ELGENS®

TDM-D Series Defense Monitor

User Manual



https://www.elgens.com.tw/

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Foreword

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Users are encouraged to review this manual thoroughly and to contact ELGENS Co., Ltd. directly for any clarifications or inquiries regarding product specifications and operational guidelines. Thank you for your understanding and cooperation.

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Regulatory Compliance Statements

FCC Statement

FCC Part 15 Class A Notice

This equipment generates, uses, and may emit radio frequency energy. If it is not installed and operated according to the instruction manual, it could cause harmful interference to radio communications. The device has been tested and meets the Class A computing device limits set forth in Part 15 of the FCC Rules. These limits are intended to provide reasonable protection against interference in commercial environments.

Warning:

- Operating this equipment in residential areas may result in harmful interference. If such interference occurs, the user is responsible for resolving the issue at their own expense.
- Electric Shock Hazard: Operating this machine with the back cover removed is prohibited. High voltages inside pose a danger.

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CE Statement

The EMC (Electromagnetic Compatibility) and LVD (Low Voltage) Directive

This device meets the requirements outlined in the EU directives, specifically the electromagnetic compatibility (EMC) and low voltage (LVD) directives, in accordance with Council Directives 2014/30/EU and 2014/35/EU. Modifications made to the device without our prior authorization may result in the invalidation of the user's right to operate the equipment. We cannot accept responsibility for any such modifications.

The WEEE (Waste Electrical and Electronic Equipment) Directive

This product features a crossed–out wheeled bin symbol, signifying that it should not be disposed of with regular household waste. Instead, it must be taken to a designated collection point for the recycling of electrical and electronic equipment. This measure is essential for protecting the environment and human health.

The RoHS (Restriction of Hazardous Substances) Directive

This product complies with Directive 2011/65/EU, which restricts the use of certain hazardous substances in electrical and electronic equipment, as well as its subsequent amendments, including Directive (EU) 2015/863.

MIL–STD–704F Statement

The TDM–D Monitor has successfully undergone and passed comprehensive power quality testing and has demonstrated full compliance with the electrical power characteristics requirements stipulated in MIL–STD–704F, Aircraft Electric Power Characteristics (dated 12 March 2004).

This validation confirms the equipment’s capability to operate as intended on the 28 Volts DC aircraft electrical power system. Compliance was successfully demonstrated across all required operational categories, including:

- Normal Operation (LDC101, LDC102, LDC103, LDC104, LDC105)
- Transfer Operation (LDC201)
- Abnormal Operation (LDC301, LDC302)
- Emergency Operation (LDC401)
- Starting Operation (LDC501)
- Power Failure (LDC601, LDC602)

The successful completion of these tests ensures that the utilization equipment meets the defined electrical power characteristics requirements for aircraft usage, sustaining normal function or resuming specified performance following transient events, without suffering damage or causing an unsafe condition.

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Chapter 1 Getting Started

1.1 Product Introduction

The TDM-D Series is a series of robust touch monitors engineered for military applications. It is available with projected capacitive or resistive touch technology and is designed to meet rigorous standards.

This monitor is certified as MIL-STD-461G and MIL-STD-1275E and features a high brightness display with Anti-Glare and Mosmite Film to ensure optimal visibility in demanding environments. It supports a wide range of 9-36 VDC power input for versatile use. Optional features are also available, including EMI Mesh Shield, Rack Mount, and Flush Mount configurations, making it an ideal display solution for console panels and drone base stations in military settings.

1.2 System Key Features

Model Number	TDM-D240	TDM-D215	-
Panel Size	24"	21.5"	
Max. Resolution	1920*1080	1920*1080	
Max. Color	16.2M	16.7M	
Luminance (Typ.)	1500 cd/m2	1500 cd/m2	
View Angle (H/V)	170/170	160/140	
Contrast Ratio	5000:1	5000:1	
Power Consumption (W)	TBD	TBD	
Weight			
I/O Connectors			
D38999/ Military Standard Connectors	1x HDMI by D38999 Connector 1x USB (for Touch function) by D38999 Connector 1x DC Power Input by D26482/MS3114E8 Connector 1x GND Screw for safety grounding		
Touch Screen			
Type	P-cap Touch with USB 2.0 interface		
Light Transmission	90%		
Power Supply			
Power Input	9-36Vdc Wide Range Power Input by D26482/MS3114E8 Connector		
Power Adapter Supply (for Testing)	Input: 90-264Vac / 50/60Hz 1.3A@115Vac, 0.6A@230Vac Output: 24Vdc, 3.75A, with D26482/MF3116F8-4S Connector		
Mechanical			
Construction	Aluminum Front Bezel with Metal Case		
IP Rating	Front Panel compliant with IP65		
Mounting	Flush/Console Mount		
Environmental			
Operating Temperature	-40 ~ 70 ° C		
Storage Temperature	-40 ~ 85 ° C		
Storage Humidity	10 ~ 95% @40 ° C non-condensing		

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1.3 Package contents and Accessories

Check your TDM-D Series LCD package for the following items. If any of the listed items is damaged or missing, contact your retailer immediately.

Standard in your package

- 1x TDM-D Defense Monitor
- 1x D38999 HDMI Type A Male to Standard HDMI Type A Male, Length = 1.5m



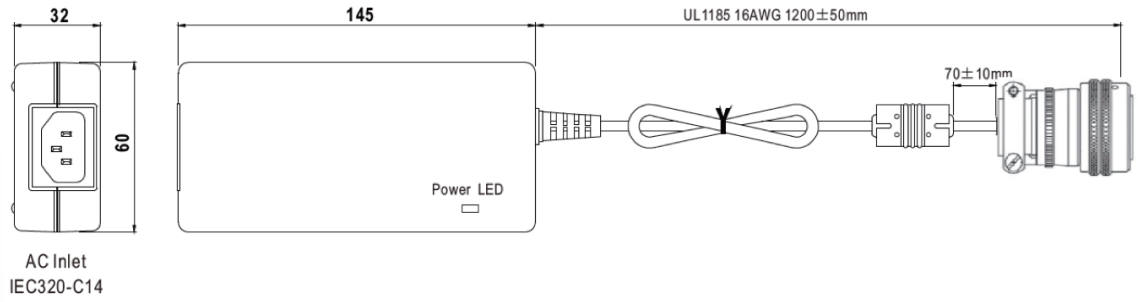
- 1x D38999 USB Type A Male to Standard USB Type A Male, Length = 1.5m



- 1x MS3116F8-4S Connector to Wire with Terminal, Length = 30cm



- 1x AC/DC power adapter, 24Vdc output, 90W, with MS3116F8-4S connector, DC cable length 1.2m (for test purposes only)



- 1x AC Power cord, L = 1.8m (for test purposes only)

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NOTE*: When a specification item is marked as "(Optional)", it signifies that the feature or component is available as an add-on or a configurable choice and is NOT included with the base product package. Customers wishing to incorporate optional features must explicitly select them at the time of purchase or system configuration. Please consult your Elgens Sales Representative for details on availability and pricing.

Important Note Regarding High-Brightness Models*: For models ordered with the optional **High-Brightness** feature, the power consumption requirements will be significantly higher than the standard unit. Depending on the actual power draw needed, **Elgens** technicians may be required to supply a different, higher-wattage power adapter to ensure stable and optimal operation.

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CHAPTER 2 Installation and Setup

2.1 Safety Information

Warnings and Precautions: Before setting up the monitor, carefully read all the documentation that came with the package.

- To prevent fire or shock hazard, never expose the monitor to rain or moisture.
- Never try to open the monitor cabinet. The dangerous high voltages inside the monitor may result in serious physical injury.
- If the monitor is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- Slots and openings on the back or top of the cabinet are provided for ventilation. Do not block these slots. Never place this product near or over a radiator or heat source unless proper ventilation is provided.
- 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 supply to your home, consult your dealer or local power company.
- Use the appropriate power plug which complies with your local power standard.
- Do not overload power strips and extention cords. Overloading can result in fire or electric shock.
- Avoid dust, humidity, and temperature extremes. Do not place the monitor in any area where it may become wet. Place the monitor on a stable surface.
- Never push objects or spill liquid of any kind into the slots on the monitor cabinet.
- If you encounter technical problems with the monitor, contact a qualified service technician or your retailer.
- Always handle the monitor and its components with care to avoid electrostatic discharge (ESD), which can damage internal circuitry.
- Never touch the internal components of the monitor while it is powered on. Always unplug the power cord before performing any hardware changes or maintenance.
- To protect against electrical surges, disconnect all power when connecting or disconnecting any cables or hardware devices. A sudden surge can damage electronic components or the entire system.

Operating Environment: To ensure safe and reliable operation of this product, please adhere to the following environmental guidelines:

- **Temperature:** Operate the monitor within a temperature range of –40~70 ° C. Avoid exposing the unit to heat sources, or extreme temperature changes.
- **Humidity:** The optimal operating humidity is between 10–95% @40 ° C, non–condensing. Do not use the monitor in high–humidity or moist environments.
- **Ventilation:** Ensure adequate space around the monitor for proper ventilation. Do not block the ventilation openings, as this can lead to overheating and potential damage.
- **Dust and Liquids:** Protect the monitor from excessive dust, dirt, and liquids. Do not place the unit in areas where it may be exposed to splashing or dripping water.
- **Power Supply:** For optimal performance and to prevent electrical hazards, please follow these power supply instructions:

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Power Supply: For optimal performance and to prevent electrical hazards, please follow these power supply instructions:

- **Correct Voltage:** Use only the power adapter or DC power supplier by the power cable supplied with the monitor. The monitor operates on 9–36Vdc. The AC/DC power adapter operates on 90–264Vac, 50/60 Hz. Using an incorrect voltage can damage the unit and may result in fire or electric shock.
- **Proper Connection:** Connect the power to a grounded power outlet. Do not use a damaged power cable or adapter.
- **Overloading:** Avoid overloading power outlets, extension cords, or power strips. Ensure the total ampere rating of all connected devices does not exceed the circuit rating.

