

DATA SHEET

This information may not, in whole or in part, be copied, photocopied, reproduced, translated or reduced to any electronic medium or machine-readable form without the prior written consent of Hatteland Display AS. The products may not be copied or duplicated in any way.

HATTELAND[®] DISPLAY

Manufacturer: **Hatteland Display AS**
 Product: **20.1 inch Maritime Multi Display (MMD)**
 Type: **JH 20T17 MMD-xxx-Axxx**

Last Revised: **03 Jun 2015**
 Revision#: **26**

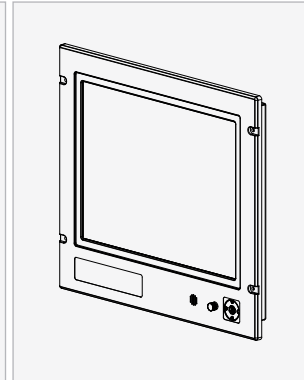
20.1 inch Maritime Multi Display (MMD) - Series 1

Features:

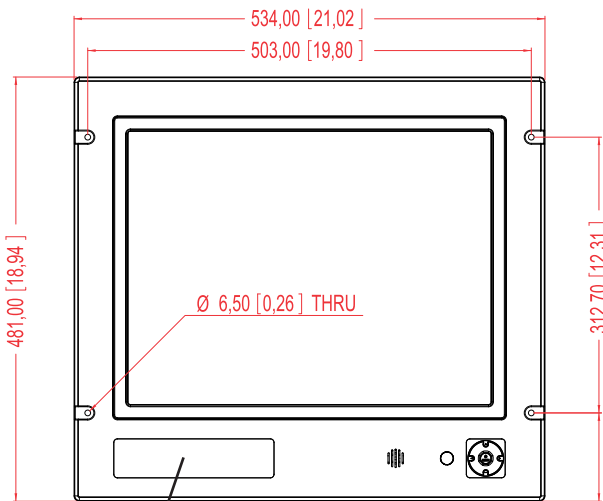
The Series 1 Maritime Multi Display (MMD) uses fewer cable connections than the previous generation, which increases reliability whilst reducing component costs. All models can be delivered with either AC or DC input as standard and connections include DVI-I in, RGB out, RGB in, IEC inlet, IEC outlet and USB I/O.

Signal input/output options can be increased upon request by using the Multifunction Connector, which allows the connection of many common signal types through a single cable connection, for common signals such as; Composite Video Input, Touch Screen and Serial Communication. The Series 1 provide Picture-By-Picture (PBP) and Picture-In-Picture (PIP) functionality.

The unit features LED Backlight Technology instead of traditional CCFL Backlighting which increases the light intensity life time. Further, with Optical Bonding Technology the viewing performance, reliability and lifespan increases dramatically. Bonding will also help with problems related to condensation, sunlight reflection, night vision and overheating. By factory standards the unit is ECDIS Compliant.



FRONT VIEW

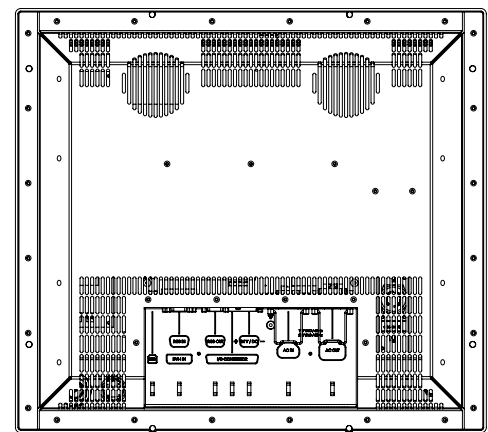


Custom logo label: WxH 181.66 x 44.16mm / 7.15" x 1.74"
 R4.10 - 4 places

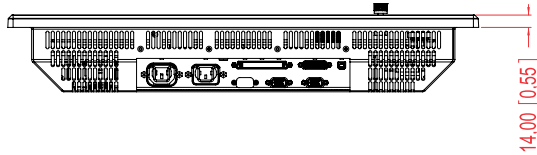
SIDE VIEW



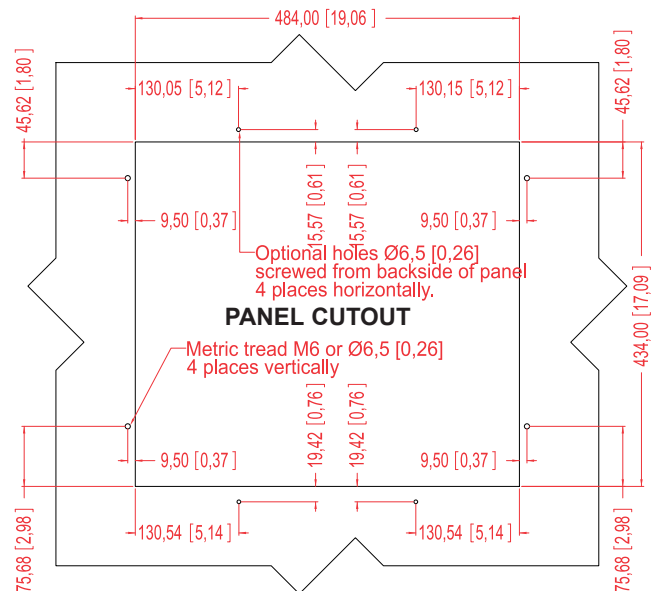
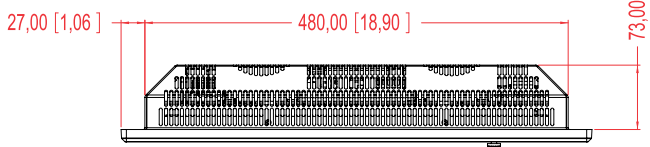
BACK VIEW



BOTTOM VIEW



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.

