4-528-680-**19** (1)
2024-10

SONY

Digital Graphic Printer

Instructions for Use

Before operating the unit, please read this manual thoroughly and retain it for future reference.

UP-D898MD

CE UK CA

Indications for Use/Intended Use

The Sony UP-D898MD printer is a compact, medical grade black and white digital printer. It is designed to be integrated into digital radiology imaging systems such as mobile c-arm, ultrasound, cardiac cath lab and other compatible medical imaging systems and produce hard copy prints of still images captured by these systems for the patient record or for referrals.

Notes

- Output images from this equipment cannot be used for diagnostic use.
- This equipment is for medical professionals.
- This equipment is intended for use in medical environments, such as clinics, examination rooms, and operating rooms.

WARNING

To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

No modification of this equipment is allowed.

WARNING

To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

WARNING

To disconnect the main power, unplug the power plug. When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power plug to an easily accessible socket-outlet near the unit.
Do not position the ME equipment where it is difficult to unplug the power plug.
If a fault should occur during operation of the unit, operate the disconnect device to switch the power supply off, or disconnect the power plug.

For customers in the U.S.A.

Caution

Federal law (United States of America) restricts this device to sale by or on the order of a licensed healthcare practitioner.

Rx
ONLY

Symbols on the product

Consult the instructions for use
Follow the directions in the instructions for use for parts of the unit on which this symbol appears.

This symbol indicates the manufacturer, and appears next to the manufacturer's name and address.

This symbol indicates the date of manufacture.

This symbol indicates the serial number.

This symbol indicates the Unique Device Identifier (UDI), and appears next to the bar code representation of the Unique Device Identification.

This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.

Storage and transport temperature
This symbol indicates the acceptable temperature range for storage and transport environments.

Storage and transport humidity
This symbol indicates the acceptable humidity range for storage and transport environments.

Storage and transport pressure
This symbol indicates the acceptable atmospheric pressure range for storage and transport environments.

This symbol indicates the Importer, and appears next to the Importer's name and registered office address.

This symbol indicates the European Community representative, and appears next to the European Community representative's name and address.

This symbol indicates the UK Responsible Person, and appears next to the UK Responsible Person's name and address.

This symbol indicates the Swiss authorized representative, and appears next to the Swiss authorized representative's name and address.

MD This symbol indicates the medical device in the European Community.

 This symbol indicates sharp edges.

For accessories

LOT This symbol indicates the batch code.

 This symbol indicates “Do not reuse”.

For customers in the U.S.A.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.
All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of part 15 of FCC Rules.

For customers in Canada

This unit has been certified according to Standard CAN/CSA-C22.2 No.60601-1.

For customers in Europe

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

Important safeguards and notices for use in the medical environments

1. All devices connected to the unit must be certified or compliant according to IEC 60601-1, IEC 60950-1, IEC 62368-1 and IEC 60065 standards and other IEC/ISO standards applicable to the devices.

2. Furthermore, the system as a whole must comply with IEC 60601-1 standards. All peripheral devices connected to the signal input/output sections of the unit constitute the medical-use system, and therefore, the user is responsible for ensuring that the system as a whole complies with IEC 60601-1 standards. If in doubt, consult qualified Sony service personnel.

3. Connecting the unit to other devices may increase the leakage current.

4. For all peripheral devices connected to the unit that operate on commercial power supplies and do not comply with IEC 60601-1 standards, incorporate an isolation transformer that complies with IEC 60601-1 standards and connect to the commercial power supply via the transformer.

5. The unit generates, uses, and may radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference on other devices. If the unit causes interference (which can be determined by disconnecting the power cord from the unit), try the following.
   – Relocate the unit with respect to the affected devices.
   – Connect the unit and the affected devices to different branch circuits.
   For more information, consult qualified Sony service personnel.
   (Applicable standard: IEC 60601-1-2)

Important EMC notices for use in medical environments

- The UP-D898MD needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the instructions for use.
- The UP-D898MD is intended for use in a professional healthcare facility environment.
- Portable and mobile RF communications equipment, such as cellular phones, can affect the UP-D898MD.

Warning

- Portable RF communications equipment should be used no closer than 30 cm (12 inches) to any part of the UP-D898MD. Otherwise, degradation of the performance of this equipment could result.
- If the UP-D898MD will be used adjacent to or stacked with other equipment, normal operation of the UP-D898MD under such configurations should be verified via observation.
- The use of accessories and cables other than those specified, with the exception of replacement parts sold by Sony Corporation, may result in increased emissions or decreased immunity of the UP-D898MD.

Guidance and manufacturer's declaration – electromagnetic emissions		
The UP-D898MD is intended for use in the electromagnetic environment specified below. The customer or the user of the UP-D898MD should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The UP-D898MD uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11 CISPR 32	Class B	The UP-D898MD is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
The UP-D898MD is intended for use in the electromagnetic environment specified below. The customer or the user of the UP-D898MD should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, a relative humidity of at least 30% is recommended.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/ output lines	±2 kV for power supply lines ±1 kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% U_T (100% dip in U_T) for 0.5/1 cycles [a] 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25/30 cycles [a] (for 0.5 sec) 0% U_T (100% dip in U_T) for 250/300 cycles [a] (for 5 sec)	0% U_T (100% dip in U_T) for 0.5/1 cycles [a] 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25/30 cycles [a] (for 0.5 sec) 0% U_T (100% dip in U_T) for 250/300 cycles [a] (for 5 sec)	Mains power quality should be that of a typical commercial or hospital environment. If the user of the UP-D898MD requires continued operation during power mains interruptions, it is recommended that the UP-D898MD be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Proximity magnetic fields IEC 61000-4-39	65 A/m 134.2 kHz Pulse modulation 2.1 kHz 7.5 A/m 13.56 MHz Pulse modulation 50 kHz	65 A/m 134.2 kHz Pulse modulation 2.1 kHz 7.5 A/m 13.56 MHz Pulse modulation 50 kHz	Proximity magnetic fields of the UP-D898MD should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: U_T is the a.c. mains voltage prior to application of the test level.			
a For example, 10/12 means 10 cycles at 50 Hz or 12 cycles at 60 Hz.			

Guidance and manufacturer's declaration – electromagnetic immunity			
The UP-D898MD is intended for use in the electromagnetic environment specified below. The customer or the user of the UP-D898MD should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the UP-D898MD, including cables, than the recommended separation distance calculated from the equation appliance to the frequency of the transmitter. **Recommended separation distance**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz outside ISM bands [c]	3 Vrms	$d = 1.2 \sqrt{P}$
	6 Vrms 150 kHz to 80 MHz in ISM bands [c]	6 Vrms	
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz	3 V/m	IEC 60601-1-2: 2007 $d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz IEC 60601-1-2: 2014 + A1: 2020 $d = 2.0 \sqrt{P}$ 80 MHz to 2.7 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with following symbol: 
NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the UP-D898MD is used exceeds the applicable RF compliance level above, the UP-D898MD should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the UP-D898MD.

b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

c The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 MHz to 40.70 MHz.

Recommended separation distances between portable and mobile RF communications equipment and the UP-D898MD

The UP-D898MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the UP-D898MD can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the UP-D898MD as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m				
	IEC 60601-1-2 : 2007			IEC 60601-1-2 : 2014 + A1: 2020	
	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 2.7 GHz $d = 2.0 \sqrt{P}$
0.01	0.12	0.12	0.23	0.12	0.20
0.1	0.38	0.38	0.73	0.38	0.63
1	1.2	1.2	2.3	1.2	2.0
10	3.8	3.8	7.3	3.8	6.3
100	12	12	23	12	20

For transmitters rated a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Guidance and manufacturer's declaration – electromagnetic immunity					
The UP-D898MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. Portable RF communications equipment should be used no closer than 30 cm (12 inches) to any part of the UP-D898MD. Otherwise, degradation of the performance of this equipment could result.					
Immunity test	Band [a]	Service [a]	Modulation	IEC 60601 test level	Compliance level
Proximity fields from RF wireless communications equipment IEC 61000-4-3	380 – 390 MHz	TETRA 400	Pulse modulation 18 Hz	27 V/m	27 V/m
	430 – 470 MHz	GMRS 460 FRS 460	FM ±5 kHz deviation 1 kHz sine	28 V/m	28 V/m
	704 – 787 MHz	LTE Band 13, 17	Pulse modulation 217 Hz	9 V/m	9 V/m
	800 – 960 MHz	GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE Band 5	Pulse modulation 18 Hz	28 V/m	28 V/m
	1,700 – 1,990 MHz	GSM 1800 CDMA 1900 GSM 1900 DECT LTE Band 1, 3, 4, 25 UMTS	Pulse modulation 217 Hz	28 V/m	28 V/m
	2,400 – 2,570 MHz	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE Band 7	Pulse modulation 217 Hz	28 V/m	28 V/m
	5,100 – 5,800 MHz	WLAN 802.11 a/n	Pulse modulation 217 Hz	9 V/m	9 V/m
NOTE: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.					
a For some services, only the uplink frequencies are included.					

Caution

When you dispose of the unit or accessories, you must obey the laws in the relative area or country and the regulations in the relative hospital regarding environmental pollution.

