WINMATE

12G-SDI LCD Monitor

4K (12G-SDI)
Ultra HD
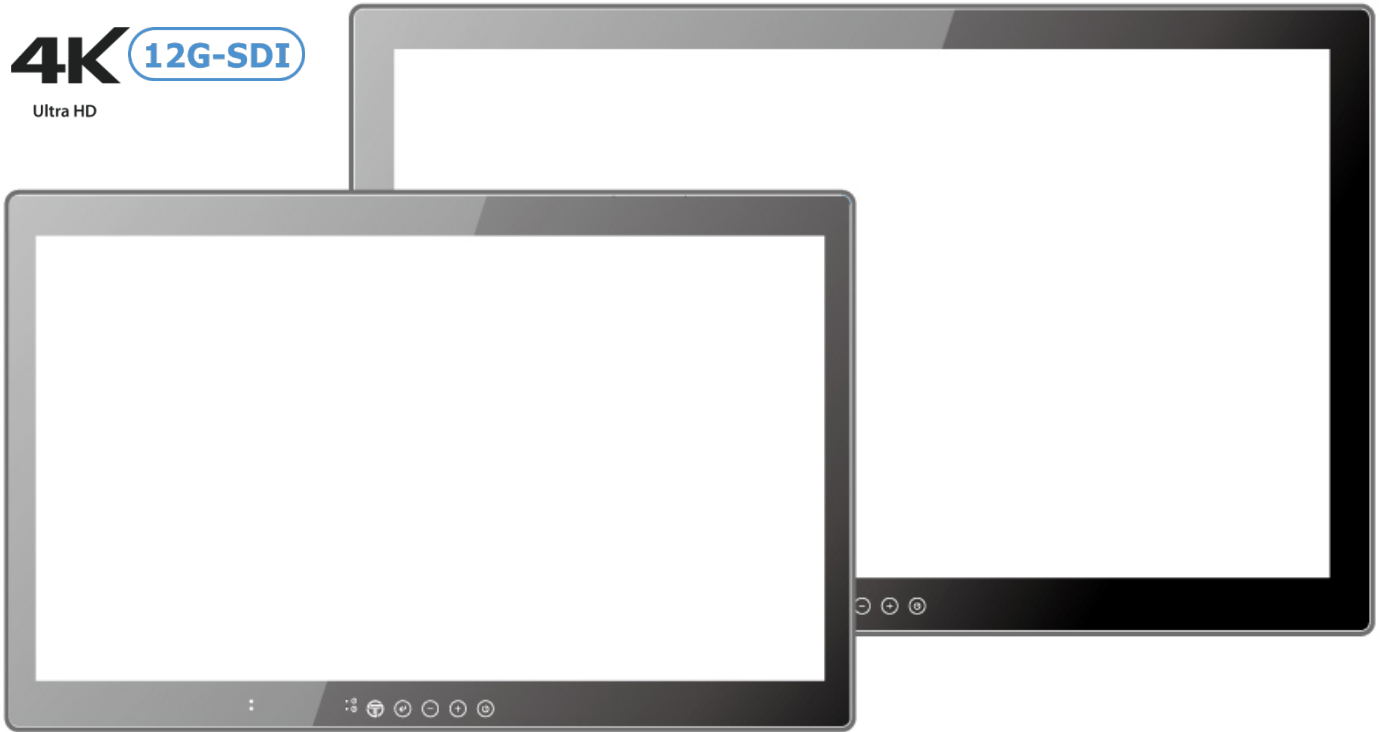
Model No. M270TF-SDI
M320TF-SDI

User Manual

CE FC c(UL)us
E489236

Table of Contents

Preface

Owner's Record

The model and serial numbers are located at the rear of the unit. Record these numbers in the spaces provided below. Refer to these numbers whenever you call upon your Winmate dealer regarding this product.

Model No. _____   Serial No. _____

What is Included

- **27" / 32" 4K UHD 12G-SDI Display**

Part number depends on the configuration the unit
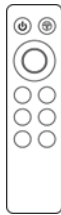
- **Remote Control**

Part No. 9B0000000418

- **User Manual**

Part No. 91521110104S

- **M4 VESA Mount Screws**

10mm x 8 pcs
12mm x 8 pcs
15mm x 8 pcs

- **AC Adapter**

Part No. 922D150W24V4
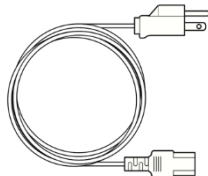
- **Power Cable 1.8m**

Varies on the country
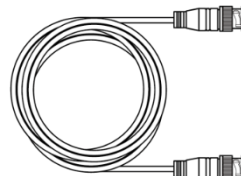
- **12G-SDI Cable**

Part No. 9470020020K3
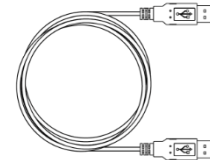
- **USB Cable for Touch (Optional)**

Part No. 948018102100
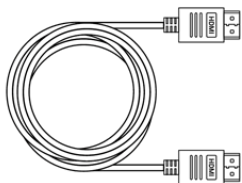
- **HDMI Cable**

Part No. 9491191190K5
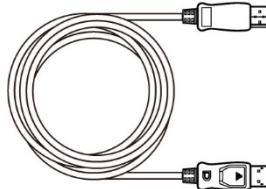
- **Display Cable**

Part No. 94E0200200K0

Chapter 1: Hardware Installation

1.1 Installation

To access the connectors, remove the connector cover. Before removing the connector cover, disconnect the power cord.

