TM-P60

Technical Reference guide

EPSON

English

Rev. E
405018204

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ESC/POS® Proprietary Command System

EPSON took the initiative by introducing ESC/POS, a proprietary POS printer command system including patented commands and enabling versatile POS system construction with high scalability. Compatible with all types of EPSON POS printers and displays, this proprietary control system also offers the flexibility to easily make future upgrades. Its popularity is worldwide.

The influence on the environment of radio wave radiation

- ❑ The Radio Frequency module that can be installed in this product radiates the same high frequency energy as some other high frequency devices but the level of the energy radiated from it is suppressed so that it is much lower than the electromagnetic energy radiated from radio equipment like cell phones.

- ❑ Under some situations and in certain environments, the use of this equipment is sometimes limited by the owner of the building or a representative with responsibility for the group. For example, it may be restricted in the following case:

  - Use in an environment where it may cause interference with other devices and services.

- ❑ If you do not understand the radio device usage policy in a specific group or environment, such as an airport, ask permission before turning on the power of this product.

Note about interference

- ❑ The Radio Frequency module that can be installed in this product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

- ❑ If this equipment does cause 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 your dealer or an experienced radio/TV technician for help.

- ❑ Never disassemble or modify this product or the installed Radio Frequency module.

- ❑ Seiko Epson Corporation shall not be liable for interference to radio/TV resulting from changes or modifications to this product or the installed Radio Frequency module not expressly approved by Seiko Epson Corporation.

- ❑ Other radio equipment sometimes uses the same frequency band that this unit uses. To prevent radio wave interference with other radio equipment, pay attention to the following matters when you use this product:

  - The Radio Frequency module that can be installed in this product uses the Industrial Scientific and Medical band (2.4 GHz), DS-SS modulation, and the interference distance is 40 m.

- Other equipment that uses the same frequency band used by the Radio Frequency module that can be installed in this product includes equipment for industry, science and medical treatment, microwave ovens, HomeRF, and radio and other broadcasting equipment (both ones that require a license and ones that do not require a license).
- Confirm that radio and other broadcasting equipment are not used nearby before using this product.
- When trouble occurs, for example, if the Radio Frequency module causes problems such as radio wave interference, consult your dealer.

Note about security

This section describes security concerns when using a wireless LAN by using the Radio Frequency module that can be installed in this product. Please also see "Wireless LAN Security" in Appendix F.

Security is important for the protection of the user's privacy

A wireless LAN has the advantage that information can be exchanged by using radio waves instead of a cable. However, radio waves are not confined to a cable and can be received in a fairly wide area and through obstacles such as walls, so if security is not used, the following problems may occur.

❑ Communication data can be received by stealth.

A third person can receive private communication data by intercepting the radio waves intentionally. Such a person could receive items such as the following:

- Personal information, such a an ID and password or credit card number
- The contents of e-mail.
- Data which is communicated between the PC and printer.

❑ Illegal access

A third person can access the network and cause damage such as the following:

- Personal information and secret information can be removed.
- Invalid information can be sent as if it were from a legitimate user of the network.
- Intercepted communication contents can be re-written and sent.
- Data and the system can be destroyed by an electronic virus.

This product, the wireless LAN card, and the access point have security mechanisms to counter these problems. If you use the security settings for this product, you can nearly eliminate these problems.

In some cases, the wireless LAN equipment is not set up before it is sold to the user. Therefore, to attempt to prevent security problems, always use all the security settings for the wireless LAN equipment according to the manual.

The security functions, however, cannot guarantee 100% security. Please understand this when you use this product.

When you cannot set the security by yourself, please ask your dealer.

Seiko Epson Corporation suggests that the security setting is set by the judgment and the responsibility of user after understanding the possible problems resulting from using this product without the security settings.

For details, see "Wireless LAN Security" in Appendix F.

Revision Information

Revision	Page	Altered Items and Contents
Rev. A	All pages	Newly authorized
Rev. B	pp. vii-viii p. 1-2 p. 1-3 p. 2-6 p. 4-2 D-5 Appendix F	EMC and Safety Standards Applied for Europe added. RF Module Standards for Europe added. Standard parts included with the printer: AC adapter (included only with some models) added. Description of the OT-ST60 (shoulder strap) added. Installing/replacing roll paper vertically added. The web address of "epson.pos.com" added. WEB addresses added. Wireless LAN Network Composition added.
Rev. C	All pages	Type of RF module changed.
Rev. D	pp. vii,ix-x	EMC and Safety Standards Applied for Oceania added. RF Module Standards for Oceania added.
Rev. E	p. 1-5 to 6 p. 4-1	IEEE 802.11b Wireless Interface added. For Application developing added.

About This Manual

Aim of the Manual

This manual was created to provide information on the TM-P60 printer for anyone who is developing hardware, installations, or programs. Programmers will also want to consult other documents.

Contents of the Manual

Chapter 1, "General Information."	General description of features plus specifications.
Chapter 2, "Setup."	Contains introduction of control methods and each connection form.
Chapter 3, "Troubleshooting."	Contains troubleshooting information

Chapter 4, “Application Development Information.”	Contains information on such matters as DIP switches, memory switches, error processing for using TM-P60
Appendix A, “The Difference Between TM-P60 and TM-T88II / III.”	Comparison between TM-P60 and TM-T88II / III.
Appendix B, “Wireless LAN Setup Detailed Information.”	User’s Manual for TM Net Win Config
Appendix C, “Character Code Tables.”	Contains the supported character tables.
Appendix D, “System Planning.”	This section provides information for system planning.
Appendix E, “FAQ.”	This section provides frequently asked questions.
Appendix F, “Wireless LAN Security.”	Describes detailed security information.

Related Software and Documents

Related software and documents

Software/document name	Description
TM-P60 User's Manual/	This provides basic handling procedures for the end user of the printer
TM-P60 Technical Reference Guide	This Manual
ESC/POS Application Programming Guide	This provides descriptions in Acrobat format of the commands used by each TM printer, along with sample programs and other information about the printers
Command Comparison between the TM-T88II/T88III and the TM-P60	This provides detailed command comparison information among the printers.
EPSON OPOS ADK	This is a OCX driver
EPSON OPOS ADK Manual	This provides information for anyone who is programming using OPOS. This is included in the EPSON OPOS ADK
EPSON Advanced Printer Driver	This is a Windows driver
EPSON Advanced Printer Driver Manual	This provides information for anyone who is programming using the APD (EPSON Advanced Printer Driver)

Safety Precautions

EMC and Safety Standards Applied

Product Name: TM-P60

Model Name: M196A

The following standards are applied only to the printers that are so labeled. (EMC is tested using EPSON power supplies.)

North America:	EMI:	FCC / ICES-003 Class B
	Safety:	UL 60950 / CSA C22.2 No. 60950
Europe:		CE Marking
Oceania:		AS / NZS 4771, AS / NZS CISPR Class B

WARNING

The connection of a non-shielded printer interface cable to this printer will invalidate the EMC standards of this device.

You are cautioned that changes or modifications not expressly approved by Seiko Epson Corporation could void your authority to operate the equipment.

FCC Compliance Statement For American Users

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 instruction manual, 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 cause 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.

For Canadian Users

This Class B digital apparatus complies with Canadian ICES-003.

CE Marking

DECLARATION of CONFORMITY

According to ISO / IEC Guide 22 and EN 45014

Manufacturer: SEIKO EPSON CORPORATION

Address: 3-5, Owa 3-chome, Suwa-shi,
Nagano-ken 392-8502 JAPAN

Representative: EPSON Engineering Europe S.A.

Address: Parc Technologique Europarc 60, Rue Auguste
Perret 94043 Creteil Cedex France

Declares that the Product:

Product Name: Printer
Model Name: M196A
Commercial Name: TM-P60

Conforms to the following Directives and Norms

Directive 1999 / 5 / EC
EN 301 481-1
EN 301 489-17
EN 300 328-2
EN 60950
EN 55022 Class B
EN 55024
IEC 61000-4-2
IEC 61000-4-3
IEC 61000-4-4
IEC 61000-4-5
IEC 61000-4-6
IEC 61000-4-11

FCC

DECLARATION of CONFORMITY

According to 47CFR, Part 2 and 15 for Class B Personal Computers and Peripherals; and / or CPU Boards and Power Supplies used with Class B Personal Computers:

We: EPSON AMERICA, INC.

Located at: MS 3-13
3840 Kilroy Airport Way
Long Beach, CA 90806
Telephone: 562-290-5254

Declare under sole responsibility that the product identified herein, complies with 47CFR Part 2 and 15 of the FCC rules as a Class B digital device. Each product marketed, is identical to the representative unit tested and found to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47CFR §2.909 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.

Trade Name: EPSON

Type of Product: Printer

Model: M196A

RF Module

This equipment contains the following wireless module.

Manufacturer: TOYOTA INDUSTRIES CORPORATION

Type: 6180210

Product Name: WIRELESS LAN CF-CARD

This device complies with Part 15 of the FCC Rules and RSS-210 of the IC 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.

USA

NOTICE

This device conforms to Part 15 of the FCC rules.
This device 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 instruction manual, 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 cause 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.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This device conforms to IC, Low Power License-Exempt Radio Communication Devices (RSS-210).
The information such as Certification No., Model Name, and Manufacturer Name are described on the surface of the module.

SAR

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. The TM-P60 has been tested and found to comply with FCC radiation exposure limits set forth for uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. The maximum SAR value tested for the TM-P60 has been shown to be 0.144W/kg at the body.

EUROPE

Hereby, TOYOTA INDUSTRIES CORPORATION declares that this 6180210 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC and 89/336/EEC.

France

In France, using the TM-P60 outdoors is prohibited.

Italy

In Italy, if used outside of own premises, general authorization is required.

The TM-P60 can be Used Only in the Countries Listed Below:

Austria, Belgium, Germany, Luxembourg, Netherlands, Switzerland, France, Italy, Greece, Spain, Portugal, Denmark, Finland, Ireland, Sweden, UK, USA, Canada, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Slovenia, Slovak Republic, Norway, Australia, and New Zealand.

Key to Symbols

The following symbols are used in the documentation for this product. See the specific warnings and cautions at appropriate points throughout this guide.

⚠ WARNING:

Warnings must be followed carefully to avoid serious bodily injury.

⚠ CAUTION:

Cautions must be observed to avoid minor injury to yourself or damage to your equipment.

✎ ***Note:***
Notes have important information and useful tips on the operation of your printer.

Safety Precautions

This section presents important information to ensure safe and effective use of this product. Please read this section carefully and store it in an accessible location.

⚠ WARNING:

- ❏ *Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Continued use may lead to fire or electric shock. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.*
- ❏ *Never attempt to repair this product yourself. Improper repair work can be dangerous.*
- ❏ *Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.*
- ❏ *Be sure to use the specified power source. Connection to an improper power source may cause fire or shock.*
- ❏ *Never insert or disconnect the power plug with wet hands. Doing so may result in severe shock.*
- ❏ *Do not allow foreign matter to fall into the equipment. Penetration of foreign objects may lead to fire or shock.*
- ❏ *If water or other liquid spills into this equipment, unplug the power cord immediately, and then contact your dealer or a Seiko Epson service center for advice. Continued usage may lead to fire or shock.*

- ❏ *Do not place multiple loads on the power outlet (wall outlet). Overloading the outlet may lead to fire.*
- ❏ *Always supply power directly from a standard domestic power outlet.*
- ❏ *Handle the power cord with care. Improper handling may lead to fire or shock.*
  - *Do not modify or attempt to repair the cord.*
  - *Do not place any object on top of the cord.*
  - *Avoid excessive bending, twisting, and pulling.*
  - *Do not place cord near heating equipment.*
  - *Check that the plug is clean before plugging it in.*
  - *Be sure to push the prongs all the way in.*
- ❏ *If the cord becomes damaged, obtain a replacement from your dealer or a Seiko Epson service center.*

⚠ *CAUTION:*

- ❏ *Do not connect cables other than as described in this manual. Different connections may cause equipment damage and burning.*
- ❏ *Be sure to set this equipment on a firm, stable, horizontal surface. Product may break or cause injury if it falls.*
- ❏ *Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage, fire, or shock.*
- ❏ *Do not place heavy objects on top of this product. Never stand or lean on this product. Equipment may fall or collapse, causing breakage and possible injury.*
- ❏ *To ensure safety, please unplug this product prior to leaving it unused for an extended period.*
- ❏ *Do not touch the thermal print head. Wait for the head to cool. The head can be very hot after printing for a long time. Touching them may cause burns.*

Contents

Appendix C ***Character Code Tables***

Appendix D ***System Planning***

Appendix E ***FAQ***

Appendix F ***Wireless LAN Network Composition***

Chapter 1
General Information

1.1 Features

The TM-P60 is a POS printer designed to meet the needs of both retail and hospitality for high-speed, on-the-go thermal printing.

1.1.1 General

- ❑ Compact size with rugged design to ensure top reliablility
- ❑ Support for 802.11b wireless LAN protocols
- ❑ Belt clip for maximum mobility
- ❑ Industry-leading 12-hour battery life. (When power management is enabled)

1.1.2 Printer handling

- ❑ Drop-in paper loading and autocutter for easy use

1.1.3 Printing

- ❑ Clear, crisp high speed thermal receipt printing

1.1.4 Software

- ❑ Command protocol is based on the ESC/POS proprietary command system.
- ❑ OPOS ADK and Windows printer driver are available.
- ❑ Automatic status back (ASB) function that automatically transmits changes in printer status.
- ❑ Current TM-T88 series applications are instantly compatible with the printer

1.2 Product Structure

1.2.1 Standard Parts Included with the Printer

This printer is packed with the materials listed below.

- ❑ User's Manual
- ❑ Roll paper: 1 roll
- ❑ Battery pack unit (LIP-2500), and its User's manual: 1
- ❑ AC adapter (included only with some models): 1

Note:
To charge the battery, you have to use "PS-10" (AC adapter) or "OT-CH60" (Rapid battery charger). Both are options.

1.2.2 Related materials for TM-P60

TM-P60 has the related materials listed in the following table.

Category	Name	Description
Options	PS-10	This is an exclusive AC adapter for battery charging. It is able to connect to TM-P60 directly. The charging period: 4 hours.
	OT-CH60	This is an exclusive battery charger. To use it you must take the battery out of the TM-P60. The charging period: 2.5 hours.
	OT-RS60	This is to connect TM-P60 and host PC with serial connection.
	LIP-2500	This is a spare battery. It is the as same as ithe ncluded one.
	OT-ST60	This is a shoulder strap.
Consumables	Roll Paper	This is required to print.
Manuals	User's Manual	This manual is packed in the carton box.
	Technical Reference Guide	This Manual.
	FAQ about ESC/POS command	This Manual is Quick Reference of ESC/POS command with a simple sample program & Tips.
	ESC/POS Application Programming Guide	This Manual is a Command Reference Guide of ESC/POS command, including some sample programs & Tips.
	Command Comparison between the TM-T88II/T88III and the TM-P60	This provides detailed command comparison information among the printers.
Drivers (WIndows environment)	OPOS ADK	This provides the OCX driver which is based upon OPOS. It has manuals, sample programs, and TMFlogo utility.
	Advanced Printer Driver	This is a Windows Driver. This Driver has a manual, sample programs, and utilities to use the driver.
Utilities (Windows environment)	Memory Switch setting Utility	This is a utility to adjust the setting (Memory Switch) of this printer. See "2.5.3 Memory Switches" (page 2-11) for details.
	TMFlogo	This is a utility to store "NV graphics" into this printer. It helps printing "NV graphics."
	TMNetWinConfig Ver. 2.0	This is a utility to set the wireless LAN property.

Please contact your dealer to get these.

1.3 Consumables

1.3.1 Roll paper

Roll paper widths are 60 mm and 58 mm {2.36" / 2.28"}.

Note:
When you use 60mm width roll paper, you have to change the printer setting. See "2.5.4 Adjusting Roll paper width" (page 2-13)

1.4 Product Specifications Overview

Print method		Thermal line printing
Print density		203 dpi × 203 dpi [dpi: dots per 25.4 mm (dots per inch)]
Printing width (default)		52.5 mm, 420 dot positions
Print font	**Font**	Font A: 12 × 24, Font B: 10 × 24, Font C: 8 × 16
	Characters per line (default)	Font A: 35, Font B: 42, Font C: 52
	Character size (W × H)	Font A: 1.50 × 3.0, Font B: 1.25 × 3.0, Font C: 1.0 × 2.0
	Character set	95 Alphanumeric, 48 International, 128 × 10 Graphic
Paper	**Roll paper dimensions (default)**	57.5 ± 0.5 mm (59.5 ± 0.5 mm by removing the spacer installed)
	Paper thickness	50 µm ~ 80 µm
	Paper roll spool diameter	18 mm outside
	Specified thermal paper	Original: Kanzaki Specialty Paper (USA): P350 (paper thickness: 62 µm) P310 (paper thickness: 58 µm) P300 (paper thickness: 56 µm)
Print speed		Maximum 70 mm/s, when number of dots per dot line is 64 dots or less (printing with a fully charged battery, at 25°C, print density 100%)
Interface		IEEE802.11b, RS-232
Receive buffer		128 bytes
Power consumption	**Specified battery**	Lithium-ion battery: Product name: LIP-2500, Trade name: Seiko Epson Corporation Output: DC 7.4 V Capacity: 2200 mAh
	AC adapter (option)	Output voltage: DC 12 V Input voltage: AC 100 V ~ 240 V Product name: PS-10, Trade name: Seiko Epson Corporation
Life	**Mechanism**	10,000,000 lines printing
	Print head	100,000,000 dots
	Autocutter	500,000 cuts
Temperature /humidity	**Operation (Printing quality guaranteed)**	5 ~ 45°C, 10 ~ 90% RH
	Storage	Abnormal operations not found when the printer is left under the environment of 25°C, 60% RH for 2 hours after it was left in the following conditions: High temperature and humidity: 50°C, 90% RH for 120 hours High temperature: 70°C for 120 hours Low temperature: -25°C for 120 hours
Overall dimensions (mm)		103 × 159 × 65 (W × D × H)
Mass (approx.)		670 g (including LIP-2500 [battery pack] but not roll paper)

1.5 IEEE 802.11b Wireless Interface

1.5.1 Specifications (IEEE 802.11b compliant)

- ❑ IEEE 802.11b (2.4 GHz zone) compliant wireless LAN communication is supported.
- ❑ Infrastructure mode and 802.11 Ad-hoc mode are supported.
- ❑ Communication speed can be fixed or automatically changed to 11 Mbps, 5.5 Mbps, 2 Mbps, or 1Mbps.
- ❑ 64 bit / 128 bit WEP (encryption) compliant. 4 types of WEP key are selectable.
- ❑ Energy-saving mode is selectable.
- ❑ Automatic allocation function (DHCP, APIPA)

NOTE:
The wireless communication may not be connected depending on the combination with the access point.

1.5.2 Print protocol

Print job is output via following protocols to the printer.

- ❑ LP, LPR — Transfers printing data.
- ❑ TCP Socket Port — Transfers printing data and printer status by direct socket communications (bi-directional).

1.5.2.1 LP, LPR

- Maximum Simultaneous Connections: 3
- Number of connections that can print: 1 (Other users are kept waiting until this printing is completed.)
- Time Out: 5 minutes
- Job deletion: not supported
- Banner printing: not supported

1.5.2.2 Socket Communications

- Port type: TCP comm. port for direct printing
- Port number: 9100
- Port communication direction: bi-directional
- Maximum Simultaneous Connections: 3
- Number of connections that can print: 1 (Other users are kept waiting until this printing is completed.)
- Time Out: 5 minutes

1.5.3 Setting/monitoring function

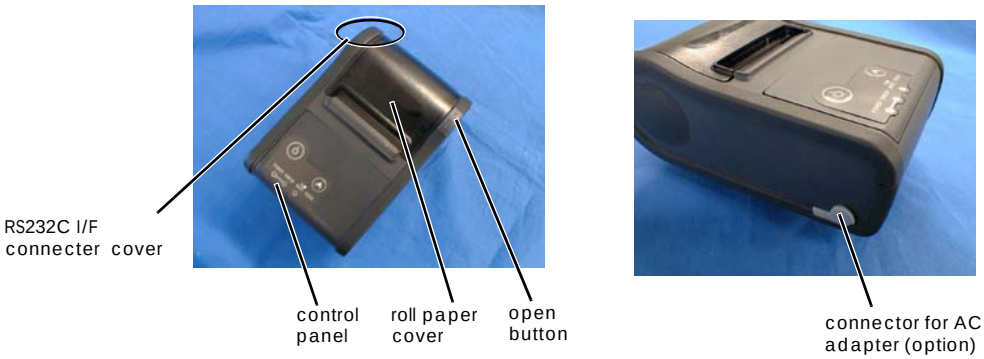
- ❑ Setting of wireless and network parameters using WWW browsers and display of operating states
- ❑ Setting of wireless and network parameters using the dedicated utility, and display of operating states
- ❑ Automatic IP address acquisition function (DHCP, APIPA) is supported.
- ❑ IP address setting with arp + ping

Chapter 2

Setup

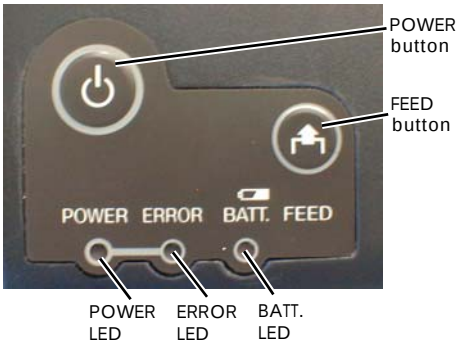
2.1 Part Name and Basic Operation

2.1.1 Part names



2.1.2 Control Panel

The control panel is shown below.



- ❑ POWER LED
- ❑ ERROR LED
- ❑ BATT. LED
- ❑ FEED button

2.1.2.1 LED

POWER

POWER LED	Meaning
On	Power is on.
Off	Power is off.
Flashing	The printer is in power-off operation or is in an area where wireless communication is not possible.

ERROR

Printer Condition	ERROR LED	Meaning
Power On	On	Printer is offline (paper out, power-on initialization, roll paper cover open, power-off operation, or the remaining battery charge is not enough for printer operation when the battery is used to supply the power.)
	Off	Printer is online.
	Flashing	It indicates an error. See "3.1 LED Blinking Pattern" (page 3-1) for troubleshooting
Power Off, battery installed, and AC adapter connected	On	Indicates that an abnormality occurred during battery charging. The battery must be replaced with a new one.
	Off	No problem.

BATT.

Printer Condition	BATT. LED	Meaning
Power On without AC adapter	On	Remaining battery charge is not enough. It must be charged.
	Off	Remaining battery charge is adequate.
	Flashing	Remaining battery charge is below half.
Power Off and battery installed	On	The battery is being charged.
	Off	The battery is fully charged.

2.1.2.2 Control Panel Buttons

The control panel has a FEED button that you may have to use, although most paper handling functions will be handled by your software.

FEED

Use this button to feed roll paper or to start a roll paper self test, or start printing status sheet. (See "3.5.1 Self test mode" on page 3-3.)

Note:
The FEED button can be disabled by using an ESC/POS command. Refer to "ESC/POS Application Programming Guide" for details.

2.1.3 Beeper Function

This printer has a "beeper" function. This function causes beeping in specified situations. The situations are the following:

- ❏ The battery remaining is low (Memory switch can enable / disable this function)
- ❏ The printer can't find any Access point (wireless LAN). (Memory switch can enable / disable this function)
- ❏ Roll paper is out (Memory switch can enable / disable this function)
- ❏ A error has occurred except "printer temperature error." (Memory switch can enable / disable this function)
- ❏ Start of status sheet printing
- ❏ The radio field intensity check is started (reply for pressing FEED button)
- ❏ The radio field intensity check is processing

Note:
About memory switch, see "2.5.3 Memory Switches" (page 2-11).

About status sheet, see "2.6.2 Confirming the current LAN setting of the printer" (page 2-15).

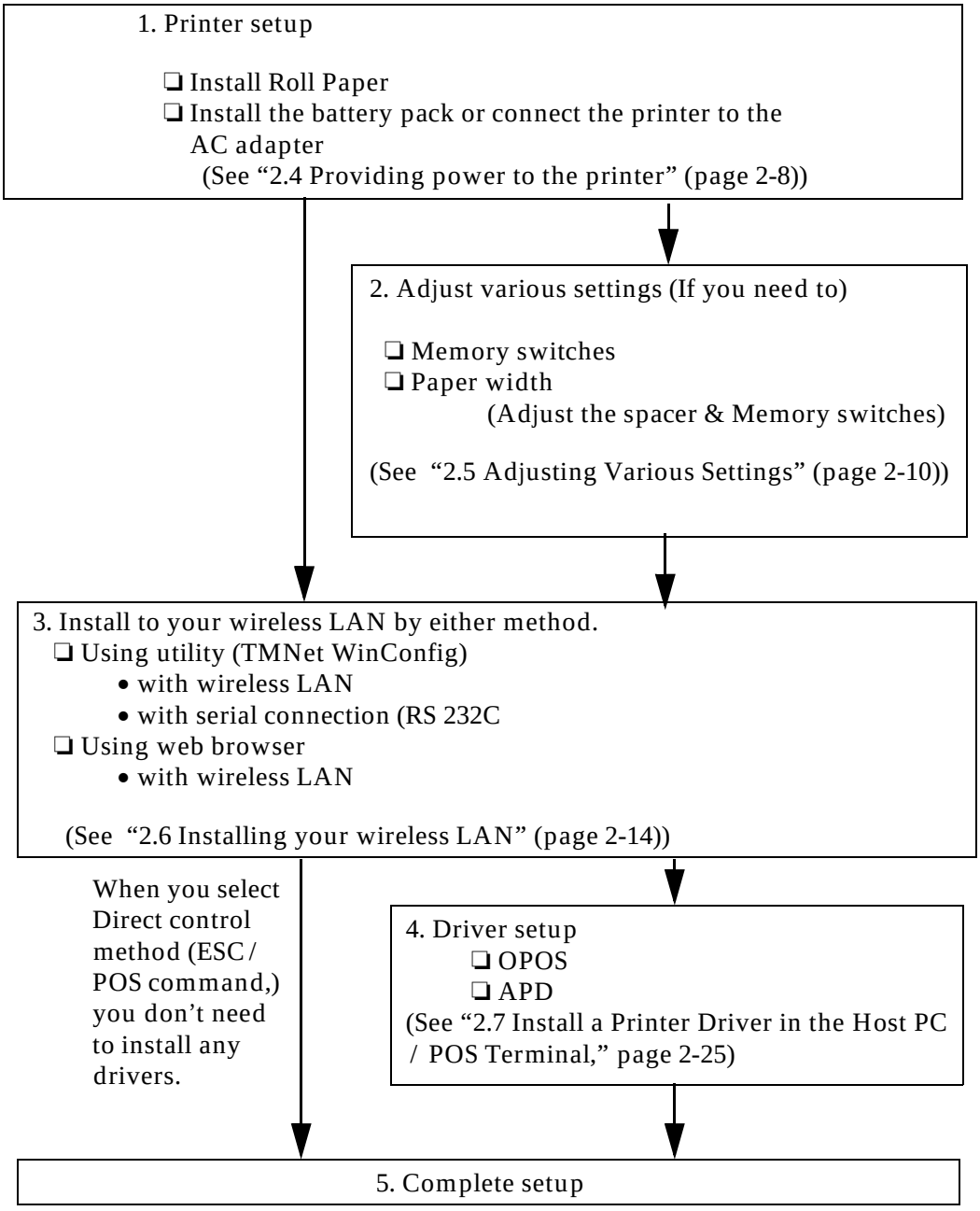
About radio field intensity check processing, see "3.6 Radio Field Intensity Check Mode" (page 3-5).

