



USER'S GUIDE

Thermal Printer

DPU-414

Read this manual carefully before using the printer.

Keep this manual in a place where it can be accessed quickly.

Seiko Instruments Inc.


DPU-414 THERMAL PRINTER USER'S GUIDE

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Please refer to the page in Chinese for the information of the hazardous substances under China RoHS (Management Methods for Controlling Pollution by Electronic Information Products).

For use in Turkey
Complies with Electrical and Electronic Equipment Directive.

Türkiye' deki Kullanıcılar için
EEE Yönetmeliğine Uygundur.

Applicable EC Directive and Standards

Product: Thermal Printer DPU-414-40B-E, DPU-414-41B-E

<u>Directive:</u>	<u>Title</u>
2004/108/EC	EC Electromagnetic Compatibility Directive
2009/125/EC	Directive on Eco-Design of Energy-related Products
2011/65/EU	Restriction of the use of certain hazardous substances (RoHS) Directive

Standards

EN 55022 Class B
EN 61000-3-2
EN 61000-3-3
EN 55024
EN 50581

Product: AC adapter PW-C0725-W1-E

Product: AC adapter PW-C0725-W1-B

<u>Directive:</u>	<u>Title</u>
2004/108/EC	EC Electromagnetic Compatibility Directive
2006/95/EC	EC Low Voltage Directive
2009/125/EC	Directive on Eco-Design of Energy-related Products
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Standards

EN 55022 Class B
EN 61000-3-2
EN 61000-3-3
EN 55024
EN 60950-1
EN 50581

Federal Communications Commission (FCC) compliance statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does 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.

Any changes in this certified device could void your legal right to operate it.

Industry Canada (IC) compliance statement

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

INTRODUCTION

Thank you for purchasing the DPU-414 thermal printer.

This USER'S GUIDE explains how to handle DPU-414 thermal printer (hereinafter referred to as printer), specified AC adapter, specified battery pack and specified AC cable (hereinafter, omit "specified").

This USER'S GUIDE applies to the following product.

- DPU-414-40B-E

Read through the Safety Precautions on Page 2 to 6 carefully before using the printer.



This manual consists of the following sections.

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SAFETY PRECAUTIONS


The following symbols are used in this manual in order to make use of the printer properly and prevent the printer from being damaged.

Follow the instructions marked with the symbol.


 WARNING	Severe Personal Injury or Death Failure to follow the guidelines marked with this symbol could result in severe personal injury or death.
 CAUTION	Minor Personal Injury or Product and/or Peripheral Damage. Failure to follow the guidelines marked with this symbol could result in minor personal injury or product and/or peripheral damage.

Symbol Examples




The symbol  indicates caution (including danger and warning).
The example on the left indicates warning or caution.



The symbol  indicates prohibition.
The example on the left means prohibition of disassembling.



The symbol  indicates requirement or what must be done.
The example on the left means "pull the power plug out of the outlet".

Precautions in the Printer

WARNING



DO NOT use the printer, the AC adapter and the AC cable in countries where these items do not comply with the regulations. Doing so, we do not assure the safety of these products and you will be responsible for violation of regulations.



POWER OFF the printer, unplug the power cable from the power outlet, and remove the battery pack in any of the following cases:

- _ The printer does not recover from an error.
- _ Smoke, strange noise, overheat or smells erupt from the printer.
- _ A piece of metal or any liquid touches the internal parts or slot of the printer.
- _ Case is broken.

Doing so may cause fire or electric shock. Please contact your vender to repair the products.



DO NOT insert any foreign objects such as a piece of metal or any liquid in the internal parts or slot of the printer. Doing so may cause fire or electric shock.



DO NOT disassemble or remodel the printer. DO NOT REPAIR THE PRINTER YOURSELF. Doing so may cause fire, a failure or other accidents.



DO NOT use an AC adapter, AC cable or battery pack other than that which is specified. Doing so may cause explosion, overheating or fire leading to serious accidents.



DO NOT use any power supply of the AC adapter other than specified range of one. Doing so may cause fire, a failure or other accidents.



DO NOT touch the output terminal or metallic area of the connector to avoid short-circuiting. Doing so may cause fire, a failure or other accidents.



DO NOT put the printer into water in a place where it could get wet.
Doing so may cause fire, a failure or other accidents.



DO NOT touch the printer by wet hand.
If not, it might cause electric shock.



POWER OFF the printer before removing/inserting the battery pack.
If not, it might cause electric shock.



UNPLUG the AC plug from the outlet when there is the AC cable of the
AC adapter damaged.

Doing so may cause fire, a failure or electric shock.
Please contact your vender to repair the products.



Keep the AC plug of the AC adapter away from dust and metallic
materials.

If not, it might cause fire or electric shock.



Plug the AC plug of the AC adapter completely.
If not, it might cause fire or electric shock.



DO NOT destroy the AC cable or plug of the AC adapter. Moreover, DO
NOT bend, pull or twist the AC cable forcibly, or place heavy object on
the cable.

Doing so may cause fire, a failure or electric shock.



UNPLUG the AC adapter from the outlet, do not pull on the cable but hold
onto the plug.

Exposure or disconnection of the cable might cause fire or electric shock.

CAUTION



If the printer is not used for a long time, unplug the AC plug from the outlet and remove the battery pack from the printer.
If not, it might cause fire or electric shock.



When cleaning the printer, unplug the AC plug from the outlet and remove the battery pack from the printer.
If not, it might cause fire or electric shock.



Keep the printer out of the reach of children.
If not, it might cause injury.



DO NOT subject the printer to the following places as it may lead to fire, a failure or injury.

- Places of direct sunlight or high temperature.
- Places of extreme humidity or any place where it can possibly be splashed by any liquids.
- Places with strong vibration or is inclined.



DO NOT cover the printer with any clothes.
Doing so may cause fire or a failure.



NEVER touch the thermal head immediately after printing because it becomes very hot. Make sure that the thermal head is cool before clearing a paper jam or cleaning the thermal head.
Doing so may cause injury.



NEVER touch the portions such as the thermal head or the paper sensor or the platen roller directly while opening the paper cover to install the thermal paper for example.
Doing so may cause injury or other accidents.



Be sure to hold the battery cover to the printer when the battery pack is inserted in the printer.

Fall of the battery pack due to the battery cover slid off may cause injury or any damages.



DO NOT make your hair, etc. which are easily entangled in the printer approach to the printer during the operation

Doing so may cause injury.

Precautions in the Battery pack (Option)

WARNING



If you find any of the following abnormalities in the battery pack, remove the battery pack from the printer and keep away from fire.

- _ When the battery pack gave out a nasty smell, reached an extraordinarily high temperature or showed any unusual sign.
- _ When the battery pack case was broken.
- _ When leakage was found.

Doing so may cause liquid leakage, explosion, overheating or fire leading to fire or injury.



NEVER disassemble, remodel, or solder the battery pack.

Doing so may cause liquid leakage, explosion, overheating or fire leading to fire or injury.



DO NOT touch the metallic area of the battery pack to avoid shortcircuiting.

Doing so may cause overheating, fire or electric shock leading to fire or injury.



DO NOT throw the battery pack into fire and DO NOT heat it.

Doing so may cause liquid leakage, explosion, overheating or fire leading to fire or injury.



DO NOT charge the battery pack in a place at 35 °C / 95 °F or more under burning scorching or in the close vicinity of fire.