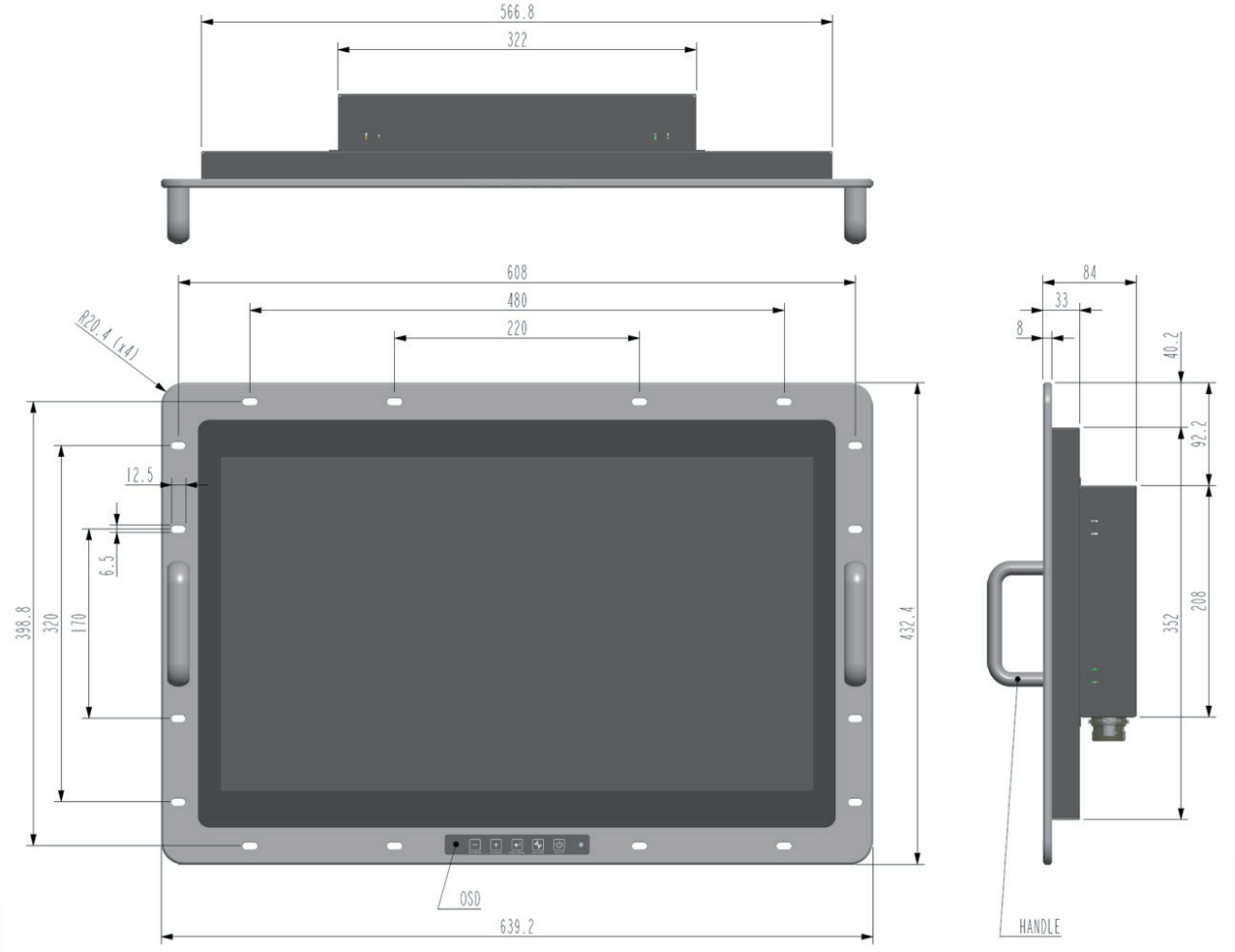
2.2 Assembling the Monitor

Exterior Features and Dimensions

- To ensure a proper fit and seamless installation, this section provides detailed measurements and diagrams of the monitor's exterior.
- Before installation, please refer to the following diagrams and specifications for a comprehensive overview of the monitor's physical features and dimensions.