The beeper can be beeped by a command from an application program.
See "4.3 Beeper function" (page 4-3)

2.2 Setup Flow

You have to set up your printer to use it. And you can adjust some features by customizing them. This section describes the setup.

The setup flow of preparing to use printer is below.



Note:
A printer may beep when turned on. It is caused by the Access point's LAN setting not corresponding to the printer. Ignore the beeping. (see "3.2.1 Beeping Types" (page 3-2) for the beeping pattern.)

When you use OPOS (OCX driver from EPSON) or the Advanced Printer Driver, you need to install the driver. When you use ESC/POS commands, you don't have to install drivers. For information on these drivers, see "D.1 Control Method" (page D-1).

The following sections describe the setup.

2.3 Installing/Replacing the Roll Paper

1. Press the button to open the roll paper cover.

2. Remove the used roll paper core if there is one, and insert the new roll paper.

Note:
Note the direction the paper comes off the roll.

Do not use paper rolls that have the paper glued to the core.

3. Pull out some paper, close the cover, and tear off the paper with the manual cutter.

⚠ CAUTION:

Be sure to use roll paper that meets the specifications.
Be sure not to touch the manual cutter. Otherwise your fingers might be injured.

Note:
Do not open the roll paper cover during printing or paper feeding. It may cause to make damage for printer.

2.3.1 Installing or Replacing Roll Paper Vertically

You can hang the printer vertically on a belt using a clip on the back of the printer or a neck strap provided as an option. When you use the printer vertically, follow the steps below to install roll paper.

1. Press the button to open the roll paper cover.

2. Remove the used roll paper core if there is one.

3. Set the new roll paper on the inside of the roll paper cover.

   Note:
   Note the direction the paper comes off the roll.

4. Pull the leading edge of the roll paper.
5. Align the left edge of the roll paper with the edge of the cover.
6. Close the cover and tear off the paper with the manual cutter.

2.4 Providing power to the printer

You can supply power through the battery pack packaged with the printer or the AC adapter provided as an option.

⚠ WARNING:

Be sure to use the battery that came with the printer. Using a battery other than the one specified may cause fire, explosion, leakage, overheating, or other damage.

2.4.1 Provide power from the battery

2.4.1.1 Installing the battery

⚠ CAUTION:

There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

1. Slide the battery cover to open it.

2. Install the battery.

3. Close the cover.

2.4.1.2 Charging the battery

When you charge the battery, you have a choice of two methods.

- ❏ Charge the battery using the exclusive battery charger (option: OT-CH60).

  In this method, remove the empty battery from printer; then put it onto a battery charger. For the battery charger operation, see the user's manual of the battery charger.

  This method requires about 2.5 hours to charge the battery.

- ❏ Charge the battery from the AC adapter (option: PS-10).

  For this method, turn off the printer. Then connect the AC adapter into the printer's connector for AC adapter. (For instructions, see "2.4.2.1 Connecting the AC adapter" (page 2-9).) During the charging, the BATT. LED comes on (color: red). When the charging is completed, the BATT. LED goes off.

  This method requires about 4 hours to charge the battery.This method also requires the printer's power to be turned off. If the power is turned on, the battery is not charged; the power is consumed to drive the printer.

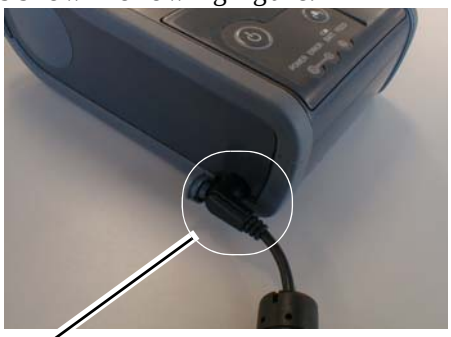
2.4.2 Providing power from the AC adapter unit

When you would like to drive the printer with AC adapter (it is an option), read following section.

2.4.2.1 Connecting the AC adapter

1. Turn off the printer.
2. Connect the AC adapter into the connector as shown following figure.

connector for AC adapter
(It is covered by a cap)



Connect AC adapter to here opening the cap

⚠ *WARNING:*

Make sure you use the EPSON PS-10 AC adapter or equivalent.
Using an incorrect AC adapter may cause fire or electrical shock.

2.5 Adjusting Various Settings

This printer is able to be adjusted for the items below:

- ❏ DIP switch (handshake of serial communication conditions)
- ❏ Memory switch (serial communication conditions, roll paper width, print density, etc...)
- ❏ Roll paper width (58mm / 60mm)
  Adjusting the spacer and memory switch

The current settings can be confirmed by a self test. (See "3.5.1 Self test mode" (page 3-3).)

Note:
When you adjust these items, we recommend you to confirm the new setting. You can confirm the settings by running a self-test. See "3.5.1 Self test mode" (page 3-3) for detail.

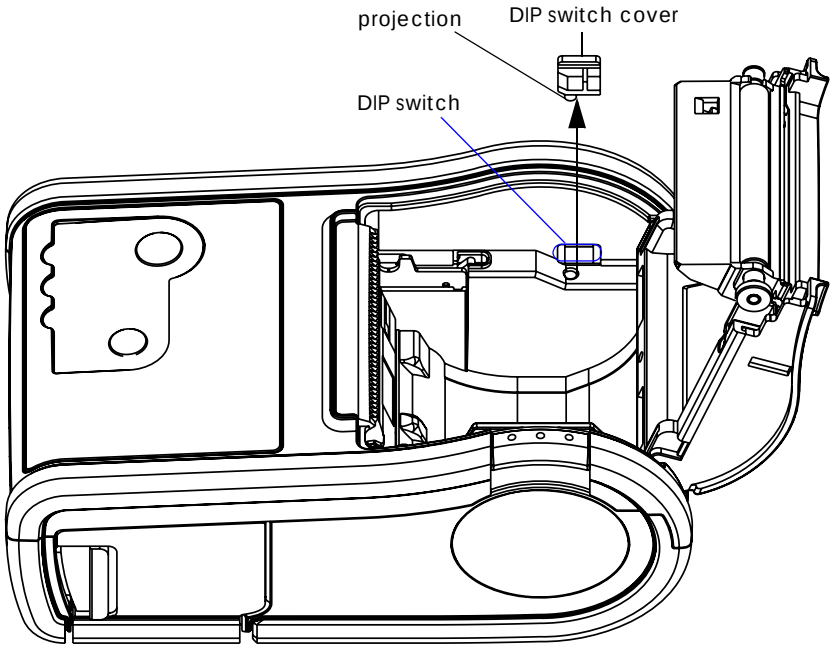
2.5.1 How to Confirm Current Settings

You can use a self-test to confirm the current settings. See *"3.5.1 Self test mode" (page 3-3).*

2.5.2 DIP switch

This printer has DIP switches 1~4. These are located as shown in the figure below.

1. Make sure the printer is turned off.
2. To access the DIP switches, remove the DIP switch cover by hand (pull out the cover and then pull it upward to release the projection.)



DIP switch

Handshake	DSW1	DSW2	DSW3	DSW4
DTR/DSR	OFF	ON	OFF	ON
RTS/CTS	OFF	OFF	ON	OFF

DSW 1 is fixed to OFF.

Note:
Serial communication setting is assigned to MemorySwitch (baud rate, parity). See the table " Customize values" (page 2-12) for details.

3. After set the DIP switch, attach the DIP switch cover.

2.5.3 Memory Switches

This printer has a set of software switches called "Memory switches" . The memory switch set has "Msw 8," "Customize value," "Serial communication condition."

The "Memory switch setting utility" can change the Memory switch set to ON or OFF as shown in the table below:

Note:
When you use this printer with RS-232C interface, you should adjust the "serial communication setting" (see the table " Serial communication" (page 2-12).)

The Memory switch can be changed by either one of two methods:

- *Memory switch setting utility*
- *Control by an ESC/POS command*

Settings of the memory switch are stored in the NV memory; therefore, even if the printer is turned off, the settings are maintained. Excessive use of this function may destroy the NV memory. As a guideline, do not use this function more than 10 times a day.

When you use OPOS or APD, generally you don't need to adjust memory switch because OPOS or APD are able to set these items automatically.

Memory Switch 8

SW	Function	On	Off
1	Status notice *1	Transmit s*	Doesn't transmit
2	Beeper tone when the battery is not charged	Beeps *	Doesn't beep
3	Beeper tone when this printer can't connect to any access point	Beeps *	Doesn't beep
4	Beeper tone when roll paper is out	Beeps *	Doesn't beep
5	Beeper tone when an error occurs	Beeps *	Doesn't beep
6 ~ 8	Reserved	-	Fixed to Off *

* : Default setting

Note:

Msw 8-1:

When On is selected, this printer transmits power-off notice, power-on notice, and battery status to a host PC. When off is selected, this printer doesn't transmit these.

Msw 8-2:

When On is selected, the printer beeps the buzzer for 10 seconds when the battery status enters "battery level is L" or "battery level is S."

Msw 8-3, 8-4, 8-5:

When On is selected, the buzzer beeps for 10 seconds for each situation. For information on printer errors (Msw 8-5), see "3.1.1 Error Types" (page 3-1).

Customize values

Function	Selectable value
Roll paper width	58mm or 60 mm (Default: 58mm)
Time for auto power off	Disable, or 1 ~ 60 minutes (Default: 20 minutes)
Print density	70%, 75%, 80%, 85%, 90%, 95%, 100%, 105%, 110%, 115%, 120%, 125%, 130%, (Default: 100%)

* "Time for auto power off": When a printer isn't received any data from host PC, and isn't operated anything (ex. opening the roll paper cover, pressing the FEED button) during the specified time, the printer turns off itself automaticaly.

Note:

See "2.5.4 Adjusting Roll paper width" (page 2-13) also to adjust roll paper width.

Serial communication

Function	Selectable value
Baud rate	9600 bps
	19200 bps (default)
	384000 bps
Parity	None (default)
	Odd
	Even

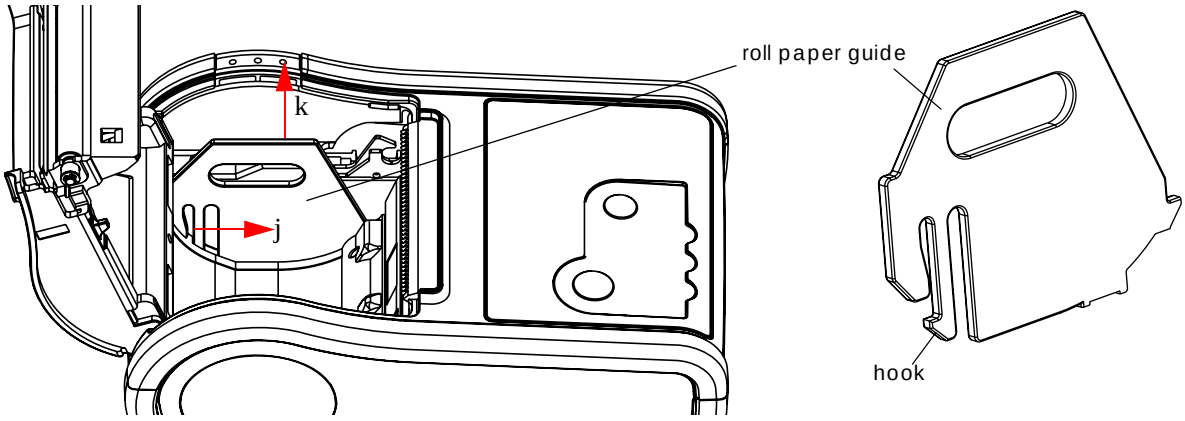
Note:

When this printer connected with serial interface, the data length is always "8 bit." The handshake is changed by a DIP switch; see "2.5.2 DIP switch" (page 2-10) for details.

2.5.4 Adjusting Roll paper width

The TM-P60 accommodates 58 mm {2.28"}, and 60 mm {2.36"} wide paper rolls. The roll paper guide is removed to change the roll paper width to 60mm. The method of removing the guide is following below.

1. Make sure the power is turned off.
2. Open the roll paper cover.
3. Take the roll paper guide off of the printer.
4. Release th hook to the direction (j in the illustration) by using a pointed tool, such as tweezers or a small screwdriver, and lift up (k in the illustration) the roll paper guide to take the roll paper guide off.

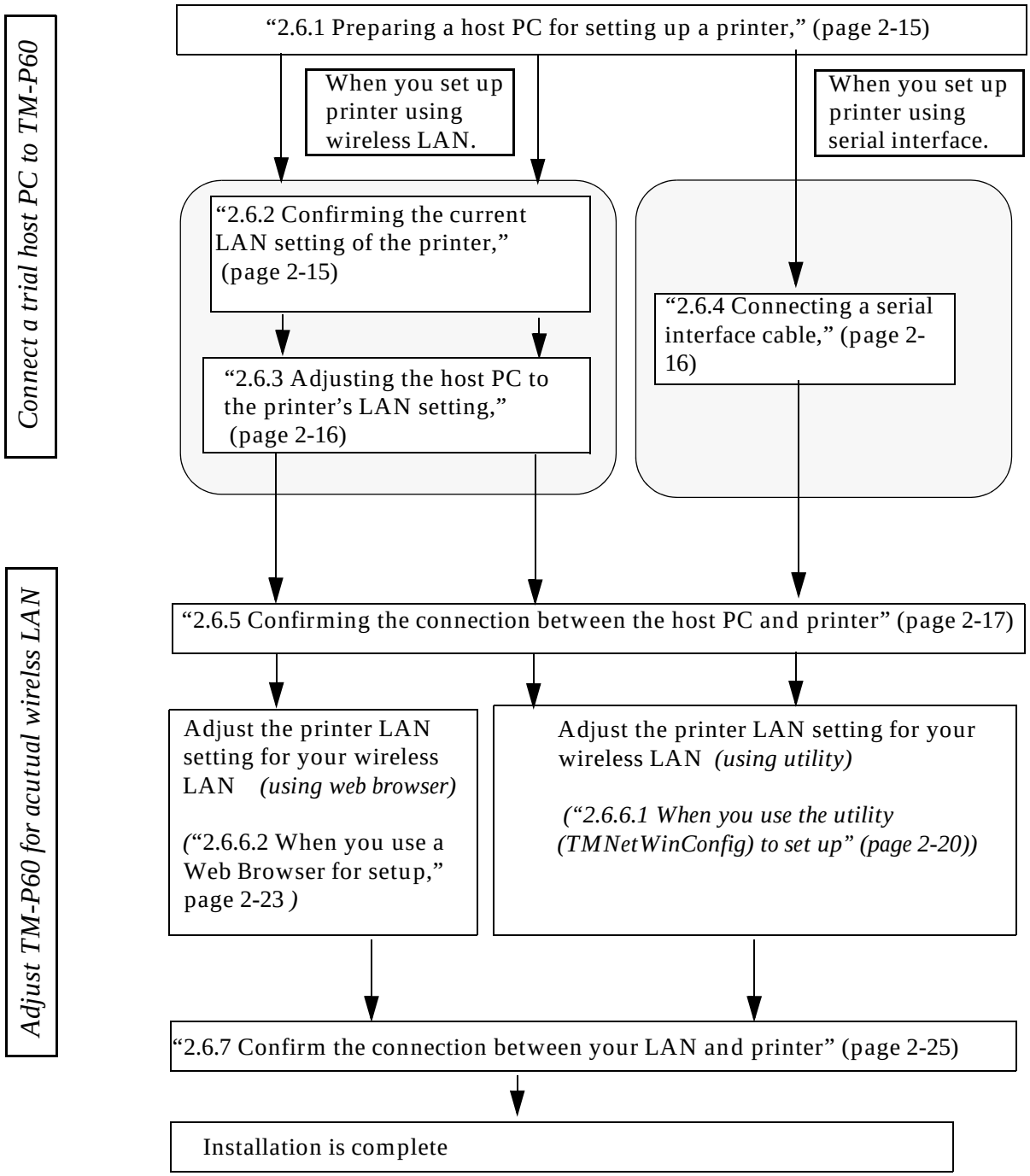


5. Set the memory switch (customize value) for the paper width. (See “2.5.3 Memory Switches” (page 2-11))

Note:
When this printer connected with serial interface, the data length is always “8 bit.“ The handshake is changed by a DIP switch; see “2.5.2 DIP switch” (page 2-10) for details.

2.6 Installing your wireless LAN

This section describes how to install a wireless LAN in this printer. The following shows you the installation procedure.



Note:
For detailed information about the utility and web browser for LAN setting, see " Wireless LAN Setup Detailed Information" (page B-1).

2.6.1 Preparing a host PC for setting up a printer

At first, prepare a PC (trial host PC) to set up a printer. The requirements for the trial host PC are the following:

- ❏ OS: Windows 2000 professional, Windows XP professional
- ❏ Communication port: 802.11b or serial port equipped

When you use the utility (TM Net Win Config Ver. 2.00 or later), you should install it in the host PC before setting up the TM-P60. See "B.2.1 Install" (page B-4) for the installation procedure.

Note:
When you set up the printer by using wireless LAN, the LAN setting of host PC is changed to correspond to the LAN setting of TM-P60 temporarily.

There are three way for instaling TM-P60 to wireless LAN. The following table lists required setting item for trial host PC.

	Using Brawser	**Using TM Net Win Config (in wireless LAN)**	**Using TM Net Win Config (with serial interface (RS-232C))**
Required items (wireless LAN items)	Networkmode (commucication mode) SSID WEP key IP address Subnet mask	Networkmode (commucication mode) SSID WEP key IP address Subnet mask	"not required to change any network items " *(On the utility, you have to select serial I/F communication condition)*

2.6.2 Confirming the current LAN setting of the printer

Confirm the current LAN setting of the printer according following procedure.

1. Turn on the printer' s power.
2. Open the roll paper cover.
3. Press the FEED button until the printer beeps (about 2 seconds).
4. Close the roll paper cover.
5. The printer prints the current LAN setting (Status sheet).

Note:
The printed result (Status sheet) is necessary at the next step.

The printer may beep when turned on. It is caused by the host PC's LAN setting not corresponding to the printer's setting. Ignore the beeping.

When you connect serial cable (RS-232C) at turning on printer, this mode is disable.

2.6.3 Adjusting the host PC to the printer's LAN setting

When you set up the printer with serial interface, omit this section and read from "2.6.4 Connecting a serial interface cable" (page 2-16).

Adjust the LAN setting of the host PC corresponding to the status sheet. (It is printed at "2.6.2 Confirming the current LAN setting of the printer" (page 2-15).) The setting items are the following.

- ❏ Network mode (Ex: Ad-Hoc mode)
- ❏ SSID (Ex: EPSONNetIBSS)
- ❏ WEP (Ex: None) (This item isn't printed on status sheet. This printer isn't registered any keys at shipped. When your printer isn't registered any key, you have to set to "disabled" this item.)
- ❏ IP address (Ex: Auto, or 192.168.192.XXX)
  (Don't set the IP address of host PC the same as the printer's setting.
  Ex; when printer's IP address is 192.168.192.168, set the host PC's to 192.168.192.2.
  Don't set 192.168.192.168)
- ❏ Subnet mask (Ex:0, 0, 0, 0)

Note:
For informatin about the PC setting method, see your PC's manual or wireless LAN card's manual.

The examples are for the default setting. You should use the settings printed on the status sheet.

After the setup, skip the "2.6.4 Connecting a serial interface cable" (page 2-16), and go to "2.6.5 Confirming the connection between the host PC and printer" (page 2-17).

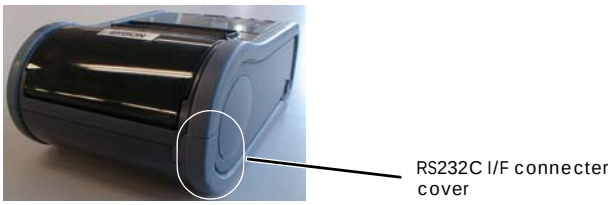
2.6.4 Connecting a serial interface cable

When you don't set up the printer with serial interface, omit this section and read from "2.6.5 Confirming the connection between the host PC and printer" (page 2-17).

Use the following procedure.

1. Turn off the printer.

2. Open the “RS232C I/F connecter cover.”



3. Connect the serial interface cable (option) to the printer and the serial port of the host PC.

4. Turn on the printer while pressing the FEED button.

5. The printer prints the self test result, which is necessary for the next step.

Note:
If you connect the serial cable to the printer while turning it on, the printer doesn’t support serial communication. Turn off the printer before connectiing the cable.

2.6.5 Confirming the connection between the host PC and printer

You can select from these two methods to confirm:

- Using Utility (TMNetWinConfig)
- Using web browser

The following sections describe each method.

Note:
Before you using Utility (TMNetWinConfig), you have to install it into your host PC. About install it, See “B.2.1 Install” on page B-4.

When you connect TM-P60 to host PC with serial cable, you have to use the utility to confirm the connection. See “2.6.5.1 When you use the Utility (TMNetWinConfig) to set up the connection” (page 2-18).

2.6.5.1 When you use the Utility (TMNetWinConfig) to set up the connection

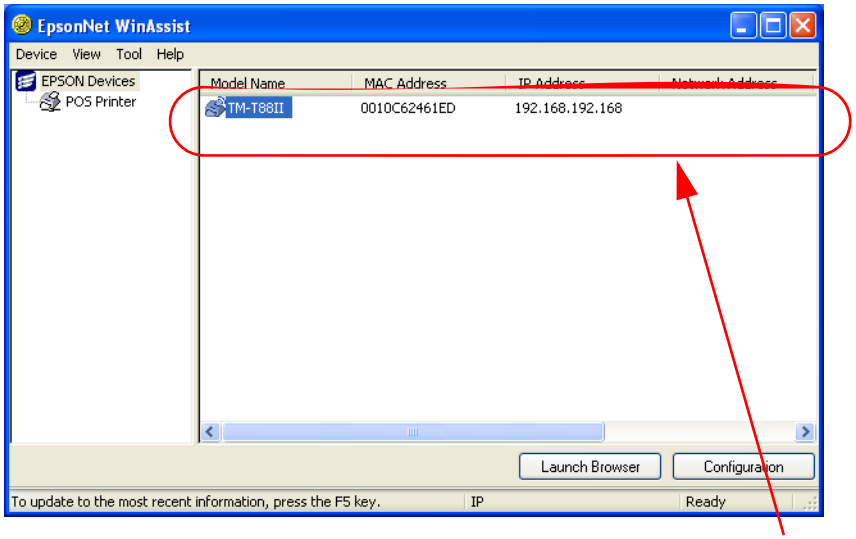
You can confirm the connection this way when you select either connection (wireless LAN, or RS-232C)

1. Run "TMNetWinConfig" on the host PC.

Note:
If the utility hasn't been installed on the host PC, install now.

2. Turn on your printer.

3. Confirm the printer is shown in the list view.



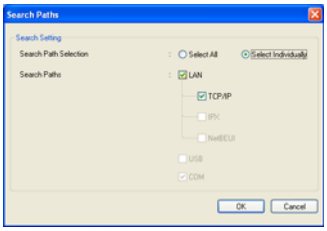
The your printer is shown in here.

Note:
If the printer isn't shown in the list view, check following item. See Appendix B for details of the utility function.

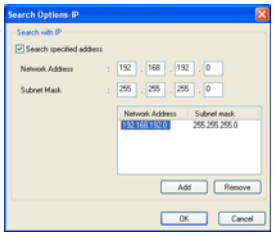
- Turn the printer on.

- Without connecting a serial cable to the TM-P60, confirm that the "Search Method," and "Search Option IP" are correct. You have to set it to correspond to the printer.
  "Search Path"; Menu:Tool -> "Search Method."
  (You should check "Search Path selection: select All")

"Search Option IP"; Menu:Tool -> "Search Option" -> "IP"
(You should set the IP address and subnet mask to search.
See " Search Options - IP" (page B-17) for details)



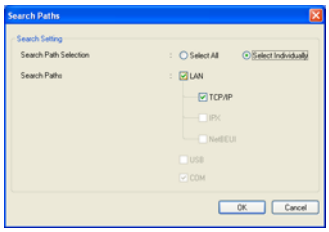
Search Method



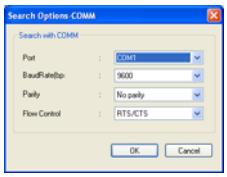
Search Option IP

- When you use serial cable, confirm connect a serial cable to the TM-P60 and host PC, and turn the printer on again.

- With connecting a serial cable to the TM-P60 and host PC, confirm that the "Search Method," and "Search Option COM" are correct. You have to set it to correspond to the printer.
  "Search Path"; Menu:Tool -> "Search Method." (You should check "Search Path selection: select All")
  "Search Option COM"; Menu:Tool -> "Search Option" -> "COM."



