



Liquid Crystal Display (LCD) User Manual

27G11ZE2

Safety	
National Conventions	
Power	2
Installation	3
Cleaning	4
Other	5
Setup	6
Contents in Box	6
Set-up Stand & Base	7
Adjusting Viewing Angle	8
Connecting the Monitor	9
Adaptive-Sync function	10
HDR	11
Adjusting	12
Hotkeys	12
OSD Setting	13
Game Setting	14
Picture	16
Setting	18
Audio	19
OSD Setup	20
Information	21
LED Indicator	22
Troubleshoot	23
Speci ication	24
General Speci ication	24
Preset Display Modes	25
Pin Assignments	26
Plug and Play	27
Copyright Notice	27

Safety

National Conventions

The following subsections describe national conventions used in this document.

Notes, Cautions, and Warnings

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, cautions, and warnings, and they are used as follows:



NOTE: A NOTE indicates important information that helps you make better use of your computer system.



CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



WARNING: A WARNING indicates the potential for bodily harm and tells you how to avoid the problem. Some warnings may appear in alternate formats and may be unaccompanied by an icon. In such cases, the specific presentation of the warning is mandated by regulatory authority.

Power

⚠ The monitor should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.

🛕 Unplug the unit during a lightning storm or when it will not be used for long periods of time. This will protect the monitor from damage due to power surges.



Do not overload power strips and extension cords. Overloading can result in fire or electric shock.

No ensure satisfactory operation, use the monitor only with UL listed computers which have appropriate configured receptacles marked between 100-240V AC, Min. 5A.



 \bigwedge The wall socket shall be installed near the equipment and shall be easily accessible.



Only use it with the included power adapter:

Manufacturer: Dongguan Yidai Power Technology CO.,LTD

Model: YD-BG1200300US-B01

* The adapter shall be subject to the actual product, depending on the country or region.

Installation

🛕 Do not place the monitor on an unstable cart, stand, tripod, bracket, or table. If the monitor falls, it can injure a person and cause serious damage to this product. Use only a cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with this product. Follow the manufacturer's instructions when installing the product and use mounting accessories recommended by the manufacturer. A product and cart combination should be moved with care.

 Λ Never push any object into the slot on the monitor cabinet. It could damage circuit parts causing a fire or electric shock. Never spill liquids on the monitor.



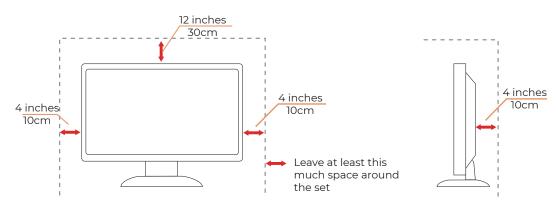
Do not place the front of the product on the floor.

If you mount the monitor on a wall or shelf, use a mounting kit approved by the manufacturer and follow the kit instructions.

1 Leave some space around the monitor as shown below. Otherwise, air-circulation may be inadequate hence overheating may cause a fire or damage to the monitor.

See below the recommended ventilation areas around the monitor when the monitor is installed on the wall or on the stand:

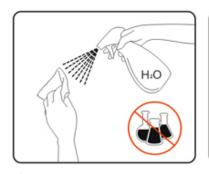
Installed with stand



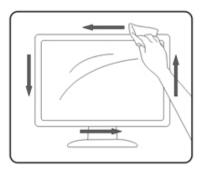
Cleaning

Clean the cabinet regularly with a water-dampened, soft cloth.

• When cleaning use a soft cotton or microfiber cloth. The cloth should be damp and almost dry, do not allow liquid into the case.







Please disconnect the power cord before cleaning the product.

Other

If the product is emitting a strange smell, sound or smoke, disconnect the power plug IMMEDIATELY and contact a Service Center.



Make sure that the ventilating openings are not blocked by a table or curtain.