Doing so may cause liquid leakage, explosion, overheating or fire leading to fire or injury.



DO NOT apply strong impact to the battery pack with a hammer or a nail, and DO NOT crush it.

Doing so may cause liquid leakage, explosion, overheating or fire leading to fire or injury.



DO NOT put the battery pack into water. Always keep it away from rain and water.

Doing so may cause liquid leakage, explosion, overheating or fire leading to fire or injury.



DO NOT touch the battery pack by wet hand.

Doing so may cause electric shock or a failure.

CAUTION



If liquid inside the battery pack reaches the eyes, immediately wash it away with clean water and take a physician's medical treatment.

If not, the eyesight might be damaged.



Keep the battery pack away from children.

If not, it might cause injury.



DO NOT subject the battery pack to the following places as it may lead to liquid leakage, explosion, overheating or fire leading to fire or injury.

- _ Places of direct sunlight or high temperature where such as in a car.
- _ Places of extreme humidity or any place where it can possibly be splashed by any liquids.
- _ Places with strong vibration or is inclined.

OPERATING PRECAUTIONS

Please follow the precautions below to enjoy and maintain the full performance of the printer.

Using the printer

- ◆ Be careful not to drop or bump the printer.
- ◆ DO NOT place the printer in any place where it will be subjected to direct sunlight or the corrosive gas will generate. Install the printer in a location with the following conditions:
 - Ambient temperature: 0°C to 40°C (32°F to 104°F)
 - Relative humidity: 30%RH to 80%RH (non-condensing)
- ◆ DO NOT connect the power cables of the AC adapter to the same outlet as devices that generate electromagnetic fields.
- ◆ DO NOT power off while printing.
- ◆ Switch the power off when not in use.
- ◆ When not using the printer for extended periods of time, remove the battery pack from the printer. Disconnect the power cable of the AC adapter from the outlet.
- ◆ Clean the printer using soft, lint-free cloth. Do not use alcohol or other solvent.
- ◆ Before use, always clean the terminals using a dry, soft, lint-free cloth. If the terminals are dirty, it may not be possible to obtain proper contact.
- ◆ The AC adapter and the battery pack become warm when in use. This is normal and is not a malfunction.
- ◆ The length of time the printer can be used may be shortened when using a battery pack at low temperature.
- ◆ For assistance with obtaining an exchange battery for this product in the USA, please contact:
 - tpdrecycleinfo@siu-la.com
 - Seiko Instruments USA inc.
 - Thermal Printer Div.

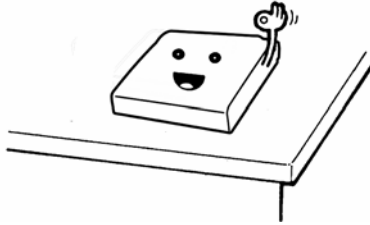
Thermal Paper Handling

- ◆ Store the thermal paper in a cool, dry, and dark place.
- ◆ Do not rub the thermal paper with hard objects.
- ◆ Do not leave the thermal paper near organic solvents.
- ◆ Do not allow plastic film, erasers, or adhesive tape to touch the thermal paper for long periods.
- ◆ Do not stack copies made by the Diazo or wet process on top of the thermal paper.
- ◆ Do not use chemical glue.

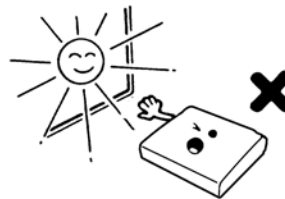
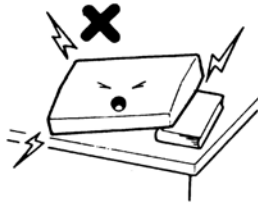
- ◆ Always use the specified thermal paper TP-411L.

Installation

- ◆ Install the printer in a flat, stable place.



- ◆ Do not install the printer in the following places:
 - Places with strong vibration
 - Places with oily or iron dust
 - Hot or cold places
 - Humid places



More than 40°C (104°F)



Less than 0°C (32°F)



More than 80%RH



NOTATIONS USED IN THIS MANUAL

The following two types of notations are used throughout this manual to denote items of caution and items to remember:

NOTE

- ◆ This box contains items that when not followed may lead to a malfunction or to a deterioration of performance.

HINT

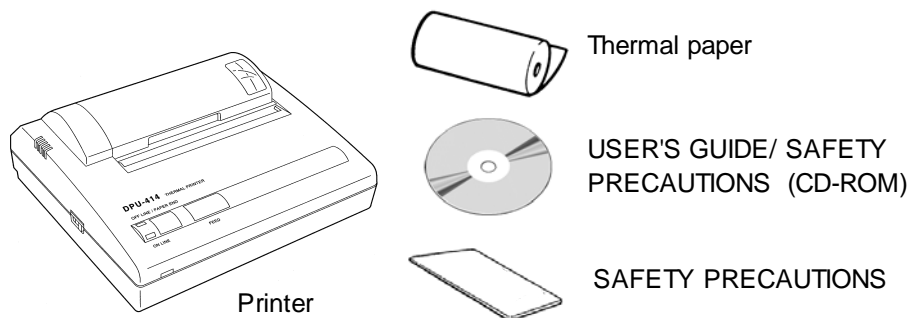
- This box contains helpful hints to remember when using the printer.

1 PREPARATION

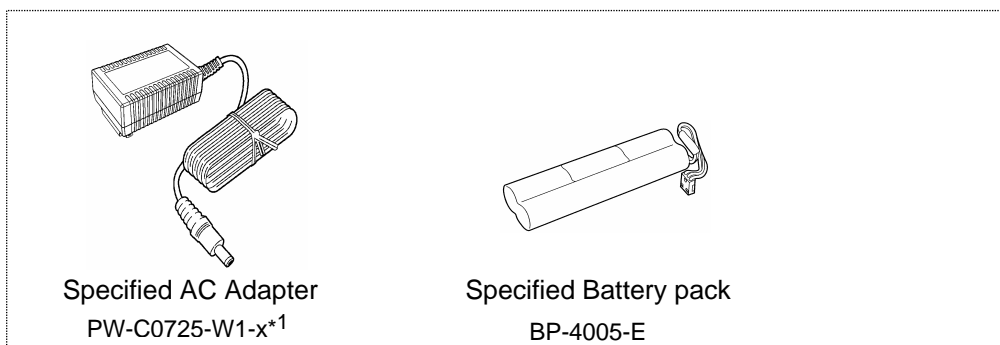
1.1 Unpacking

Once you have opened the carton, make sure it contains the printer and all accessories.