Search Method



Search Option COM

2.6.5.2 When you use a Web Browser for setup

1. Start your web browser (Ex. Internet Explorer)

2. Enter the IP address of the printer into the address bar, and press Enter key.

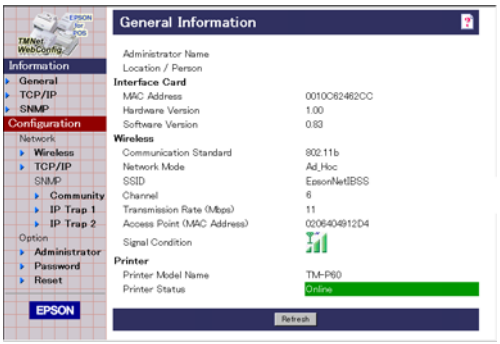
Note:
The IP address is printed at "2.6.2 Confirming the current LAN setting of the printer" (page 2-15).

3. The web browser displays a dialog box requesting a user name and password. Click OK without entering any user name or password.

Note:
If the dialog box doesn't appear, confirm the IP address (printer and host PC) and host PC's subnet mask.

This printer doesn't have any password at shipped. When you registered a password into the printer, you have to enter it on the dialog box. For setting password, see " Password" (page B-41).

4. When following screen is shown, the confirmation is complete.



Note:
If the screen doesn't appear, see "Q 6. The TM-P60 can't connect to the Wireless LAN. What should I do?" (page E-2).

2.6.6 Adjusting the printer LAN setting for your wireless LAN

2.6.6.1 When you use the utility (TMNetWinConfig) to set up

In this step, change the LAN setting of printer to the setting of the wireless LAN installed in the printer from the trial host PC.

Note:
To enter the printer into your wireless LAN, you have to setup the following items at least. If you setup other items, you have to setup also these items.

- Network mode (it is fixed to Infrastructure from utility accesses the printer.)
- SSID
- Method for specifying the IP address / IP address, subnet mask, default gateway
- WEP key

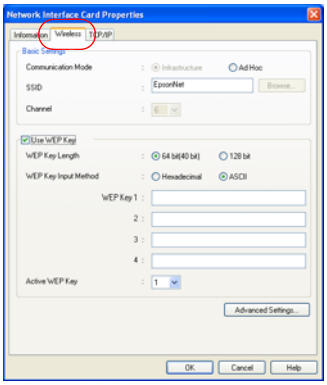
1. Select the printer from the list view.

Note:
When you use multiple TM-P60 printers, you can distinguish each TM-P60 with a MAC address. The MAC address can be confirmed by the status sheet. See "2.6.2 Confirming the current LAN setting of the printer" (page 2-15) about the status sheet.

Don't turn off the printer until the step 9. If do so, the printer may be not able to comunicate the host PC. In this case, reset the printer to default setting and try again the setting procedure.

2. Click the "configuration" button.

3. Click the "Wireless" Tab



4. Set following items for the wireless LAN installed the printer.

   - Communication mode (Network mode): (Check to "Infrastructure." (If you don't check it, it is checked automaticaly))

   - SSID

   - WEP key, and active WEP key

Note:
Change the SSID from default and define WEP key to secure your wireless LAN.

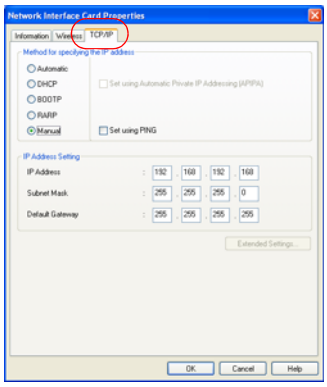
We recommend to define WEP key as 128bit, Hexadecimal to secure security.

This printer doesn't support the blank SSID ""(any). Enter one character into the SSID at least.

Ad-Hoc mode is for default value only. See "Q 1. Can I use the TM-P60 in the Ad-Hoc mode?" (page E-1) for detail.

For detail of setting items, see "B.3 Setting Using a Web Browser" (page B-28).

5. Click the "TCP / IP" tab.

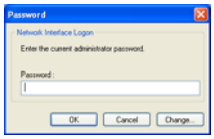


6. Set the following items for the wireless LAN installed in the printer.

   - Method for specifying the IP address
   - IP address setting (IP address, Subnet Mask, Default gateway)
     When you select the method "Auto," you can omit the IP address setting.

7. Click the "OK" button. (This utility shows a dialog box, follow the message.)

8. A dialog box is shown as following, click the OK button without entering any password.



Note:
This printer doesn't have any password at shipped. When you registered a password into the printer, you have to enter it on the dialog box. For setting password, see "B.2.4.1 password" (page B-28).

9. The changin is enabled after the utility shows you "finished" message.

Note:
We recommend to confirm the changed wireless LAN setting by status sheet printing after changing the LAN setting. (see "2.6.2 Confirming the current LAN setting of the printer" (page 2-15))

2.6.6.2 When you use a Web Browser for setup

In this step, change the LAN setting of printer to the setting of the wireless LAN installed in the printer from the trial host PC.

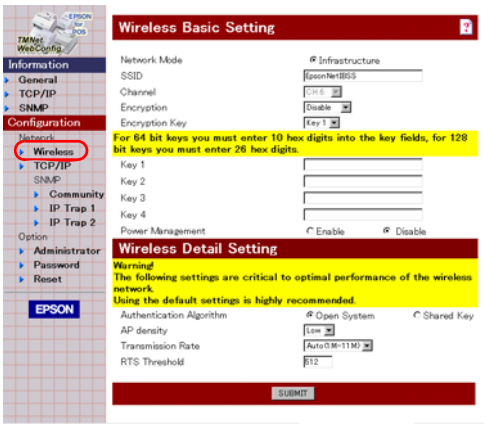
Note:
To enter the printer into your wireless LAN, you have to setup the following items at least. If you setup other items, you have to setup also these items.

- Network mode (it is fixed to Infrastructure from utility accesses the printer.)
- SSID
- Method for specifying the IP address / IP address, subnet mask, default gateway
- WEP key

Note:
Don't turn off the printer until the step 8. If do so, the printer may be not able to comunicate the host PC. In this case, reset the printer to default setting and try again the setting procedure.

1. Open the screen with your web browser. (See "2.6.5.2 When you use a Web Browser for setup" (page 2-19) for this procedure).

2. Click "Wireless" from the right side menu.



3. Set the following items for the wireless LAN installed in the printer.

   - Network mode (Communicaiton mode): (It is fixed to "Infrastructure")
   - SSID
   - WEP key, and active WEP key

Note:
Change the SSID from default and define WEP key to secure your wireless LAN.

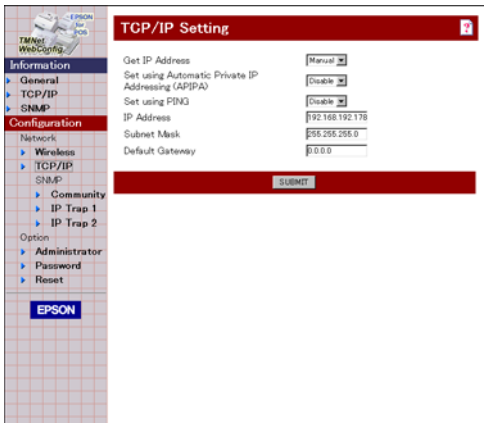
We recommend define WEP key with 128bit, Hexadecimal to secure security.

This printer doesn't support the blank SSID ""(any). Enter one characters into SSID at least.

Ad-Hoc mode is for default value only. See "Q 1. Can I use the TM-P60 in the Ad-Hoc mode?" (page E-1) for detail.

4. Click the "submit" button.

5. Click "TCP/IP" from the right side menu.



6. Set the following items for the wireless LAN installed the printer.

   - Get IP Address
   - Set using Automatic Private IP Addressing (APIPA)
   - Set using PING
   - IP Address setting (IP address, Subnet Mask, Default Gateway)
     When you select the method "Get IP Address: Auto," you can omit the IP address setting.

7. Click the "submit" button.

8. The the printer off and back on; the changes have now been made.

Note:
We recommend to confirm the changed wireless LAN setting by status sheet printing after changing the LAN setting. (see "2.6.2 Confirming the current LAN setting of the printer" (page 2-15))

2.6.7 Confirm the connection between your LAN and printer

Transmit “ping” command to the printer from PC in the LAN to which the printer is connected to confirm the connection. If a reply isn’t returned from the printer, retry these procedures from the first after reset the wireless LANsetting of printer.

2.7 Install a Printer Driver in the Host PC / POS Terminal

EPSON provides printer drivers for the TM-P60. The drivers are OPOS and Advanced Printer Driver (APD). They are for the Windows® environment.

2.7.1 OPOS

2.7.1.1 Installing and setting up

When you install and set up, please refer to the User's Manual, the file is automatically created during the installation of the OPOS ADK.

Outline of install and setup procedure is as follows.

START

1. Installation OPOS ADK

(Execute the Setup.exe in DISK1, and continue to installation by wizard)

Is installation completed?

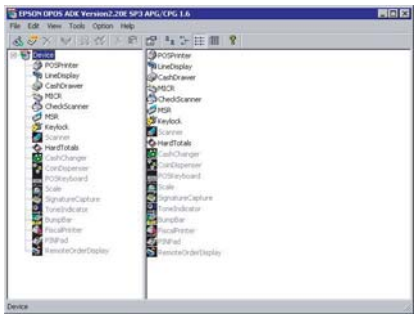
ERROR

For detail refer to [User Manual]

Completed

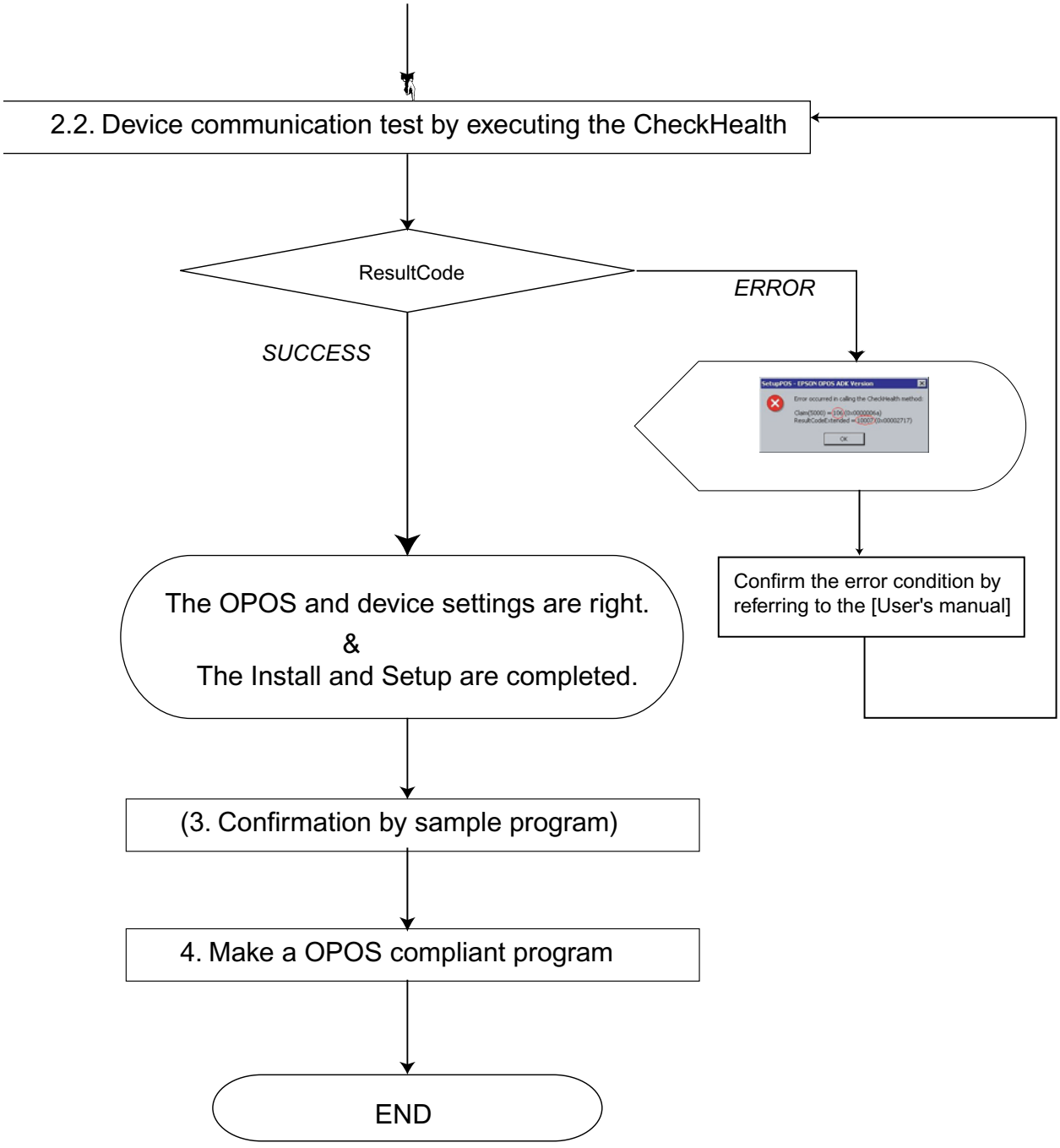
2. Setup the OPOS & device setting by using SetupPOS utility

You can setup the OPOS and device setting by the SetupPOS utility.



2.1 Setup the OPOS & device setting

- ❑ Select the device and I/F setting
- ❑ Device specified setting
  - Paper type & size setting
  - Bitmap setting



1. Installation.

   Execute the Setup.exe in DISK. and continue to install by following the wizard instructions.

2. Set up the device and environment.

    1. Set the device setting by using SetupPOS utility.

        - Select the device and I/F setting.
        - Device specified setting. (set the specified setting of the device)

    2. Execute the CheckHealth
       Device communication test.

        - If you get "SUCCESS", the setting of the device is right.
        - If you get ResultCode (error), re-check the device connection setting by following the User's Manual.

After performing the above procedure, use an OPOS compliant program in your system.

 ***Note:***
Please refer to the sample program when you make a program.

The OPOS ADK provides a sample program for each device class. The sample programs are intended as programs to serve as references for application developers. The ways to use the principal methods and properties for each device are introduced in the form of Visual Basic and Visual C++ programs. In this manual, it is introduced in the form of Visual Basic.

2.7.1.2 Package contents of EPSON OPOS ADK

Package contents of EPSON OPOS ADK are same as that of the previous one.

- ❑ Installer
- ❑ SetupPOS Utility
- ❑ OPOS Controls
- ❑ Manual

    - User's Manual: Installation of the EPSON OPOS ADK, Configurations,and explanations of the attached tools.
    - ADG : Detailed information on the each device to support the development.

ADG for General :	General information on the development.
ADG for Common Information :	Common information to all the devices.
ADG for device class :	General information on the device class.
ADG for model :	Specific explanation on the device.
Sample program :	Information on the Sample Programs.

- ❑ Sample Program

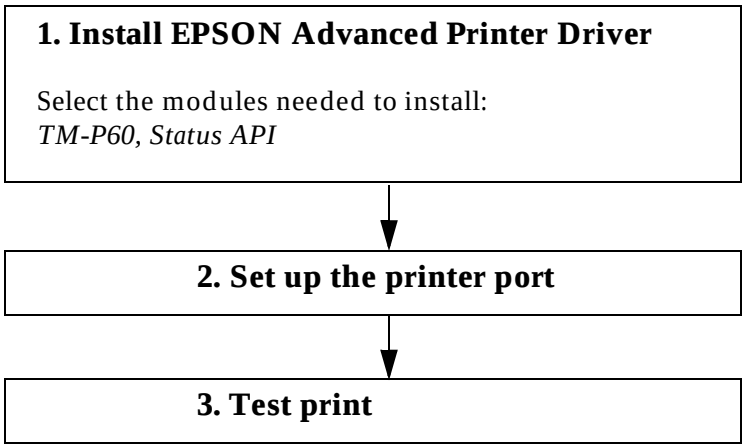
  Sample program for VB and VC (for each device class)

2.7.2 Advanced Printer Driver (APD)

2.7.2.1 Installing and Setting Up

When you install and set up the APD, please refer to the "EPSON Advanced Printer Driver Install Manual." The Manual is a PDF file, which is provided with other manuals for the APD.

Outline of installation and setup procedure is as follows.



1. Install EPSON Advanced Printer Driver

   Execute the installer "ADT###e.exe," and select modules which you need. The recommended modules are shown below. Refer to the installation manual for details.

EPSON TM-P60 Receipt	This module is required for printing.
Status API:	This module is required for monitoring the printer. This module provides API to monitor the printer's status.

   Note:
   For the Manual, Sample program, and each utility, you have to download separately the ADT###e.exe.

2. Set up the printer port

   After installing the APD, you need to adjust the printer port setting for the printer interface model. See the Installation manual and the User's manual for details.

3. Test print

   Execute a test print from the "property" of the printer to confirm the setting. If the test print is not correct, please see the "Notes" on the "User's Manual" and "Status API Reference Manual" to solve the your problem.

   Note:
   You can use the printer with sample program (written in Microsoft Visual Basic, Visual C++). The sample program is provided separately.

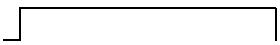
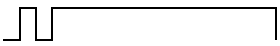
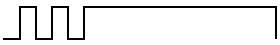
Chapter 3
Troubleshooting

This section describes general troubleshooting.

3.1 LED Blinking Pattern

3.1.1 Error Types

The printer stops all printer operations, goes offline, and the ERROR LED blinks when an error is detected.

ERROR	Description	ERROR LED Blinking Pattern (320 ms)	Recovery
Printer temperature error (*1)	The internal temperature of the printer is extremely high		Recovers automatically when the printer cools
Autocutter error	The autocutter does not work correctly		Recovers by error recovery command. (See "Paper Jam" (page 3-2))
Circuit error	The circuit board doesn't work		Impossible to recover
Memory error	The printer does not work correctly in R/W checking.		Impossible to recover
Voltage error	The power supply voltage is extremely high or low		Impossible to recover
Software error	The firmware does not work correctly.		Impossible to recover.
The radio unit error	The IEEE802.11b radio interface unit doesn't work.		Impossible to recover

Note:
The ERROR LED is on when the printer is offline (paper out, power-on initialization, roll paper cover open, power-off operation, or the remaining battery charge is not enough for printer operation when the battery is used to supply the power.)

(1) Print temperature error is not an abnormality.*

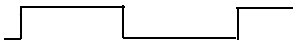
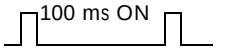
When you see an error described as "Impossible to recover" in the recovery column, turn off the printer as soon as possible and consult your dealer.

When the printer beeps, see also "Beeping Types" (page 3-2).

3.2 Printer Beeps

3.2.1 Beeping Types

The printer beeps in some situations. The beeping patterns are as follows.

Beeping Pattern	The beeping indicates mean	Beeping times	Switch method to Enable/disable
1000 ms ON 1000 ms OFF 	• Battery remaining amount is "L level" or less • The printer can't find an Access point. • Roll paper end • An error has happened.	5 times	Memory switch specify the beeping enable/ disable • Battery remaining amount [Msw 8-2] • Can't find Access point [Msw 8-3] • Roll paper end [Msw 8-4] • Error has happened [Msw 8-5]
100 ms ON 	• A status sheet is printed (when you press the FEED button) • A radio field intensity check sheet is printed. (when you press the FEED button)	1 time	This beeping is always enabled.
100 ms ON 1900 ms OFF 	• A radio field intensity check sheet is printed. (See "Radio Field Intensity Check Mode" (page 3-5) for details.)	Until printing is started.	This beeping is always enabled.
Other patterns	• Application transmit "beeper command"to printer.	Depends on the application	--

Note:
For details about the status sheet, see "Status sheet printing" (page 3-4).

3.3 Printer Beeps When the Power is Turned on

When printer can't find any access points with the current wireless LAN setting, the printer beeps to warn you. [See "Printer Beeps" (page 3-2) for the beeping pattern.] In this case, you should change the LAN setting of this printer or your access point. For details, see "Installing your wireless LAN" (page 2-14).

3.4 Paper Jam

When there is a paper jam, follow the procedure below.

1. Open the roll paper cover.

2. Remove the jammed paper.

3. Close the roll paper cover.

4. Transmit the error recovery command.

Note:
For error recovery command information, see the manual for each control method (OPOS, Advanced Printer Driver, ESC/POS commmand).

3.5 To Confirm the Current Setting of the Printer

This printer has two functions to confirm the current setting of the printer.

- Self test mode

  This mode prints all settings of the printer and a character printing test on roll paper. (Ex: serial communication condition, wireless LAN setting, memory switch setting, etc...)

- Status sheet printing

  This prints wireless LAN settings on roll paper.

3.5.1 Self test mode

The self test lets you know if your printer is operating properly. It checks the control circuits, printer mechanisms, print quality, control software version, and DIP switch settings.

This test is independent of any other equipment or software, so it is a good idea that run it when you first set up the printer and if you have any trouble. If the self test works correctly, the problem is in the other equipment or the software, not the printer.

1. Make sure the printer is turned off and the roll paper cover is closed properly.

1. While holding down the FEED button, turn on the printer using the switch on the front of the printer. The self test prints the printer settings and then prints the following, cuts the paper, and pauses.

```
If you want to continue SELF-TEST printing, please press
FEED button.
```

1. Press the FEED button to continue printing. The printer prints a pattern using the built-in character set.

Note:
If you would like to finish the test printing, turn off the power.

2. The self test automatically ends and cuts the paper after printing the following:

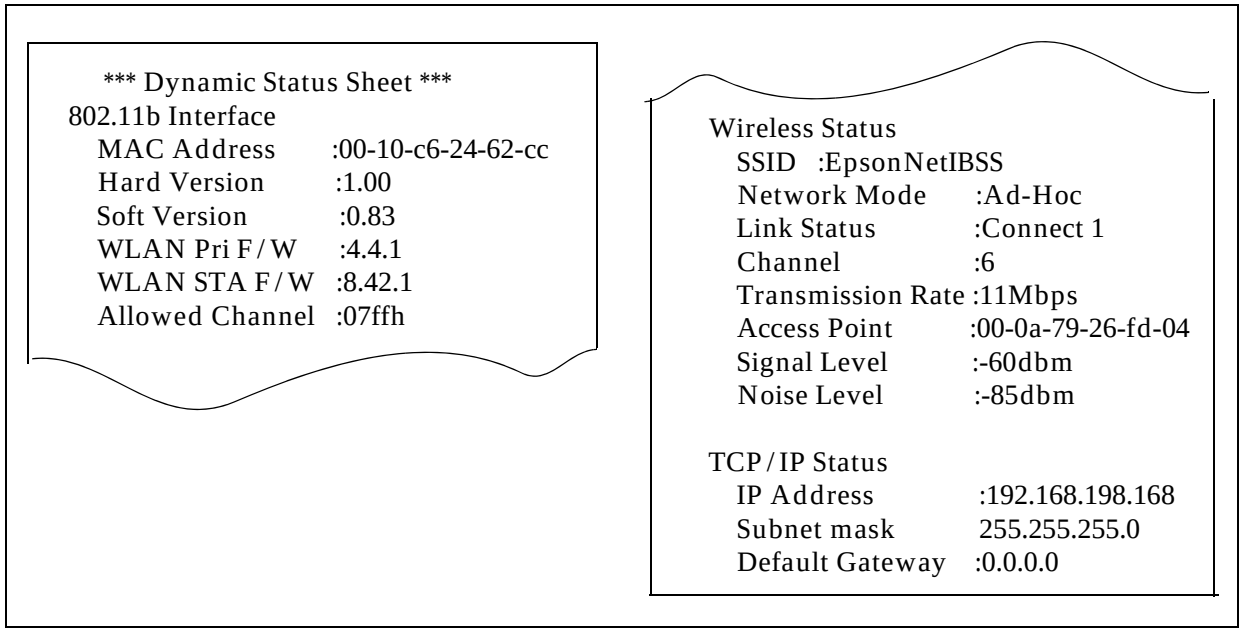
```
*** completed ***
```

The printer is ready to receive data as soon as it completes the self test.

Note:
If you want to pause the self test manually, press the FEED *button. Press the* FEED *button again to continue the self test.*

3.5.2 Status sheet printing

The status sheet describes the wireless LAN setting of printer. This sheet is useful to confirm the current wireless LAN status.



A example of status sheet

To print a status sheet, follow the procedure below.

1. Make sure the printer is turned on. If it is off, turn it on.
1. Open the roll paper cover.
1. Press the FEED button until the printer beeps 1 time. (about 2 seconds).
1. Close the roll paper cover.
1. The printer prints the current LAN status (Status sheet), and then returns to the normal mode.

Note:
After printing a status sheet, this printer doesn't reset itself (keeps all setting values).

3.6 Radio Field Intensity Check Mode

This mode prints the current radio field intensity on roll paper. This mode is useful to confirm that the printer can communicate with an access point at the current location by radio.

1. Make sure the printer is turned off and the roll paper cover is closed properly.

1. Open the roll paper cover.

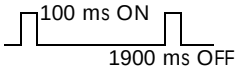
2. While holding down the FEED button, turn on the printer using the POWER button.

