



# Maintenance and Service Guide

## OMEN 24 model

### **SUMMARY**

This guide provides information about spare parts, removal and replacement of parts, diagnostic tests, problem troubleshooting, and more.

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Assembly part number: N31073-001

## **Product notice**

Only trained service personnel familiar with this product should service it. Before performing any maintenance or service, be sure to read "Important Safety Information".

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# 1 Getting started

Read this chapter to learn about safety information and where to find additional HP resources.

## Important safety information

Carefully read the cautions and notes within this document to minimize the risk of personal injury to service personnel. The cautions and notes are not exhaustive. Proper service methods are important to the safe, reliable operation of equipment. Improper service methods can damage equipment.

The service procedures recommended and described in this service manual provide effective methods of performing service operations. Service engineers should have prior repair knowledge and experience as well as appropriate training for the product before performing service procedures.

- Be sure your working environment is dry and clean and meets all government safety requirements.
- Be sure that other persons are safe while you are servicing the product.
- Do not perform any action that can cause a hazard to the customer or make the product unsafe.
- Use proper safety devices to ensure your personal safety.
- Always use approved tools and test equipment for servicing.
- Never assume the product's power is disconnected from the main power supply. Check that it is disconnected before opening the product's cabinet.
- Modules containing electrical components are sensitive to electrostatic discharge (ESD). Follow ESD safety procedures while handling these parts.
- Some products contain more than one battery. Do not disassemble or expose a battery to high temperatures, such as throwing into fire, or the battery may explode.
- Refer to government requirements for battery recycling or disposal.

This information provides general service information for the monitor. Adherence to the procedures and precautions is essential for proper service.

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**IMPORTANT:** Only trained service personnel who are familiar with this HP product should perform service or maintenance for it. Before performing any service or maintenance, personnel must read the important safety information.

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**IMPORTANT:** You must disconnect the power cord from the power source before opening the monitor to prevent component damage.

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## Important service information and precautions

- Repair must be performed by professional service technicians in a repair center. End users should not perform these procedures.
- Please note during servicing that the primary side is the high voltage area.
- This monitor meets ROHS requirements. Be sure to use lead-free solder wire when soldering.
- If you must change a capacitor, be sure to match the polarity as printed on the PCB.
- If you must replace a capacitor, make sure the specification and part number match the BOM and location.
- If you must replace a capacitor, insert new parts carefully to avoid a short circuit caused by the near pin.
- Do not get the board wet. Water and moisture can cause a short circuit that causes malfunctions.

- To avoid damage, be sure to use lead-free solder.
- When soldering, work quickly to avoid overheating the circuit board.
- Keep the soldering iron tip clean and well tinned when replacing parts.
- After repair, perform a close inspection of the circuit board to confirm it is in good condition.
- After repair, perform a function test to confirm the power supply is working properly.

#### **ERP Lot5 requirement**

1. A professional repairer must have the technical competence to repair electronic displays and comply with the applicable regulations for repairers of electrical equipment in the Member States where the repairer operates. Reference to an official registration system as professional repairer, where such a system exists in the Member States, shall be accepted as proof of compliance.
2. A professional repairer must have insurance that covers liabilities resulting from repairs, regardless of whether required by the Member State.

## **RoHS (2002/95/EC) requirements**

#### **Applied to all countries that require RoHS.**

The RoHS (Restriction of Hazardous Substance in Electrical and Electronic Equipment Directive) is a legal requirement by the EU (European Union) for the global electronics industry sold in the EU and other countries. Any electrical and electronics products launched in the market after June 2006 should meet this RoHS requirement. Products launched in the market before June 2006 are not required to be compliant with RoHS parts. If the original parts are not RoHS compliant, the replacement parts can be non-ROHS compliant. If the original parts are RoHS compliant, the replacement parts **MUST** be RoHS compliant.

If product service or maintenance requires replacing parts, confirm the RoHS requirement before replacement.

## **General descriptions**

This manual contains general information. There are two levels of service:

Level 1: Cosmetic/appearance/alignment service

Level 2: Circuit board or standard parts replacement

## **Firmware updates**

Firmware updates for the monitor are available at [support.hp.com](http://support.hp.com). If no firmware is posted, the monitor does not need a firmware update.

## **Before returning the repaired product to the customer**

Perform an AC leakage current check on exposed metallic parts to be sure the product is safe to operate without the potential of electrical shock. Do not use a line isolation transformer during this check.

Measurements that are not within specified limits present a possible shock hazard. You must check and repair the product before returning it to the customer.

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## 2 Monitor features

This chapter provides an overview of the monitor's features.