Warning on power connections

Use a proper power cord for your local power supply.

1. Use the approved Power Cord (3-core mains lead) / Appliance Connector / Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
2. Use the Power Cord (3-core mains lead) / Appliance Connector / Plug conforming to the proper ratings (Voltage, Ampere).

If you have questions on the use of the above Power Cord / Appliance Connector / Plug, please consult a qualified service personnel.

Warning on power connections for medical use

Customers in the U.S.A. and Canada should use the following type of power cord.
Customers in other countries or regions should use the power cord prescribed by their country or region.

	U.S.A. and Canada
Plug type	HOSPITAL GRADE*
Cord type	Min. Type SJT
	Min. 18 AWG
Minimum rating for plug and appliance couplers	10 A / 125 V
Safety approval	UL Listed and CSA

* Note: Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked “Hospital Only” or “Hospital Grade”.

Important

The nameplate is located on the bottom.

Caution

Do not use the device in a MR (Magnetic Resonance) environment.
It may cause a malfunction, fire, and unwanted movement.

This equipment is not suitable for use in locations where children are likely to be present.

For the customers in the U.S.A.

SONY LIMITED WARRANTY - Please visit www.sony.com/psa/warranty for important information and complete terms and conditions of Sony’s limited warranty applicable to this product.

For the customers in Canada

SONY LIMITED WARRANTY - Please visit www.sony.com/psa/warranty for important information and complete terms and conditions of Sony’s limited warranty applicable to this product.

For the customers in Europe

Sony Europe B.V. - Standard Warranty and Exceptions on Standard Warranty. Please visit https://pro.sony/support-services/primesupport/support-professional-solutions-europe-standard-product-warranty for important information and complete terms and conditions.

For the customers in Korea

SONY LIMITED WARRANTY - Please visit https://pro.sony/ko_KR/support-services for important information and complete terms and conditions of Sony’s limited warranty applicable to this product.

Table of Contents

Getting Started

Overview 11
Location and Function of Parts and Controls 11
Front Panel 11
Rear Panel 12
Connections 12
Connecting to the USB Connector 13
Installing the Printer Driver to the Computer ... 13
Paper 13
Paper You Can Use 13
Loading Paper 14

Operation

Adjustments and Settings Using the Menu 17
Menu Flow 17
Menu List 18
Basic Menu Operations 20
Registering Menu Settings 21
Printing the Menu List 21
Printing 22
Starting a Print Job 22
Cutting the Printed Paper 23
Canceling a Print Job 23
Making Copies of the Last Printout 23
Feeding Paper 23
Adjusting the Contrast and Brightness 24

Others

Precautions 25
On Safety 25
On the Printer Carriage 25
On Installation 25
Cleaning the Cabinet 25
Cleaning the Thermal Head 26
Cleaning the Platen Roller 27
Specifications 28
Troubleshooting 29
Error Messages 30
License 31
Index 33

Overview

This unit is a printer that prints images by heating a thermal head, according to the input image data, and pressing the head against special thermal printing paper to print the image on the paper. It features the following characteristics.

Quiet, high quality, fast printing

- A thin-film thermal head with a built-in high speed drive IC is equipped, and printing high resolution images of 12.8 dots/mm is available.
- High quality image (960 × 1280 dots) printing is available in approx. 1.9 seconds per print when printing at high speed.
- Standard memory for image is capable of printing images up to 4096 × 1280 dots (approx. 320 × 100 mm).
- Monochrome printing with up to 256 shades of gradation is available.
- Built-in temperature correction circuits prevent temperature changes which could cause blurred prints.

USB interface

The unit is equipped with a USB connector which complies with the Hi-Speed USB (USB 2.0).

Easy printer settings using a menu

You can make up the settings to meet your requirements using a menu. You can store up to three settings as a set of user settings.

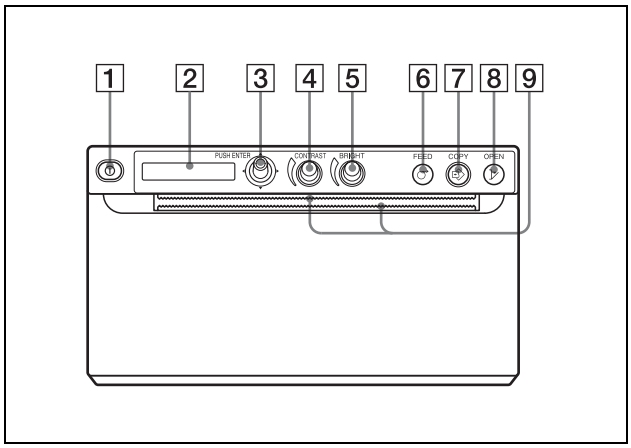
Easy paper loading

Free access to the door panel allows you to drop paper into the unit for easy loading.

Location and Function of Parts and Controls

For more details, see the referenced page numbers enclosed in parentheses ( ).

Front Panel



1 **⏻ Power ON/OFF switch (15, 20, 22, 26)**
Press the switch to ON to turn the power on. The back light on the LCD lights in green.

Note

When the switch is turned off or when turning the main power off then on again, wait about five seconds and turn on the unit.

2 **Printer window display (LCD: liquid crystal display) (17, 22)**
The back light lights in green when the unit operates normally.
If an error occurs, the back light lights in orange and a corresponding alarm message is displayed.
During menu operations, menu items and settings are displayed.

3 **Menu lever (20, 26)**
Use to make menu operations.

4 **CONTRAST control (24)**
Adjust the contrast of the printouts.

5 **BRIGHT (brightness) control (24)**
Adjust the brightness of the printouts.

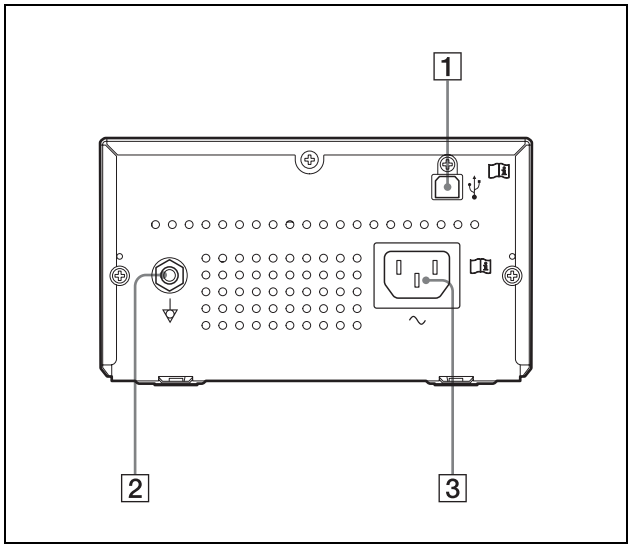
6 **FEED button (16, 23)**
Hold down to feed paper.
While a print job is in progress, press to cancel the print job.

7 **COPY button (23)**
Press to print another copy of the previous printout. You can make only one copy each time you press this button regardless of the print quantity set using the menu.

8 **OPEN button (15, 23)**
Press to open the door panel. While a print job is in progress, press to cancel the print job.

9 **Paper cutters**
Use to cut the paper after printing.
There are cutters positioned above and below the output slot.

Rear Panel



1 **USB connector (13)**
Connects to a computer equipped with the USB interface, using a USB cable compatible with Hi-Speed USB (sold separately).

2 **Equipotential ground terminal connector**
Used to connect to the equipotential plug to bring the various parts of a system to the same potential. Refer to "Important safeguards and notices for use in the medical environments" (page 3).

3 **AC IN connector**
Use a specified power cord.
Refer to "Warning on power connections" (page 9) and "Warning on power connections for medical use" (page 9).

Connections

After connecting the USB cable (sold separately) to the unit and the computer, connect the power cord. For details about the unit connection, refer to the manuals for the computer or other peripheral devices.

WARNING

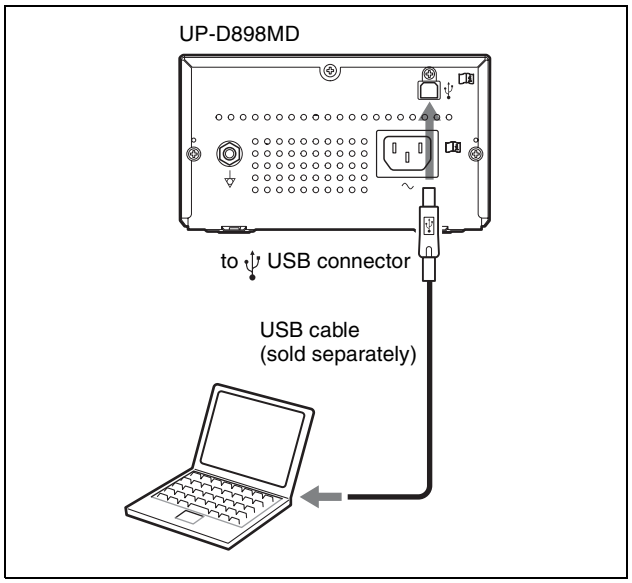
Using this unit for medical purposes

The connectors on this unit are not isolated.
Do not connect any device other than one which conforms to IEC 60601-1 standards.
When an information technology device or AV device that uses an alternating current is connected, current leakage may result in an electric shock to the patient or operator.
If use of such a device is unavoidable, isolate its power supply by connecting an isolation transformer, or by connecting an isolator between the connecting cables. After implementing these measures, confirm that the reduced risk now conforms to IEC 60601-1 standards.