3. Press the FEED button 2 times.

4. Close the roll paper cover.

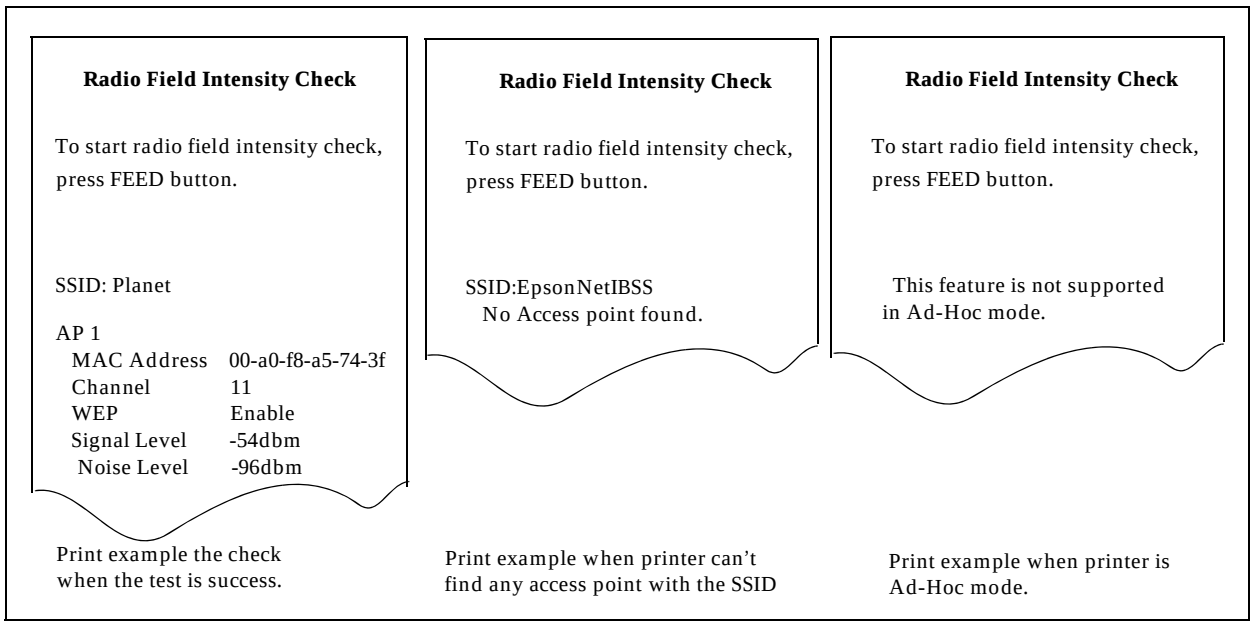
5. The printer prints the message “To start radio field intensity check, press FEED button.“ Then press the FEED button; the printer beeps to inform you that the printer has started the radio field intensity check

6. When the check is completed, the printer prints the result on roll paper. When the printer cannot complete the check within 4 seconds, the printer beeps with the following timing until the check is completed.



Note:
Usually the printer completes this check within 2 or 3 seconds. When there are too many access points, the printer requires more time to compete the checking.

This feature isn’t supported in Ad-Hoc mode. When executing this feature in Ad-Hoc mode, the printer prints the following message.



7. Turn off the power.

3.6.1 Resetting the printer

Reset the printer's LAN setting to be certain it is correct.

This mode is useful when you need to set the wireless LAN setting of a TM-P60 when the setting cannot by changed by an Access point, serial cable, or TMNetWinconfig. In this case, reset the printer to change the printer to Ad-Hoc mode for communication without any access point.

Note:
When you haven't adjusted the printer's wireless LAN setting, or you set up the printer with a serial interface, you can omit the resetting. In this case, omit the resetting; then confirm the current setting.

The printer may beep when turned on. It is caused by the access point's LAN setting not corresponding to the printer's setting. Ignore the beeping.

1. Open the roll paper cover.
2. Turn on the printer's power while pressing down the FEED button.
3. Press the FEED button 6 times.
4. Close the roll paper cover.
5. The printer prints the procedure for resetting. Follow the procedure. (Open the roll paper cover, press the FEED button, close the roll paper cover.)

Then, the printer prints "Initialize" and cuts the paper, then starts resetting. Printer is rebooted after the initialization.

Note:
This printer completes the initialization a few seconds after the paper is cut.

3.7 Hexadecimal Dump Mode

This feature allows experienced users to see exactly what data is coming to the printer. This can be useful in finding software problems. When you turn on the hex dump function, the printer prints all commands and other data in hexadecimal format, along with a guide section to help you find specific commands.

To use the hex dump feature, follow these steps:

1. After you make sure the printer is off, open the roll paper cover.
2. While you hold down the FEED button, turn on the printer.
3. Close the cover.

4. Run any software program that sends data to the printer. The printer prints "Hexadecimal Dump" and then all the codes it receives in a two-column format. The first column contains the hexadecimal codes and the second column gives the ASCII characters that correspond to the codes. Part of a hexadecimal dump is shown below:

```
                    Hexadecimal Dump


          To terminate hexadecimal dump,press

         FEED button three times.


          1B 21 00 1B 26 02 40 40 40 40    . ! . . & . @ @ @ @

          1B 25 01 1B 63 34 00 1B 00 1B    . % . . c 4 . . . .

          41 42 43 44 45 46 47 48 41 42    A B C D E F G H A B
```

   - A period (.) is printed for each code that has no ASCII equivalent.
   - In hex dump mode all commands except real time ESC / POS commands are disabled.

5. Press the FEED button twice to print the last line.

6. Pressing the FEED button two times turns off the hex dump mode and returns the printer to the normal mode. Or, reset the printer to turn off the hex dump mode.

Note:
The hexadecimal dump mode can't be used with OPOS or the APD.

Chapter 4

Application Development Information

This section contains usable information to develop POS systems that use this printer.

4.1 About wireless communication

4.1.1 For Application developing

The TM-P60 uses wireless comunication technology; therefore temporary communication breaks may occur when you move or are in an outside environment. When you develop application software using wireless communication, you should consider this.

Even when the wireless communication is interrupted, the TM-P60 maintains the connection. Unless you close it from the host computer, the TM-P60 does not print even if you reestablish the connection. Therefore, when the wireless communication is reestablished, close the first connection, and then recover the next connection.

Once a connection is established, it is maintained in the TM-P60 until it is closed from the host computer or until there is a time out (no data sent / received for 5 minutes). During that time, you can establish another connection from the host computer; however, printing is not possible until the first connection is closed.

We recommend you confirm whether or not the printer printed after every print data transmission unit. Detection of communication errors and recovering from such errors are also important. Data communication without confirmation of printing and detetection of communication errors may cause data loss.

To ensure heghly reliable data communication, we recommend the use of the status confirmation function of our genuine OPOS, or Windows Printer Driver (APD).

4.1.2 For Radio field intensity

Wireless communication is related to radio field intensity. The TM-P60 has a function,“Radio Field Intensity Check Mode” (page 3-5), to confirm the current radio field intensity. This mode shows the current radio field intensity to the operator.

The function can’t be executed from any drivers (OPOS, Advanced Printer Driver) or ESC / POS commands.

4.1.3 Operation tested Access point products

The Access points that have been evaluated with the TM-P60 are in the following table. For the latest information, see the appropriate web site below:

For customers from North America, go to the following web site: http://pos.epson.com/

For customers from other countries, go to the following web site: http://www.epson-pos.com/
Select the product name from the "Select any product" pull down menu.

.

Vendor	Model	A/P firmware	RF firmware	Power Managiment funtion with TM-P60
Symbol	AP-4121-1150-US	0.252-13	V2.51-08	Impossible
Symbol	AP-4131-1050-WW	0.350-33	F3.10-04	Possible

Vender	Model	Software Ver.	Boot ver.	Power Managiment funtion with TM-P60
Cisco	Air-AP1120B-A-K9	12.2 (13)JA1	12.2(8)JA	Impossible

4.2 About the Battery Remaining Amount

4.2.1 The battery remaining amount

This printer has a battery to supply power. The battery has four statuses:

Battery Status	The battery LED condition	Description
Level H (High)	Off	The remaining battery charge is between 100% and approximately 50% when the amount of difference between the full battery and level L is 100%.
Level M (Medium)	Flashing	The remaining battery charge is between approximately 50% and level L when the amount of difference between the full battery and level L is 100%.
Level L (low)	On	The battery needs to be replaced or recharged because the remaining battery charge is low.
Level S (Serious)	On	The printer will not operate because the remaining battery charge is too low.

*When an AC adapter is connected to the printer, the "battery LED condition" is always Off.

4.2.2 The method to confirm the battery status

The battery status can be confirmed by every control method.

4.2.2.1 OPOS

In OPOS, the battery status can be confirmed by Direct I/O method "PTR_DI_GET_BATTERY_STATUS." This information is described in the manual "Application Developement Guide POS printer (TM Series): *(4.3 StatusUpdateEvent regarding Battery Status.)*" This manual is installed with OPOS.

4.2.2.2 Advanced Printer Driver

The battery status can be confirmed by the Status API. The API is **BiGetBatteryStatus**.

Also, the battery status can be transmitted when the status changes. For this setting, use **BiSetBatteryStatusBackFunctionEx**, **BiSetBatteryStatusBackWndEx**, **BiCancelBatteryStatusBack**.

See the "Status API user's manual" for details.

4.2.2.3 ESC/POS command

The beeper function can be operated by commands. See the "ESC/POS Application Programming Guide" for details.

4.2.3 Power Management function

The power management function is to save the battery. This function can be set from TMNetWinconfig ["Power Management Setting" (page B-25)]. However, some Access points don't't use this function with the TM-P60. See "Operation tested Access point products" (page 4-2) for details.

4.3 Beeper function

This printer has a beeper function. The beeper beeps automatically when the following conditions occur. The automatic beeping enabled/disabled is switched by a memory switch. See "Memory Switches" (page 2-11) for details.

- ❏ The remaining battery charge is low
- ❏ The printer can't find an Access point (wireless LAN).
- ❏ Roll paper is out
- ❏ Printer has an error

Also, the beeper can be beeped by a command from an application. The following sections describe the method for each control method.

4.3.1 OPOS

On OPOS, the beeper function can be beeped by Direct I/O method "PTR_DI_RING_BUZZER." This information is described in the manual "Application Development Guide POS printer (TM Series.)" This manual is installed with OPOS.

4.3.2 Advanced Printer Driver

In the Advanced Printer Driver, you have to use “Control font A.” The procedure is described below.

> ***Note***
> *See the user’s manual of the Advanced Printer driver for detail of the utility “EPSON Control font.“*

1. Open the properties of printer.
2. Click the “utility“ tab.
3. Click the “EPSON Control FontA“ button.
4. Click the “operation“ tab.
5. Edit a control font. The following table shows example definitions.

Deined Command data	Tone	Description
1B284104003031010A	1280Hz	1000ms beeping
1B284104003032010A	4100Hz	1000ms beeping
1B284104003033010A	1280Hz	200ms beeping
1B284104003034010A	4100Hz	200ms beeping
1B284104003035010A	1280Hz	200ms beeping -> 200ms off -> 200ms beeping
1B284104003036010A	4100Hz	200ms beeping -> 200ms off -> 200ms beeping
1B284104003037010A	1280Hz	500ms beeping
1B284104003038010A	4100Hz	500ms beeping
1B284104003039010A	1280Hz	200ms beeping -> 200ms off -> 200ms beeping -> 200ms off -> 200ms beeping
1B284104003039010A	4100Hz	200ms beeping -> 200ms off -> 200ms beeping -> 200ms off -> 200ms beeping

6. When the printer receives data of the defined control font A, the printer beeps as described.

4.3.3 ESC/POS command

The beeper function is able to be operated by commands. See the “ESC / POS Application Programming Guide“ for details.

4.4 Various Status Categories

This printer is able to send various status reports to the host PC. This section describes the kind of statuses and handling.

Status Categories	Description

Roll Paper cover status	Roll paper cover is open or closed
FEED button status	Paper feed button is pressed or not
Error status	Various error information (Off-line / On-line), (detail of the error; Mechanical error, autocutter error, auto-recovery error, unrecoverable error)

The statuses are useful for the following situations.

- ❏ When an error status is sent to the host PC, the host PC can display an error message or solution message for operator (with beeping).
- ❏ When "Paper end" status is sent to the host PC, the host PC can display a message for the operator to replace roll paper (with beeping).

4.4.1 Printer Status on APD

When you use APD to get printer's status, you have to install "Status API" and use it. Refer to "Status API User's Manual" and the sample program of Status API for details.

4.4.2 OPOS

Note
This section describes the summary of status handling. Refer to "OPOS ADK Application Development Guide General Functions" for details.

4.4.2.1 Checking the printer state

The state of the printer can be checked through properties supported by the printer. For example, if the user wants to check if the printer cover is open, the CoverOpen property can be used.

```
If OPOSPOSPrinter1.CoverOpen = True Then
        MsgBox "Cover is open!"
End If
```

This and many other events can also be checked by firing a StatusUpdateEvent.

```
[Event management]
Private Sub OPOSPOSPrinter1_StatusUpdateEvent(ByVal Data As Long)
        If Data = PTR_SUE_COVER_OPEN Then
                MsgBox "Cover is open!"
        End If
End Sub
```

StatusUpdateEvent can return information on the following items.

STATUS INFORMATION

PTR_SUE_COVER_OPEN	Cover is open.

PTR_SUE_COVER_OK	Cover is closed.
PTR_SUE_REC_EMPTY	Receipt paper is out.
PTR_SUE_REC_PAPEROK	Receipt paper is OK.
PTR_SUE_IDLE	Printer State is idle.

When the FlagWhenIdle property is set to TRUE, PTR_SUE_IDLE is sent to inform the application that the printer is idle. Other than when data is being sent, the printer is in an idle state, so if FlagWhenIdle is TRUE, an event will be fired when printing is finished. After the event is fired, FlagWhenIdle will be set to FALSE. By using this value, the information below can be found out.

*Finding out when multiple asynchronous print jobs have finished printing. When multiple asynchronous print jobs have been sent to the printer, it is possible to know when they have finished printing. After setting the AsyncMode property to TRUE and running the PrintNormal method, change the FlagWhenIdle property to TRUE. When all data has finished printing, the printer becomes idle and a StatusUpdateEvent is fired to the application with the value of PTR_SUE_IDLE.

4.4.2.2 Printer Errors and Status

A change in printer status when asynchronous data is being sent is made available to the program by the firing of an ErrorEvent and StatusUpdateEvent. When the printer changes status while nothing is happening, the change is told to the program by a StatusUpdateEvent only.

As an example, assume that the printer cover becomes open. Usually, when data is not being sent to the printer and the cover is opened, a StatusUpdateEvent is fired to the application. After the AsyncMode property is set to TRUE and a method is used to print data, if the cover is opened while the data is being sent, the program is notified by an ErrorEvent. ErrorEvents are fired when the error has interrupted the data that is being sent. Only StatusUpdateEvent will fire when the error does not effect the data and the data will continue being sent as normal.

Reasons for the ErrorEvent being fired and the corresponding error names are listed below.

ResultCode/ ResultCodeExtended	Reason
OPOS_E_ILLEGAL	There is an abnormality with the device. (Includes the following 1 error)
OPOS_E_EXTENDED	Error determined by the device's SO (Includes the following 4 errors)
OPOS_EPTR_COVER_OPEN	Cover is open.
OPOS_EPTR_REC_EMPTY	Receipt paper is empty.
OPOS_E_FAILURE	Hard error (Includes the following 6 errors).
OPOS_EPTR_UNRECOVERABLE	Error that cannot be recovered from.
OPOS_EPTR_CUTTER	Error with the auto cutter.
OPOS_EPTR_MECHANICAL	Mechanical error.

OPOS_EPTR_OVERHEAT	Head overheat error.
OPOS_EX_DEVBUSY	Device busy error.
OPOS_EPTR_REC_CARTRIDGE_REMOVED	Receipt cartridge is removed.
OPOS_EPTR_REC_CARTRIDGE_EMPTY	Receipt cartridge is empty.
OPOS_EPTR_REC_HEAD_CLEANING	Receipt head starts cleaning.

After an error occurs, more detailed information about the error can be obtained from the ErrorLevel, ErrorStation, and ErrorString properties.

4.4.2.3 ESC/POS commands

When you use ESC / POS commands to control the printer, you can get the status by using "status command" including Auto Status Back command (ASB.) Please refer to "ESC / POS APG."

4.5 NV memory

This printer has NV memory (Non-volatile). The data of NV memory remains after you turn off the power. The NV memory is available in two ways.

1. NV Graphics

   Please refer "NV Graphics Printing" (page 4-8) for details of the function.

2. User NV memory

   There is free area in the NV memory that the user can use. You can use this free area for notations, to write other character information, or for many other purposes. The data remains after you turn off the power. Use ESC / POS commands to read and write this data. The following are examples of purposes.

   - Date of the printer for maintenance
   - ID definition for developer or POS system

   Note
   When you use User NV memory area by using OPOS or APD, you have to use "Direct I/O method" or "Control A font." Please contact EPSON or your dealer for details.

Note the following when writing to and erasing NV memory.

❑ The following restrictions apply when performing NV memory operations (including data writing and erasing).

- The paper FEED button must not be used to feed paper.
- The real-time command must not be executed.

- The ASB status will not be sent, even when the ASB function is set to enabled.

❑ The printer sometimes enters the Busy state while data is written to NV memory. It is important not to send data from the host computer while the printer is in the Busy state, as it will be incapable of processing any received data.

❑ Frequent use of the functions for writing to and erasing data from NV memory can damage the memory. As a rule in using the various commands, avoid writing to NV memory more than 10 times per day.

4.6 NV Graphics Printing

This printer has an "NV Bit-Graphics" Function. This function provides printing Graphics (e.g. a shop logo.) This function is available for any control method (APD, OPOS, ESC/POS command.)

EPSON provides a utility, "TMFLogo," that enables registration of a bitmap image in the NV memory of an EPSON TM series printer. The bitmap image in the NV memory can be printed with the printer by using each control method.

	Printable Size	Printing method
NV Graphics	<width> Paper width, or less than paper width. <height> 1200dot (normal mode) 2400dot (double-height mode)	Store Store NV Graphics to NV memory by TMFLogo utility in device specific settings on the SetupPOS utility. If you store the bitmap in NVRAM, it is not necessary to restore it unless the NV memory is deleted.
		Print Depends on each control method.

Note

NV graphics data shares the domain used by user NV memory record data; therefore, the entire capacity of the domain to which NV graphics data and user NV memory data are defined is targeted. The TM-P60's entire capacity is 384 KB.

Example: The NV memory can store 64 items graphics data when the file size of a graphic is 6 KB.

4.6.1 Advanced Printer Driver

4.6.1.1 How to print "NV Graphics"

APD prints a stored "NV Graphics" by using "Control font." See the User's Manual of the Advanced Printer Driver for details.

4.6.1.2 Printable bitmap format in APD

The printable bitmap formats are formats that meet all the following condition.

❑ When using "NV Graphics"

- Depends on the TM Flogo utility. (.BMP format)

4.6.2 OPOS

EPSON OPOS ADK provides a tool, “TMFLogo” that enables registration of a bitmap image in the NVRAM of an EPSON TM series printer. The tool can be used from the device specific settings of the SetupPOS utility. The bitmap image in the NVRAM can be printed with a printer by using the DirectIO method. Concerning the available NVRAM size for the TM-U220, refer to the ADG for TM-U220 in the OPOS ADK.

4.6.2.1 Printing method

Print stored bitmap by DirectIO method.

- *Command : PTR_DI_PRINT_FLASH_BITMAP

Note
NV graphics data shares the domain used by user NV memory record data; therefore, the entire capacity of the domain to which NV graphics data and user NV memory data are defined is targeted. The TM-P60’s entire capacity is 384 KB.

4.6.2.2 LetterQuality

It is possible to change the speed and quality of a bitmap by using the XXXLetterQuality property.

RecLetterQuality = TRUE ‘print Receipt’s bitmap in quality mode.
RecLetterQuality = FALSE ‘print Receipt’s bitmap in speed mode.

4.6.2.3 Setting of printing position by escape sequence

POS Printers support escape sequences that can be treated as printing data. The following commands are the escape sequence command for setting of printing position.

Name	Data	Remarks
Center	ESC |cA	Aligns following text in the center.
Right justify	ESC |rA	Aligns following text at the right.
Normal	ESC |N	Restores printer characteristics to normal condition.

Note1: manner of ”ESC |cA” and “ESC |rA”
Characteristics are reset at the end of each print method or by a “Normal” sequence, so these escape sequences cannot be used in the following manner.

OPOSPOSPrinter1.PrintNormal PTR_S_RECEIPT, Chr(&H1B) + ”|cA” + ”123”
OPOSPOSPrinter1.PrintNormal PTR_S_RECEIPT, “456” + Chr(13) + Chr(10)

The “123” characters will be printed in the center, but not under “456”. When using a new method to print characters, it is necessary to add the desired escape sequence again.

Note2 : limitation of "ESC \|cA" and "ESC \|rA"
**During rotated printing mode (Left90, right90), these escape sequences will not work.*
**These will not work if they are not the first character of a line.*
**It is not possible to use these on PrintBitmap method.*

4.6.2.4 Printable bitmap format in OPOS

The printable bitmap formats are formats that meet all the following conditions.

- ❏ BMP files
- ❏ Monochrome, 16-color (4 bit), 256-color (8 bit)
- ❏ Uncompressed

4.6.3 ESC/POS command

See "ESC/POS Application Programming Guide" about the method.

4.6.4 Tips for Visual Basic

When programming with Visual Basic, limitations prevent data from 81h through 9Fh and from E0h through FEh from being sent as characters. Therefore, you may be not able to print a part of Page 0 (for example ä, ü, ë)in Visual Basic.

However, you can use the following procedure to send this data.

```
Dim Send_ data(0) As Byte
Send_data(0) = &h81 '1 byte of sending data
MSComm1.Output = Send_data
```

Appendix A
The Difference Between TM-P60 and TM-T88II/III

TM-P60 is able to print with 42 print columns (when paper width is 58mm and Font B is printed [default]). The number of print columns is the same as that of the TM-T88II / III (when paper width is 80mm and Font A is printed [default].) Therefore,the TM-P60 is able to print with same layout as TM-T88II / III.

This chapter is FAQ for the difference between the TM-P60 and the TM-T88III.

A.1 Can TM-P60 print with TM-T88II/III printer driver?

Unforunately, the answer is No. If you drive the TM-P60 with a TM-T88II / III printer driver (OPOS, or Advanced Printer Driver), the printer doesn't work correctly. You have to use a printer driver for the TM-P60.

A.2 Can TM-P60 send back status to host PC the same as TM-T88II/III?

The answer is yes; however, the kind of status is little different between the TM-P60 and the TM-T88II / III. The differences are shown in the following table.

Status name	TM-T88II/III	TM-P60	Comment
Drawer status	Supported.	Not supported	TM-P60 doesn't have drawer kick out connector.
Roll paper near end	Supported.	Not supported	TM-P60 doesn't have near end detector.
Roll paper cover open error	Supported.	Not supported	TM-P60 doesn't have the error.
Battery remaining amount	Not supported.	Supported	TM-T88II/III doesn't have battery.

Appendix B
Wireless LAN Setup Detailed Information

This appendix describes setting methods for wireless LAN. There are two methods: using TMNetWinConfig (utility software), and using your web browser. To use either method, you have to install the TCP / IP protocol into your operating system.

For instructions on installing TCP / IP protocol see "Setting the TCP / IP protocol in Your Operating System" on page B-1.

For instructions on the wireless LAN setting of the TM-P60 using TMNetWinConfig (utility), see "TMNetWinConfig" on page B-4.

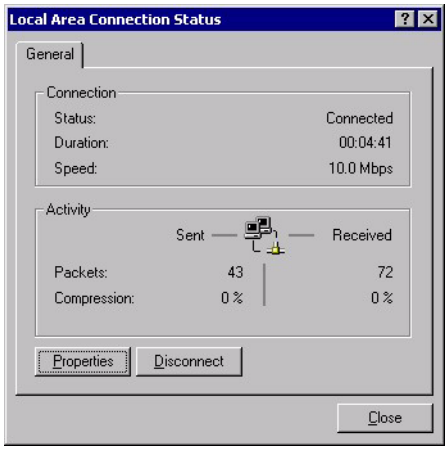
For instructions on wireless LAN setting of the TM-P60 using your web browser see "Setting Using a Web Browser" on page B-28.

B.1 Setting the TCP/IP protocol in Your Operating System

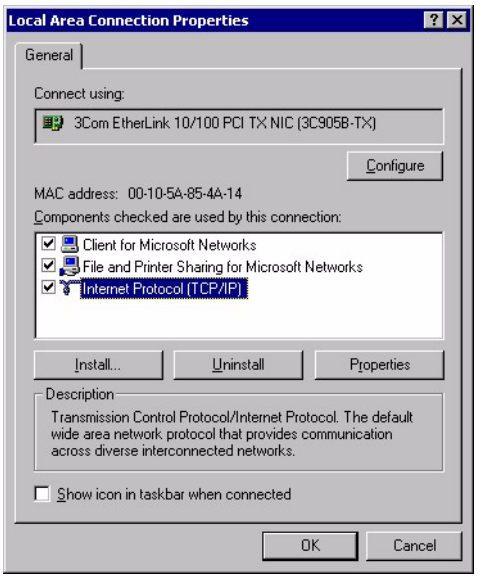
To set the IP address, you need to install the TCP / IP protocol in your operating system. How to set the TCP / IP protocol is explained for Windows 2000 professional and Windows XP professional.

B.1.1 Windows 2000

1. Double-click the Network and Dial Set Up icon in the Control Panel; then click Local Area Connection Status.



2. Click Properties and check whether the Internet Protocol (TCP/IP) check box is checked. If not, click the check box.

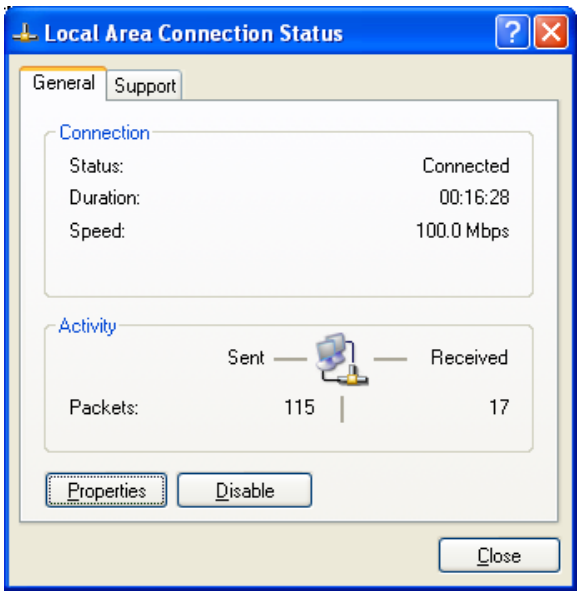


Note:
After the TCP/IP is installed, restart your computer and move on to the Installing TMNetWinConfig section.