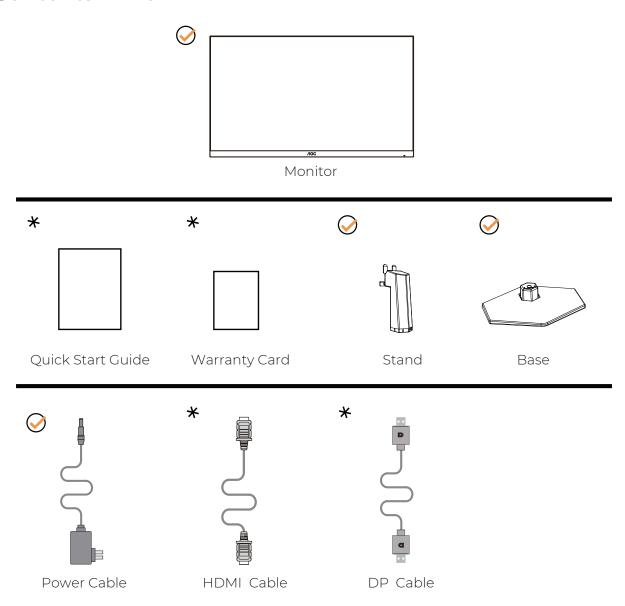
<u>N</u>Do not engage the LCD monitor in severe vibration or high impact conditions during operation.



⚠ Do not knock or drop the monitor during operation or transportation.

Setup

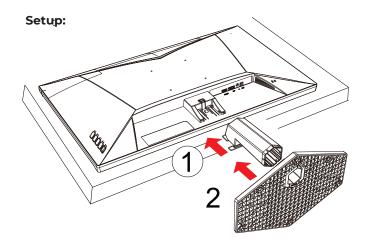
Contents in Box



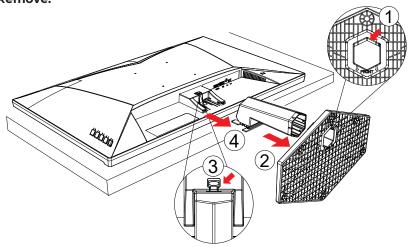
Not all signal cables will be provided for all countries and regions. Please check with the local dealer or AOC branch office for confirmation.

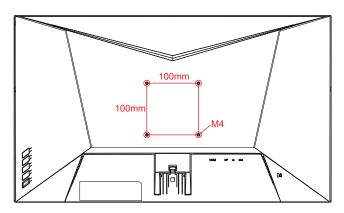
Set-up Stand & Base

Please setup or remove the base following the steps as below.



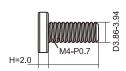
Remove:





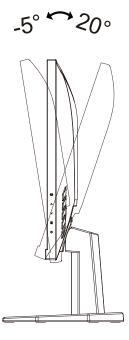
Wall - mounting hole screw specifications: M4*(10 + X)mm (X = thickness of the wall - mounting bracket iron parts)





Adjusting Viewing Angle

To achieve the best viewing experience, it is recommended that the user can make sure they are able to look at their whole face on the screen, then adjust the monitor's angle based on personal preference. Hold the stand so you will not topple the monitor when you change the monitor's angle. You are able to adjust the monitor as below:





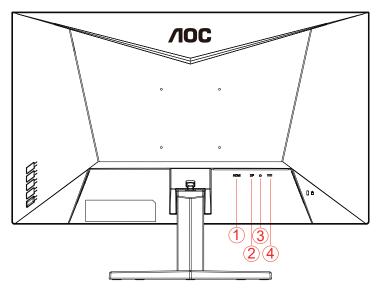
Do not touch the LCD screen when you change the angle. Touching the LCD screen may cause damage.

Warning

- To avoid potential screen damage, such as panel peeling, ensure that the monitor does not tilt downward by more than -5 degrees.
- \cdot $\,$ Do not press the screen while adjusting the angle of the monitor. Grasp only the bezel.

Connecting the Monitor

Cable Connections In Back of Monitor and Computer:



- 1. HDMI
- 2. DisplayPort
- 3. Earphone
- 4. Power

Connect to PC

- 1. Connect the power cord to the back of the display firmly.
- 2. Turn off your computer and unplug its power cable.
- 3. Connect the display signal cable to the video connector on the back of your computer.
- 4. Plug the power cord of your computer and your display into a nearby outlet.
- 5. Turn on your computer and display.

