

FS-L4202D(42") MEDICAL LCD MONITOR USER'S GUIDE

Before connecting, operating or adjusting this product, please read this instruction booklet carefully and completely.

Service contact and AS call
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Part No.
949494060002-01

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Symbol Definitions

The following symbols appear on the product, its labeling, or the product packing. Each symbol carries a special definition, as defined below



Dangerous : High Voltage.



Consult accompanying documents.



Direct Current.



Indicates protective earth ground.



DC Power control switch.

SN

Serial Number.



Top-Bottom.



Fragile.



Do not get wet.



Maximum Stacking.



Indicates proof of conformity to applicable European Economic Community Council directives and to harmonized standards published in the official journal of the European Communities.



Medical Equipment is in accordance with UL 60601-1 and CAN/CSA C22.2 No.601.1 in regards to electric shock, fire hazards, and mechanical hazards.



Tested to comply with FCC Class B standards.



This symbol indicates that the waste of electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact the manufacturer or other authorized disposal company to decommission your equipment.



Tested to comply with VCCI Class B standards.

Safety Instructions

On Safety

1. Before connecting the AC power cord to the DC adapter outlet make sure the voltage designation of the DC adapter corresponds to the local electrical supply.
2. Never insert anything metallic into the cabinet openings of the Liquid Crystal Display(LCD) monitor. doing so may create the danger of electric shock.
3. To reduce the risk of electric shock, do not remove cover. No user-serviceable parts inside. Only a qualified technician should open the case of the LCD monitor.
4. Never use your LCD monitor if the power cord has been damaged. Do not allow anything to rest on the power cord, and keep the cord away from areas where people can trip over it.
5. Be sure to hold the plug, not the cord,when disconnecting the LCD monitor from an electric socket.
6. Unplug your LCD monitor when it is going to be left unused for an extended period of time.
7. Unplug your LCD monitor from the AC outlet before any service.
8. if your LCD monitor does not operate normally-in particular, if there are any unusual sounds or smells coming from it-unplug it immediately and contact an authorized dealer or service center.

Warning

Do not touch signal input,signal output or other connectors, and the patient simultaneously.

Warning

External equipment intended for connection to signal input, signal output or other connectors, shall comply with relevant IEC standard(e.g.,IEC60950 for IT equipment and IEC60601 series for medical electrical equipment).

In addition, all such combination-systems shall comply with the standard IEC 60601-1-1, safety requirements for medical electrical systems. Any person who connects has formed a system and is therefore responsible for the system to comply with the requirements of IEC 60601-1-1.

if, in doubt, contact qualified technician or your local representative.

On installation

1. Openings in the LCD monitor cabinet are provided for ventilation. To prevent overheating, these openings should not be blocked or covered. if you put the LCD monitor in a bookcase or some other enclosed space, be sure to provide adequate ventilation.
2. Put your LCD monitor in a location with low humidity and a minimum of dust.
3. Do not expose the LCD monitor to rain or use it near water (in kitchens, near swimming pools, etc.). if the LCD monitor accidentally gets wet, unplug it and contact an authorized dealer immediately. You can clean the LCD monitor with a damp cloth if necessary, but be sure to unplug the LCD monitor first.
5. Locate your LCD monitor near an easily accessible AC outlet.
6. High temperature can cause problems. Don't use your LCD monitor in direct sunlight and keep it away from heaters, stoves, fireplaces, and sources of heat.

CAUTION

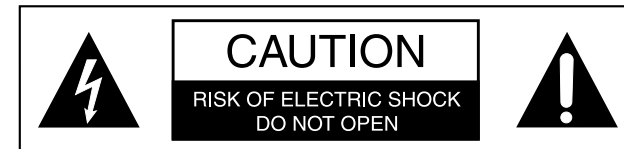
Environmental Conditions for transport and Storage

- Temperature range within -20°C to 60°C
- Relative humidity range 10% to 85%

Atmospheric pressure range within 500 to 1060hPa.

