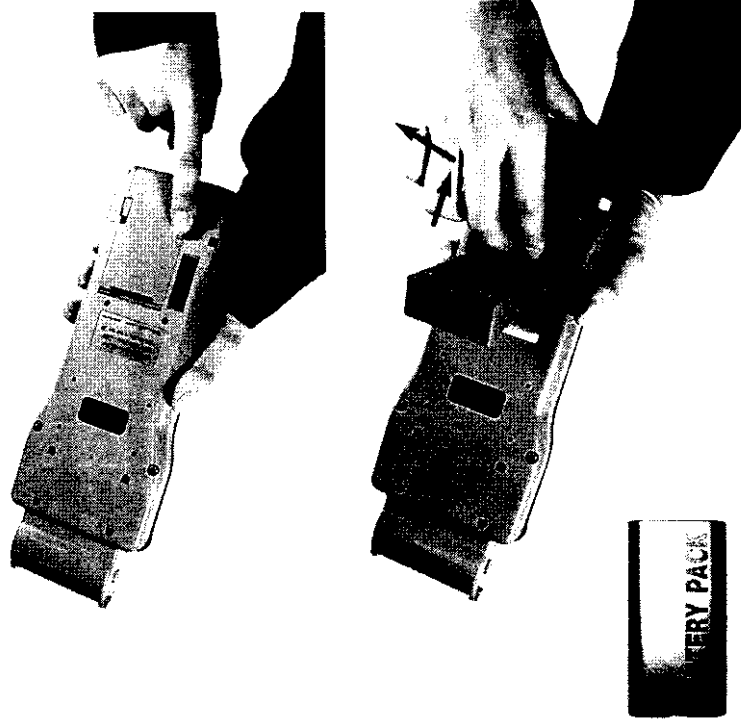
Note: * If the initial setting (1) and (2) are not performed, the hand-held terminal does not operate normally. Be sure to perform the initial settings.

5. Charging Battery

5-1. Replacing Battery Pack

- (1) Be sure to turn off the power by pressing the **OFF** key before replacing.
- (2) Slide two battery cover locks to the position of "UNLOCK", and open the battery cover. Then, slide the battery pack a little and remove it (as shown below).
- (3) Set the charged battery pack to the hand-held terminal in a reverse procedure.

Note: * Be careful not to close the battery cover with battery cover locks at the position of "LOCK".

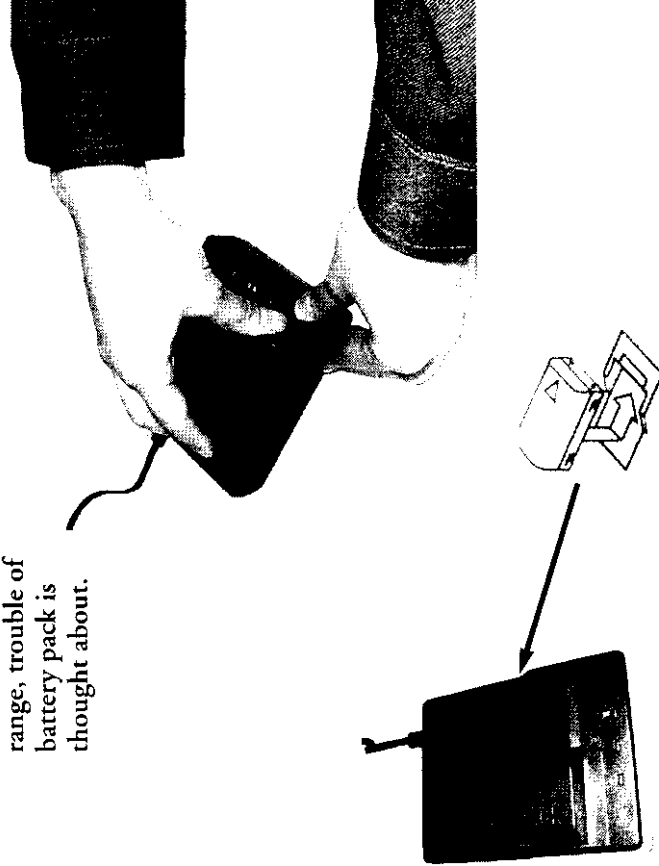


5-2. Charging Battery Pack

Be sure to use the special quick charger (PCG-16) to charge the battery pack.

