MITSUBISHI

CE

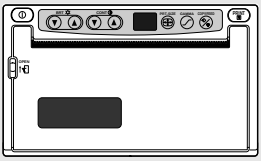
VIDEO COPY PROCESSOR

MODEL

P91W

P91E

OPERATION MANUAL



THIS OPERATION MANUAL IS IMPORTANT TO YOU.
PLEASE READ IT BEFORE USING YOUR VIDEO COPY PROCESSOR.

VIDEO COPY PROCESSOR

This video copy processor complies with the requirements of the EC Directive 89/336/EEC, 73/23/EEC, 93/42/EEC and 93/68/EEC.
The electro-magnetic susceptibility has been chosen at a level that gains proper operation in residential areas, on business and light industrial premises and on small-schale enterprises, inside as well as outside of the buildings. All places of operation are characterised by their connection to the public low voltage power supply system.

WARNING:

Use the AC power cord recommended as below and the included composite video cable so as not to interfere with radio and television reception.
If you use other cables, it causes interference with radio and television reception.

FOR THE MODEL P91W ONLY

WARNING:

Use the AC power cord according to the recommendations as below,
Case 1, 2, 3 and 4; in order to comply with UL2601 and CAN/CSA C22.2 No. 601.1.
Case 5; in order to comply with EN60601-1 and EN60950.

Case 1. Connect to the 120V receptacle of the room or the host equipment.
The AC power cord should be UL and CSA approved and consist of type SJT, size 16AWG, length 2.2m or shorter cord with IEC320/C13 type, 125V 10A or higher rating connector and NEMA 5-15 type, 125V 10A or higher rating, Hospital Grade plug.
Case 2. Connect to the 230V receptacle of the room or the host equipment.
The AC power cord should be UL and CSA approved and consist of type SJT, size 16AWG, length 2.2m or shorter cord with IEC320/C13 type, 250V 10A or higher rating connector and NEMA 6-15 type, 250V 10A or higher rating, Hospital Grade plug.
Case 3. Connect to the 120V receptacle of the host equipment.
The AC power cord should be UL and CSA approved and consist of type SJT, size 16AWG, length 2.2m or shorter cord with IEC320/C13 type, 125V 10A or higher rating connector and IEC320-2.2/E type, 125V 10A or higher rating plug.
Case 4. Connect to the 230V receptacle of the host equipment.
The AC power cord should be UL and CSA approved and consist of type SJT, size 16AWG, length 2.2m or shorter cord with IEC320/C13 type, 250V 10A or higher rating connector and IEC320-2.2/E type, 250V 10A or higher rating plug.
Case 5. Connect to the 230V receptacle of the room or the host equipment.
The AC power cord should be VDE approved and consist of core size $1mm^2$ or bigger, length 2.2m or shorter cord with IEC320/C13 type, 250V 10A or higher rating connector and CEE(7)VII type or IEC 320-2.2/E type, 250V 10A or higher rating plug.

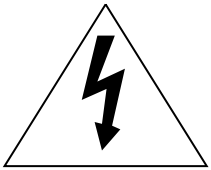
NOTE:

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 or her own expense.

Information:

This class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

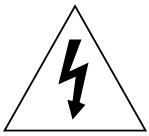
"CLASSIFIED BY UNDERWRITERS LABORATORIES INC.®
WITH RESPECT TO ELECTRIC SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL2601-1 AND CAN/CSA C22.2 No. 601.1"



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This product is to be employed with medical equipment, just for reference purpose, not for medical diagnostic purpose.

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2 PRECAUTIONS

In the interest of safety, please observe the following precautions:

POWER REQUIREMENT

This Video Copy Processor is designed for operation on 120/220-240V AC 50/60Hz in U.S.A and Canada, 220-240V AC 50/60Hz in Europe. Never connect to any outlet or power supply having a different voltage or frequency.

WARNING : THIS APPARATUS MUST BE EARTHED.
AVERTISSEMENT : CET APPAREIL DOIT ETRE MIS A LA TERRE.

This equipment is classified as class I, type B according to the type of protection against electric shock.

PROTECTIVE MEASURES

IF ABNORMALITIES ARISE, . . .

Use of the unit during emission of smoke or abnormal sounds (without adopting countermeasures) is dangerous. In such a case, unplug the power cord from the source outlet immeadiately, and request maintenance services from the sales dealer.

NEVER INSERT ANY OBJECT INTO THE UNIT

Foreign objects of any kind inserted into this unit constitute a safety hazard and can cause extensive damage.
If any object should be inserted into the unit, unplug the power cord, then contact the sales dealer.

DO NOT PLACE ANYTHING ON THE UNIT

Heavy objects placed on the unit can cause damage or obstruct proper ventilation.

PROTECT THE POWER CORD

Damage to the power cord may cause fire or shock hazard. When unplugging, hold by the plug only and remove carefully.
Never put a heavy thing on the power cord. The cord may be damaged causing a fire or electric shock.

DO NOT PLACE WATER CONTAINERS ON THE UNIT

Do not place flower vases, and other water-holding containers on the unit. If, for some reason, water seeps to the inside of the unit, unplug the power cord from the source outlet, and contact the sales daler. If used without corrective measures, the unit may be damaged.

DO NOT REMOVE THE CABINET

Touching internal parts is dangerous, besides, it may lead to malfunction. Contact the sales dealer to carry out internal checks and/or adjustments. Before opening the cover for eliminating a jammed paper, etc., be sure to disconnect the power cord plug.

PLACE THE UNIT ON A HORIZONTAL LEVEL

The unit is likely to be affected if it is placed in slanted conditions or in unstable places.

PROTECT AGAINST DEW FORMATION

In extremely cold regions, if the unit is moved quickly from an extremely cold place to a warmer one, dew is likely to be formed. If dew is formed, printing is not possible.

OPERATING AMBIENT TEMPERATURE RANGE

The operating ambient temperature range is 5°C-40°C (41°F-104°F), and humidity of 20-80%.

BE CAREFUL AROUND PRINT PAPER EXIT SLIT

Do not insert your hand or any material into the paper exit slit during printing.
Do not touch the cutter blade inside the paper exit slit. Otherwise, your finger will be injured.

