DATASHEET

HATTELAND TECHNOLOGY
an EMBRON Company

Manufacturer:	**Hatteland Technology AS**
Product:	**23.1 inch Maritime Multi Display (MMD)**
Type:	**JH 23T14 MMD-yRx-xxxx**
Description:	Where y=Power Input (M=AC+DC), x=configuration

Last Revised:	**12 Apr 2022**
Revision#:	**16**

23.1 inch Maritime Multi Display (MMD) - Series 1 G2

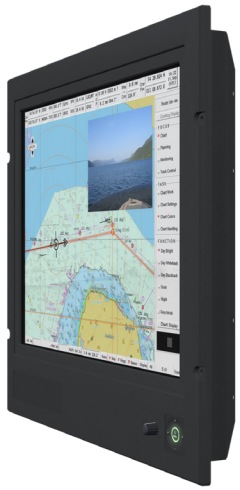
Features:

The Series 1 Generation 2 (G2) Maritime Multi Display (MMD) models are delivered with Multi-power (AC and DC built in) ensuring that they are compatible with all power systems on vessels. The displays will automatically switch to whatever power is connected, making it highly flexible for shipbuilders and system integrators alike. The onboard connections include DVI-I, DP, Composite Video, as well as VGA out, RS-232 for touch, RS-422/485, USB Type A for SCOM, SCOM Ethernet and Potmeter/user connection for access to display settings.

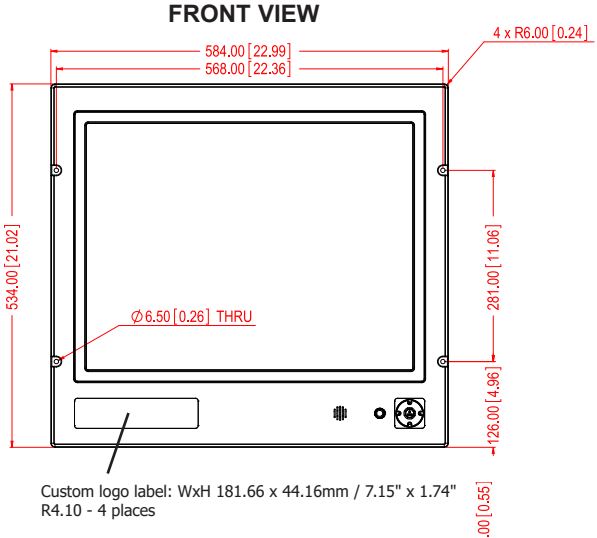
The Series 1 Generation 2 (G2) MMD models are available in a wide range of display size and format, making them suitable for a multitude of shipboard applications, where combining data and video inputs to a single unit provides maximum flexibility. Be it for ship navigation, automation or safety and security, this range with all it's possible options provides a robust and versatile platform from which to display and manage multisource data from all of a vessels systems.

All models and variations can be offered with Optical Technology bonding that mitigates screen misting. By factory standards the unit is ECDIS Compliant.

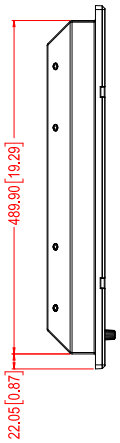
The Series 1 Generation 2 (G2) Maritime Multi Display (MMD) feature control buttons on the front of the monitor (keypad control) as well as an potentiometer knob, providing fast and easy user access to the displays OSD features and settings. An Keypad Control only (no potmeter) model is also available.