Notes

- Before connecting the unit to the computer, turn off the unit, computer, monitor, and all peripheral devices connected to the computer.
- Before connecting the unit to the computer, disconnect the power cord from the unit. Connect the power cord to the unit only after connecting the unit and the computer.
- Follow the connection procedures described in the computer manual.
- Make sure that the cables are connected securely at both ends.
- The unit drive software provided with the unit is not suitable for using the unit connected to a network.
- Printer operation is not guaranteed when connecting to the computer using the USB cable via a hub.
- Two or more units cannot be connected to a single computer.

Connecting to the USB Connector



Installing the Printer Driver to the Computer

When you use Windows XP/Windows Vista:
After connecting this unit to the computer, turn on this unit. For installing, see the Install Guide of the supplied CD-ROM and the Readme file.

When you use Windows 7/8:
Before connecting this unit to the computer, install the supplied printer driver to the computer. For installing, see the Install Guide of the supplied CD-ROM and the Readme file.

Note

When this unit is turned on, do not make the computer which is connected to this unit standby (suspended) or pause mode. It may occur the malfunction.

Paper

Use only Sony UPP-110S/110HD/110HG paper designed for use with this unit. High print quality cannot be guaranteed if any other paper is used with this unit, and such paper could damage the unit.
You cannot use the UPP-110HA as specified for the UP-D890 series printer.

Paper You Can Use

Print paper characteristics are as follows.

Print Characteristics	Paper Type
TYPE I (Normal)	UPP-110S
TYPE II (High Density)	UPP-110HD
TYPE V (High Glossy)	UPP-110HG

Notes on storing and handling paper

Do not re-use
Doing so may result in malfunction and negatively affect printing results.

Storing unused paper
- Store unused paper at a temperature below 30 °C (86 °F) in a dry location that is not exposed to direct sunlight.
- Do not store unused paper near volatile liquids or allow the paper to contact any organic volatile liquid, cellophane tape, or any compound of vinyl chloride.

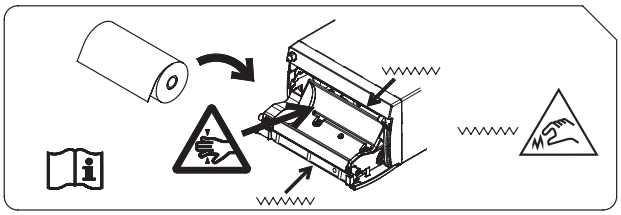
Loading paper
- Handle the paper carefully when loading not to touch the printing surface with your fingers. Inspection gel, fingerprints or perspiration could cause pictures to blur.
- After removing the label from the leading edge of the paper, pull the paper out 15 - 20 cm (6 - 8 inches) before printing. Label adhesive remaining on the paper could spoil a picture.
- If you reuse paper that has been removed once, pull out 15 – 20 cm (6 – 8 inches) before printing. If the dust, etc. exists, it could spoil a picture.

Storing printouts
- To prevent printouts from fading or changing color, store them in a cool, dry location where the temperature is not higher than 30 °C (86 °F).
- Store printouts in a polypropylene pouch or between sheets of paper that contain no plastic.
- Do not store printouts where they will be exposed to direct sunlight or high humidity.
- Do not store printouts near volatile liquids or allow the prints to contact any organic volatile liquid, cellophane tape, or any compound of vinyl chloride.

- To prevent fading, do not stack printouts on or under a diazo copy sheet.
- To mount printouts on another sheet of paper, use double-sides tape or a water base adhesive.
- Do not incinerate waste printer paper.

Loading Paper

When loading paper, make sure to follow the notes of the symbols on the unit.



Caution

Paper cutters are mounted in the unit. When loading paper, be careful not to touch the paper cutters. Touching the paper cutters may cause injury.

Caution

Do not insert your finger into the back of the paper tray. Your finger may become stuck in an internal gap, which may lead to injury.

Caution

Do not touch any unit circuitry and the patient at the same time.
If the unit malfunctions, it may generate voltage that could be harmful to the patient.

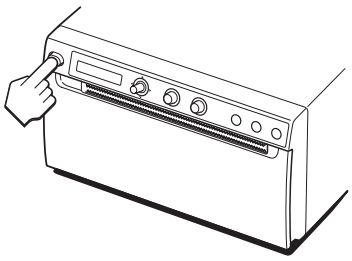
Notes

- Before loading paper in the unit, see “Notes on storing and handling paper” (page 13).
- Always handle paper carefully when loading to avoid adversely affecting the quality of the printouts. Never bend or crease the paper and never touch the printing surface with your fingers. Inspection gel, fingerprints or perspiration could cause pictures to blur.
- Do not use any paper other than UPP-110S/110HD/110HG paper. (page 13)
- Be sure to set “-PP.TYPE” of the “CONFIG.” menu to the paper to be used. (page 19) You can confirm the media currently selected on the LCD.
  For detailed information on how to confirm, see “Paper currently selected” (page 23).

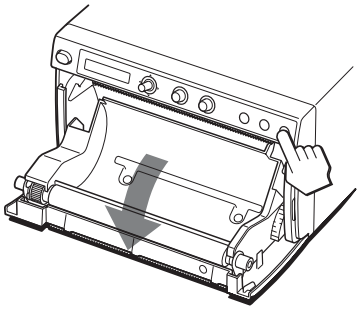
Caution

Paper cutters are mounted in the unit. When loading paper, be careful not to touch the paper cutters. Touching the paper cutters may cause injury.

1 Press the power ON/OFF switch to on.
When paper is not loaded yet, the back light on the LCD lights in orange and the message “EMPTY” is displayed.



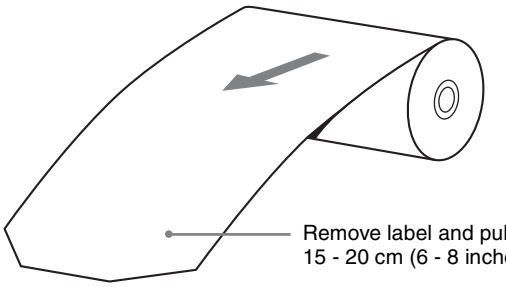
2 Press the OPEN button to open the door panel.

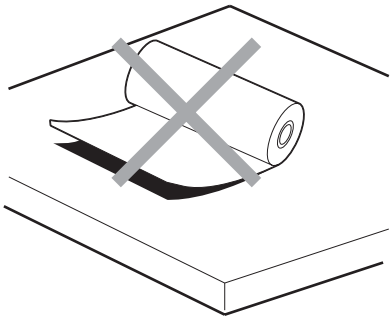


3 Remove the label from the leading edge of the paper, pull out about 15 - 20 cm (6 - 8 inches) of the paper, and then set the paper roll in the paper tray.

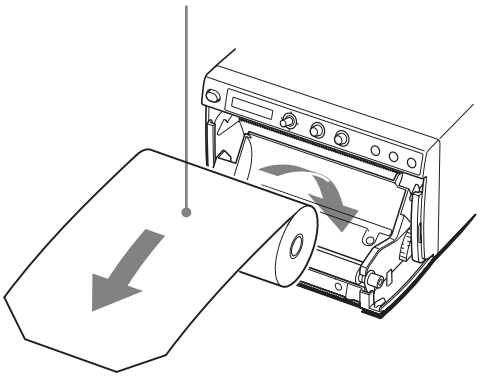
Note

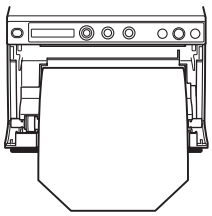
When installing/removing the paper to/from the paper tray, be careful not to drop the paper or put the paper on desk, etc., with the surface of the paper facing downward.





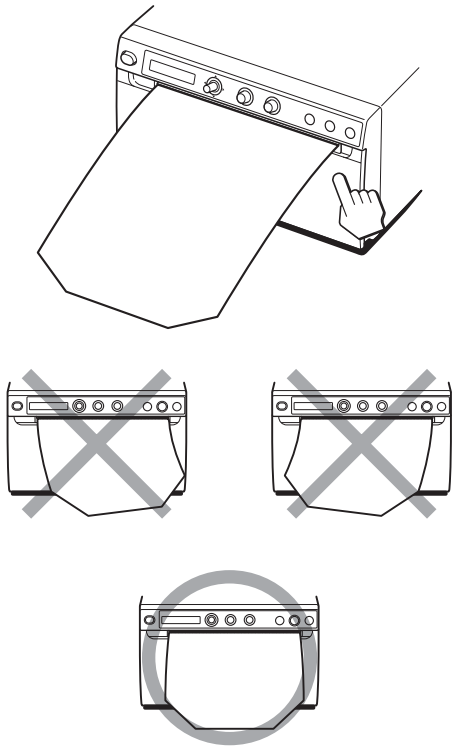
Load the paper in the orientation shown in the diagram. Printing is not possible if the paper is reversed.