The standard configuration contains the following items:



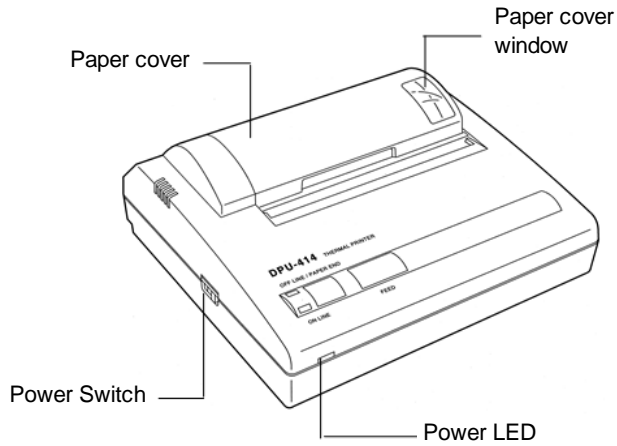
The option configuration contains the following items:



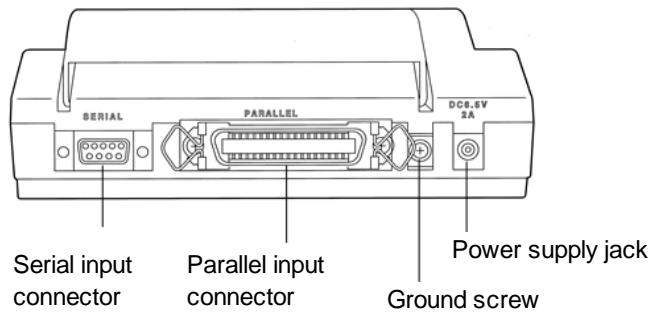
*1: Applicable product models differ in respective countries. See "List of Compliance with Regulation" for proper use.

1.2 Part Names

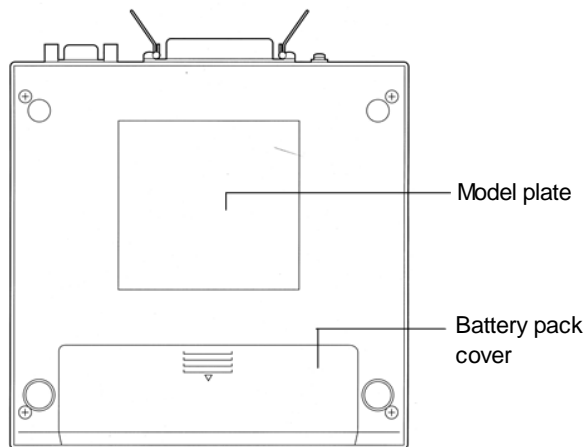
Front



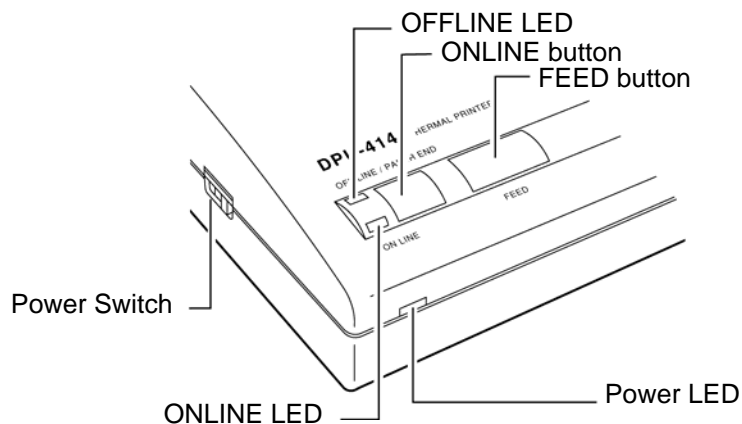
Back



Bottom



1.3 Operation Panel



- | | | |
|---|---------------|--|
| 1 | Power Switch | Slide the Power Switch to turn the power on (ONLINE) or off. |
| 2 | FEED button | Feeds the thermal paper when pressed in OFFLINE mode. (See the Hint on the next page). |
| 3 | ONLINE button | Press to toggle between OFFLINE and ONLINE. |
| 4 | Power LED | Indicates the power is on.
Blinks once every second to indicate the battery is being charged.
Blinks once every 1/2 second to indicate the battery is low. |
| 5 | ONLINE LED | Indicates the printer is ONLINE.
Blinks to indicate there is data in the buffer memory when the printer is OFFLINE. |
| 6 | OFFLINE LED | Indicates the printer is OFFLINE.
If the thermal paper is not set or has run out, the LED flashes. When an error occurs, both the ONLINE and off-line LEDs light. |

NOTE

- ◆ DO NOT press and hold the ONLINE button and FEED button for 30 seconds or more, because it will cause the Software DIP switches to reset and you will not be able to use the printer.
- ◆ Be sure the thermal head is in the home position (at the far left) before turning off the Power Switch. If left away from the home position for a long period, the print quality might deteriorate.

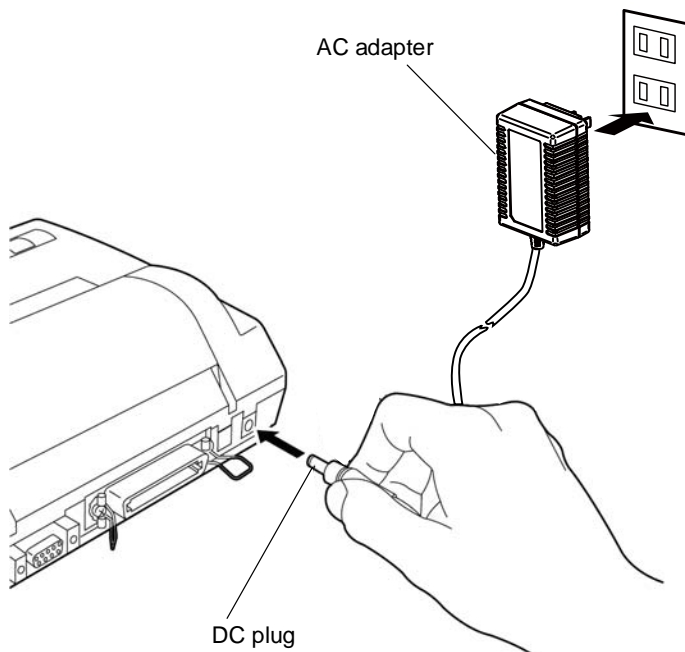
HINT

- ONLINE: Set the printer ONLINE to print from the computer.
- OFFLINE: Set the printer OFFLINE to feed the thermal paper with the FEED button or to stop printing.
(Print data and commands cannot be input in OFFLINE mode.)

2 OPERATION

2.1 Connecting AC Adapter

1. Turn off the power.
2. Plug the DC plug on the AC adapter into the power supply jack on the printer.
3. Plug the AC adapter into an outlet.
4. Turn on the power.



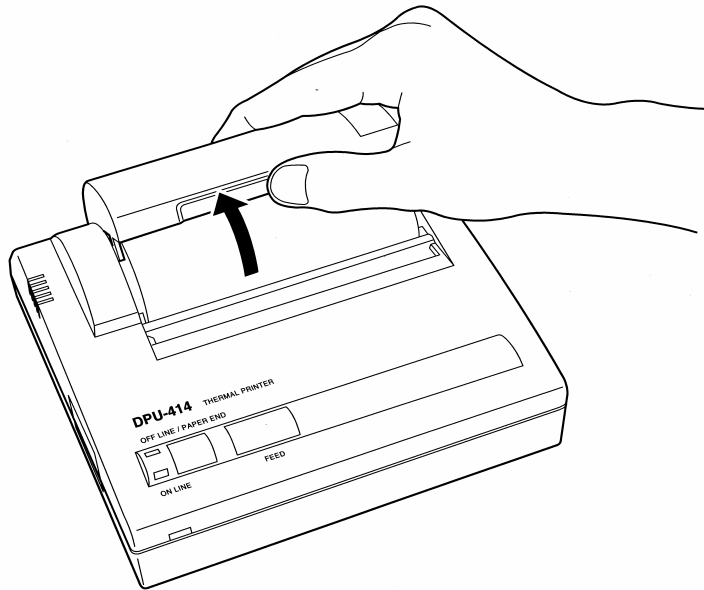
NOTE

- ◆ Always use an SII specified adapter.
- ◆ DO NOT touch the pins of the DC plug.
- ◆ To remove the AC adapter, turn off the Power Switch first, then unplug the AC adapter and the DC plug.

