Service Manual

LCD Monitor

E2223HN

DELL™ **Service Manual**

Service Manual Versions and Revision

No.	Version	Release Date	Revision
1	1.0	2022/01/26	Initial Release

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Product Announcement:

This product is certificated to meet RoHS Directive and Lead-Free produced definition. Using approved critical components only is recommended when the situation to replace defective parts. Vender assumes no liability express or implied, arising out of any unauthorized modification of design or replacing non-RoHS parts. Service providers assume all liability.

Qualified Repairability: Proper service and repair is important to the safe, reliable operation of all series products. The service providers recommended by vender should be aware of notices listed in this service manual in order to minimize the risk of personal injury when perform service procedures. Furthermore, the possible existed improper repairing method may damage equipment or products. It is recommended that service engineers should have repairing knowledge, experience, as well as appropriate product training per new model before performing the service procedures.

NOTICE:

! To avoid electrical shocks, the products should be connected to an authorized power cord, and turn off the master power switch each time before removing the AC power cord.

! To prevent the product away from water or expose in extremely high humility environment.

! To ensure the continued reliability of this product, use only original manufacturer's specified parts.

! To ensure following safety repairing behavior, put the replaced part on the components side of PWBA, not solder side.

! To ensure using a proper screwdriver, follow the torque and force listed in assembly and disassembly procedures to unscrew screws.

! Using Lead-Free solder to well mounted the parts.

! The fusion point of Lead-Free solder requested in the degree of 220°C.

## 2. Exploded view diagram with list of items
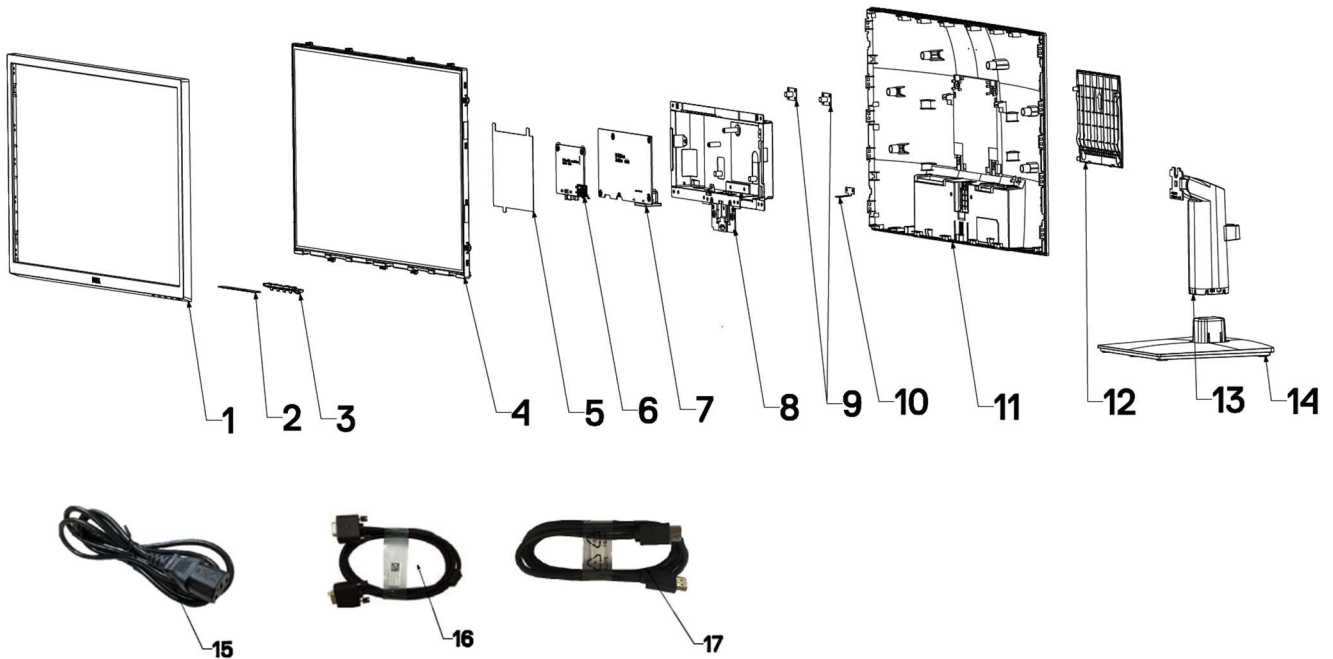
Item	Description	Q'TY	Remark
1	ASSY Front Trim	1	
2	Key BD	1	
3	Power OSD Button	1	
4	Panel	1	
5	Mylar- panel	1	
6	Interface BD	1	For EMEA Only, not for other regions
7	Power BD	1	
8	ASSY Main Chassis	1	
9	VESA Mount	2	
10	Lock Plate	1	
11	ASSY Back Cover	1	
12	VESA Cover	1	
13	ASSY Stand Riser	1	
14	ASSY Stand Base	1	
15	Power cord	1	See"NOTE"
16	VGA cord	1	See"NOTE"
17	HDMI cord	1	See"NOTE"