Intended Use

- This TFT-LCD Monitor is as accessory intended for use with Medical Equipment to display alpha, numerical and graphical data.



This symbol alerts the user that important literature concerning the operation of this unit has been included. Therefore, it should be read carefully in order to avoid potential problems.



This symbol warns user that un-insulated voltage within the unit the may have sufficient magnitude to cause electrical shock. Therefore, it is dangerous to make contact with any part inside the unit. To reduce the risk of electric shock, DO NOT remove cover (or back). There are no user serviceable parts inside. Refer servicing to qualified service personal.

To prevent fire or shock hazards, do not expose this unit to rain or moisture. Also, do not use this unit's polarized plug with an extension cord receptacle or other outlets unless the prongs can be fully inserted. The display is designed to meet the medical safety requirements for a patient vicinity device. This device may not be used in connection with life support equipment.



Underwriters Laboratories (UL) Classification:

UL safety Compliance:

This LCD monitor is U.L. Classified WITH RESPECT TO ELECTRIC SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL 60601-1/CAN/CSA C22.2 NO. 601.1



EEC Safety Compliance:

This display unit meets the requirements of EN-60601-1 so as to conform to the Medical Device Directive 93/42/EEC (general safety information).

The monitor should be powered from a center tapped circuit when used in the US at voltages over 120 volts. Monitor is intended for continuous operation. (Using Plug for US: 120V rating -5-15P tYPE, 230V rating-6-15P type)

Recycling :



Follow local governing ordinances and recycling plans regarding the recycling or disposal of this requirement.

Cleaning Instructions :



Follow your hospital protocol for the handling of blood and body fluids. Clean the display with a diluted mixture of mild detergent and water. Use a soft towel or swab. Use of certain cleaning agents may cause degradation to the labels and plastic components of the product. Consult cleanser manufacturer to see if agent is compatible with it. Do not allow liquid enter the display.

Servicing

Do not attempt to service the apparatus yourself as opening or removing covers may expose you to dangerous voltages or other hazards, and will void the warranty. Refer all servicing to qualified service personnel.

Unplug the apparatus from its power source and refer servicing to qualified personnel under the following conditions:

If the power cord or plug is damaged or frayed.

If liquid has been spilled into the apparatus.

If objects have fallen into the apparatus.

If the apparatus has been exposed to rain or moisture

If the apparatus has been subjected to excessive shock by being dropped.

If the cabinet has been damaged.

If the apparatus seems to be overheated.

If the apparatus emits smoke or abnormal odor.

If the apparatus fails to operate in accordance with the operating instructions.

Accessories

Use only accessories specified by the manufacturer, or sold with the apparatus.

Classification

- Protection against electric shock : Class I
- Applied Parts : No Applied Parts
- Protection against harmful ingress of Eater : IPX0
- Degree of safety in the presence of flammable anesthetics mixture with air or with oxygen or with nitrous oxide.
Not suitable for use in the presence of a flammable anesthetics mixture with oxygen or with nitrous oxide.
- Mode of operation : Continuous.

FCC Information

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against interference. This monitor can radiate radio frequency energy and, if not installed and used in accordance with the instructions, it may interfere with other radio communications equipment. There is no guarantee that interference will not occur in a particular installation.

If this equipment is found to cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by carrying out one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the color monitor and the subject of interference.
3. Plug the monitor into a outlet on a different electrical circuit than \that to which the subject of interference is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

NOTICES TO USER :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING :

This equipment geneates or uses radio frequency energy. Changes or modifications to this equipement may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose authority to operate this equipment if an unauthorized change or modification is made.