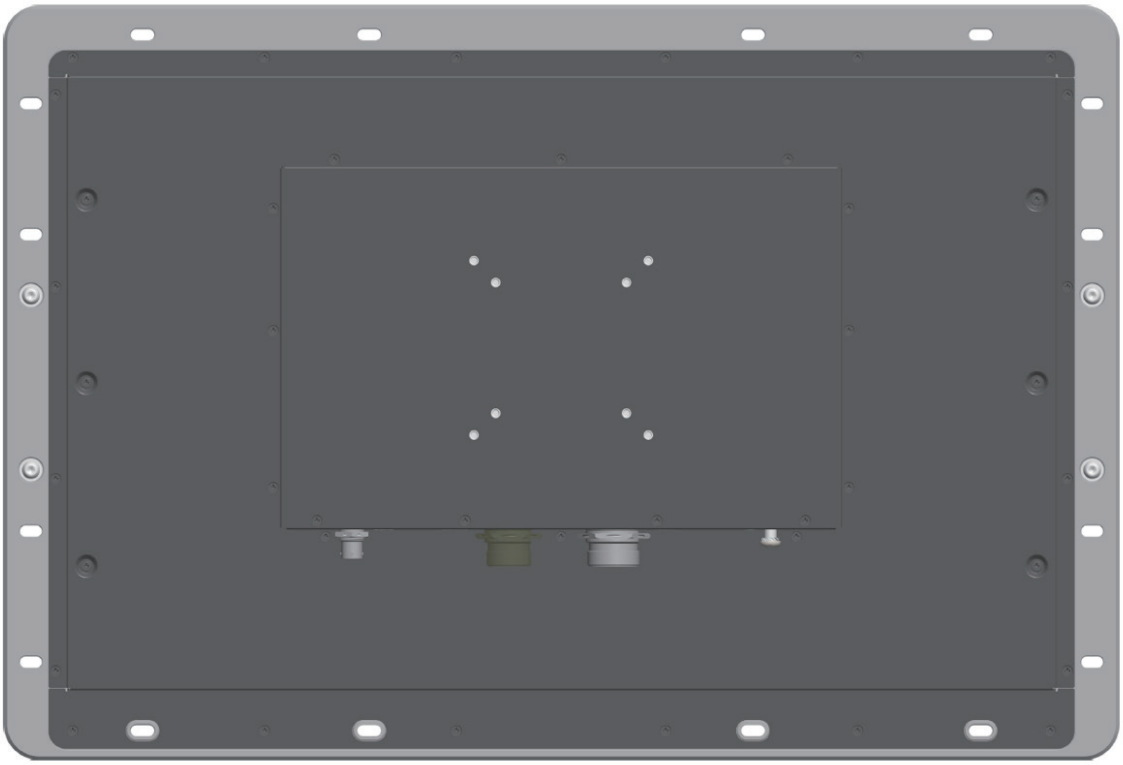
TDM-D240

Front View, Top View, Right-Side View

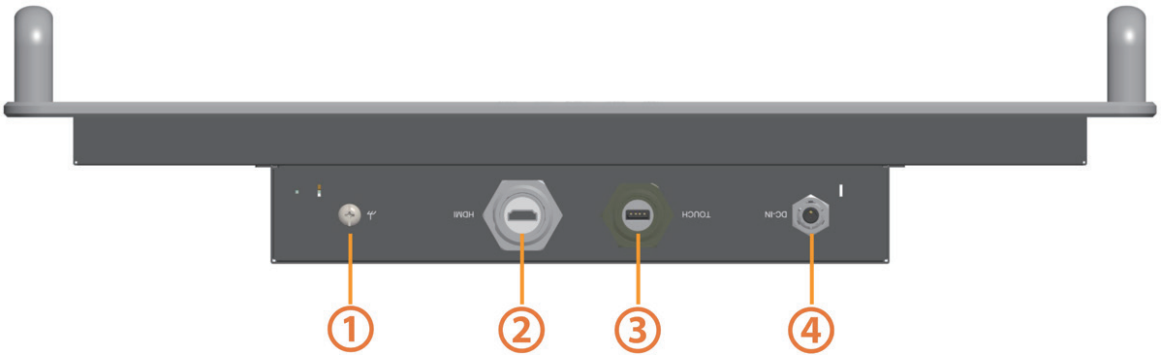


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Rear View



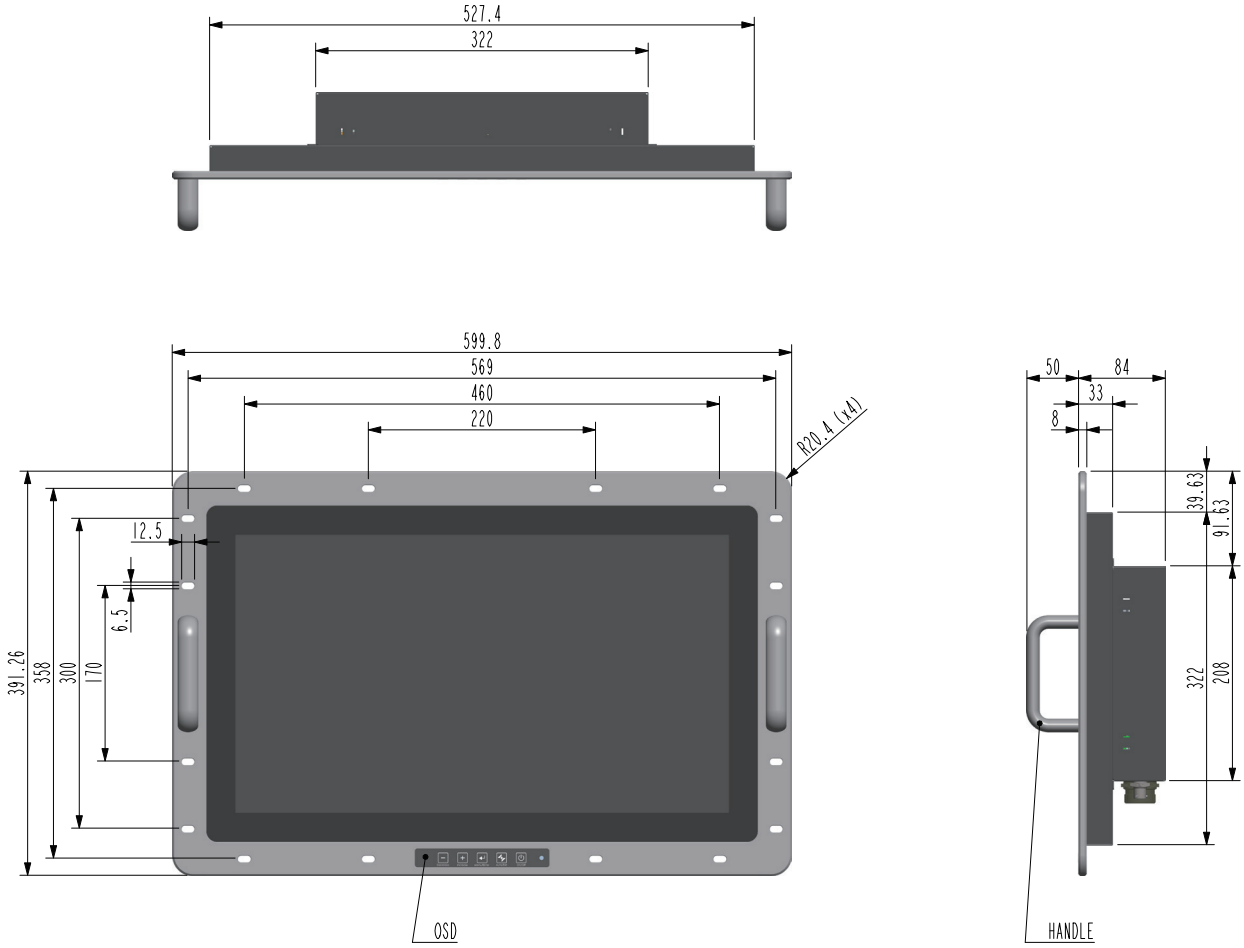
Bottom View



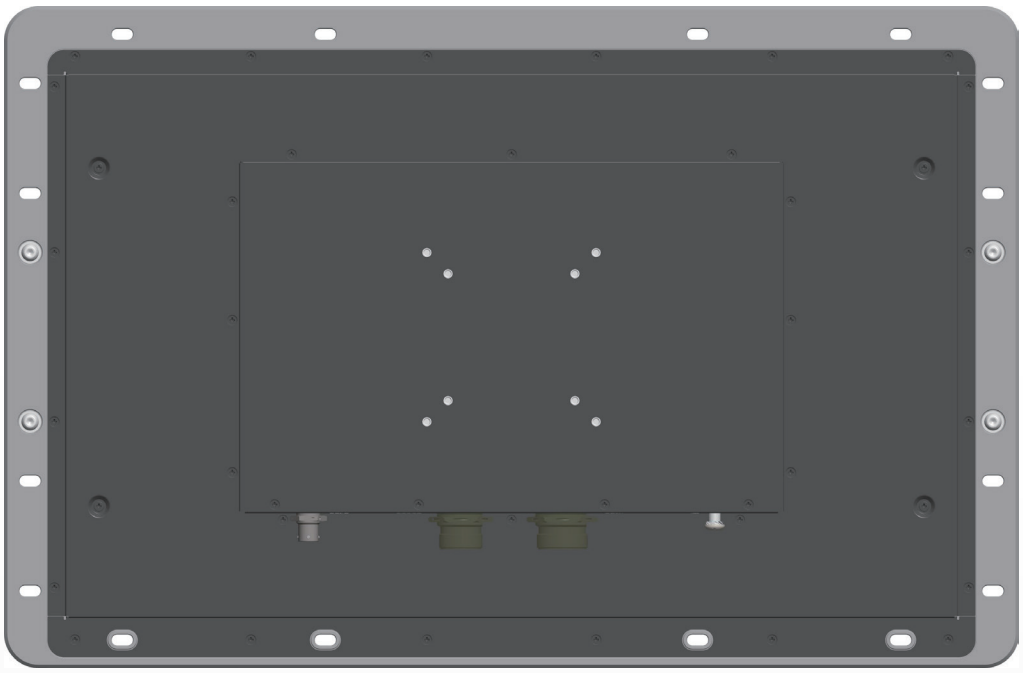
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TDM-D215

Front View, Top View, Right-Side View

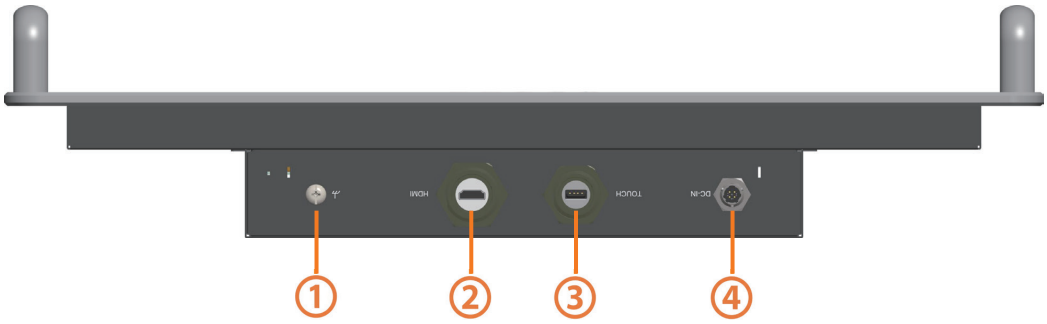


Rear View



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Bottom View



Item	Component	Description
1	GND Screw	To secure the device's **ground connection**, which is essential for safety and proper electrical operation.
2	HDMI_D38999 Connector for HDMI Input	Accept the **HDMI input** signal for high-definition video.
3	USB_D38999 Connector for Touch function	To connect to a host system to enable the **touch screen function** via USB.
4	Power_MS3114E8-4P Connector for DC power input*	To supply the **DC power input** to this monitor.

NOTE: **Direct DC Power Source Connection**
Customers must follow the steps in this NOTE section to correctly connect the DC power supply.

IMPORTANT POWER CONNECTION WARNING
This device uses an **isolated power** design. To maintain the integrity of the power module's isolation and prevent damage, **do not connect the negative pole (PWR-) of the power input to the chassis ground (GND) screw**. This connection will bypass the internal isolation, which may damage the power module and compromise safety features.

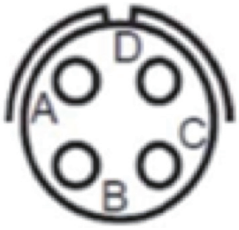
DANGER: Risk of Fire and Equipment Damage
Connecting the power source with incorrect voltage or reversed polarity will result in immediate and irreversible damage to the unit and potentially create a fire hazard.

Procedure and Requirements:

1. **Verify Power Source Specifications:**
   - » Voltage Compliance: Ensure your DC power source output voltage strictly adheres to the input voltage range specified in the Monitor's Technical Specifications.
   - » Current Capacity: The DC power source must provide sufficient current capacity (Amps) to meet the maximum power consumption of the Panel PC plus a recommended 25% safety margin.
   - » You can follow the power specifications of the included AC power adapter.

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2. **Ensure Correct Polarity:**
   - » The DC–IN Port: Pin definition of Power input connector is as below.



Pin No.	Name	Description
A	PWR+	The positive DC voltage to power the monitor.
B	PWR+	The positive DC voltage to power the monitor.
C	PWR–	The negative DC voltage to power the monitor.
D	PWR–	The negative DC voltage to power the monitor.

   - » **Crucial Step:** Before inserting the wires, consult the label or diagram adjacent to the terminal block connector to confirm the exact pin configuration for Positive (V+) and Negative (G) connections. **The standard color coding (Red for V+ and Black for V–) should be followed but always verify the unit's specific pinout.**
3. **Prepare Wires:**
   - » **Wire Gauge:** Use copper wire appropriate for the current load, typically **AWG 14**, rated for at least 75oC.
   - » **Strip Length:** Strip the insulation only to the length required for proper contact, ensuring no bare wire extends outside the terminal block when secured.
4. **Grounding (GND):**
   - » The protective ground wire should be connected for the GND screw (shown as below) to a chassis ground or protective earth in your installation environment.



