



Medical Display

FM-A2701D, FM-A2701DS

FM-B2702D, FM-B2702DG



User's Guide

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

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The specifications and information in this document are subject to change without notice.

Overview



FM-A2701D, FM-A2701DS
FM-B2702D, FM-B2702DG

This product from FSN Medical Technologies is a high-end surgical display monitor designed for advanced digital OR applications. This medical display is uniquely equipped to handle tasks in the demanding operating room environment. This unit features LED backlight technology.



















We have implemented methods to fine-tune the properties of FSN displays. Distinct color space settings have been calibrated to well-known surgical color preferences, providing the user with the ideal surgical visualization system. Features include:





- Rapid signal detection, robust mode tables
- Artifact-free 4K UHD images
- Fanless - sterile field compatible
- Calibrated to clinical color
- Image pan, zoom, freeze, picture-in-picture

FSN Medical Technologies has solutions for managing your operating room video signals. Our products are engineered and built for compatibility with other highly specialized surgical and diagnostic equipment used in surgical suites, operating rooms, emergency rooms, and procedural facilities.

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		Power adapter
	Direct Current		Indicates equipotential earth ground
	Indicates protective earth ground		Indicates top-bottom direction
	DC Power control switch		Fragile
	Do not get wet		Maximum Stacking
	Consult the operating instructions.		Indicates the manufacturer
	Indicates the manufacturing date		Authorized representative in the European community
	Serial Number		Humidity limitation
	Temperature limitation		Atmospheric pressure limitation

	<p>Indicates proof of conformity to applicable European Economic Community Council directives and to harmonized standards published in the official journal of the European Communities.</p>
	<p>Medical Equipment is in accordance with ANSI/AAMI ES60601-1 (2005) + AMD 1 (2012) and CAN/CSA-C22.2 No. 60601-1 (2014) in regards to electric shock, fire hazards, and mechanical hazard.</p>
	<p>Tested to comply with FCC Class B standard.</p>
	<p>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.</p>

Language: English

Note: A printed copy of the manual in English is provided with the product. Users within EU member states, please contact local distributor for other languages or refer to the CD manual enclosed with the product. This applies to EU member states where the product has been purchased through authorized channels.

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 medical 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 medical LCD monitor.
4. Never use your medical 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 medical LCD monitor power cord from an electric socket.
6. Unplug your medical LCD monitor power cord when it is going to be left unused for an extended period of time.
7. Unplug your medical LCD monitor power cord from the AC outlet before any service.
8. If your medical 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.
9. Please contact the manufacturer if the set should be installed in an inaccessible area.

Warning: Do not touch input or output connectors and the patient simultaneously.

Warning: This medical LCD monitor is intended for connection to input/output signals and other connectors that comply with relevant IEC standard (e.g., IEC60950 for IT equipment and IEC60601 series for medical electrical equipment). In addition, all such combination-system shall comply with the standard IEC 60601-1-1 or clause 16 of the 3 Ed. of IEC 60601-1, respectively, safety requirements for medical electrical systems. Any person who has formed a combination-system is responsible for the system to comply with the requirements of IEC 60601-1-1 or clause 16 of the 3 Ed. of IEC 60601-1, respectively. If in doubt, contact qualified technician or your local representative.

Warning: To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth. Power supply (AC/DC Adapter) is specified as a part of the LCD Color Display. Do not position equipment so that it is difficult to disconnect the power cord plug from the appliance inlet.

Warning: Do not modify this equipment without authorization of the manufacturer.

Product fuse has a lower breaking capacity. Do not install at the building power system, prospective short-circuit current exceeding 35 A.

On installation

1. Openings in the medical LCD monitor cabinet are provided for ventilation. To prevent overheating, these openings should not be blocked or covered. If you put the medical LCD monitor in a bookcase or some other enclosed space, be sure to provide adequate ventilation.
2. Put your medical LCD monitor in a location with low humidity and a minimum of dust.
3. Do not expose the medical LCD monitor to rain or use it near water (in kitchens, near swimming pools, etc.). If the medical LCD monitor accidentally gets wet, unplug it and contact an authorized dealer immediately. You can clean the medical LCD monitor with a damp cloth if necessary, but be sure to unplug the medical LCD monitor first.
4. Place your medical LCD monitor near an easily accessible AC outlet.
5. High temperature can cause problems. Don't use your medical LCD monitor in direct sunlight and keep it away from heaters, stoves, fireplaces, and sources of heat.
6. Don't place your medical LCD Monitor on an unstable stand, Medical LCD monitor may malfunction or fall.
7. This medical LCD monitor should not topple over when tilted at a 5° angle, in any position, during NORMAL USE, excluding transport.
8. In the position specified for transport, medical LCD monitor shall not overbalance when tilted at a 10 degree angle.
9. When carrying this product, please use both handles (if included) on the left and right side of the product, and carry using two people. If you want the product to be installed in another place, please call your service center.
10. Do not use other cables or accessories that are not provided.
11. Do not lay this monitor on the other equipment.

Environmental Conditions for Operation and Storage

Temperature range within 0°C to 40°C(operation), -20°C to 60°C (storage)

Relative humidity range 10% to 85%

Atmospheric pressure range within 500 to 1060hPa.

Intended Use

This Medical LCD Monitor is an accessory intended for use with Medical Equipment to display alphabetical, numerical and graphical data.

Cautions

Caution



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 users that un-insulated voltage within the unit 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 electrical shock, DO NOT remove cover (or back). There are no user-serviceable parts inside. Refer servicing to qualified service personnel.

To prevent fire or shock hazards, do not expose this unit to rain or moisture. Do not use this unit's polarized plug with an extension cord receptacle or other outlets unless the prongs can be fully inserted. This 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 medical 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 and EMC Compliance:

This medical LCD monitor unit meets the requirements of EN60601-1 and EN60601-1-2 so as to conform to the Medical Device Directive 93/42/EEC.

This medical LCD monitor complies to the above standards only when used with the supplied medical grade power supply. Use 120V rating 5-15P type plug only in the U.S.

ATM160T-P240

Caution: Make sure the power cord is the correct type that is required in your area. This medical LCD monitor has a universal power supply that allows operation in either 100-120V AC or 200-240V AC voltage areas (no user adjustment is required).

Use the proper power cord with correct attachment plug type. If the power source is 120 V AC, use a power cord which is a Hospital Grade Power Cord with NEMA 5-15 style plug, labeled for 125 volts AC with UL and C-UL approvals. If the power source is a 240 V AC supply, use the tandem (T blade) type attachment plug with ground conductor power cord that meets the respective European country's safety regulations.