### Features

Depending on the model, your monitor might include the following features:

#### Display features

- 60.5 cm, 23.8-in screen with 1920 × 1080 @ 165 Hz FHD resolution, plus full-screen support for lower resolutions; includes custom scaling for maximum image size while preserving original aspect ratio
- Liquid crystal display (LCD) with active matrix and in-plane switching (IPS) (select models)
- VA panel technology (select models)
- Wide color gamut to provide coverage of sRGB/DCI-P3 color spaces
- Nonglare panel with an LED backlight
- Wide viewing angle to allow viewing from a sitting or standing position, or moving from side to side
- Tilt, swivel, and height adjustment capabilities
- Pivot capability to rotate the monitor head from landscape to portrait orientation (select models)
- On-screen display (OSD) adjustments in several languages for easy setup and screen optimization
- Energy saver feature to meet requirements for reduced power consumption
- Cable management feature for placement of cables and cords

#### Connectors

- DisplayPort™ video input (cable included)
- High-Definition Multimedia Interface® (HDMI) video input(2)
- Audio-out (headphone) jack
- Plug and Play capability, if supported by your operating system

#### Monitor stand

- Removable stand for flexible monitor head mounting solutions
- HP Quick Release 2 device to quickly attach the monitor head to the stand with a simple click, and then remove it with the convenient sliding tab release
- VESA® mounting bracket for attaching the monitor head to a wall-mount device or swing arm
- VESA mounting capability (100 × 100 mm) for attaching the monitor to a swing arm mount
- Support for a mounting bracket to attach the monitor to a workstation

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**NOTE:** For safety and regulatory information, refer to the Product Notices provided on your optical disc or in your documentation kit. To locate updates to the user guide for your product, go to <http://www.hp.com/support> and select your country. Select Find your product, and then follow the on-screen instructions.

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# Rear components

To identify the components on the rear of the monitor, use this illustration and table.

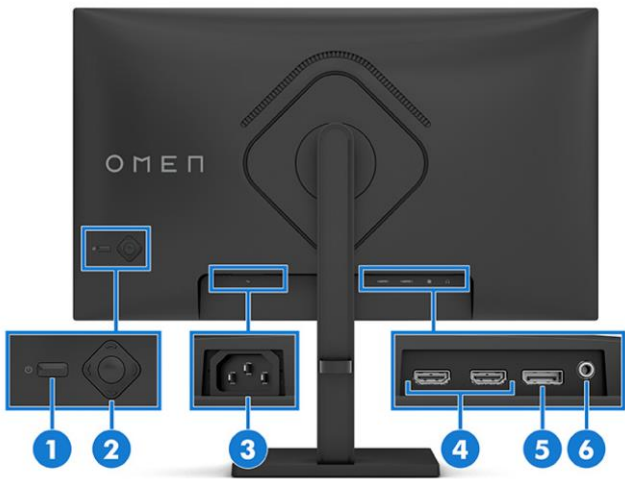
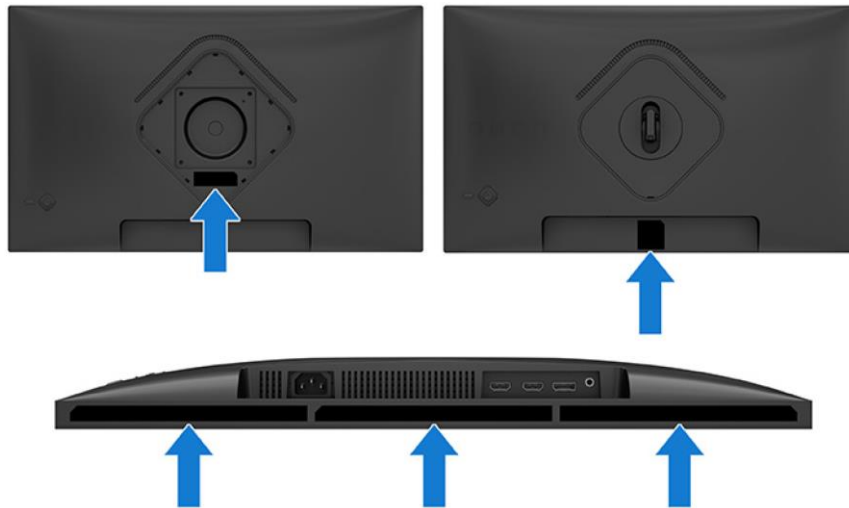


Table 1-1: Rear components

| Component |                            | Function                                                                                              |
|-----------|----------------------------|-------------------------------------------------------------------------------------------------------|
| 1         | Power button               | Turns the monitor on or off.                                                                          |
| 2         | OSD control                | Adjusts settings in the OSD menu.                                                                     |
| 3         | Power connector            | Connects the power cord to the monitor.                                                               |
| 4         | HDMI ports (2)             | Connect the HDMI cable to a source device such as a computer or game console.                         |
| 5         | DisplayPort connector      | Connects the DisplayPort cable to a source device such as a computer or game console.                 |
| 6         | Audio-out (headphone) jack | Connects optional powered stereo speakers, headphones, earbuds, or a television audio cable.          |
|           |                            | CAUTION: To reduce the risk of personal injury, adjust the volume before using headphones or earbuds. |

## Locating the serial number and product number

Depending on the product, the serial number and product number are located on a label on the rear of the monitor or on a label under the front bezel of the monitor head. You might need these numbers when contacting HP for support.