1. Guidance and manufacturer's declaration - electromagnetic emissions

The FS-L4202D is intended for use in the electromagnetic environment specified below. The customer or the user of the FS-L2401D should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment -guidance
RF Emissions CISPR 11	Group 1	The FS-L4202D 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	Class B	FS-L4202D is suitable for use in ail establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes
Harmonic emisions IEC 61000-3-2	D	
Voltage fluctuations IEC 61000-3-3	Complies	

2. Guidance and manufacturer's declaration - electromagnetic immunity

FS-L4202D is intended for use in the electromagnetic environment specified below. The customer or the user of FS-L4202D should assure that it is used in such an environment.			
Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment -guidance
Electrostatic discharge(ESD) IEC61000-4-2	6kV Contact 8kV air	6kV Contact 8kV air	Floors should be wood,concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient/burst IEC 61000-4-4	2kV for power supply lines 1kV for input/output lines	2kV for power supply lines 1kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.

Surge IEC 61000-4-5	1kV differential mode 2kV common mode	1kV differential mode 2kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80MHz	3 Vrms 150 kHz to 80MHz	Portable and mobile RF communications equipment should be used no closer to any part of the FS-L4202D, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = \left[\frac{3,5}{V_T} \right] \sqrt{P}$
where P is the maximum output power rating of the transmitter in watts (W)			

3. Guidance and manufacturer's declaration - electromagnetic immunity

FS-L4202D is intended for use in the electromagnetic environment specified below. The customer or the user of FS-L4202D should assure that it is used in such an environment.			
Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment -guidance
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3.0A/m	3.0A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycle 70 % U_T (30 % dip in U_T) for 25 cycle <5 % $U_{\%}$ (<95 % dip in $U_{\%}$) for 5 s	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycle 70 % U_T (30 % dip in U_T) for 25 cycle <5 % U_T (<95 % dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of FS-L4202D requires continued operation during power mains interruptions, it is recommended that FS-L4202 be powered from an uninterruptible power supply or a battery

Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment -guidance
Radiated RF IEC 61000-4-3	3 V/m 80.0 MHz to 2.5 GHz	3 V/m 80.0 MHz to 2.5 GHz	Recommended separation distance 80MHz to 800MHz $d = \left[\frac{3,5}{E_1} \right] \sqrt{P}$ 80MHz to 2.5GHz $d = \left[\frac{7}{E_1} \right] \sqrt{P}$ 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, should be less than the compliance level in each frequency range.
NOTE : U_T is the A.C. mains voltage prior to application of the test level.			

4. Recommended separation distances between portable and mobile RF communications equipment and the FS-L4202D

- The is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the FS-L4202D can help
- Prevent electromagnetic interference by maintaining a minimum distance between portable and mobile
- RF communications equipment (transmitters) and the FS-L4202D 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]		
	150kHz to 80MHz $d = \left[\frac{3,5}{V_T} \right] \sqrt{P}$	80MHz to 800MHz $d = \left[\frac{3,5}{E_1} \right] \sqrt{P}$	800MHz to 2.5GHz $d = \left[\frac{7}{E_1} \right] \sqrt{P}$
	V1=3Vrms	E1=3V/m	E1=3V/m

0.01	0.116	0.116	0.2333
0.1	0.368	0.3687	0.7378
1	1.166	1.1660	0.2333
10	3.687	3.6872	0.7375
100	11.660	11.6600	23.333

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (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 80MHz and 800MHz, 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.

▶ Quick Startup

Powering On The Unit :

1. Connect the power supply to the display via the power plug.
2. Plug in the DC adapter to AC inlet with power cord cable.
3. Connect the video source to this monitor.
4. Apply power to the peripheral device.
5. Turn on the switch of this monitor.