2.2 Loading the Thermal Paper

Opening and Closing the Paper Cover

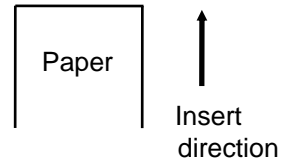
1. Lightly push up on the front of the paper cover with your thumb and rotate it toward the back of the printer.



2. Close the paper cover and push down on it to lock it into place.

Loading the Thermal Paper

1. Turn on the power.
2. Cut the tip of the thermal paper straight across. New paper can be inserted as is. (See figure on right)
3. Open the paper cover.
4. Push the tip of the thermal paper into the inlet at the bottom of the paper holder, until the auto-loader catches it and feeds about 10cm of it through the paper cutter.



NOTE

- ◆ Load the thermal paper in an area protected from direct sunlight.

HINT

- Place the thermal paper on the cover to make feeding easier.

The printing surface is the outside of the thermal paper roll.

Insertion Slot



5. Keep pressing the FEED button until the thermal paper feeds straight and smoothly.

HINT

- When the thermal paper is set correctly, the OFFLINE LED stops blinking and stays on to indicate the printer is still in OFFLINE mode.
- When the thermal paper is about to run out, red lines appear on both sides of the thermal paper.

2.3 Setting the Software DIP Switches (SWDIP switch)

The startup settings and input method can be set by the Software DIP switches (SWDIP switch). Refer to section 2.4, SWDIP Switch Settings, for details on the different settings.

1. Slide the Power Switch to OFF.
2. Slide the Power Switch to ON while pressing the ONLINE button. Release the ONLINE button after a list of the current settings starts printing out.
3. The print out of the current settings is followed by the prompt:
"Continue? :Push 'On-line SW' ",
"Write?: Push 'Paper feed SW' "
To change the SWDIP switch settings, push the ONLINE button, and move onto step 4.
To leave the SWDIP switch settings unchanged, push the FEED button, and move onto step 5.
4. 'Dip SW1' is printed prompting the input of new settings for switch number 1 through 8 of SWDIP switch 1.

NOTE

- ◆ Always input either "ON" or "OFF" for every setting in order for switch number 1 through 8 because SWDIP Switch Set Mode can not be canceled once it is initiated.

"ON" can be set by pushing the ONLINE button once and "OFF" by pushing the FEED button once.

The setting is printed out after the ONLINE or FEED button is pushed to allow to confirm the new setting.

As soon as switch number 8 is set, the printer once again prompts with "Continue?" or "Write?", and step 3 is repeated for SWDIP switch 2 and 3.

HINT

- The ONLINE LED lights when the ONLINE button is pressed and the OFFLINE LED when the FEED button is pressed to allow confirmation of the button operation.

5. After the FEED button is pushed, the ONLINE and OFFLINE LED alternately blink and the new settings are written to memory. When the printer finishes writing everything to memory, "Dip SW setting

complete!!" is printed out and the printer returns to ONLINE mode.


6. As soon as switch number 8 of SWDIP switch 3 is set, the printer writes the settings to memory regardless of which button (ONLINE or FEED) is pushed.

CAUTION

- ◆ NEVER turn the printer off while it writing the new settings to memory. Always wait until "Dip SW setting complete!!" is printed, then turn the power off.

2.4 SWDIP Switch Settings

(1) SWDIP switch 1

 indicates factory default setting.

Switch No.	Function	ON	OFF
1	Input Method	Parallel	Serial
2	Printing speed	High	Low
3	Auto loading	ON	OFF
4	CR function	Carriage return and line feed	Carriage return
5	SWDIP switch Setting Command	Enable	Disable
6 to 8	Print density	See the table below	

Switch No. Print Density (%)	6	7	8
72	ON	ON	ON
79	ON	ON	OFF
86	ON	OFF	ON
93	ON	OFF	OFF
100	OFF	ON	ON
107	OFF	ON	OFF
114	OFF	OFF	ON
121	OFF	OFF	OFF

HINT

- Set switch number 5 to "ON" when you want to enable SWDIP switch setting via command.

(2) SWDIP switch 2

Switch No.	Function	ON	OFF
1	Print mode	Normal printing (40 columns)	Condensed printing (80 columns)
2	User-defined characters back-up	ON	OFF
3	Character type	Ordinary characters	Special characters
4	Zero font	0	∅
5 to 8	International character set	See the table below	

Switch No. Character set	5	6	7	8
Japanese	ON	ON	ON	ON
American	ON	ON	ON	OFF
German	ON	ON	OFF	ON
English	ON	ON	OFF	OFF
French	ON	OFF	ON	ON
Spanish 1	ON	OFF	ON	OFF
Italian	ON	OFF	OFF	ON
Swedish	ON	OFF	OFF	OFF
Danish 1	OFF	ON	ON	ON
Danish 2	OFF	ON	ON	OFF
Norwegian	OFF	ON	OFF	ON
Spanish 2	OFF	ON	OFF	OFF
Latin American	OFF	OFF	ON	ON

CAUTION

- ◆ DO NOT set switches 5 to 8 a setting other than that shown in the table.

(3) SWDIP switch 3

Switch No.	Function	ON	OFF
1	Data bit length	8 bits	7 bits
2	Parity permission	Without	With
3	Parity condition	Odd	Even
4	Flow control	H/W BUSY	XON/XOFF
5 to 8	Baud rate	See the table below	

Switch No. Baud rate	5	6	7	8
75 bps	ON	ON	ON	ON
110 bps	ON	ON	ON	OFF
150 bps	ON	ON	OFF	ON
300 bps	ON	ON	OFF	OFF
600 bps	ON	OFF	ON	ON
1200 bps	ON	OFF	ON	OFF
2400 bps	ON	OFF	OFF	ON
4800 bps	ON	OFF	OFF	OFF
9600 bps	OFF	ON	ON	ON
19200 bps	OFF	ON	ON	OFF
75 bps	OFF	ON	OFF	ON
75 bps	OFF	ON	OFF	OFF
75 bps	OFF	OFF	ON	ON
75 bps	OFF	OFF	ON	OFF
75 bps	OFF	OFF	OFF	ON
75 bps	OFF	OFF	OFF	OFF

2.5 Connecting the Printer

Connection

1. Turn off the printer and computer.
2. Connect the printer to the computer with an interface cable.
 - Parallel: Secure with veil lock.
 - Serial: Secure with screws.
3. Set the printer SWDIP switches to match the input method.
4. Turn on the printer and the computer.

NOTE

- ◆ Select the correct interface cable for the type of input (parallel or serial).