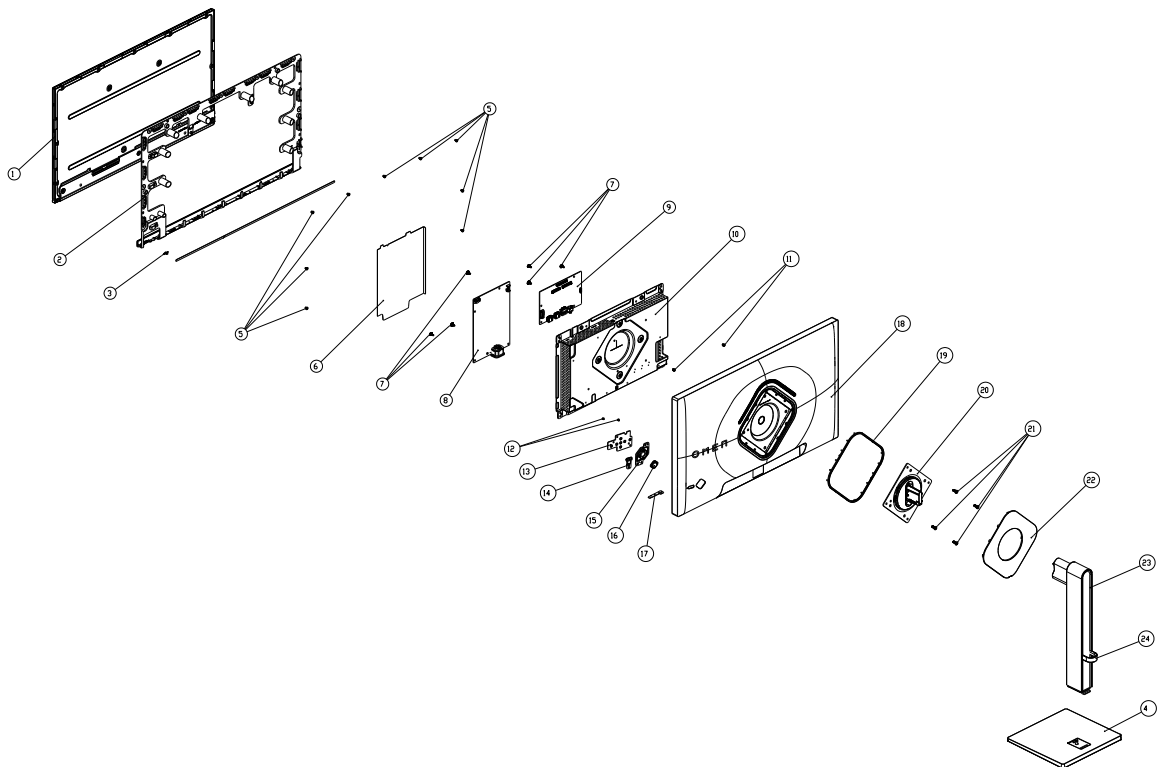


### For worldwide models



### 3 Illustrated parts catalog

To identify the monitor major components, use this illustration and table.



| Item | Description                      | Qty |
|------|----------------------------------|-----|
| 1    | Panel                            | 1   |
| 2    | MIDDLE_FRAME L238W-Ghp3-p3       | 1   |
| 3    | LENS_POWER                       | 1   |
| 4    | BASE_ASS'Y NA N/A                | 1   |
| 5    | SCREW M3 4                       | 9   |
| 6    | INSULATING SHEET 207.8*155.4*0.5 | 1   |
| 7    | SCREW D3 6                       | 7   |
| 8    | POWER BOARD                      | 1   |
| 9    | MAIN BOARD                       | 1   |
| 10   | MAINFRAME                        | 1   |
| 11   | SCREW M3 4                       | 2   |
| 12   | SCREW Q2 3.4                     | 2   |
| 13   | KEY BOARD                        | 1   |
| 14   | KEY_POWER                        | 1   |
| 15   | KEY_FUNCTION                     | 1   |

|    |                          |   |
|----|--------------------------|---|
| 16 | KEY                      | 1 |
| 17 | CONNECTOR BOARD          | 1 |
| 18 | REAR_COVER L238W-Ghp3-p3 | 1 |
| 19 | DECO_REAR_COVER          | 1 |
| 20 | HINGE ASS'Y              | 1 |
| 21 | SCREW M4 10              | 4 |
| 22 | COVER_VESA L238W-Ghp3-p3 | 1 |
| 23 | stand ass'y NA NA        | 1 |
| 24 | stand clamp N/A NA       | 1 |

## How to order parts

The HP authorized repair center can purchase the power board from HP.

### Power board

| Description                          | HP spare part number | Manufacturer part number |
|--------------------------------------|----------------------|--------------------------|
| PSU OMEN 24 (1 <sup>st</sup> source) | N49783-001           | PLPCME471GACT            |
| PSU OMEN 24 (2 <sup>nd</sup> source) | N49783-002           | PLPCME581KACM            |

Capacitors and connectors are available for purchase from the following EU distributors:

- RS Component: [Capacitors | RS Components \(rs-online.com\)](https://www.rs-online.com)
- Farnell: [Farnell UK - Electronic Components Distributor](https://www.farnell.com)

### Capacitors by distributor

| Component description | Location | Component distributor | Distributor part number |
|-----------------------|----------|-----------------------|-------------------------|
| NA                    | NA       | NA                    | NA                      |

### Connectors by manufacturer

| Component description | Location identifier | Component distributor | Distributor part number |
|-----------------------|---------------------|-----------------------|-------------------------|
| HDMI                  | CN502/CN503         | RS                    | SD-47151-001<br>(Molex) |
| DP                    | CN501               | Farnell               | DP1RD20JQ1<br>(JAE)     |
| PHONE JACK            | CN601               | RS                    | 913-1021<br>(RS PRO)    |

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**NOTE:** Rear cover and chassis need to be modified to hold connector. Connector may need modifications to meet functional, safety and regulatory requirements accordingly if it doesn't match exactly.