The hospital-grade plug for medical products intended for use in Denmark has DEMKO approval and is rated 13 amps at 250Vac. Plug is recommended for use in medical applications and specifications are being added to the standard SB 107-2-D1. Plug mates with maker's Danish hospital-grade socket. Hospital sockets have slightly different shaped openings allowing only the hospital plug, not the standard Danish plug, to be inserted, to protect the ac circuit in specific medical settings.

A ground post, located on the back of the display, may be used for the purpose of grounding the display's chassis. Any such ground must be installed in accordance with applicable electrical codes. The ground post is shown on the mechanical drawing found in this user's guide.



Recycling

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

Warning: Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

Warning: Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

Warning: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of this medical LCD monitor, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Warning: Failure to use this equipment in the X-ray or magnetic resonance environment could result in degradation of the performance of this equipment, interference with other equipment or interference with radio services.

Warning: This equipment has been tested for radiated RF immunity only at selected frequencies, and use nearby of emitters at other frequencies could result in improper operation.

Warning: This product is not considered physically to connect to HF (High Frequency) electrosurgical equipment.

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 cotton towel or swab. Use of certain detergents may cause degradation to the labels and plastic components of the product. Consult cleanser manufacturer to see if agent is compatible. Do not allow liquid to enter the display.

Servicing

Do not attempt to service the medical LCD monitor 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 medical LCD monitor 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 medical LCD monitor.
- If objects have fallen into the medical LCD monitor.
- If the medical LCD monitor has been exposed to rain or moisture.
- If the medical LCD monitor has been subjected to excessive shock by being dropped.
- If the cabinet has been damaged.
- If the medical LCD monitor seems to be overheated.
- If the medical LCD monitor emits smoke or abnormal odor.
- If the medical LCD monitor fails to operate in accordance with the operating instructions.

Accessories

Use only accessories specified by the manufacturer, or sold with the medical LCD monitor.

Classification

- Protection against electric shock : Class I including AC/DC Adapter
- Applied Parts : No Applied Parts
- 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 medical LCD monitor unit 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 medical LCD monitor and the subject of interference.
3. Plug the monitor into an 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 medical LCD monitor generates or uses radio frequency energy. Changes or modifications to this medical LCD monitor 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.

PRODUCT LIFETIME

The average lifespan of this LCD monitor has been determined to be approximately 5 years, considering the LCD flat panel which has been specified with a lifetime of 50,000 hours.

1. Guidance and manufacturer's declaration - electromagnetic emission

The medical LCD monitor is intended for use in the electromagnetic environment specified below. The user of the device should make sure that the medical LCD monitor is operated in such an environment.		
Interference emission measurements	Conformity level	Electromagnetic environment -guidance
RF emissions acc. to CISPR 11	Complies with Group 1	The characteristics of this device determined by broadcasting permit its industrial and hospital use (CISPR 11, Class A). When used in a living area (for which CISPR 11 usually requires Class B), this device may not provide adequate protection of radio services. The user must, if necessary, take remedial action such as implementation or reorientation of the device.
RF emissions acc. to CISPR 11	Complies with Class B	
Emission of harmonic oscillations acc. to IEC 61000-3-2	Complies with Class A	
Voltage fluctuations/flicker emissions acc. to IEC 61000-3-3	Complies	


2. For the use of ME devices in professional healthcare facilities. Guidance and manufacturer's declaration - electromagnetic immunity

The medical LCD monitor is intended for use in the electromagnetic environment specified below. The user of the medical LCD monitor should make sure that it is used in such an environment.		
Interference immunity test	IEC 60601-1-2:2014 conformity level	Electromagnetic environment-guidance
Electrostatic discharge (ESD) acc. to IEC 61000-4-2	Complies ± 2 kV, ± 4 kV, ± 6 kV, ± 8 kV contact discharge ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air discharge	Floors should be made of wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity must be at least 30%
Rapid transient electric interferences/ bursts acc. to IEC 61000-4-4	Complies ± 2 kV for mains lines ± 1 kV for input/output lines	The quality of the supply voltage should correspond to that of a typical business or hospital environment.
Surge acc. to IEC 61000-4-5	Complies ± 1 kV push-pull voltage ± 2 kV common-mode voltage	The quality of the supply voltage should correspond to that of a typical business or hospital environment.
Voltage dips, short interruptions and fluctuations of the supply acc. to IEC 61000-4-11	0% U_T^* ; 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° 0% U_T ; 1 cycle and 70% U_T ; 25/30 cycles Single phase: at 0° 0% U_T ; 250/300 cycle	Mains power quality should be that of a typical commercial or hospital environment. If the user of the device requests continued functioning even when interruptions of the power supply occur, it is recommended that the device be supplied from a power supply that is free of interruptions.
*Note: U_T is the mains alternating voltage before applying the test levels.		

**3. For the use of ME devices in professional healthcare facilities.
Test specification for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment (according to IEC 60601-1-2:2014)**

The medical LCD monitor is intended for use in the electromagnetic environment specified below. The user of the medical LCD monitor should make sure that it is used in such an environment.						
Test frequency MHz	Band MHz	Service	Modulation	Maximum power W	Distance m	IMMUNITY TEST LEVEL V/m
385	380 to 390	TETRA 400	Pulse modulation 18 Hz	1.8	1.0	27
450	430 to 470	GMRS 460, FRS 460	FM ± 5 kHz stroke ± 1 kHz sine wave	2	1.0	28
710	704 to 787	Band 13, 17	Pulse modulation 217 Hz	0.2	1.0	9
745						
780						
810	800 to 960	GSM 800/900 TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	2	1.0	28
870						
930						
1720	1700 to 1990	GSM 1800, CDMA 1900, GSM 1900, DECT, LTE Band 1,3, 4, 25 UMTS	Pulse modulation 217 Hz	2	1.0	28
1845						
1970						
2450	2400 to 2570	Bluetooth, WLAN 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	2	1.0	28
5240	5100 to 5800	WLAN 802.11 a/n	Pulse modulation 217 Hz	0.2	1.0	9
5500						
5785						
*Note: If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the medical LCD monitor may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.						