If your monitor displays an image, installation is complete. If it does not display an image, please refer to Troubleshoot.

To protect equipment, always turn off the PC and LCD monitor before connecting.

Adaptive-Sync function

- 1. Adaptive-Sync function works with DP/HDMI
- 2. Compatible Graphics Card: Recommended list is as below, also could be checked by visiting <u>www.AMD.</u> <u>com</u>

Graphics Cards

- Radeon™ RX Vega series
- Radeon™ RX 500 series
- Radeon™ RX 400 series
- Radeon™ R9/R7 300 series (R9 370/X, R7 370/X, R7 265 except)
- Radeon™ Pro Duo (2016)
- Radeon™ R9 Nano series
- Radeon™ R9 Fury series
- Radeon™ R9/R7 200 series (R9 270/X, R9 280/X except)

Processors

- AMD Ryzen™ 7 2700U
- AMD Ryzen™ 5 2500U
- AMD Ryzen™ 5 2400G
- AMD Ryzen™ 3 2300U
- AMD Ryzen™ 3 2200G
- · AMD PRO A12-9800
- · AMD PRO A12-9800E
- · AMD PRO A10-9700
- · AMD PRO A10-9700E
- · AMD PRO A8-9600
- · AMD PRO A6-9500
- · AMD PRO A6-9500E
- · AMD PRO A12-8870
- AMD PRO A12-8870E
- · AMD PRO A10-8770
- AMD PRO A10-8770E
- · AMD PRO A10-8750B
- AMD PRO A8-8650B
- · AMD PRO A6-8570
- · AMD PRO A6-8570E
- · AMD PRO A4-8350B
- · AMD A10-7890K
- AMD A10-7870K
- · AMD A10-7850K
- · AMD A10-7800
- · AMD A10-7700K
- · AMD A8-7670K
- · AMD A8-7650K
- · AMD A8-7600
- · AMD A6-7400K

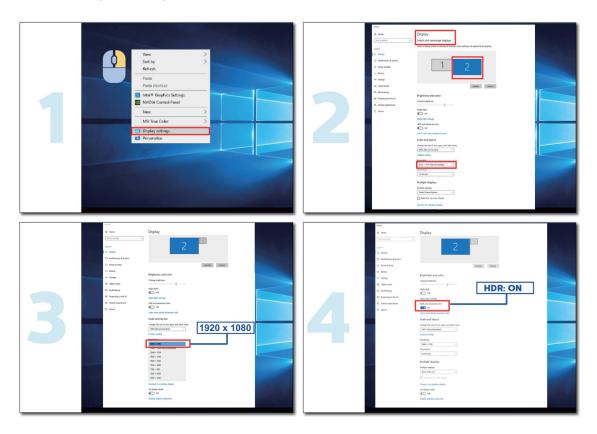
HDR

It is compatible with input signals in HDR10 format.

The display may automatically activate the HDR function if the player and content are compatible. Please contact the device manufacturer and the content provider for information on the compatibility of your device and content. Please select "OFF" for the HDR function when you have no need for automatical activation function.

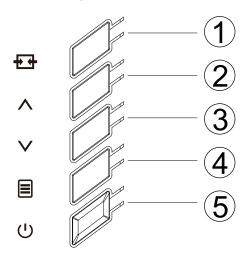
Note:

- 1. No special setting is needed for the DisplayPort/HDMI interface in WIN10 versions lower (older) than V1703.
- 2. Only the HDMI interface is available and the DisplayPort interface cannot function in WIN10 version V1703.
- 3. Display Settings:
- a. The display resolution is set to 1920*1080, and HDR is preset to ON.
- b. After entering an application, the best HDR effect can be achieved when the resolution is changed to 1920*1080 (if available).



Adjusting

Hotkeys



1	Source/Exit
2	Dial Point/Boost
3	Game Mode/Diminish
4	Menu/Enter
5	Power

Source/Exit

When the OSD is closed, press Source/Exit button will be Source hot key function. When the OSD menu is active, this button acts as an exit key (to exit the OSD menu).