Make sure that the paper is set straight.

4 Close the door panel by pushing it.



Notes

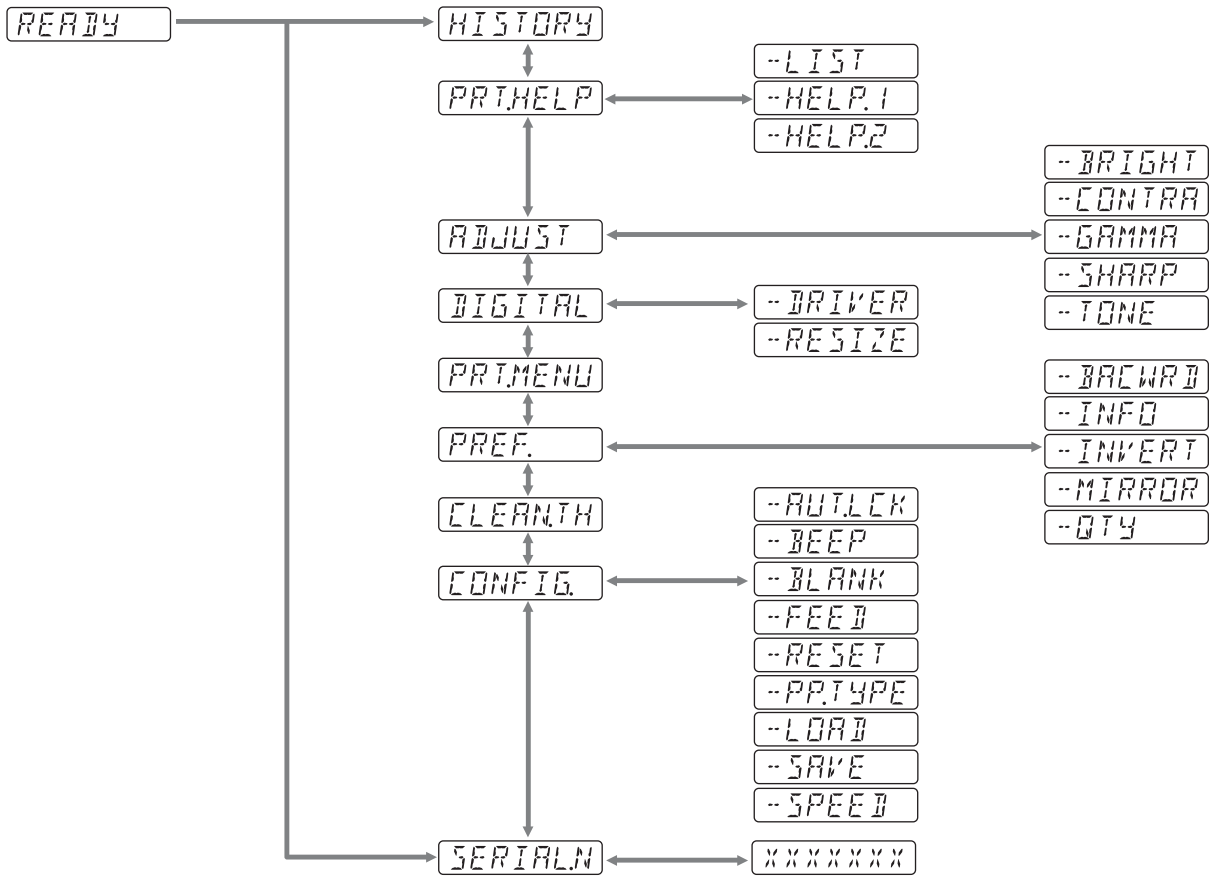
- Make sure that the paper is loaded straight. If it is skewed, this could cause the paper to jam.
- If you did not pull out enough paper in step 3, press the FEED button to feed some more paper out of the unit without pulling out the paper.

Adjustments and Settings Using the Menu

You can carry out adjustments and settings to meet your requirements. Those settings and adjustments are retained even if the unit is turned off.
You can set up the unit according to its intended purpose, connected equipments or your individual preferences.
You can store up to three settings as a set of user settings.

Menu Flow

The contents displayed on the LCD change in sequence as you operate the menu lever, as shown in the following menu flow chart, and you can make the settings for each menu item.



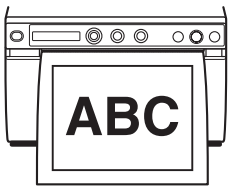
Menu List

This section describes the menus displayed as you operate the menu lever. The setting surrounded by [ ] indicates the default setting.

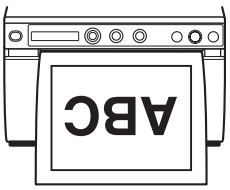
Item	Function	Settings	
HISTORY	Displays up to five recently used menus according to the menu operation history. "NO ITEM" is displayed as the default.		
PRT.HELP	Prints description of operation method. (English only)	-LIST	Prints list of operating instructions.
		-HELP.1	Prints instructions of "Contrast and Brightness Control."
		-HELP.2	Prints instructions of "Print direction and feed control."
ADJUST	Displays menu for adjusting image quality.	-BRIGHT	Adjusts brightness of printouts. You can set between –64 -- [0] -- +64.
		-CONTRA	Adjusts contrast of printouts. You can set between –64 -- [0] -- +64.
		-GAMMA	Select the type of gamma. When "P.TYPE:S" of the "-PP.TYPE" is selected, GAMA1 is fixed. GAMA4: Softest gradation GAMA3: Hard gradation [GAMA2]: Standard GAMA1: Soft gradation
		-SHARP	Adjusts the sharpness of the printout to any of 15 levels, from [0] to 14. The outline of the printout is most emphasized at the setting of 14 and no emphasis at the setting of "0" (default value).
		-TONE	Adjusts density of the half tone. You can set between –32 -- [0] -- +32.
DIGITAL	Displays menu of settings to print from computer.	-DRIVER	Select the printer driver to use for this unit. [DRV:898]: Use the driver for UP-X898MD, UP-D898MD. DRV:897: Use the driver for UP-D897.
		-RESIZE	Select whether or not the image is enlarged. [RSIZ:OFF]: Prints the image at its original size. RSIZ:ON: Prints the image at a larger size, according to the paper size set by the printer driver.
PRT.MENU	Prints current settings by menu list.	MENU:OK	Prints by pushing the menu lever.
PREF.	Displays menu to set printout conditions.	-BACWRD [a)]	Select whether the top or bottom of the screen is to be printed first. BACW:ON: Starts to print in the reverse direction (from the top of the screen). [BACW:OFF]: Starts to print in the normal direction (from the bottom of the screen).
		-INFO	Select whether the print conditions are to be printed under image. [INFO:OFF]: Does not print information. INFO:ADJ: Prints image quality adjustment value.
		-INVERT	Set the printout to either positive printout or negative printout. INV:NEG: Makes negative printouts. [INV:POS]: Makes normal printouts.
		-MIRROR	Prints image inverting right and left. MIRR:ON: Inverts right and left of image. [MIRR:OFF]: Does not invert image.
		-QTY	Set the print quantity. QTY: [1] -- 10: You can make 1 -- 10 copies of the same printout.
CLEAN.TH	Starts head cleaning.	CLEAN:OK	Starts the head cleaning by pushing the menu lever.

Item	Function	Settings	
CONFIG.	Displays settings for operation.	-AUT.LCK	Select whether to lock BRIGHT control and CONTRAST control automatically. ALCK:ON: Always lock automatically. Unlock by pushing and holding the menu lever for three seconds on STANDBY. The controls are locked after ten seconds of no operation. [ALCK:OFF]: Does not lock automatically. Lock/unlock the controls by pushing and holding the menu lever for three seconds.
		-BEEP	Select whether the operation tone sounds. Error tones sound regardless of the setting. BEEP:OFF: The operation tone does not sound. [BEEP:ON]: The operation tone sounds.
		-BLANK	Adjust the blank space length. BLANK:L: Lengthens the blank space. [BLANK:S]: Shortens the blank space. Adjust the length of the top blank space (BACW:OFF) or the bottom blank space (BACW:ON).
		-FEED	To select the paper feed length to be used after printing. [FEED:ON]: Feeds extra blank paper between prints. FEED:OFF: Feeds less paper between prints to conserve paper, or when printing multiple pictures on the same sheet without cutting. More pictures can be printed on one roll when there is only a little space between printed pictures. Feed the desired length of the paper to leave a margin, using the FEED button before cutting the paper.
		-RESET	Resets the menu items to the default setting (initialization). [RESET:OK]: Resets the settings to the default.
		-PP.TYPE	Select paper to use. [P.TYPE:HG]: Use UPP-110HG. P.TYPE:HD: Use UPP-110HD. P.TYPE:S: Use UPP-110S.
		-LOAD	Loads the registered menu settings. LOAD:3: Loads the “SAVE:3” settings registered using the SAVE menu item. LOAD:2: Loads the “SAVE:2” settings registered using the SAVE menu item. [LOAD:1]: Loads the “SAVE:1” settings registered using the SAVE menu item.
		-SAVE	Register up to three settings. SAVE:3: Registers the menu settings as No. 3. SAVE:2: Registers the menu settings as No. 2. [SAVE:1]: Registers the menu settings as No. 1.
		-SPEED	Select the printing speed. When you use the UPP-110HD paper, you cannot select HI (high speed printing). [HI]: Prints at high speed. NOR: Prints at the normal speed.
SERIAL.N	Displays serial numbers of the product.		

a) The printing direction is as follows.