Parts

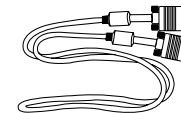
▶ 42" LCD Monitor



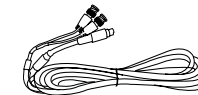
▶ Accessories



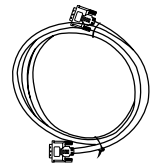
User Manual



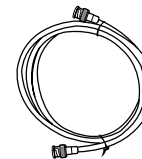
D-SUB Cable



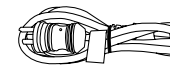
S-Video (Y/C) Cable



DVI Cable



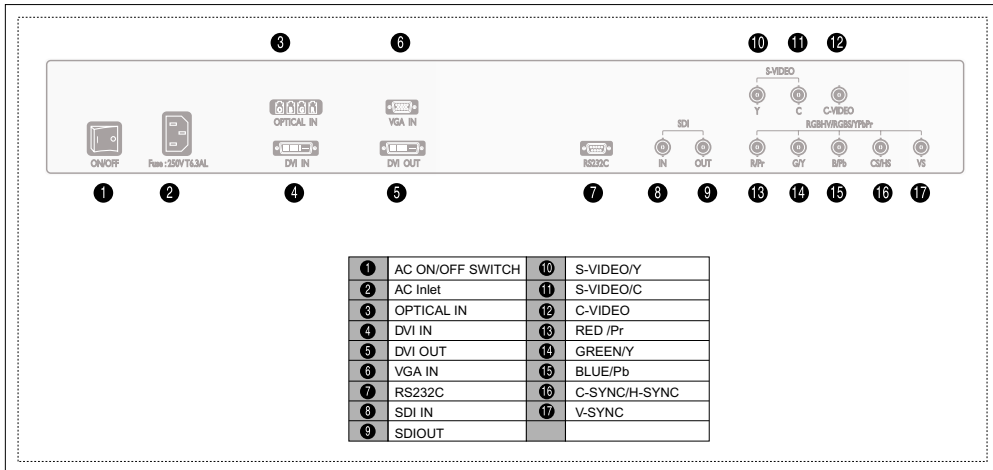
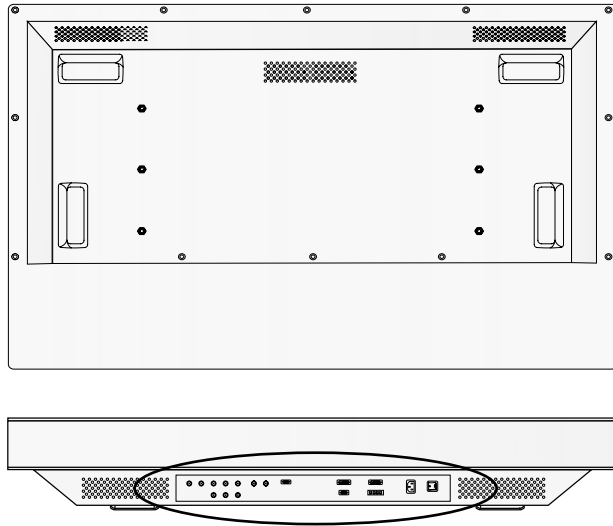
BNC Cable



