DATA SHEET

HATTELAND® DISPLAY

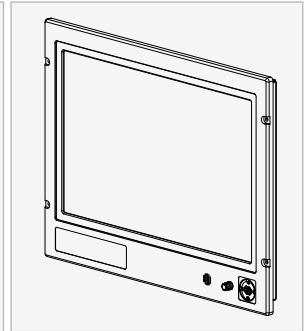|	
Manufacturer:	**Hatteland Display AS**
Product:	**22.0 inch Maritime Multi Display (MMD)**
Type:	**JH 22T11 MMD-xxx-Axxx**

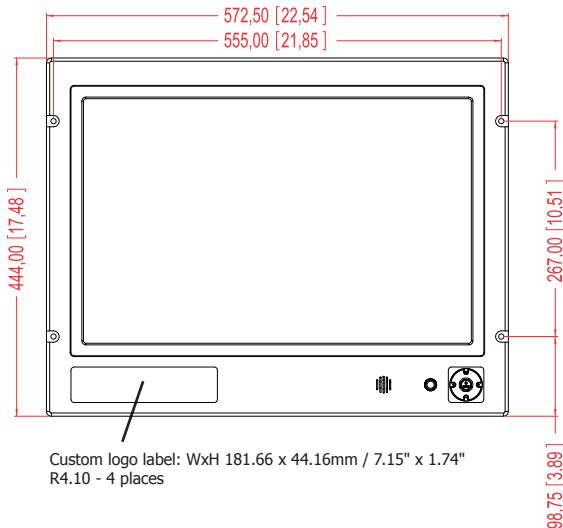## 22.0 inch Widescreen (MMD) - Series 1

Features:

The Series 1 Maritime Multi Display Widescreen (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, VGA out, VGA 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 models provide Picture-By-Picture (PBP) and Picture-In-Picture (PIP) functionality. Aspect ratio is 16:10.
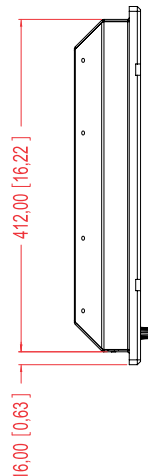
Further, all models and variations can be offered with Optical Bonding Technology that mitigates screen misting. By factory standards the unit is ECDIS Compliant. Single AC model is also available.
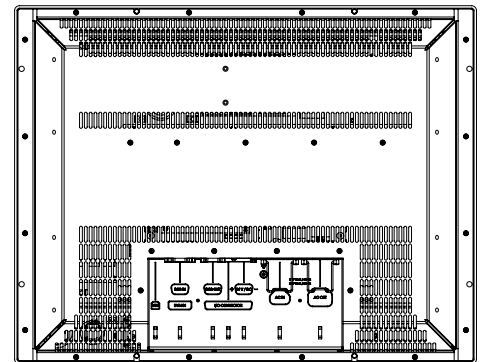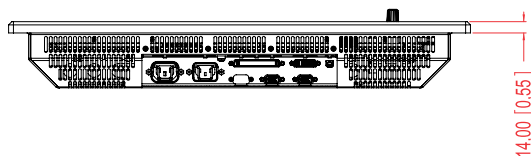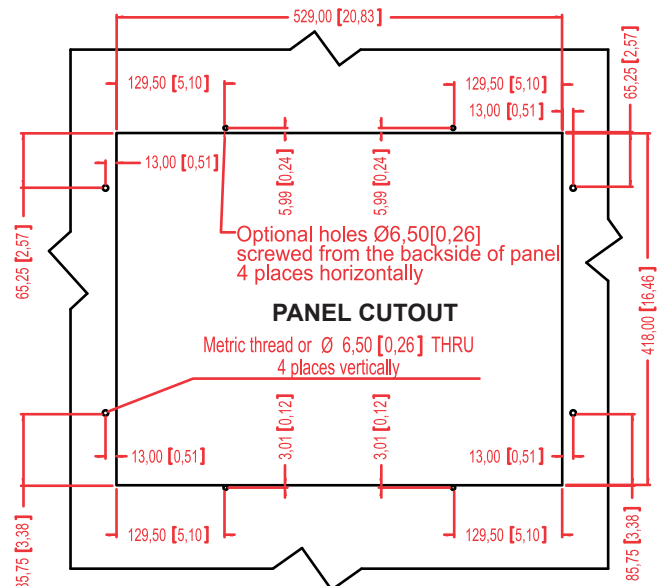
FRONT VIEW