When “BACW:OFF” is selected

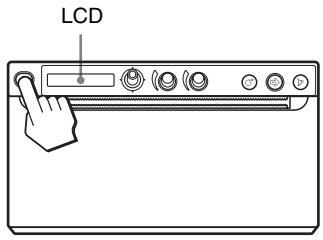


When “BACW:ON” is selected

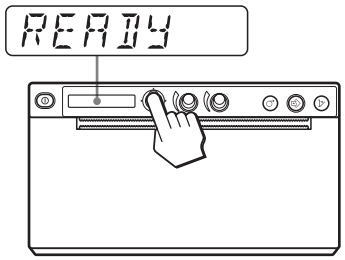
Basic Menu Operations

This section describes the basic menu operations which are common to each menu, taking settings for printing direction as an example.

1 Press the power ON/OFF switch to on.
The back light on the LCD lights in green.

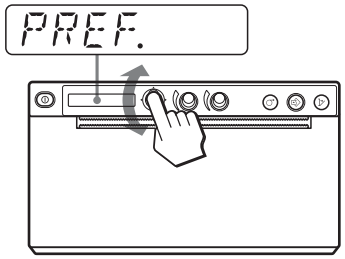


2 Confirm that “READY” is displayed on the LCD, and push the menu lever.



The unit enters the menu mode.
Menu item is displayed on the LCD.

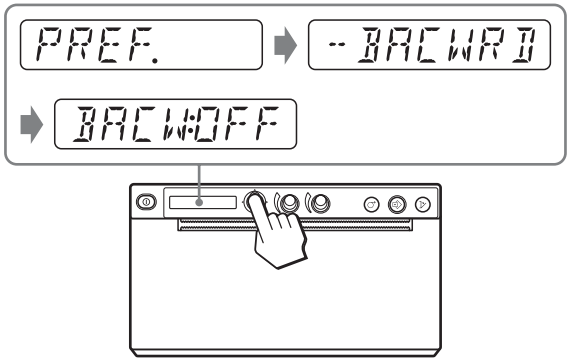
3 Display “PREF.” by shifting the menu lever up or down.



4 Push the menu lever or shift it to the right.
The unit enters the menu mode in which you can set printing condition. The menus have “-” in front of their name.

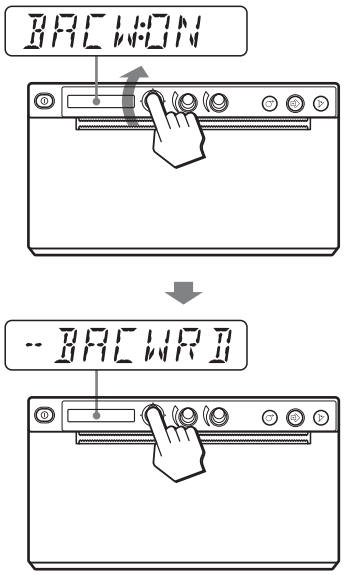
5 Display “-BACWRD” by shifting the menu lever up or down.

6 Push the menu lever or shift it to the right.



The unit enters the mode in which you can select the printing direction.
“BACW:OFF,” which is the default setting, is displayed on the LCD. “BACW:OFF” is the currently selected setting.
In this menu operation, you will change the setting to “BACW:ON.”

7 Display “BACW:ON” by shifting the menu lever up, and then push the menu lever.



“BACW:ON” is registered as the printing direction.
“-BACWRD” is displayed on the LCD.

Note

If about 20 seconds elapse without making any menu operation after you have displayed the menu item or setting, the display returns to “READY” on the LCD and the unit exits the menu mode. In such a case, the setting of “-BACWRD” is not changed.

To cancel the setting

Go back to step 3 or 5 by shifting the menu lever to the left in step 7.

To continue menu operations

Make settings by repeating steps 3 to 7.

To end the menu operations

Display “READY” by shifting the menu lever to the left after step 7.
The unit exits the menu mode.

Menu lock function

If the message “LOCK” is displayed and you hear the alarm sound when you push the menu lever, the menu lever is disabled because the menu operation function is locked. If you want to perform a menu operation, contact the nearest authorized dealer.

Registering Menu Settings

You can store up to three sets of settings made using the menu, and you can load the desired setting when needed. The unit retains these settings even if you turn off the power.

Note

When you use the unit for the first time after you purchase it, factory settings are registered in all three of the stored selections.

Registering new settings

1. Make all of the required settings.
2. Display “CONFIG.” by shifting the menu lever up or down, and then push the menu lever or shift it to the right.
   The unit enters the menu in which you can make setting for printer operation.
3. Display “-SAVE” by shifting the menu lever up or down, and then push the menu lever or shift it to the right.
   The number is displayed like “SAVE:1.”
4. Select the desired number by shifting the menu lever up or down, and then push the menu lever.
   The value set in step 1 is registered to the number selected.

Loading the desired settings

You can load the desired settings and make printouts with the loaded settings.

1. Confirm that “READY” is displayed on the LCD, and push the menu lever.
2. Display “CONFIG.” by shifting the menu lever up or down, and then push the menu lever or shift it to the right.
3. Display “-LOAD” by shifting the menu lever up or down, and then push the menu lever or shift it to the right.
   The number is displayed, such as “LOAD:1.”
4. Select the desired number of setting content by shifting the menu lever up or down, and then push the menu lever.
   The setting of the number selected is loaded.

When you change the loaded settings

The unit operates according to the changed settings. In this case, the unit operates according to these settings until you load another set of settings, even if you turn off the unit. When you load another group of settings, the settings loaded previously are cleared.

To retain previously loaded settings

Example: Settings registered as setting 1 are loaded and settings are to be changed. To retain the original settings of setting 1 and to register the new settings as setting 2, proceed as follows.

1. Load the settings of “LOAD:1” following the procedure for loading the desired settings.
2. Change the loaded settings as required.
3. Select “SAVE:2” following procedure for registering the settings.
4. Push the menu lever.
   The settings, changed in step 2, are registered as “SAVE:2.”

Printing the Menu List

You can make a printout of the current menu settings.

1. Push the menu lever.
   The menu item is displayed and the unit enters menu mode.
2. Display “PRT.MENU” by shifting the menu lever up or down, and then push the menu lever or shift it to the right.
3. Confirm “MENU:OK” is displayed, and then push the menu lever.
   The unit starts printing the current menu settings.

"PRT.MENU" is displayed on the LCD.

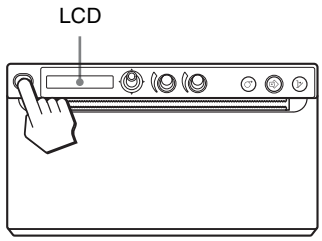
4 Shift the menu lever to the left.
"READY" is displayed and the unit enters the normal printing mode.

Printing

Before starting a print job, always check the following points:
- Unit connected correctly? (page 13)
- Printer driver installed? (page 13)
- Paper loaded correctly? (page 14)
- Menu settings and adjustments done correctly? (page 17)

Starting a Print Job

1 Press the power ON/OFF switch to on.
The back light on the LCD lights in green, and "READY" is displayed on the LCD.



2 Execute the print job with the software application.

When the message is displayed on the LCD

If a problem occurs, the back light on the LCD lights in orange and the error message stating the problem is displayed on the LCD.

Message	Cause and remedy
EMPTY:XX	Paper is not loaded. Load paper.
DOOR:XX	The door is open. Close the door.

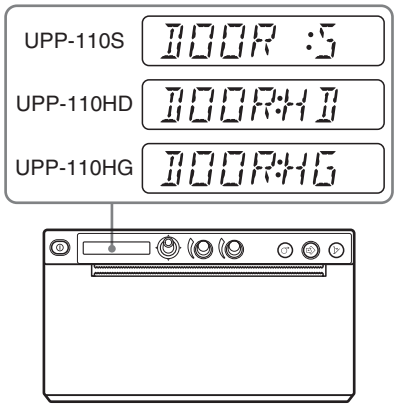
XX indicates the selected paper type.
"S" means UPP-110S, "HD" means UPP-110HD, and "HG" means UPP-110HG.

When the unit stops printing

When printing almost black images continuously, the thermal head protection circuit may shut down the unit to prevent the thermal head from overheating. In such a case, the message "COOLING" is displayed on the LCD.
Leave the unit until the head cools down and this message disappears.

Paper currently selected

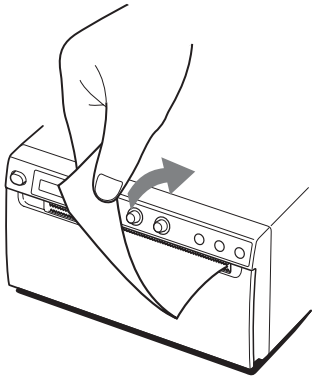
You can check the paper type currently selected on the LCD. The paper type currently selected is displayed on the right edge of the LCD when you press the OPEN button and open the door panel.