4. Guidance and manufacturer's declaration – electromagnetic immunity – for equipment and systems that are not life-supporting

The medical LCD monitor is intended for use in the electromagnetic environment specified below. The user of the medical LCD monitor should make sure that it is used in such an environment.			
Interference immunity tests	IEC 60601-1-2:2014 test level	Conformity level	Electromagnetic environment – guidelines
<p>Conducted RF disturbances acc. to IEC 61000-4-6</p> <p>Radiated RF disturbances according to IEC 61 000-4-3</p>	<p>3 V rms 150 kHz to < 80 MHz</p> <p>3 V/m 80 MHz to 2.5 GHz</p>	<p>3 V eff</p> <p>3 V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the medical LCD monitor, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance:</p> $d = 1.2 \sqrt{P}$ <p>Where P is the nominal power of the transmitter in watts [W] according to the information provided by the manufacturer of the transmitter and d is the recommended separation distance in meters [m].</p> <p>The field strength of stationary transmitters at all frequencies on site a should be, according to a study, less than the conformity level b.</p> $d = 1.2 \sqrt{P}$ <p>80 MHz to < 800 MHz</p> $d = 2.3 \sqrt{P}$ <p>800 MHz to 2.5 GHz</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
<p>Note: These guidelines may not apply in all situations. The propagation of electromagnetic quantities is affected by absorptions and reflections of buildings, objects, and persons.</p>			
<p>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 of the stationary transmitters, a site survey should be considered. If the measured field strength in the location at which the device is used exceeds the above conformity levels, the device should be observed to verify normal operation. If unusual performance characteristics are observed, additional measures may be necessary, such as a modified orientation or a different location for the device.</p> <p>b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</p>			

5. Recommended separation distances between portable and mobile RF communications equipment and the medical LCD monitor

The medical LCD monitor is intended for use in the electromagnetic environment in which the RF disturbances are controlled. The user of the device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the device – as a function of the output power of the communication device, as shown below.

Nominal power of transmitter [W]	Separation distanced [m] according to frequency of transmitter		
	150kHz to < 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to < 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at 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.

Parts

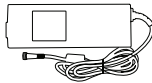
Monitor



Accessories



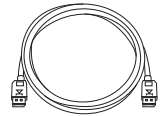
User Manual



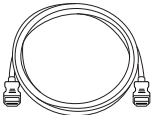
AC-DC Adaptor
(6.23ft/1.9m)



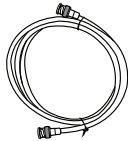
AC Power Cord
(6ft/1.8/m US,UK,EU, China)
(Hospital Grade)



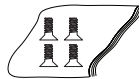
DisplayPort Cable



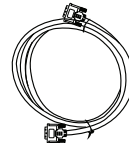
HDMI Cable



SDI BNC Cable x 4
(FM-A2701DS)



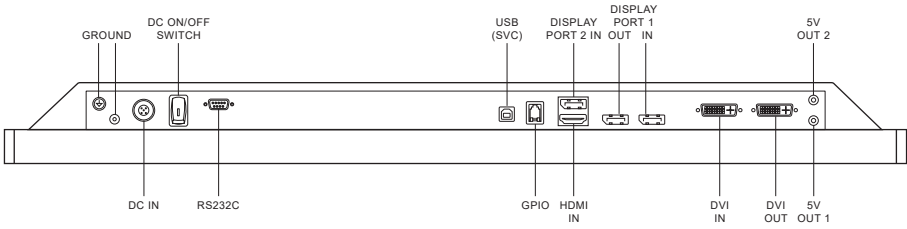
Screw
BH M4 x 14



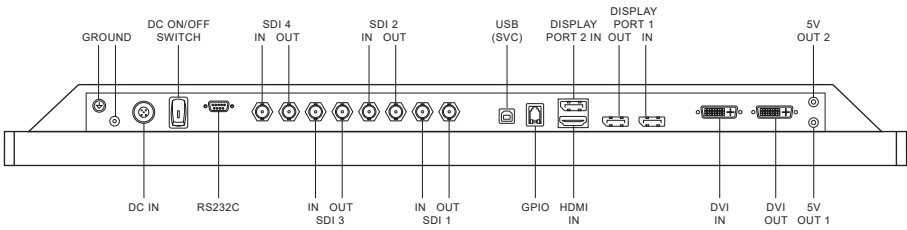
DVI-D Cable

Connectors

27" FM-A2701D Monitor Connector

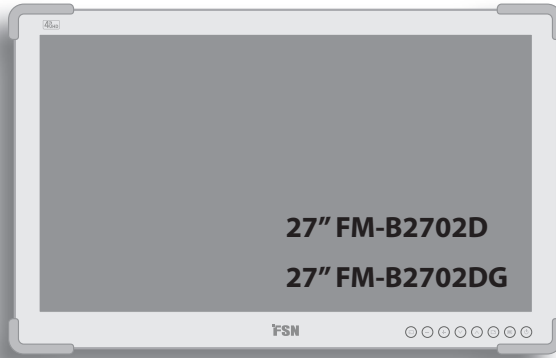


27" FM-A2701DS Monitor Connector



Parts

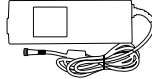
Monitor



Accessories



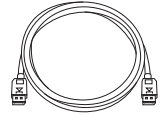
User Manual



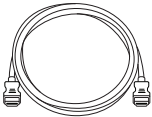
AC-DC Adaptor
(6.23ft/1.9m)



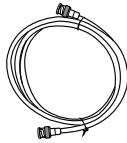
AC Power Cord
(6ft/1.8m US,UK,EU, China)
(Hospital Grade)



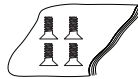
DisplayPort Cable



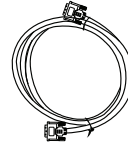
HDMI Cable



SDI BNC Cable x 4
(FM-B2702DG)