1. Remove the four screws on the connector cover.
2. Slide the connector cover in the direction of the arrow and remove it.
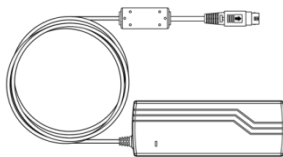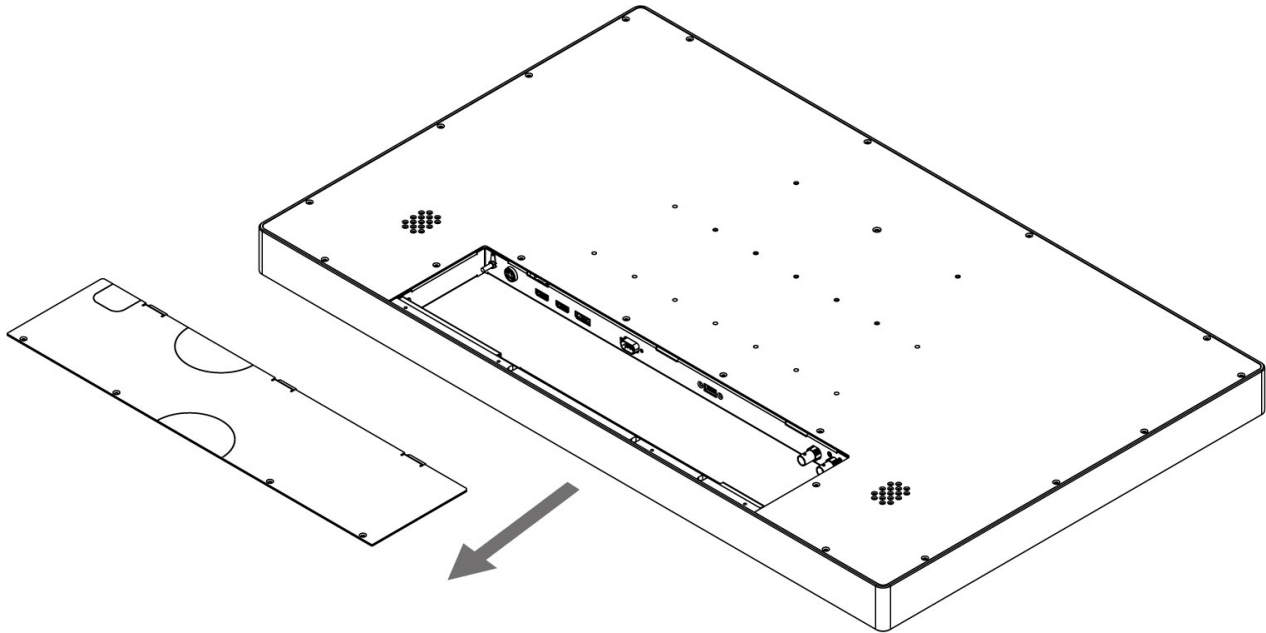

⚠ **WARNING !**   Do not remove any other screws other than the four screws affixing the connector cover. Doing so may cause electric shock.

1.2 Connecting Cables
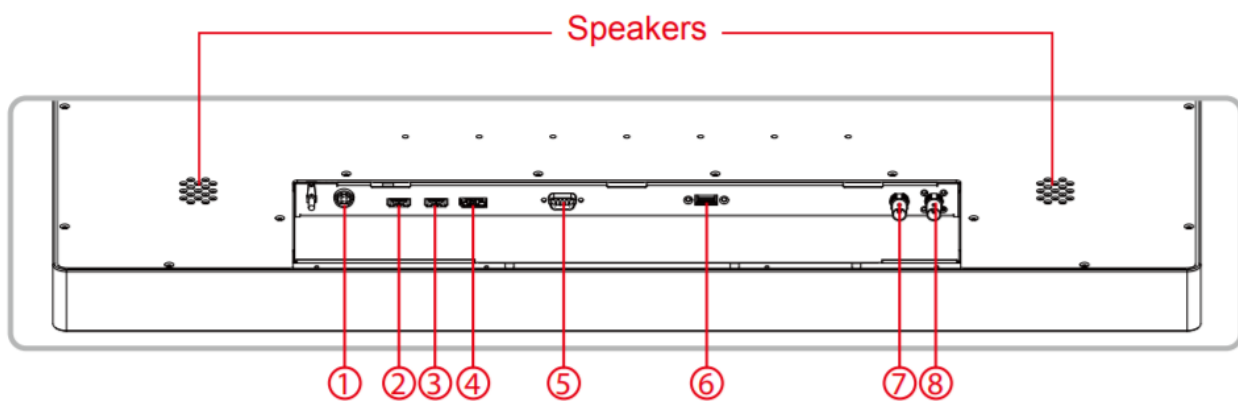
1.	12 V DC In	5.	RS232 for Remote control
2.	HDMI 1.4	6.	USB for Touch
3.	HDMI 2.0	7.	12G-SDI
4.	DP1.2 In	8.	12G-SDI Output(Loop through)

There are several video and/or data cables that can be connected in many combinations. The number and type of connections will be automatically detected by the monitor. From the OSD (On Screen Display) the user can select the way the images will be displayed.

Be sure to tighten and thumb screws on the individual video cable. A secure connection is important to ensure the best image quality.