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You can purchase cables from the HP part store at <https://partsurfer.hp.com/Search.aspx>.

Internal and External Power Supplies are available for purchase from the following EU distributor: EET\_ <https://www.eetgroup.com/en-eu/>

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**NOTE:** HP continually improves and changes product parts. For complete and current information about supported parts for your product, go to <https://partsurfer.hp.com/Search.aspx>, select your country or region, and then follow the on-screen instructions.

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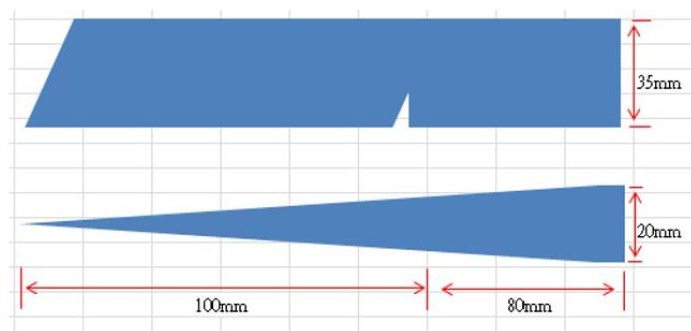
## 4 Removal and replacement procedures

Adherence to these procedures and precautions is essential for proper service.

### Preparation for disassembly

Use this information to properly prepare to disassemble and reassemble the monitor.

- 1) Read the “Important safety information” and “Important service information and precautions” sections in the “Getting started” chapter of this guide.
- 2) Clean the room for disassembly.
- 3) Identify the disassembly area.
- 4) Check the position that the monitors are to be placed along with the number of monitors. Prepare the area for material flow according to the disassembly layout.
- 5) Be sure to have the following equipment and materials:
  - Press fixture
  - Working table
  - Screwdriver
  - Knife
  - Gloves
  - Cleaning cloth
  - ESD protection
  - Scraper bar in the following dimensions:



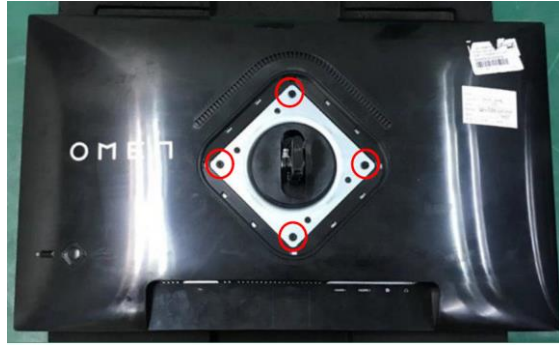
### Rear Cover

Before removing the Rear Cover, follow these steps:

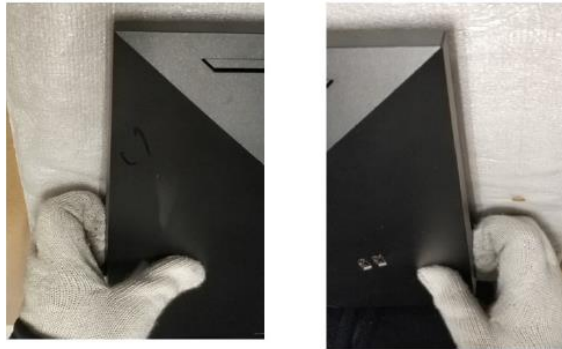
- ▲ Prepare the monitor for disassembly. See Preparation for disassembly on page 10.

Remove the Rear Cover:

- 1) Remove 4 screws from the hinge.



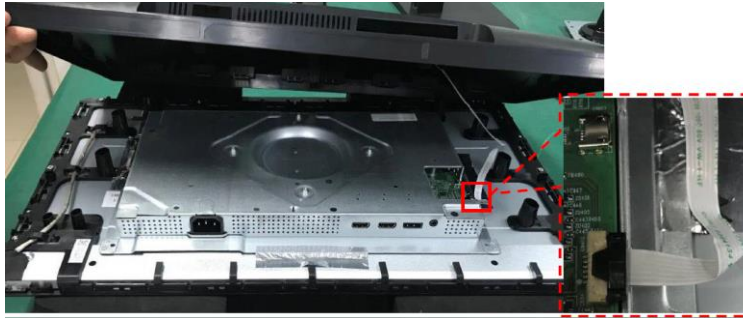
- 2) Use your fingers to split the left and right sides apart between the middle frame and rear case.



