MD-224 Series

24-inch display: 16:9 aspect ratio, full HD 1920 x 1080 resolution

> 24-inch display, 16:9 aspect ratio
> Sunlight readable 1000-nit LED backlight
> Color calibrated for ECDIS compliance
> Full range dimming, 0 to 100%
> SavvyTouch™ display controls
> Built-in RS-232/422/485 interfaces
> Dual power supplies (AC & DC)
> IP54-rated front panel (IP66 available by request)
> Optical bonding available on request

⋮ Introduction

The MD-224 series of marine displays comes with full range dimming, wide viewing angles and optional optical bonding. These displays are built with a small-profile modular design that allows easier integration into industrial marine systems, reducing deployment costs and overall time-to-market.
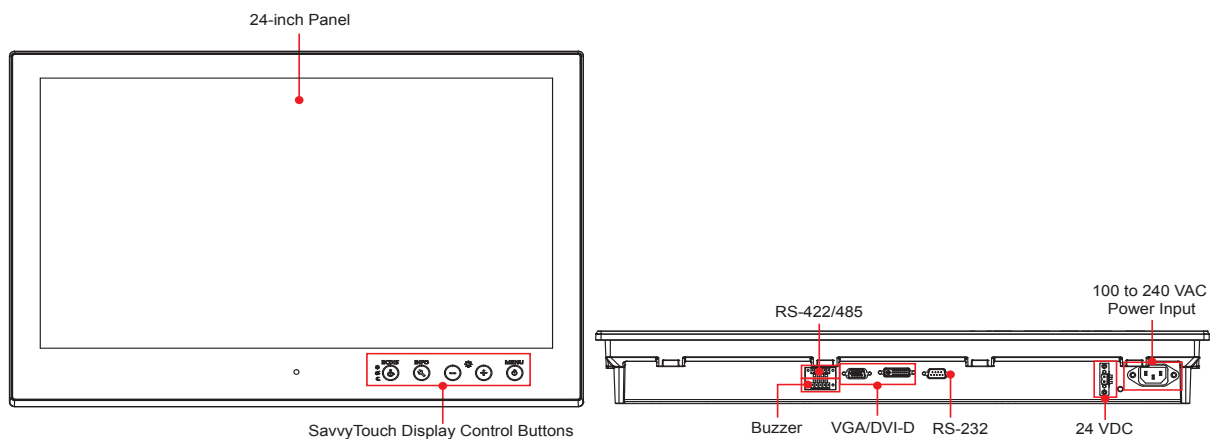
The innovative and user-friendly SavvyTouch display controls offer several unique features not found on any other marine display consoles: a proximity sensor for convenient adjustments in dark conditions, an info button for immediate updates of power status, and a quick-switch to adjust between day, dusk, and night-time ECDIS modes (for colorcalibrated ECDIS models only).

The MD-224 series displays are compliant with IEC 60945, DNV, ABS, and IACS E10, making them suitable for maritime applications. Their IP54 (IP66-rated models available on request) rated enclosure provides additional protection against dust and moisture above and beyond the limits established by these international standards bodies.
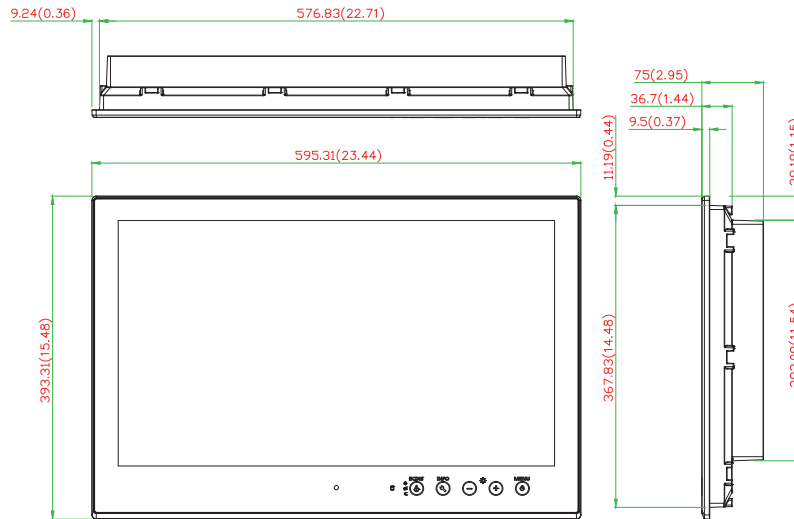
ECDIS-approved models are also available, offering an excellent HMI solution for ECDIS charting and navigation stations.