- (1) Remove the battery pack from the hand-held terminal as mentioned in "5-1. Replacing Battery Pack" (1), (2).
- (2) Set the battery pack onto the quick charger as shown below.
- (3) When charge starts, the LED (1 or 2) of the side that a battery pack is set blinks in green, and the LED changes in lighting when charge completes. Usually charge takes about two hours per one battery pack. When two battery packs was set, the quick charger charges one by one from the battery pack set first.
- (4) The fully charged battery pack can be removed in a reverse procedure it was set.

Note: * If the LED turns off though a battery pack is set, charge error is occurred. When temperature of a battery or environment exceeds range from -10°C to $+60^{\circ}\text{C}$, charge again after temperature entered the range. If temperature is in appropriate range, trouble of battery pack is thought about.



5-3. Charging Sub-battery

The hand-held terminal contains a sub-battery. The sub-battery supplies a power to the memory and the calendar of the hand-held terminal when a battery pack is exhausted, and a battery pack is removed from the hand-held terminal.

When you are routinely using the hand-held terminal, you NEED NOT charge the sub-battery. The sub-battery is charged from the battery pack automatically whether the power of the hand-held terminal is on or not.

Notes: * The hand-held terminal which was purchased newly or was kept for a long time needs to be charged for more than eight hours. Let the hand-held terminal alone for more than eight hours after mounting a charged battery pack to the hand-held terminal. Normal operation can't be executed when the sub-battery isn't charged properly.

* You can't charge the sub-battery directly.

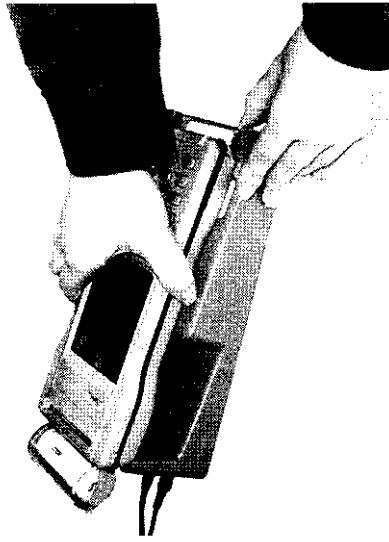
6. Connecting to External Equipment

To connect the hand-held terminal to an external equipment and perform data communication, there are two methods:

- additional use of an optical communication adapter (POT-16)
- direct connection with a special RS-232C cable

6-1. Connecting by Optical Communication Adapter

- (1) Insert the connector of the special RS-232C interface cable (PCB-232C-AT) to the socket of the optical communication adapter.
- (2) Insert the DC output connector of the AC adapter (included in the optical communication adapter package) to the DC socket of the optical communication adapter.
- (3) Insert the AC plug of the AC adapter to an AC outlet.
- (4) Put the hand-held terminal on the optical communication adapter. At this time, fit the projections of the optical communication adapter into hollows of the bottom case of the hand-held terminal properly.
- (5) Make sure that the red POW lamp is lighted.
- (6) While data are being transferred through the optical communication adapter, the communication lamp is lighted. (On the hand-held terminal, the TXD lamp is lighted while transmitting data from the hand-held terminal, and the RXD lamp is lighted while receiving data from the external equipment.)
- (7) After the communication lamp has turned off, then remove the hand-held terminal.



Notes: * Don't apply a hard impact or remove the hand-held terminal during communication.

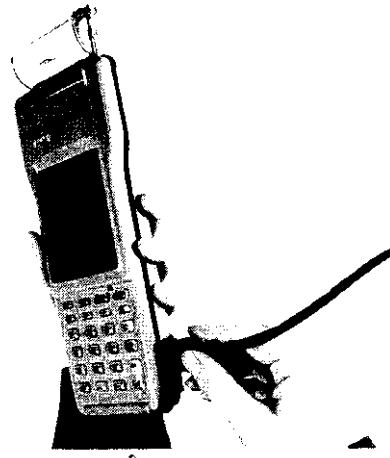
* Take care that dust does not adhere to the optical connector (window). If the optical connector is soiled, wipe it with clean gauze.

* If the optical connector is damaged, communication may be disabled. So, be careful not to damage it.