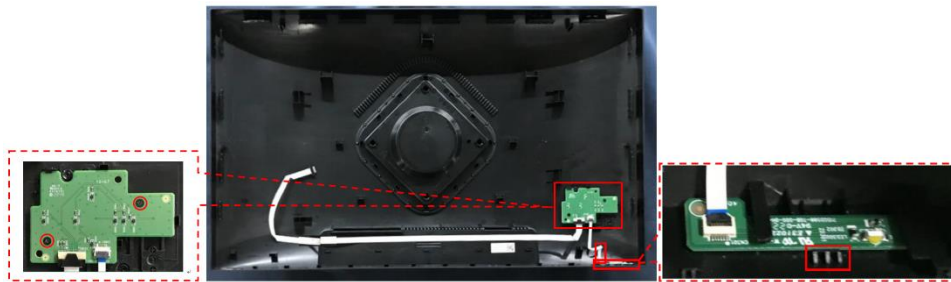
- 3) Insert the scraper bar tool into the gap between the middle frame and rear case, and then rotate. The hook opens. Repeat the steps.



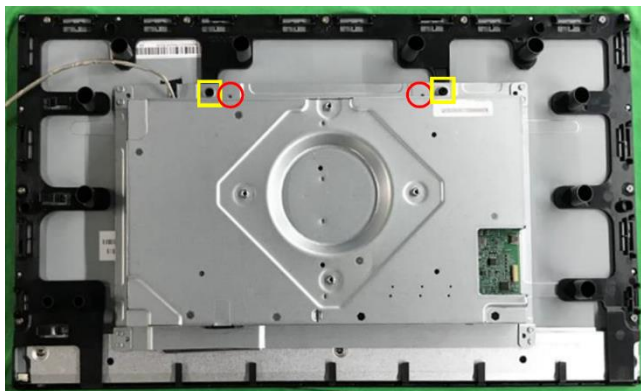
- 4) Disassemble Rear Cover and disconnect the connector.

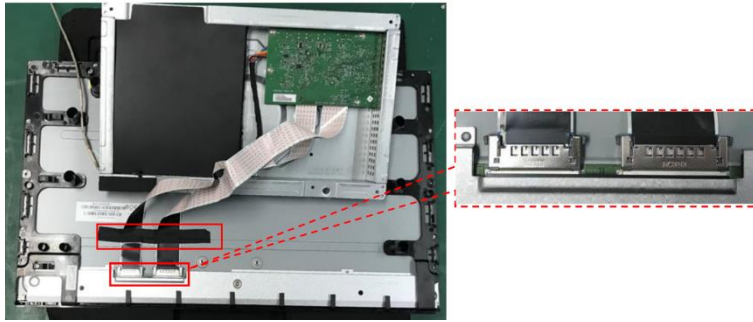


- 5) Disassemble the key board and connector board from the Rear Cover (if required).

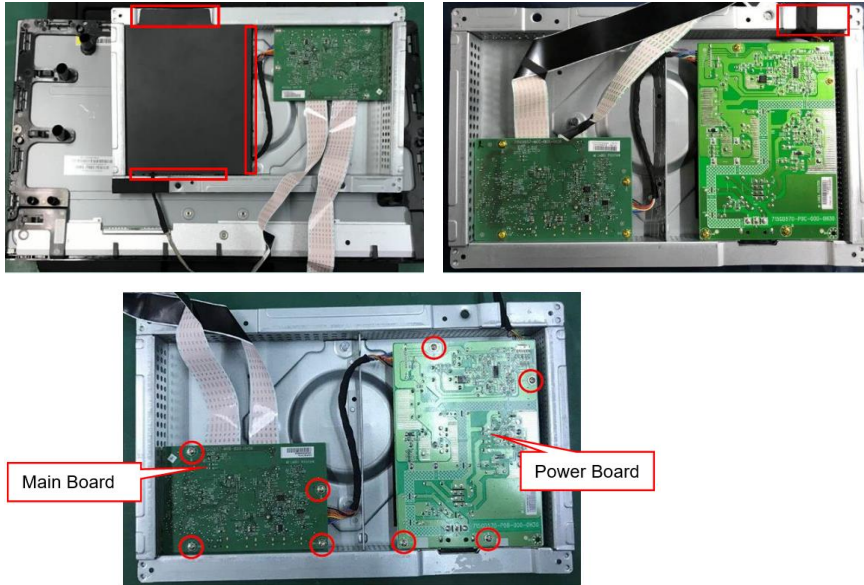


- 6) Release 2 screws and tear off the tapes. Disconnect the FFC cable to disassemble the main frame from panel