Dial Point/Boost

When the OSD menu is closed, repeatedly press the "^" key to turn on or off the game crosshair and dynamic crosshair. The game crosshair will automatically turn off after the monitor is turned on/off.

Game Mode/Diminish

When there is no OSD, press " Λ " key to open game mode function, then press " Λ " or " \mathbf{V} " key to select game mode (FPS, RTS, Racing, Gamer 1, Gamer 2 or Gamer 3) basing on the different game types.

Menu/Enter

Press to display the OSD or confirm the selection.

Power

Press the Power button to turn on the monitor.

OSD Setting

Basic and simple instruction on the control keys.



- 1). Press the **MENU-button** to activate the OSD window.
- 2). Press∨ or ∧ to navigate through the functions. Once the desired function is highlighted, press the MENU-button to activate it, press ∨ or ∧ to navigate through the sub-menu functions. Once the desired function is highlighted, press MENU-button to activate it.
- 3). Press vor A to change the settings of the selected function. Press to exit. If you want to adjust any other function, repeat steps 2-3.
- 4). OSD Lock Function: To lock the OSD, press and hold the MENU-button while the monitor is off and then press power button to turn the monitor on. To unlock the OSD press and hold the MENU-button while the monitor is off and then press power button to turn the monitor on.

Notes:

- 1). If the product has only one signal input, the item of "Input Select" is unable to be adjusted.
- 2). If the input signal resolution is the native resolution or Adaptive-Sync, then the item "Image Ratio" is invalid.

Game Setting



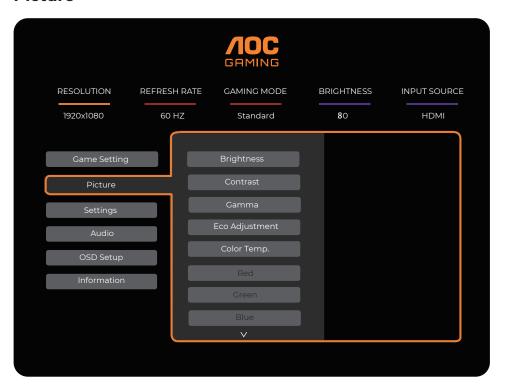
	Standard	No optimization by Smart image game	
	FPS	For playing FPS (first Person Shooters) games. Improves black level in dark theme.	
	RTS	For playing RTS (Real Time Strategy). Improves the image quality.	
Game Mode	Racing	For playing Racing games, Provides fastest response time and high color saturation.	
	Gamer 1	User's preference settings saved as Gamer 1.	
	Gamer 2	User's preference settings saved as Gamer 2.	
ı	Gamer 3	User's preference settings saved as Gamer 3.	
Shadow Control	0-20	Shadow Control Default is 0, then end-user can adjust from 0 to 20 or 0 to to increase/decrease contrast for clear picture.	
Low Input Lag	On / Off	Turning off the frame buffer can reduce input latency. Note: The low input latency feature is enabled by default when Adaptive-Sync is turned on and cannot be adjusted.	
Game Color	0-20	Game Color will provide 0-20 level for adjusting saturation to get better picture.	
Adaptive-Sync	On or Off	Disable or Enable Adaptive-Sync. Adaptive-Sync Run Reminder: When the Adaptive- Sync feature is enabled, there may be flashing in some game environments.	
DialPoint	Off / On / Dynamic	You can turn the game crosshair function on or off. The game crosshair will automatically turn off after the monitor is turned on/off. When the crosshair function is enabled, the crosshair will be placed in the center of the screen to help players aim accurately when playing first-person shooter games.	
of adjustments to reduce motion R Note: 1. The MBR function can be adjuste Adaptive-Sync is turned off, and th ≥75Hz.		 The MBR function can be adjusted when Adaptive-Sync is turned off, and the refresh rate ≥75Hz. The brightness of the screen will decrease as the 	