5. **Final Check:**
   - » **Before applying power, visually inspect all connections to confirm correct polarity and verify that no wire strands are loose or capable of touching adjacent terminals.**
   - » **Only connect the DC power source to its main supply after the wiring to the Panel PC's terminal block is complete and verified.**

To use **AC/DC power adapter supply** to test, please follow the instructions as below.

1. Plug the D38999 connector into the monitor.
2. Plug the AC power cord into the power adapter.
3. Connect the other end of the AC power cord to an electrical outlet.



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2.3 Resistive Touch Calibration (Optional)

This guide is applicable if your monitor is equipped with a **Resistive Touch Screen** and you experience issues with pointer inaccuracy or offset.

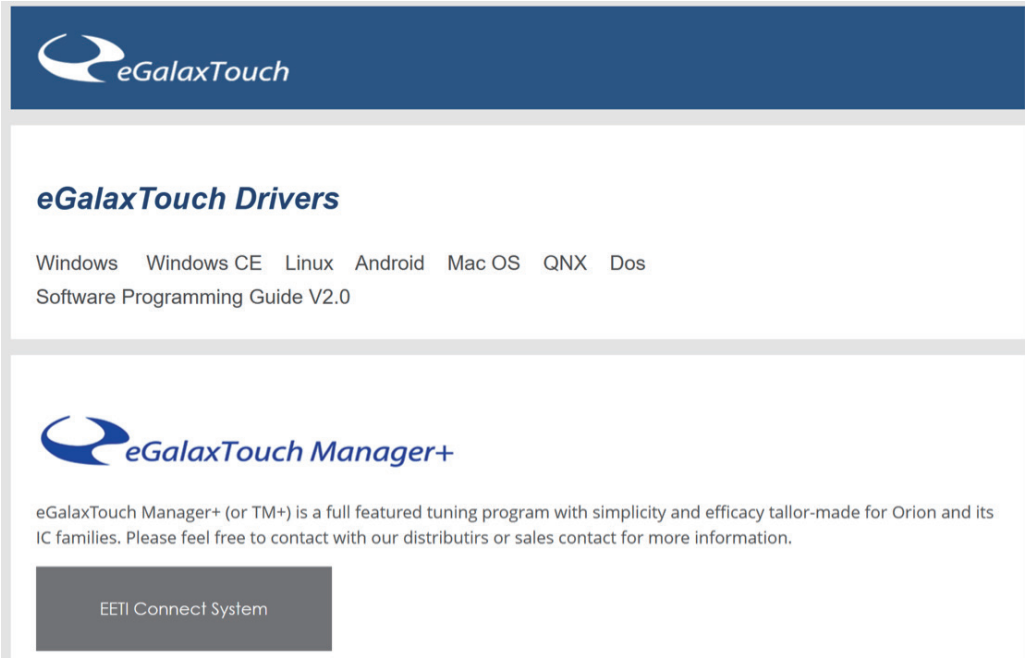
NOTE: If your unit features a Projected Capacitive (PCAP) touch screen, refer to FAQ for the appropriate solution, as PCAP technology usually requires manufacturer–specific utilities.

Resistive Touch Inaccuracy and 4–Point Calibration

If the touch pointer does not align precisely with the point of contact on the screen, a mandatory calibration procedure is required.

Procedure for 4–Point Calibration:

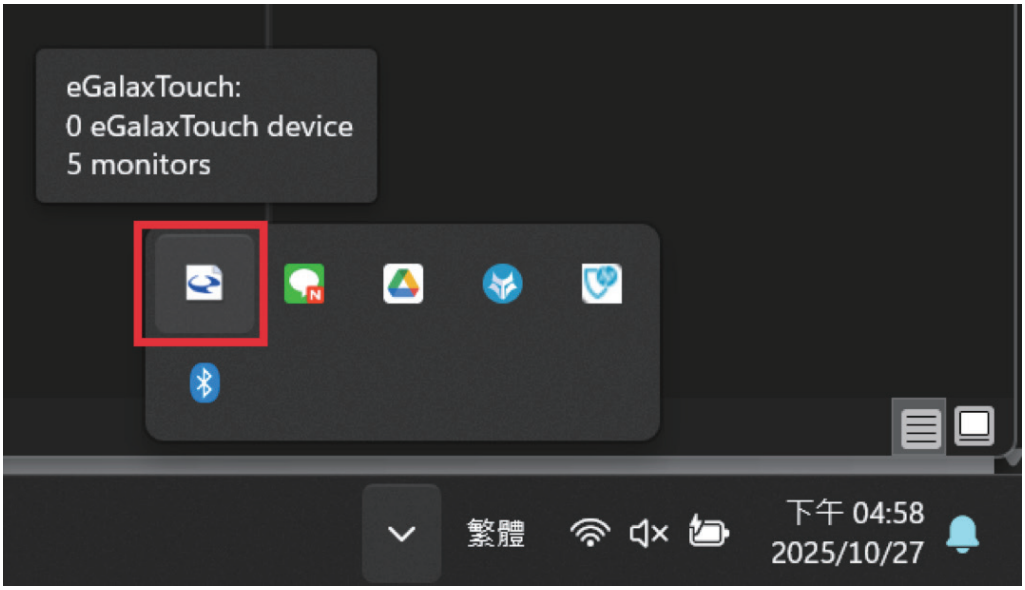
1. **Driver Download and Installation:**
   - » Download: Navigate to the official eGalax/EETI driver download page: https://www.eeti.com/drivers.html
   - » **Selection:** Locate the appropriate driver for your PC's Windows Operating System version (e.g., Windows 10/11 64–bit).
   - » **Installation:** Download and execute the installer package. Follow the on–screen prompts and ensure the system is restarted if prompted to complete the driver installation.



2. **Access the Calibration Utility:**
   - » After installation, the calibration utility can usually be accessed from:
     - ▷ The Windows **Start Menu** or **System Tray** icon.
     - ▷ The **Windows Control Panel** or **Device Manager** settings for the touch device.

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3. **Perform 4–Point Calibration:**
   - » Launch the calibration program (often named "eGalaxTouch" or similar).



   - » Select the **"4–Point Calibration"** (or appropriate multi–point calibration) option.
   - » The screen will display a sequence of target points (typically four corners). Precisely touch and hold the center of each target as it appears.
   - » Follow the on–screen instructions until the calibration is successfully saved and the utility closes.
4. **Verification:**
   - » Test the touch accuracy across the entire screen area, paying special attention to the edges and corners. If the inaccuracy persists, repeat the calibration steps.

If the touch screen remains unresponsive or severely inaccurate after a successful calibration, the issue may be due to driver conflict or hardware failure. In this case, please contact Elgens Technical Support

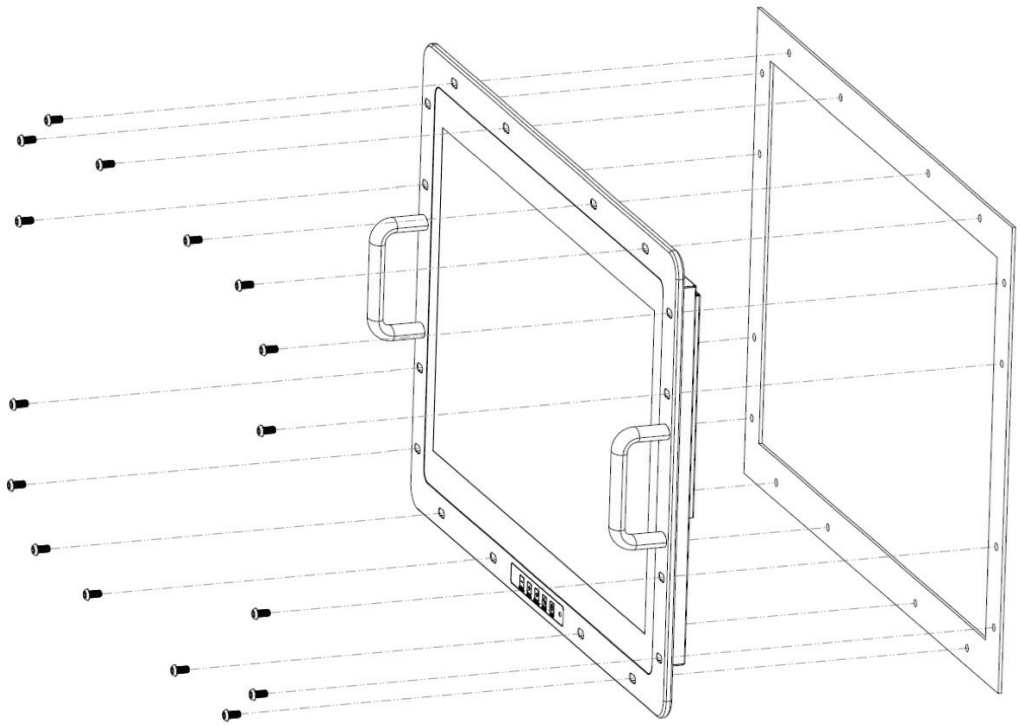
2.4 Mounting

To Mount Your Monitor by Flush Mount:

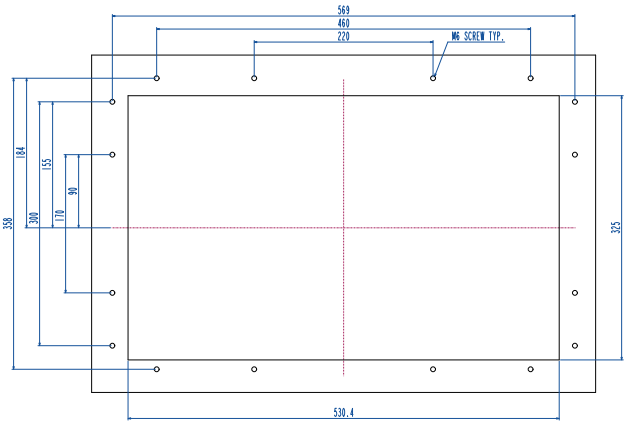
When installing the device using the Flush Mount method, please observe the following critical requirements:

1. **Mounting Screws:** Use **M6 screws** (not supplied) for securing the device to the panel. Ensure the screws are properly tightened to secure the unit firmly.
2. Cut–Out Dimensions: The panel opening (cut–out) must **strictly follow the dimensions provided in the figure below** to ensure a proper fit and seal. Do not deviate from these dimensions.