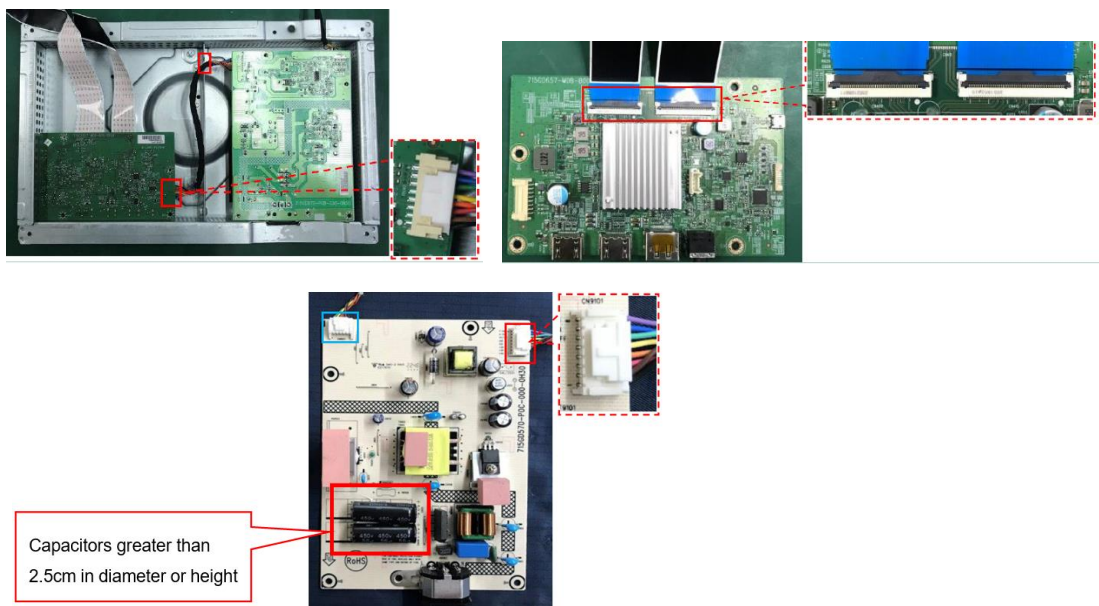




- 7) Remove the mylar. Tear off tapes and disassemble 8 screws from the boards.



- 8) Disassemble all the boards from housing.  
9) Disconnect all the wires from the board.



Capacitors greater than  
2.5cm in diameter or height

## Power board

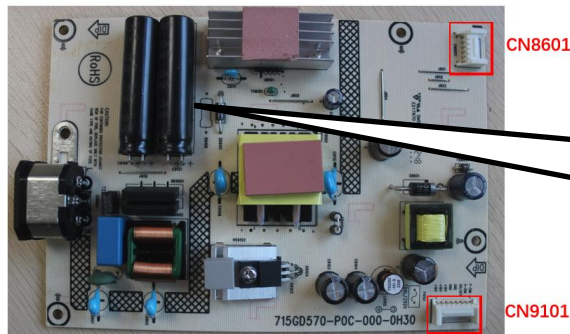
The power board part number is PLPCME471GACT (1<sup>st</sup>) or PLPCME581KACM (2<sup>nd</sup>)

Before removing the power board, follow these steps:

- ▲ Prepare the monitor for disassembly. See Preparation for disassembly on page 10.

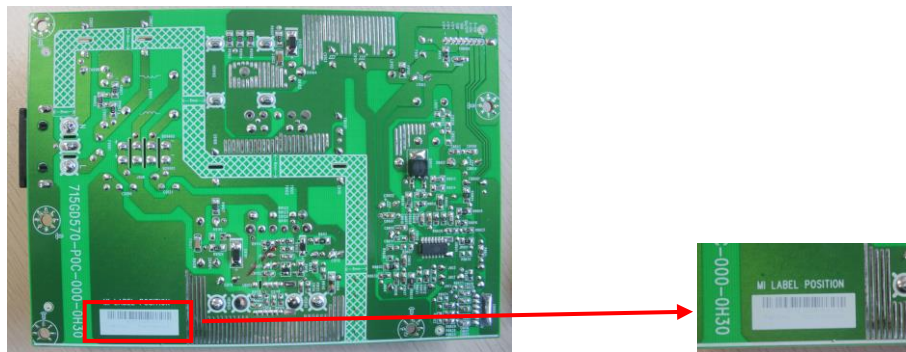
Remove the power board:

- 1) The HP OMEN 24 power board connector position is as follows:



**Warning:** After unplugging the power supply, the capacitance is still charged, do not touch and discharge the capacitor.

- 2) Locate the part number location on the board



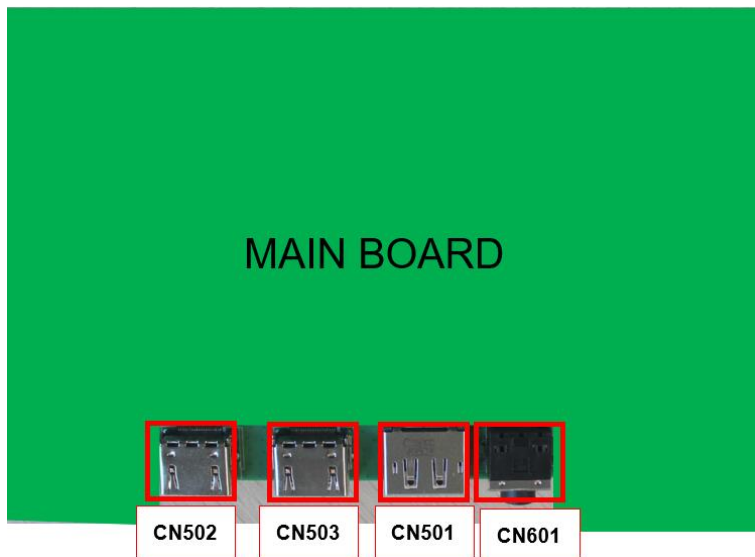
## Connector repair

This procedure includes HDMI, DisplayPort and Phone Jack connectors.