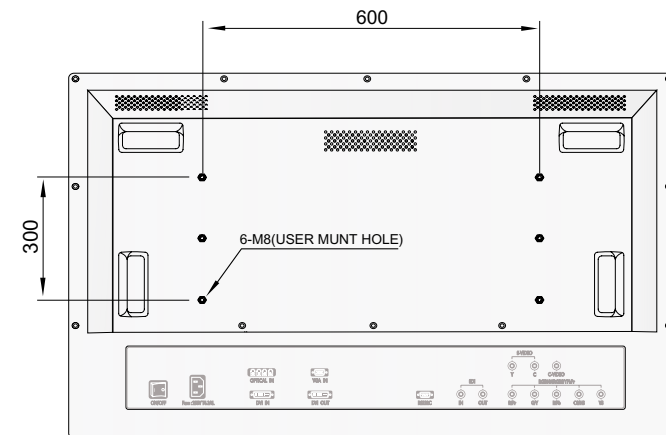
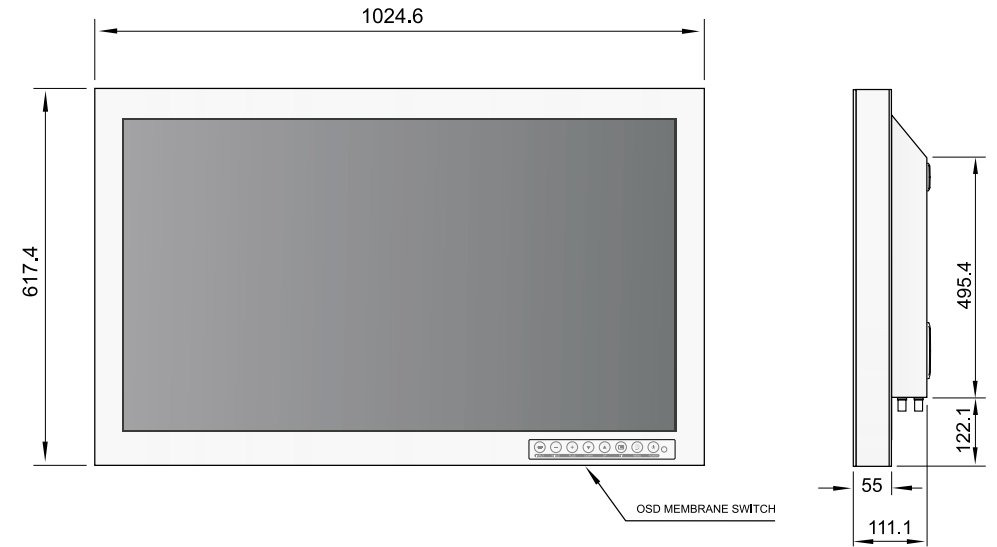
AC Power code
(Hospital Grade)

Connector

▶ Back Panel Jacks



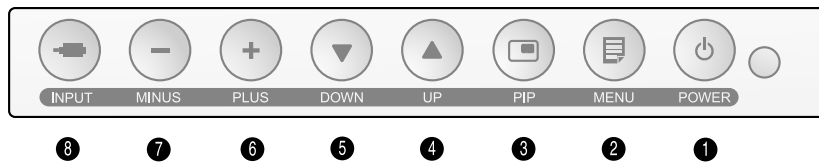
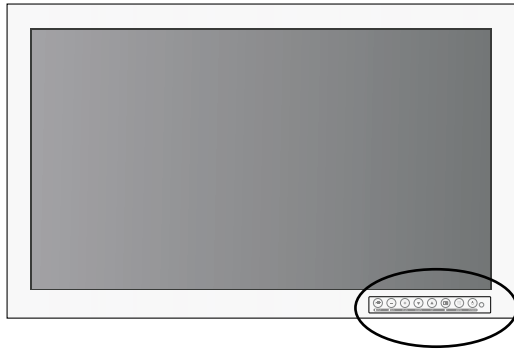
Mechanical Product Drawing



※Unit : mm

Control

OSD Button Position



OSD Button Function

An 8 button keypad, located in button light corner on the front of the display, allows the user to make adjustments to various display parameters using the On Screen Display (OSD) system.

- Power Indicating LED
 - Green : Normal mode
 - Amber: Standby mode
 - OFF : Monitor off

On-Screen Display (OSD) Function Button

- 1 POWER : Turns ON/OFF the monitor.
- 2 MENU : With OSD deactivated, Activated to OSD menu.
With OSD activated, Exit from main menu or sub menu.
- 3 PIP : With OSD deactivated, Hot key of PIP mode.
- 4 UP (▲) : With OSD deactivated, Hot key of the brightness control and increases the brightness.
With OSD activated, move the cursor upward.
selected function.
- 5 DOWN (▼) : With OSD deactivated, Hot key of the brightness control and decreases the brightness.
With OSD activated, move the cursor downward.