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

572,50 [22,54]
555,00 [21,85]
444,00 [17,48]
267,00 [10,51]
98,75 [3,89]

SIDE VIEW

412,00 [16,22]
16,00 [0,63]

BACK VIEW

BOTTOM VIEW

14,00 [0,55]

TOP VIEW

523,00 [20,59]
68,00 [2,68]

529,00 [20,83]
129,50 [5,10]
129,50 [5,10]
13,00 [0,51]
65,25 [2,57]
13,00 [0,51]
5,99 [0,24]
5,99 [0,24]
65,25 [2,57]
418,00 [16,46]

Optional holes Ø6,50[0,26] screwed from the backside of panel 4 places horizontally

PANEL CUTOUT

Metric thread or Ø 6,50 [0,26] THRU 4 places vertically

13,00 [0,51]
3,01 [0,12]
3,01 [0,12]
13,00 [0,51]
85,75 [3,38]
129,50 [5,10]
129,50 [5,10]
85,75 [3,38]
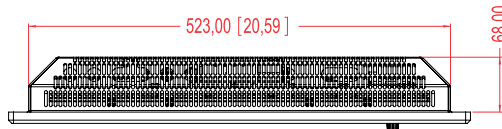
Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

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Tel: (+47) 4814 2200 - mail@hatteland-display.com - www.hatteland-display.com

1/2

SPECIFICATIONS

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

HATTELAND®
DISPLAY

TFT Technology:
- High Quality AU Optronics TFT
- 22.0 inch viewable image size. Widescreen, Aspect ratio 16:10.
- Active Matrix, Thin Film Transistor (TFT)
- RGB Vertical Stripe

TFT Characteristics:
- Native Resolution   : 1680 x 1050
- Pixel Pitch (RGB)   : 0.282 (H) x 0.282 (V) mm
- Response Time   : 20 ms (typical), "black" to "white"
- Contrast Ratio   : 1000:1 (typical)
- Light Intensity   : 300 cd/m2 (typical)
- Viewable Angle   : +/- 89 deg. (typical) (Up/Down/Left/Right)
- Active Display Area   : 473.76 (H) x 296.1 (V) mm
- Max Colors   : 16.7 millions

Synchronisation:
Sync Signal:
- Digital separate synchronisation
- Composite synchronisation
- Synchronisation on green.
- Auto detects VGA -> WSXGA, 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 optimum 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
- WSXGA   : 1680 x 1050*

* 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 + 24 VDC   - JH 22T11 MMD-Mxx-Axxx*
- 115&230VAC - 50/60Hz   - JH 22T11 MMD-Axx-Axxx

*Multi-Power: 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   - 85W (TYP) - 100W (MAX)

Physical Considerations:
- 572.50 (W) x 444.00 (H) x 82.00 (D) mm
- 22.54" (W) x 17.48" (H) x 3.23" (D)
- Weight: 14.50 kg (approx)

Signal Terminals:
- DVI-I Signal IN   : 1 x 29p DVI Female (or as VGA IN with adapter)
- VGA Signal IN   : 1 x 15p HD D-SUB (female)
- VGA Signal OUT   : 1 x 15p HD D-SUB (female) - Clone of VGA 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
- If AC Power OUT   : 1 x Std IEC Outlet (5A Max)
- If DC Power IN   : 1 x 2p D-SUB Connector (male) - Amphenol FCC17

**Tested at recommended resolutions. The VGA output signal 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.

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 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 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. : JH22T11MMD-xxx-xxxx - Std: 160cm Steering: 90cm

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 22BRD STD-A1   = Mounting Bracket EN60945 Tested
- JH 22TBR STD-A1   = Mounting Bracket
- JH MMDRO STD-A1   = Rotary Bracket
- JH 22VED STD-A1   = VESA Bracket
- JH 22TWC STD-A1   = Water Cover
- JH 22TSV STD-A1   = Sun Visor
*Please see user manual for drawings/measurements.

Factory Options:
- Capacitive Touch Screen (requires Bonding) / Optical Bonding Technology
- Color Calibrated models (ECDIS)

TESTING/APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies:

IEC 60945 4th (EN 60945:2002) | **ClassNK** - Nippon Kaiji Kyokai | **GL** - Germanischer Lloyd | **DNV** - Det Norske Veritas
ABS - American Bureau of Shipping | **BV** - Bureau Veritas | **LRS** - Lloyd's Register of Shipping | **EU RO MR** - Mutual Recognition
CCS - China Classification Society