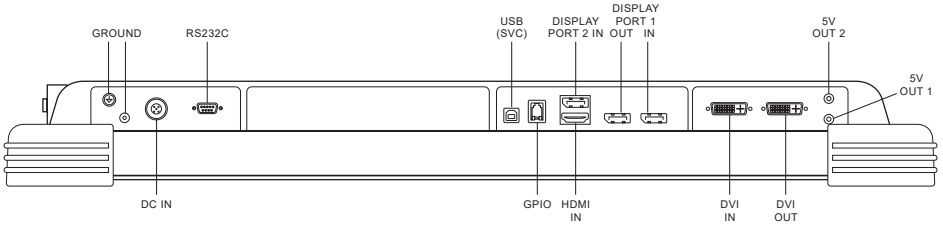
Screw
BH M4 x 14



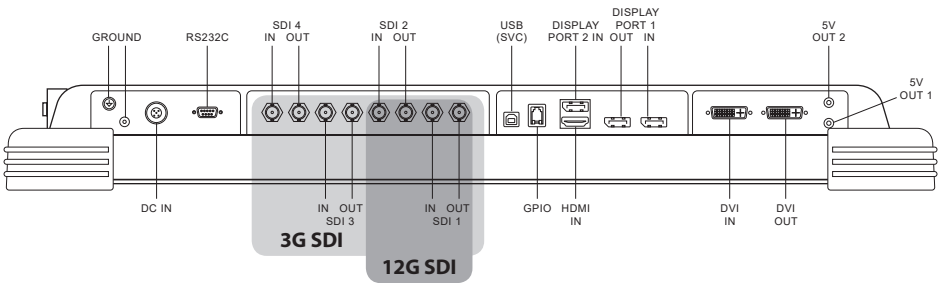
DVI-D Cable

Connectors

27" FM-B2702D Monitor Connector

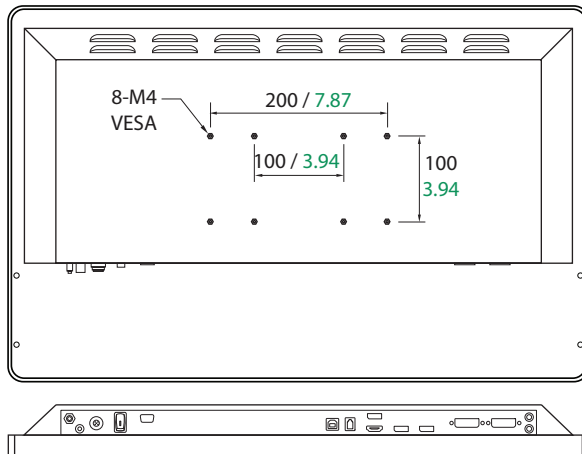
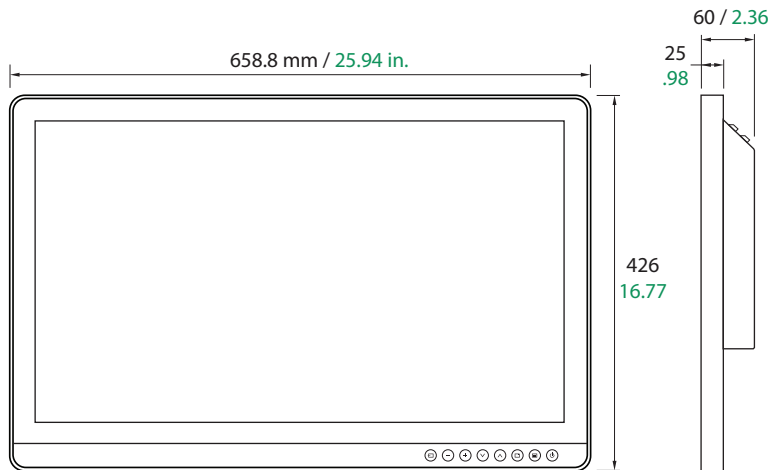