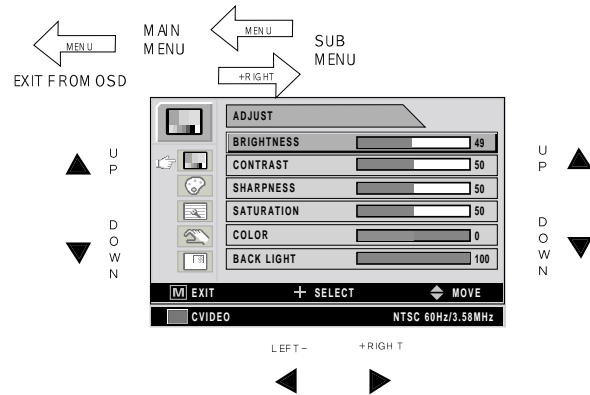
Power management

This monitor does not adhere to the VESA DPMS standard when no signal is present on the video inputs.

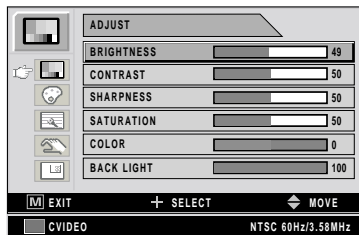
- 6 - (MINUS) : With OSD deactivated, Hot key of the contrast control and decreases the contrast.
With OSD activated, decreases the adjustment of the selected function.
- 7 + (PLUS) : With OSD deactivated, Hot key of the contrast control and increase the contrast.
With OSD activated, enter sub menu and increases the adjustment of the selected function.
- 8 INPUT : Change the display signal source.
If D-SUB Analog's picture size not matched with full screen size or image is noisy press the input button during 2~3 seconds then you can see the most appropriate screen.

Status	LED sign	Power Consumption
Normal Mode	Green on	<260W
Standby Mode	Amber Blinking	<20W

Adjusting OSD

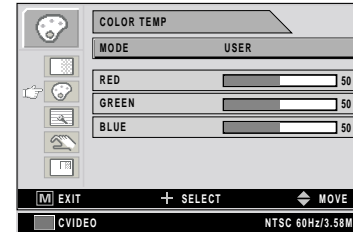


Adjust



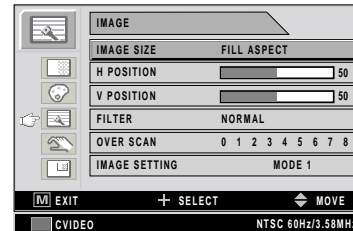
- 1 BRIGHTNESS
Increase or decrease the brightness. (Range : 0~100)
- 2 CONTRAST
Increase or decrease the Contrast. (Range : 0~100)
- 3 CLOCK
Increase or decrease the sampling frequency.(Range : 0~100)
- 4 PHASE
Increase or decrease the Phase level.(Range : 0~100)
- 5 BACK LIGHT
Increase or decrease the back light dimming level (Range : 0~100)
- 6 AUTO ADJUST
Fit to the most appropriate screen on the D-SUB Analog signal
- 7 SHARPNESS
Adjust the sharpness of the displayed image.
- 8 SATURATION
Adjust the saturation of the image.
- 9 COLOR
Adjust the color of the image.

Color temp



- 1 MODE
Change the color model. (C1(Redish), C2(greenish). USER)
- 2 RED
Red balance (Only Working with USER mode) (Range : 0~100)
- 3 GREEN
Green balance (Only Working with USER mode) (Range : 0~100)
- 4 BLUE
Blue balance (Only Working with USER mode) (Range : 0~100)

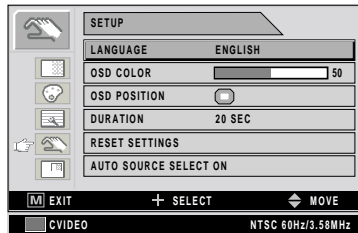
Image



- 1 IMAGE SIZE
Change the image size (Scaling mode)
(Full, Fill aspect, 1:1, Normal, Video, Zoom, video only)
- 2 H POSITION
Adjust the horizontal position of the displayed source image.
(Range : 0~100)
- 3 V POSITION
Adjust the vertical position of the displayed source image.
(Range : 0~100)
- 4 FILTER
Set the sharpness of image (Softest, Soft, Normal, Sharp, Sharpest)
- 5 OVER SCAN
Adjust the displayed size. (0~8)
- 6 IMAGE SETTING
Allows selection of one of five user defined image presets.