Cutting the Printed Paper

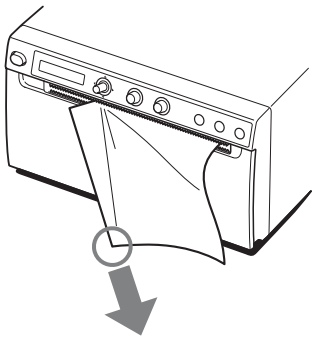
Cutting using the upper paper cutter

Hold the edge of the paper and cut the paper upward in an arc.



Cutting using the lower paper cutter

Hold the corner of the paper and pull downward at an angle to cut the paper.



Notes

- If you cut the paper by pulling it horizontally, the paper inside the unit will skew and may cause misprinting.
  If the paper is skewed, reload the paper correctly. (page 14)
- When cutting using the lower paper cutter, the paper may not be cut cleanly if holding the center of the front edge of the paper.

Canceling a Print Job

To cancel a print job in progress, press the OPEN button or the FEED button.

Making Copies of the Last Printout

Press the COPY button. The unit makes a copy of the last printout. The image of the last printout is retained in the unit's memory until you make a printout of another image or turn the power off. You can make only one copy regardless of the print quantity set using the menu.

Notes

- If you press the COPY button immediately after turning the power on, the alarm buzzer will sound as nothing is stored in memory.
- Turning off the power of the printer will cause the image stored in memory to be lost.

To make multiple copies of the same printout

Press the COPY button as many times as necessary (maximum 20 copies including the first printout) while copying the first printout. Each time you press the COPY button, a short buzzer sounds.

To interrupt copying

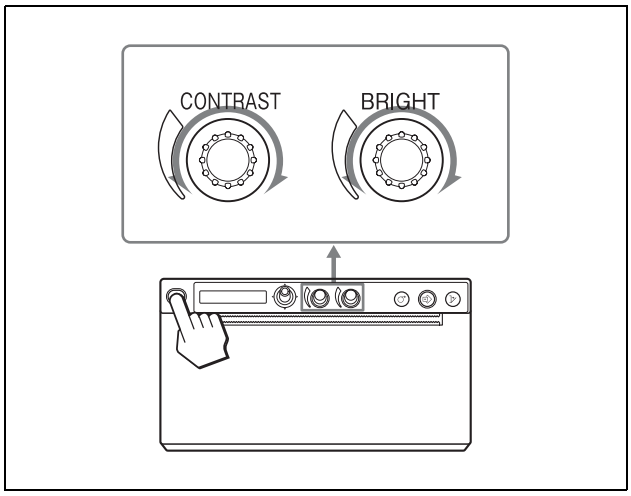
Press the OPEN or FEED button while copying.

Feeding Paper

To feed paper, press the FEED button. The unit will continue to feed paper as long as you hold down the FEED button. Do not attempt to pull paper out of the unit with your hand.

Adjusting the Contrast and Brightness

You can adjust the contrast and brightness of the unit using the CONTRAST control and BRIGHT control.



To adjust the contrast

You can adjust the contrast of printouts using the CONTRAST control.

To make the contrast stronger: Turn the CONTRAST control clockwise. Maximum is 64.

To make the contrast weaker: Turn the CONTRAST control counterclockwise. Minimum is –64.

Note

The contrast adjusting function is equivalent to “Light” of the density control provided with the printer driver. The value adjusted by using this CONTRAST control is added to the value already set as “Light.”

To adjust the brightness

You can adjust the brightness of printouts using the BRIGHT control.

To make the image brighter: Turn the BRIGHT control clockwise. Maximum is 64.

To make the image darker: Turn the BRIGHT control counterclockwise. Minimum is –64.

To lock control

You can lock the CONTRAST control and BRIGHT control to prevent accidentally changing the setting by turning the controls.

To lock: Push and hold the menu lever for about three seconds. “LOCK” is displayed on the LCD, and the value does not change even when the control is turned.

To unlock: Push and hold the menu lever again. “UNLOCK” is displayed on the LCD, and the lock is canceled.

Precautions

On Safety

- Check the operating voltage before operation. Operate the unit only with a power source specified in "Specifications."
- Stop operation immediately if any liquid or solid object falls into the cabinet. Unplug the unit and have it checked by qualified personnel.
- Unplug the unit from the wall outlet if you will not be using it for a long time. Disconnect the power cord by grasping the plug. Never pull the cord itself.
- Do not disassemble the cabinet. Refer servicing to qualified personnel only.

Caution

Paper cutters are mounted in the unit. When loading paper, be careful not to touch the paper cutters. Touching the paper cutters may cause injury.

On the Printer Carriage

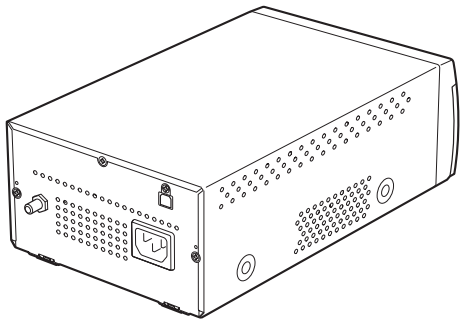
Do not carry or move the unit when the paper roll is placed in the unit. Doing so may cause a malfunction.

On Installation

- Place the unit on a level and stable surface. If you use the unit with placed on an uneven surface, malfunction of the unit is likely to occur.
- Do not install the unit near heat sources. Avoid locations near radiators or air ducts, or places subject to direct sunlight or excessive dust, humidity, mechanical shock or vibration.
- Provide adequate air circulation to prevent heat build-up. Do not place the unit on surfaces such as rugs, blankets, etc., or near materials such as curtains and draperies.

Caution

To prevent internal heat built-up, maintain sufficient space around the printer (at least 10 cm (4 in.)). Do not obstruct the ventilation holes on the right and left sides of the printer and on the rear panel.



- If the unit is suddenly taken from a cold to a warm location, or if ambient temperature suddenly rises, moisture may form on the outer surface of the unit and/or inside of the unit. This is known as condensation. If condensation occurs, turn off the unit and wait until the condensation clears before operating the unit. Operating the unit while condensation is present may damage the unit.

Cleaning the Cabinet

Note

Before cleaning the printer, be sure to turn off the power and disconnect the power cord.

When the cabinet becomes dirty

When solvents such as benzene or thinner, or acid, alkaline or abrasive detergent, or chemical cleaning cloths are used on the printer surface, the surface finish may be damaged. Take care with respect to the following:

- Clean the printer surface with a 50 to 70 v/v% concentration of isopropyl alcohol or a 76.9 to 81.4 v/v% concentration of ethanol.
- Stubborn stains may be removed with a soft cloth such as a cleaning cloth lightly dampened with mild detergent solution and then cleaned using the above chemical.
- Do not use unnecessary force to rub the printer surface with a stained cloth. The printer surface may be scratched.
- Do not keep the printer surface in contact with a rubber or vinyl resin product for a long period of time. The surface finish may deteriorate or the coating may come off.

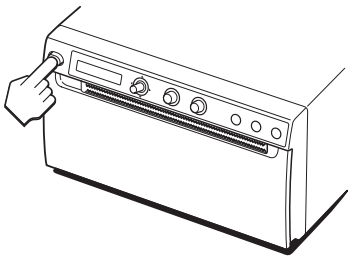
Cleaning the Thermal Head

If the printout is dirty or white stripes appear on the printouts, clean the thermal head using the cleaning sheet supplied.
Carry out the head cleaning operation using the menu.

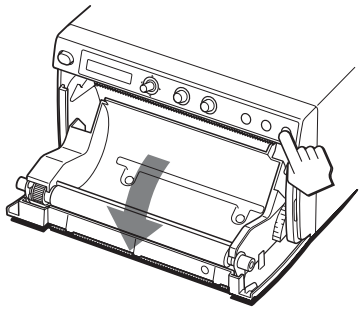
Caution

Paper cutters are mounted in the unit. When cleaning the thermal head, be careful not to touch the paper cutters. Touching the paper cutters may cause injury.

1 Press the power ON/OFF switch to on.



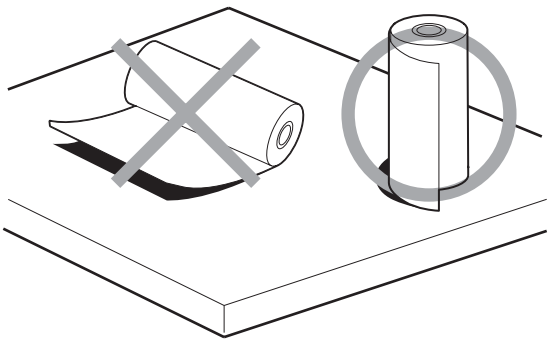
2 Press the OPEN button to open the door.