DO NOT TOUCH THE THERMAL HEAD AND CUTTER

Do not touch your hand to the thermal head (located inside the unit) and the cutter blade.
The thermal head is heated to high temperature. This may cause injury.

INSTALLATION LOCATIONS

MAINTAIN GOOD VENTILATION

Ventilation slots and holes are provided on sides of this unit.
Place the unit on a hard and level surface and locate at least 4" (10cm) from walls to ensure proper ventilation.

UNSUITABLE LOCATIONS

Avoid shaky places or hot-springs areas where hydrogen sulfide and acidic ions are likely to be generated.

PLACES WITH HIGH HUMIDITY AND DUST

Do not place the unit at locations with high humidity and/or dust. They can cause extensive damage.
Avoid places where the unit is likely to contact oily fumes and vapors.

PLACES NOT LIKELY TO BE EXTREMELY HOT

Places exposed to direct sunlight, or near heating appliances can attain extremely high temperatures, which may deform the cabinet, or can become a prime cause of damage.

SET THE UNIT ON A FLAT PLACE

Do not use the unit in the state inclined ±20° in vertical or horizontal direction, or in an unstable place.
It will disturb paper feeding or ventilation, or affects the set.

FOR LONG OPERATING LIFE

UNSUITABLE MATERIALS FOR THE UNIT
Many plastic components are used in the back-side. Coat flaking and deformation are likely to occur if the unit is wiped with chemical dusters, benzine, thinner or any other solvent, if rubbers or PVC items are left in contact with the unit for extended duration, or if the unit is sprayed with insecticide.

CARE OF THE CABINET
Unplug and clean with a soft cloth slightly moistened with a mild soap and water solution. Allow to dry completely before operating. Never use petroleum base solutions or abrasive cleaners.

HEAD ABRASION
The thermal head, like the video head, wears out. When it is abraded, it becomes hard to print out fine details of the picture. In such a case, it is necessary to replace the thermal head. Consult with the sales dealer for replacing the head.

WHEN A DEFECT IS FOUND
When you detect smoke or smell from the unit, disconnect immediately the power cord plug from a wall socket and ask the agent for repair. Dangerous if the unit is operated in that state.

CONNECTION DEVICES
Read thoroughly "Operating Precautions" of the instruction booklets for the devices connected with the Video Copy Processor.
Do not disconnect the power cord during printing.

CAUTION ON RELOCATING
When transporting this unit, make sure it is not likely to be subjected to impacts. They can be a prime cause for damage. Further, make sure to disconnect the power cord from the power outlet, and the cables from the connected devices.

UNPLUG THE POWER CORD DURING A LONG ABSENCE
Turn off the MAIN power switch and unplug the power cord during a long absence.

THERMAL PAPER

- Thermal paper K65HM (High-density synthetic paper for high quality printing) is available.
- One roll of K65HM permits printing about 260 pictures in "PAPER SAVING MODE".
- When the remaining length of the paper is about10" (25cm), a color belt appears at the paper end. Prepare for replacement of the paper. If the remaining paper length is less than 10" (25cm), printing becomes uneven due to the uneven paper core surface.
- When the Printed paper is touched by wet hand, the print may be discolored.
- When the paper runs out during printing, the printing operation stops and "EP" is displayed by the indicator on the front panel. Install new paper at this time.
- Store the printed paper in a place with low humidity free from a direct sunlight.
- If the paper absorbs non-volatile organic solvents (alcohol, ester, katone, etc.) the print may be discolored.
  Particularly, if the paper comes in contact with soft vinyl chloride such as a transparent tape, it quickens discoloration.
- Do not use paper other than the specified one.
- Immediately after the paper is replaced, 2-3 images may be printed with a blank part due to hand's dust or oil.
- Avoid a direct sunlight or a plane near a heater, and store the paper in a place with 30°C (86°F) or lower temperature and 35-80% RH.
- When the paper is rapidly transferred from a cool place to a hot place, a vapor or a dew is generated on the paper surface causing paper jam or degraded printing quality.
- A finger print or dust on the paper surface may degrade the printing quality.

Note:
Mitsubishi brand thermal paper is specially treated with an anti-static coating against thermal head damage caused by static-electricity discharge.
The use of non-treated paper may cause premature head failure in your product.

SAFETY TECHNICAL CHECKS

Periods: According to the recommendations of the manufacturer of medical device.
Scope: a) Visual check
Housing, cables, operator controls, readout device (displays, LED etc.), labels, accessories, instruction manual.
b) Function test
Performance check acc. instruction manual, also unity and applicability of set and accessory test.
c) Electrical check
Safety electrical test of the configuration in accordance with EN60601-1.

" In the interest of safety, avoid the handling of liquids beside the set."

RESPONSIBILITY OF THE MANUFACTURER

The manufacturer, assembler, installer or importer considers himself responsible for the effects on safety, reliability and performance of the EQUIPMENT only if:
– assembly operations, extensions, re-adjustments, modifications or repairs are carried out by persons authorized by him, and
– the electrical installation of the relevant room complies with the IEC requirements
– the EQUIPMENT is used in accordance with the instructions for use.

- Any service after expiration of the warranty period will be made at cost. Consult our service station in your place.

TECHNICAL DESCRIPTION

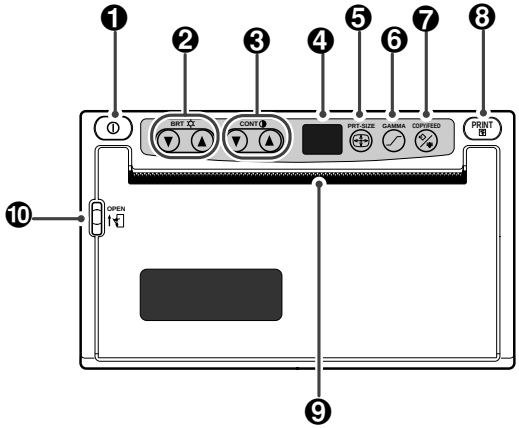
The supplier will make available on request such circuit diagrams, component part lists, descriptions, calibration instructions or other information which will assist the USER's appropriately qualified technical personnel to repair those parts of the EQUIPMENT which are classified by the manufacturer as repairable.

The use of ACCESSORY equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Consideration relating to the choice shall include:
– use of the accessory in the PATIENT VICINITY
– evidence that the safety certification of the ACCESSORY has been performed in accordance to the appropriate EN60601-1 and/or EN60601-1-1 harmonized national standard.