27" FM-B2702DG Monitor Connector

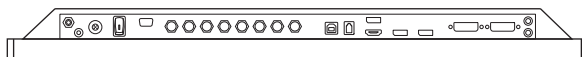


Mechanical Product Drawing

27" FM-A2701D, FM-A2701DS Dimension

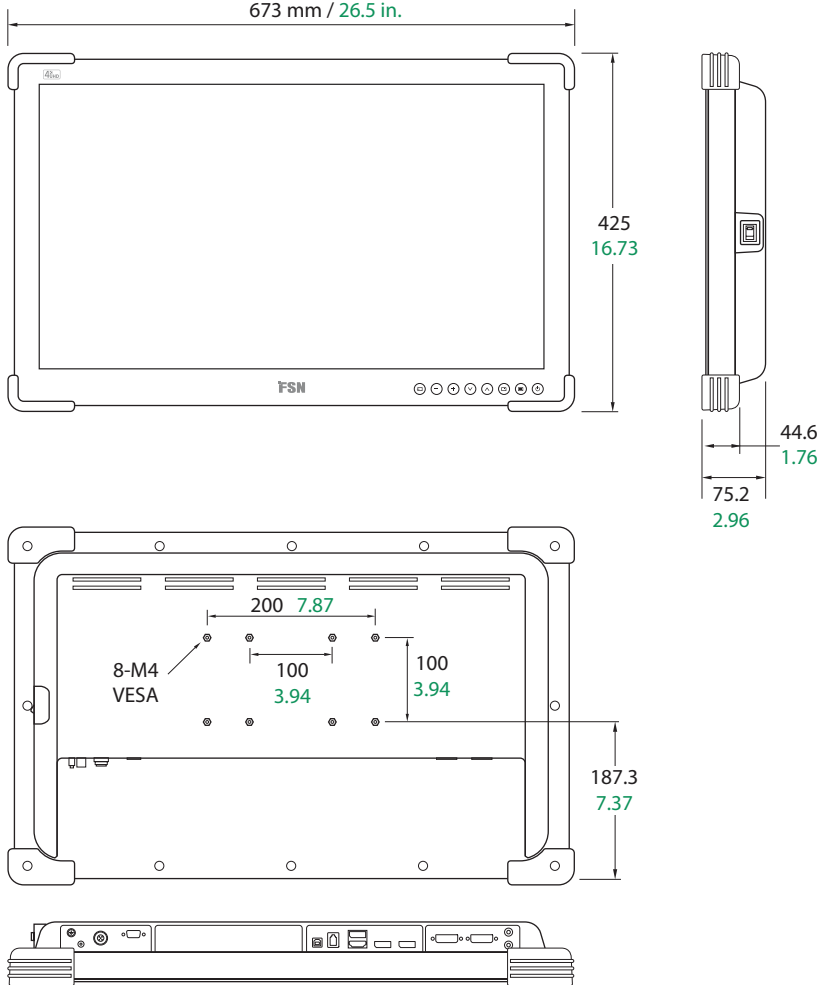


FM-A2701DS

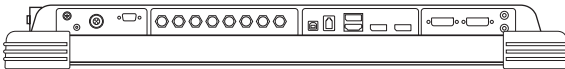


Mechanical Product Drawing

27" FM-B2702D, FM-B2702DG Dimension



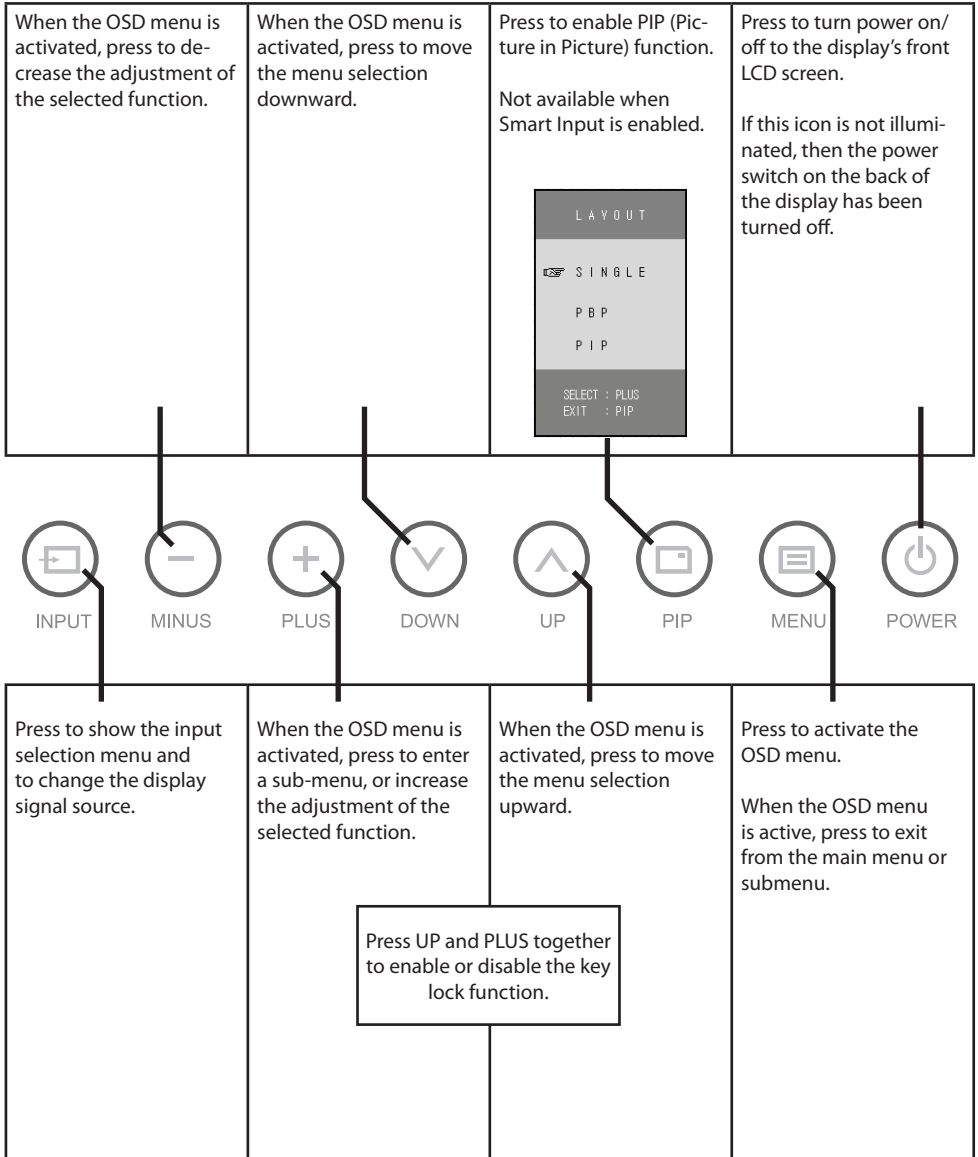
FM-B2702DG



Controls

On Screen Display (OSD) Touchscreen

Touchscreen icons, located in bottom right corner of the LCD display, allows the user to make adjustments to various display parameters using the On Screen Display (OSD) system. Slightly touch any icon to activate all of the icons.



Controls

On Screen Display (OSD) Touchscreen

Touchscreen icons, located in bottom right corner of the LCD display, allows the user to make adjustments to various display parameters using the On Screen Display (OSD) system. Slightly touch any icon to activate all of the icons.



To change input signal sources, press INPUT and move the cursor by pressing the UP or DOWN icons. Press PLUS to select the desired source.

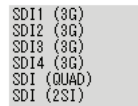


FM-A2701D
FM-B2702D

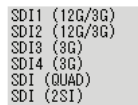


FM-A2701DS
FM-B2702DG

For FM-A2701DS and FM-B2702DG, SDI source type can be changed by pressing MINUS when the cursor is next to SDI in the source list.



FM-A2701DS



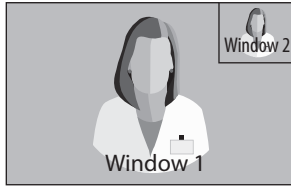
FM-B2702DG

Window Layout

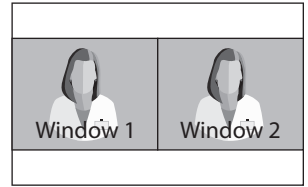
Single Window



Picture in Picture (PiP)



Picture by Picture (PbP)

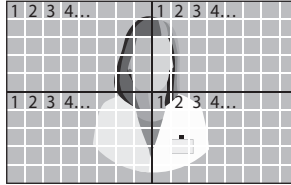


SDI Source Compatibility

3G-SDI Single (1080p 60Hz)



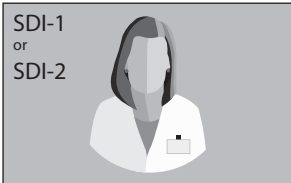
3G-SDI 2-SI



3G-SDI Quad



12G-SDI Single (2160p 60Hz)



For SDI single view setting, use the INPUT menu to select which SDI source should be activated.

For SDI quad view setting, each connector should correspond with the four image areas as shown above.

PiP/PbP Combination Table

FM-A2701D, FM-B2702D

	DisplayPort 1 (SST)	DisplayPort 2 (SST)	HDMI	DVI
DisplayPort 1 (SST)	–	✓	✓	✓
DisplayPort 2 (SST)	✓	–	–	✓
HDMI	✓	–	–	✓
DVI	✓	✓	✓	–

FM-A2701DS, FM-B2702DG

	DisplayPort 1 (SST)	DisplayPort 2 (SST)	HDMI	SDI (1,2,3,4 quad, 2-SI)	DVI
DisplayPort 1 (SST)	–	✓	✓	✓	✓
DisplayPort 2 (SST)	✓	–	–	✓	✓
HDMI	✓	–	–	✓	✓
SDI (1,2,3,4 quad, 2-SI)	✓	✓	✓	–	✓
DVI	✓	✓	✓	✓	–

On Screen Display (OSD) Menus

FSN display monitors come equipped with a rich set of features for system set-up, image adjustments, and screen layout control. These features are managed through the On Screen Display, or OSD. Some options presented in the OSD are contextual and vary depending on the active input signal. See the Controls section for a complete description of each OSD button.