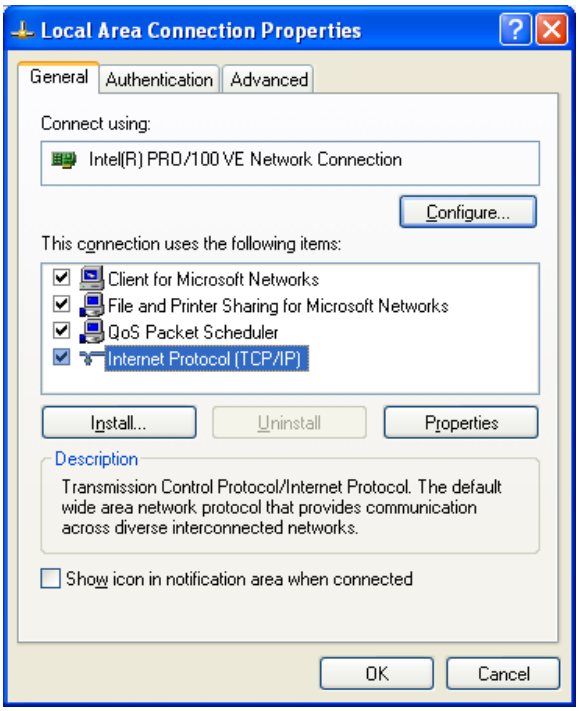
B.1.2 Windows XP

1. Click the Network and Internet Connections icon in the Control Panel; then click Network Connections.

2. Double-click the Local Area Connection icon. The Local Area Connection Status dialog is displayed.



3. Click Properties and check whether the Internet Protocol (TCP / IP) check box is checked. If not, click the check box.



Note:
After the TCP/IP is installed, restart your computer and move on to the Installing TMNetWinConfig section.

B.2 TMNetWinConfig

This section describes the details of the TMNetWinConfig, which is a utility for setting up a wireless LAN environment.

B.2.1 Install

Note:
After TMNetWinConfig is installed, if you add or remove protocols or services, TMNetWinConfig might not work correctly. In this case, uninstall TMNetWinConfig and reinstall it.

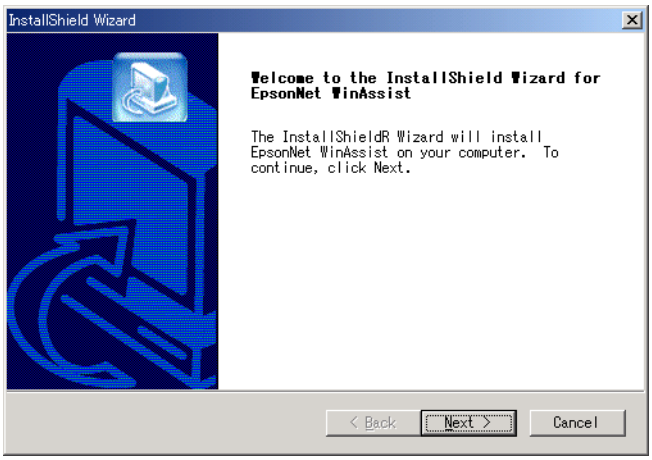
B.2.1.1 Installation Environments

Your computer should meet the following conditions:

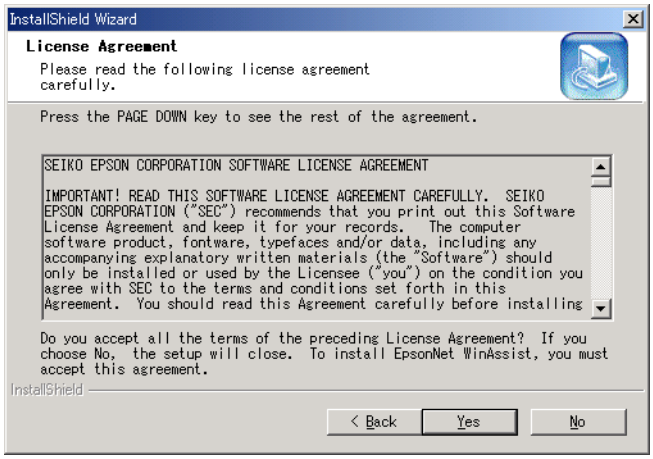
- ❏ The hard disk must have unused memory of 3 MB or more.
- ❏ The operating system must be one of the following:
  Windows 2000 professional, Windows XP professional.
- ❏ The PC must be an IBM PC / AT compatible with one of the operating systems mentioned above.

B.2.1.2 Windows 2000

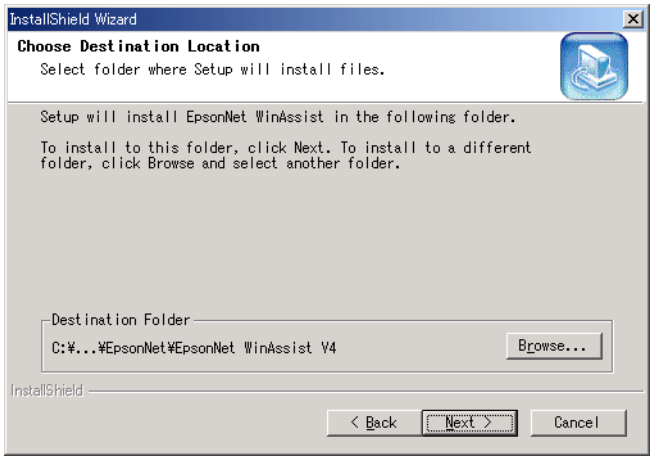
1. Unzip the file and start Setup.exe.
2. The Choose Setup Language dialog is displayed. Select the language and click OK.
3. The Welcome dialog is displayed. Click Next.



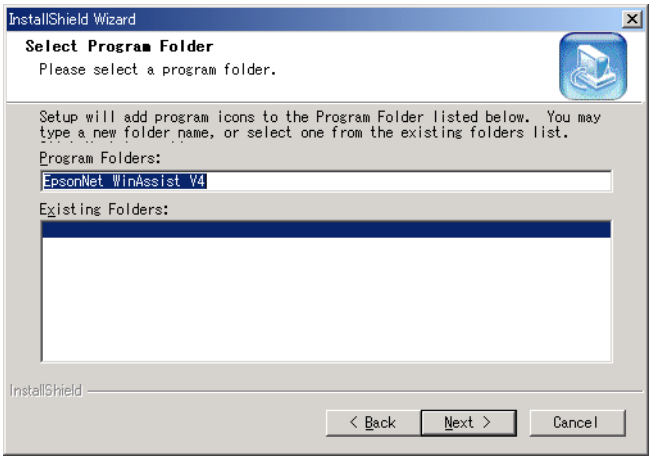
4. The License Agreement dialog is displayed. After confirming the contents, Click Yes.



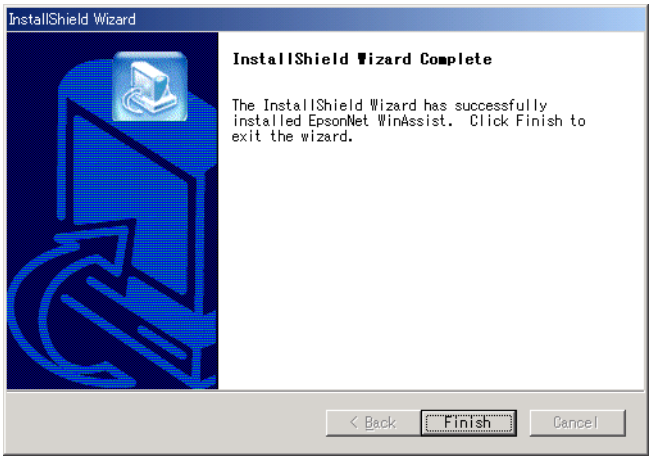
5. The Choose Destination Location dialog is displayed. Select the folder for installation and click Next. The default is "C:\Program Files\EpsonNet\EpsonTMNetWinConfig\."



6. The Select Program Folder dialog is displayed. Select the program folder for installation and click Next. The default is “EpsonTMNetWinConfig.”



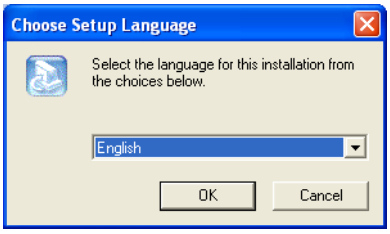
7. When the installation is finished, click Finish.



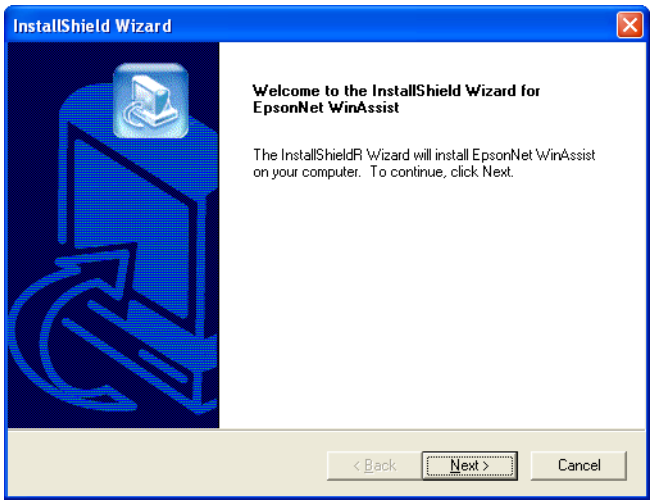
B.2.1.3 Windows XP

1. Unzip the file and start Setup.exe.

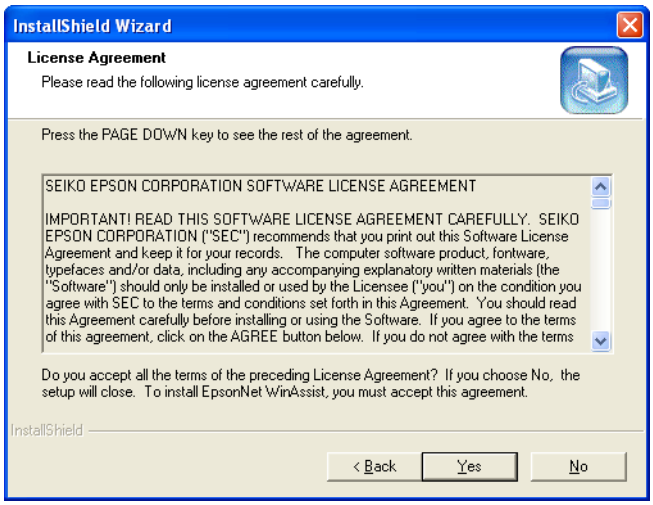
2. The Choose Setup Language dialog is displayed. Select the language and click OK.



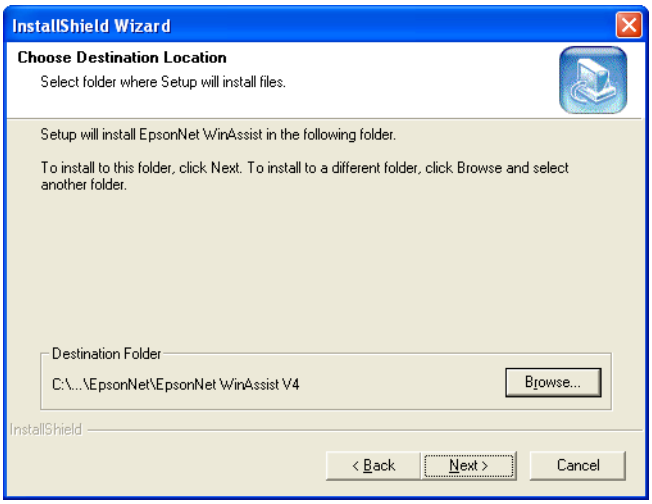
3. The Welcome dialog is displayed. Click Next.



4. The License Agreement dialog is displayed. After confirming the contents, Click Yes.

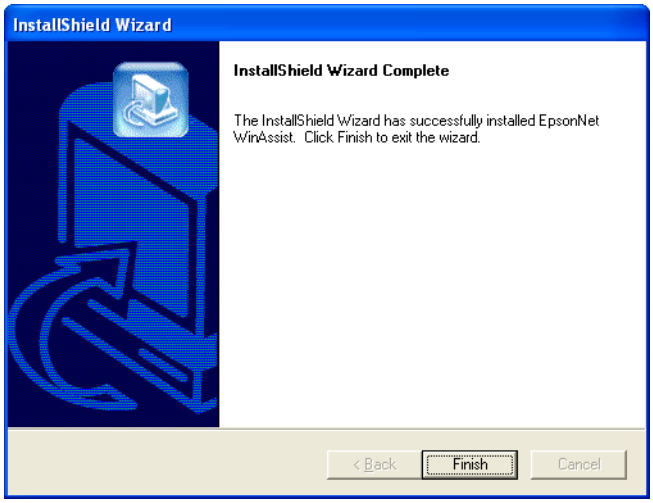


5. The Choose Destination Location dialog is displayed. Select the folder for installation and click Next. The default is “C:\Program Files\EpsonNet\EpsonTMNetWinConfig\.”



6. The Select Program Folder dialog is displayed. Select the program folder for installation and click Next. The default is “EpsonTMNetWinConfig.”

7. When the installation is finished, click Finish.



B.2.2 Operating

⚠ CAUTION:

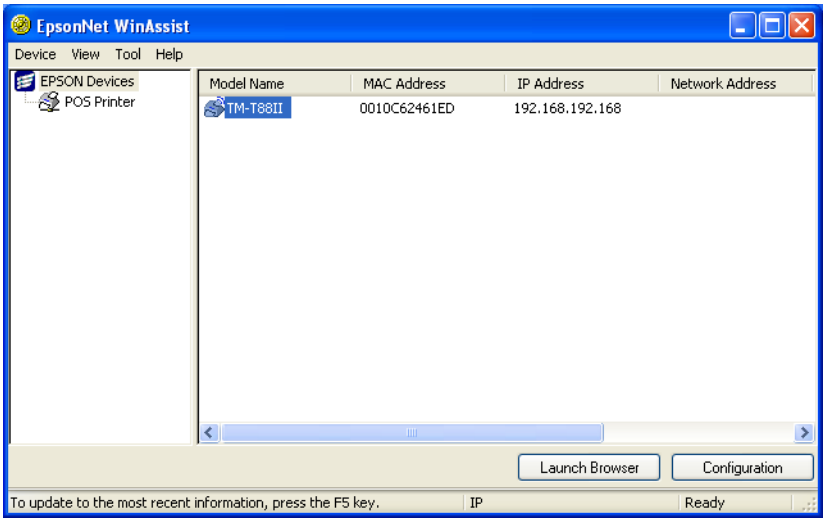
Be sure not to turn off the printer or send printing data to the printer while setting. Do not use the same IP address as that of any other network device or PC.

B.2.2.1 IP Address Setting

Here, as an example, how to set the IP Address in Windows XP is explained.

1. Make sure Windows is running and a TM-P60 is turned on.
2. Click Start, point to All Programs, point to TMNetWinConfig; then click TMNetWinConfig.

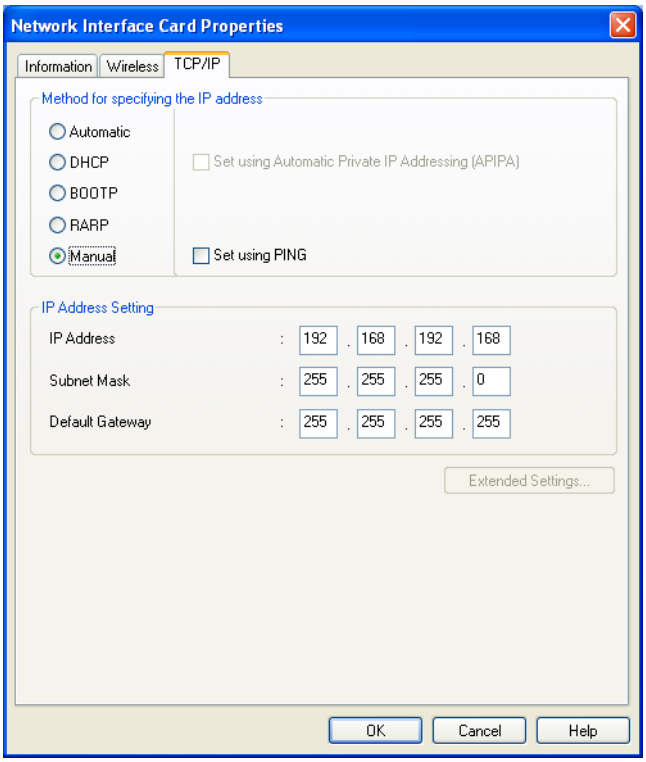
3. Click the printer for which you want to set the IP address, and then click the Configuration button. (You might have to wait for 10 seconds or more to view the TM-P60 over the network on your screen.)



Note:

If you have connected more than one printer to the network and do not know for which printer you want to set the IP address, you can check the printer by finding out the MAC address of the TM-P60. The MAC address can be found on the status sheet. For printing the status sheet, refer to "Status sheet printing" on page 3-4.

4. Click the TCP/IP tab. Under Method for specifying the IP address, select one of the following: Automatic, or Manual.



Note:

To use "Method for specifying the IP address: Auto," a server for DHCP is necessary. If there is no corresponding server, do not use these settings. See your network operating system documentation for the settings.

When "Method for specifying the IP address: Auto" is specified when there is no DHCP server, the TM-P60 gets the IP address by APIPA (Automatic Private IP Addressing) method. In this case, the TM-P60 requires about 1 minitue to get the IPaddress after the power is turned on.

The default setting is as follows.

Method for specifying the IP address: "Manual."
IP Address: 192.168.192.168
Subnetmask: 255.255.255.0

5. Assign the IP address, the Subnet mask, and the Default gateway. If you use DHCP to acquire an IP address, you cannot assign these items. Ask your administrator for the IP address and the Default gateway to be set.

Note:
If a server or router acts as a gateway, type the gateway address.

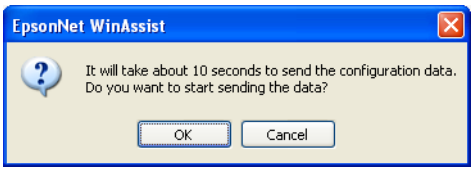
When you select the "Automatic method," the IP address is disabled to enter, and subnet mask, and default gateway settings are ignored.

⚠ CAUTION:

Be sure that the Set using PING box is turned on if a setting by PING or ARP command is permitted.

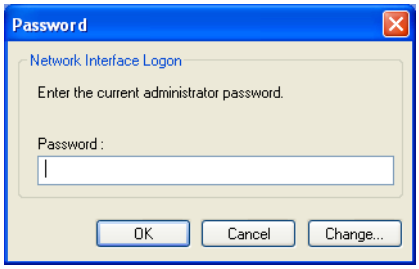
6. Click the OK button.

7. Click the OK button again to be sure.



8. Enter the password set in the print server; then click OK. If the password is not set, just click OK without entering a password.

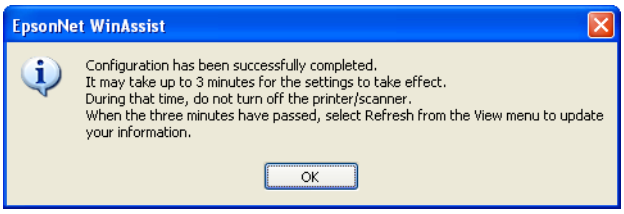
Note:
For information on the password function, see "password" on page B-28.



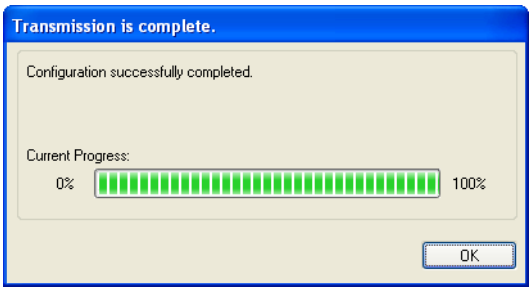
⚠ CAUTION:

After clicking OK, you must not turn off the printer while the new settings are being sent to the TM-P60.

9. The update is complete when the message “Configuration has been successfully completed” appears; then click OK.



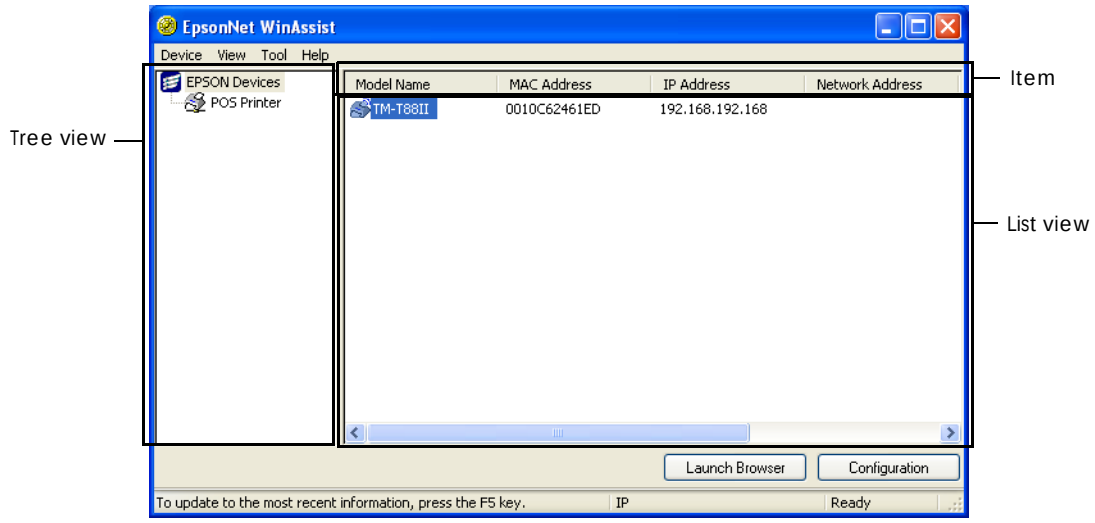
10. When the message “Transmission is complete” appears, click OK.



Note:
To get the information for the TM-P60 for the other segments, see the Functions section below.

B.2.3 Functions

This section describes the functions, including options, of the TMNetWinConfig. The main dialog box is shown below.



.

Item	Explanation
Tree view	The tree structure indicates the printer list.
Item	You can change the order by clicking on an item. You can also adjust the viewing size of the item by dragging the dividing line between the items.
List view	Indicates the information for the TM-P60.
Launch Browser	Select the Model Name and then click this button. Broswser is run and shows you to configure from web brawser.
Configuration	Select the Model Name and then click this button. The setting window of TMNetWinConfig appears.

Note:

The "Launch Browser" funtion requires Internet Explorer 4.0 or later.

B.2.3.1 Menu Bar

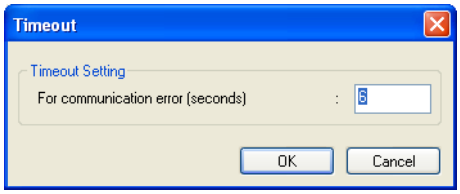
This table shows each item and its function.

Menu	Sub Menus		Explanation
Device	Configuration		Start the setting of the TM-P60 selected
	Launch Browser		Start up the TMNetWebConfig
	Quit		Close the TMNetWinConfig
View	Refresh		Find the printers and update the list to show the latest information.
Tool	Time-out		Set the time-out for data transmission and reception to 2 to 120 seconds.
	Search Method (*)		Set the search method.
	Search Options	IP	Set the UDP/IP Search Options setting.
		IPX	Set the IPX Search Options setting.
		COM	Set the COM Search Options setting.
	Firmware Update		Update the firmware. (usually you don't need to use this function)
Help	Help Topics		TMNetWinConfig help
	About TMNetWinConfig		Version information and copyright information.

(*) When you use this function, Windows printing cannot be done while opening the TMNetWinConfig. You should use this option only if you connect TM-P60 with an RS-232C cable to your PC.

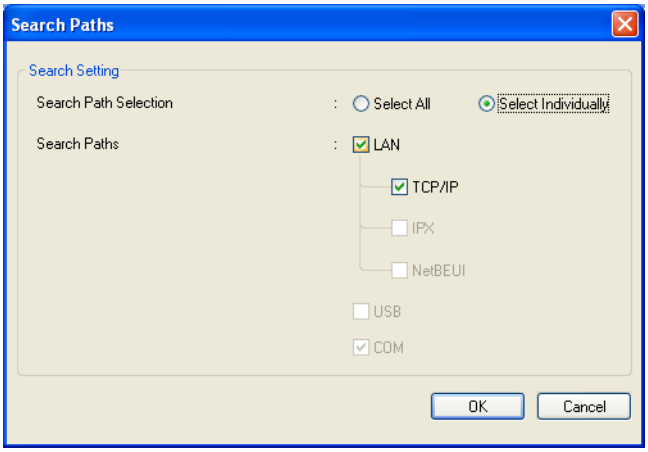
Time-out

Use Time-out setting to set the time-out for data transmission and reception. This can be set from 2 to 120 seconds. If the time-out exceeds the value set, a communication error occurs.



Search Method

Set the Search path.



Item	Explanation
Select All	All selectable Search methods are set. (*)
Select Individually	Selectable Search method is set individually.

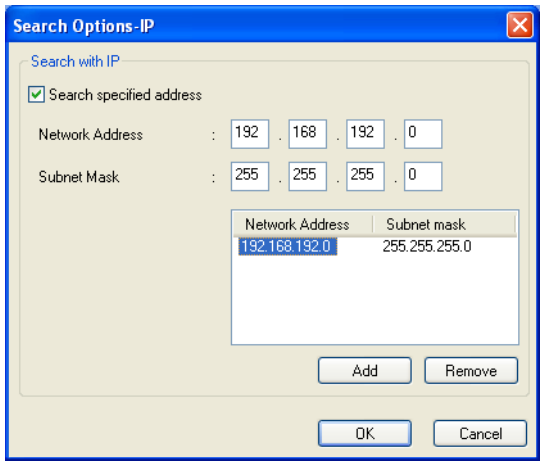
Note:

When you use check "Select All" or "COM," Windows printing cannot be done while opening the TMNetWinConfig. You should use this option at only if you connect the TM-P60 with an RS-232C cable to your PC.

Search Options - IP

This function is to search for print servers in other segments. Set the network address and the subnet mask. Select Refresh from the View menu or restart TMNet WinConfig to activate the settings.

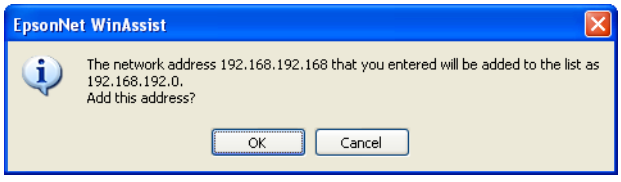
A maximum of 20 network addresses can be registered to the list.