NOTE:

For replacement of power cord, connectivity cable and external power supply (if applicable), contact Dell:

1. Go to https://www.dell.com/support.

2. Verify your country or region in the Choose A Country/Region drop-down menu at the bottom-right corner of the page.

3. Click Contact Us next to the country dropdown.

4. Select the appropriate service or support link based on your need.

5. Choose the method of contacting Dell that is convenient for you.

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3. Wiring Connectivity Diagram

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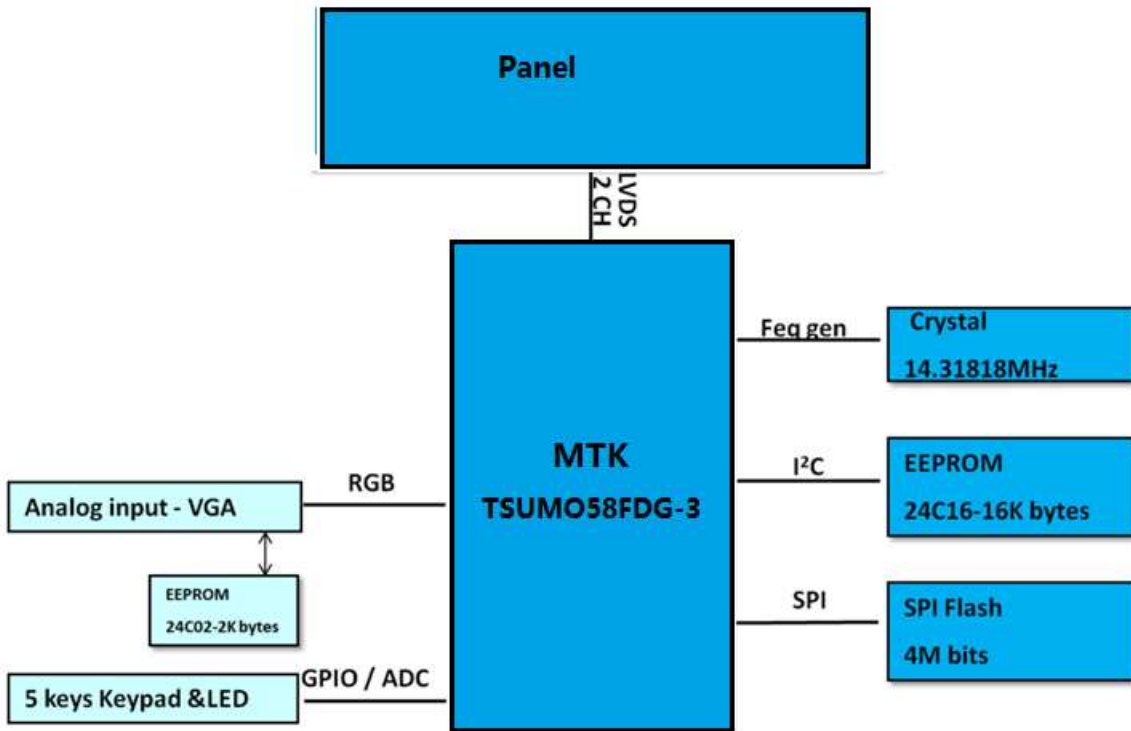
4. How to connect and disconnect power cable/ connectivity cable