TFT Technology:

- High Quality TFT with LED Backlight Technology
- 20.1 inch viewable image size
- a-Si TFT (Thin Film Transistor) Active Matrix, RGB Vertical Stripe

TFT Characteristics:

- Pixel Number : 1600 x 1200
- Pixel Pitch (RGB) : 0.255 (H) x 0.255 (V) mm
- Response Time : 30 ms (typical), rise + fall
- Contrast Ratio : 1000:1 (typical)
- Light Intensity : 260 cd/m2 (typical)
- Viewable Angle : +/- 85 deg. (typical) (Up/Down/Left/Right)
- Active Display Area : 408.0 (H) x 306.0 (V) mm
- Max Colors : 16.7 millions

Synchronisation:

Sync Signal:

- Digital separate synchronisation
- Composite synchronisation
- Synchronisation on green.
- Auto detects VGA -> WUXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
: Input Impedance 75 Ohm

Synchronisation Range:

- Horizontal : 15,0 kHz to 91,1 kHz
- Vertical : 60 Hz* to 85 Hz

* Recommended for optimal picture quality

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*
- WUXGA : 1920 x 1200

* Recommended for optimum picture quality. (60 Hz only)

Video Signals (with Multifunction Cable):

- Interlaced NTSC and PAL/SECAM video
- Composite video

Power Specifications:

Power Supply Options:

- 115&230VAC - 50/60Hz - JH 20T17 MMD-Axx-xxxx
- 24 VDC - JH 20T17 MMD-Dxx-xxxx

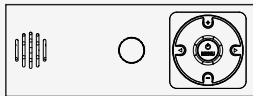
Power Consumption:

- Operating : 100 W (max)

Typical Type Numbers:

- JH 20T17 MMD-AA1-AAAA = Standard AC, Keypad controls only
- JH 20T17 MMD-DA1-AAAC = Standard DC & Capacitive Touch Screen
- JH 20T17 MMD-AA1-AOBA = Standard AC, Bonded, Potmeter Controls, Buzzer

Buzzer-Potmeter-Keypad



MMD-xxx-xxBx

Keypad



MMD-xxx-xxAx

For a full overview, please review our typenumber sheet found on our website:
<http://www.hatteland-display.com/pdflink/ind100780-1.php>

Physical Considerations:

- W:534.00 [21.02"] x H:481.00 [18.94"] x D:87.00 [3.43"] mm [inch]
- Weight: 13.50 kg (approx)

Signal Terminals:

- DVI-I Signal IN : 1 x 29p DVI Female (or as RGB IN with adapter)
- RGB Signal IN : 1 x 15p HD D-SUB (female)
- RGB Signal OUT : 1 x 15p HD D-SUB (female) - Clone of RGB IN**
- Multifunction : 1 x 160p D-SUB (female) - Also see table below
- USB I/O : 1 x TYPE B Conn. (female) Reserved for future use
- AC Power IN : 1 x Std IEC Inlet
- AC Power OUT : 1 x Std IEC Outlet (5A max)
- DC Power IN : 1 x 2p D-SUB Connector (male) - Amphenol FCC17

**Tested at recommended resolutions. The RGB output signal is at same resolution and sync as the RGB input. The output is working even if the display unit is turned off, but power cable/supply must be connected/provided.

Multifunction Cable:

Available factory standard cables, 30cm [11.81"] in length.

• VSD100692-1	: 1 x 9P D-SUB (female) - RS-232 (COM1)
• VSD100692-3	: 1 x 9P D-SUB (female) - RS-232 (COM1) : 1 x 9P D-SUB (female) - RS-232 (COM Touch Screen) : 3 x BNC (female) (Composite Video in)
• VSD100692-4	: 1 x 9P D-SUB (female) - RS-232 (COM1) : 3 x BNC (female) (Composite Video in)

Customized cables are possible to support more built-in signals, like: RS-485, RS-422/RS-485, Buzzer, ON/OFF, Touch (PS/2), 1 x S-Video IN, Remote External User Controls, Alternative Keypad interface (i2c) and reserved for other signals. Custom cable lengths can be manufactured.

User Controls:

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

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

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

- Power On/Off and On Screen Display Menu (push button)
- Brightness Control (rotary control)
- Hotkeys (left/right - push buttons)
- Mode Status Red/Green/Orange Illuminated LED-Ring Indicator
- Speaker / Buzzer

Environmental Considerations:

- Operating : Temperature -15 deg. C to +55 deg. C
: Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
: Humidity up to 95%
- IP Rating : Protection (EN60529): IP66 front - IP20 rear
- Compass Safe Dist. : JH20T17MMD-xxx-xxxx - Std: TBD Steering: TBD

Lifetime Considerations:

Even although 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:

- Cables = Custom Multifunction Cable to support more signals
- JH MMDBR STD-A1 = Bracket (See user manual)
- JH MMDRO STD-A1 = Rotary Bracket (See user manual)
- JH 20TSV STD-B1 = Sun Visor (See user manual)
- JH 20VED STD-A1 = Vesa Bracket (See user manual)
- JH 20TWC STD-B1 = Water Cover (See user manual)

Factory Options:

- Capacitive Touch Screen / Optical Bonding Technology
- Color Calibrated models (ECDIS)

TESTING / APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies: (*=pending)

IEC 60945 4th (EN 60945:2002)* IACS E10* EU RO MR - Mutual Recognition (covers DNV, BV, ABS, GL, NK and LRS certificates)*