Item	Explanation
Search specified address	When this checkbox is checked, the specified address is searched.
Network Address	Set the network address.
Subnet Mask	Set the subnet mask.
Add	Click Add after entry in Network Address and Subnet Mask; the address is added to the list.
Remove	Select the address from the list and click Remove; the address is deleted.

Note:

Input the host address as 0. If you don't enter 0, the following dialog is displayed. When you click OK, the local address is set as 0. See the help of the utility for details.

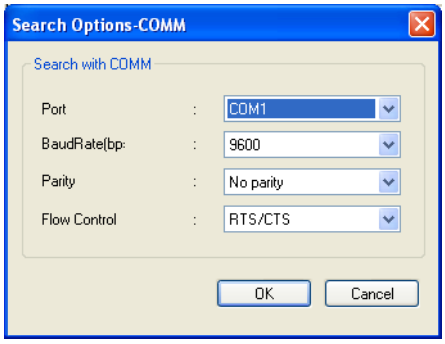


Note:

"0.0.0.0" and "255.255.255.255" cannot be set as the Network address. Also, "255.255.255.255" cannot be set as the Subnet mask.

Search Options - COM

Specify the Searching COM port to match a TM-P60 connected by an RS-232C cable.



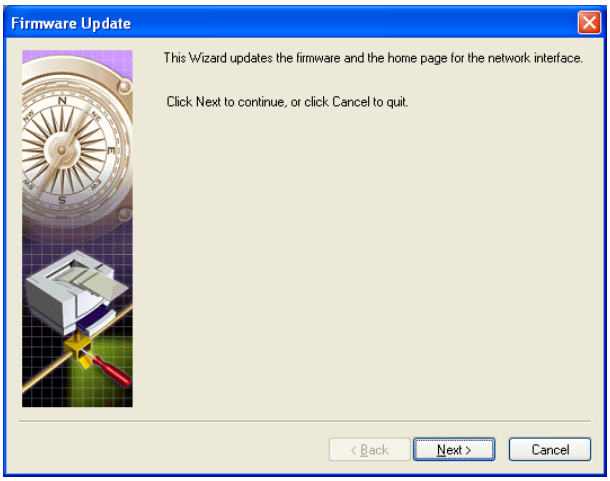
Item	Explanation
Port	Set the COM port number.The COM port numbers that can be used are 1 through 256.
Baud Rate (bps) (See note below.)	Set the baudrate.The baud rate that can be set is one of the following: 9600/14400/19200/38400/56000/57600/115200.
Parity	Set the parity. Set either No Parity, ODD or EVEN.
Flow Control	Set the flow control. Set either NONE, RTS/CTS, or DTR/DSR.

Note:

The TM-P60 supports only the baud rates 9600, 19200, and 384000. When you specify another baud rate with the utility, the utility can't communicate with the TM-P60.

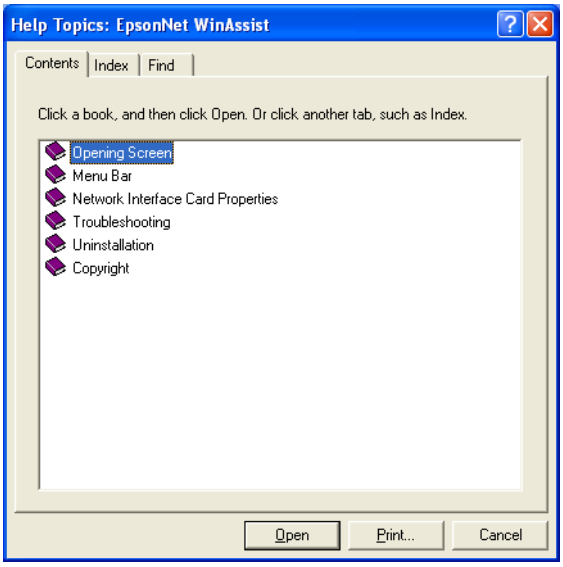
Firmware Update

When you select this menu, the Firmware Update wizard starts up. Usually you don't need to use this function.



Help Topics

Help for the TMNetWinConfig is displayed.



About TMNetWinConfig

The version information of the TMNetWinConfig is displayed. When clicking the mouse on the left in the dialog or pressing the [Enter] key or [ESC] key, the dialog is closed.

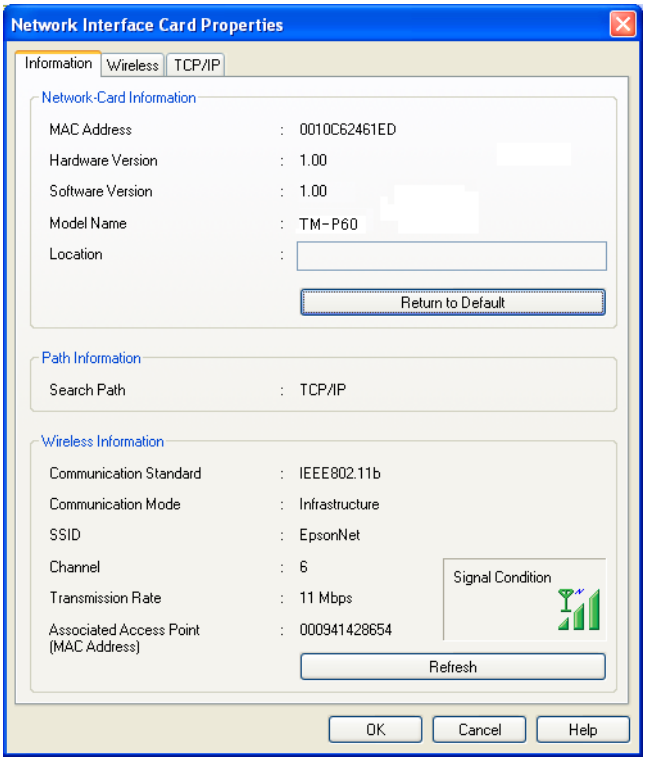
B.2.4 Settings

Start up TMNETWINCONFIG and click the printer you want to set, and then click the Configuration button. The settings dialog is displayed. The TM-P60 current setting contents can be confirmed and be changed.

Setting contents of each head are explained below.

Information

Click the Information tab and dialog below is displayed. You can confirm the current setting of the TM-P60.



❑ Network-Card Information

Information about the Network-Card is displayed.

Item	Explanation
MAC Address	MAC Address is displayed.
Hardware Version	Hardware Version is displayed.
Software Version	Software Version is displayed.
Model Name	Model Name of the TM printer is displayed. (TM-P60)
Location	TM-P60 cannot use this.

- Return to Default button

  This returns the settings of the TM-P60 to the factory settings.

❑ Path Information

Information about Network Card is displayed.

Item	Explanation
Search Path	The protocol used by the Search and the protocol detected by the Search is displayed.

❑ Wireless Information

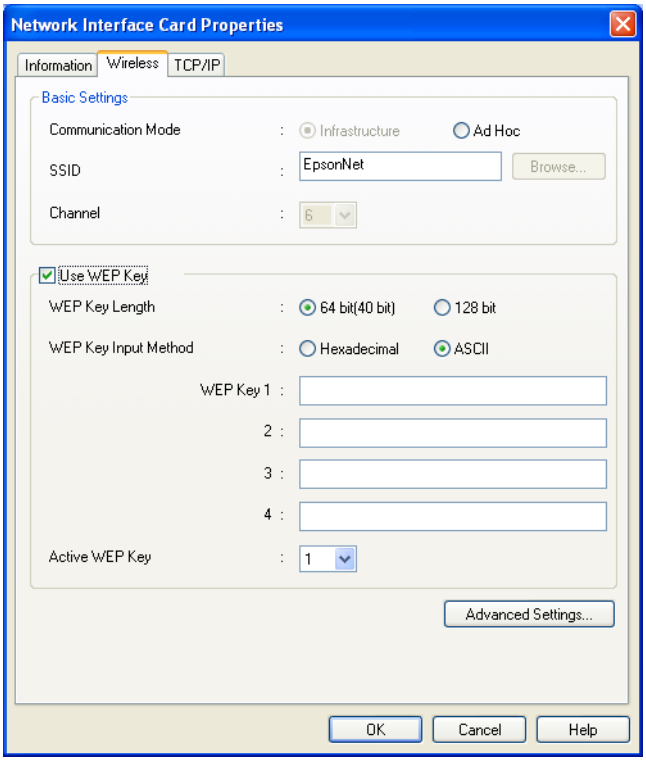
Information about Wireless communication is displayed.

Item	Explanation
Communication Standard	The IEEE communication standard type of the wireless LAN is displayed.
Communication Mode	Communication Mode (Network Mode) (Infrastructure or Ad Hoc) is displayed。
SSID	The wireless Service set of the print server is displayed.
Channel	The channel of the wireless LAN is displayed.
Transmission Rate	The transmission rate of the wireless LAN is displayed.
Signal Condition	The signal condition of the printer is displayed an the icon.  Excellent  Good  Poor  No Connection: There is possibility that it cannot communicate. Unknown :Confirm the setting once again.

- Refresh button — The Wireless Information is updated with the latest information.

Wireless

Click the Wireless tab and the dialog below is displayed. Set the setting of the Communication Mode, SSID, and WEP.



When you click the OK button, the host PC transmits the specified settings to the TM-P60.

❑ Basic Settings

Set the basic setting of the Wireless communication

Item	Explanation
Communication Mode	Set the Communication Mode (Network Mode) of the wireless LAN to either the infrastructure mode or the Ad-Hoc mode. (TM-P60 is fixed to Infrastructure mode except for the factory setting.)
SSID	Set the wireless Service Set (SSID) belonging to the print server. When clicking the Browse button, the list of SSIDs confirmed at present is displayed. You can select the SSID and set it, too.
Channel	If the Network mode is in Ad-hoc mode, sets the channel in the list.

❑ Using a WEP key

When using the WEP Key, check the checkbox and set the following item

Note:

When clicking the "Use WEP Key" checkbox, WEP comes on and Authentication Method of Advanced Settings is set to "Shared Key" automatically. (See "Advanced Settings" on page B-25.)

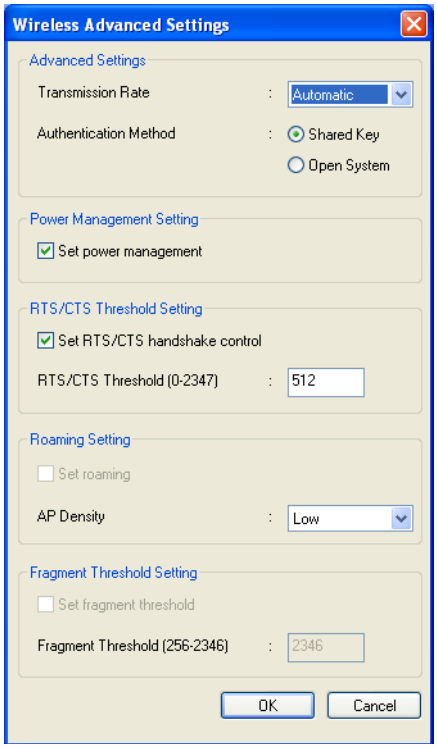
When the "Use WEP Key" checkbox is not checked, WEP is off and Authentication Method of Advanced Settings is fixed to "Open System." (See "Advanced Settings" on page B-25.)

Define WEP key to secure your wireless LAN.

Item	Explanation
Use WEP Key	Check WEP key: ON, Authentication Method of Advanced Settings: "Shared Key". Clear WEP key: OFF, Authentication Method of Advanced Settings: "Open System".
WEP Key Length	Set the length of the WEP key to either 64 bits or 128 bits.
WEP Key Input Method	Set the character of the WEP key to either Hexadecimal or ASCII.
WEP Key 1/2/3/4	Input the WEP key. When setting the WEP key Input Method to ASCII, the optional character string can be input. When setting the WEP key Input Method to Hexadecimal, only the letters of "0"-"9", "a"-"f", "A"-"F" can be input. Also, when setting the WEP Key Length to 64 bits, always input 5 letters by the ASCII character, or always input 10 digits by the Hexadecimal. When setting the WEP Key Length to 128 bits, always input 13 letters by the ASCII character, or always input 26 digits by the Hexadecimal.
Active WEP Key	Select the WEP key for using from 1-4.

❑ Advanced Settings button

The Wireless Advanced Settings dialog is displayed; set the following detailed items.



❑ Advanced Settings

Item	Explanation
Transmission Rate	Select one of the following: Automatic/1Mbps/2Mabps/5.5Mbps/ 11Mbps.
Authentication Method	Set either Shared key or Open System.

❑ Power Management Setting

Note:
When using the TM-P60 in the Ad-Hoc mode, this function is disabled.

It depends on Access point whether using this function is possible or impossible. See "Power Management function" on page 4-3.

Item	Explanation
Set power management	Select Disable/Enable of Power management.

❑ RTS / CTS Threshold Setting

Item	Explanation
Set RTS/CTS handshake control	Select RTS/CTS handshake control Disable or Enable.
RTS/CTS Threshold [0-2347]	Set the value, 0-2347.

❑ Roaming Setting

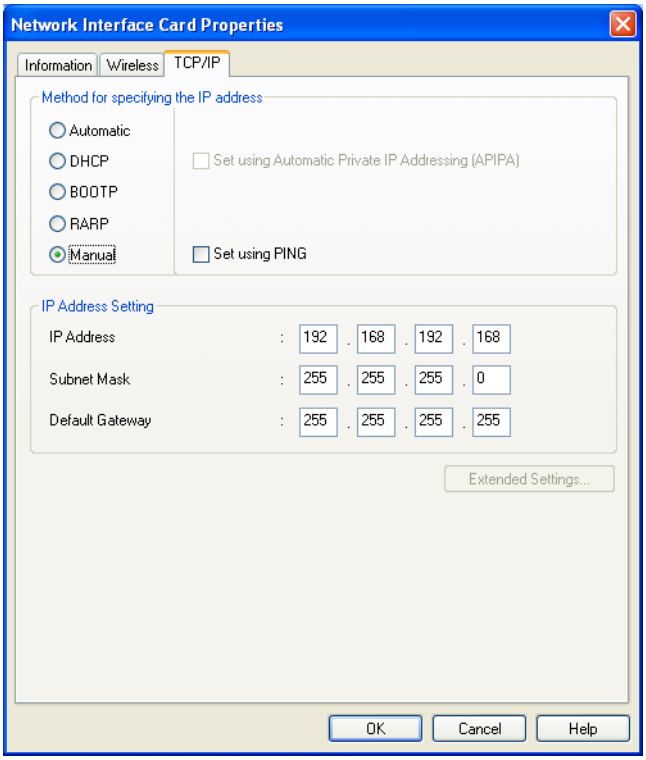
Item	Explanation
Set roaming	Select Disable/Enable of the AP Density.
AP Density	Select the access point density as Low, Medium, or High.

❑ Fragment Threshold Setting

Item	Explanation
Set fragment threshold	Disable or Enable the Fragment threshold.
Fragment Threshold [256-2346]	Set the value between 256-2346.

TCP/IP

Click the TCP / IP tab; the dialog below is displayed. Set the TCP / IP.



❑ Method for specifying the IP address

Item	Explanation
Automatic/ Manual	Select either Automatic/Manual for specifying the IP address. (Other items are disabled)
Set using Automatic Private IP Addressing (APIPA)	Select Disable or Enable for the APIPA (Automatic Private IP Addressing) function. When the Method is set to Automatic, this item is set to Enable.
Set Using PING	Select Disable/Enable the IP address setting by PING.

❑ IP Address Setting

Note:
When using "Automatic" method, these items are disabled.

Item	Explanation
IP Address	Set the IP Address.
Subnet Mask	Set the Subnet Mask.
Default Gateway	Set the Default Gateway.

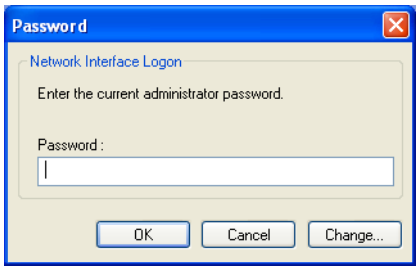
❑ Extended Settings button

This button is disabled. Ignore it.

B.2.4.1 password

TM-P60 has a password function for changing wireless LAN setting. This function prevents anyone except the network administrator from chaning the settings.

When setting the password, click the “change“ button on following screen. The screen is shown when you change any setting.



Note:
The password can also be changed from the web browser. This password function is common for these.

B.3 Setting Using a Web Browser

The TM-P60 has a function to change settings from a PC on which TMNetWinConfig isn't installed by using a web browser such as Internet Explorer.

Note:
Be sure to use Microsoft Internet Explorer 5.0 or later.

B.3.1 Operation

Note:
Set your web browser so that it does not use a proxy server.

1. Start Windows Internet Explorer (or your web browser).

2. Input the IP address of the TM-P60 in the browser address bar and press Enter (Ex. http://192.168.192.168).

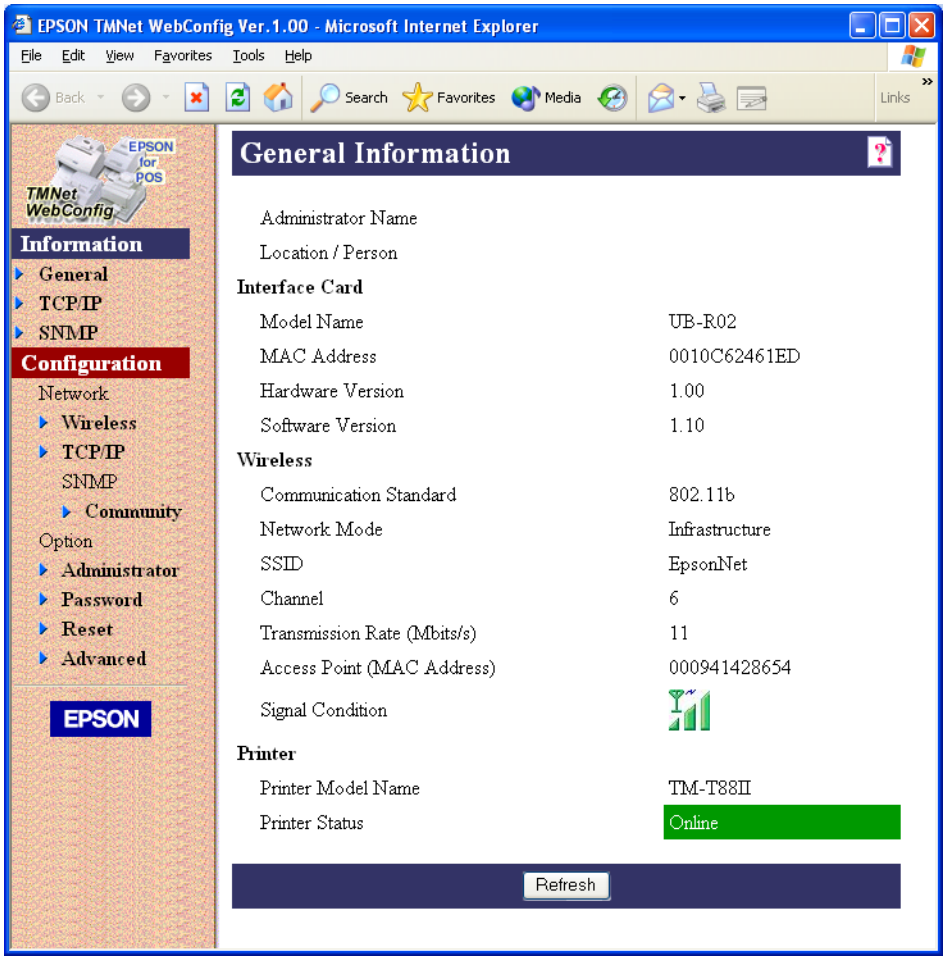
   Note:
   You can confirm the IP address by printing a status sheet. See “Status sheet printing” on page 3-4 for details.

3. The browser displays a dialog box requesting a user name and password. Enter your username and password.

Note:

If you are using the default settings of the TM-P60, click OK without entering a user name or password. If a password is required, you have to contact the Administrator of your wireless LAN. When you wish to reset the printer to the default setting, see "Resetting the printer" on page 3-6.

4. You can modify the parameters by following the menus. You must click Submit to send the change to the printer and then click Reset to make the submission effective on each Web page. If you change the IP address, SSID, etc., you have to change the settings of the host PC and AP to match the printer's setting.

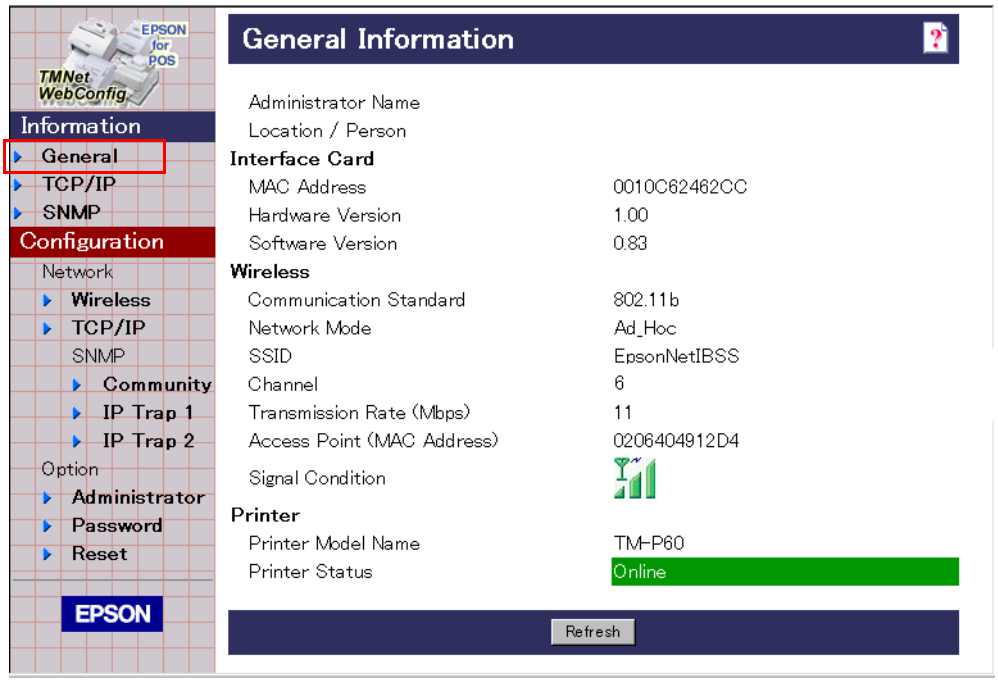


B.3.2 Function

B.3.2.1 Information

General

Click General, following screen is displayed. You can confirm the basic settings of the TM-P60.



❑ Interface Card

Information of the Interface Card is displayed.

Item	Explanation
Administrator Name	Administrator Name is displayed.
Location / Person	Location/Person is displayed.
MAC Address	MAC Address is displayed.
Hardware Version	Hardware Version is displayed.
Software Version	Software Version is displayed.

❑ Wireless Information

Information about the Wireless communication is displayed.

Item	Explanation
Communication Standard	The IEEE communication standard type of the wireless LAN is displayed.
Network Mode	The Network Mode of the wireless LAN is displayed.
SSID	The wireless Service Set of the print server is displayed.
Channel	The channel of the wireless LAN is displayed.
Transmission Rate (Mbits/s)	The transmission rate of the wireless LAN is displayed.
Access Point [MAC Address]	The access point of the wireless LAN is displayed. (It is displayed only when the infrastructure mode is being used.)
Signal Condition	The signal condition of the printer is displayed with an icon.  Excellent  Good  Poor  No Connection: There is possibility that it cannot communicate. Unknown :Confirm the setting once again.

❑ Printer

Information about the printer is displayed.

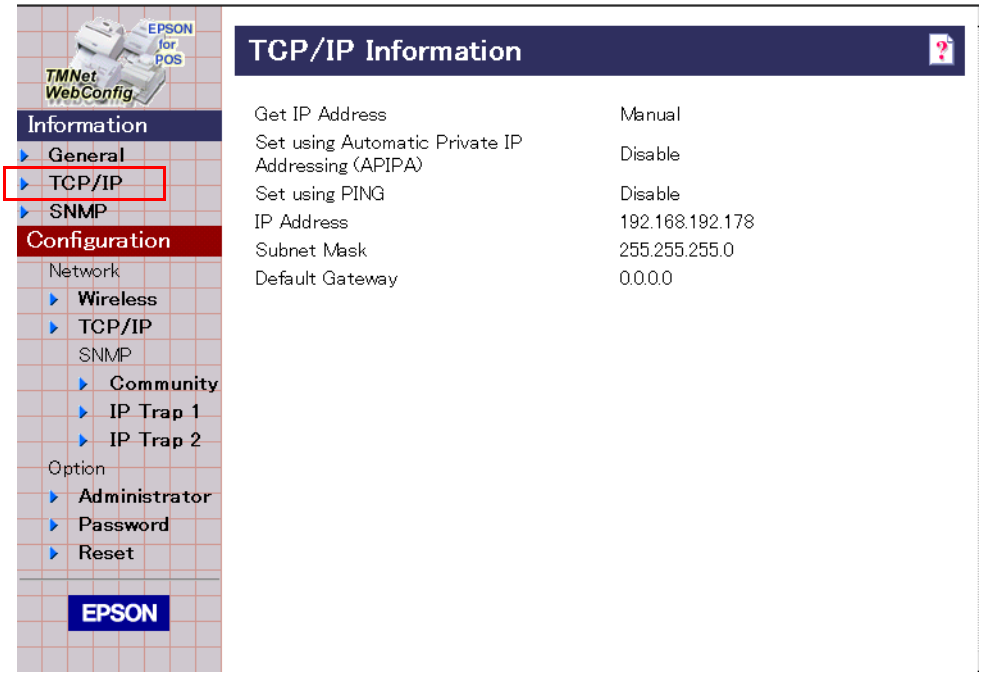
Item	Explanation
Printer Model Name	Printer Model Name is displayed.
Printer Status	Printer status is displayed.

❑ Refresh button

It updates the information with the latest information.

TCP/IP

Click TCP / IP; the screen below is displayed. You can confirm the present setting of the TCP / IP.