WARNING: To change power cable/ connectivity cable, switch off power before unplugging the cable and replugging in required cable.
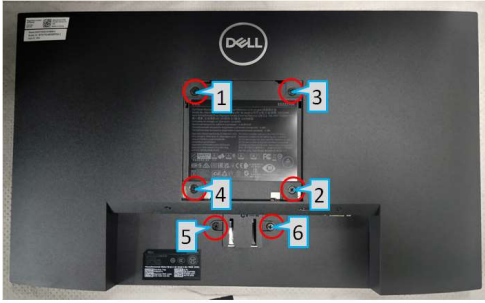

Connecting VGA cable

Connecting HDMI cable

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5. Disassembly and Assembly Procedure

S1

1. Remove Rear Cover Screw and Stand Screws
   a. Remove screws "1~6" on rear cover with electric screwdriver
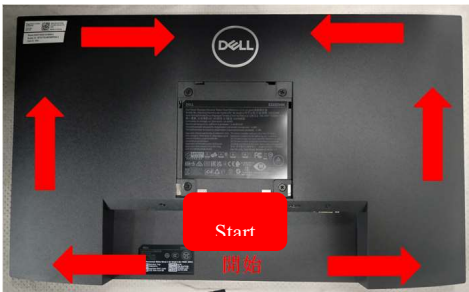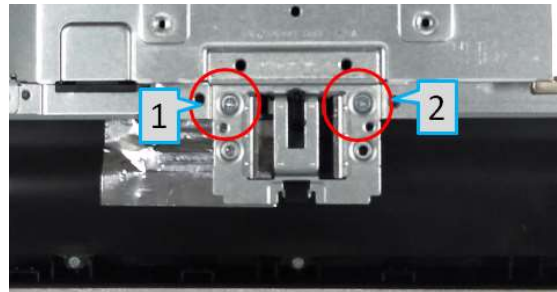   b. Torque: 12.0 +/- 0.5Kgf/cm, Phillips screwdriver

S2

2. Remove Rear Cover
   a. Pry off the back cover of the machine with the aid of the dismantling fixture, in the sequence of "Bottom->Left/Right->Top"

S3

   b. Remove Light Bar and Keypad Cable:
   a. Remove acetate cloth tape marked with "1", then remove light bar (grasp on Pin then pull outwards to remove)
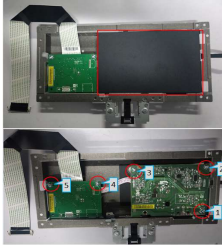   b. Remove Keypad cable "2"

S4

4. Remove VGA screw
   a. Remove screws "1~2" with electric screwdriver
   b. Torque: 12.0 +/- 0.5Kgf/cm, hex screwdriver

S5

5. Remove Chassis Screw
   a. Remove screws "1~2" with electric screwdriver
   b. Torque: 3.5 +/- 0.5Kgf/cm, Phillips screwdriver

S6

6. Remove Aluminium Foil and LVDS Cable
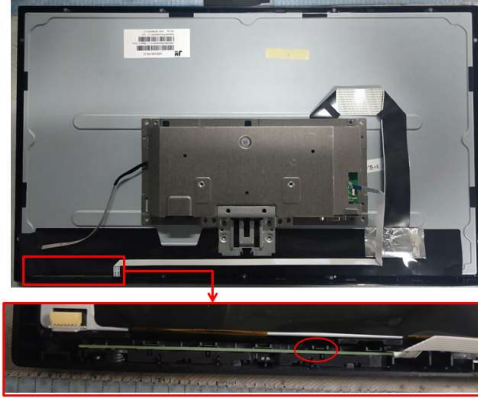   a. Remove aluminium tape then remove LVDS cable (Pinch on clips on the sides)