6-2. Connecting by RS-232C Interface

- (1) Turn off the power switch.
- (2) Remove the rubber cap on the right side of the hand-held terminal, and connect the special RS-232C cable (PCB-16H-AT) between the hand-held terminal and an external equipment.
- (3) Check that the cable is connected properly, then turn on the power switch.

Note: * If you perform data communication everyday, we recommend that you use the optical communication adapter.



7. Reading Barcode

To read a barcode by using the hand-held terminal, the special barcode reader is necessary. The following three kinds of barcode reader are prepared.

- Wand Scanner
- Touch Scanner
- Laser Scanner

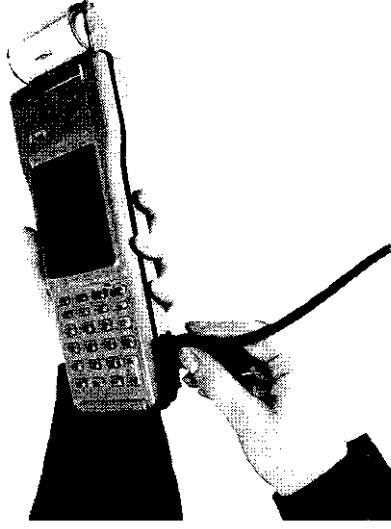
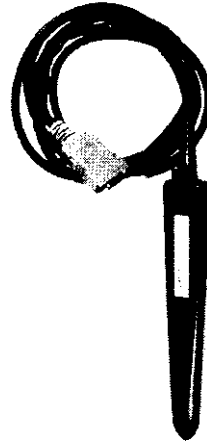
The wand scanner is used in an example of the photographs.

- (1) Turn off the power switch.
- (2) Remove the rubber cap on the right side of the hand-held terminal, and connect the special barcode reader with the RS-232C / barcode reader connector.
- (3) Make sure that the barcode reader is connected properly, then turn on the power switch.
- (4) Read a barcode by using the barcode reader.
- (5) When a barcode has been read properly, the buzzer goes on. (supported by your application program)

Notes: * In case of a wand scanner, trace by fixed speed while keeping the scanner perpendicular to barcode surface.

* Since reading accuracy varies with barcode print conditions, use barcodes that are printed properly.

* Reading may be failed in too bright circumstances.



3. Handling of Printer

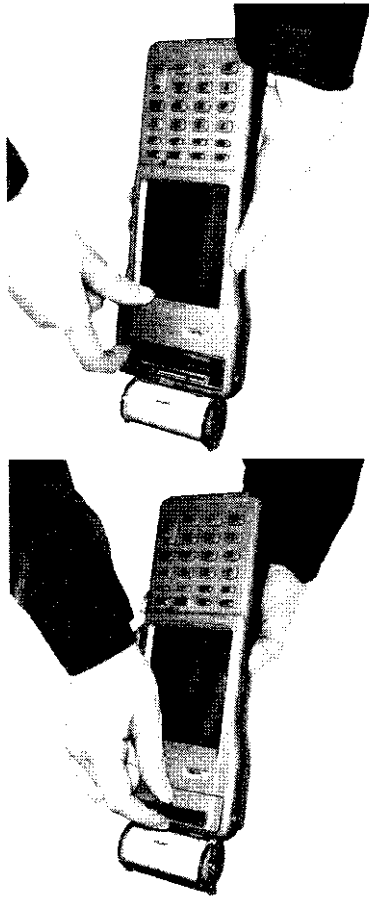
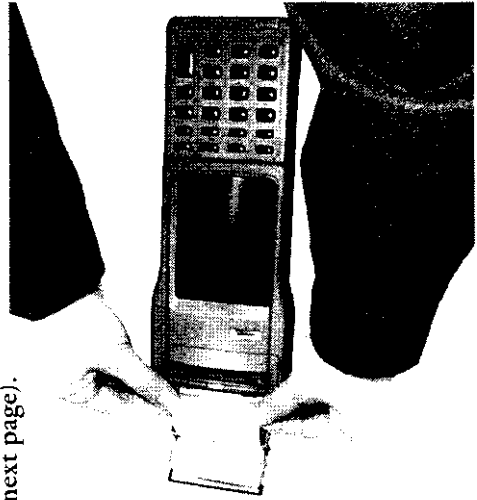
8-1. Setting Paper into Printer

- (1) Turn on the power switch, then press the **[FNC]** key to display the function menu.
- (2) Press the "AUTO LOAD" button displayed on the LCD display.
- (3) Open the paper holder, and put thermal paper (rolled paper) on the cover of the paper holder. Then insert the end of thermal paper cut on the straight in the printer.
- (4) If thermal paper is inserted to a certain extent, the hand-held terminal feeds thermal paper to the predetermined position automatically. Close the paper holder after making sure paper is fed.