The transportation and storage environmental conditions are:
Temperature : -20°C - +60°C (-4°F - +140°F)
Humidity : 90%RH or less at 40°C (104°F)
Note : The above transportation environmental conditions indicate the storage environmental conditions during transport.

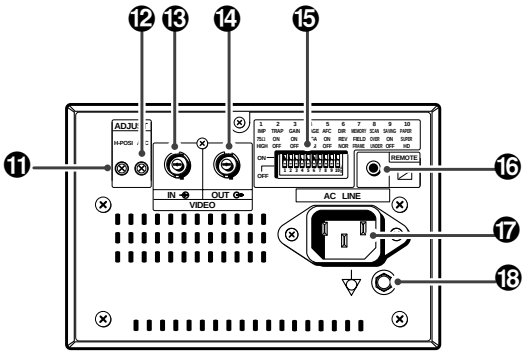
3 FEATURES AND FUNCTIONS

Front Panel



	Name	Function	Reference Page
❶	Power switch	Turns on/off the power.	11
❷	Brightness buttons	Press these buttons to select brightness adjustment mode.	13•14
❸	Contrast buttons	Press these buttons to select the contrast adjustment mode.	13•14
❹	Indicator	Displays standby, functions and error messages.	19
❺	Print size button	Press this button to change the print size.	16
❻	Gamma button	Press this button to change the γ-curve.	15
❼	Copy/Feed button	Hold down this button to feed the paper. Press this button for additional copies of the previous print-out.	11•12
❽	Print button	Press this button to memorize and print the picture displayed at that instant.	11
❾	Print exit/Cutter	Printed paper will come out through this slot./ Cut the printed paper here.	7
❿	Lever	Door open	-

Rear Panel



POTENTIAL EQUALIZATION TERMINAL

This is used to equalize the potential of the equipment connected to this unit.
For details refer to the installation instruction of equipment to be connected.

	Name	Function	Reference Page
⓫	Horizontal position control	Adjust the horizontal position of a picture.	–
⓬	AFC* control	Adjust automatic frequency control.	–
⓭	VIDEO IN connector (BNC type)	Video signal input.	9•10
⓮	VIDEO OUT connector (BNC type)	Video signal output (Monitor output).	9•10
⓯	MODE switch	Selects special functions.	21-23
⓰	Remote control terminal	Terminal to connect the remote control.	12
⓱	Power terminal (AC LINE)	Connect the power cord to this terminal.	9•10
⓲	Potential equalization terminal	Makes the connected equipment potential equal.	–

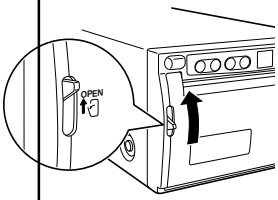
*AFC : Automatic Frequency Control

4 INSTALLATION OF PAPER

Paper (High-density paper K65HM)

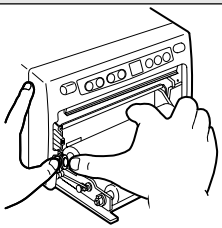
■ **Moisture, fingerprints or dust on the paper surface may cause a noise at printing or deterioration in print quality. Set the paper in the following procedure to prevent adhesion of fingerprint or dust on the paper surface.**

1 Open the door.

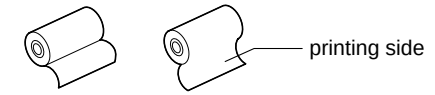


- Switch the lever located on the left side to the **"OPEN"** position.
- ■ The door opens.

2 Load the paper roll.

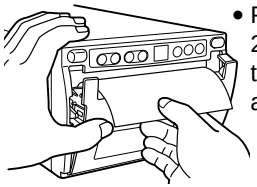


•Place the paper roll in the printer.



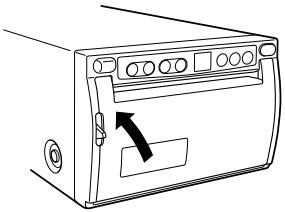
Note: The printing surface is the outside. Place the paper with the thermo-sensitive side (printing side) up. When the paper roll is placed inversely, images can not be printed.

3 Pull out the paper end.

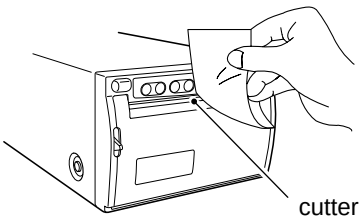


- Pull out the first 15-20cm (6 in. - 9 in.) of the paper to remove any slack in the roll.

4 Close the door.

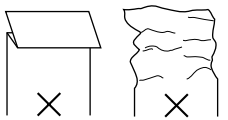


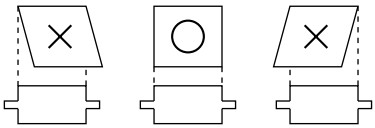
5 Cut the paper end.



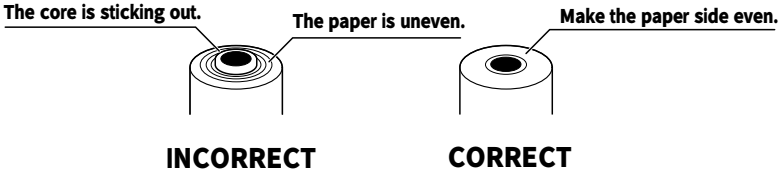
- Cut the paper end with the cutter just like tearing off the paper.

■ When setting the paper, observe the following precautions to prevent paper jam.

Do not use defective paper.	
	■ Do not use the bent or wrinkled paper.

Adjust the paper position correctly.	
	■ When the paper is fed out skewed from the print exit, adjust the paper position so that it is fed out straight.

If the side of the print paper is uneven or the core is sticking out, the amount of paper feeding after printing may vary.
When the side of paper is uneven or the core is sticking out, install the print paper after making the paper side even.



CAUTION

- Keep the high-density paper away from fingerprint, dust or moisture when storing it.
- Do not touch the rubber roller. Do not stain or damage the roller surface.
- Do not touch the thermal head (located behind the cutter). When printing, the thermal head is heated to high temperature.
- Do not touch the cutter blade.