1.3 Ground Pin

Connect this monitor to the Protective Earth ground at this pin. This Pin is also used when potential equalization between the monitor and other equipment is required. Simply connect the potential equalization pin (POAG) found on devices, to the monitor ground pin using an AWG18 wire (WIRE NOT PROVIDED).
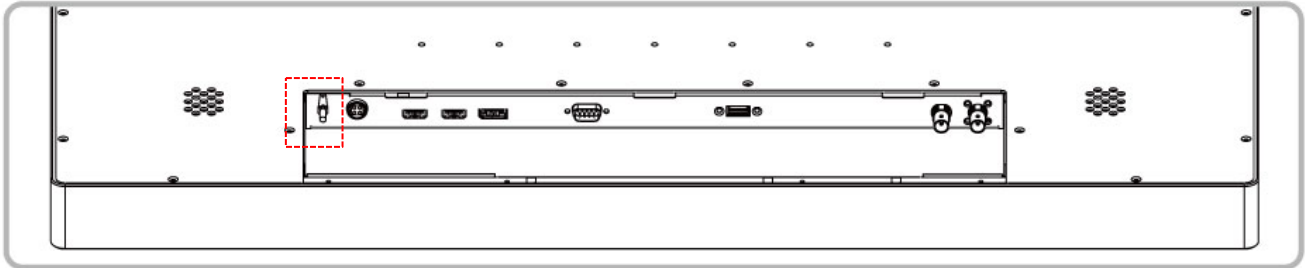
1.4 Connecting Power

- Connect the AC cord to the AC IN terminal on the AC adaptor.
- Connect the DC OUT terminal of the AC adaptor to the DC IN terminal on the monitor.
- Align the notch on the cord connector with the guiding groove and plug it in.
- Connect the AC cord plug to the power outlet.
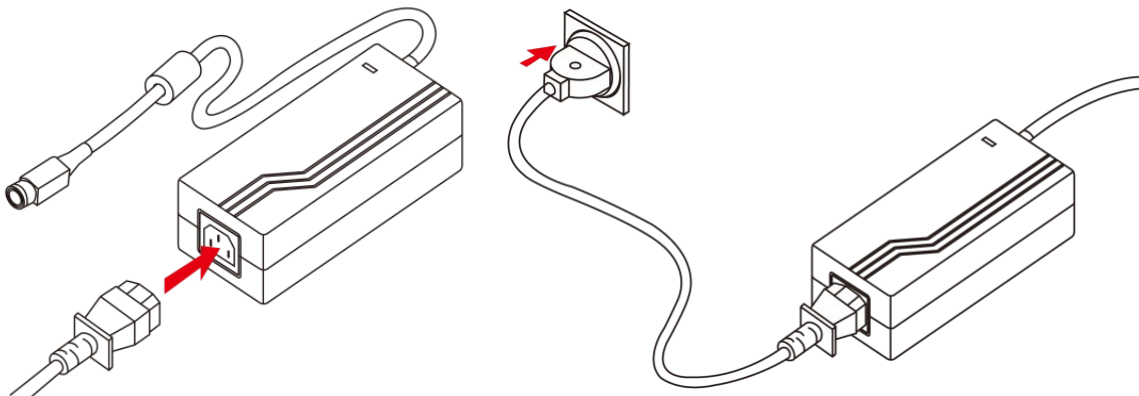
1.5 Soft Power On and Off

The soft power button, when touched, will enable or disable the video screen. The soft power button need only be touched once. Depending on monitor's current state, there may be a few second delay in displaying an image.

1.6 Power Modes

This table shows the LED light combinations and their meaning:

Blue	Amber	Description
ON	OFF	Power On Mode Image being displayed
ON	ON	Searching for a signal
OFF	ON	No signal found or stand-by mode
OFF	OFF	Soft Power Off Mode The soft power button was pressed
OFF	OFF	Hard Power Off Mode No image being displayed

Chapter 2: Operating the Device

2.1 IR Remote Control

All the monitor controls can be accessed through the IR remote control. This controller has a few quick access keys for the user's convenience.

Soft Power

Auto Menu – Opens Menu.

Central Key – Contains: Volume increase / decrease, down/ less, up/more, and enter

PIP Key – initiates the Picture in Picture Features.

Source Key – Initiates the next active video input.

Reset – Reset the system.

Swap Key – Initiates an image swap during a 2P mode

Mute Key – Activates or deactivates speakers.

Exit – Exit the menu.

2.2 On Screen Display (OSD) Navigation

When the Enter key is touched, the OSD (On Screen Display) menu will appear on the monitor screen. This menu offers the user ability to make many changes to the image. The table below shows the response after touching the different OSD icons

Icon	OSD Menu Status	Response
	Displaying	Close OSD menu
	Off	Auto adjust
	Displaying	Enter
	Off	Open OSD menu
	Displaying	Move down / Decrease value
	Off	N/A
	Displaying	Move up / Increase value
	Off	N/A
	Displaying	Power on
	Off	Power off

2.3 OSD Locking / Unlocking

Touching both the ⊖ and ⊕ buttons simultaneously will either turn ON or OFF the OSD lockout feature.

UNLOCKED	LOCKED

2.4 Hot Keys

Touching either the ⊖ or the ⊕ button will initiate the brightness control feature.