Notes: * Don't use the thermal paper which isn't designated. Printing quality may become bad.

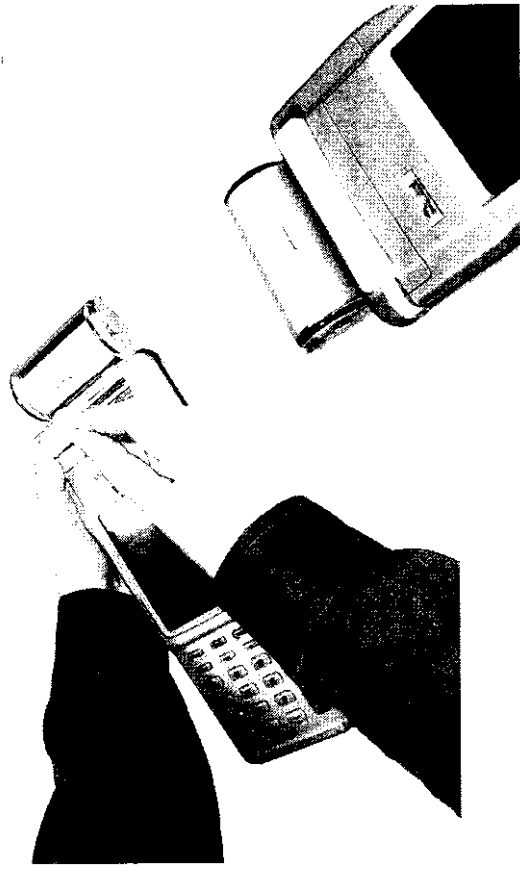
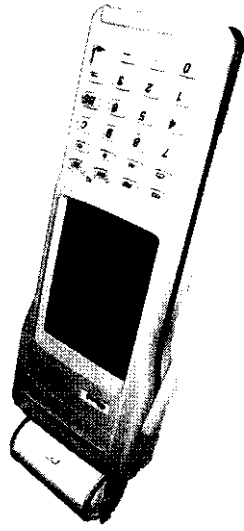
* Don't print without thermal paper. The printer may break down.

* When thermal paper jams, turn off the power of the hand-held terminal, remove the printer cover after the head and the motor of the printer become cool enough. Then pull up the lever on the right side, and remove the thermal paper (see photographs on the next page).



8-2. Protecting Printer from Liquid

- (1) Mount the protection cover to the protection cover hook on the left side of the hand-held terminal.
- (2) Seal up the paper outlet with the protection cover.



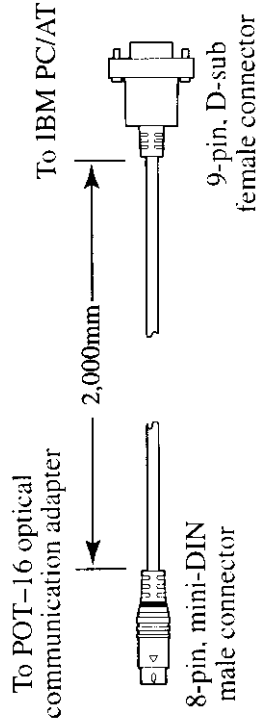
9. Messages

Message	Possible cause	Remedy
1 Indicator LED blinks in red.	The battery pack is almost discharged.	Stop your job and recharge the battery pack immediately.
2 MAIN BATTERY EMPTY	Your hand-held terminal can't operate due to dropped voltage of the battery pack.	Turn OFF the power switch, and recharge the battery pack or replace with a new pack.
3 SUB BATTERY EMPTY	Your hand-held terminal can't operate due to dropped voltage of the sub-battery.	Turn OFF the power switch, and recharge the sub-battery.
4 PROGRAM FILE ERROR	No application program has been loaded on your hand-held terminal.	Download an application program from the host to your hand-held terminal.
5 FILE CAN'T OPEN	No application program has been loaded on your hand-held terminal.	Download an application program from the host to your hand-held terminal.
6 other messages		Contact to the administrator.