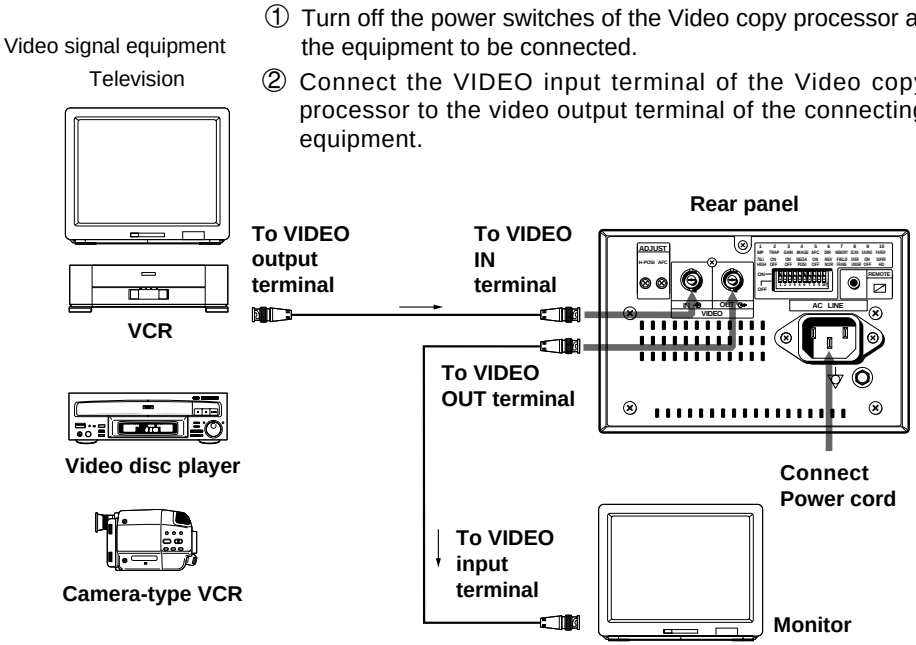
5 EXAMPLE OF CONNECTION / SETTING OF SWITCHES

Connecting to various composite video signal equipments such as medical equipment.

Composite Video Signal

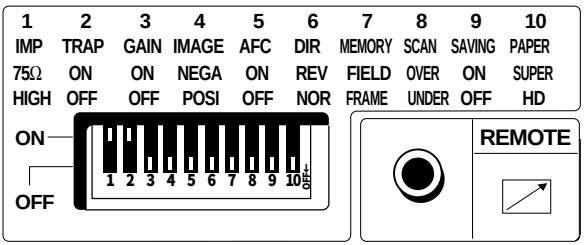
① Turn off the power switches of the Video copy processor and the equipment to be connected.

② Connect the VIDEO input terminal of the Video copy processor to the video output terminal of the connecting equipment.



Setting of Switches

■ The following is an example of MODE switch setting.
■ Refer to pages 21 - 23 for the MODE switch settings.

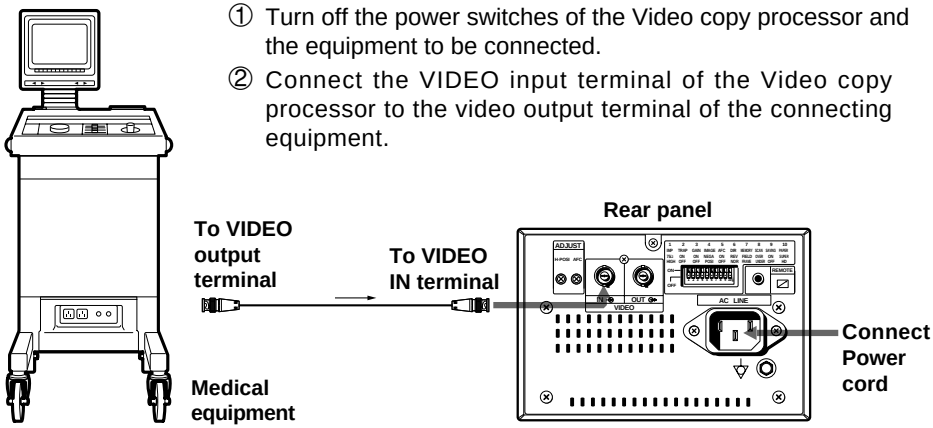


SW-NO.	Setting
1	75Ω
2	ON ※
3	OFF
4	POSI
5	OFF
6	NOR
7	FRAME
8	UNDER
9	OFF
10	HD

■ Select γ-curve "ﾆｭｰﾄﾗﾙ" for video equipment. Refer to the γ-curve set mode on page 15.
※ Refer to the **" MODE SWITCH FUNCTIONS "** on page 21.

For the functions of the MODE switch, refer to "MODE SWITCH FUNCTIONS" on page 21 - 23.

Medical Video Signal

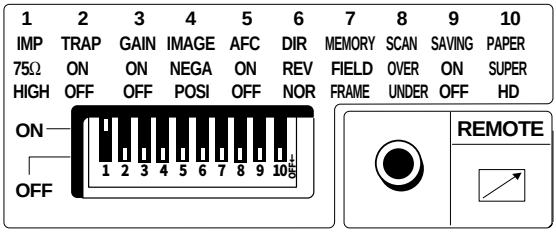


① Turn off the power switches of the Video copy processor and the equipment to be connected.

② Connect the VIDEO input terminal of the Video copy processor to the video output terminal of the connecting equipment.

Setting of Switches

Set the MODE switch as follows:
(This is standard setting.)



SW-NO.	Setting	
1	75Ω	
2	OFF	※
3	OFF	
4	POSI	
5	OFF	
6	NOR	
7	FRAME	
8	UNDER	
9	OFF	
10	HD	

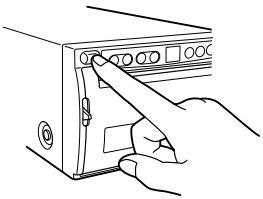
■ Select γ-curve "1" and "3" - "5" for ultrasonic diagnosis equipment.
Especially "5" is recommended. Refer to the γ-curve set mode on page 15.

■ ※ Refer to the **" MODE SWITCH FUNCTIONS "** on page 21 .