2.5 OSD Menu Navigation

Icon	Menu	Options	Icon	Menu	Options
RGB DISPLAY	DISPLAY	BRIGHTNESS CONTRAST SHARPNESS ADC BRIGHTNESS TEMPERATURE COLOR CONTROL GAMMA SCHEME HUE SATURATION REGION	AUDIO	AUDIO	VOLUME MUTE AUDIO SOURCE
1 2 MULTI-DSP	MUILT DSP	DISPLAY MODE SOURCE1 SOURCE2 2P LR RATIO PIP SIZE PIP POITION MULTI-DISP SWAP	OSD	OSD	OSD TURN OFF OSD POSITION OSD TRANSPARENCY OSD ROTATED MONITOR INFO
PRO ADVANCED	ADVANCED	SACLING FLIP SCAN TYPE COLOR FORMAT SCHEME RED SCHEME GREEN SCHEME BLUE SCHEME YELLOW SCHEME MAGENTA SCHEME CYAN BRIGHTENSS MIN LIGHT SENSOR FACTORY RESET			

2.5.1 Display

OSD Icon	Sub menu	Settings	Note
	BRIGHTNESS	**slider bar**	
	Adjusts the overall image and background brightness. Press "◄" or "►" to adjust.		
	CONTRAST	**slider bar**	
	Adjusts the image brightness in relationship to the background. Press"◄" or "►" to adjust.		
	SHARPNESS	**slider bar**	
	Adjusts the crispness of the image. Press"◄" or "►" to adjust.		
	ADC BRIGHTNESS *VGA CHANNEL ONLY	**slider bar**	
	Adjusts the ADC brightness. Press"◄" or "►" to adjust.		
	TEMPERATURE	**USER/ sRGB/ 6500K/ 9300K**	
	Adjusts the color temperature of the entire screen. A low color temperature will make the screen reddish. A high color temperature will make the screen bluish.		
	COLOR CONTROL	**R slider bar**	
		G slider bar	
		B slider bar	
	Adjusts the levels of the Red, Green, Blue. Press"◄" or "►" to adjust.		
	GAMMA SELECTION	**OFF**	
		1.8	
		2.2	
	Select a display gamma value for best picture quality.		
	SCHEME	**USER**	
		Standard	
		GAME	
		SPORT	
		Movie	
		Photo	
	Select scheme for different default setting combination.		
	HUE	**slider bar**	
	Saturation	**slider bar**	
	Region	**1P** **1/2P,2/2P,1+2/2P**	

2.5.2 Audio
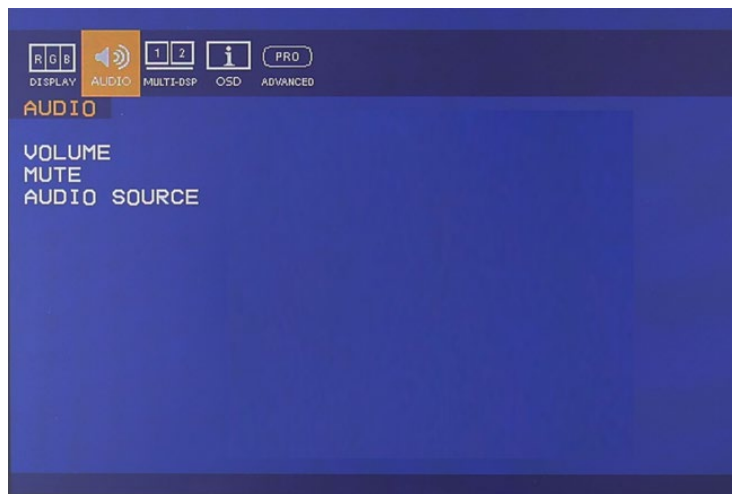
OSD Icon	Sub menu	Settings	Note
	VOLUME	slider bar	
	Adjusts the Volume. Press"◀" or "▶" to adjust.		
	MUTE	ON/OFF	
	Audio Source	Analog/1P/2P/3P/4P	

2.5.3 Multi-Display
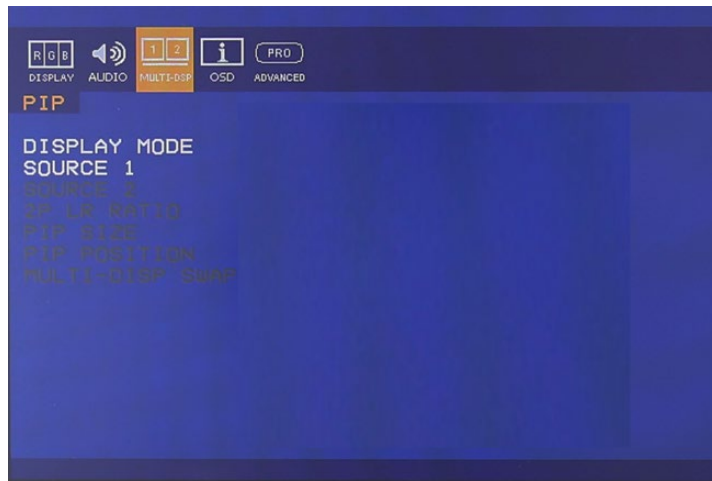
OSD Icon	Sub menu	Settings	Note
	Display Mode	**1P**	
		1/2P Right Left	
		1/2P Up down	
		PIP	
	Choose the Display Mode for 1P , 2P		
	Display source Select 1 2 3	**Auto scan**	
		HDMI 2.0	
		HDMI 1.4	
		DP	
		SDI	
	Choose the channel of Display source		
	2P LR Ratio	Ratio 0	
		Ratio 1	
		Ratio 2	
		Ratio 3	
		Ratio 4	
	PIP Size	**slider bar**	
	Adjust the Picture-in-Picture(PIP) Size		
	PIP Position	Horizontal	
		Vertical	
	Determines where the PIP appears on the screen.		
	Multi Display SWAP	**YES/NO**	