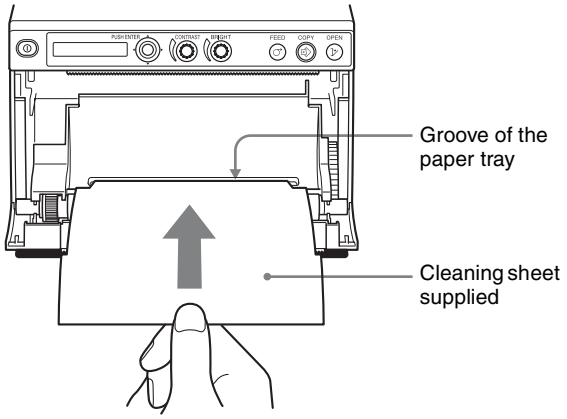
If the paper is loaded in the paper tray, remove it.

Note

Be careful not to let the surface of the paper touch the other objects. Failure to do so may cause defective printings because of the dirt on the paper.



3 Insert the cleaning sheet, with the black surface facing down, into the groove of the paper tray.



4 Close the door by pushing it.

5 Push the menu lever.
Menu item is displayed.

6 Display “CLEAN.TH” by shifting the menu lever up or down, and then push the menu lever.

7 Confirm that “CLEAN:OK” is displayed, and then push the menu lever.
The unit starts cleaning the thermal head.
“CLEAN:TH” is displayed on the LCD.
Cleaning is finished when the cleaning sheet stops.

8 Press the OPEN button to open the door and remove the cleaning sheet.

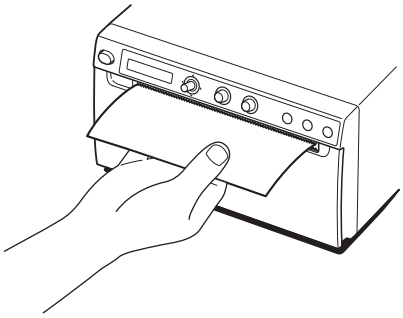
9 Close the door by pushing it.

Note

Clean the thermal head only when necessary. If you clean the thermal head too frequently, it may cause a malfunction.

Cleaning the Platen Roller

When the surface of the platen roller gets dirty, the paper will not be fed smoothly, resulting in paper jams and inconsistent print quality. Press the power ON/OFF switch to on, and then press the FEED button for about one second to feed some more paper out of the unit. It is likely that the roller is getting dirty if the paper is easily pulled out by the hand.



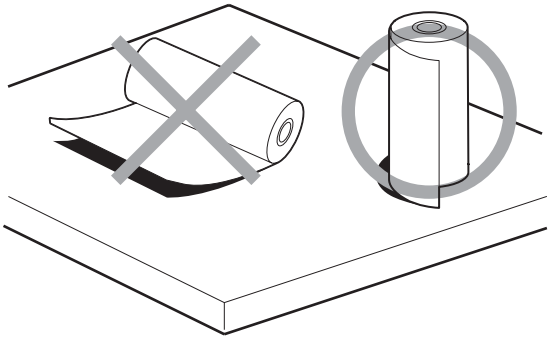
Clean the platen roller using a soft cloth moistened with a 76.9 to 81.4 v/v% concentration of ethanol when it becomes dirty.

1 Press the power ON/OFF switch to on.

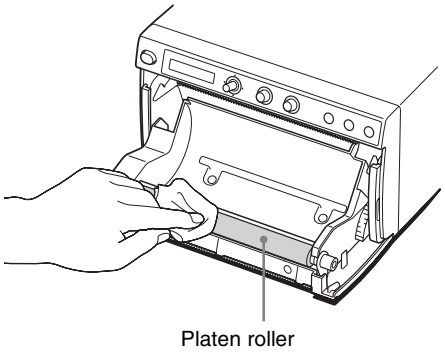
2 Press the OPEN button to open the door.
If the paper is loaded in the paper tray, remove it.

Note

Be careful not to let the surface of the paper touch the other objects. Failure to do so may cause defective printings because of the dirt on the paper.



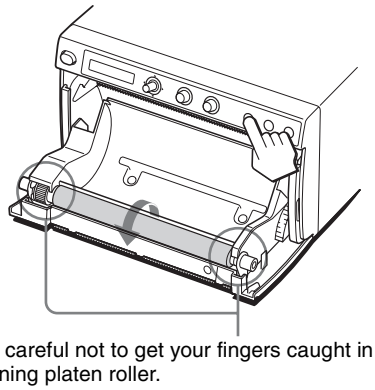
3 Clean the platen roller gently using a soft cloth moistened with ethanol.



Notes

- After the surface of the platen roller wiped has been dried completely, turn the platen roller to clean another portion.
- Do not turn the platen roller with hands. Use the FEED button to turn it. To clean another part of the surface of the platen roller, go to the next step.
- Paper cutters are mounted in the unit.
  Be careful not to touch the paper cutters.
  Touching the paper cutters may cause injury.

4 Press the FEED button.
The platen roller turns about 120 degrees.



Notes

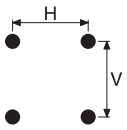
- Be careful not to get your fingers caught in the turning platen roller.
- Be sure to start cleaning only after the platen roller has stopped completely.

5 Repeat steps 3 and 4 until the platen roller becomes clean.

6 After the platen roller has been dried completely, close the door by pushing it.

Specifications

Power Requirements
100 V to 240 V ∿, 50/60 Hz
Input Current 1.3 A to 0.6 A
Operating Temperature
5 °C to 40 °C (41 °F to 104 °F)
Operating Humidity
20% to 80% (no condensation allowed)
Operating Pressure
700 hPa to 1,060 hPa
Storage and Transport Temperature
–20 °C to +60 °C (–4 °F to +140 °F)
Storage and Transport Humidity
20% to 80% (no condensation allowed)
Storage and Transport Pressure
700 hPa to 1,060 hPa
Dimensions 154 × 88 × 240 mm (w/h/d)
(6 1/8 × 3 1/2 × 9 1/2 inches)
Mass 2.5 kg (5 lb 8.2 oz) (printer only)
Thermal head Thin-film thermal head, 1280 dots
Gradation 256-level gradation (8-bit)
Memory capacity
4096 × 1280 × 8 (bit)
Picture size 320 × 100 mm (max.)
Printing speed About 1.9 sec./image (960 × 1280 dots)
(printing at the high speed)
About 3.3 sec./image (960 × 1280 dots)
(printing at the normal speed)
Picture elements
4096 × 1280 dots (max.)
Dot density H: 100 mm/1280 dots = 0.078
V: 100 mm/1280 dots = 0.078
Square dots



Interface Hi-Speed USB (USB 2.0)
Accessories provided
Thermal head cleaning sheet (1)
CD-ROM (including multi-lingual Instructions for Use, Readme and printer driver) (1)
Before Using this Printer (1)
Service Contact List (1)
Information for Customers in Europe (1)
Optional accessories
Thermal Print Media
UPP-110HG (High Glossy)
UPP-110HD (High Density)
UPP-110S (High Quality)

Caution

Do not use the FS-24 in a place (such as an operating room) exposed to liquids, etc., since the FS-24 conforms to IPX3 waterproof Ingress Protection Rating. In such a place, use a product which conforms to IPX6 or higher.

Medical Specifications

Protection against electric shock:
Class I
Protection against harmful ingress of water:
Ordinary
Degree of safety in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:
Not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide
Mode of operation:
Continuous

The design and these specifications are subject to change without prior notification.

Notes

- Always verify that the unit is operating properly before use.
  SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF FAILURE TO PRINT CONTENT OF ANY TYPE OR LOSS OF DATA DUE TO FAILURE OF THIS UNIT OR ITS PRINTING MEDIA, ASSOCIATED SOFTWARE, EXTERNAL STORAGE, OR OTHER EXTERNAL DEVICE.
- SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.
- SONY WILL NOT BE LIABLE FOR CLAIMS OF ANY KIND MADE BY USERS OF THIS UNIT OR MADE BY THIRD PARTIES.
- SONY WILL NOT BE LIABLE FOR THE TERMINATION OR DISCONTINUATION OF ANY SERVICES RELATED TO THIS UNIT THAT MAY RESULT DUE TO CIRCUMSTANCES OF ANY KIND.

If the unit is suddenly taken from a cold to a warm location, or if ambient temperature suddenly rises, moisture may form on the outer surface of the unit and/or inside of the unit. This is known as condensation. If condensation occurs, turn off the unit and wait until the condensation clears before operating the unit. Operating the unit while condensation is present may damage the unit.

The life expectancy of the electrolytic capacitor is about 5 years under normal operating temperatures and normal usage (8 hours per day; 25 days per month). If usage exceeds the above normal usage frequency, the life expectancy may be reduced correspondingly.

If this unit is to be used together with devices that emit strong radio waves, such as a radio knife, always verify that the unit is operating properly before use and ensure that there is no failure of the unit.

Troubleshooting

Before you call for service, please check the problems and solutions described below. If you cannot solve the problem, contact the nearest authorized dealer.

