DATASHEET

HATTELAND TECHNOLOGY
an EMBRON Company

Manufacturer:	**Hatteland Technology AS**
Product:	**15.6 inch Maritime Multi Computer (MMC)**
Type:	**HD 16T30 MMC-xxx-xxxxxx** Where x=configuration

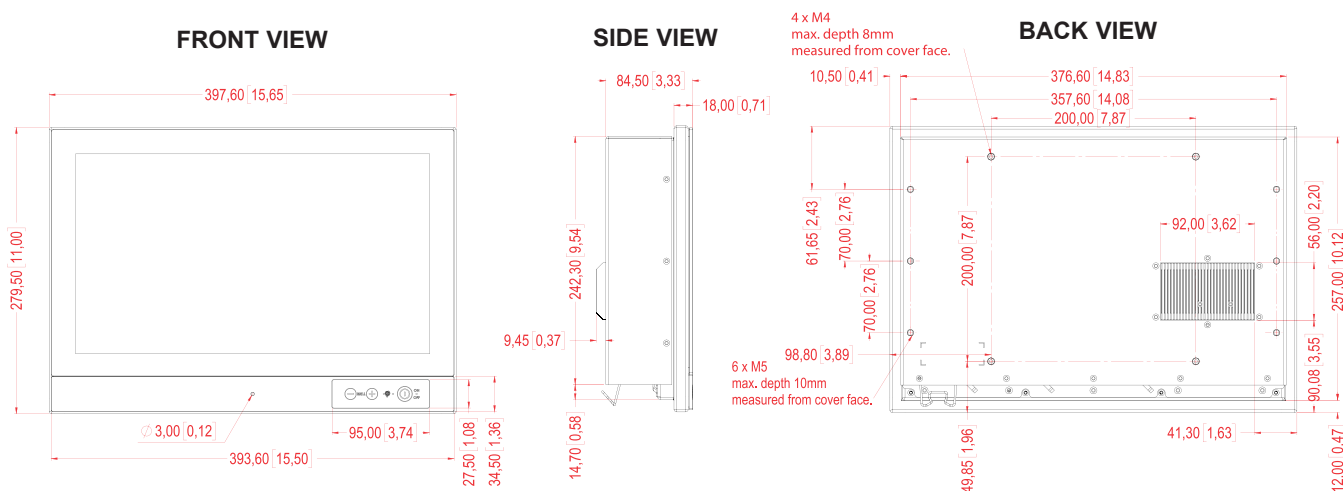|	
Last Revised:	**14 Feb 2025**
Revision#:	**34**

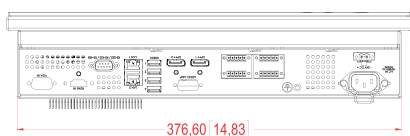# 15.6 inch Maritime Multi Computer - Series E

Features:

Series E is the new cost effective Panel Computers portfolio from Hatteland Technology. Designed for 10 years manufacturing, all Series E Panel Computers integrate Intel® Apollo Lake processor-based computers, high quality display technology, fan-less design and low power consumption to deliver a fast and reliable all-in-one solution for diverse maritime applications.

The integrated nature of Series E Panel Computers enables tangible cost savings for maritime technology and equipment manufacturers as well as systems integrators. The portfolio features a range of display sizes, new data storage technology and a number of IO options, providing full flexibility to integrate the highest quality displays in a wider range of maritime technology. Especially suited to developing new bridge solutions, Series E Panel Computers make it possible to continue improving safety and efficiency through safe navigation, while still retaining focus on quality and cost.
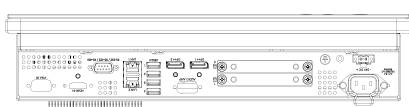
Series E Panel Computers also meet the same extreme quality standards as the proven Series X Panel Computer range and feature LED Backlight Technology, full dimming (0-100%) all as standard. In addition there are options such as Multi-Power (AC/DC) inputs or Single AC input, SSD and m.2 storage mediums and Multiple interface configurations. The product range can also accommodate and combine multi-touch screen and optical bonding.

FRONT VIEW

SIDE VIEW

BACK VIEW

4 x M4
max. depth 8mm
measured from cover face.

6 x M5
max. depth 10mm
measured from cover face.

BOTTOM VIEW w/1 x Module Area model

BOTTOM VIEW w/SSD Diskbays model

TOP VIEW

PANEL CUT OUT

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!
Please visit www.hattelandtechnology.com for the latest electronic version.