2.5.4 OSD

OSD Icon	Sub menu	Settings	Note
	OSD TURN OFF	**slider bar**	
	Turns off the OSD after a period of inactivity. The preset choices are 10-60 seconds.		
	OSD POSITION	**Horizontal - slider bar**	
		Vertical - slider bar	
	Determines the location where the OSD appears on the screen.		
	OSD TRANSPARENCY	**slider bar**	
	Adjusts the transparency level of OSD		
	OSD Rotated	**OFF**	
		90	
		270	
	Set to rotate the OSD menu		
	MONITOR INFORMATION	**Version**	
		Input 1 Source Resolution	
		Input 2 Source	
		Resolution	
	Shows BIOS version & resolution info.		

2.5.5 Advanced

OSD Icon	Sub menu	Settings	Note
	Scaling Adjust the image scaling setting	**Full Screen**	
		16:9	
		4:3	
		5:4	
		1:1	
	Flip	**ROTATE 0**	
		ROTATE 90	
		ROTATE 0 180	
		ROTATE 0 270	
		Left/ Right	
		Up/ Down	
	Scan Type Choose the scan type	**Under Scan**	
		Over Scan	
	Color Format Choose the format of color composition	**RGB**	
		YUV	
	Scheme RED	**HUE - slider bar**	
		Saturation - slider bar	
	Scheme Green	**HUE - slider bar**	
		Saturation - slider bar	
	Scheme Blue	**HUE - slider bar**	
		Saturation - slider bar	
	Scheme Yellow	**HUE - slider bar**	
		Saturation - slider bar	
	Scheme Magenta	**HUE - slider bar**	
		Saturation - slider bar	
	Scheme Cyan	**HUE - slider bar**	
		Saturation - slider bar	
	Brightness Min	**0 to 10 Stratum**	
	Factory reset	**Yes/No**	
	Resets OSD options back to factory settings EXCEPT FOR: CHANGE SECURITY PASSWORD and SECURITY PASSWORD.		

Chapter 3: Important Information

3.1 About the LCD Display Panel

- The LCD panel fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99%. Thus, a very small proportion of pixels may be "stuck", either always off (black), always on (red, green, or blue), or flashing. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such "stuck" pixels may appear spontaneously. These problems are not a malfunction.
- Do not leave the LCD screen facing the sun as it can damage the LCD screen. Take care when you place the unit by a window.
- Do not store the monitor FACE DOWN.
- Do not push or scratch the LCD screen.
- Do not place a heavy object on the LCD screen. This may cause the screen to lose uniformity.
- If the unit is used in a cold place, a residual image may appear on the screen. This is not a malfunction. When the monitor becomes warm, the screen returns to normal.
- The screen and the cabinet become warm during operation. This is not a malfunction.

3.1.1 Images that may cause burn-in

- Masked / boarded images with aspect ratios other than 16:9
- Color bars or images that remain static for a long time
- Continuous characters or messages displaying on the screen

3.1.2 To reduce the risk of burn-in

- Turn off the character displays from connected equipment.

3.1.3 About the screen protect panel

The screen protect panel is made of toughened glass, but there is a possibility that it may crack.
- Handle with care. Avoid strong impact, such as dropping from a high place or an object swinging into it.
- Do not scratch the panel with a sharp object or place it in harm's way.

3.1.4 A long period of use

- Due to the characteristics of LCD panel, displaying static images for extended periods, or using the unit repeatedly in a high temperature/high humidity environments may cause image smearing, burn-in, areas of which brightness is permanently changed, lines, or a decrease in overall brightness.
- In particular, continued displaying of an image smaller than the monitor screen, such as in a different aspect ratio, may shorten the life of the unit.
- Avoid displaying a still image for an extended period, or using the unit repeatedly in a high temperature/high humidity environment such an airtight room, or around the outlet of an air conditioner.

3.1.5 Moisture condensation

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

3.1.6 Cleaning before cleaning

Be sure to disconnect the AC power cord from the AC outlet.

3.1.7 Cleaning the monitor

A material that withstands disinfection is used for the front protection plate of the healthcare use LCD monitor. The protection plate surface is specially treated to reduce reflection of light. When solvents such as benzene or thinner, or acid, alkaline or abrasive detergent or chemical cleaning cloth are used for the protection plate surface/monitor surface, the performance of the monitor may be impaired or the finish of the surface may be damaged. Take care with respect to the following:
- Clean the protection plate surface/monitor surface with a 50 to 70 v/v% concentration of isopropyl alcohol or a 76.9 to 81.4 v/v% concentration of ethanol using a swab method. Wipe the protection plate surface gently (wipe using less than 1 N force).
- Stubborn stains may be removed with a soft cloth such as a cleaning cloth lightly dampened with mild detergent solution using a swab method and then clean using the above chemical solution.
- Never use solvents such as benzene or thinner, or acid, alkaline or abrasive detergent, or chemical cleaning cloth for cleaning or disinfection, as they will damage the protection monitor surface.
- Do not use unnecessary force to rub the protection plate surface/monitor surface with a stained cloth. The protection plate surface/monitor surface may be scratched.
- Do not keep the protection plate surface/monitor surface in contact with a rubber or vinyl resin product for a long period of time. The finish of the surface may deteriorate.