1. Enter the OSD

To activate the OSD menu, press the MENU button on the front of the display monitor. To close the OSD menu, press the menu button to exit from the main menu or a sub menu.



2. Pick a Main Menu Category

After entering the OSD, use the UP ▲ and DOWN ▼ buttons on the front of the display monitor to navigate to a main menu category.



The PICTURE menu controls brightness, contrast, and more.



The COLOR menu controls preset or customized color settings.



The ADVANCED menu controls image aspect ratio and over scan.



The SETUP menu controls language, OSD behavior, and more.



The LAYOUT menu controls picture in picture layouts.

3. Pick a Submenu Category

After using the UP ▲ and DOWN ▼ buttons to navigate to the desired main menu category, press the + button to enter the submenus associated with the selected main menu.

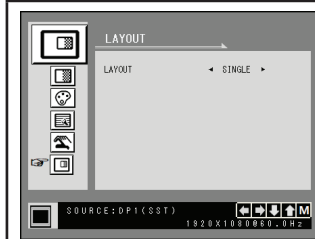
On Screen Display (OSD) Menus

After selecting a main menu category, press the **+** button to enter the associated submenus as shown below. Next, use the UP **▲** and Down **▼** buttons to navigate to the desired submenu, then adjust as needed with the **+** and **-** buttons. Select the MENU button to exit from the submenu or main menu.

	<h3>Submenus under the PICTURE menu</h3> <ol style="list-style-type: none"> BRIGHTNESS Increases or decrease the brightness. (Range : 0~100) CONTRAST Increases or decreases the contrast. (Range : 0~100) SATURATION Increases or decreases the saturation. (Range : 0~100) SHARPNESS Increases or decreases the sharpness. (Range : 0~4) VIVIDNESS Sets image vividness. (Off, Low, Mid, High) Enhances image quality with minimal artificial effects. VIDEO RANGE Select a video range setting. (0~255, 16~235, or AUTO) 0~255: for RGB format setting. 16~235: for YUV format setting. AUTO: automatically changes to 0~255 for RGB format, or to 16~235 for YUV format.
	<h3>Submenus under the COLOR menu</h3> <ol style="list-style-type: none"> GAMMA Select the appropriate gamma. (BYPASS, 1.8, 2.0, 2.2, 2.4, 2.6, DICOM). Gamma cannot be changed when color space is BT.709. COLOR SPACE Select the color space setting. (NATIVE, BT.709, BT.2020, or AUTO) NATIVE: for native color setting. BT.709: for HD signal setting. BT.2020: for UHD signal setting. AUTO: automatically changes to BT.2020 for UHD, or BT.709 for HD signal. COLOR MODE Changes the image color setting. (C1, C2, C3, USER) RED Red balance. (Only works with USER mode) (Range : 0~100) GREEN Green balance. (Only works with USER mode) (Range : 0~100) BLUE Blue balance. (Only works with USER mode) (Range : 0~100)
	<h3>Submenus under the ADVANCED menu</h3> <ol style="list-style-type: none"> ASPECT RATIO Changes aspect ratio of the displayed image. (Full, Auto, Fill-H) OVER SCAN Adjusts the displayed size. (0~6) FREEZE Keeps the image still. ROTATE/MIRROR Changes the displayed image direction. (Normal, 180, H-Mirror, V-Mirror) SMART INPUT Enables automatic switch to the backup source when main source is off. SMART MAIN When smart input is on, current source is changed to main source. SMART 2ND When smart input is on, backup source is set to 2nd source.
	<h3>Submenus under the SETUP menu</h3> <ol style="list-style-type: none"> LANGUAGE Changes the OSD language. (10 languages) OSD OVERLAY Adjusts the OSD transparency. OSD POSITION Changes the OSD position. (9 Positions) OSD MENU TIME Adjusts the length of time the OSD Menu is present on the screen. (range: 10~60 seconds) BACKLIGHT Increases or decreases the backlight. (Range : 0~100) POWER ON DC5V Enables or disables the DC5V output. RESET Changes all the OSD values to factory default.

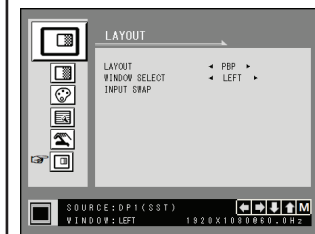
On Screen Display (OSD) Menus

After selecting a main menu category, press the **+** button to enter the associated submenus as shown below. Next, use the UP **^** and Down **v** buttons to navigate to the desired submenu, then adjust as needed with the **+** and **-** buttons. Select the MENU button to exit from the submenu or main menu.



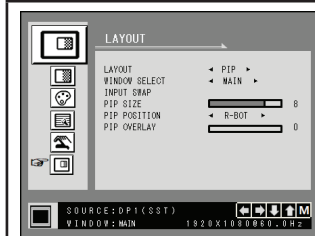
Submenus under the LAYOUT menu - Single

1. LAYOUT Changes the image layout. (SINGLE, PBP, PIP)



Submenus under the LAYOUT menu - PBP

1. LAYOUT Changes the image layout. (SINGLE, PBP, PIP)
2. WINDOW SELECT Selects the active window during PBP or PIP.
3. INPUT SWAP Swaps the position of the primary and secondary images.



Submenus under the LAYOUT menu - PIP

1. LAYOUT Changes the image layout. (SINGLE, PBP, PIP)
2. WINDOW SELECT Selects the active window during PBP or PIP.
3. INPUT SWAP Swaps the position of the primary and secondary images.
4. PIP SIZE Changes the PIP size. (range : 0~10)
5. PIP POSITION Changes the PIP position. (L-Top, R-Top, Mid, L-Bot, R-Bot)
6. PIP OVERLAY Change the transparency of PIP image. (range : 0~8)