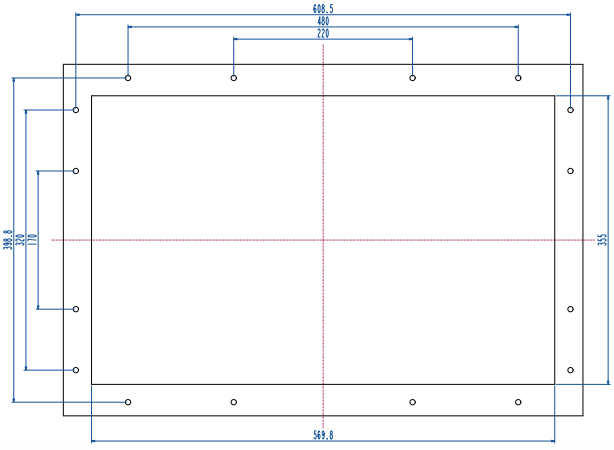
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TDM-D215 Panel Cut-Out Dimensions



TDM-D240 Panel Cut-Out Dimensions



IMPORTANT NOTE: Adhesion for Shock and Vibration Resistance
You will observe instances of adhesive material (often visible as hot melt glue or silicone sealant) applied at the connection points of specific internal and external cables, such as power connectors, internal data ribbons, or board headers.

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Purpose of Adhesion (Potting):

This adhesive is applied during the manufacturing process to provide superior resistance against shock and vibration, ensuring that critical connections remain secure and signal integrity is maintained, particularly when the Panel PC is deployed in harsh industrial environments.

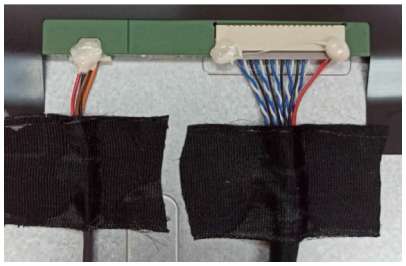
Procedure for Disassembly and Reassembly:

Removal: If specific connections secured by this adhesive must be disconnected for maintenance, upgrade, or custom configuration, the adhesive must be carefully and gently removed. Use only tools that will not damage the connector housing or the underlying circuitry.

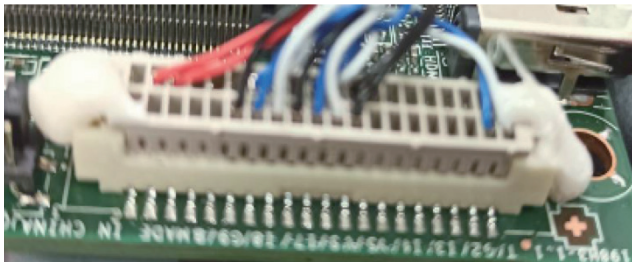
Reinstallation Requirement: After the connection is re-established, the customer is mandatorily required to re-apply an equivalent industrial-grade adhesive or sealant to those connection points.

Customer Responsibility: Failure to re-secure these critical connections with adhesive will compromise the unit's declared resistance to vibration and shock, which may lead to intermittent operation or system failure and could potentially void the product warranty if deemed the cause of failure.

Always ensure that connections are secured and stabilized before deploying the unit.







IMPORTANT NOTE: Torque Control for Panel Integrity
Proper torque control when securing the Panel PC is critical for maintaining its structural integrity, ensuring effective panel sealing (IP rating), and achieving its specified vibration resistance.

Torque Requirement:

When fastening the screws used for mounting, covers, or chassis securing, the maximum recommended tightening torque must be strictly observed.

Screw Type / Location	Recommended Tightening Torque
Chassis/Enclosure Screws	**3.5–4.0 kgf–cm** (Refer to specific drawing for unit)
Equivalent in N–m	**0.34–0.39 N–m**

Consequences of Incorrect Torque:

- **Under–Torque (Too Loose):** Leads to poor sealing integrity, potential vibration issues, and eventual screw loosening.
- **Over–Torque (Too Tight):** Can permanently damage the screw threads, deform the chassis, compromise the watertight gasket, and potentially crack internal PCB standoffs.

Action: Always use a calibrated torque screwdriver or torque wrench set within the specified range **3.5–4.0 kgf–cm** to ensure a secure and non–damaging connection

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IMPORTANT NOTE: Vertical Force for Screw Integrity
In addition to controlling the tightening torque, it is equally critical to maintain proper tool alignment during screw installation or removal.

- **Vertical Application of Force:**
  Always ensure that the screwdriver or torque tool is applied perfectly perpendicular (at a 90-degree angle) to the screw head. Avoid any angled or skewed application of force.
- **Consequences of Improper Angle:**
  - **Stripping Screw Head:** Applying force at an angle significantly increases the risk of stripping the screw head (cam-out), making subsequent removal or tightening impossible.
  - **Damaging Screw Threads:** Misaligned tools can also damage the internal threads of the screw hole, compromising the fastening strength and potentially requiring costly repairs.
  - **Tool Damage:** Can lead to premature wear or breakage of the screwdriver bit.

Action: Maintain a stable, perpendicular alignment between the screwdriver and the screw head throughout the entire tightening or loosening process to prevent damage and ensure a secure, long-lasting connection.

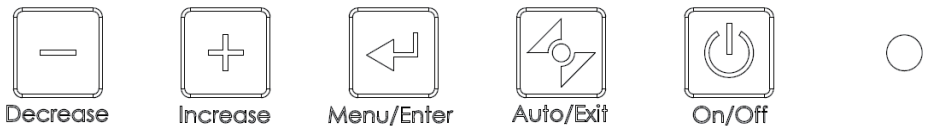
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CHAPTER 3 - Operation Guide

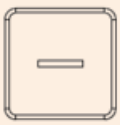
3.1 OSD Buttons and Indicator Lights

OSD Buttons

TDM–D Series.



OSD Functions and Indicator Lights: The following table provides an overview of the monitor's OSD buttons, Indicators, and their functions.

Key	Icon	Description
Power LED		· **OFF:** The monitor is off. · **Orange:** No video input signal is detected. · **Green:** The monitor is on and displaying a normal input signal.
On/Off		· Turns the monitor on or off.
Auto/Exit		· **Auto:** Automatically adjusts the screen image for the most suitable resolution (VGA input only). · **Exit:** Exits the OSD menu or returns to the previous submenu without saving changes.
Menu/Enter		· **Opens the OSD menu**, selects a menu item, or confirms a setting.
Increase		· Navigates right within a menu or increases the value of a selected setting.
Decrease		· Navigates left within a menu or decreases the value of a selected setting.

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3.2 OSD (On-Screen Display) Menu

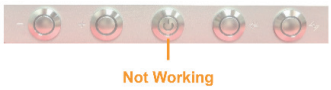
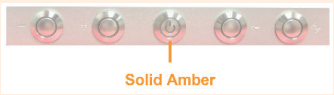
Press the Menu button (⏎) to open the OSD Menu.

Layer 1	Layer 2	Value Range	Comment	Default Value
Luminance	Contrast	0–100	Adjust contrast	50
	Brightness	0–100	Adjust brightness (backlight)	90
	Eco Mode	Standard	To select Standard/economic mode	Standard
	DCR	On/Off	Set dynamic contrast ratio On/Off	Off
Image Setup	Clock	0–100	Adjust clock latency of output capture window	Depending on the input resolution
	Phase	0–100	Adjust clock phase of output capture window	Depending on the input resolution
	H. Position	0–100	Adjust horizontal position of output capture window	50
	V. Position	0–100	Adjust vertical position of output capture window	50
	Image Ratio	Wide/4:3	Set aspect ratio of the screen	Wide
Color Tem.	Color Temp.	Warm/xxx	Set color temperature	Warm
	Red	0–100	Adjust Red color level	50
	Green	0–100	Adjust Green color level	50
	Blue	0–100	Adjust Blue color level	50
OSD Setup	H. Position	0–100	Adjust OSD horizontal position	50
	V. Position	0–100	Adjust OSD vertical position	50
	Timeout	5–100	Set OSD timeout counter	
	Language	English/xxx	Set OSD display language	English
Extra	Input select	HDMI/xxx	Set input source	Depending on the input source
	DDC/CI	On/Off	Set DDC/CI function on/off	On
	Reset	Yes/No	Set user setting reset	No
	Display Information	Resolution H. Frequency V. Frequency	Display current source information.	Depending on the input source

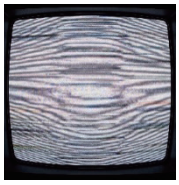
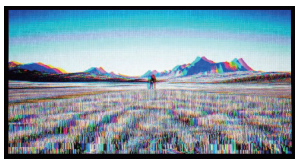
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APPENDIX A: Frequently Asked Questions (FAQ)

This section lists common issues users may encounter while operating this monitor, along with potential causes and suggested solutions.