Symptom	Causes/remedies
First few prints spotted with small dots.	New paper roll just installed? →If a new roll of paper has just been loaded, paper dust may cause white spots in printed images. Press the FEED button and hold it down to feed about 15 - 20 cm (6 - 8 inches) and then release. (page 15)
Print job does not start even after transmitting picture from the computer.	• Paper does not feed. →Power switched on? →Unit connected correctly? →Paper roll loosen? • Alarm sounds. →Has the thermal head overheated? The thermal head may overheat when the unit prints dark image continuously. Wait until the head cools down. →Paper loaded correctly? (page 15) • Paper feeds but printing does not start. →Paper loaded with the wrong side up? (page 14)
Paper Jams	• Jammed paper visible? →Press the OPEN button to open the door panel, remove the printout or the paper roll, and then gently pull the jammed paper out of the unit. • Condensation collected in unit? →If the unit has just been brought into a warm room from a cold location, condensation may have formed inside the unit. Switch the unit off and let it set for 1 - 2 hours (until it warms to room temperature), then try printing again.
Printouts dirty.	• Thermal head dirty? →Use the head cleaning sheet provided with the unit to clean the thermal head. (page 26) • Platen roller dirty? →Clean the platen roller using a soft cloth moistened with ethyl alcohol. (page 27)
The unit stops printing while printing almost black images continuously and the message “COOLING” is displayed on the LCD.	When printing almost black images continuously, the thermal head protection circuit may shut down the unit to prevent the thermal head from overheating. →Wait for the message to disappear.
Paper is not fed smoothly.	Platen roller dirty? →Clean the platen roller. (page 27)

Symptom	Causes/remedies
Printing is interrupted. When printing, the unit discharges several centimeters of the white paper and stops. The print operation cannot be performed. The FEED operation cannot be performed. When the paper is set correctly, "EMPTY" is displayed.	Does the sunlight or incandescent light that includes strong infrared light irradiate the paper exit? →The unit has an infrared light sensor that detects the printing paper. Therefore, when the light directly irradiates the paper exit, paper detection may not operate correctly. Do not expose the paper exit to light directly.

Error Messages

Messages appear on the LCD under the following conditions. Take the remedial actions shown next to the messages to correct the problem.

Messages	Description and remedy
DOOR	The door panel is open. →Close the door panel until it is locked securely.
EMPTY	• There is no paper loaded. • Paper has been used up. →Load some paper. (page 14)
COOLING	The protection circuit that prevents the thermal head from overheating has been activated. →Wait for the message to disappear. Printing will then resume automatically.
LOCK	When only the BRIGHT (brightness) control and CONTRAST control are locked; →Keep pressing the menu lever for about three seconds and release the lock, and operate the unit. When the menu lever, BRIGHT (brightness) control, and CONTRAST control are locked; →If you want to perform menu operations or use those controls, contact the nearest authorized dealer.
ERROR	The unit has encountered a technical problem. →Restart the unit. If the display does not disappear, contact the nearest authorized dealer.

License

“zlib”, “FreeType” and “ttfautohint” software are provided in this unit. We provide this software based on license agreements with their owners of copyright. Based on requests by the owners of copyright of these software applications, we have an obligation to inform you of the following.

zlib

FreeType

haven't found anything to help you in the documentation.

o freetype-devel@nongnu.org

Discusses bugs, as well as engine internals, design issues, specific licenses, porting, etc.

Our home page can be found at

https://www.freetype.org

--- end of FTL.TXT ---

ttfautohint

The FreeType Project LICENSE

2006-Jan-27

Introduction
==========

The FreeType Project is distributed in several archive packages; some of them may contain, in addition to the FreeType font engine, various tools and contributions which rely on, or relate to, the FreeType Project.

This license applies to all files found in such packages, and which do not fall under their own explicit license. The license affects thus the FreeType font engine, the test programs, documentation and makefiles, at the very least.

This license was inspired by the BSD, Artistic, and IJG (Independent JPEG Group) licenses, which all encourage inclusion and use of free software in commercial and freeware products alike. As a consequence, its main points are that:

o We don't promise that this software works. However, we will be interested in any kind of bug reports. (`as is' distribution)

o You can use this software for whatever you want, in parts or full form, without having to pay us. (`royalty-free' usage)

o You may not pretend that you wrote this software. If you use it, or only parts of it, in a program, you must acknowledge somewhere in your documentation that you have used the FreeType code. (`credits')

We specifically permit and encourage the inclusion of this software, with or without modifications, in commercial products. We disclaim all warranties covering The FreeType Project and assume no liability related to The FreeType Project.

Finally, many people asked us for a preferred form for a credit/disclaimer to use in compliance with this license. We thus encourage you to use the following text:

"""
Portions of this software are copyright © <year> The FreeType Project (www.freetype.org). All rights reserved.
"""

Please replace <year> with the value from the FreeType version you actually use.

Legal Terms
==========

0. Definitions

Throughout this license, the terms `package', `FreeType Project', and `FreeType archive' refer to the set of files originally distributed by the authors (David Turner, Robert Wilhelm, and Werner Lemberg) as the `FreeType Project', be they named as alpha, beta or final release.

`You' refers to the licensee, or person using the project, where `using' is a generic term including compiling the project's source code as well as linking it to form a `program' or `executable'. This program is referred to as `a program using the FreeType engine'.

This license applies to all files distributed in the original FreeType Project, including all source code, binaries and documentation, unless otherwise stated in the file in its original, unmodified form as distributed in the original archive. If you are unsure whether or not a particular file is covered by this license, you must contact us to verify this.

The FreeType Project is copyright (C) 1996-2000 by David Turner, Robert Wilhelm, and Werner Lemberg. All rights reserved except as specified below.

1. No Warranty

THE FREETYPE PROJECT IS PROVIDED `AS IS' WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL ANY OF THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY DAMAGES CAUSED BY THE USE OR THE INABILITY TO USE, OF THE FREETYPE PROJECT.

2. Redistribution

This license grants a worldwide, royalty-free, perpetual and irrevocable right and license to use, execute, perform, compile, display, copy, create derivative works of, distribute and sublicense the FreeType Project (in both source and object code forms) and derivative works thereof for any purpose; and to authorize others to exercise some or all of the rights granted herein, subject to the following conditions:

o Redistribution of source code must retain this license file (`FTL.TXT') unaltered; any additions, deletions or changes to the original files must be clearly indicated in accompanying documentation. The copyright notices of the unaltered, original files must be preserved in all copies of source files.

o Redistribution in binary form must provide a disclaimer that states that the software is based in part of the work of the FreeType Team, in the distribution documentation. We also encourage you to put an URL to the FreeType web page in your documentation, though this isn't mandatory.

These conditions apply to any software derived from or based on the FreeType Project, not just the unmodified files. If you use our work, you must acknowledge us. However, no fee need be paid to us.

3. Advertising

Neither the FreeType authors and contributors nor you shall use the name of the other for commercial, advertising, or promotional purposes without specific prior written permission.

We suggest, but do not require, that you use one or more of the following phrases to refer to this software in your documentation or advertising materials: `FreeType Project', `FreeType Engine', `FreeType library', or `FreeType Distribution'.

As you have not signed this license, you are not required to accept it. However, as the FreeType Project is copyrighted material, only this license, or another one contracted with the authors, grants you the right to use, distribute, and modify it. Therefore, by using, distributing, or modifying the FreeType Project, you indicate that you understand and accept all the terms of this license.

4. Contacts

There are two mailing lists related to FreeType:

o freetype@nongnu.org

Discusses general use and applications of FreeType, as well as future and wanted additions to the library and distribution. If you are looking for support, start in this list if you haven't found anything to help you in the documentation.

o freetype-devel@nongnu.org

Discusses bugs, as well as engine internals, design issues, specific licenses, porting, etc.

Our home page can be found at

https://www.freetype.org

--- end of FTL.TXT ---

Index

C

Cleaning
- cabinet 25
- platen roller 27
- thermal head 26

Connections 12

E

Error messages 22, 30

G

Getting Started 11

L

Location and function of parts and controls
- front panel 11
- rear panel 12

M

Menu
- basic operations 20
- list 18
- loading the menu settings 21
- menu flow 17
- printing the menu list 21
- storing the menu settings 21

O

Overview 11

P

Paper
- cutting 23
- feeding 23
- loading 14
- notes on storing and handling 13
- paper you can use 13

Precautions
- on installation 25
- paper cutters 25
- printer carriage 25
- safety 25

Printer driver 13

Printing
- adjusting the brightness 24
- adjusting the contrast 24
- cancelling 23
- starting a print job 22

S

Specifications 28

T

Troubleshooting 29

EU: Sony Europe B.V.
Da Vincilaan 7-D1, 1930 Zaventem, Belgium
UK: Sony Europe B.V.
The Heights, Brooklands, Weybridge,
Surrey KT13 0XW, United Kingdom
CH: Sony Europe B.V., Hoofddorp,
Schlieren/Switzerland Branch
Wiesenstrasse 5, 8952 Schlieren, Switzerland

EC REP
Sony Belgium, bijkantoor van
Sony Europe B.V.
Da Vincilaan 7-D1, 1930 Zaventem,
Belgium

UK RP
Sony Europe B.V.
The Heights, Brooklands, Weybridge,
Surrey KT13 0XW, United Kingdom

Sony Corporation
1-7-1 Konan Minato-ku Tokyo,
108-0075 Japan