6 PRINTING

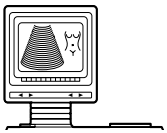
Printing Procedure

1 Turn on the power.

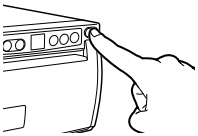


- Press the **"POWER"** switch to turn on the power.

2 Print a picture displayed on the screen.

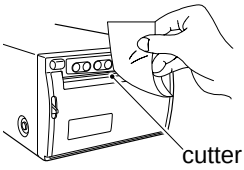


- Display a picture to be printed on the monitor screen, and press the " **PRINT** " button.



■ When printing is over, a buzzer tone will be heard.

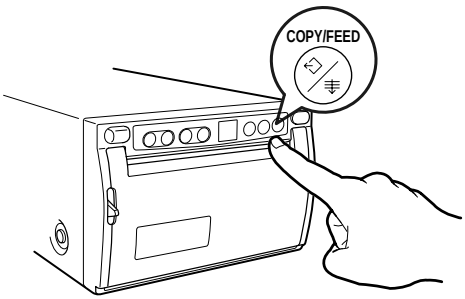
3 Cut the printed paper.



- Cut the printed paper with the cutter by tearing off the paper in the upper right direction.

Copy Printing

■ You can set the number of copies by pressing the **"COPY/FEED"** button on the front panel. You can copy the same picture as many times as you desire until the " **PRINT** " button is pressed again.

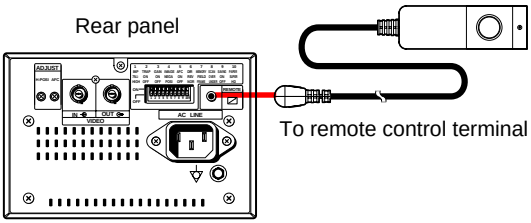


Paper Feeding

■ Hold down the "**COPY/FEED**" button on the front panel, you can feed the paper.

Use of Remote Control

- Connect the wired remote control to the remote control terminal on the rear panel.
- Press the remote control button to print pictures.
  This performs the same function as the "**PRINT**" button.



Precautions on Printing

- If printing is continued with a very black picture, the Video copy processor may become overheated. "EH" is indicated, and the button functions become invalid.
  In this case, wait for a while until the unit is cooled down.
- Avoid pulling out or holding the recording paper during printing or copying.
  It can cause paper jam. Do not touch the paper until printing or copying ends.
- If printed when there is no input signal, "NO SIGNAL" will be printed under the image.

Paper saving mode

- When the paper saving mode switch "SAVING" is selected to "ON" (mode switch #9), print feeding distance is shorter than normal condition.
  Before cutting the print, press and hold the " **COPY/FEED** " button on the front panel to advance the paper.

7 ADJUSTMENT OF PRINT PICTURE

Adjustment of Brightness/Contrast

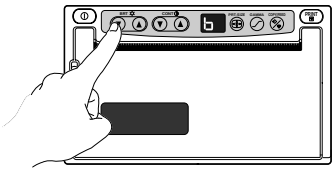
■ You can adjust brightness and contrast of print while observing the monitor screen.

Control panel

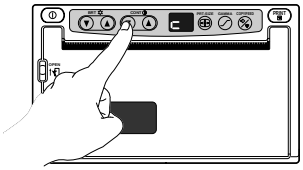
• To adjust pictures, use the bright buttons "▼" and "▲" of BRT "☼", the contrast buttons "▼" and "▲" of CONT "◑".

1 Press the buttons to adjust brightness or contrast.

■ Press the bright buttons "▼" and "▲" of BRT "☼" to adjust brightness.
• The selected mode is displayed on the left side of the indicator.



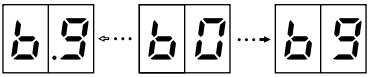
■ Press the contrast buttons "▼" and "▲" of CONT "◑" to adjust contrast.
• The selected mode is displayed on the left side of the indicator.



• Press the button "▲" to raise the value.
• Press the button "▼" to lower the value.

■ The set value is displayed on the right side of the indicator.

Example: Brightness adjustment

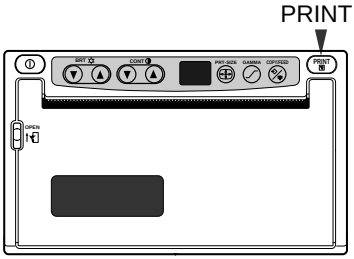


Minus (–) value is indicated by "•".

Set value.

■ Setting range is –9 to +9.

2 Store the set value.

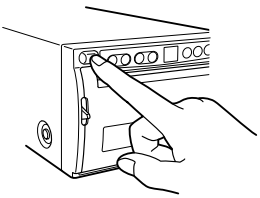
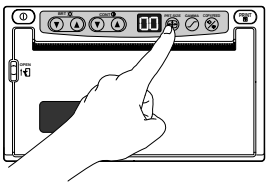


- A value is stored by pressing "**PRINT**" button.
- A stored value will not be lost even if the power is turned off.

ABC mode (Automatic Brightness Control)

■ ABC mode can be set to adjust the brightness of the print picture. ABC mode is the function that checks and adjusts automatically the brightness of the input signal whenever the "PRINT" button is pressed.

Setting ABC mode

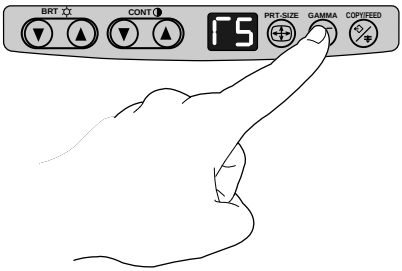
1 Turn on the power.	2 Hold down the "PRT-SIZE" button.
	■ Hold down the print size button (PRT-SIZE) " ⊕ " for approx. 3 seconds.  • A tone is given and LED display changes from 00 to 80. ■ ABC mode is set. ■ ABC mode will be not released even if the power is turned off.

Releasing ABC mode

■ Hold down the print size button " ⊕ " for approx. 3 seconds.
A tone is given, LED display changes from A0 to 00 and ABC mode is released.