Connectors:

Parallel: Anphenol 36-pin
Equipped connector
: 57LE-40360-7700(D29)(DDK) or equivalent

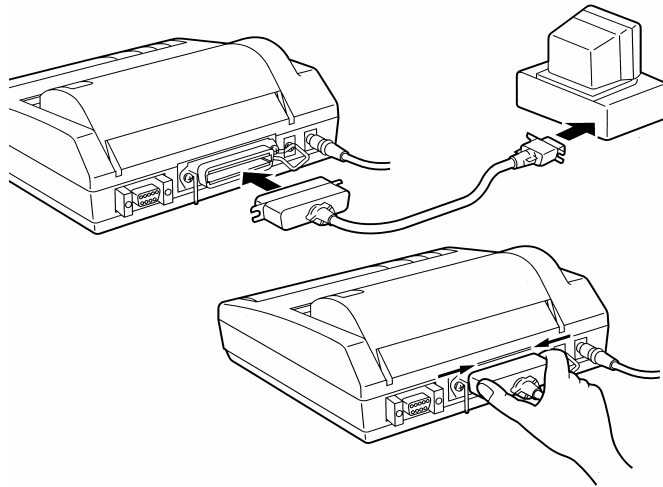
Serial: D-Subminiature type connector with 9-pin
Equipped connector
: (M2.6 type) RDED-9SE-LN(05) (HIROSE)
or equivalent

- ◆ Use a shielded cable no more than 1.5m long.

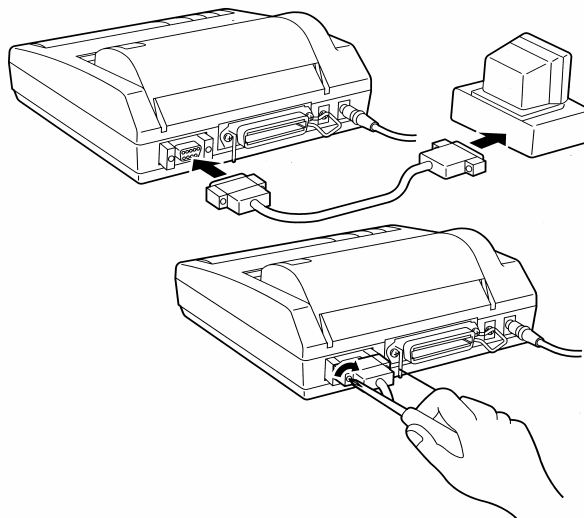
Confirmation

Follow the instructions in section 2.8, *Printing*, to confirm that the printer is connected properly.

Parallel



Serial

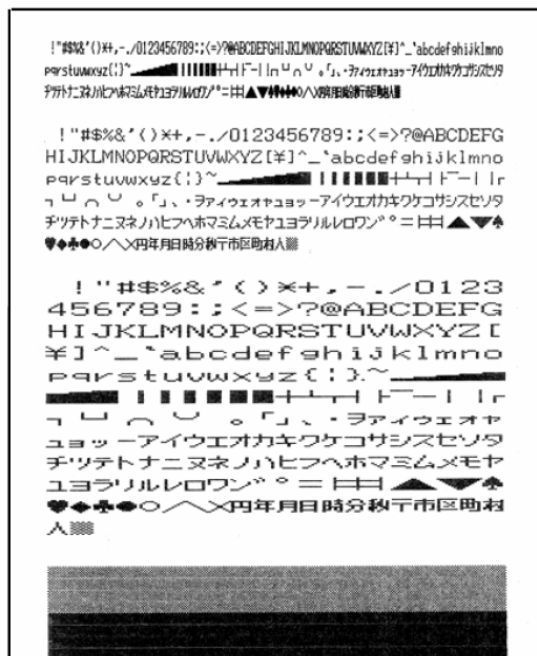


2.6 Test Print

In a test print, characters 20H to FEH are printed in condensed, ordinary and double-width modes according to the international, special character and zero font settings of the SWDIP switches. This is followed by a small checkered pattern and solid black pattern printed dot by dot, after which the current settings are printed. To execute a test print follow this procedure:

1. Turn off the power.
2. Make sure the thermal paper is inserted correctly.
3. Turn on the power while pressing the FEED button to start the self-test.
4. Release the FEED button as soon as the self-test starts.

Print Sample



NOTE

- ◆ The printer stops automatically after the test print. DO NOT turn off the power to the printer while it is printing.

2.8 Printing

1. Turn on the power to the printer and the computer.
2. Check that the ONLINE LED lights.
When the thermal paper is not set, the OFFLINE LED blinks. When the thermal paper is loaded, the OFFLINE LED lights. Press the ONLINE button so put the printer ONLINE.
3. Send a print command from the computer to the printer.

Example:

Printing ABC in parallel input using BASIC

1. Set SWDIP switch 1-1 to ON.
2. Input LPRINT "ABC" on the computer, then press the return key.
The printer should print ABC.
If the printer does not print, see Section 7, *Troubleshooting*.

HINT

- Some forms of BASIC use the PRINT# statement or the PR# instead of the LPRINT statement.

2.9 Buffer Memory

The buffer memory, which has a capacity of about 28000 characters (approx. 28KB), receives and stores data at high speed, greatly reducing the time that the computer cannot be used while it outputs to the printer. When the printer is ONLINE, data can be input during printing until the buffer memory becomes full.

If the printer is turned OFFLINE when there is still data in the buffer memory, the ONLINE LED will blink. Printing resumes when the printer is turned ONLINE.

2.10 Handling the Battery Pack

A fully charged battery pack can print about 3000 lines (40 columns of the number "8"). The battery discharges when it is not used for a long time, therefore, immediately recharge the battery after purchase or after long periods of storage.

NOTE

- ◆ Always use an SII specified battery pack.

Inserting the Battery Pack

1. Turn the printer over and open the battery cover as shown in Figure 1.
2. Connect the battery pack as shown in Figure 2, turn it so the label is visible, insert it into the printer, and close the battery cover.
3. Close the battery cover.

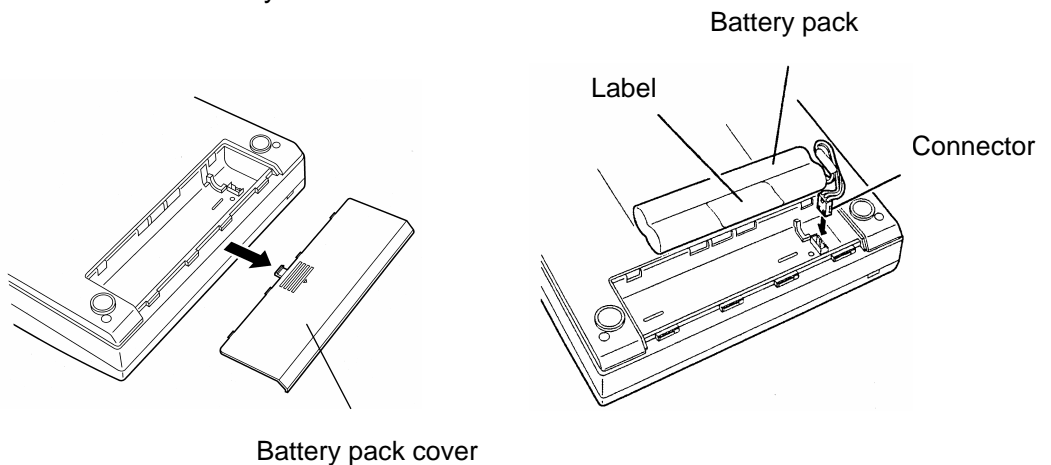


Figure 1

Figure 2

Removing the Battery Pack

1. Remove the battery cover as shown in Figure 1.
2. Pull out the battery pack, grab the connector with your thumb and index finger, and remove it by pulling up on it.
3. Close the battery cover.