No.	Issue	Possible Cause	Solution
1	Power LED is not illuminated (OFF)  	The monitor is not receiving power or is in an unexpected off state.	a. Press the Power button to confirm the monitor is in the ON mode. b. Verify that the power cable is securely connected to both the monitor and a functional power outlet. c. Check the power outlet for proper power output and correct voltage.
2	Power LED is solid Amber/ Orange and there is no screen image  	The monitor is on but not receiving a stable video signal from the computer.	a. Ensure both the monitor and the computer are fully powered ON and not in Sleep or Standby mode. b. Confirm that the signal cable (e.g., HDMI, VGA) is securely connected to both the monitor and the computer's video output port. c. Visually inspect the signal cable connectors for any bent or broken pins. d. Test the computer's video output by connecting it to a different, working monitor.
3	Screen image is too light or too dark	The brightness or contrast levels are incorrectly configured.	Adjust the Contrast and Brightness settings directly through the OSD (On–Screen Display) menu.
4	Screen images are not centered or sized properly	The image display position or size has shifted relative to the panel.	a. Press the Auto button for automatic image adjustment (typically for VGA input only). b. Manually fine–tune the display position using the H–Position (Horizontal) or V–Position (Vertical) settings via the OSD menu.

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No.	Issue	Possible Cause	Solution
5	Screen image is unstable (bouncing) or exhibits a wave pattern 	Signal interference or a loose cable connection is present.	a. Ensure the signal cable is properly and tightly secured to both the monitor and the computer. b. Move any nearby electrical devices (such as speakers, mobile chargers) that might be causing electrical or electromagnetic interference.
6	Screen images have color defects (e.g., white does not look white)	Signal transmission issue or incorrect color configuration.	a. Inspect the signal cable connectors to ensure that none of the pins are bent or damaged. b. Select and execute the Reset function within the OSD menu to restore factory color settings. c. Manually adjust the R/G/B color settings or select a different Color Temperature mode via the OSD.
7	Screen images appear blurry or fuzzy 	The image timing or phase settings are not correctly synchronized with the input signal.	a. Press the Auto button to initiate an automatic image adjustment. b. Adjust the Phase and Clock settings (Pixel Clock) manually through the OSD menu to synchronize the monitor with the input signal. c. Note on Resolution: The monitor is designed to automatically detect and adjust to common display resolutions and scanning frequencies. Ensure your computer's resolution matches one of the monitor's supported preset modes (see Table A1 below) for the clearest image.
8	The touch function is unresponsive or inaccurate.	a. Touch driver is not installed or is corrupted. b. Foreign objects, dust, or moisture on the screen surface. c. Touch screen requires recalibration. d. External electromagnetic interference (EMI).	a. Check the status of the touch device driver in Device Manager; reinstall or update the driver. b. Clean the screen surface and ensure it is dry. c. Go to Windows settings or use the touch vendor's calibration tool to recalibrate. d. Remove devices that may generate strong electromagnetic interference. e. If using gloves or a stylus, confirm their compatibility with touch technology.

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No.	Issue	Possible Cause	Solution
9	The touch response is inaccurate, or exhibits offset (requires recalibration). 	The internal calibration parameters specific to your touch panel have become misaligned due to environmental changes or OS updates.	As touch panels may require specialized calibration utilities tied to the specific hardware revision: 1. Locate the Unit's Serial Number (SN). 2. Contact Elgens Technical Support or your Authorized Reseller. 3. Provide the Serial Number, Pictures, Videos of malfunction to the Field Application Engineer (FAE). 4. The FAE will provide the precise touch calibration utility corresponding to your unit's touch controller and hardware revision. 5. Follow the instructions provided with the utility to perform a full touch screen recalibration.
10	The display exhibits bright spots (stuck–on pixels), dark spots (dead pixels), or visible inclusions/ impurities within the viewing area.	These are inherent characteristics of mass–produced TFT LCD panels, resulting from minor manufacturing defects in the liquid crystal cells or polarizing layers.	The existence of a limited number of pixel defects or minor cosmetic inclusions does not constitute a product failure. This Panel PC's display quality is evaluated according to a strict acceptance criteria standard. To understand the maximum allowable number of bright pixels, dark pixels, or other blemishes, please refer to the detailed acceptance specifications provided in Appendix C Touch Panel Inspection Standards.

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Table A1 Support Timing Table (By models may have different)

Mode	Resolution	H Freq.(KHz)	V Freq.(Hz)
1	640*480@60	640*480@60	640*480@60
2	640*480@75	640*480@75	640*480@75
3	800*600@60	800*600@60	800*600@60
4	800*600@75	800*600@75	800*600@75
5	1024*768@60	1024*768@60	1024*768@60
6	1024*768@75	1024*768@75	1024*768@75
7	1280*720@50	1280*720@50	1280*720@50
8	1280*720@60	1280*720@60	1280*720@60
9	1280*1024@60	1280*1024@60	1280*1024@60
10	1280*1024@70	1280*1024@70	1280*1024@70
11	1280*1024@75	1280*1024@75	1280*1024@75
12	1920*1080@50	1920*1080@50	1920*1080@50
13	1920*1080@60	1920*1080@60	1920*1080@60

Disclaimer: The solutions provided in this FAQ are general recommendations for common issues and are not guaranteed to resolve all problems. If the issue persists after attempting the steps above, please document the symptoms, steps performed, unit model, and serial number, and contact your technical support service.

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APPENDIX B: Quality Assurance, Warranty Policy and Support Information

- **Product Quality Commitment (Burn–in Testing):**

  Elgens is committed to delivering products of the highest quality and reliability, ensuring exceptional performance in demanding industrial environments.
- **Mandatory Pre–Shipment Quality Assurance:**

  To validate product stability and reliability, every monitor unit undergoes a stringent, mandatory Burn–in Test before it is released for shipment.
- **Test Duration:** Each unit is subjected to a comprehensive operational test for a minimum of four (4) hours.
- **Test Scope: The Burn–in Test includes cycling key components and simulating high–load scenarios to ensure stability under sustained operating conditions.**
- **Quality Guarantee:** This rigorous process is integral to our quality control, guaranteeing that the product delivered to the customer meets our high standards for performance and robustness upon deployment.

ELGENS Out-going Quality Control Report

Model Name	Quantity	Serial number	Tester	Sales	Shipping Date
LPC-P190SAG-2VE2-IU	2	20250708000001011		Cherry	2025/8/8

Item	Configuration	Remark
1	CPU	
2	Memory	
3	HDD	
4	Power Supply	
5	Main board	
6		

History						
Item	Tool	Version	Description			Notes
1	Burn-In Test	2021-11-19	4 Hours	Start Time	End Time	Temperature: 25°C
2	Chamber Test (for Optical Bonding)	N/A	Hours	Start Time	End Time	Temperature:
3						

Visual Mechanical Inspection(VMI)					
Item	Function	OK / NG			Remark
1	螺絲有無鎖附 Screw check	□ O K	□ N/A	□ N G	
2	外觀有無瑕疵 Visual Mechanical Inspection	□ O K	□ N/A	□ N G	
3	connector與線材連接處需點膠/DRAM點膠 Glue at the connector and DRAM	□ O K	□ N/A	□ N G	

Packing list check					
Item	Features	OK / N/A			Remark
1	Mounting Kits	□ O K	□ N/A	□ N G	8 PCS
2	VESA	□ O K	□ N/A	□ N G	
3	Power code	□ O K	□ N/A	□ N G	EU/AU/US Power code
4	Power Adaptor	□ O K	□ N/A	□ N G	
5	Driver CD/User manual	□ O K	□ N/A	□ N G	
6	Antenna	□ O K	□ N/A	□ N G	
7		□ O K	□ N/A	□ N G	

Function test						
Item	Function	OK / NG			Test Descritation	Configuration
1	Operation system install	□ O K	□ N/A	□ N G	1. Test basic function of connectors, jumper setting, ports, buttons & pin handers. 2. Use visual inspection to verify system & physical integrity. 3. Connect peripheral devices and test function whether normal.	
2	CPU	□ O K	□ N/A	□ N G		
3	RAM	□ O K	□ N/A	□ N G		
4	HDD/CFsat	□ O K	□ N/A	□ N G		
5	DP	□ O K	□ N/A	□ N G		
6	HDMI	□ O K	□ N/A	□ N G		
7	VGA	□ O K	□ N/A	□ N G		
8	DVI	□ O K	□ N/A	□ N G		
9	USB1 (3.0)	□ O K	□ N/A	□ N G		USB Disk 8GB
10	USB2 (3.0)	□ O K	□ N/A	□ N G		USB Disk 8GB
11	USB3 (3.0)	□ O K	□ N/A	□ N G		USB Disk 8GB
12	USB4 (3.0)	□ O K	□ N/A	□ N G		USB Disk 8GB
13	LAN 1	□ O K	□ N/A	□ N G		Communication between

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Limited Product Warranty

Elgens provides a Limited Product Warranty that covers material defects and workmanship of this monitor product for a defined period from the date of purchase. This warranty ensures that your monitor will perform according to the specifications set forth in the product documentation under normal operating conditions.