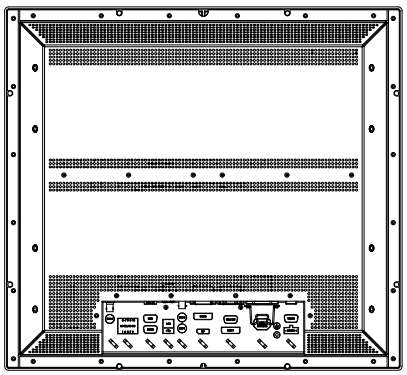
FRONT VIEW



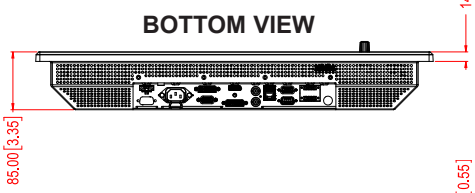
SIDE VIEW



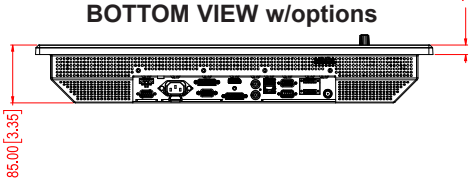
BACK VIEW



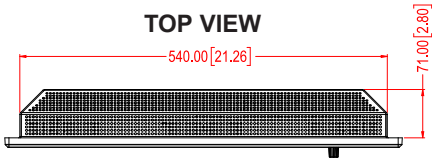
BOTTOM VIEW

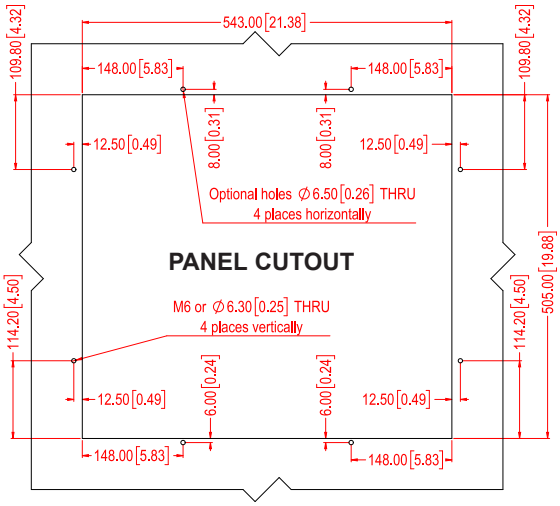


BOTTOM VIEW w/options



TOP VIEW





Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

SPECIFICATIONS

Note: All specifications are subject to change without prior notice!
Please visit www.hattelandtechnology.com for the latest electronic version.

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TFT Technology:

- High Quality TFT with LED Backlight Technology
- 23.1 inch viewable image size
- TFT active-matrix liquid crystal panel
- MVA (Multi-domain Vertical Alignment) LCD Technology

TFT Characteristics:

- Pixel Number : 1600 x 1200
- Pixel Pitch (RGB) : 0.294 (H) x 0.294 (V) mm
- Response Time : 12ms (typ) black-white-black or 8ms gray to gray
- Contrast Ratio : 600:1 (typical)
- Light Intensity : 500 cd/m2 (typical)
- Viewable Angle : +/- 85 deg. (typical) (Up/Down/Left/Right)
- Active Display Area : 470.4 (H) x 352.8 (V) mm
- Max Colors : 16.7 millions

Supported Signals:

Resolutions:

- VGA : 640 x 480 (including 640 x 350)
- SVGA : 800 x 600 (including 720 x 400)
- XGA : 1024 x 768
- SXGA : 1280 x 1024
- UXGA : 1600 x 1200*
- FHD : 1920 x 1080
- WUXGA : 1920 x 1200

** Recommended for optimal picture quality*

Video Signals:

- Interlaced HDTV, NTSC, PAL and SECAM video
- Composite video

Power Specifications:

Multi-power Supply:

- 100-240V AC - 50/60Hz + 24 VDC

Note: You may connect either AC power or DC power or both. In case both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be a uninterrupted switch-over to DC input.