Selection of Gamma (γ) Curve

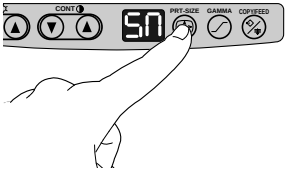
■ **You can select γ-curve by pressing the gamma button " ⌐ ". Each time the button is pressed, the indicator and γ-curve number is switched. After a γ-curve number has been selected, press any other button to store the γ-curve number.**

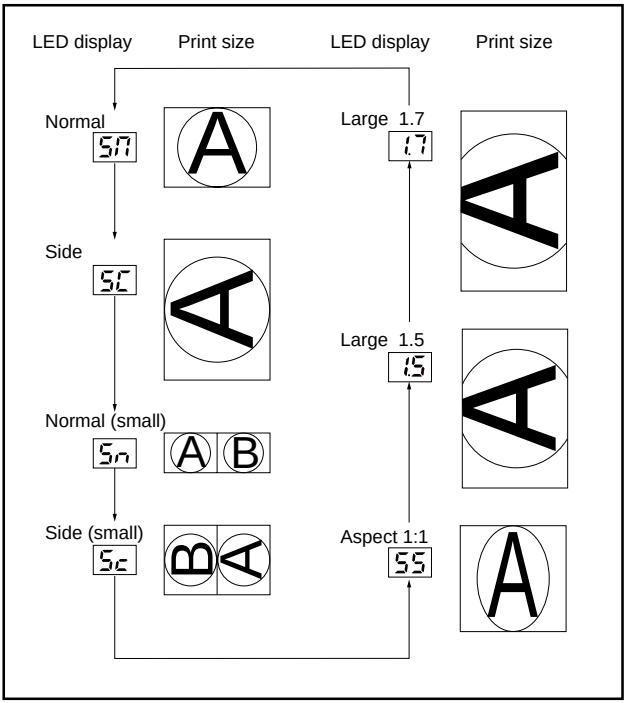


Indicator/Adjustable item	Adjustable contents
r5 γ-curve set mode 1 ~ 6	■ To select the gamma (γ) curve (density diagram characteristic) use this mode. This mode will help optimize prints. There are six settings. Select γ-curve "2" for video equipment. Select γ-curve "1" and "3" - "5" for ultrasonic diagnostic equipment. Setting "5" is recommended for ultrasonic equipment. When "6" is selected, the picture will be printed in negative regardless of the setting of #4 DIP-SW on the rear panel.

Selection of Print Size

■ **You can select print size by pressing the print-size button "⊕". Each time the button is pressed, the indicator and print size is switched as follows.**
After a print size has been selected, press any other button to store the print size.





■ **Pressing "▲" or "▼" of CONT button when selecting Large 1.5 or Large 1.7, the center position of the print image can be adjusted.**

Note:
When the side (small) or normal (small) size is stored, press the "**PRINT**" button twice to print out. The first press of the "**PRINT**" button will store in memory the first image, the second press of the "**PRINT**" button will memorize the second image and automatically print both images.

Resetting the set values

■ **You can reset the set values of Brightness, Contrast, Gamma and Print size.**

1. Turn off the power.
2. While pressing **PRT-SIZE** button and **GAMMA** button, turn on the power.
3. The set values are reset.

8 SPECIAL FUNCTION

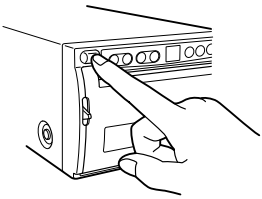
Locking the settings

■ **You can lock the setting of each button on the front panel (BRT, CONT, PRT-SIZE, GAMMA) .**

Locking the setting (e.g. brightness)

1 Turn on the power.

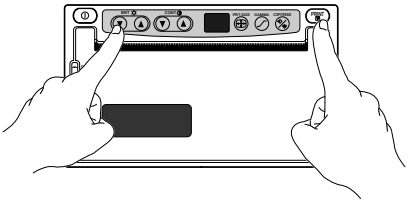
• Press the "**POWER**" switch to turn on the power.



2 Lock the setting of the brightness (BRT)

• While holding down the "▼" or "▲" of **BRT** button, press the **"PRINT"** button for approx. 3 seconds.

■ A tone is given and the setting of the **BRT** button is locked.



■ The lock will not be released when the power is turned off.

Releasing the locking

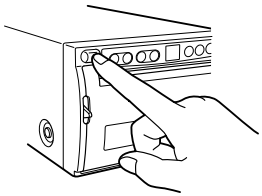
■ While holding down the button that needs the lock function cancelled, press the **"PRINT"** button for approx. 3 seconds.
A tone is given and the lock is released.

Printing the set conditions

■ You can print the set conditions of BRT, CONT and GAMMA under the image.

1 Turn on the power.

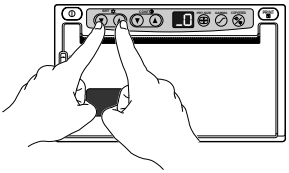
- Press the "**POWER**" switch to turn on the power.



2 Make a setting to print the set conditions.

- While holding down the "▼" of **BRT** button, press the "▲" of **BRT** button for approx. 3 seconds till a "Peep" sounds.

■ "_0" is displayed on the indicator.



- To select whether the printing conditions are printed or not, press the "▼" or "▲" of **CONT** button**.**

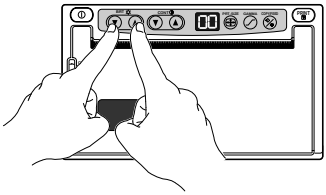
■ "_0" or "_1" is displayed on the indicator.

mode	indicator
Printing	_1
Not printing	_0

3 Set to the stand-by status.

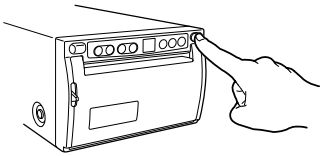
- While holding down the "▼" of **BRT** button, press the "▲" of **BRT** button for approx. 3 seconds till a "Peep" sounds.

■ "00" is displayed on the indicator.

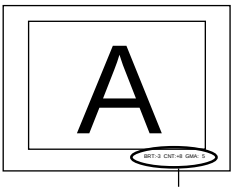


4 Print the set conditions.

- Press the "**PRINT**" button. Refer to the pages 11 to 12 for printing procedure.



Example



Set conditions

■ The set mode will not be lost even if the power is turned off.

9 ERROR DISPLAY

When an error in operation occurs it is warned by an audible alarm and a visible error display in the LED indicator.