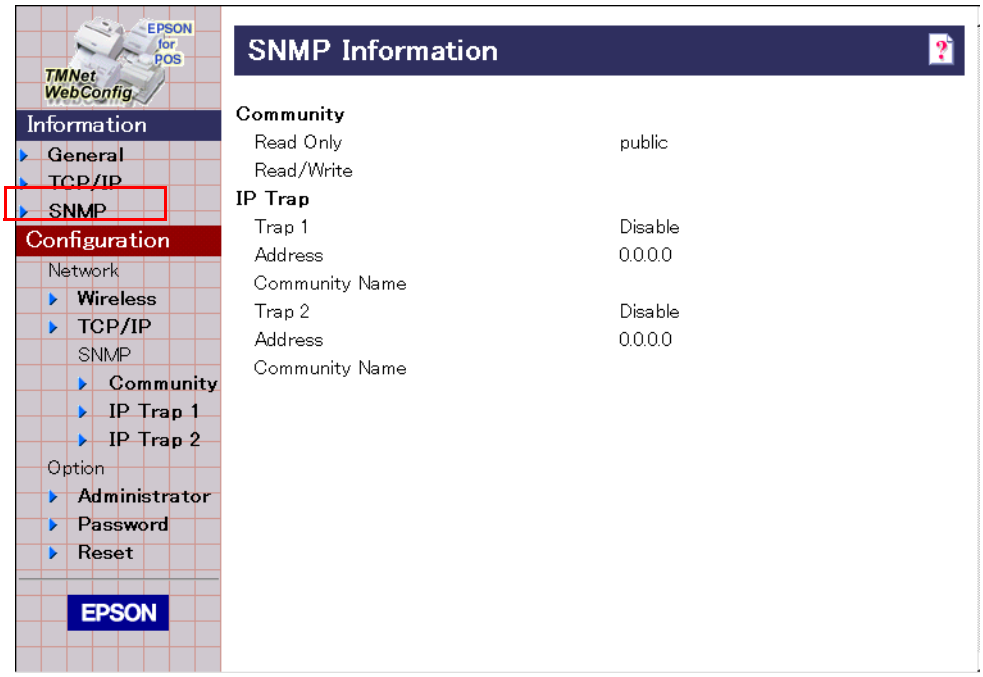


❑ TCP / IP Information

Item	Explanation
Get IP Address	The setting condition of the IP Address setting method is displayed.
Set using Automatic Private IP Addressing (APIPA)	The setting condition of the APIPA (Automatic Private IP Addressing) function is displayed.
Set Using PING	The IP address setting by PING is displayed.
IP Address	The IP Address is displayed.
Subnet Mask	The Subnet Mask is displayed.
Default Gateway	The Default Gateway is displayed.

SNMP

Click SNMP; the screen below is displayed. You can confirm the present setting of the SNMP.



❑ Community

Item	Explanation
Read Only	The Read Community information is displayed.
Read/Write	The Read/Write Community information is displayed.

B.3.2.2 Configuration

Note:

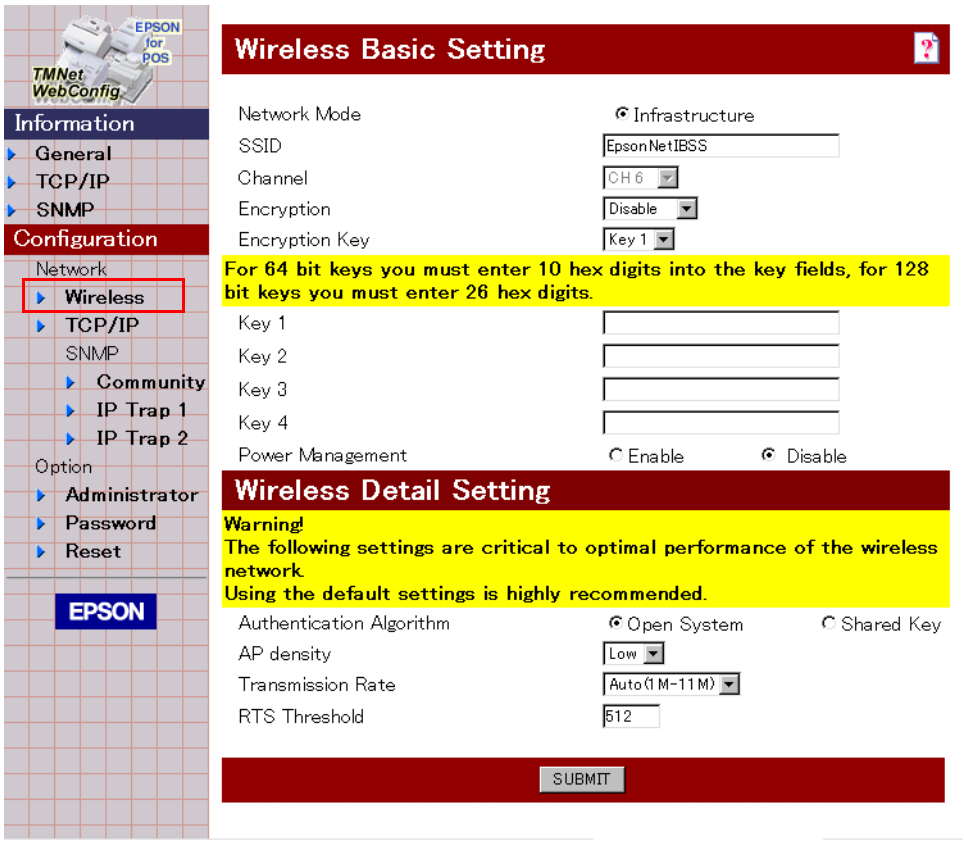
Even if you change each item with the setting screen of the TMNetWebConfig, the setting contents of the TM-P60 are not updated immediately. Click the SUBMIT button on the setting screen to send the setting contents to the TM-P60.

When changing each item of the Wireless, TCP/IP, and SNMP, first click the SUBMIT button on the setting screen. Then all items (Wireless, TCP/IP, and SNMP) are changed on the screen; then reset the printer or turn the power off and back on again.

Then the setting is effective.

Wireless

Click Wireless; the screen below is displayed. Set the Network Mode, SSID, and WEP.



❑ Wireless Basic Setting

Set the basic setting of the Wireless communication.

Item	Explanation
Network Mode	Set the network mode of the wireless LAN to either the infrastructure mode or the Ad-Hoc mode.
SSID	Set the Wireless Service Set (SSID) of the print server.
Channel	Set the channel to use from the list.
Encryption	Set the WEP key to either OFF, WEP 64, or WEP 128.
Encryption Key	Select the WEP key from 1-4.
Key 1/2/3/4	Input the WEP key. When setting the Encryption to WEP 64, always input 10 Hexadecimal digits. When setting the Encryption to WEP 128, always input 26 Hexadecimal digits.

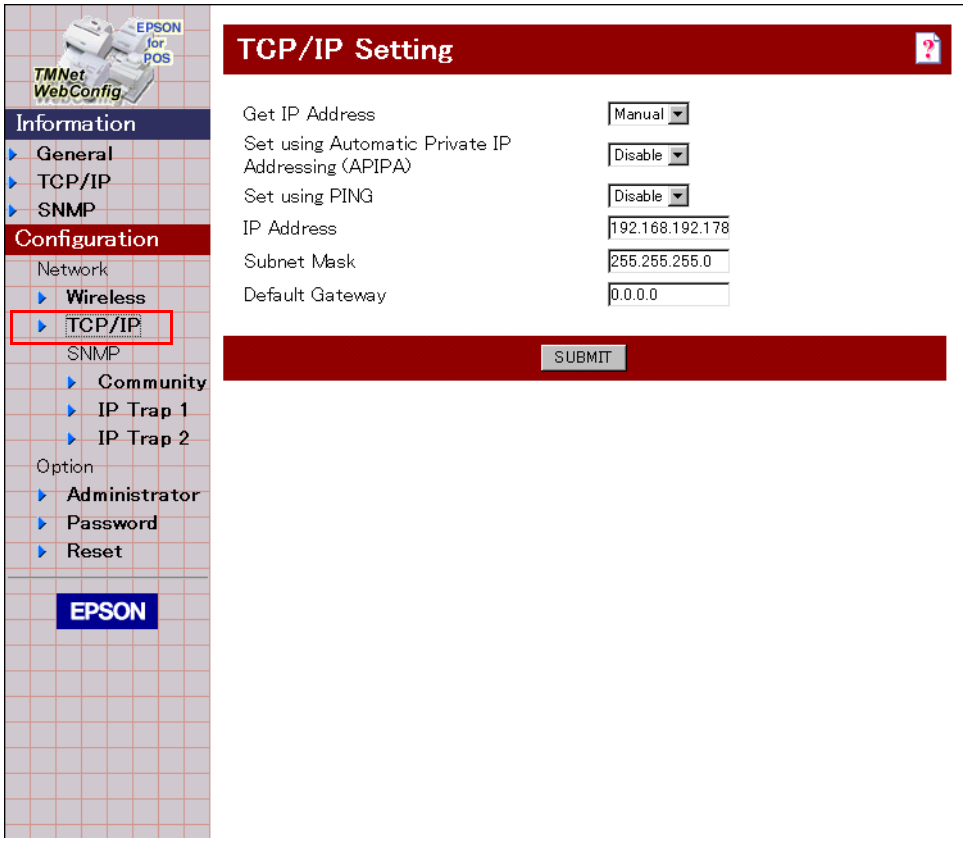
❑ Wireless Detail Setting

Item	Explanation
Authentication Algorithm	Select from Open System/Shared Key.
AP Density	Select the density of the access point from Low/Med/High.
Transmission Rate	Set from Auto (1M-11M)/1M/2M/5.5M/11.
RTS Threshold	Select a value between 0 and 2347.

- SUBMIT button — Click this button after changing the setting contents to send the setting contents to the TM-P60.

TCP/IP

Click the TCP / IP, the screen below is displayed. Set the TCP / IP.



❑ TCP / IP Setting

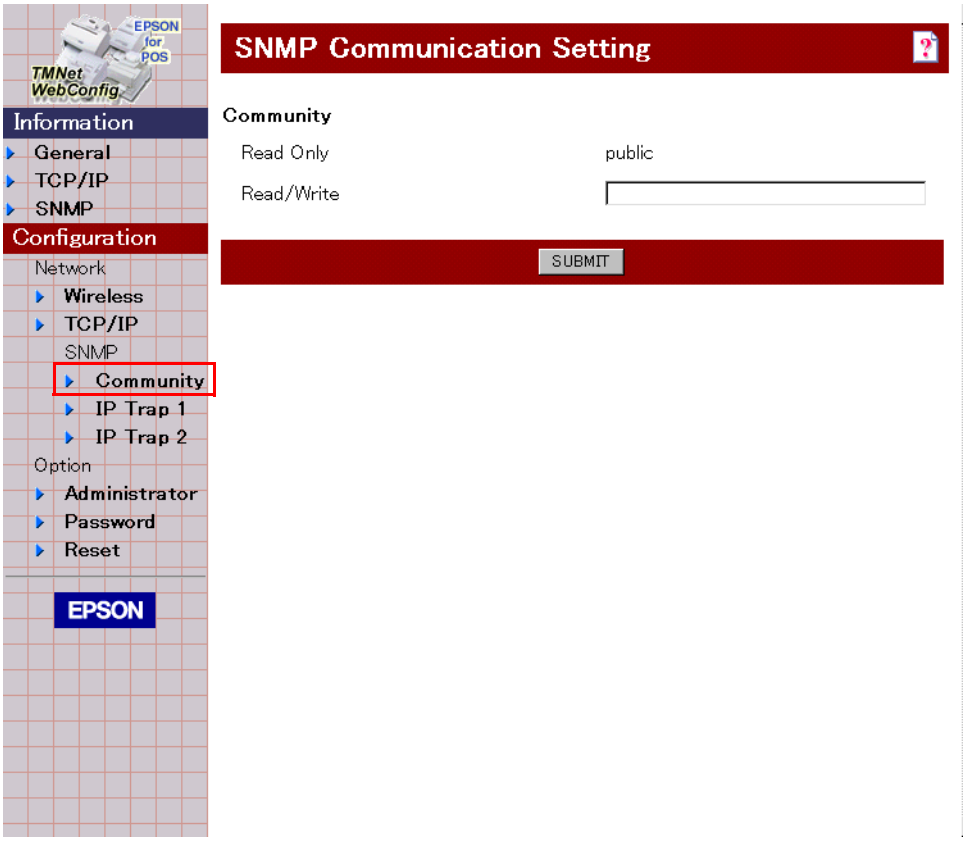
Item	Explanation
Get IP Address	Select either Auto /Manual.
Set using Automatic Private IP Addressing (APIPA)	Select the ON/OFF of the APIPA (Automatic Private IP Addressing) function.
Set Using PING	Select the ON/OFF of the IP address setting by PING.
IP Address	Set the IP Address.
Subnet Mask	Set the Subnet Mask.
Default Gateway	Set the Default Gateway.

- SUBMIT button — Click this button after changing the setting contents to send the setting contents to the TM-P60.

Note:
The "Set Using PING" is changed to "disabled" automaticaly after the IP address is defined by it.

SNMP Community

Click Community; the screen below is displayed. Set the SNMP Communication.



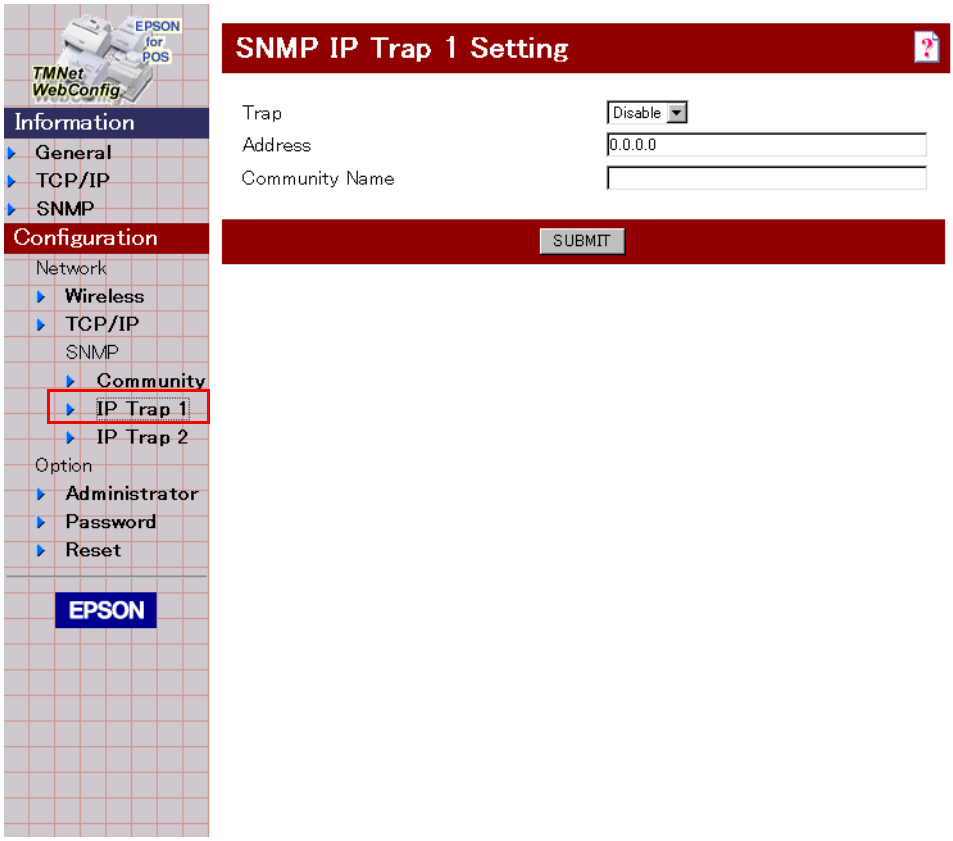
❑ Community

Item	Explanation
Read Only	The setting is "public" only.
Read/Write	Set the Read/Write Community name. (It is possible to input to a maximum 32 letters but the 16 letters from the head can be input.)

- SUBMIT button — Click this button after changing the setting contents to send the setting contents to the TM-P60.

IP Trap 1, IP Trap 2

Click IP Trap 1 or IP Trap 2; the screen below is displayed. Set the administrator.



❑ SNMP IP Trap Setting

Item	Explanation
Trap	Select Disabled/Enabled
Address	Set the Address
Community name	Enter the name

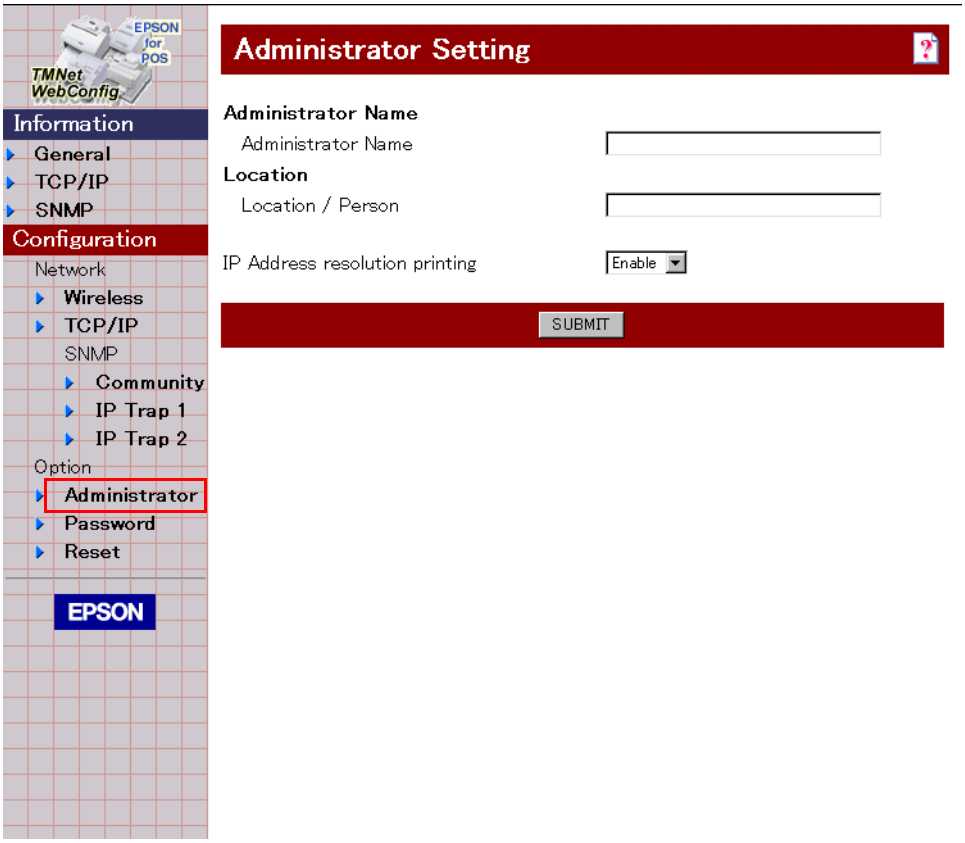
- SUBMIT button — Click this button after changing the setting contents to send the setting contents to the TM-P60.

Note:

The Trap items are "printer is turned on," and all errors.

Administrator

Click Administrator; the screen below is displayed. Set the administrator.



❑ Administrator Setting

Item	Explanation
Administrator Name	Set the Administrator Name.
Location / Person	Set the Location / Person.
IP Address resoluition printing	Set the disabled/enabled.

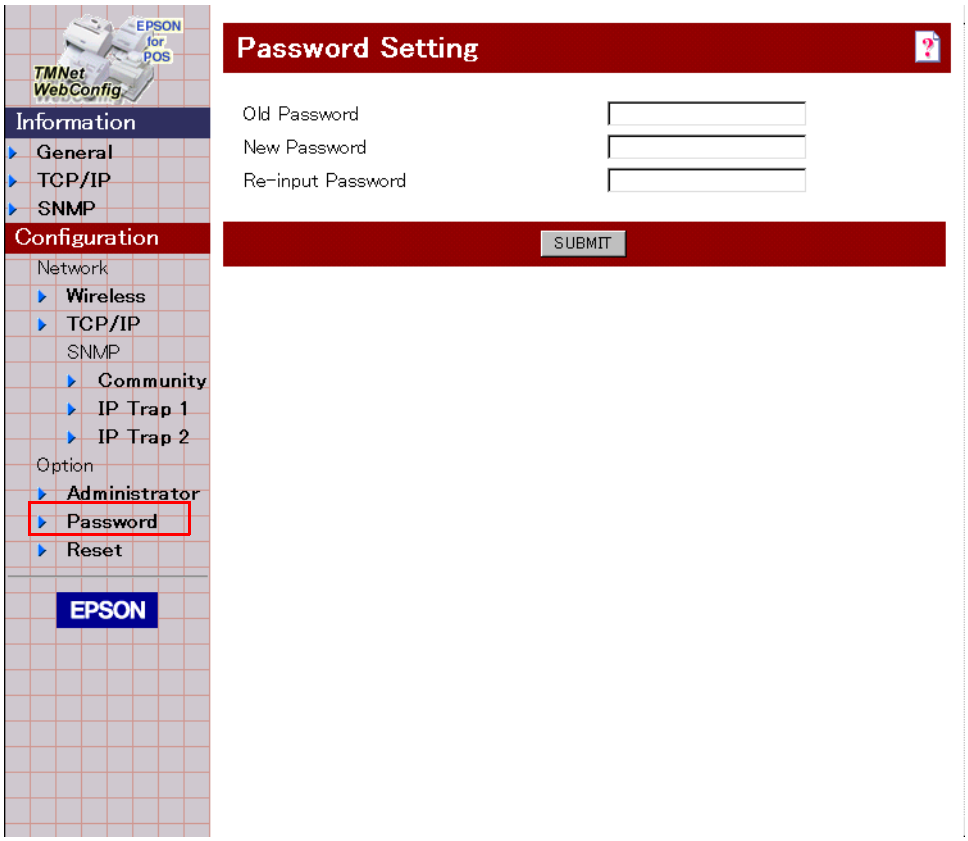
Note:

The "IP Address resolution printing function," it is for "Get IP address: auto" function that prints a specified IP address at the TM-P60 is assigned IP address.

- SUBMIT button — Click this button after changing the setting contents to send the setting contents to the TM-P60.

Password

Click Password; the screen below is displayed. Set the Password.



❑ Password Setting

Item	Explanation
Old Password	Input the old password.
New Password	Input the new password.
Re-input Password	Input the new password again.

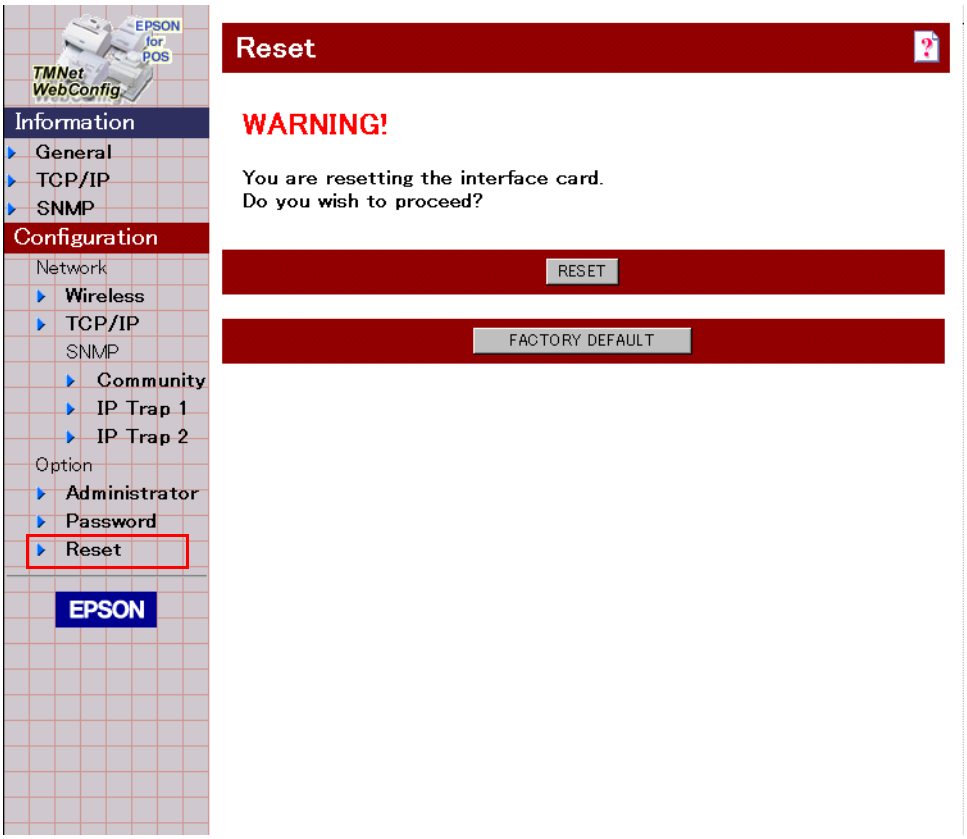
- SUBMIT button — Click this button after changing the setting contents to send the setting contents to the TM-P60.

Note:

The Password is common to the one which is set by TMNetWinConfig (“password” on page B-28.)

Reset

Click Reset; the screen below is displayed. Reset the setting of the TM-P60 to the first condition.