3.1.8 Flat surface for better maintenance
The design allows the user to easily wipe liquids and gel off the LCD panel and control buttons – ensuring a high standard of disinfection and cleanliness.

3.1.9 Repacking

Do not throw away the carton and packing materials. They can be used again to repack monitor.
If you have any questions about this unit, contact your authorized dealer.

3.1.10 Disposal of the unit

Do not dispose of the unit with general waste. Do not include the monitor with household waste.

3.2 Frequency Table

Signal name	Vertical Frequency (Hz)	12G-SDI	DP 1.2	HDMI 1.4	HDMI 2.0
640 x 480	60		✔	✔	✔
480P	60	✔	✔	✔	✔
800 x 600	60		✔	✔	✔
1024 x 768	60		✔	✔	✔
720P	60	✔	✔	✔	✔
1280 x 1024	60		✔	✔	✔
1600 x 1200	60		✔	✔	✔
1920 x 1080	60	✔	✔	✔	✔
1920 x 1200	60	✔	✔	✔	✔
2560 x 1440	60	✔	✔	✔	✔
3840 x 2160	30		✔	✔	✔
3840 x 2160	60	✔	✔		✔
4096 x 2160	60	✔			

3.3 Troubleshooting

Problem	Check the following
There is a black dot or dead pixel dot on the screen	A missing pixel does not constitute an out of spec. defective product
Cannot turn power on	Turn off the power supply, and check that the AC cord or DC cord are securely inserted. After checking, turn on the power supply again.
It takes time for image to appear	Since the monitor processes various signals digitally to reproduce beautiful images, it may take time before images appear when it is turned on, input is switched, or when the mode is switched to "Multi Window".
There are spots on the screen	There may be electrical distortion from vehicles, trains, high voltage lines or fluorescent lamps.
Bad color	Color density or tint control may not be adjusted properly. (See the adjusted value of image.)
Image appears and disappears	Input may not be connected properly.
When changing the scan size, the top and bottom part of the screen does not show images	When using a video software program (such as a cinema size program) with a screen wider than one in the 16:9 mode, blank areas separate from the images are formed at the top and bottom of the screen.
Image contour flickers	Due to the characteristics of the display control, contour of animated parts of images may seem to flicker, but that is not a breakdown.
Color is extremely bad	Input configuration "RGB"/"YPBPR" may not be selected properly.
The POWER indicator is flashing orange	After checking the number of flashes, turn off the power and contact the dealer where the monitor was purchased.

Appendix

Appendix A: Technical Specification

	Model Name	
	M270TF-SDI	**M320TF-SDI**
Screen Technology	LED Backlight Technology, TFT Active-matrix, Widescreen, IPS Technology	LED Backlight Technology, TFT Active-matrix, Widescreen, IPS Technology
Viewable Size	27" Diagonal	32" Diagonal
Active Area	596.16 (H) x 335.34 (V) mm	708.48 (H) x 398.52 (V) mm
Native Resolution	3840 x 2160 (UHD 4K)	3840 x 2160 (UHD 4K)
Pixel Pitch	155.25 (H) x 155.25 (V) um	184.5 (H) x 184.5(V) um
Aspect Ration	16:9,	16:9
Response Time	12ms (Gray to Gray)	12ms (Gray to Gray)
Light Intensity	300 cd/m² (typ.) 700 cd/m2 (Optional)	350 cd/m² (typ.) 700 cd/m2 (Optional)
Contrast Ratio	1000:1 (typ.)	1000:1 (typ.)
View Angle	89/89/89/89	89/89/89/89
Max Colors	1.07B	1.07B
Synchronization Signal Auto-detect	Digital Separate Sync., Composite Sync., Sync. On Green	Digital Separate Sync., Composite Sync., Sync. On Green
Color Profiles	Support 3D LUT profile 6 x general user color schemes DICOM GSDF (Optional)	Support 3D LUT profile 6 x general user color schemes DICOM GSDF (Optional)
Product Features	Ambient light sensor IR Control Internal Backlight sensor (Optional for 700 cd/m²)	Ambient light sensor IR Control Internal Backlight sensor (Optional for 700 cd/m²)
Power Specifications	12V DC in, 110-240V AC to DC Adapter	12V DC in, 110-240V AC to DC Adapter
User Controls and Activity	Capacitive OSD : Power On/Off, On Screen Display Menu,	Capacitive OSD : Power On/Off, On Screen Display
Input Signal	˙12G-SDI* ˙HDMI 1.4 ˙HDMI 2.0 ˙DP 1.2 ˙USB for Touch ˙RS232 for Remote Control	˙12G-SDI* ˙HDMI 1.4 ˙HDMI 2.0 ˙DP 1.2 ˙USB for Touch ˙RS232 for Remote Control
Output Signal	˙12G SDI (Loop Through)	˙12G SDI (Loop Through)
Product Dimensions	643.17 x 408.06 x 48 mm (25.3 x 16.1 x 1.8 in)	777.58 x 477.62 x 48 mm (30.6 x 18.8 x 1.8 in)
Mounting	VESA mounting 100 x 100mm VESA mounting 200 x 100mm	VESA mounting 100 x 100mm VESA mounting 200 x 100mm VESA mounting 300 x 100mm
Product Weight	9.5 Kg (20.9 lbs)	11 Kg (24.2 lbs)
Housing	Antimicrobial Surface Coating	Antimicrobial Surface Coating

Factory Options	˙Projected Capacitive Multitouch,
	  USB touch screen
		˙Projected Capacitive Multitouch,
		  USB touch screen

Operating Temperature	0°C to 35°C, Humidity up to 95%	0°C to 35°C, Humidity up to 95%
Storage Temperature	-20°C to 60°C, Humidity up to 95%	-20°C to 60°C, Humidity up to 95%
IP Rating	Protection: front IP65 - rear IP22	Protection: front IP65 - rear IP22
Type Approval, Testing and Certificates	CE, FCC	CE, FCC

* Please use cables which meet the SDI requirements. Recommend to use 75 Ohm RG59 cable or above for HD-SDI and 75Ohm RG6 cable for 12G-SDI.