MBR Sync	Off / On	Turn the MBR Sync function on or off. MBR Sync dynamically adjusts to reduce motion blur based on the instantaneous changes in the Adaptive - Sync refresh rate. Note: The MBR Sync function can be adjusted when Adaptive - Sync is enabled and the input is a variable - frequency signal.
	Normal	Adjust the response time. Note:
	Fast	1. If the user adjusts OverDrive to "Fastest" the displayed image may be blurred. Users can adjust
Overdrive	Faster	the OverDrive level or turn it off according to their preferences. 2. The "Boost" function is optional
	Fastest	when Adaptive-Sync is turned off, the low input delay is turned on, and the refresh rate is ≥75Hz.
	Extreme	3. The screen brightness will decrease when the "Boost" function is turned on.
Frame Counter	Off / Right-up / Right-Down / Left- Down / Left-Up	Display V frequency on the corner selected
OverClock	Yes / No	Turn the overclocking function on or off. If you choose to enable the "Overclocking" function, after the monitor restarts, please change the maximum refresh rate setting in the operating system control panel. If the screen display is abnormal, please turn off the "Overclocking" setting in the monitor menu.

Note:

- 1) When the "HDR Mode" under "Picture" is set to a state other than "Off", the items of "Shadow Control" and "Game Color" cannot be adjusted.
- 2) Now When the "HDR" under "Picture" is set to a state other than "Off", the items such as "Game Mode", "Shadow Control", "Game Color", "MBR", and the "Turbo" option in "Overdrive" under "Game Settings" cannot be adjusted or selected.
- 3) \upday When the "Color Space" under "Picture" is set to "sRGB", the items of "Shadow Control" and "Game Color" cannot be adjusted.

Picture



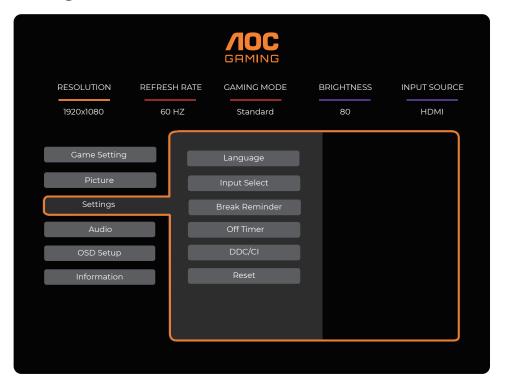
Brightness	0-100	Adjust Frame Brightness.	
Contrast	0-100	Adjust Frame Contrast.	
Gamma	1.8 / 2.0 / 2.2 /2.4 / 2.6	Adjust to Gamma.	
	Standard	Standard Mode.	
	Text	Text Mode.	
	Internet	Internet Mode.	
Eco Adjustment	Game	Game Mode.	
	Movie	Movie Mode.	
	Sports	Sports Mode.	
	Reading	Reading Mode.	
	Warm	Recall Warm Color Temperature from EEPROM.	
Color Temp.	Normal	Recall Normal Color Temperature from EEPROM.	
Color remp.	Cool	Recall Cool Color Temperature from EEPROM.	
	User	Restore Color Temperature from EEPROM.	
Red	0-100	Red gain from Digital-register.	
Green	0-100	Green gain from Digital-register.	
Blue	0-100	Blue gain from Digital-register.	

	Off		
HDR	DisplayHDR	Set the HDR profile according to your usage	
	HDR Picture	requirements. Note:	
	HDR Movie	When HDR is detected, the HDR option is displayed for adjustment.	
	HDR Game		
	Off	Optimized for the color and contrast of the	
HDR Mode	HDR Picture	picture, which will simulate showing the HDR effect.	
TIDA Mode	HDR Movie	Note: When HDR is not detected, the HDR Mode	
	HDR Game	option is displayed for adjustment.	
DCR	Off / On	Turn the dynamic contrast on or off.	
Color Space	Panel Native	Panel standard color space.	
Color Space	sRGB	sRGB color space.	
	Off		
	Multimedia		
Lowblue Mode	Internet	Reduce the proportion of blue light by controlling the color temperature.	
	Office		
	Reading		
Image Ratio	Full Aspect 1:1 / 17" (4:3) / 19" (4:3) / 19" (5:4) / 19"W (16:10) / 21.5"W (16:9) / 22"W (16:9) / 23.6"W (16:9) / 24"W (16:9)	Adjust the image ratio.	