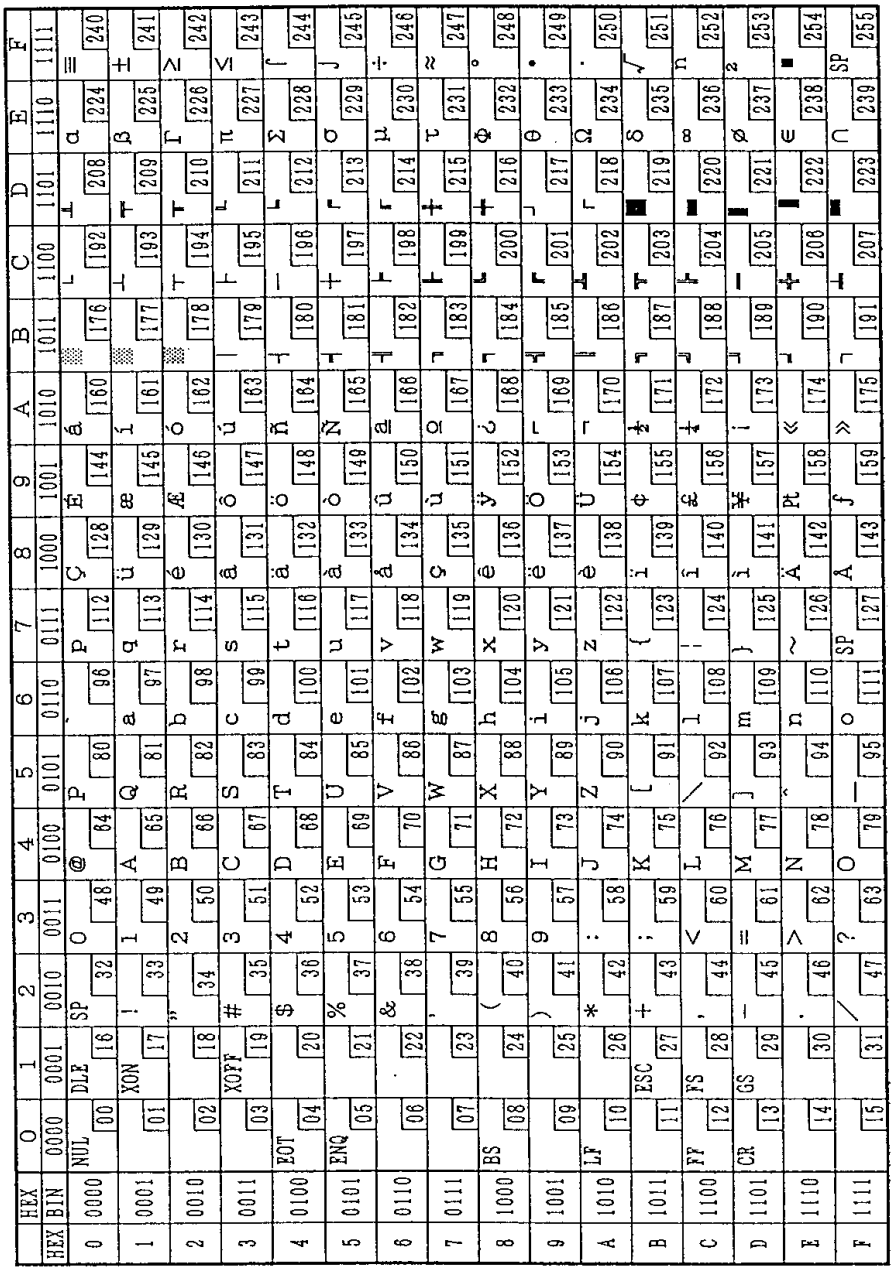
❑ Reset

- Reset button — When you click this button, the TM-P60 applies the changing and reboots itself.
- FACTORY DEFAULT button — When you click this button, the TM-P60 is returned to the factory setting. After clicking the button, reboot the printer to return it to the factory setting.

Appendix C
Character Code Tables

C.1 Page 0 (PC437: USA, Standard Europe)

(International character set)



C.2 Page 1 (Katakana)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	128	144	SP 160	176	タ 192	ミ 208	224	× 240
1	0001	129	145	。 161	ア 177	チ 193	ム 209	225	円 241
2	0010	130	146	「 162	イ 178	ツ 194	メ 210	226	年 242
3	0011	131	147	」 163	ウ 179	テ 195	モ 211	227	月 243
4	0100	132	148	、 164	エ 180	ト 196	ヤ 212	228	日 244
5	0101	133	149	・ 165	オ 181	ナ 197	ユ 213	229	時 245
6	0110	134	150	ヲ 166	カ 182	ニ 198	ヨ 214	230	分 246
7	0111	135	151	ァ 167	キ 183	ヌ 199	ラ 215	231	秒 247
8	1000	136	152	ィ 168	ク 184	ネ 200	リ 216	♠ 232	〒 248
9	1001	137	153	ゥ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	1010	138	154	ェ 170	コ 186	ハ 202	レ 218	✦ 234	区 250
B	1011	139	155	ォ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	1100	140	156	ャ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	1101	141	157	ュ 173	ス 189	ヘ 205	ン 221	○ 237	人 253
E	1110	142	158	ョ 174	セ 190	ホ 206	゛ 222	／ 238	▒ 254
F	1111	┼ 143	159	ッ 175	ソ 191	マ 207	゜ 223	＼ 239	SP 255

C.3 Page 2 (PC850: Multilingual)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	— 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	Ê 210	Ô 226	═ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▬ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	— 238	▮ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

C.4 Page 3 (PC860: Portuguese)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	À 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	È 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ã 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	Á 134	Ú 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	Ì 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	Ê 137	Õ 153	Ò 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	Í 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	1100	Ô 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	^{n} 252
D	1101	ì 141	Ù 157	¡ 173	╜ 189	═ 205	▌ 221	ø 237	^{2} 253
E	1110	Ã 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	Â 143	Ó 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

C.5 Page 4 (PC863: Canadian-French)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	¦ 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	È 145	´ 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	Ê 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	Â 132	Ë 148	¨ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	Ï 149	¸ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	¶ 134	û 150	³ 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	— 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	¤ 152	Î 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	ë 137	Ô 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	ï 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	═ 141	Ù 157	¾ 173	╜ 189	═ 205	▌ 221	ø 237	² 253
E	1110	À 142	Û 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	§ 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

C.6 Page 5 (PC865: Nordic)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╤ 203	▉ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╞ 204	▄ 220	∞ 236	n 252
D	1101	ì 141	Ø 157	¡ 173	╜ 189	═ 205	▌ 221	ø 237	² 253
E	1110	Ä 142	₧ 158	« 174	╛ 190	╪ 206	▐ 222	∈ 238	■ 254
F	1111	Å 143	ƒ 159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

C.7 Page 16 (WPC1252)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	€ 128	SP 144	SP 160	° 176	À 192	Đ 208	à 224	ð 240
1	0001	SP 129	‘ 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	0010	’ 130	’ 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	0011	*f* 131	“ 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	0100	” 132	” 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	0101	… 133	· 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	0110	† 134	– 150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	0111	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	+ 247
8	1000	ˆ 136	˜ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	1001	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	1010	Š 138	š 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	1011	‹ 139	› 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	1100	Œ 140	œ 156	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
D	1101	SP 141	SP 157	- 173	½ 189	Í 205	Ý 221	í 237	ý 253
E	1110	Ž 142	ž 158	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
F	1111	SP 143	Ÿ 159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

C.8 Page 17 (PC866: Cyrillic #2)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	А 128	Р 144	а 160	176	192	208	р 224	Ё 240
1	0001	Б 129	С 145	б 161	177	193	209	с 225	ё 241
2	0010	В 130	Т 146	в 162	178	194	210	т 226	Є 242
3	0011	Г 131	У 147	г 163	179	195	211	у 227	є 243
4	0100	Д 132	Ф 148	д 164	180	196	212	ф 228	Ї 244
5	0101	Е 133	Х 149	е 165	181	197	213	х 229	ї 245
6	0110	Ж 134	Ц 150	ж 166	182	198	214	ц 230	Ў 246
7	0111	З 135	Ч 151	з 167	183	199	215	ч 231	ў 247
8	1000	И 136	Ш 152	и 168	184	200	216	ш 232	° 248
9	1001	Й 137	Щ 153	й 169	185	201	217	щ 233	• 249
A	1010	К 138	Ъ 154	к 170	186	202	218	ъ 234	· 250
B	1011	Л 139	Ы 155	л 171	187	203	219	ы 235	√ 251
C	1100	М 140	Ь 156	м 172	188	204	220	ь 236	№ 252
D	1101	Н 141	Э 157	н 173	189	205	221	э 237	¤ 253
E	1110	О 142	Ю 158	о 174	190	206	222	ю 238	254
F	1111	П 143	Я 159	п 175	191	207	223	я 239	SP 255

C.9 Page 18 (PC852: Latin2)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	176	192	đ 208	Ó 224	- 240
1	0001	ü 129	Ĺ 145	í 161	177	193	Đ 209	ß 225	˝ 241
2	0010	é 130	Í 146	ó 162	178	194	Ď 210	Ô 226	˛ 242
3	0011	â 131	ô 147	ú 163	179	195	Ë 211	Ń 227	ˇ 243
4	0100	ä 132	ö 148	Ą 164	180	196	ď 212	ń 228	˘ 244
5	0101	ů 133	Ľ 149	ą 165	Á 181	197	Ň 213	ň 229	§ 245
6	0110	ć 134	ľ 150	Ž 166	Â 182	Ă 198	Í 214	Š 230	÷ 246
7	0111	ç 135	Ś 151	ž 167	Ě 183	ă 199	Î 215	š 231	¸ 247
8	1000	ì 136	ś 152	Ę 168	Ş 184	200	ě 216	Ř 232	° 248
9	1001	ë 137	Ö 153	ę 169	185	201	217	Ú 233	¨ 249
A	1010	Ö 138	Ü 154	170	186	202	218	ŕ 234	· 250
B	1011	ö 139	Ť 155	ź 171	187	203	219	Ű 235	ű 251
C	1100	î 140	ť 156	Č 172	188	204	220	ý 236	Ř 252
D	1101	Ź 141	Ł 157	ş 173	Ż 189	205	Ţ 221	Ý 237	ř 253
E	1110	Ä 142	× 158	« 174	ż 190	206	Ů 222	ţ 238	■ 254
F	1111	Ć 143	č 159	» 175	191	¤ 207	223	´ 239	SP 255

C.10 Page 19 (PC858: Euro)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	— 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	Õ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	▮ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

C.11 Page 255 (Blank page)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	0001	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	0010	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	0011	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	0100	SP 132	SP 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	0101	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	0110	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	0111	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	1000	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	1001	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	1010	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	1011	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	1100	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	1101	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	1110	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	1111	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

C.12 International Character Sets

Country	ASCII code (hexadecimal number)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.	#	$	@	[	\	]	^	`	{	|	}	~
France	#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
UK	£	$	@	[	\	]	^	`	{	|	}	~
Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	$	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain I	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
Korea	#	$	@	[	₩	]	^	`	{	|	}	~

Appendix D
System Planning

This section provides you information for system planning.

D.1 Control Method

A TM printer can print and be controlled using any of the following three methods:

1. Windows printer driver (EPSON Advanced Printer Driver)
2. EPSON OPOS ADK
3. ESC / POS commands

Depending on the driver or interface to be used, an IP setting tool for the Ethernet specification, a USB device driver, and a logo registration utility for printing (TMFlash logo utility) are provided.

See "How to Get a Driver" (page D-5) in this Chapter.

D.1.1 Windows Driver (EPSON Advanced Printer Driver)

The EPSON Advanced Printer Driver is a method for controlling the TM printer in the same manner as the Windows standard printer driver.

General Features of the EPSON Advanced Printer Driver

The EPSON Advanced Printer Driver has the following features:

- ❏ Supplies the Windows printer driver for the TM printer, which enables printing through general Windows applications.
- ❏ Enables executing unique functions of the POS printer, such as paper cutting and drawer opening.
- ❏ Font type selection enables printing with the printer's internal fonts.
- ❏ Enables obtaining the printer status by StatusAPI with a programming language such as VisualBasic. This makes it possible to have bi-directional communication with the TM printer under the Windows standard printer driver environment.

Note:
The statusAPI is the API for controlling the printer, which is supplied exclusively by EPSON. Using this enables obtaining printer status and transmitting ESC/POS commands.

EPSON Advanced Printer Driver Components

Installer recognizes PC environment in which the installation will be done and installs DLL files and software components necessary for operating automatically. Driver, sample program, or manual can be selected to be installed.

❑ Driver

You can select a driver depending on the purpose of usage (installation can be done at the same time). Each has functions such as two-color printing, smoothing, continuous printing, and option selection for cutting method.

- Receipt: printing receipt

❑ Sample program

Sample program for using the StatusAPI with Visual Basic and Visual C++ can be installed.

❑ Manual

The following manuals can be installed:

- Driver: User's Manual
- Status API: Reference Manual

EPSON Advanced Printer Driver Support Environment

❑ Supported interfaces

- Serial, wireless LAN(802.11b)

❑ Supported Operating Systems: Epson has confirmed performance with the following:

- Windows NT Ver 4.0 English Version SP5, SP6
- Windows 2000 English Version
- Windows XP English Version

❑ Supported Development Languages

- Visual Basic
- VisualC++

Note:
For detailed information, please contact your dealer or EPSON.

D.1.2 EPSON OPOS ADK

EPSON OPOS ADK supports the development environment necessary for OLE for Retail POS (OPOS) application development by OPOS Control proposed by the UnifiedPOS Committees and supplies a printer driver (OCX) conforming to OPOS.

When developing an OPOS confirmed application, use the following control methods. EPSON OPOS ADK has the following features.

- ❏ EPSON OPOS ADK supports not only the OPOS Control (CO + SO) proposed by the UnifiedPOS Committees but also totally supports the OPOS application development environment such as utilities for installation and setup, the contents necessary for development, such as sample programs and manuals, and also the function of Log when debugging, and silent installation, which enables easy installation for a targeted PC.
- ❏ EPSON OPOS ADK supports DirectIO with parameters for unique functions exclusively for TM printers by EPSON. Also the power notice function, offline buffer clear processing, and device irregular processing that has been taken into account by developers are supported by the driver; these can reduce the number of application steps.

Note:
For detailed information for the API functions, refer to "OLE for Retail POS Application Programmer's Guide (APG)" issued by the UnifiedPOS Committees.

General Features of EPSON OPOS ADK (OPOS Control)

OPOS Control included in EPSON OPOS ADK has the following features:

- ❏ Offers CO for each device class and SO for EPSON devices.
- ❏ Can use Direct IO with parameter
  - Acquires maintenance counter
  - Prints bit image for which NVRAM has already been registered
- ❏ Power on notice function (recovering automatically to the status before the power is turned off when turning on the power again)
- ❏ Offline buffer clear processing (deleting contents in print buffer at offline)
- ❏ Debugging function (trace function)
  - Logs between an application and CO (for used API and its return value)
  - Logs for device status (acquires causes for offline and errors in devices)

EPSON OPOS ADK Contents

Any installer later than EPSON OPOS ADK Ver2.10 supports the silent install function that can install the OPOS environment without a user interface, which offers easier installation. With this installer, OPOS Control for EPSON devices that are compatible with OPOS, manuals, utilities and sample programs described below can be installed.

❑ OPOS Control for EPSON devices

The following can be installed: CO, SO, header file for C++, header file for VB, TLB file for CO, or device information file.

❑ Manuals

- User's Guide (Environment construction manual: installation / uninstallation / usage of each utility)
- Application Development Guide (for OPOS compatible application developers: editions for common description and for each device)

❑ Utilities

- SetUpPOS Utility

Can select a device to be used, connection port and settings, such as paper width, monochrome / two-color (only for two-color supported devices) and print waiting time.

- TM Flash logo utility

Can register a bit map file to the printer and customer display.

- USB device driver

Required to connect a USB specification printer.

- Sample program

Sample programs in VB and VC++ can be installed.

EPSON OPOS ADK Supported Environment

❑ Supported interfaces

- Serial, Parallel, USB, Ethernet

❑ Supported Operating Systems: Epson has confirmed performance with the following:

- Windows 98 English Version Second Edition
- Windows NT Ver 4.0 English Version SP5, SP6
- Windows 2000 English Version

- Windows XP English Version

❑ Supported Development Languages

- Visual Basic
- VisualC++

D.1.3 ESC/POS Command

Print / control by ESC / POS commands is direct control for TM printers using the ESC / POS commands proposed by EPSON. Sending ESC / POS commands to the printer from an application enables direct control of the printer. For the detailed information regarding the ESC / POS commands, contact the dealer where you purchased the product.

D.1.4 How to Get a Driver

For customers from North America, go to the following web site: **http://www.epsonexpert.com/** and follow the onscreen instructions.

For customers in other countries, go to the following web site: **http://www.epson-pos.com/** Select the product name from the "Select any product" pulldown menu.

Appendix E
FAQ

Q 1. Can I use the TM-P60 in the Ad-Hoc mode?

A 1.1 The TM-P60 supports the Ad-Hoc mode for the first setup only.

The TM-P60 changesthe network mode to “Infrastructure“ automaticaly when any wireless LAN setting is changed (IP address, SSID, WEP key, etc...)

When you are using the TM-P60 in Ad-Hoc mode, there are some products that can’t communicate with the TM-P60. Therefore, please use the TM-P60 in the Infrastructure mode.

Q 2. Buzzer sounds when the TM-P60 is turned on. What should I do?

A 2.1 Confirm whether the POWER LED is flashing slowly or not

When TM-P60 is turned on, it searches for an access point for wireless communication when TM-P60 is in infrastructure mode. (In Ad-Hoc mode, TM-P60 serches for an host PC which is in Ad-Hoc mode) If the TM-P60 is out of wireless communication range, the POWER LED flashes slowly and the buzzer sounds. In this case, try following items.

- ❑ Confirm the wireless LAN settings of the TM-P60 and the access point. (Ex. SSID, IP address, submet mask, WEP key etc..) The TM-P60’s self test shows you the current settings except WEP key. See “Self test mode” (page 3-3) for procedure of self test.

- ❑ There is no access point or PC in the range where the communication is possible. When there are obstructions between the AP or PC and the TM-P60, move the TM-P60 and confirm that the LED does not flash.

A 2.2 Confirm whether the ERROR LED lights or flashes

The TM-P60 beeps when error occurs depending on the memory switch setting. Confirm the error cause, and see “Beeping Types” (page 3-2).

Q 3. How to set the buzzer not to sound.

A 3.1 Change Memory switch setting.

The buzzer does not sound if the Memory switch setting is changed. About memory switch, See “Memory Switches” (page 2-11).

Q 4. BATT LED lights or flashes. What should I do?

A 4.1 There is no remaining battery charge.

You can confirm the remaining battery charge by the BATT LED condition. (See “About the Battery Remaining Amount” (page 4-2))

About procedure for battery charging, see “Charging the battery” (page 2-9).

Q 5. The Power LED is flashing slowly. What should I do?

A 5.1 Confirm the wireless setting of the TM-P60, AP, or PC.

Print out a status sheet for the TM-P60. Set the settings such as the network mode of AP or PC, SSID, WEP, IP Address, and Channel to match the each other. See “Status sheet printing” (page 3-4) for how to print status sheet.

A 5.2 Confirm whether the TM-P60 is out of the wireless communication range.

There may be no access point or PC in the range where the communication is possible. When there are obstructions between the AP or PC and the TM-P60, move the TM-P60 and confirm that the LED does not flash.
When the AP is where there are obstructions or the AP is not on the same floor, move the AP or the TM-P60 and confirm that communication is possible.

Q 6. The TM-P60 can’t connect to the Wireless LAN. What should I do?

The network mode for the TM-P60 is in the AdHoc mode as the initial setting. Print out a status sheet and set the wireless LAN setting of the PC to match the TM-P60.

A 6.1 Confirm the wireless LAN setting of the TM-P60 and AP or host PC.

Confirm the wireless LAN setting of the AP (when you use infrastructure mode) or PC (when you use Ad-Hoc mode) matches the TM-P60. The TM-P60’s wireless LAN setting can be confirmed by self test. (See “Self test mode” (page 3-3))

(wireless LAN setting: SSID, IP address, subnet mask, WEP key, etc...)

A 6.2 Confirm that the IP address of the PC or AP isn’t the same as that of the TM-P60.

On host PC or AP, do not set the same IP address as that of the TM-P60.

A 6.3 There is interference with another network

When there is more than one wireless LAN network on the same floor and the same channel is used, interference occurs. When the channels are close to each other, interference may occur. In this case, one needs to be moved.

A 6.4 TM-P60 is near something that makes noise.

Communication may be difficult near a microwave or motor. Move the AP or TM-P60 and confirm that communication is possible away from anything that makes noise.

A 6.5 Confirm TM-P60 is turned on.

Turn on the TM-P60.

A 6.6 Reset the TM-P60 to the default setting.

Reset the TM-P60 to the default setting (see “Resetting the printer” (page 3-6)). Then set up from the first step (see “Installing your wireless LAN” (page 2-14).)

A 6.7 There are problems with the PC.

If you have another PC available for setting, exchange the other PC with your current PC and retry setting.

A 6.8 Confirm the AP (in infrastructure mode)

- ❑ Confirm that AP is turned on.
- ❑ Confirm the setting for the wireless LAN function of the AP or PC. Confirm that the wireless LAN function or RF is turned on.
- ❑ Confirm that the cable between the network and AP is not unplugged or cut.

Q 7. Wireless LAN parameters for the TM-P60 cannot be set with RS-232

When setting the TM-P60 with RS-232, TMNetWingConfig must be installed on the PC. Also, the serial setting of TMNetConfig must match the TM-P60.

A 7.1 Turn on the TM-P60 again.

After confirming the that TM-P60 is connected with the serial cable to the PC, turn the TM-P60 on again.

A 7.2 The serial cable is not specified by EPSON.

Use a serial cable that EPSON specifies. Communication is not guaranteed with any cable except the specified cable (OT-RS6).

A 7.3 The COM setting for the TM-P60 does not match that of the PC.

Select “COM” in the “SearchPass” option of TMNetWinConfig and set the COM setting to meet the setting of the PC. and set the seiral communication conditon with “search option COM“ to match the TM-P60’s condition. The condition of TM-P60 can be confirmed by self test; see “Self test mode” (page 3-3).

A 7.4 The TM-P60 is turned OFF.

Turn ON the TM-P60.

Q 8. Searching on the network takes several minutes.

A 8.1 The IP address is set redundantly.

When the same IP address is set for more than one device connected to the network, searching takes time and communication may be impossible. Confirm the settings for the devices.

Q 9. Network is disconnected several minutes after it is connected.

A 9.1 The power management or suspend function of the PC on the network is operating.

Confirm that the power management and suspend functions are turned off.

Q 10. TM-P60 turns off several minutes after it is turned on.

A 10.1 The period of time set for the auto power off of TM-P60 is not proper.

When the TM-P60 is set “time for auto power off” by memory switch, the TM-P60 turns itself off automaticaly when it doesn’t receive any data in the specified period. Confirm the power management function of the TM-P60. (See “Memory Switches” (page 2-11))

Q 11. Printing is not possible.

A 11.1 The TM-P60 is turned off.

Turn on the TM-P60.

A 11.2 The power is turned off during printing.

There is no remaining battery. Replace it or recharge it or connect the AC adapter.

Appendix F
Wireless LAN Network Composition

F.1 Network mode

F.1.1 Infrastructure Mode

This is a method for connecting to an existing wired network using an access point. If multiple access points are in the same proximity, set their channels at least five channels apart. For setting the access point, see the manual for the access point.

F.1.2 Ad Hoc Mode

A network connection between personal computers and printers that have a wireless LAN function is called an "Ad Hoc Mode." Each piece of equipment can be connected without using an access point.

This product supports the IBSS AdHoc mode.

To use the Ad Hoc connection, set the network name [SSID], the network key, and the channel of each device to the same setting.

F.2 Wireless LAN Use

The Radio Frequency module that can be installed to this product uses the IEEE 802.11b standard and cannot communicate with equipment using IEEE 802.11a and IEEE 802.11g.

The distance between the communicating wireless LAN equipment must be 25 meters or less, but the distance of possible communication depends on the environment. Also, the communication speed sometimes declines at longer distances.

The wireless LAN can be set to any one of 11 channels, but when another wireless LAN network is using a channel with a similar number, it sometimes interferes. Therefore, set the two networks to channels that are at least 5 channels apart.

Place the access point, the built-in wireless LAN system, and the printer separate from other electronic devices. Specifically, equipment such as microwave ovens that emit high frequency energy can cause interference. If this happens, move the wireless equipment or the interfering equipment so that there is no more interference.

Radio and other broadcasting equipment can also interfere with the wireless communication. If this happens, move the access point and the printer away from the interference.

Because Bluetooth and the wireless LAN use the identical frequency band (2.4GHz), signal interference sometimes occurs when they are used close together. Separate them by more than 10 meters.

F.3 Wireless LAN Security

F.3.1 Security of a wireless LAN

Why does a wireless LAN need a security function?

A wireless LAN is designed to be constructed easily without the labor of wiring, In the wired LAN environment, because the communication flows through a network cable, the cable must be connected physically to tap or monitor the communication contents and/or tamper with the data. But with wireless, the communication is broadcast and susceptible to interception. Communicating on a wireless network without using security is the same as leaving your house without locking the door. Therefore, we recommend using wireless security options. A wireless LAN needs better security measures than a wired LAN does.

What kind of security functions does the wireless LAN have?

To prevent above-mentioned problem, the wireless LAN of the IEEE802.11 method is provided with the security functions described below, which can be set easily by the developer and the end user.

Not setting security at all with a wireless LAN is the same as going out without locking the door of your house. These security functions attempt to prevent your data from being monitored or tampered with by a third party.

For increased wireless security, you can use such methods as a Radius server and Internet Protocol Security (IPSec).

F.3.2 Security Function Outline

SSID (Service Set Identifier)

This is the ID which specifies an access point of the connection place; only wireless LAN terminals that are set to the same SSID can connect with each other.

WEP (Wired Equivalent Privacy)

This encrypts data between the access point and the wireless LAN terminal with a common encryption key (the WEP key).

MAC (Media Access Control)

This is address filtering. After registering a unique number (the MAC address) of each wireless LAN terminal; this allows only the registered terminals to connect to the wireless LAN.

F.3.3 Outline of Each Security Function

SSID Setting

The SSID must be set to a unique name of the network to distinguish it from the other networks. (It is set to “EpsonNetIBSS” at the factory.) Because a third person can see the SSID easily, the SSID does not have a security function. However, setting SSID to the name of the company using the network may provoke unnecessary interest by third parties.We recommend using an SSID that has no meaning to outside parties.

WEP Setting

WEP is the function to encrypt the wireless data. It is currently the most effective standard security function. Because the factory setting for the WEP encryption key setting is Enabled, you must set it to Disabled to connect it to a wireless network. Once it is connected, you can set the WEP encryption key in the printer to the same as the key in the network. When it is possible to set the WEP key to 128 bits or 64 bits, select 128 bits to make it harder to decipher the key. We also recommend changing the WEP key regularly in case it is ever deciphered.

MAC Address Filtering

This prohibits a connection to an access point by any device that does not have a MAC address registered with the network. This can prevent tampering with your data but it does not prevent unauthorized monitoring of your data. Because there is possibility to be monitored, we recommend using the MAC address together with WEP.

Note:

Just as you can protect your house better with two locks instead of one, you can protect your network better by using more than one security feature. We recommend using all three of the above functions.

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