⋮ Appearance

24-inch Panel

SavvyTouch Display Control Buttons

RS-422/485

100 to 240 VAC Power Input

Buzzer   VGA/DVI-D   RS-232   24 VDC

Dimensions

Unit: mm (inch)

9.24(0.36)   576.83(22.71)

595.31(23.44)

393.31(15.48)

75(2.95)
36.7(1.44)
9.5(0.37)
11.19(0.44)
29.18(1.15)
367.83(14.48)
293.08(11.54)

Specifications

Display
Panel Size: 24" viewable image size
Panel Type: MVA
Aspect Ratio: 16:9
Pixels: 1920 x 1080 (WSXGA+)
Response Time: 25 ms (gray to gray)
Contrast Ratio: 5000:1
Light Intensity:
Standard model: 300 nits
High brightness model: 1000 nits
Viewing Angles: 178°/178°
Active Display Area: 531.36 (H) x 298.89 (V) mm
Max. No. of Colors: 16.7M / 8-bit color
Display Interface:
• 1 VGA input
• 1 DVI-D input
Resolution:
• VGA: 640 x 480
• SVGA: 800 x 600
• XGA: 1024 x 768
• SXGA: 1280 x 1024
• WSXGA+: 1920 x 1080 (optimal setting)

Serial Interface
Serial Standards: 1 RS-232 port (male DB9), 1 RS-422/485 port (terminal block)
Optical Isolation Protection: 4 kV

Serial Signals
RS-232: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485-2w: Data+, Data-, GND

Front Panel
LEDs: MENU, Brightness, INFO, ECDIS, Day/Dusk/Night
Smart OSD: Yes

Physical Characteristics
Housing: Aluminum sheet metal
Weight: 12 kg
Dimensions: 595 x 393 x 75 mm (23.43 x 15.47 x 2.95 in)
Mounting: VESA, panel, and desktop

Environmental Limits
Operating Temperature: -15 to 55°C (5 to 131°F)
Storage Temperature: -20 to 60°C (-4 to 140°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
IP Rating:
• Front: IP54 (IP66 available by request)
• Rear: IP22
Anti-Vibration:
0.7 g @ DNV 2.4 (Class A), sine wave, 2-100 Hz, 1 Oct./min., 1.5 hr per axis

Power Requirements
Input Voltage:
• DC: 24 VDC (with tolerance from 18 to 30 VDC, 2-pin terminal block)
• AC: 100 to 240 VAC
Power Consumption: 40 W (Max)

Standards and Certifications
Safety: UL 60950-1, CCC
Hazardous Environments: UL Class 1 Division 2
EMC: EN 55032/24
EMI: CISPR 32, FCC Part 15B Class A
EMS: IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m
IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV
IEC 61000-4-6 CS: Signal: 1 kV
IEC 61000-4-8
Marine Standards: IEC-60945 4th, IEC-61174
Marine Type Approval: DNV 2.4 and IACS E10, ABS
Green Product: RoHS, cRoHS, WEEE

Warranty
Warranty Period: 1 year
Details: See www.moxa.com/warranty

We recommend taking the following precautions to minimize heat build-up within the display:

- Position the display within ±40° of the vertical.
- Install an external fan to increase airflow upwards through the display if (a) the display is not positioned within ±40° of the vertical, (b) the ambient temperature exceeds 25°C, or (c) the display is used in a location with minimal ventilation.

Important Safety Precaution:
Even though the display is rated to operate within the IEC 60945 standard of -15 to 55°C, it is best to ensure that the ambient temperature does not exceed 25°C. Doing so will increase the life of your display and minimize service costs.

Ordering Information

Available Models
MD-224X: 24-inch tape bonded marine display with 16:9 aspect ratio, full HD (1920x1080), LED backlighting, dual-power supply (AC/DC)
MD-224Z: 24-inch tape bonded marine display with 16:9 aspect ratio, full HD (1920x1080), projected-capacitive touch panel, LED backlighting, dual-power supply (AC/DC)
MD-224Z-HB: 24-inch sunlight readable 1000-nit display, 16:9 aspect ratio, full HD (1920x1080), glove-friendly multi-touch, LED backlighting, dual-power supply (AC/DC)

Optional Accessories (can be purchased separately, for AC power input)
PWC-C13US-3B-183: Power cord with 3-pin connector, USA plug
PWC-C13EU-3B-183: Power cord with 3-pin connector, Euro plug
PWC-C13UK-3B-183: Power cord with 3-pin connector, British plug
PWC-C13AU-3B-183: Power cord with 3-pin connector, Australian plug
PWC-C13CN-3B-183: Power cord with 3-pin connector, Chinese plug

Optional Mounting/Bracket Kits (can be purchased separately)
MPC-MD-2-24-PMTK: 24-inch panel-mounting kit, consisting of 14 mounting clamps
MPC-MD-2-24-VESAMTK: 24-inch VESA-mounting kit (can be used with either 200 x 100 mm or 280 x 150 mm VESA mounts)
MPC-MD-2-24-26-DMTK w/o hinge: 24-inch desktop mounting kit without hinge
MPC-MD-2-24-26-DMTK w/ hinge: 24-inch desktop mounting kit with hinge

Package Checklist
- MD-224 display
- VGA cable
- DVI-D cable
- 2-pin terminal block x 1
- 5-pin terminal block x 2
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card