The connectors are on the main board (board part number CBPR2TZHPQ6)

The connectors' identifiers are as follows:

| Connector  | Location |
|------------|----------|
| HDMI 1     | CN502    |
| HDMI 2     | CN503    |
| DP         | CN501    |
| Phone Jack | CN601    |



Before repairing connectors, follow these steps:

- ▲ Prepare the monitor for disassembly. See [Preparation for disassembly](#) on page 10.

#### IMPORTANT:

- **Repair Condition: Connector repair is only for out of warranty.**
- **Repairing must operate by professional repairers (Note) in repair center, not applicable for end user.**
- **Electrostatic protection is required when component replacement is required.**
- **The monitor meets ROHS, please use Lead-free solder wire for soldering.**
- **If Connector need to replace, must check specification and part number whether match the BOM and location.**
- **If connector need to replace, please insert new parts carefully because the near pin may cause short circuit by inappropriate operate.**
- **DO NOT allow any liquid on the board. Water and moisture may cause short-circuit to the electronic components and lead to malfunctions.**
- **The fusion point of Lead-Free solder is requested. Repairing with conventional lead wire may cause damage.**
- **Work quickly to avoid overheating the circuit board as soon as you confirm the steady soldering condition.**
- **Keep the soldering iron tip clean and well tinned and when replacing parts.**
- **A close inspection of the circuit board revealed look in good condition.**
- **After repaired, must connect source to each port to check Main board function is ordinary.**

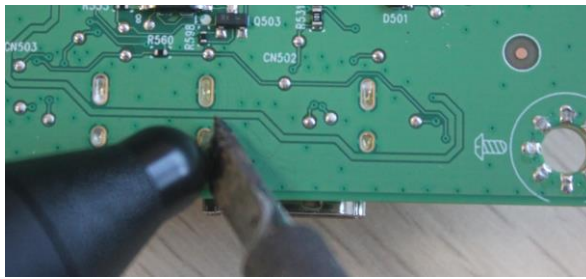
Note: (The requirement of professional repairers' regulation by ERP lot5)

- 1) The professional repairer has the technical competence to repair electronic displays and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point.
- 2) The professional repairer is covered by insurance covering liabilities resulting from its activity, regardless of whether this is required by the Member State.

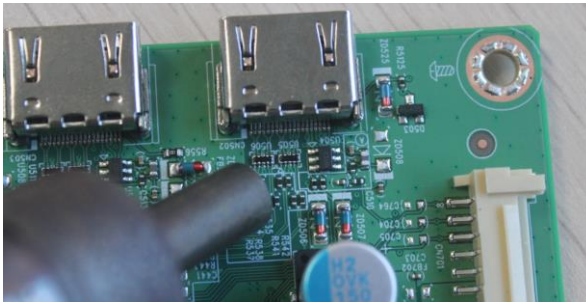
## HDMI 1 connector CN502

Repair the HDMI connector:

- 1) Use a soldering iron and a de-soldering pump to remove as much solder as possible from the pin.



- 2) Use a hot air gun to melt the solder on the pins.

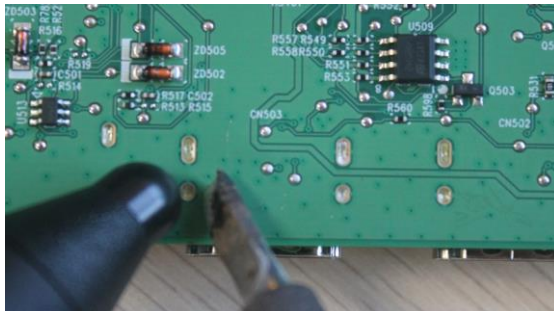


- 3) Lift the HDMI 1 connector from the circuit board
- 4) Place the new component on the circuit board. Be sure that it matches the footprint.
- 5) Solder the new component.

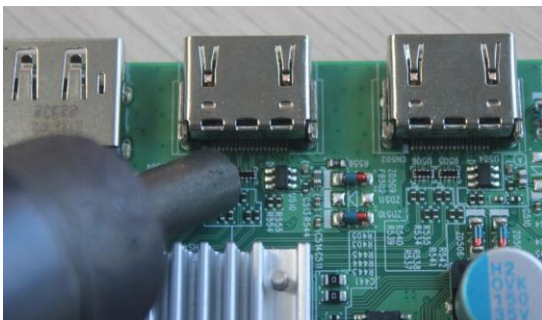
## HDMI 2 connector CN503

Repair the HDMI connector:

- 1) Use a soldering iron and a de-soldering pump to remove as much solder as possible from the pin.



- 2) Use a hot air gun to melt the solder on the pins.