Power Consumption:

- Operating AC/DC: 156W (max)

Physical Considerations:

- W: 584.00 [22.99] x H: 534.00 [21.02] x D: 85.00 [3.35] mm [inch]
- Weight: Approx. 13.5kg / 29.7lbs

Signal Terminals:

- DVI-I IN : 2 x 29p DVI Female (or as VGA IN with adapter)*
- DP1.2 IN : 1 x 20p DisplayPort (female)
- Comp. Video IN : 3 x BNC Connector (female)
- SCOM RS-422/485 : 2 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
- SCOM USB : 1 x USB TYPE A Connector (female)
- SCOM Ethernet : 1 x RJ45 Connector
- SCOM RS-232 : 1 x 9p D-SUB (female)
- VGA OUT : 1 x 15p HD D-SUB (female) - Clone of VGA IN**
- Potmeter/User : 1 x 9p D-SUB (male) (Potentiometer IN, +5VDC OUT, BRT +/- IN)
- If Touch Screen : 1 x 9p D-SUB (female)
- AC Power IN : 1 x Std IEC Inlet
- DC Power IN : 1 x 2-pin Terminal Block 5.08

* DVI-I Port #1 as VGA IN also acts as clone to VGA Signal Out (buffered).
**Tested at recommended resolutions. The VGA output signal (buffered) is at same resolution and sync as the VGA input. The output is working even if the display unit is turned off, but power cable/supply must be connected/provided.

Note for DVI and VGA signal inputs:
DVI-I #1, DVI-D #1 and VGA #1 is Single Link.
DVI-I #2, DVI-D #2 and VGA #2 is Dual Link.

User Controls:

On front bezel - Keypad control (IP66) xRx-xxAx models:

- Power On/Off and On Screen Display Menu (OSD)*
- Brightness Control (up/down - push buttons)
- Hotkeys (left/right - push buttons)
- Mode Status Red/Green Illuminated LED-Ring Indicator

On front bezel - Potmeter control (IP66) xRx-xxBx models:

- Power On/Off and On Screen Display Menu (OSD)*
- Brightness Control (rotary control)
- Hotkeys (left/right - push buttons)
- Mode Status Red/Green Illuminated LED-Ring Indicator
- Buzzer (75-85dB)

*OSD Key Codes: 321=Get access to OSD, 362=Advanced Mode

Environmental Considerations:

• Operating	: Temperature -15°C to +55°C
• Storage	: Temperature -20°C to +60°C
• Humidity	: Up to 95% (Operating / Storage)
• Shock - Vibration	: 5g/11ms - 0.7g (IEC 60945 / IACS E10)
• Air Pressure Maximum Altitude	: Operating: 4000m - Storage: 12912m
• Air Pressure Maximum Altitude (Bonded)	: Operating: 3000m - Storage: 3000m
• IP-Rating Protection	: IP66 front - IP20 rear (EN60529).
• Compass Safe Distance	: Standard: 110cm - Steering: 70cm

Lifetime Considerations:
Even though the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories:

• JH 23TBR T01-A1	: Mounting Bracket
• JH 23BRD STD-A1	: Mounting Bracket EN6095 Tested
• JH MMDRO STD-A1	: Rotary Bracket
• JH 23TSV STD-A1	: Sun Visor
• JH 23VED STD-A1	: VESA Adapter 75/100mm
• JH 23TWC STD-A1	: Water Cover
• HD REM SX1-A1	: External Remote Control, EN60945 Tested

Factory Options:

- Capacitive* Touch Screen
- Optical Bonding Technology
- Color Calibrated models (ECDIS)
- Keypad only or Keypad+Potmeter+Buzzer controls

**Note that touch screen additionally require factory default optical bonding technology*

APPROVALS & CERTIFICATES

These products have been tested / type approved by the following classification societies: *=PENDING

IEC 60945 4th (EN 60945:2002) **IACS E10** **EN55024** **EN55022, Class A** **EU RO MR** - Mutual Recognition
LRS - Lloyd's Register of Shipping* **ABS** - American Bureau of Shipping* **CCS** - China Classification Society **KR** - Korean Register of Shipping*
BV - Bureau Veritas **ClassNK** - Nippon Kaiji Kyokai