10. Communication Cable Specifications

10-1. Optical Communication Adapter to PC Signal Cable (PCB-232C-AT)

(1) Cable connectors

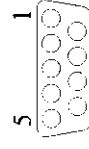


(2) Wirings

Connector to POT-16 optical communication adapter		Connector to IBM PC/AT	
SIGNAL	PIN	PIN	SIGNAL
TXD	2	2	RXD
RXD	3	3	TXD
RTS	4	7	RTS
CTS	5	8	CTS
DTR	1	1	CD
DSR	6	6	DSR
CD	8	4	DTR
SG	7	5	SG
		9	



8-pin, mini-DIN male connector

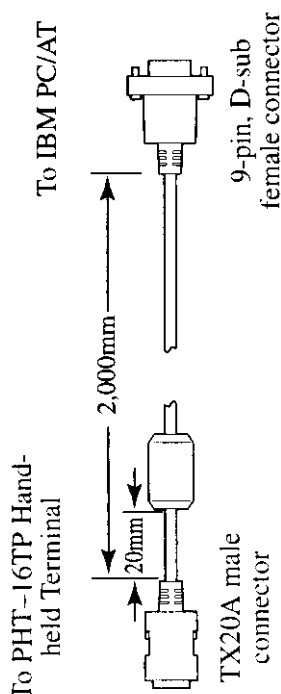


9-pin, D-sub female connector

Notes: * IBM is a trademark of International Business Machines Corporation.
 * IBM PC/AT is a registered trademark of International Business Machine Corporation.

10-2. Hand-held Terminal to PC Signal Cable (PCB-16H-AT)

(1) Cable connectors

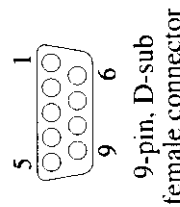
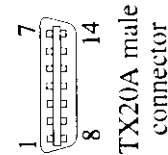


(2) Wirings

To PHT-16TP Hand-held Terminal

Connector to IBM PC/AT

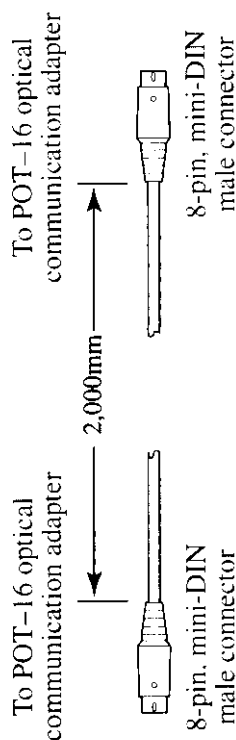
SIGNAL	PIN	PIN	SIGNAL
TXD	2	2	RXD
RXD	3	3	TXD
RTS	4	8	CTS
CTS	5	1	CD
DTR	1	7	RTS
DSR	6	6	DSR
SG	7	4	DTR
FG		5	SG
		9	
			FG



Notes: * IBM is a trademark of International Business Machines Corporation.
 * IBM PC/AT is a registered trademark of International Business Machine Corporation.

10-3. Optical Communication Adapter Signal Cable (PCB-8PWM-HT)

(1) Cable connectors

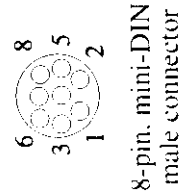
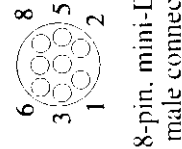


(2) Wirings

Connector to POT-16 optical communication adapter

Connector to POT-16 optical communication adapter

SIGNAL	PIN	PIN	SIGNAL
TXD	2	3	RXD
RXD	3	2	TXD
RTS	4	5	CTS
CTS	5	4	RTS
DTR	1	1	DTR
DSR	6	6	DSR
SG	7	7	SG
CD	8	8	CD



- (1) This manual is subject to change without prior notice.
- (2) No part of this manual may be reproduced in any form without permission.
- (3) If your hand-held terminal has failed, contact to your dealer or sales representative.