Cause/Error display	Symptom/ Remedy
① **No paper** 	[Symptom] • When the paper runs out or the paper is not installed, printing becomes impossible and alarm tone is given.
	[Remedy] Install brand-new paper according to **"4. INSTALLATION OF PAPER"** on page 7.

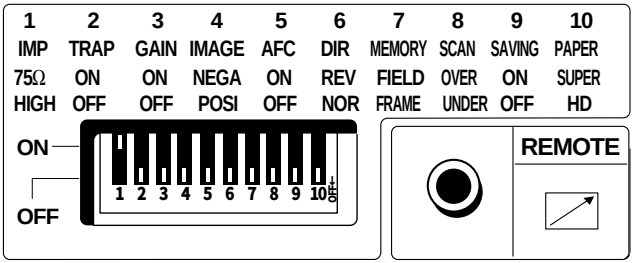
Cause/Error display	Symptom/ Remedy
② **Overheat** 	[Symptom] • When the head gets over-heated, "EH" is displayed on the indicator. In this case, all the button functions become invalid.
	[Remedy] Wait until the head is cooled down.

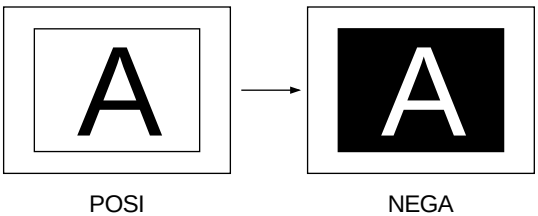
Cause/Error display	Symptom/ Remedy
③ **Button input error** 	[Symptom] • An alarm tone is given once, "Eb" is displayed for one second in the indicator, and button operation is nullified in the following cases: The function value change button "▼" or "▲" is pressed exceeding the value range during adjustment of brightness or contrast. The "**COPY/FEED"** button is pressed exceeding the limit value during setting the number of copies. The "**COPY/FEED"** button is pressed first after the power is turned on.

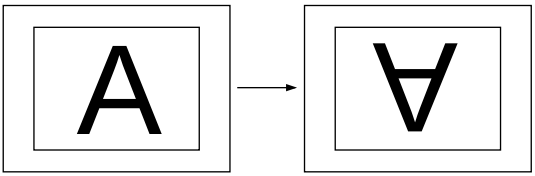
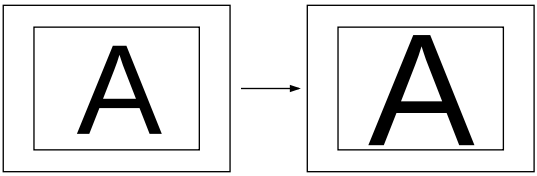
Cause/Error display	Symptom/ Remedy
④ **Door error** 	[Symptom] • When the door opens, an alarm tone is given.
	[Remedy] Close the door.

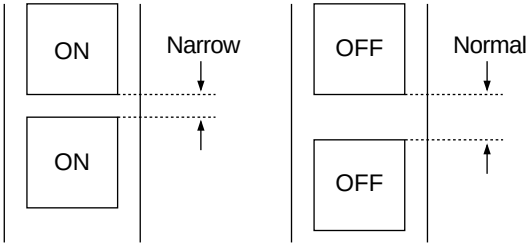
Cause/Error display	Symptom/ Remedy
⑤ **Gear lock error** 	[Symptom] • When the thermal head does not automatically go up after printing, an alarm tone is given. • "EL" is displayed in the indicator and all the button functions become invalid.
	[Remedy] Turn the power off. Then turn it on again.

10 MODE SWITCH FUNCTIONS



MODE SWITCH (DIP switch)	Functions
❶ **IMP (IMPEDANCE) 75Ω/HIGH**	Usually set to "**75Ω**". Set to "**HIGH**" when making branch connection of a monitor or other units to the VIDEO IN connector.
❷ **TRAP ON/OFF**	When this is set to "**ON**", the color trap circuit functions. At "**OFF**", the trap is invalid. Normally set to "**ON**" for video sources (VCR, etc.) and "**OFF**" for medical equipment.
❸ **GAIN ON/OFF**	Usually set to "**OFF**". When this is set to "**ON**", the contrast of the video image becomes high.
❹ **IMAGE NEGA/POSI**	NEGA: A picture is printed reverse to the display (negative). POSI: A picture is printed as displayed (positive).  POSI NEGA

MODE SWITCH (DIP switch)	Functions
❺ **AFC ON/OFF**	Usually set to "**OFF**". Set to "**ON**" when connecting equipment with a poor signal. Picture quality will be improved.
❻ **DIR (DIRECTION) REV/NOR**	NOR (NORMAL): A picture is printed in the same direction as the display. REV(REVERSE): A picture is printed reverse to the display (180° turned). ■ This function is invalid when the print size is set to "Side", "Side (small)" or "Large (x1.5 / x1.7)".  NORMAL REVERSE
❼ **MEMORY FIELD/FRAME**	FRAME: Usually set to "**FRAME**" position. FIELD: Set to "**FIELD**" position to print an image with rapid motion or VCR image in special playbook mode. Vertical resolution of a printed picture is 1/2 of that at FRAME.
	■ Usually two field pictures are synthesized for a monitor picture, and one frame picture is displayed.
❽ **SCAN OVER/UNDER**	UNDER: Usually set to "**UNDER**" position. OVER: Set to "**OVER**" position to print larger image.  UNDER OVER

<table>
<tr><th>MODE SWITCH
(DIP switch)</th><th>Functions</th></tr>
<tr><td>❾ SAVING
(PAPER SAVING)
ON/OFF</td><td>Set this switch to select the margin size.
ON: Printed with narrow margin.
OFF: Printed with normal margin.
 