SDI Resolution, frame rate and cable

Resolution	Frame Rate & Structure	SDI Cable
4096×2160p	60/50/30/25/24fps	Canare L-5.5 CUHD
3840x2160	60/50/30/25/24fps	
1920x1080	60/P	RG6
1920x1080	50/P	RG6
1920x1080	60/I	RG59 or RG6
1920x1080	50/I	RG59 or RG6
1920x1080	30/P	RG59 or RG6
1920x1080	25/P	RG59 or RG6
1920x1080	24/P	RG59 or RG6
1920x1080	30/PsF	RG59 or RG6
1920x1080	25/PsF	RG59 or RG6
1280x720	60/P	RG58 or RG59 or RG6
1280x720	50/P	RG58 or RG59 or RG6

SD-SDI 270 Mb/sec
HD-SDI 1.485 Mb/sec
3G-SDI 2.97Mb/sec
12G-SDI 12GMB/sec

Appendix B: PIN Specification

Pin assignment and signal name of RS-232 terminal
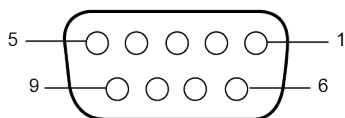
Pin No.	Signal Name	Signal Name
1	CD	NC (no connection)
2	RXD	Transmission data
3	TXD	Reception data
4	DTR	Data terminal ready
5	GND	GND
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Short circuit at pin 7 on the monitor
9	RI	NC (no connection)

Pin assignment and signal name of DP-IN
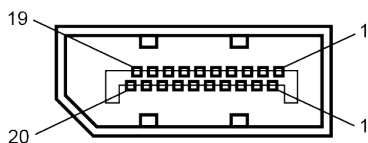
Pin No.	Signal Name	Pin No.	Signal Name
1	Lane 0 P	2	GND
3	Lane 0 N	4	Lane 1 P
5	GND	6	Lane 1 N
7	Lane 2 P	8	GND
9	Lane 2 N	10	Lane 3 P
11	GND	12	Lane 3 N
13	GND	14	GND
15	AUX P	16	GND
17	AUX N	18	Hot Plug
19	Return	20	DP_PWR

12G SDI-IN
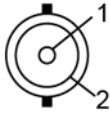
Pin No.	Signal Name	Pin No.	Signal Name
1	12G SDI	2	GND

Pin assignment and signal name of 12G SDI-Out
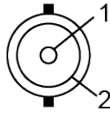
Pin No.	Signal Name	Pin No.	Signal Name
1	12G SDI	2	GND

Pin assignment and signal name of HDMI
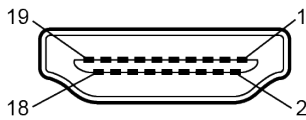
Pin No.	Signal Name	Pin No.	Signal Name
1	2+	2	GND
3	2-	4	1+
5	GND	6	1-
7	0+	8	HDMI_D1M
9	0-	10	GND
11	GND	12	C+
13	GND	14	C-
15	SCL	16	NC
17	GND	18	5V

Pin assignment and signal name of USB
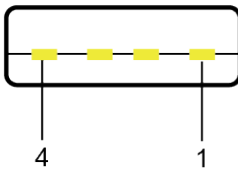
Pin No.	Signal Name	Pin No.	Signal Name
1	+5V	2	Data-
3	Data+	4	GND