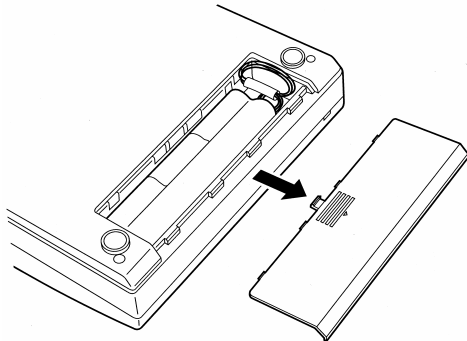


Figure 1

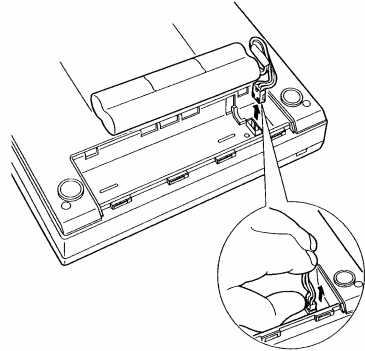


Figure 2

Charging the Battery pack

1. Connect the AC adapter to the printer.
2. Turn on the printer. The Power LED will blink once every second indicating the battery pack is charging. It takes about 10 hours to fully charge the battery pack. When the battery pack is fully charged, the Power LED stops blinking and goes on.
3. Disconnect the AC adapter.

NOTE

- ◆ Always charge the battery pack in a location that is from 5°C (41°F) to 40°C (104°F) otherwise it may lead to a degradation of the battery pack.
- ◆ The printer does not charge the battery pack when the power is in OFF state.

HINT

- Battery charging is temporarily disrupted while the printer is printing and resumed automatically when printing is completed.

When the Battery pack Gets Low During Printing

When the Power LED starts blinking about once every 0.5 seconds and the printer goes OFFLINE, connect the AC adapter.

The ONLINE LED will blink if there is data left in the memory buffer. In order to print the remaining data, connect the AC adapter as quickly as possible and push the ONLINE button.

NOTE

- ◆ Battery pack efficiency will decrease if battery pack is recharged more than necessary. Confirm whether Power LED is blinking and battery charge has decreased before recharging battery pack.
- ◆ When using the rechargeable battery pack:
Turn off the Power Switch after use.
Leaving Power Switch ON will consume battery pack and eventually run battery pack out, leading to low performance and malfunction.
- ◆ When using the AC adapter:
If you are not using the printer, turn off Power Switch, and unplug the AC adapter.

3 PRINTER FUNCTION

3.1 Buffer Full Printing

The DPU-414 has a line buffer to receive data in one-line units. If data with more columns than one line is received, printing will start, even if there is no print command.

This is called "*Buffer full printing*".

3.2 Interval Home Return

To protect the printer, the head returns to the home position (the leftmost position) automatically when;

- data is not sent from the computer
- the ONLINE button is pressed to set the printer OFFLINE
- the printer runs out of the thermal paper

3.3 Errors

Both the ONLINE and OFFLINE LEDs and data input and paper feed are disabled when one of the following four errors occurs:

- A The head does not return to the home position even when the power is turned on;
- B The head does not return to the home position at interval home return;
- C Printing is attempted at extremely low or high ambient temperatures;
- D The battery runs out;

If an error occurs:

A or B:

1. Turn off the Power Switch.
2. Remove the foreign material.
3. Turn on the Power Switch.

C:

Use the printer at 0°C to 40°C (32°F to 104°F).

D:

Connect the AC adapter and turn on the Power Switch to charge the battery pack.

3.4 Out-of-Paper Detection

When the thermal paper runs out, the printer goes OFFLINE and the OFFLINE LED flashes. The printer cannot be set ONLINE while the OFFLINE LED is flashing. When the thermal paper has been loaded, the OFFLINE LED stops flashing, and stays lit. Press the ONLINE button to print.

If the thermal paper runs out during printing, the printer will go OFFLINE. Load new paper and press the ONLINE button to resume printing.

4 CONTROL CODE

The DPU-414 uses control codes to change forms and characters. The control codes are not printed. There are two types of function codes: basic function codes that can be used independently and extended function codes used with the ESC Sequence.

Basic codes

Code	Function
BS	Back space
HT	Horizontal tab
LF	Line feed
FF	Form feed
CR	Carriage return
SO	Set double-width printing by line
SI	Set condensed printing
DC2	Reset condensed printing
DC4	Reset double-width printing by line
CAN	Cancel
DEL	Delete

ESC sequence codes

Code	Function
ESC+ "%" +n	Select user-definable characters
ESC+ "&" +s+n	Register user-definable characters
ESC+ ":" +s+SP+SP	Delete user-definable characters
ESC+ "0"	Set 11-dot line feed
ESC+ "2"	Set 15-dot line feed
ESC+ "3"	Set line feed length in half dots
ESC+ "." +n1+n2+n3	Function settings
ESC+ ":" +s+n+m	Font copy
ESC+ ";" +n+s	User-defined characters back-up
ESC+ "@"	Reset
ESC+ "A" +n	Set line feed length in dots
ESC+ "C" +n	Set page length
ESC+ "E"	Set emphasized printing
ESC+ "F"	Reset emphasized printing
ESC+ "G"	Set double-strike printing
ESC+ "H"	Reset double-strike printing
ESC+ "J" +n	Line feed in half dots
ESC+ "K" +n1+n2	Set single-density bit -image graphics mode
ESC+ "L" +n1+n2	Set horizontal double-density bit-image graphics mode
ESC+ "N" +n	Set skip length
ESC+ "O"	Reset skip length
ESC+ "Q" +n	Set right margin
ESC+ "R" +n	Select international characters
ESC+ "S" +n	Set superscript or subscript printing
ESC+ "T"	Reset superscript or subscript printing
ESC+ "U" +n	Select printing direction
ESC+ "W" +n	Select double-width printing
ESC + "^" +m+n1+n2	Set vertical double-, or quadruple-density bit-image graphics mode
ESC + "c" +n	Select special characters
ESC + "l" +n	Set left margin
ESC + "z" +n	Select zero font

5 CHARACTER CODE TABLE

- Japanese Character Set

The following table is the Japanese character set when 0 is set to normal 0.

Upper 4 bits	Lower 4 bits	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0000			SP	0	@	P	'	p	-	1	SP	-	1	1100	1110	1111
1	0001			!	1	A	Q	a	q	-	2	o	ア	チ	ム	ト	水
2	0010		DC2	"	2	B	R	b	r	-	3	「	イ	ツ	メ	+	水
3	0011			#	3	C	S	c	s	-	4	」	ウ	テ	モ	4	木
4	0100		DC4	\$	4	D	T	d	t	-	5	、	エ	ト	ヤ	▲	金
5	0101			%	5	E	U	e	u	-	6	・	オ	ナ	ユ	▲	土
6	0110			&	6	F	V	f	v	■	7	ヲ	カ	ニ	ヨ	▼	【
7	0111			'	7	G	W	w	w	■	8	7	キ	ス	ラ	▼	】
8	1000	BS	CAN	(	8	H	X	h	x	|	9	7	ク	ネ	リ	▲	「
9	1001	HT		)	9	I	Y	i	y	|	0	7	ケ	ノ	ル	▼	」
A	1010	LF		*	:	J	Z	j	z	|	1	7	コ	ハ	レ	▼	☺
B	1011		ESC	+	:	K	[	k	{	|	2	7	サ	ヒ	ロ	▼	♀
C	1100	FF		.	<	L	\	l	|	|	3	7	シ	フ	ワ	▼	♂
D	1101	CR		-	=	M	]	m	}	|	4	7	ス	ヘ	ソ	▼	ℓ
E	1110	SO		.	>	N	^	n	~	■	5	7	セ	ホ	ッ	▼	km
F	1111	SI		/	?	O	_	o	DEL	+	6	7	ソ	マ	ッ	▼	cm
																	mm

- SP denotes space.
- Blank codes are ignored.
- Function codes are enclosed in thick lines.

