

Manufacturer: **Hatteland Display AS**

Product: **12.1 inch Maritime Multi Display (MMD)**
Standard / Sunlight Readable - High Bright model

Type: **HD 12T21 MMD-xxx-Fxxx / HD 12T21 MMD-xxx-FHxx**

Last Revised: **03 May 2017**
Revision#: **32**

12.1 inch Maritime Multi Display - Series X

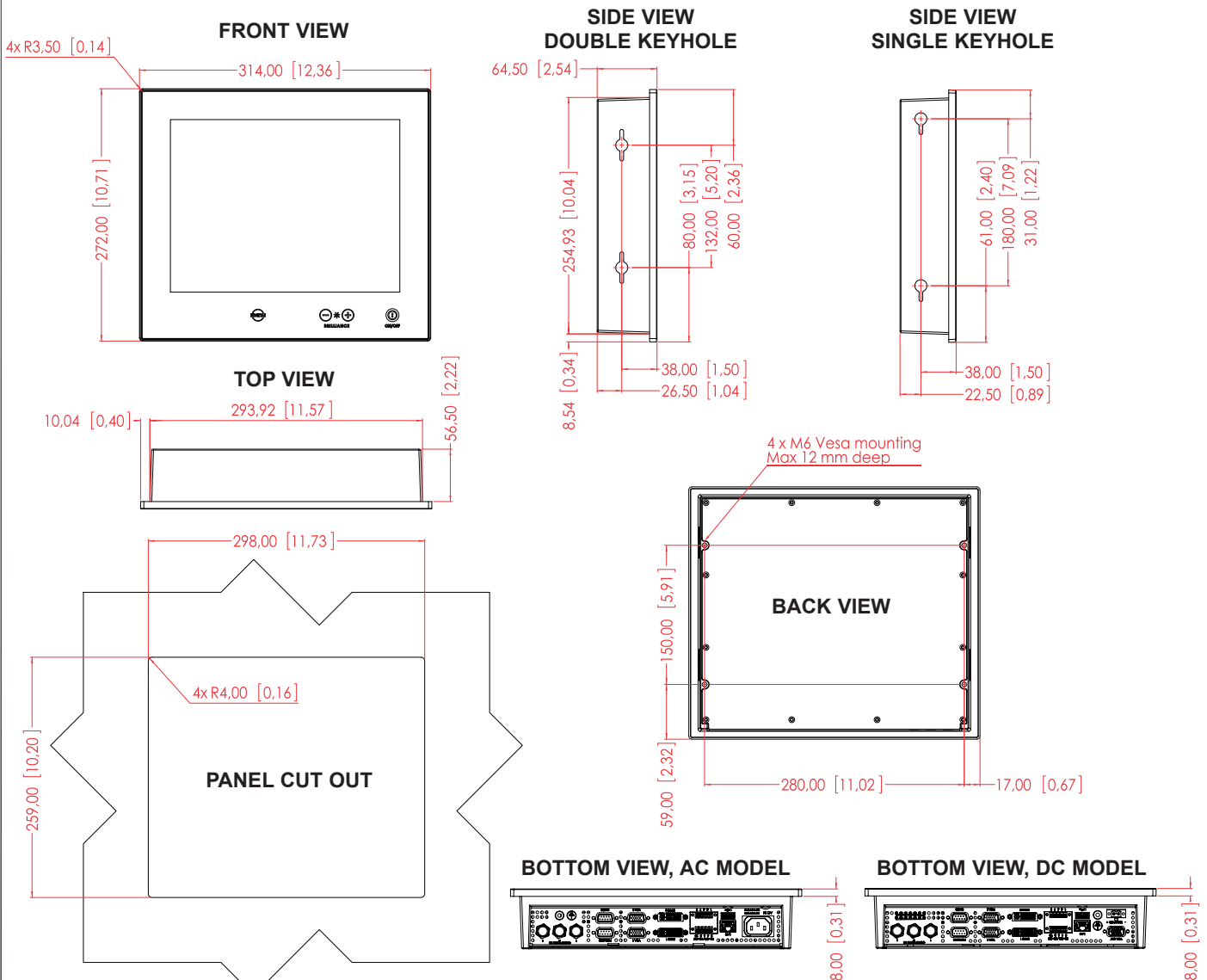
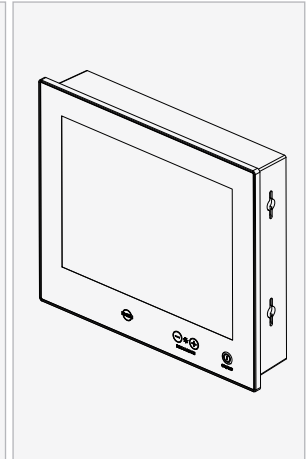
Features:

Series X Displays and Panel Computers offer the ultimate in performance, convenience, state of the art design and enduring quality for system integrators and boat builders. Series X products offer a range of feature sets optimized for varying requirements and applications.