Pin assignment and signal name of Power

Pin No.	Signal Name	Pin No.	Signal Name
1	+12VDC	2	GND
3	+12VDC	4	GND

Appendix C: Dimensional Figure

27" Model, M270TF-SDI
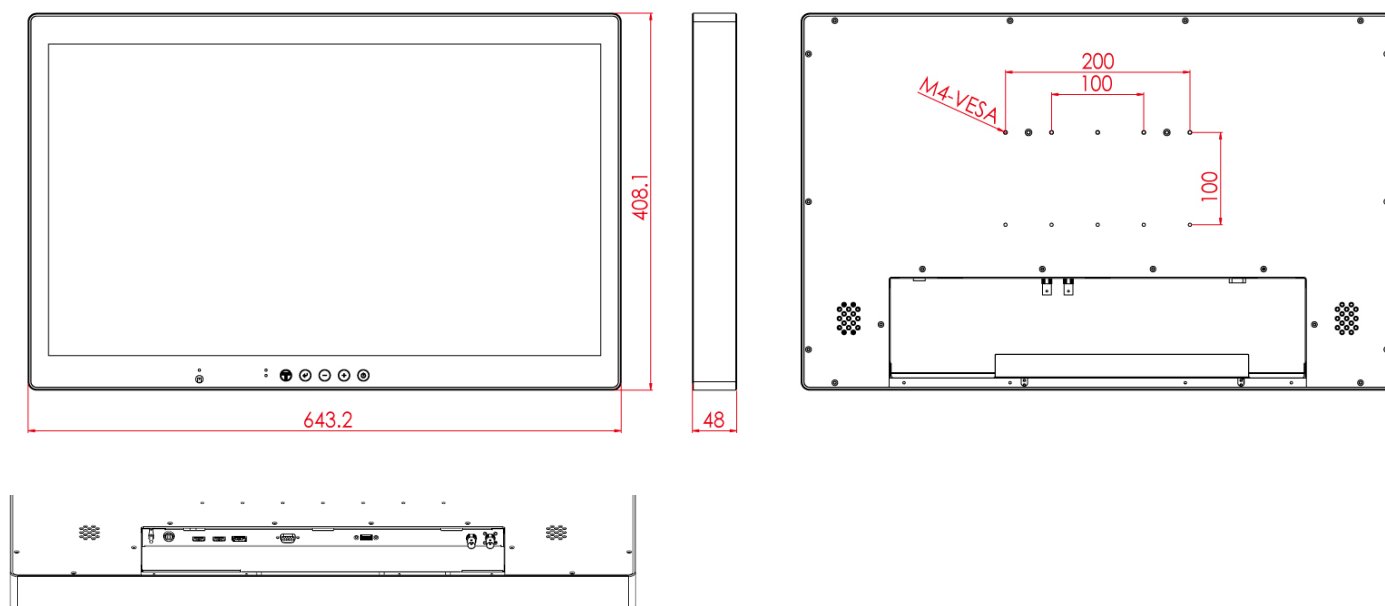
32" Model, M320TF-SDI
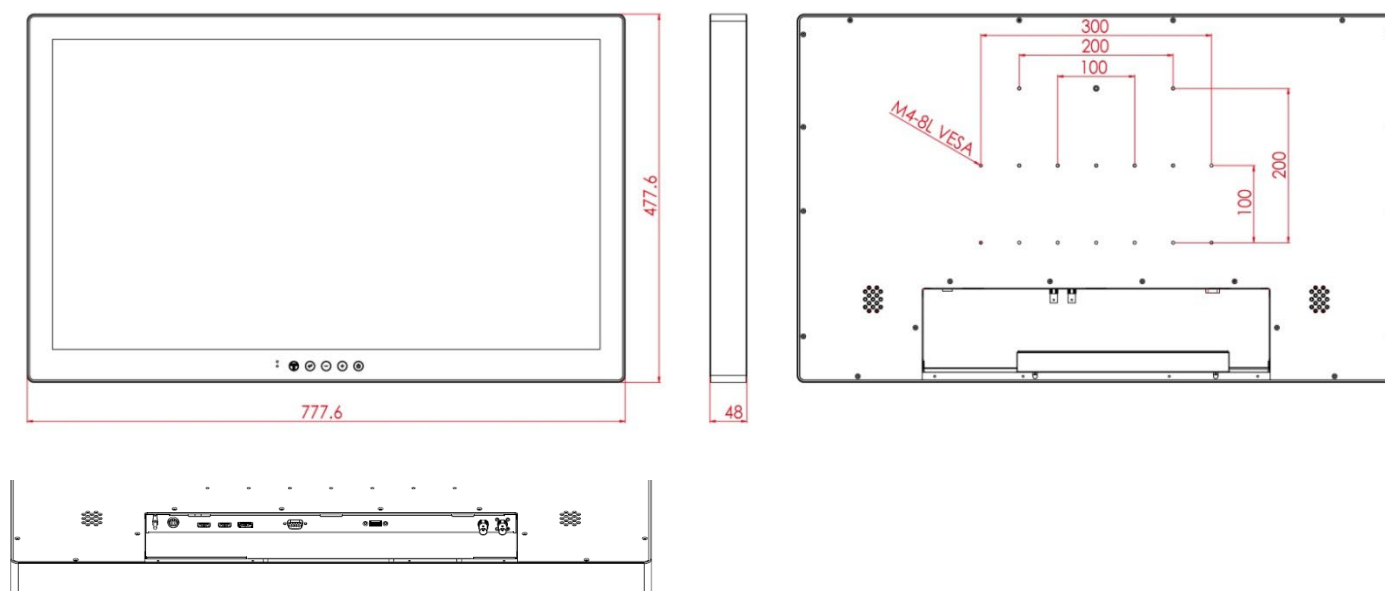
Appendix D: Meaning of Symbols on the unit

Symbol	Description	Symbol	Description	Symbol	Description
	Potential equalization terminal (Sets other devices to same potential	CE	This device complies with the Healthcare Device Directive 93/42/EEC	SN	Serial number
	Date of manufacture		Manufacturer/product owner	---	Direct current
↑↑	This way up		Stacking limit by number		Keep away from rain
	Fragile	11 kg	Weight		Consult operating instruction for use.
	Temperature limits		Recycling symbol for corrugated cardboard used for packaging	⚠	General warning sign
	Indicates user need to read user manual before using the device	UL LISTED	UL Listing Mark		UL Recognized Component Mark
	TUV SUD Mark	D	Indicates device is approved according To The UL DEMKO Regulation		Indicates device is approved according To The VCCI Regulation
FC	Indicates this device is compliance with Part 15 of FCC rules (Class B)		Indicates this device must not throw in the trash		

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information. Information on Disposal in other Countries outside the **European Union.**

Winmate reserves the right to make changes in specifications and features shown herein, or discontinue the product at any time without notice or obligation."

	Information on Disposal for Users of Waste Electrical & Electronic Equipment (private households)
	This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.
	For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.
	Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point.
	Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.