Narrow Margin Normal Margin</td></tr>
<tr><td>❿ PAPER
SUPER/HD</td><td>Set this switch as follows to suit the thermal paper used:
<table><tr><th>Position</th><th>Thermal paper</th></tr><tr><td>SUPER</td><td>K61S, K61B</td></tr><tr><td>HD</td><td>K65HM, K65H</td></tr></table></td></tr>
</table>

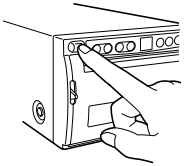
11 STATUS AND MODES

Set state/Mode	LED display		Contents of right side LED display	Video output
	Left	Point and right		
Power off			Power off	Through
Stand-by	0	0	Except small size	Through
	0	o	Small size for 1st image	Through
	0	'	Small size for 2nd image	Through
Print state	-	-	Print state	Through
Copy state	C	1 - 9	Remained copy number	Through
Brightness adjustment mode (Bright)	b	.9 - 9	Brightness index	Monitor
Contrast adjustment mode (Contrast)	c	.9 - 9	Contrast index	Monitor
γ-curve set mode (γ-curve)	r	1 - 5	γ-curve No.	Through
		6	Negative printing	Through
Print size set mode	S	n	Normal	Through
		C	Large (side)	
		n	Small (normal)	
		c	Small (side)	
		S	Aspect 1:1	
	1	.5	Large 1.5	
		.7	Large 1.7	
Error detect state	E	H	Overheat	Through
		P	No paper	
		b	Button input error	
		o	Door is open.	
		L	Gear lock	

12 USE OF CLEANING PAPER

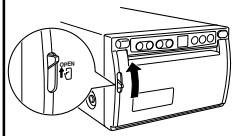
When the thermal head is dirty with dust and perspiration, etc., white spots or stripes may appear on the print. In this case, clean the thermal head in the following procedure BY USING THE SUPPLIED CLEANING PAPER.

1 Turn on the power.



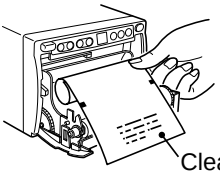
■ Press the **"POWER"** switch to turn on the power.

2 Open the door.



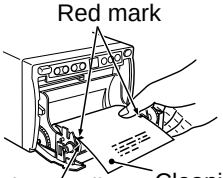
■ Switch the left side lever to the **"OPEN"** position.

3 Insert the cleaning paper.



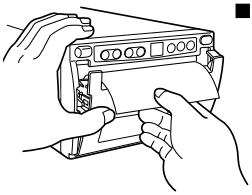
■ Roll the cleaning paper and install into the set.

Cleaning paper



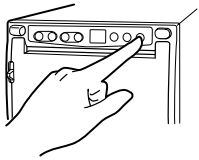
■ Adjust the red mark on the cleaning paper parallel to the the platen roller.

4 Close the door.



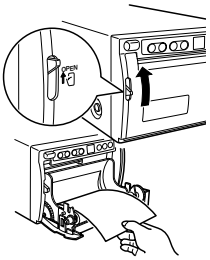
■ Close the door without taking out the cleaning paper.

5 Press the "COPY/FEED" button.



■ Keep pressing the **"COPY/FEED"** button until you hear a beep.

6 Take out the cleaning paper.



■ Open the door.

■ Take out the cleaning paper.

■ Do not pull out the cleaning paper while the door is closed.

7 Repeat the steps **3** - **6** by 2 or 3 times, and print 1-2 sheets to verify the cleaning effect.

CAUTION

- It is recommended that after printing 10 rolls of paper the unit be cleaned using the supplied cleaning paper.
- If the symptom of the dirty head is not corrected even after cleaning, your set needs repairing, contact your dealer.
- Do not pull out the sheet and the cleaning paper while the door is closed. This may cause extensive damage on the unit.
- Never use other cleaning papers. It may cause damage to the thermal head.
- This cleaning paper should be used only for cleaning the thermal head. Do not use it for other purpose.

13 MAINTENANCE

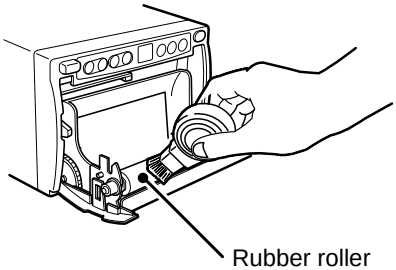
Turn off the power for maintenance.

Maintenance of Main Unit

Wipe off stains of the front panel with a soft cloth.
When the panel is heavily stained, wipe off with the cloth moistened with neutral cleanser diluted by water and finish with a dry cloth.

Maintenance of Rubber Roller

When the rubber roller is dirty with dust, etc., a blank spot may appear on the print.
In this case, eliminate the dust on to the rubber roller with a blower or a brush.



Cleaning of Thermal Head

When the thermal head is dirty with dust, etc., white spots or stripes may appear on the print.
In this case, clean the thermal head according to **"12. USE OF CLEANING PAPER"**.

Note: After installation of new roll of paper, dust on the paper will generally require 2 to 3 prints to be made before the dust is eliminated.

14 SPECIFICATIONS

Type:	Video Copy Processor
Model:	P91W / P91E
Power supply and power consumption:	120V AC, 50/60Hz, 1.2A 220-240V AC, 50/60Hz, 0.7A
Connection terminals:	Video input terminal (BNC contact plug) Video output terminal (BNC contact plug)
Resolution:	Horizontal 1022 pixels x Vertical 500 lines (Standard) (NTSC) Horizontal 1022 pixels x Vertical 600 lines (Standard) (PAL)
Gradation:	256 gradations
Printing speed:	4.7 sec (Standard) (NTSC), 5.6 sec (Standard) (PAL)
Print size:	4" X 3" (100mm X 75mm) (Standard)
Operating conditions:	Temperature 41 - 104°F (5-40°C) Humidity 20 - 80% RH (No dewing)
External dimensions:	6.1" x 3.8" x 11.8" (154mm x 97mm x 300mm) ; W x H x D
Weight:	7.3 lbs (3.3Kg)
Standard accesories:	BNC/BNC connection cable (2m) ..... 1 piece AC power cord ..... 1 piece Thermal paper K65HM ..... 1 roll Wired remote control ..... 1 unit Cleaning paper ..... 1 sheet
Optional accessory:	Thermal paper K65HM, K65H, K61S, K61B

SERVICE INFORMATION

Before requesting service please review this operation manual to correct minor complaints. If you are unable to correct the problem, consult your MITSUBISHI Dealer or MITSUBISHI Service Department.

DO NOT ADJUST ANY CONTROLS NOT DESCRIBED IN THIS OPERATION MANUAL.
DO NOT REMOVE THE PROTECTIVE ENCLOSURE OF THIS UNIT.

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