Standard Signal Table

Resolution	Timing Information			Signal Source			
	H-Freq (KHz)	V-Freq (Hz)	Clock (MHz)	DP	HDMI	DVI	SDI
800 x 600 @56Hz	35.16	56.25	36.00	•	•	•	
800 x 600 @60Hz	37.88	60.32	40.00	•	•	•	
800 x 600 @72Hz	48.08	72.19	50.00	•	•	•	
800 x 600 @75Hz	46.88	75.00	49.50	•	•	•	
800 x 600 @85Hz	53.67	85.06	56.25	•	•	•	
1024 x 768 @60Hz	48.36	60.00	65.00	•	•	•	
1024 x 768 @70Hz	56.48	70.07	75.00	•	•	•	
1024 x 768 @75Hz	60.02	75.03	78.75	•	•	•	
1024 x 768 @85Hz	68.68	85.00	94.50	•	•	•	
1152 x 864 @75Hz	67.50	75.00	108.00	•	•	•	
1280 x 960 @60Hz	60.00	60.00	108.00	•	•	•	
1280 x 960 @85Hz	85.94	85.00	148.50	•	•	•	
1280 x 1024 @60Hz	63.98	60.02	108.50	•	•	•	
1280 x 1024 @75Hz	79.98	75.02	135.00	•	•	•	
1280 x 1024 @85Hz	91.15	85.02	157.50	•	•	•	
720p @50Hz	37.50	50.00	74.25	•	•	•	•
720p @59.94	44.96	59.94	74.176	•	•	•	•
720p @60Hz	45.00	60.00	74.25	•	•	•	•
1080i @50Hz	28.13	50.00	74.25				•
1080i @59.94Hz	33.72	59.94	74.167				•
1080P @50Hz	56.25	50.00	148.50	•	•	•	•
1080P @59.94Hz	67.43	59.94	148.352	•	•	•	•
1080P @60Hz	67.50	60.00	148.50	•	•	•	•
1920 x 2160 @60Hz	133.29	59.99	277.25	•	•		
3840 x 2160 @30Hz	67.50	30.00	297.00	•	•		• ¹
3840x2160 @50Hz	112.50	50.00	594.00	•	•		• ²
3840 x 2160 @59.94Hz	134.87	59.94	593.407	•	•		• ²
3840 x 2160 @60Hz	135.00	60.00	594.00	•	•		• ²

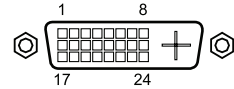
¹ Available on FM-B2702DG.

² FM-A2701DS, FM-B2702DG SDI quadrant and 2 sample interleave division only.

Signal Connector Pin Assignments

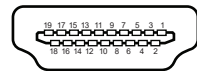
DVI-I input interface connector

Pin No.	Assignment	Pin No.	Assignment
1	T.M.D.S. Data 2-	13	No Connection
2	T.M.D.S. Data 2+	14	+5V Power
3	T.M.D.S. Data 2 Shield	15	Ground
4	No Connection	16	Hot Plug Detect
5	No Connection	17	T.M.D.S. Data 0-
6	DDC Clock	18	T.M.D.S. Data 0+
7	DDC Data	19	T.M.D.S. Data 0 Shield
8	No Connection	20	No Connection
9	T.M.D.S. Data 1-	21	No Connection
10	T.M.D.S. Data 1+	22	T.M.D.S. Clock Shield
11	T.M.D.S. Data 1 Shield	23	T.M.D.S. Clock+
12	No Connection	24	T.M.D.S. Clock-



HDMI input interface connector

Pin No.	Assignment	Pin No.	Assignment
1	T.M.D.S. Data 2+	11	T.M.D.S. Clock Shield
2	T.M.D.S. Data 2 Shield	12	T.M.D.S. Clock-
3	T.M.D.S. Data 2-	13	CEC
4	T.M.D.S. Data 1+	14	Reserved
5	T.M.D.S. Data 1 Shield	15	SCL
6	T.M.D.S. Data 1-	16	SDA
7	T.M.D.S. Data 0+	17	Ground
8	T.M.D.S. Data 0 Shield	18	+5V
9	T.M.D.S. Data 0-	19	HPD
10	T.M.D.S. Clock+		



DisplayPort input interface connector

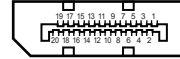
Pin No.	Assignment	Pin No.	Assignment
1	Lane 3-	11	Ground
2	Ground	12	Lane 0+
3	Lane 3+	13	Config 1
4	Lane 2-	14	Config 2
5	Ground	15	Aux +
6	Lane 2+	16	Ground
7	Lane 1-	17	Aux -
8	Ground	18	Hot Plug Detect
9	Lane 1+	19	Return
10	Lane 0-	20	Power (3.3 V 500mA)



Signal Connector Pin Assignments

DisplayPort output interface connector

Pin No.	Assignment	Pin No.	Assignment
1	Lane 0+	11	Ground
2	Ground	12	Lane 3-
3	Lane 0-	13	Config 1
4	Lane 1+	14	Config 2
5	Ground	15	Aux +
6	Lane 1-	16	Ground
7	Lane 2+	17	Aux -
8	Ground	18	Hot Plug Detect
9	Lane 2-	19	Return
10	Lane 3+	20	Power (3.3 V 500mA)



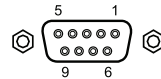
SDI interface connector (if available)

Pin No.	Description
1	SDI input
2	Ground



RS232C interface connector

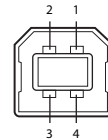
Pin No.	Assignment	Pin No.	Assignment
1	No Connection	6	No Connection
2	TXD (Monitor to PC)	7	No Connection
3	RXD (PC to Monitor)	8	No Connection
4	No Connection	9	No Connection
5	Ground		



Important: Do not use a null modem cable. Use only a standard RS-232 cable.

USB interface connector

Pin No.	Assignment	Pin No.	Assignment
1	5V	2	-DATA
3	+DATA	4	Ground



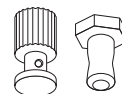
GPIO

Pin No.	Assignment		
1	Source Change	2	Single, PBP,PIP selection
3	Record Indicator	4	Ground



Equipotential earth terminal

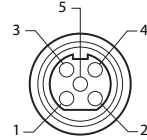
This should be connected to other equipment's earth terminal.



DC Power

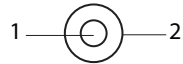
Input interface connector

Pin No.	Description
1	Ground
2	Ground
3	+24V (DC)
4	F.G (ground)
5	+24V (DC)



Output interface connector

Pin No.	Description
1	5V / 2A (max.)
2	Ground



Power Management

This monitor saves energy by switching into a low power mode when it has not been used for a certain period of time. Normal operation automatically returns to the monitor when horizontal and vertical sync return.