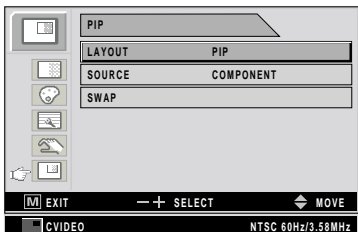
Standard Signal table

Setup



- 1 **LANGUAGE**
Change the OSD language (8 language)
(Korean, English, French, Spanish, German, Chinese, Japanese, Italian)
- 2 **OSD COLOR**
Adjust the OSD background from white opaque to half translucent.
- 3 **OSD POSITION**
Change the osd position. (9 Positions)
- 4 **DURATION**
Adjust time until the OSD Menu will disappear after adjusting the menu.
(5, 10, 20, 30, 60, 90, 120, 180, 240 seconds)
- 5 **RESET SETTINGS**
Changes the all OSD value to factory out going status.
- 6 **AUTO SOURCE SELECT**
Disable of enable auto source select.
(ON: Searches through all possible input source until an active video source is found.
OFF: Video input is manually selected.)

PIP



- 1 **LAYOUT**
Change the OSD layout. (Single, PIP, PBP1, PBP2)
- 2 **SOURCE**
Change the secondary source.
- 3 **SWAP**
Swaps the position and size of the Primary and Secondary image.

PC Supported Mode

Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Clock Frequency (MHz)
640 X 350 @70Hz	31.469	70.087	25.175
720 X 400 @70Hz	31.469	70.082	28.324
640 X 480 @60Hz	31.469	59.940	25.175
640 X 480 @75Hz	37.500	75.000	31.500
800 X 600 @60Hz	37.879	60.317	40.000
800 X 600 @75Hz	46.875	75.000	49.500
1024 X 768 @60Hz	48.363	60.004	65.000
1024 X 768 @75Hz	60.023	75.029	78.750
1152 X 864 @60Hz	54.348	60.053	80.000
1152 X 864 @75Hz	67.500	75.000	108.000
1280 X 1024@75Hz	79.976	75.025	135.000
1360 X 768@75Hz	47.649	59.936	84.625
1600 X 1200@60Hz	74.077	59.981	130.375
1920 X 1080@60Hz	67.500	60.000	148.500

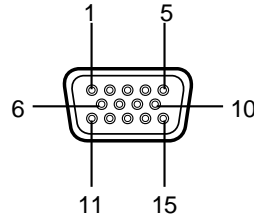
SDI Video format

Output Signal	Description
SMPTE-274M	1080i (60 / 59.94 / 50) 1080p (30 / 29.97 / 25 / 24 / 24sF / 23.98 / 23.98sF)
SMPTE-296M	720p (60 / 59.94 / 50)
SMPTE-260M	1035i (60 / 59.94)
SMPTE-125M	480i (59.94)
ITU-R BT.656	576i (50)

Signal connector Pin Assignments

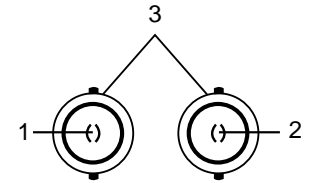
VGA (15Pin D-Sub)

Pin No.	Assignment	Pin No.	Assignment
1	Red	9	No Connection
2	Green	10	Ground-Sync
3	Blue	11	Ground
4	Ground	12	DDC Data
5	DDC 5V Standby Cable Connection check	13	H.Sync
		14	V.Sync
6	Ground-Red	15	DDC Clock
7	Ground-Green		
8	Ground-Blue		



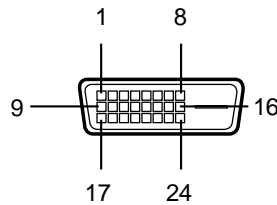
S-Video (BNC)

