DATA SHEET

HATTELAND® DISPLAY

Manufacturer:	**Hatteland Display AS**
Product:	**15.0 inch Maritime Multi Display (MMD)**
Type:	**JH 15T17 MMD-xxx-Axxx**

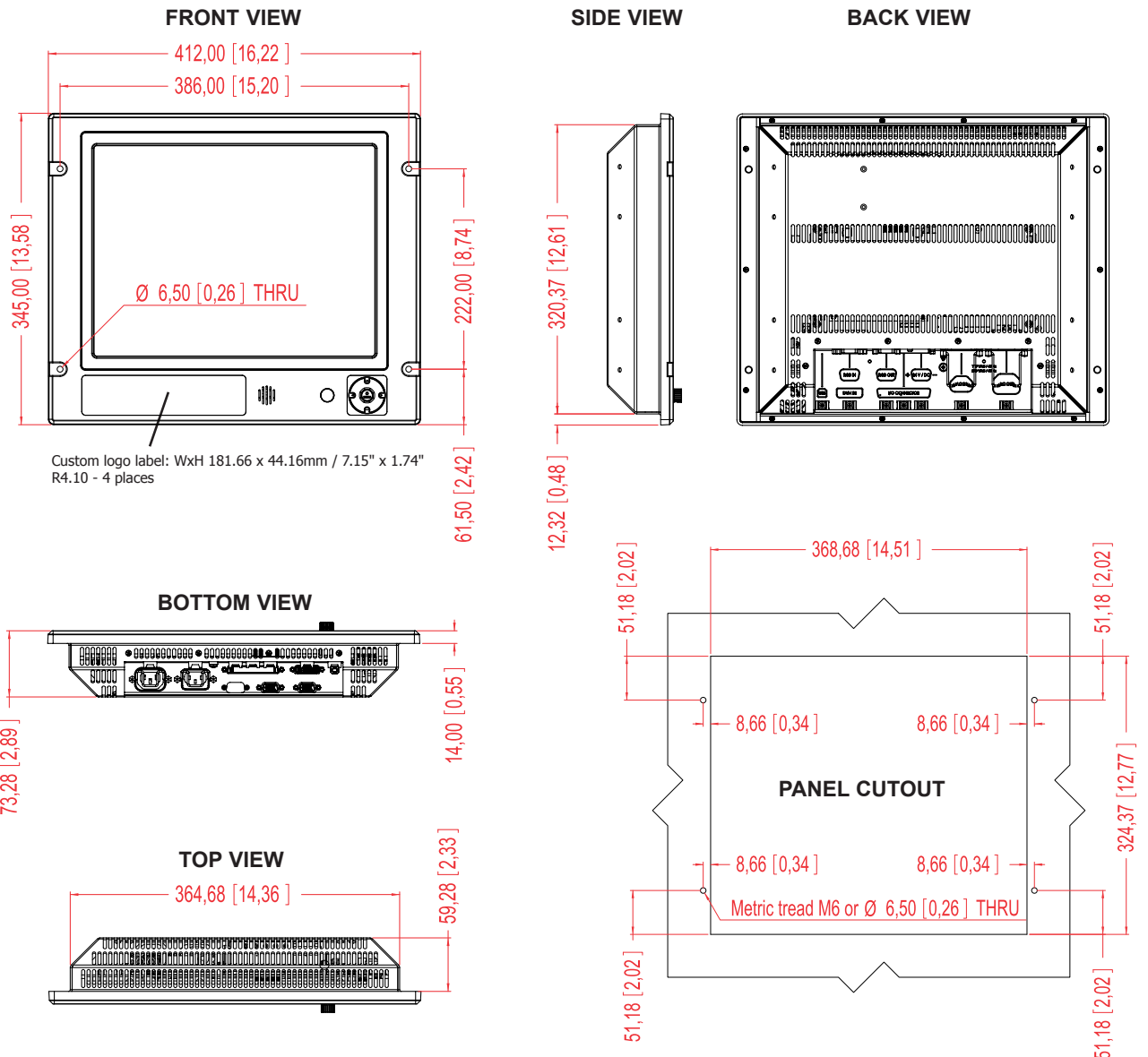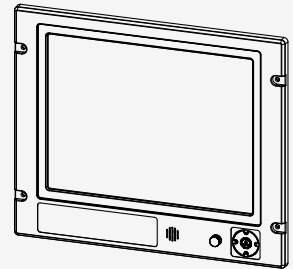| Last Revised:	**06 May 2010**
Revision#:	**15**

15.0 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 HATTELAND® 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.

Further, all models and variations can be offered with Optical Technology bonding that mitigates screen misting.