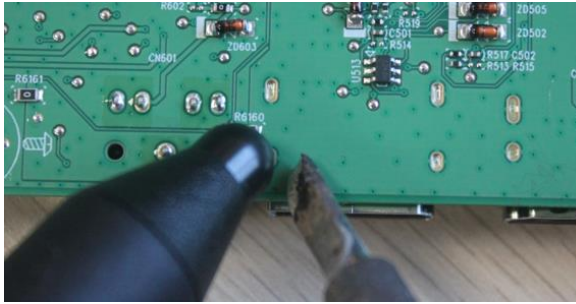
- 3) Lift the HDMI 2 connector from the circuit board.
- 4) Place the new component on the circuit board. Be sure that it matches the footprint.

- 5) Solder the new component.

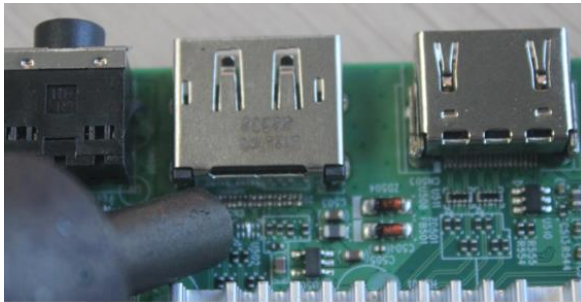
## DP connector CN501

Repair the DP connector:

- 1) Use a soldering iron and a de-soldering pump to remove as much solder as possible from the pin.



- 2) Use a hot air gun to melt the solder on the pins.

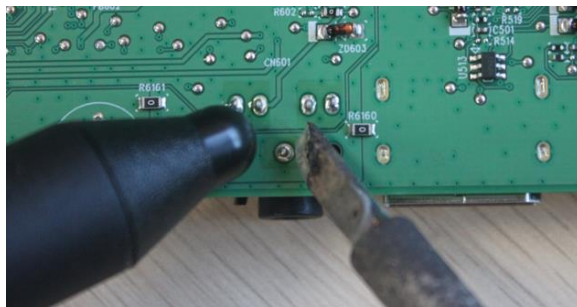


- 3) Lift the DP connector from the circuit board.
- 4) Place the new component on the circuit board. Be sure that it matches the footprint.
- 5) Solder the new component.

## Phone Jack connector CN601

Repair the Phone Jack connector:

- 1) Use a soldering iron and a de-soldering pump to remove as much solder as possible from the pin.



- 2) Lift the Phone Jack connector from the circuit board.
- 3) Place the new component on the circuit board. Be sure that it matches the footprint.
- 4) Solder the new component.

## Function test

After repair, be sure to confirm that all functions are working.

**Table 4-1: Function test**

| Test item  | Operating description                                                          | Tool used              |
|------------|--------------------------------------------------------------------------------|------------------------|
| HDMI test  | Confirm whether image displays and sound plays correctly on the monitor.       | Computer or DVD player |
| DP test    | Confirm whether image displays and sound plays correctly on the monitor.       | Computer or DVD player |
| Audio test | Change volume and balance to confirm whether volume is smooth and loud enough. | Speaker                |

## Support and troubleshooting

The following table lists possible problems, the possible cause or each problem, and the recommended solutions.

| Problem                                         | Possible cause                       | Solution                                                                                                                                                                                                        |
|-------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Screen is blank or video is flashing.           | Power cord is disconnected.          | Connect the power cord.                                                                                                                                                                                         |
|                                                 | Monitor is off.                      | Press the monitor power button.<br>NOTE: If pressing the Power button has no effect, press and hold the power button for 10 seconds to disable the Power button lockout feature.                                |
|                                                 | Video cable is improperly connected. | Connect the video cable properly.                                                                                                                                                                               |
|                                                 | System is in Auto-Sleep Mode.        | Press any key on the keyboard or move the mouse to inactivate the screen blanking utility.                                                                                                                      |
|                                                 | Video card is incompatible.          | Open the OSD menu and select the Input menu. Set Auto- Switch Input to Off and manually select the input. Or replace the video card or connect the video cable to one of the computer's on-board video sources. |
| Image appears blurred, indistinct, or too dark. | Brightness setting is too low.       | Open the OSD menu and select Brightness to adjust the brightness scale as needed.                                                                                                                               |
| "Check Video Cable" displayed on the screen.    | Monitor video cable is disconnected. | Connect the appropriate video signal cable between the computer and monitor. Be sure that the computer power                                                                                                    |

|                                                          |                                                                                     |                                                                                            |
|----------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                                                          |                                                                                     | is off while connecting the video cable.                                                   |
| “Input Signal Out of Range” is displayed on screen.      | Video resolution and/or refresh rate are set higher than what the monitor supports. | Change the settings to a supported setting.                                                |
| The monitor does not enter into a low-power sleep state. | The monitor's power saving control is disabled.                                     | Open the OSD menu and select Power, select Auto-Sleep Mode, and then set auto-sleep to On. |
| “OSD Lockout” is displayed                               | The monitor's OSD lockout function is enabled.                                      | Press and hold the Left button for 10 seconds to disable the OSD Lockout function.         |
| “Power Button Lockout” is displayed.                     | The monitor's Power Button Lockout feature is enabled.                              | Press and hold the Power button for 10 seconds to unlock the power button function.        |

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