S7

7. Remove PCBA 1

a. Remove mylar (squared in red in the upper picture)

b. Remove grounding screw "1" then locking screws marked "2~5" with electric screwdriver

c. Torque: 5.5 +/- 0.5Kgf/cm, Phillips screwdriver

S8

8. Remove PCBA 2

a. Remove PI board and IF board

b. Separate PI board from IF board

S9

9. Remove LVDS Cable and Light Bara

a. Remove light bar from PI board (grasp on Pin then pull upwards to remove)

b. Remove LVDS cable from IF board (lift cover before remove)

S10

10. Remove Keypad

a. Remove keypad from front cover (loosen hook circled in red first)
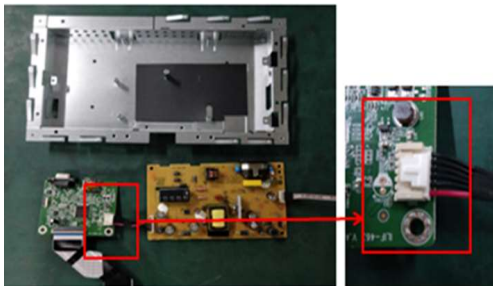
S11

11. Remove Components on PI Board 1

a. Remove electrolyte capacitor >25mm height (squared in red) from printed circuit boards

b. Cut the glue between bulk cap and PCBA with knife – ensure cutting path within the glue, don't touch bulk cap and PCBA
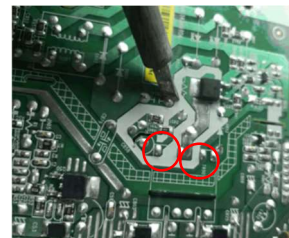

S12

12. Remove Components on PI Board 2

a. Take out the capacitor pin solder with soldering iron

b. Lift the bulk capacitor away from power board

6. Trouble Shooting Instructions

Self-test

Your monitor provides a self-test feature that allows you to check if your monitor is functioning properly. If your monitor and computer are properly connected but the monitor screen remains dark, run the monitor self-test by performing the following steps:

1. Turn off both your computer and the monitor.

2. Disconnect all video cables from the monitor. This way, the computer does not have to be involved.

3. Turn on the monitor.

If the monitor is working correctly, it detects that there is no signal and one of the following message appears. While in self-test mode, the power LED remains white.
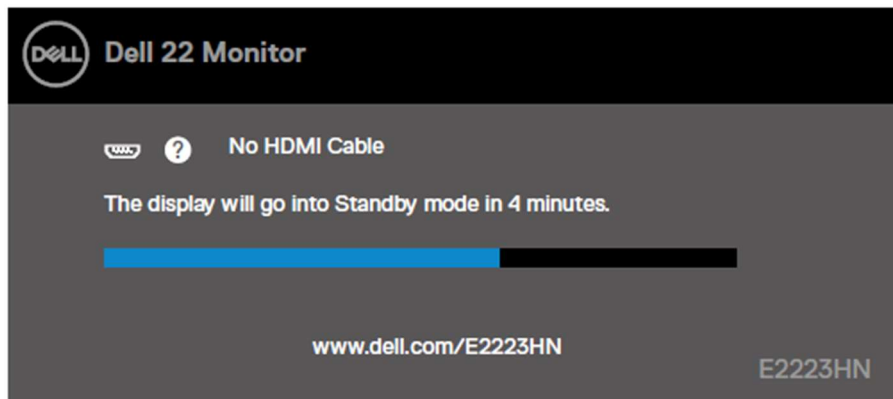
> **NOTE: This message also appears during normal operation, when the video cable is disconnected or damaged.**

4. Turn off your monitor and reconnect the video cable; then turn on your computer and the monitor.

If your monitor remains dark after you reconnect the cables, check your video controller and computer.

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6.   Trouble Shooting Instructions

Your monitor has a built-in diagnostic tool that helps you determine if any screen abnormality you experience is an inherent problem with your monitor, or with your computer and video card.