- IBM Character Set

The following table is the English character set when 0 is set to normal 0.

Upper 4 bits	Lower 4 bits	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	
0	0000			SP	0	@	P	'	p	C	É	á	⋯	⋯	⋯	α	→	
1	0001			!	1	A	Q	a	q	ü	æ	í	⋯	⋯	⋯	β	←	
2	0010		DC2	"	2	B	R	b	r	é	Æ	ó	⋯	⋯	⋯	Γ	↑	
3	0011			#	3	C	S	c	s	â	ø	ú	⋯	⋯	⋯	π	↓	
4	0100		DC4	\$	4	D	T	d	t	ä	ö	ñ	⋯	⋯	⋯	Σ	§	
5	0101			%	5	E	U	e	u	å	ø	Ñ	⋯	⋯	⋯	σ	¶	
6	0110			&	6	F	V	f	v	ä	û	ä	⋯	⋯	⋯	μ	№	
7	0111			'	7	G	W	g	w	ç	ù	ö	⋯	⋯	⋯	τ	‡	
8	1000	BS	CAN	(	8	H	X	h	x	ê	ÿ	í	⋯	⋯	⋯	Φ	•
9	1001	HT		)	9	I	Y	i	y	ë	Û	ÿ	⋯	⋯	⋯	θ	▷
A	1010	LF		*	:	J	Z	j	z	è	Ü	⋯	⋯	⋯	⋯	Ω	◀	
B	1011	ESC		+	:	K	[	k	[	ï	ç	½	⋯	⋯	⋯	δ	◆
C	1100	FF		,	<	L	\	l	l	î	£	¼	⋯	⋯	⋯	∞	∅	
D	1101	CR		-	=	M	]	m	]	ï	¥	½	⋯	⋯	⋯	φ	¼
E	1110	SO		/	>	N	^	n	^	ÿ	Ä	⋯	⋯	⋯	⋯	ε	⅞	
F	1111	SI			?	O	_	o	_	ÿ	Å	⋯	⋯	⋯	⋯	Π	*F	
																		∴

- SP denotes space.
- Blank codes are ignored.
- Function codes are enclosed in thick lines.

6 SPECIFICATIONS

6.1 General Specifications

Printer specifications

Printing method: Thermal serial dot

Character mode

Total number of dots: 9 × 320 dots / line

Character matrix: 9 dot high × 7 dot wide

Space between

characters: 1 dot

Columns: 40 column (normal), 80 column (condensed)

Printing direction: Unidirectional or bidirectional logical seek

Bit-image graphics mode

Total number of dots: 8 × 320 dots / line

Printing direction: Unidirectional logical seek

Printing width: 89.6 mm

Printing speed: Max. 52.5cps (normal), Max. 80cps (condensed)

External dimensions: W 160 mm × D 170 mm × H 66.5 mm

Mainframe mass: Approx. 580 g (excluding battery)

Life: Approx. 500,000 lines

(continuous printing of 40 columns of "8")
(when print density is 100%)

Regulation: The printer complies with regulation in following countries*1:

USA, Canada, EU, Japan, China, Taiwan,
Korea and Australia

*1: Please ask if the printer can use in other than countries
above to our sales representative.

Operating conditions

Temperature: 0°C to 40°C (32°F to 104°F)

Humidity: 30%RH to 80%RH (non-condensing)

Thermal paper specifications

Product No.: TP-411L

Width: 112 mm

Outer diameter: 48 mm

Roll length: Approx. 28 m

Specifications of Specified AC Adapter (Option)

Item	Specifications
Product No.	PW-C0725-W1-x ^{*1}
Input	AC100 V to AC240 V 50 Hz to 60 Hz
Output	DC7.0 V 2.5 A
Dimensions ^{*2}	W 77.5 mm × D 51.8 mm × H 39.2 mm Cable length : 1.5 m
Mass	Approx. 165 g
Regulation ^{*3}	USA, Canada, Japan, EU, China, Republic of Korea, Taiwan, Australia

*1: Product models differ in respective countries. See "List of Compliance with Regulation" for proper use.

*2: Excluding convex part such as the plug.

*3: Please ask if the AC adapter can use in other than countries above to our sales representative.

Specifications of the Battery pack (Option)

Item	Specifications
Product No.	BP-4005-E
Cell type	Ni-MH
Rated Voltage	4.8 V
Mass	Approx. 120 g
Regulation	USA, Canada, Japan, EU, China, Taiwan

□ List of Compliance with Regulation

Please check the list below to see if the printer and its accessories can be operated in destination countries and comply with the regulations.

✓: Compliance with regulation

countries*1 Specified AC adapter	USA	Canada	Japan	Taiwan	Republic of Korea	EU (except United Kingdom)	United Kingdom	Australia	China
PW-C0725-W1-U	✓	✓	✓	✓	-	-	-	-	-
PW-C0725-W1-K	-	-	-	-	✓	-	-	-	-
PW-C0725-W1-E	-	-	-	-	-	✓	-	-	-
PW-C0725-W1-B	-	-	-	-	-	-	✓	-	-
PW-C0725-W1-A	-	-	-	-	-	-	-	✓	-
PW-C0725-W1-C	-	-	-	-	-	-	-	-	✓
BP-4005-E	✓	✓	✓	✓	-	✓	✓	-	✓

*1: Please ask SII sales representative if you want to use the products in other countries than listed above.

6.2 Interface Specifications

Parallel

(1) Specifications

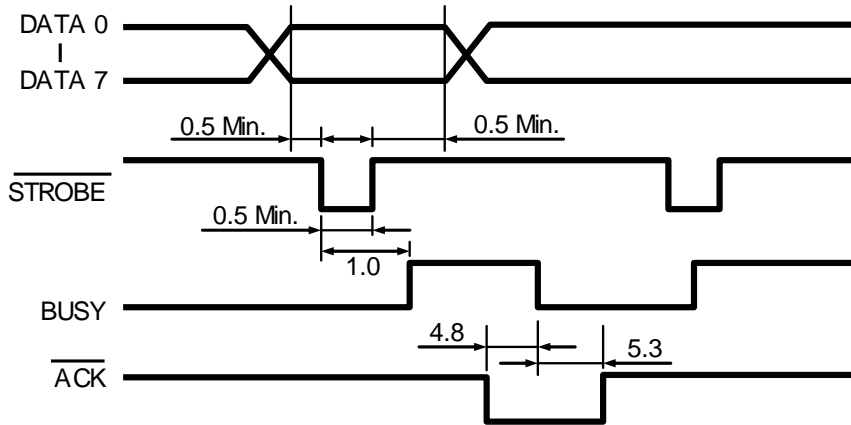
Data input: 8 bits parallel (Centronics)
 Handshake: STROBE , BUSY, and ACK