For complete details regarding the coverage period, warranty limitations, return procedures (RMA), and policy exclusions, please refer to our official Warranty Policy.

Official Warranty Policy and Procedure:

Item	Details
Warranty Document Link	Please click here for the full Returns and Warranty Policy: https://www.elgens.com.tw/about-us/returns-warranty-policy/
Request for Service	Before returning any unit for warranty service, you must obtain a Return Material Authorization (RMA) number from Elgens Technical Support or your authorized reseller.

IMPORTANT NOTE: Any unauthorized modifications, tampering with core system identifiers (e.g., System Manufacturer/Model), or usage outside the specified environmental conditions (as defined in the Technical Specifications) may void this Limited Warranty.

Technical Support and Return Material Authorization (RMA) Process

This outlines the standard procedure for handling product returns and service requests (RMA).

Step	Responsible Party	Description of Action	Key Output/Document
1	**Customer**	**Initial Contact:** Contacts the assigned Elgens Sales Representative (Sales Rep) via email or designated platform, detailing the issue encountered.	Initial Service Request / Email Log / Online request table
2	**Sales Rep**	**RMA Case Initiation:** Logs the issue into the **RMA Tracking List** and generates a unique **RMA Number.**	**Official RMA Number Issuance**
3	**Team Triage**	**Problem Analysis & Triage:** Sales Rep / SE collaborates with the Customer to understand and reproduce the fault and determine the solution (remote resolution or mandatory factory return).	Confirmed Service Solution Path
4	**Customer / Logistics**	**Return Confirmation & Shipping:** Customer ships the unit back to the service center, referencing the assigned RMA Number on all shipping documentation.	Physical Unit Received at Factory
5	**RMA Department**	**Factory Service & Repair:** Diagnoses and performs repair. The standard turnaround time is **within 30 calendar** days from the date the unit is received at the factory.	Internal Repair Log
6	**RMA Department & Sales Rep**	**Reporting & Customer Feedback:** RMA Department generates a comprehensive **RMA Report** detailing the root cause and actions taken. Report is provided to the Sales Rep.	**Official RMA Report**
7	**Sales Rep**	**Closure & Delivery:** Communicates the RMA Report and service outcome to the customer. Case is formally closed upon shipment of the repaired unit.	Formal Case Closure

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Complete RMA Process Flow

01

Initial Contact

Customer contacts Sales Rep with issue details

02

RMA Case Initiation

Sales Rep logs issue and generates RMA Number

03

Problem Analysis & Triage

Team collaborates to determine solution path

04

Return Confirmation & Shipping

Customer ships unit to service center

05

Factory Service & Repair

RMA Department diagnoses and repairs within 30 days

06

Reporting & Customer Feedback

Comprehensive RMA Report generated and shared

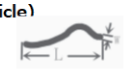
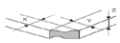
07

Closure & Delivery

Case closed upon shipment of repaired unit

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APPENDIX C: Touch Panel Inspection Standards

Defective item		Acceptance criteria Specification Spec: W (width), L (length), N (quantity), D (diameter) = (W + L) / 2, Distance (spacing) (T:	Remark
Bright dot	Random	N≦3	
	2 points adjacent	N≦1	
	3 or more points adjacent	N≦0	
Dark dot	Random	N≦3	
	2 points adjacent	N≦1	
	3 or more points adjacent	N≦0	
Sum of bright and dark points		N≦6	
The minimum distance between all bright and dark points		Distance≧10mm	
Display Error		Shall not have	
Reveal silver edge	Too much	W<0.5mm	
Linear Defects (Scratch、Scrub、Fiber、Particle) 	Scratches/Scuffs	W≦0.05mm	Ignore
		0.05mm<W≦0.1mm, L≦15mm	Ignore
		0.1mm<W≦0.2mm L≦15mm, N≦5	PASS
		W＞0.2mm or L＞15mm	NG
	Fiber/lint/impurities	W≦0.1mm, L≦10mm	Ignore
		0.1mm<W≦0.3mm L≦10mm, N≦5, Distance≧5mm	PASS
		W＞0.3mm or L＞10mm	NG
Dot Defects (Bubble、Fiber、Particle、Spot、Dent、Nick) D=(a+b)/2 	LCD viewing area	D≦0.2mm	Ignore
		0.2mm＜D＜0.5mm, N≦5, Distance≧5mm	PASS
		D＞=0.5mm	NG
	Printing area (black border)	D≦0.2mm	Ignore
		0.2mm＜D≦0.5mm, N≦5, Distance≧5mm	PASS
		D＞0.5mm	NG
Poor black border printing	Dotted holes	D≦0.2mm	Ignore
		0.2mm＜D≦0.5mm, N≦5, Distance≧5mm	PASS
		D＞0.5mm	NG
	Light leakage and jagged edge	D≦0.2mm	PASS
	Peeling paint	Can be repainted: The laminating factory and production line are allowed to use paint pens to repaint the paint.	
FPC	FPC bad	Broken/damaged	NG
Other	Glass cracks	Shall not have	NG
	Damaged corners 	Surface: X≦0.3mm, Y≦0.3mm, Z≦T/2 mm, N≦1 per edge	Ignore
		Back: X≦3.0mm, Y≦3.0mm, Z≦T/2 mm, edge N≦3, Distance≧10mm	PASS
	Broken edges 	Surface: X≦0.3mm, Y≦0.3mm, Z≦T/2 mm, N≦1 per edge	Ignore
		Back: X≦3.0mm, Y≦3.0mm, Z≦T/2 mm, N≦3 per edge, Distance≧10mm	PASS

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APPENDIX D: Package Information

Package Contents and Unpacking

The monitor package is designed with multiple protective layers to ensure product integrity during shipment. Please follow the steps below to safely unpack and inspect your product.

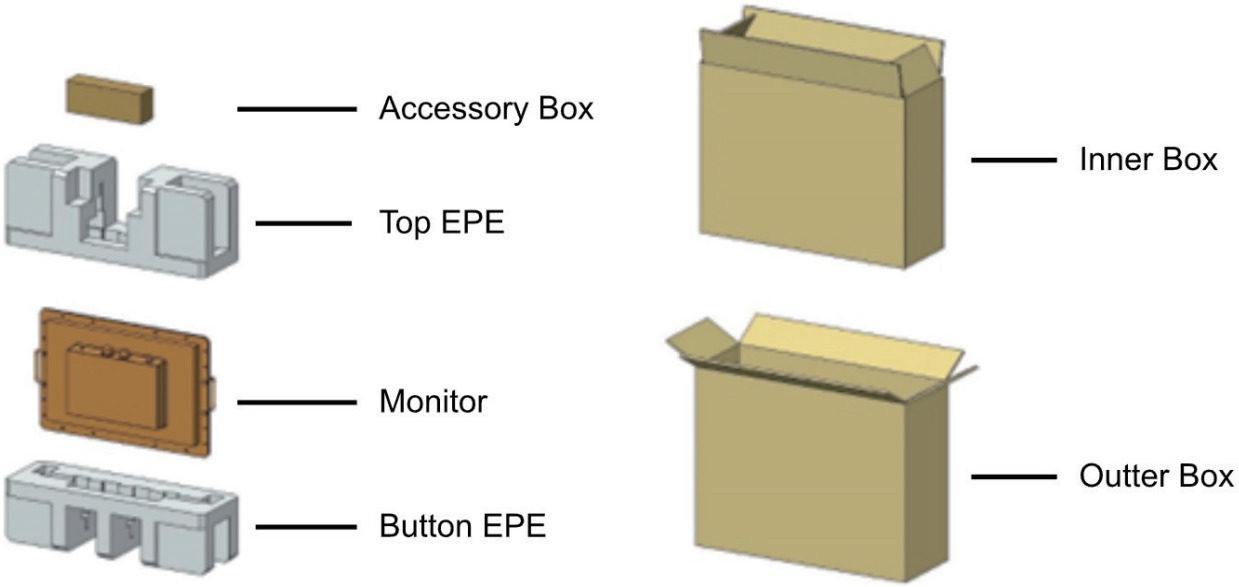
Unpacking Procedure

1. **Outer Box & Inner Box:** Open the **Outer Box** and carefully remove the **Inner Box**.
2. **Remove Cushioning:** The monitor is protected by two custom–molded Expanded Polyethylene (**EPE**) foam pieces: the **Top EPE** and the **Bottom EPE**. Remove the top piece first.
3. **Accessory Retrieval:** The included accessories are contained within the separate **Accessory Box**, typically positioned within the EPE foam layers.
4. **Monitor Removal:** Carefully lift the **Monitor** panel out of the remaining foam and box structure.

Contents Verification

After unpacking, please verify that all listed components are present and undamaged. Refer to the table below for the complete **Package Contents** list (or reference the table from your previous drafts).

CAUTION: If any items are missing or damaged, or if there is visible damage to the monitor itself, please contact your authorized dealer or technical support representative immediately.