Note:

- 1) When "HDR Mode" is set to "non-off", the items "Contrast", "Gamma", "Eco Adjustment", "Color Temp.", "Color Space", "Lowblue Mode" cannot be adjusted.
- 2) When "HDR" is set to "non-off", the items" Gamma", "Eco Adjustment", "Color Temp.", "DCR" "Color Space", "Lowblue Mode" cannot be adjusted.
- 3) When the "Color Space" is set to sRGB, the items "Contrast", "Gamma", "Eco Adjustment", "Color Temp.", "HDR" and "HDR Mode", "Lowblue Mode" cannot be adjusted.
- 4) When the "Eco Adjustment" is set to Reading, the items "Contrast", "Color Temp.", "DCR", "Color Space" "Lowblue Mode" cannot be adjusted.

Settings



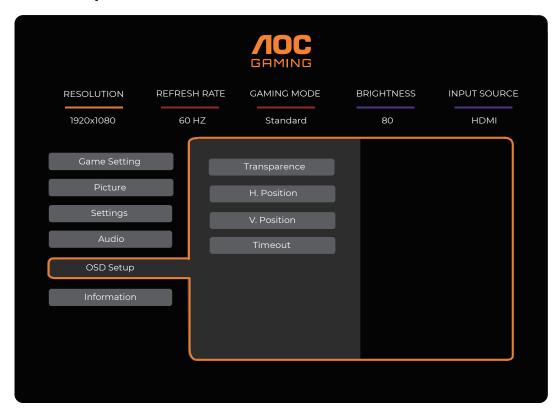
Language		Select the OSD language.	
Input Select	Auto/HDMI/DP	Select Input Signal Source.	
Break Reminder	Off/On	Once enabled, if the user works continuously for more than one hour, a break reminder will be issued.	
Off timer	0-24hrs	Select DC off time.	
DDC/CI	Yes or No	Turn ON/OFF DDC/CI Support.	
Reset	Yes or No	Reset the menu to default.	

Audio



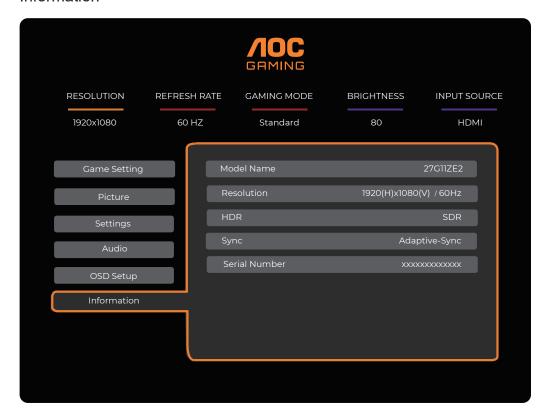
Volume	0-100	Adjust the volume of the headphone output.
Mute	Off/ On	Turn on/off mute.

OSD Setup



Transparence	0-100	Adjust the transparence of OSD.	
V. Position	0-100	Adjust the vertical position of OSD.	
Volume	0-100	Volume Adjustment.	
Timeout	5-120	Adjust the OSD Timeout.	