(2) Connector signal description

Pin no.	Signal	I/O	Function
1	<u>STROBE</u>	Input	Data strobe
2 to 9	DATA 0 to 7	Input	Carries the input data 1 when high and 0 when low
10	<u>ACK</u>	Output	Signal showing that data is received
11	BUSY	Output	Signal showing that data cannot be received
12	PE	Output	Signal showing that there is no paper
13	SLCT	Output	Signal showing that the printer is ONLINE
14	<u>AUTO · LF</u>	Input	When this signal is low at power-on, one line feed is performed at carriage return
15	N.C.	—	No connection
16	GND	—	Ground
17	FG	—	Frame Ground
18	N.C.	—	No connection
19 to 30	GND	—	Twist, pair, and ground for return signal
31	<u>INIT</u>	Input	Initialize
32	<u>ERROR</u>	Output	Signal showing that there is an error
33	GND	—	Ground
34	N.C.	—	No connection
35 and 36	+5V	—	Normally, pulled up at 4.7kΩ at high

(3) Data Input Timing

(Unit: μs , typical)



(4) Signal Conditions

Item	Standard			Unit
	Min.	Typ.	Max.	
Input: Low Level Voltage	0.0	—	0.9	V
Input: High Level Voltage	3.5	—	5.0	V
Output: Low Level Voltage	—	—	0.5	V
Output: High Level Voltage	3.5	—	—	V

Serial

(1) Specifications

Data input: RS-232C
Data control: H/W BUSY, XON/XOFF

(2) Connector signal description

Pin no.	Signal	I/O	Function
1	N.C.	—	No connection
2	TxD	Output	XON/XOFF Output
3	RxD	Input	Data reception
4	—	—	Connected to pin 6
5	GND	—	Ground
6	—	—	Connected to pin 4
7	N.C.	—	No connection
8	RTS	Output	Data send request
9	N.C.	—	No connection

Computer connections

Computer	DPU-414	
RxD	2	TxD
TxD	3	RxD
DTR	4	Connected to pin 6
GND	5	GND
DSR	6	Connected to pin 4
RTS	7	N.C.
CTS	8	RTS

(3) Error processing

The following characters are printed when an error occurs.

- ? (3FH): Framing error
- ! (21H): Parity error
- * (2AH): Overrun error

Turn the power off and check computer and DPU-414 SWDIP switch settings.

NOTE

- ◆ Always power OFF the printer before the host computer. Powering OFF the computer before the printer may cause the printer to print several lines of "?" due to a FLAMING ERROR triggered by an unstable signal output from the computer at power OFF. It does not imply a printer malfunction.

(4) Signal Conditions

Item	Standard			Unit
	Min.	Typ.	Max.	
Input: Low Level Voltage	-15.0	—	-3.0	V
Input: High Level Voltage	3.0	—	15.0	V
Output: Low Level Voltage	—	-12.0	—	V
Output: High Level Voltage	—	12.0	—	V

7 TROUBLESHOOTING

Check the following points if the printer has malfunctioned or does not operate at all. If it has still problems, call SII representative or the branch office.

If the power does not turn on (the Power LED is off)

Checkpoint	Action	Reference page
Is the Power Switch on?	Turn on Power Switch.	—
Is the AC adapter connected correctly?	See Section 2.1.	16
Is the battery recharged? (When using a battery)	See Section 2.10.	29
Is power being supplied from the outlet?	Plug other electrical appliances into the outlet to check that it is working.	—

If the thermal paper does not feed

Checkpoint	Action	Reference page
Is the thermal paper loaded correctly?	See Section 2.2.	17
Is there foreign matter in the paper inlet?	Remove any foreign objects.	—
Are the ONLINE and OFFLINE LEDs on?	An error has occurred. See Section 3.3.	32
Is the ONLINE LED off?	Set the printer OFFLINE.	14

If the printer does not print or stops during printing

Checkpoint	Action	Reference page
Is the OFFLINE LED flashing?	The thermal paper has run out. Load more paper.	18
Are the ONLINE and OFFLINE LEDs on?	An error has occurred. See Section 3.3.	32
Is the OFFLINE LED on?	Set printer ONLINE.	14
Is the ONLINE LED ON and the Power LED blinking?	If you cannot set it ONLINE, the battery has discharged. Connect the AC adapter.	—
Is the ONLINE LED flashing?	Connect the AC adapter and set the printer ONLINE.	—
Are the SWDIP switches set correctly?	Set them according to the input method.	19
Is the interface cable connected correctly?	See Section 2.5.	24
Are you using specified paper?:TP411L?	Use the specified paper	—
Are you using back of paper?	The outside is the front. See Section 2.2.	17
Is the program correct?	Check the program. The LPRINT statement in BASIC is usually used, but some machines use the PRINT# or the PR# statement.	—
Does the printer execute a self-test?	If it does not execute a self-test, contact SII representative or local branch office.	26

If the printer prints wrong characters

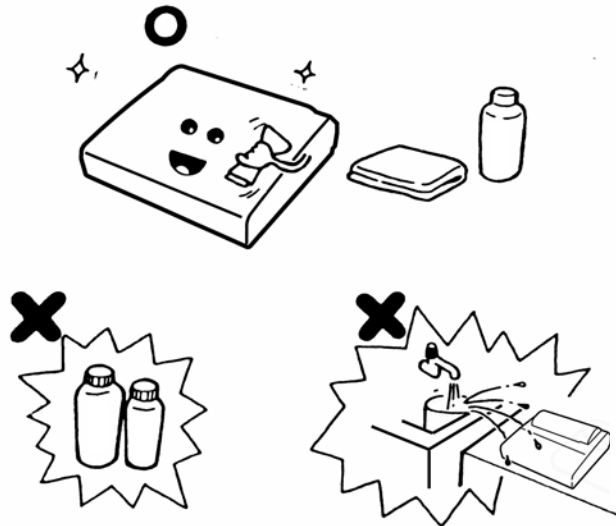
Checkpoint	Action	Reference page
Is interface cable connected correctly?	See Section 2.5.	24
Are the SWDIP switches set correctly?	Set the SWDIP switches according to the input method. In serial input, "!", "?", "*" is printed for the incorrect set at SWDIP switch 3. Set them according to the computer communications method.	19
Is the program correct?	Check the program. Unless ";" is input following the LPRINT Statement in BASIC, usually CR and LF are automatically output.	—

If the printing is light or dark

Checkpoint	Action	Reference page
Is the temperature very high or low?	Use the printer at 0°C to 40°C.(32°F to 104°F)	—
Are you using the specified paper : TP411L ?	Use the specified paper.	—
Are the SWDIP switches set correctly?	Check the print density SWDIP switch settings.	21


8 CARING FOR THE DPU-414 PRINTER

If the outside of your printer gets dirty, wipe it with a soft, dry cloth. If it gets very dirty, wet a soft cloth with mild detergent diluted with water, squeeze it well, and clean the printer.



NOTE

- ◆ DO NOT use thinner, benzene, or other volatile chemicals.
- ◆ DO NOT allow water to get inside the printer.

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(Specifications are subject to change without notice.)