DATA SHEET

HATTELAND® DISPLAY

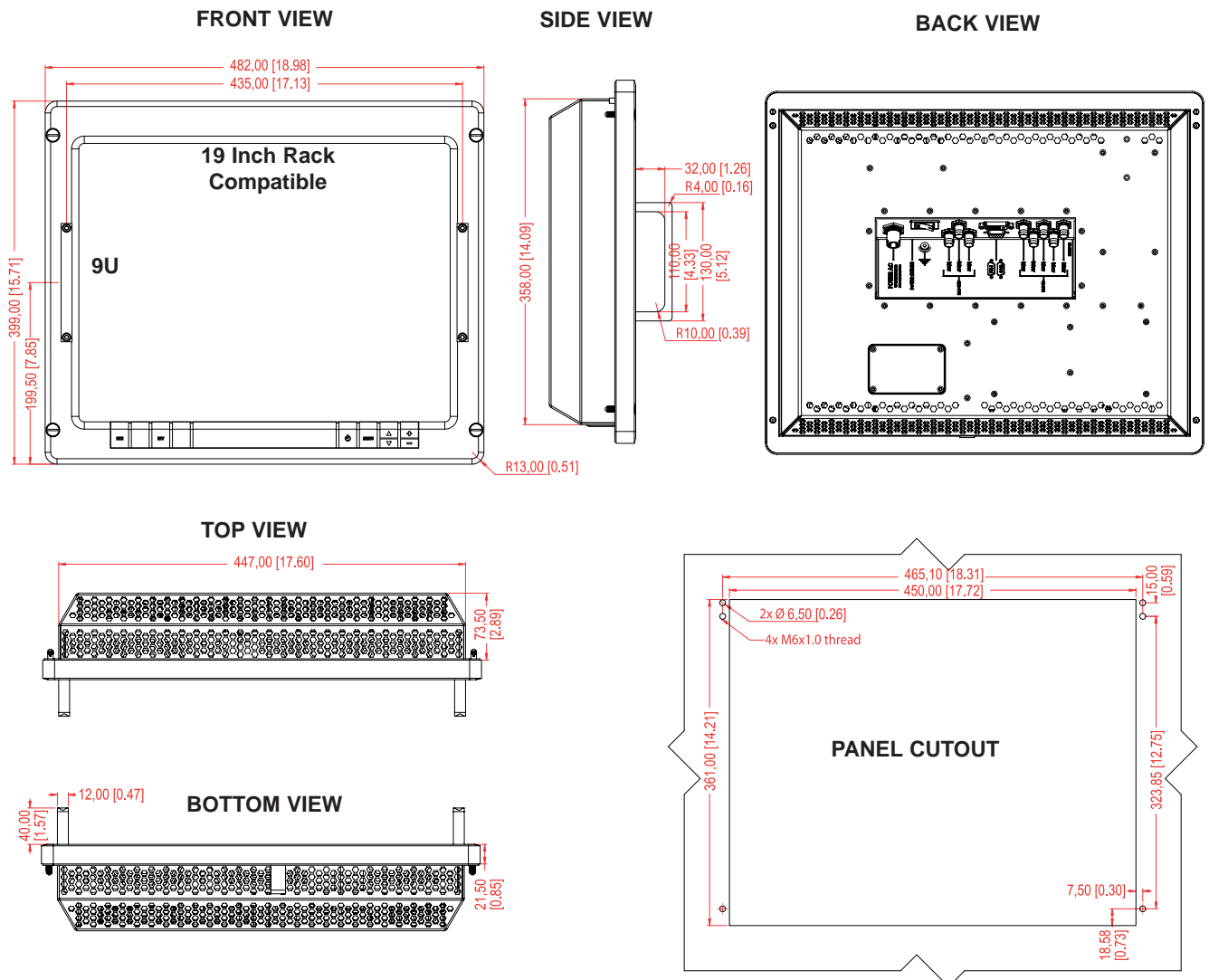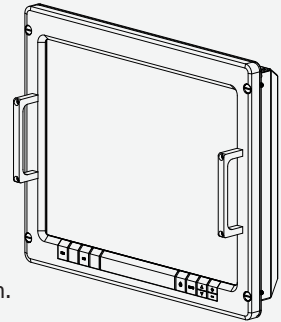|	
Manufacturer:	**Hatteland Display AS**
Product:	**20.1 inch Combat Management Display (CMD)**
Type Number:	**HM 20T07 CMD**

20.1 inch Combat Management Display (CMD)

Features:

The combination of high quality TFT panels and bonding technology to improve strength and eliminate screen condensation allows you to display all professional applications with clarity and enhanced color and image quality. This is improved even further by high light intensity and contrast with a fully adjustable backlight (0 - 100%).

Flexible input and the combination of remote control and slave output alongside optional features that include touchscreens and a choice of AC or DC input power and LCD flicker compensation provide added value.

Hatteland Display's naval products are subjected to the most severe tests to ensure that they meet the strict standards of use in the naval environment. This, in combination with the fully adaptive 19" rack mounting allows the product to be used in any environment and configuration.

FRONT VIEW

19 Inch Rack Compatible

9U

482,00 [18.98]
435,00 [17.13]
399,00 [15.71]
199,50 [7.85]
R13,00 [0.51]

SIDE VIEW

32,00 [1.26]
R4,00 [0.16]
110,00 [4.33]
130,00 [5.12]
358,00 [14.09]
R10,00 [0.39]

BACK VIEW

TOP VIEW

447,00 [17.60]
73,50 [2.89]

BOTTOM VIEW

12,00 [0.47]
40,00 [1.57]
21,50 [0.85]

PANEL CUTOUT

465,10 [18.31]
450,00 [17.72]
15,00 [0.59]
2x Ø 6,50 [0.26]
4x M6x1.0 thread
361,00 [14.21]
323,85 [12.75]
7,50 [0.30]
18,58 [0.73]

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

Technical Description:

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

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 millions

Synchronisation:
• Digital separate synchronisation
• Composite synchronisation
• Synchronisation 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 91 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/AF1/CF7/C7 models
• 24/28 VDC   - A2/AF2/CF8/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 +40 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 mm (W) x 399.00 mm (9U) (H) x 135.00 mm (D)
• 18.98" (W) x 15.71" (9U) (H) x 5.31" (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 Options:

• Resistive Factory Mounted Touchscreen - 8wire
• Flicker compensation
• Color Calibrated models (ECDIS)

Typical Type Numbers:

• HM 20T07 CMD-A1 = AC Power
• HM 20T07 CMD-A2 = DC Power
• HM 20T07 CMD-AF1 = AC Power + Flicker Compensation
• HM 20T07 CMD-AF2 = DC Power + Flicker Compensation
• HM 20T07 CMD-CF7 = AC Power + Flicker Compensation + Resistive Touch Screen
• HM 20T07 CMD-CF8 = DC Power + Flicker Compensation + Resistive Touch Screen
• HM 20T07 CMD-C7 = AC Power + Resistive Touch Screen
• HM 20T07 CMD-C8 = DC Power + Resistive Touch Screen

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)

APPROVALS & CERTIFICATES

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

EN60945 4th (IEC945 4th)   **MIL-STD 461E, 1999**