DATA SHEET

HATTELAND® DISPLAY

Manufacturer:	**Hatteland Display AS**
Product:	**20.1 inch Naval Multi Display (NMD)**
Type Number:	**HM 20T07 NMD-xx**

Last Revised:	**08 Jan 2016**
Revision#:	**16**

20.1 inch Naval Multi Display (NMD)

Features:

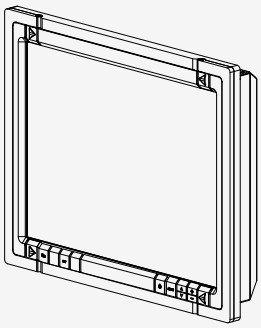
The Naval Multi Display (NMD) is engineered to provide high-quality video and graphics display performance even when subjected to the most severe environmental conditions encountered in Naval installations.

The NMD meets the requirements of MIL-S-901D, Grade A, Class I shock, eliminating the need for shock isolation in the rack or console, as well as Mil-Std-167-1, Mil-Std-461E, and Mil-Std-810F.

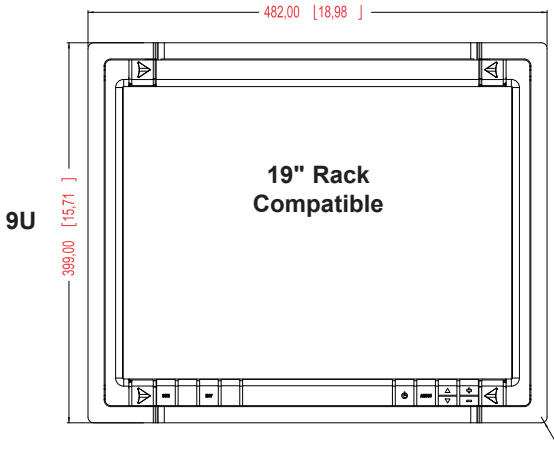
By combining the superior optical quality of a front-optical bonded UXGA LCD with its new, shock-resistant, 19-inch rack-mountable package, Hatteland Display has raised the standard for affordable, rugged COTS displays.

The clarity and enhanced color and image quality produced by our proprietary optical bonding technology makes the NMD ideal for information-intensive applications. And with our fully-adjustable backlight system (0-100%), the NMD is suitable for round-the-clock use, day or night, on the bridge or below deck.

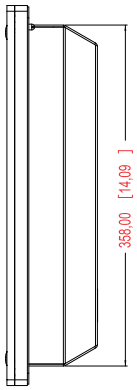
Flexible I/O options supporting both analog and digital inputs, AC or DC power configurations, and a touchscreen option makes the NMD a perfect choice for the retrofit of older displays or for new system designs.



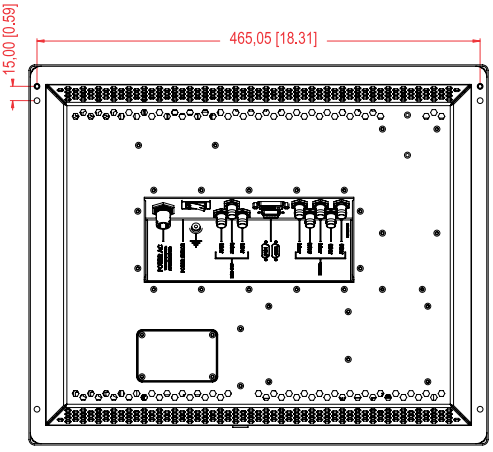
FRONT VIEW



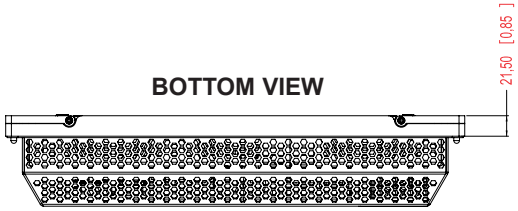
SIDE VIEW



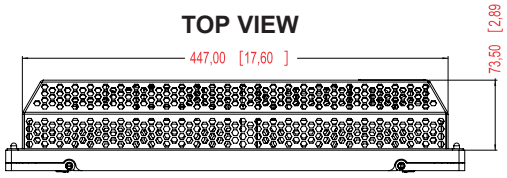
BACK VIEW



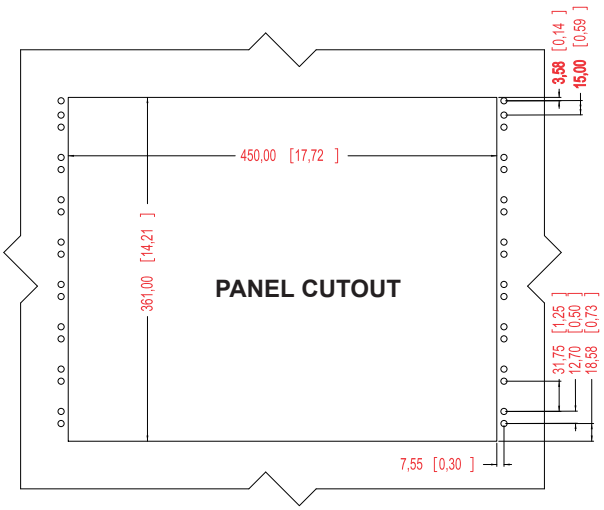
BOTTOM VIEW



TOP VIEW



PANEL CUTOUT



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.hatteland-display.com for the latest electronic version.