	Power Consumption			
	Normal operation (LED off)	Standby mode (LED blinking)	OSD power off (LED constant)	DC power off (LED off)
FM-A2701D	≤90W	≤35W	≤27W	≤0.5W
FM-A2701DS	≤110W	≤35W	≤27W	≤0.5W
FM-B2702D	≤85W	≤40W	≤20W	≤0.5W
FM-B2702DG	≤100W	≤40W	≤20W	≤0.5W

Specification

FM-A2701D, FM-A2701DS

Item		Description
Panel		27 inch TFT LCD (LED)
Resolution		3840 x 2160 pixel
Aspect Ratio		16 : 9
Active Area		596.74 (H)mm x 335.66 (V)mm
Pixel Pitch (mm)		0.1554 x 0.1554
Response Time (typical)		14 ms (gray to gray)
Number of Colors		1.07 Billion
Brightness (typical)		800 cd/m ²
Contrast Ratio (typical)		1000 : 1
Surface Treatment		Anti-glare
Viewing Angle (CR>10)		R/L 178°, U/D 178°
Input Signal		1 x HDMI 2.0 2 x DP 1.2 (SST) 1 x DVI (single link) 4 x SDI (3G) available only on FM-A2701DS
Output Signal		1 x DVI (single link) 1 x DP 1.2 (SST) 4 x SDI (3G) available only on FM-A2701DS
Power Supply		AC/DC Adaptor (AC 100~240V, DC 24V/6.6A)
Power Consumption		FM-A2701D 90W max FM-A2701DS 110W max
Unit Dimension		658.8(W) x 426(H) x 60(D) mm 25.94(W) x 16.77(H) x 2.36(D) inch
Package Dimension		755.65(W) x 654.05(H) x 234.95(D) mm 29.75(W) x 25.75(H) x 9.25(D) inch
IP Rating		IP31 - overall
Weight	FM-A2701D	8.18 kg, 18.03 lbs. (monitor with cover) 13.19 kg, 29.08 lbs. (shipping package)
	FM-A2701DS	8.8 kg, 19.4 lbs. (monitor with cover) 13.81 kg, 30.45 lbs. (shipping package)

Specification

FM-B2702D, FM-B2702DG

Item		Description
Panel		27 inch TFT LCD (LED)
Resolution		3840 x 2160 pixel
Aspect Ratio		16 : 9
Active Area		596.74 (H)mm x 335.66 (V)mm
Pixel Pitch (mm)		0.1554 x 0.1554
Response Time (typical)		11 ms (rise time)
Number of Colors		1.07 Billion
Brightness (typical)		800 cd/m ²
Contrast Ratio (typical)		1400 : 1
Surface Treatment		Anti-glare
Viewing Angle (CR>10)		R/L 178°, U/D 178°
Input Signal		1 x HDMI 2.0 2 x DP 1.2 (SST) 1 x DVI (single link) 4 x SDI (3G), 2 x SDI (12G) available on FM-B2702DG
Output Signal		1 x DP 1.2 (SST) 1 x DVI (single link) 4 x SDI (3G), 2 x SDI (12G) available on FM-B2702DG
Power Supply		AC/DC Adaptor (AC 100~240V, DC 24V/6.6A)
Power Consumption		FM-B2702D 85W FM-B2702DG 100W
Unit Dimension		673(W) x 425(H) x 75.2(D) mm 26.50(W) x 16.73(H) x 2.96(D) inch
Package Dimension		755.65(W) x 654.05(H) x 234.95(D) mm 29.75(W) x 25.75(H) x 9.25(D) inch
IP Rating		IP33 - overall
Weight	FM-B2702D	8.73 kg, 19.25 lbs. (monitor with cover) 13.45 kg, 29.65 lbs. (shipping package)
	FM-B2702DG	9.2 kg, 20.28 lbs. (monitor with cover) 14.1 kg, 31.09 lbs. (shipping package)

Cleaning Instructions

Precautions

Before cleaning, switch the display in stand-by position to prevent the control touch panel from being activated inadvertently by sweeping over the front filter. In stand-by position the touch panel cannot be activated by just sweeping over them. To switch the display on again, you must press the stand-by key again.

Take care not to damage or scratch the front filter or LCD panel.

- Be careful with rings or other jewelry that can touch the front filter.
- Do not apply pressure on the front filter or LCD panel.
- Do not use cloth made from synthetic material (polyester) as this may cause electrostatic discoloration within the LCD.
- Do not apply or spray liquid directly to the front filter, panel or cabinet as excess liquid may cause damage to internal electronics. Instead, apply the liquid to the cleaning cloth.
- Follow your hospital protocol for the handling of blood and body fluids.
- The display is not disinfected or packed in sterile environment.
- Follow your hospital protocol in case the display needs to be disinfected prior to installation.

Front Filter

Proceed as follows:

1. Remove dust with a dry, lint-free, non-abrasive soft cotton cloth.
2. Remove fingerprints or grease using a lint-free, non-abrasive soft cotton cloth that is lightly moistened with plain water or a mild commercial glass cleaning product suited for coated glass surfaces.
3. Gently wipe dry with a dry cotton cloth.

The following products are tested and approved:

- Misty Clear Lemon 10 Disinfectant
- Bohle glass cleaner
- Zep Heavy-duty glass & all surface cleaner
- Klear Screen
- Screen TFT (Kontakt Chemie)
- Incidin Foam (Ecolab)
- Microzid
- Mild detergent
- Isopropyl alcohol with concentration < 5%
- Household bleach (generic sodium hypochlorite, solutions of 5.25% sodium hypochlorite diluted with water between 1:10 and 1:100)

Cleaning Instructions (continued)

Precautions

Do NOT use on front filter:

- Alcohol/solvents at higher concentration > 5%
- Strong alkalis, strong solvents
- Acid
- Detergents with fluoride
- Detergents with ammonia
- Detergents with abrasives
- Steel wool
- Sponge with abrasives
- Steel blades
- Synthetic (polyester) cloth
- Cloth with steel thread

Cabinet

Proceed as follows:

- Clean the cabinet using a soft cotton cloth, lightly moistened with a recognized cleaning product for medical equipment.
- Repeat with water only.
- Wipe dry with a dry cloth.

The cabinet has been tested for resistance to the following products:

- Virex Ready-to-use Disinfectant Cleaner
- Misty Clear Lemon 10 Disinfectant
- Misty Multi-Purpose Disinfectant Cleaner
- Misty Multi-Purpose Disinfectant Cleaner II
- Zep Heavy-duty glass & all surface cleaner
- Klear Screen
- Screen TFT (Kontakt Chemie)
- Incidin Foam (Ecolab)
- Microzid
- Mild detergent
- Isopropyl alcohol with concentration < 5%
- Household bleach (generic sodium hypochlorite, solutions of 5.25% sodium hypochlorite diluted with water between 1:10 and 1:100)
- Precise Hospital Foam Cleaner Disinfectant

Thank you for choosing our product.

Service

Please contact our customer service if you need any information or help with our products.

Warranty

One year, parts and labor.

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