Information



LED Indicator

Status	LED Color
Full Power Mode	White
Active-off Mode	Orange

Troubleshoot

Problem & Question	Possible Solutions		
Power LED Is Not ON	Make sure the power button is ON and the Power Cord is properly connected to a grounded power outlet and to the monitor.		
No image on the screen	 Is the power cord connected properly? Check the power cord connection and power supply. Is the video cable connected correctly? (Connected using the HDMI cable) Check the HDMI cable connection. (Connected using the DP cable) Check the DP cable connection. *HDMI/DP input is not available on every model. If the power is on, reboot the computer to see the initial screen (the login screen.) If the initial screen (the login screen) appears, boot the computer in the applicable mode (the safe mode for Windows 7/8/10) and then change the frequency of the video card. (Refer to the Setting the Optimal Resolution) If the initial screen (the login screen) does not appear, contact the Service Center or your dealer. Can you see "Input Not Supported" on the screen? You can see this message when the signal from the video card exceeds the maximum resolution and frequency that the monitor can handle properly. Adjust the maximum resolution and frequency that the monitor can handle properly. Make sure the AOC Monitor Drivers are installed. 		
Picture Is Fuzzy & Has Ghosting Shadowing Problem Adjust the Contrast and Brightness Controls. Press hot-key (AUTO) to auto-adjust. Make sure you are not using an extension cable or switch box. recommend plugging the monitor directly to the video card of connector on the back.			
Picture Bounces, Flickers Or Wave Pattern Appears In The Picture Move electrical devices that may cause electrical interference from the monitor as possible. Use the maximum refresh rate your monitor is capable of at you are using.			
Monitor Is Stuck In Active Off-Mode"	The Computer Power Switch should be in the ON position. The Computer Video Card should be snugly fitted in its slot. Make sure the monitor's video cable is properly connected to the computer. Inspect the monitor's video cable and make sure no pin is bent. Make sure your computer is operational by hitting the CAPS LOCK key on the keyboard while observing the CAPS LOCK LED. The LED should either turn ON or OFF after hitting the CAPS LOCK key.		
Missing one of the primary colors (RED, GREEN, or BLUE)	Inspect the monitor's video cable and make sure that no pin is damaged. Make sure the monitor's video cable is properly connected to the computer.		
Screen image is not centered or sized properly	Adjust H-Position and V-Position or press hot-key (AUTO).		
Picture has color defects (white does not look white) Adjust RGB color or select desired color temperature.			
Horizontal or vertical disturbances on the screen	Use Windows 7/8/10/11 shut-down mode to adjust CLOCK and FOCUS. Press hot-key (AUTO) to auto-adjust.		
Regulation & Service	Please refer to Regulation & Service Information which is in the CD manual or www.aoc.com (to find the model you purchase in your country and to find Regulation & Service Information in Support page.		

Specification

General Specification

	Model name	27G11ZE2			
Panel	Driving system	TFT Color LCD			
	Viewable Image Size	68.6 cm diagonal			
	Pixel pitch	0.3114mm(H) x 0.3114mm(V)			
	Display Color	16.7M Colors			
	Horizontal scan range	30k~280kHz			
	Horizontal scan Size(Maximum)	597.888 mm			
	Vertical scan range	48~240Hz			
	Vertical Scan Size(Maximum)	336.312 mm			
	Optimal preset resolution	1920x1080@60Hz			
Others	Max resolution	1920x1080@240Hz ^[1]	1920x1080@240Hz ¹¹]		
Others	Plug & Play	VESA DDC2B/CI			
	Power Source	12V 3.0A			
		Typical(default brightness and contrast)		34W [2]	
	Power Consumption	Max. (brightness = 100, contrast =100)		≤40W [2]	
		Standby Mode		≤0.3W	
Physical	Connector Type	HDMI/DisplayPort/Earphone out			
Characteristics	Signal Cable Type	Detachable			
	Temperature	Operating	0°C~40°C		
Environmental		Non-Operating	-25°C~55°C		
	Humidity	Operating 10%~85% (Non-Condensing		lon-Condensing)	
		Non-Operating	-Operating 5%~93% (Non-Condensing)		
	A leiter and a	Operating Om~5000m (0ft~16404ft)		(Oft~16404ft)	
	Altitude	Non-Operating	0m~12192m (0ft~40000ft)		

^[1] A resolution of 1920x1080@240Hz is overclocking. If any error occurs to the monitor during the overclocking process, adjust the refresh rate to 200Hz.

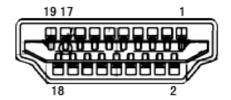
^[2] The power specifications refer to the power consumption of the monitor (including the power adapter) measured at the input end of the power adapter.