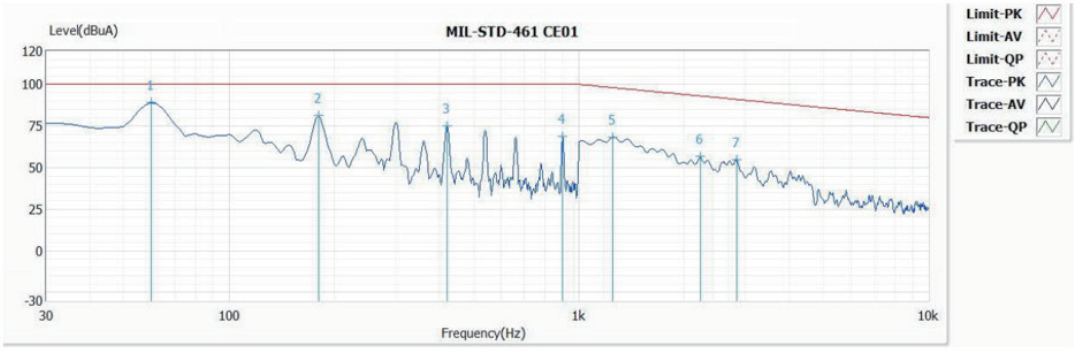


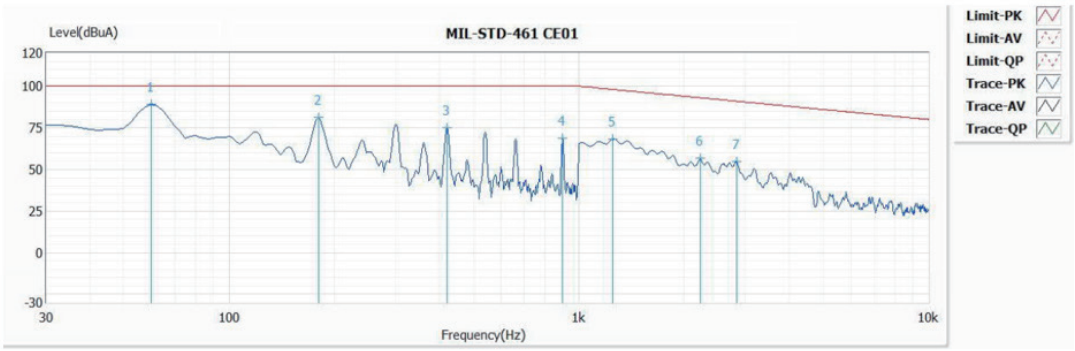
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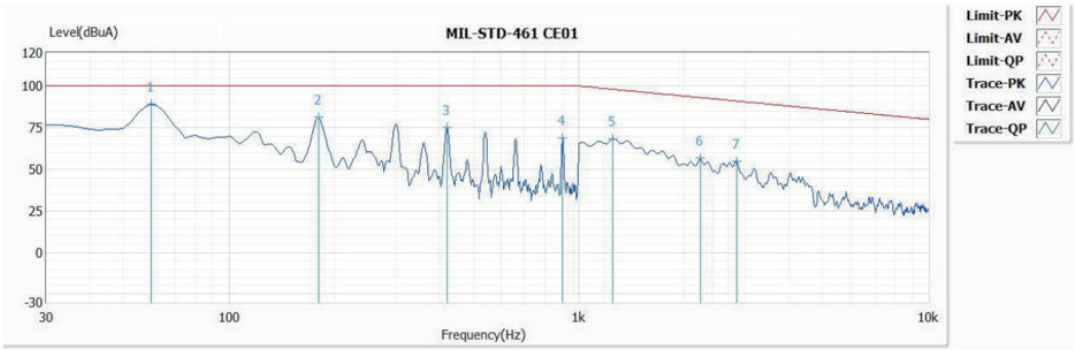
APPENDIX E: Military-Grade Power Module Test Details

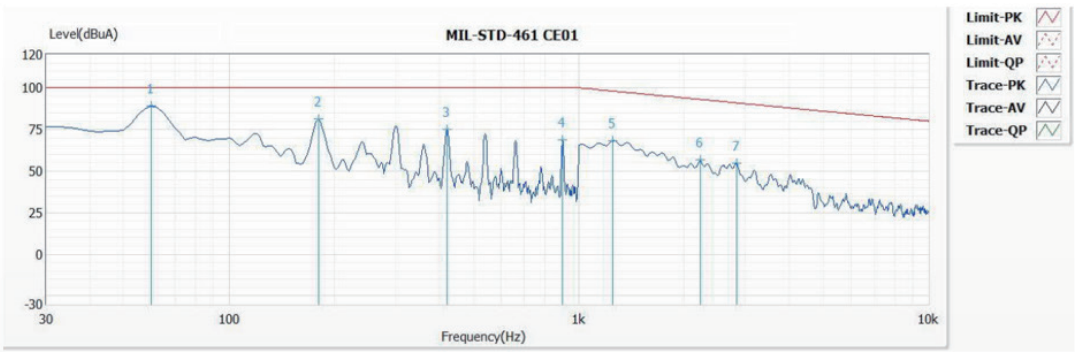
EMIL–STD–461G Test

(by Elgens Product)



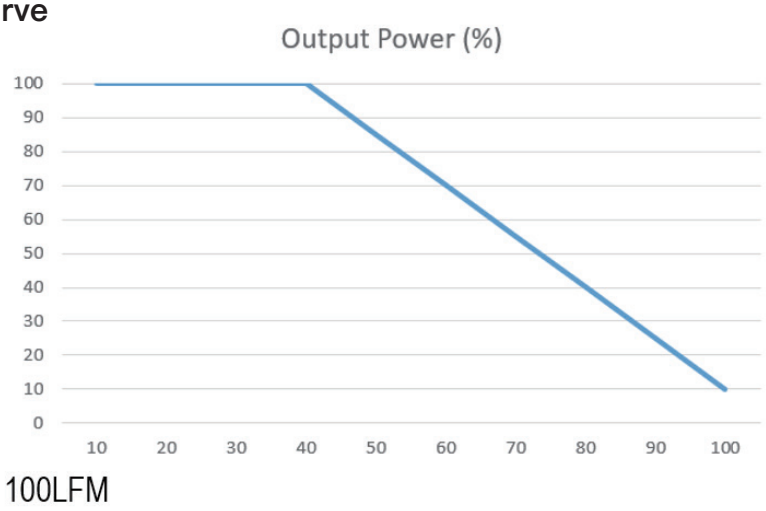




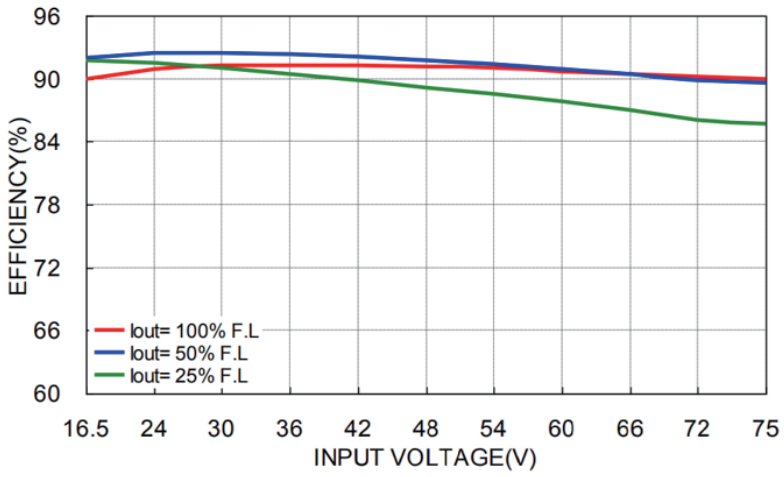


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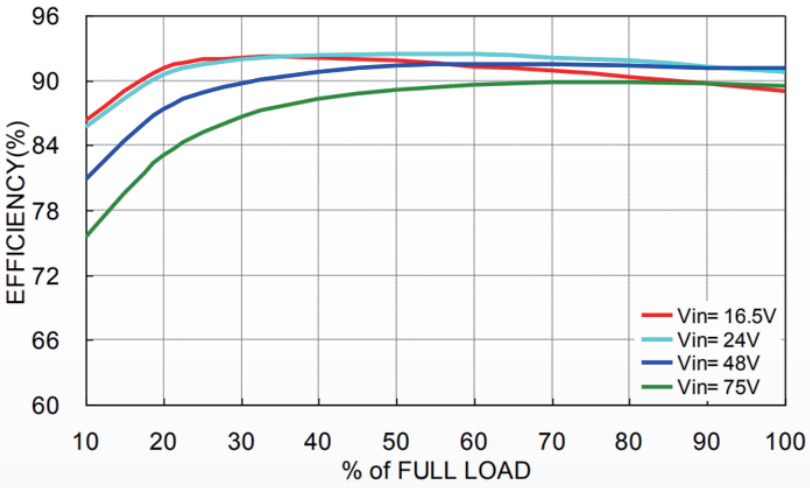
Derating Curve



Efficiency vs. Input Voltage



Efficiency vs. Output Voltage



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HISTORY

Revision	Date	Modification	Note
0.1	2025.09.01	draft	
0.2	2025.09.09	1. Update Product Picture of Cover Page 2. Change Layout of drawing pages from vertical to horizontal. 3. Change OSD button drawing and description layout. 4. Add more description for Adapter 5. Add Adapters in Packing List	
0.3	2025.11.12	1. Drawing optimization 2. Added TDM-D215 model 3. Optimization details 4. Optimized FAQ 5. Added Package Illustration Drawing	

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ELGENS CO., LTD

https://www.elgens.com.tw/

7F-6, No. 492, Bannan Rd., Zhonghe Dist., New Taipei City 235, Taiwan

+886-927370730 | +886-2-7729-7209

santiago@elgens.com.tw