The Series X display range is a flexible monitor solution designed and type approved for the professional maritime segment, where reliability and long life time are key pre-requisites for the industry. The product range combines stunning design and technology with innovative features and options, making it all that the integrator needs for top class type-approved marine systems.

The multi-input MMD models provide a wide choice of display size and format 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 security, this range with all it's possible options provides a robust and multipurpose platform from which to display and manage data and multiple camera or sensor videos.

Series X displays feature Glass Display Control™, LED Backlight Technology and full dimming, and can also accommodate and combine a number of options such as multi-touch screen and optical bonding.



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
- 12.1 inch viewable image size, Aspect Ratio 4:3
- TFT active-matrix liquid crystal panel

TFT Characteristics:

- Native Resolution : 1024 x 768
- Pixel Pitch (RGB) : 0.24 (H) x 0.24 (V) mm
- Response Time Standard : 35ms (typical), black to white
- Response Time High Bright : 19ms (typical), black to white
- Contrast Ratio Standard : 700:1 (typical)
- Contrast Ratio High Bright : 600:1 (typical)
- Light Intensity Standard : 600 cd/m² (typical)
- Light Intensity High Bright : 1000 cd/m² (typical)
- Viewable Angle Standard : +/- 80 deg. (L/R), +/- 70 deg. (U/D) (typ)
- Viewable Angle High Bright : +/- 80 deg. (D/L/R), +/- 60 deg. (U) (typ)
- Active Display Area : 245.76 (H) x 184.32 (V) mm
- Max Colors : 16.7 million

Synchronization:

- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> XGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
- : Input Impedance 75 Ohm

Synchronization Range:

- Horizontal : 31.5 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*

* Recommended for optimal picture quality

Video Signals:

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

Power Specifications:

Power Supply options:

- 115&230VAC - 50/60Hz : HD 12T21 MMD-Cxx-Fxxx model
- 12-24 VDC (14VDC nominal): HD 12T21 MMD-Fxx-Fxxx model

Power Consumption:

- Operating Standard : 21W (typ) - 60W (max)
- Operating High Bright : 29W (typ) - 60W (max)

Physical Considerations:

- W:314.00 [12.36"] x H:272.00 [10.71"] x D:64.50 [2.54"] mm [inch]
- 4 x M6 VESA mounting 280x150mm, Max 12mm deep
- Weight: 4.0kg / 8.8lbs
- High Bright only: Includes an EPDM sealing gasket (IP66 console mount).

Signal Terminals:

- DVI-D Signal IN : 2 x 24p DVI (female)
- RGB Signal IN : 2 x 15p HD D-SUB (female)
- Comp. Video IN : 3 x BNC connector (female)
- SCOM RS-422/485 : 1 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
- RGB Signal OUT : 1 x 15p HD D-SUB (female) - Clone of RGB IN*
- If Touchscreen : 1 x USB TYPE A Connector (female)
- Ethernet : 1 x RJ45 Connector for Remote Control
- SCOM RS-232 : 1 x 9p D-SUB (female) non-isolated+Buzzer
- Potmeter : 1 x 9p D-SUB (male)
(Potentiometer IN, +5VDC OUT, BRT +/- IN)
- If AC Power IN : 1 x Std IEC Inlet
- If DC Power IN : 1 x 2-pin Terminal Block 5.08

*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.

User Controls:

Behind front bezel - Glass Display Control™ (GDC) IP66:

- Power On/Off, On Screen Display Menu, Brightness Control (-/+)
- Hotkeys (left/right), Mode/Status Indicator (Service)
- Buzzer (not visible), Light Sensor (not visible)

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: IP66 front - IP22 rear (EN60529)

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:

- HD CMB SX1-A2 : 1 x Console Mount Kit (1-12.75mm). EN60945 Tested
- HD CMB SX1-A3 : 1 x Console Mount Kit (1-12.75mm). EN60945 Tested
Long screws for easier installation in tight spaces.
- HD TMB SX1-A1 : 1 x Table Mount Bracket. EN60945 Tested
- HD VED SX1-A1 : 1 x VESA Bracket, not EN60945 Tested
- HD REM SX1-A1 : 1 x External Remote Control, EN60945 Tested

Please see user manual/datasheet for more information

Factory Options:

- Projected Capacitive Touch Screen (Multitouch, USB interface)
- Optical Bonding Technology
- Sunlight Readable / High Bright (includes Optical Bonding) -FHxx model
- Single 12-24VDC Power Input

Compass Safe Distance: HD 12T21 MMD-xxx-Fxxx

Standard: 125cm

Steering: 75cm

APPROVALS & CERTIFICATES

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

IEC 60945 4th (EN 60945:2002)

GL - Germanischer Lloyd

CCS - China Classification Society

EU RO MR - Mutual Recognition

IACS E10

DNV - Det Norske Veritas

BV - Bureau Veritas

ClassNK - Nippon Kaiji Kyokai

ABS - American Bureau of Shipping

LRS - Lloyd's Register of Shipping