Preset Display Modes

STANDARD	RESOLUTION(±1Hz)	HORIZONTAL FREQUENCY(KHz)	VERTICAL FREQUENCY(Hz)				
	640x480@60Hz	31.469	59.94				
	640x480@72Hz	37.861	72.809				
VGA	640x480@75Hz	37.5	75				
	640x480@100Hz	50.313	99.826				
	640x480@120Hz	60.938	119.72				
	800x600@56Hz	35.156	56.25				
	800x600@60Hz	800x600@60Hz 37.879					
SVGA	800x600@72Hz	48.077	72.188				
SVGA	800x600@75Hz	46.875	75				
	800x600@100Hz	62.76	99.778				
	800x600@120Hz	76.302	119.972				
	1024x768@60Hz	48.363	60.004				
	1024x768@70Hz	56.476	70.069				
XGA	1024x768@75Hz	60.023	75.029				
	1024x768@100Hz	80.448	99.811				
	1024x768@120Hz)24x768@120Hz 97.551					
SXGA	1280x1024@60Hz	63.981	60.02				
SAGA	1280x1024@75Hz	79.976	75.025				
	1920x1080@60Hz	67.5	60				
	1920x1080@120Hz	139.1	119.93				
FHD	1920x1080@144Hz	136	145				
לווו	1920x1080@180Hz	206	180				
	1920x1080@200Hz	228.8	200				
	1920x1080@240Hz 275						
	IBM MODES						
DOS	720x400@70Hz	31.469	70.087				
	MAC MODES						
VGA	640x480@67Hz	35	66.667				
SVGA	832x624@75Hz	49.725	74.551				
XGA	1024x768@75Hz	60.241	74.927				

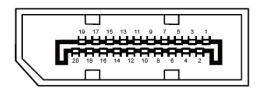
Note: According to the VESA standard, there may be a certain error (+/-1Hz) when calculating the refresh rate (field frequency) of different operating systems and graphics cards. In order to improve compatibility, the nominal refresh rate of this product has been rounded off. Please refer to the actual product.

Pin Assignments



19-Pin Color Display Signal Cable

Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
1.	TMDS Data 2+	9.	TMDS Data 0-	17.	DDC/CEC Ground
2.	TMDS Data 2 Shield	10.	TMDS Clock +	18.	+5V Power
3.	TMDS Data 2-	11.	TMDS Clock Shield	19.	Hot Plug Detect
4.	TMDS Data 1+	12.	TMDS Clock-		
5.	TMDS Data 1Shield	13.	CEC		
6.	TMDS Data 1-	14.	Reserved (N.C. on device)		
7.	TMDS Data 0+	15.	SCL		
8.	TMDS Data 0 Shield	16.	SDA		



20-Pin Color Display Signal Cable

Pin No.	Signal Name	Pin No.	Signal Name	
1	ML_Lane 3 (n)	11	GND	
2	GND	12	ML_Lane O (p)	
3	ML_Lane 3 (p)	13	CONFIG1	
4	ML_Lane 2 (n)	14	CONFIG2	
5	GND	15	AUX_CH(p)	
6	ML_Lane 2 (p)	16	GND	
7	ML_Lane 1 (n)	17	AUX_CH(n)	
8	GND	18 Hot Plug Detect		
9	ML_Lane 1 (p)	19 Return DP_PWR		
10	ML_Lane O (n)	20	DP_PWR	

Plug and Play

Plug & Play DDC2B Feature

This monitor is equipped with VESA DDC2B capabilities according to the VESA DDC STANDARD. It allows the monitor to inform the host system of its identity and, depending on the level of DDC used, communicate additional information about its display capabilities.

The DDC2B is a bi-directional data channel based on the I2C protocol. The host can request EDID information over the DDC2B channel.

Copyright Notice



The terms such as HDMI, HDMI High-Definition Multimedia Interface, the commercial appearance of HDMI and the HDMI logo are all trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

In this instruction manual and the products described herein, other trademarks, product names, service names, and company names mentioned are the property of their respective owners.