Pin No.	Assignment
1	S-VIDEO/Y (Luma)
2	S-VIDEO/C (Chroma)
3	Ground



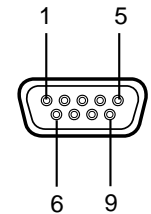
DVI In,Out (24Pin DVI-D)

Pin No.	Assignment	Pin No.	Assignment
1	T.M.D.S. Data2-	13	No Connection
2	T.M.D.S. Data2+	14	+5V Power
3	T.M.D.S. Data2 Shield	15	Cable Connection check
4	No Connection	16	Hot Plug Detect
5	No Connection	17	T.M.D.S. Data0-
6	DDC Clock	18	T.M.D.S. Data0+
7	DDC Data	19	T.M.D.S. Data0 Shield
8	No Connection	20	No Connection
9	T.M.D.S. Data1-	21	No Connection
10	T.M.D.S. Data1+	22	T.M.D.S. Clock Shield
11	T.M.D.S. Data1 Shield	23	T.M.D.S. Clock+
12	No Connection	24	T.M.D.S. Clock-



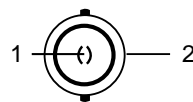
RS232C (D-SUB 9Pin)

Pin No.	Assignment
1	No Connection
2	TXD
3	RXD
4	No Connection
5	Ground
6	No Connection
7	No Connection
8	No Connection
9	No Connection



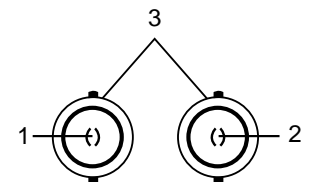
C-Video (BNC)

Pin No.	Assignment
1	Composite
2	Ground



SDI (BNC)

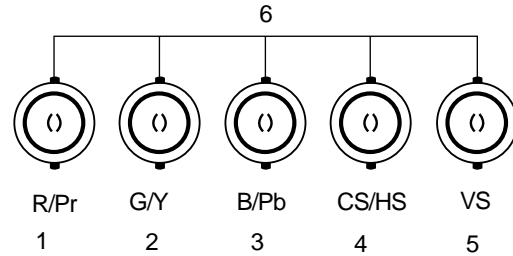
Pin No.	Assignment
1	SDI IN
2	SDI OUT
3	Ground



Specification

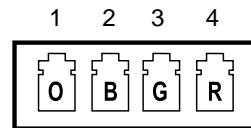
RGBHV/RGBS/YPbPr (BNC)

Pin No.	Assignment	
	RGBS	Y Pb Pr
1	Red	Pr
2	Green	Y
3	Blue	Pb
4	H-Sync / C-Sync	No Connection
5	V-Sync	No Connection
6	Ground	



OPTICAL

Pin No.	Assignment
1	OPICAL Clock
2	OPICAL Blue
3	OPICAL Green
4	OPICAL Red



Model	FS-L4202D	
LCD Panel	Type	TFT-LCD
	Screen Size	42 linch
	Maximum Resolution	1920 X 1080 @ 60Hz
	Pixel pitch	0.4845(H) mm X 0.4845(V) mm
	Display Colors	16.7M
	Contrast Ratio	1000:1
	Viewing Angle	89° / 89° / 89° / 89°
	Response Time	10msec(Rising+Falling)
	Luminance	500cd/m ²
	Synchro nization	Horizontal Frequency
Vertical Frequency		50Hz~75Hz
Power Consumption	Maximum	260W
	Standby Mode	Under 20W
Control key	Front side	INPUT, -, +, ▼, ▲, PIP, MENU, POWER
Input Signal	Video	1XDVI, 1XOptical DVI, 1XD-SUB, 1XBNC (CVBS)
		2XBNC (SVHS Y/C), 1XBNC (SDI), 5XBNC (Component Y/G, Pb/B, Pr/R, H/CS, VS Input)
Out Signal	Video	1XDVI, 1XBNC (SDI)
Input power	AC 100-230V~, 50-60Hz, 3A Max	
Dimension	Size and Weight	1024.6 × 617.4 × 111.1(mm)/ 29Kg