Label	Description
1	Button 1
2	Button 2
3	Button 3
4	Button 4

To run the built-in diagnostics:

1. Ensure that the screen is clean (no dust particles on the surface of the screen).

2. Press and hold **Button 4** for about 4 seconds and wait for a pop up menu.

3. Use **Button 1** or **2** to select the 🖥✂ and press ✔ to confirm. A gray test pattern appears at the beginning of the diagnostic program.

4. Carefully inspect the screen for abnormalities.

5. Press **Button 1** to change the test patterns.

6. Repeat steps 4 and 5 to inspect the display in red, green, blue, black, white and text screens.

7. When in White color test screen, check for white color uniformity and if there white color appears greenish/reddish, etc.

8. Press **Button 1** to end the diagnostic program.

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6. Trouble Shooting Instructions

Common problems

The following table provides general information about common monitor problems you might encounter and the possible solutions:

Common symptoms	Possible solutions
No video/Power LED off	• Ensure that the video cable connecting the monitor and the computer is properly connected and secure. • Verify that the power outlet is functioning properly using any other electrical equipment. • Ensure that the power button is pressed. • Ensure that the correct input source is selected via the **Input Source** menu.
No video/Power LED on	• Increase brightness and contrast controls using the OSD. • Perform monitor self-test feature check. • Check for bent or broken pins in the video cable connector. • Run the built-in diagnostics. • Ensure that the correct input source is selected via the **Input Source** menu.
Poor focus	• Eliminate video extension cables. • Reset the monitor to Factory Settings (**Factory Reset**). • Change the video resolution to the correct aspect ratio.
Shaky/Jittery video	• Reset the monitor to Factory Settings (**Factory Reset**). • Check environmental factors. • Relocate the monitor and test in another room.
Missing pixels	• Cycle power On-off. • Pixel that is permanently off is a natural defect that can occur in LCD technology. • For more information about Dell Monitor Quality and Pixel Policy, see Dell Support site at: www.dell.com/pixelguidelines.
Stuck-on pixels	• Cycle power On-off. • Pixel that is permanently off is a natural defect that can occur in LCD technology. • For more information about Dell Monitor Quality and Pixel Policy, see Dell Support site at: www.dell.com/pixelguidelines.
Brightness problems	• Reset the monitor to Factory Settings (**Factory Reset**). • Adjust brightness and contrast controls using OSD.
Geometric distortion	• Reset the monitor to Factory Settings (**Factory Reset**). • Adjust horizontal and vertical using OSD.
Horizontal/Vertical lines	• Reset the monitor to Factory Settings (**Factory Reset**). • Perform monitor self-test feature check and determine if these lines are also in self-test mode. • Check for bent or broken pins in the video cable connector. • Run the built-in diagnostics.

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6. Trouble Shooting Instructions

Common symptoms	Possible solutions
Synchronization problems	• Reset the monitor to Factory Settings (**Factory Reset**). • Perform monitor self-test feature check to determine if the scrambled screen appears in self-test mode. • Check for bent or broken pins in the video cable connector. • Restart the computer in safe mode.
Safety related issues	• Do not perform any troubleshooting step. • Contact Dell immediately.
Intermittent problems	• Try different **Preset Modes** in **Color** settings OSD. Adjust **R/G/B** value in **Custom Color** in **Color** settings OSD. • Change the **Input Color Format** to **RGB** or **YPbPr** in the **Color** settings OSD. • Run the built-in diagnostics.
Missing color	• Perform monitor self-test feature check. • Ensure that the video cable connecting the monitor to the computer is connected properly and is secure. • Check for bent or broken pins in the video cable connector.
Wrong color	• Try different **Preset Modes** in **Color** settings OSD. Adjust **R/G/B** value in **Custom Color** in **Color** settings OSD. • Change the **Input Color Format** to **RGB** or **YCbCr/YPbPr** in the **Color** settings OSD. • Run the built-in diagnostics.
Image retention from a static image left on the monitor for a long period of time	• Set the screen to turn off after a few minutes of screen idle time. These can be adjusted in Windows Power Options or Mac Energy Saver setting. • Alternatively, use a dynamically changing screensaver.
Video ghosting or overshooting	• Change the **Response Time** in the **Display** OSD to **Fast** or **Normal** depending on your application and usage.