HATTELAND® DISPLAY

Technical Description:

TFT Technology:
- High Quality SHARP® TFT
- 20.1" viewable image size
- a-Si TFT (Thin Film Transistor) Active Matrix
- Optical Bonding Technology

TFT Characteristics:
- Native Resolution : 1600 x 1200
- Pixel Pitch (RGB) : 0.255 (H) x 0.255 (V) mm
- Response Time : 20 ms (typical), rise + fall
- Contrast Ratio : 500:1 (typical)
- Light Intensity : 250 cd/m2 (typical)
- Viewable Angle : +/- 88° (typical) (Up/Down/Left/Right)
- Active Display Area : 408.0 (H) x 306.0 (V) mm
- Max Colors : 16.7 million

Synchronization:
- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> UXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p- Input Impedance 75Ω
- Horizontal : 15.0 kHz to 75 kHz
- Vertical : 56 Hz* to 75 Hz

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*

** Recommended in 60Hz for optimal picture quality. 56 Hz only in 800x600*

Power Supply Options:
- 115VAC/50/60/400Hz & 230VAC/50/60/400Hz - A1/C7 models
- 24/28 VDC - A2/C8 models

Power Specifications
- Power Consumption: Operating 75W (typical) - 100W (max)
- Inrush Current: 10A for 24/28VDC, Max. (@ 25 deg. C)
- Inrush Current: 10A for 115VAC, Max. (@ 25 deg. C)

Environmental Performance:

TEST	LEVEL	SPECIFICATION
Dry heat storage	70 deg. C	Mil-Std-810F
Cold storage	-40 deg. C	Mil-Std-810F
Operating Temperature (typ)	AC Model: -15 to +55 deg. C DC Model: -15 to +55 deg. C	Mil-Std-810F
Humidity	95% at 40 deg. C	Mil-Std-810F
Shock	60g / 11ms	IEC 60068-2-27 (1987), Test Ea
Grade A Shock	Class I (hard-mounted)	MIL-S-901D
Transient Shock	2-280 Hz Designed to envelope a half sine shock pulse of 50g / 35ms	IEC 60068-2-57 (1999-11), Test Ff
Rain (drip proof)	-	MIL-STD-810F *
Salt Fog	-	MIL-STD-810F
Vibration Testing	-	MIL-STD-167-1

** Console mounted.*

Mechanical Description:

Physical Dimensions:
- 482.00 (W) x 399.00 (9U) (H) x 95.00 (D) mm
- 18.98" (W) x 15.71" (9U) (H) x 3.74" (D)
- Weight: 11.5 kg

I/O Signal Terminals Rear:
- DVI-I Signal IN : 1 x 29p DVI-I (or as RGB IN with adapter)
- RGB Signal IN : 5 x BNC J01(R)+J03(G)+J05(B)+J07(H)+J08(V)
- RGB Signal OUT : 3 x BNC J02(R)+J04(G)+J06(B)
- If AC Power IN : 1 x Circular MIL P/N: AMP - MS27468T9F98P
- If DC Power IN : 1 x Circular MIL P/N: AMP - MS27468T15F5P
- Grounding : 1 x M4 Internal Screw Thread
- Combined Touch / SCOM+BIT Interface: 1 x 9p D-SUB (female)

User Controls / On front bezel:
- BIT Function button
- INV Alarm Indicator LED
- Power ON/OFF button
- On Screen Display control (OSD/OSM) button
- Up/Down OSD Navigation / Hotkey Set #1 buttons
- +/- Brightness Control
- All buttons have backlighting

User Controls / Rear:
- Mains Power ON/OFF Toggle Switch

EMI Testing:

The unit is tested according to the following:
MIL-STD 461E, 1999

- CE 101 - Conducted emission, 30 Hz - 10 kHz
- CE 102 - Conducted emissions, 10 kHz - 10 Mhz
- CS 101 - Conducted susceptibility, 30 Hz - 50 kHz
- CS 114 - Conducted susceptibility, 10 kHz - 200 MHz
- CS 116 - Conducted susceptibility, damped oscillatory waves
- RE 101 - Radiated emission, H-field, 30 Hz - 100 kHz
- RE 102 - Radiated emissions, E-field, 10 kHz - 10 GHz
- RS 101 - Radiated susceptibility, H-field, 30 Hz - 100 kHz
- RS 103 - Radiated susceptibility, E-field, 2 MHz - 18 GHz

Factory Mounted Options:

- Resistive Touch Screen (8 wire)
- Color Calibrated models (ECDIS)

Typical Type Numbers:

- HM 20T07 NMD-A1 = AC Power
- HM 20T07 NMD-A2 = DC Power
- HM 20T07 NMD-C7 = AC Power + Resistive Touch Screen
- HM 20T07 NMD-C8 = DC Power + Resistive Touch Screen

NSN (NATO Stock Number): 7025-01-576-3091

Available Accessories:

- VSD100694-1 = External 10-foot (3.0m) AC power cable NEMA (Halogen Free)
- VSD100695-1 = External 10 foot (3.0m) AC power cable Europe (Halogen Free)
- VSD100696-1 = External 10 foot (3.0m) DC power cable (Halogen Free)

TESTING / APPROVALS & CERTIFICATES

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

MIL-STD 461E, 1999 **MIL-S-901D Class I (hard-mounted) Grade A Shock** **EN60945 4th** (IEC945 4th) **IACS E10**