FRONT VIEW

412,00 [16,22]
386,00 [15,20]
345,00 [13,58]
222,00 [8,74]
Ø 6,50 [0,26] THRU
61,50 [2,42]

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

SIDE VIEW

320,37 [12,61]
12,32 [0,48]

BACK VIEW

BOTTOM VIEW

73,28 [2,89]
14,00 [0,55]

TOP VIEW

364,68 [14,36]
59,28 [2,33]

368,68 [14,51]
51,18 [2,02]
51,18 [2,02]
8,66 [0,34]
8,66 [0,34]

PANEL CUTOUT

324,37 [12,77]
8,66 [0,34]
8,66 [0,34]
Metric tread M6 or Ø 6,50 [0,26] THRU
51,18 [2,02]
51,18 [2,02]

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.

Note: All specifications are subject to change without prior notice!

TFT Technology:

- High Quality SHARP TFT
- 15.0 inch viewable image size
- Color Active Matrix LCD Module
- a-Si Thin Film Transistor (TFT)

TFT Characteristics:

- Pixel Number   : 1024 x 768
- Pixel Pitch (RGB)   : 0.297 (H) x 0.297 (V) mm
- Response Time   : 25 ms (typical), "black" to "white"
- Contrast Ratio   : 400:1 (typical)
- Light Intensity   : 250 cd/m2 (typical)
- Viewable Angle   : +/- 85 deg. (typical) (Up/Down/Left/Right)
- Active Display Area   : 304.1 (H) x 228.1 (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 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
- WUXGA   : 1920 x 1200
* Recommended for optimum picture quality. (60 Hz only)

Video Signals (with HATTELAND® Multifunction Cable):
- Interlaced NTSC and PAL/SECAM video
- Composite video

Power Specifications:

Power Supply:
- 115&230VAC - 50/60Hz   - JH 15T17 MMD-Axx-xxxx
- 24 VDC   - JH 15T17 MMD-Dxx-xxxx

Power Consumption:
Operating   : 100 W (max)

Typical Type Numbers:

- JH 15T17 MMD-AA1-AAAA   = Standard AC, Keypad controls only
- JH 15T17 MMD-DA1-AAAC   = Standard DC & Capacitive Touch Screen
- JH 15T17 MMD-AA1-AOBA   = Standard AC, Bonded, Potmeter Controls, Buzzer

Buzzer-Potmeter-Keypad	Keypad
MMD-xxx-xxBx	MMD-xxx-xxAx

For a full overview, please review our typenumber sheet found on our website:
http://www.hatteland-display.com/pdf/misc/ind100780-1_series1redesign_typenumber_desc.pdf

Physical Considerations:

- 412 (W) x 345 (H) x 73 (D) mm / 16.22" (W) x 13.58" (H) x 2.87" (D)
- Weight: 7 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
- 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.

HATTELAND® Multifunction Cable:

The factory standard cable is delivered with the following connectors.
Standard cable length is 30cm. Art: #1=VSD100692-4 / #2=VSD100692-3

#1	• COM1	: 1 x 9p D-SUB (female) - RS232
	• Composite Video IN	: 3 x BNC (female)
#2	• COM1	: 1 x 9p D-SUB (female) - RS232
	• Composite Video IN	: 3 x BNC (female)
	• COM Touch	: 1 x 9p D-SUB (female) - For touch screen

Customized cables are possible to support more built-in signals, like: RS-232, RS-485, RS-422/RS-485, Buzzer, ON/OFF, Touch (RS-232 or PS/2), 1 x S-Video IN, 3 x Composite 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   : EN60529 (IP66) (Applies for flush mount)
- Compass Safe Dist. : JH15T17MMD-xxx-xxxx Std: 130cm Steering: 100cm

Safety 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 15TBR STD-B1 = Mounting Bracket (Review user manual)
- JH 15TRO STD-A1 = Rotary Bracket (Review usermanual)
- JH 15TSV STD-A1 = Sun Visor (Review user manual)
- JH VESA 15T03-A1= Vesa Bracket (Review user manual)
- JH 15TAP STD-A1 = 15" Adapter Frame to 19" Rack (Review user manual)
- JH 15TAP STD-B1 = 15" Adapter Frame to 17" CRT monitor (Review man)
- JH 15TWC STD-A1= Water Cover (Review user manual)

Factory Options:

- Resistive* or Capacitive Touch Screen / Optical Technology Bonding*

*Note that all 15 inch with resistive touch screens can not be combined with bonding.

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   **CCS** - China Classification Society   **LRS** - Lloyd's Register of Shipping (pending)