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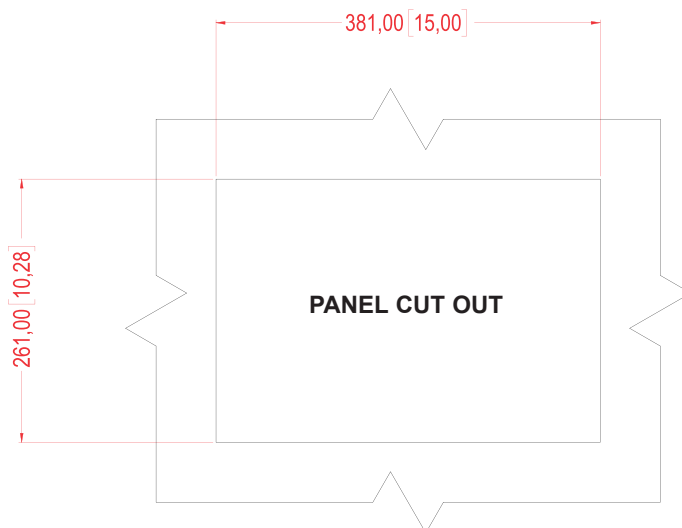
TFT Technology:
- 15.6 inch TFT Liquid Crystal Display module, VA (Vertical Alignment)
- a-si TFT Active Matrix
- Widescreen, Aspect Ratio 16:9
- LED Backlight Technology

TFT Characteristics:
- Native Resolution : 1920 x 1080 (FHD)
- Pixel Pitch (RGB) : 0.17925 (H) x 0.17925 (V) mm
- Response Time : 35ms (tr+tf) (typ)
- Contrast Ratio : 1500:1 (typ)
- Light Intensity : 400 cd/m^2 (typ)
- Viewable Angle : 85 deg. (up/down/left/right) (typical)
- Active Display Area : 344.16 (H) x 193.59 (V) mm
- Max Colors : 16.77M colors (RGB 8-bit)

Computer Specifications:
- Supported OS : See table below for factory options
- CPU/Processor : 1 x Intel Atom® x7-E3950 Processor, 2M Cache, 1.60GHz / 2.00GHz
- Installed Storage : See table below for factory options
- Installed Memory : See table below for factory options
- System Chipset : Intel® SOC
- Graphics Chipset : Intel® HD Graphics 505 (CPU dependent) Supports OpenGL 4.6 (Windows/Linux) and OpenGL ES 3.2 (Linux)
- Ethernet LAN #1 : Realtek RTL8111H-CG Gigabit LAN 10/100/1000Mbps
- Ethernet LAN #2 : Intel I210IT Gigabit LAN 10/100/1000Mbps (Supports Intel® Teaming for LAN #2)
- BIOS : AMI BIOS, supports ACPI Note: "Legacy Mode" option is not fully supported for System Chipset and Microsoft® Windows® 10.
- Buzzer : Yes (according to EN60945)
- Speaker : None
- WatchDog Timer : Yes (256 segments, 0, 1, 2...255 sec/min)
- Other features : RTC (0.5s/day), Battery Alarm, WakeOnLan, Fast Boot, AT mode, USB Boot, TPM2.0
- DP++ Out Max Res. : 640 x 480 to 4096 x 2304 @ 60Hz

Power Specifications:
Power Supply Options:
- Multi-Power option : 100-240V AC - 50/60Hz + 24VDC (MMC-Mxx)
- Single AC Power Option : 100-240V AC - 50/60Hz (MMC-Axx)

Note: 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: *(see note)
- Operating AC/DC : 44W (typ) - 75W (max)
- Operating AC : 44W (typ) - 125W (max)

Available Computer Configurations:

Type	Description	Size/Specification
Memory	DDR3L, 1600MHz, SO-DIMM	- 2GB Single Channel - 4GB Dual Channel - 8GB Dual Channel
Additional Internal Storage:	SSD m.2 SATA	- 480GB
	eMMC	- 32GB
Software Support	Application Programming Interface (API) - as defined in associated documents	- SCOM
OS Options	• **Windows® 10 IoT Enterprise 2019 LTSC (64bit)** Product Distribution End Date January 2029 • **Linux** (Apollo Lake: use kernel 4.10 or later)	

*Power Consumption: Numbers are specified as the unit is delivered from factory. All additional installed equipment like USB, PCIe and similar loads have to be added to power consumption. Note that total extra load have to be multiplied by 1.5 to compensate for efficiency in internal power converters. Typical power consumption varies a lot with computer load. We measure with 25% of max computer load.

Physical Dimensions:
Product Dimensions and Weight:
- W:397.60 [15.65"] x H:279.50 [11.00"] x D:94.50 [3.72"] mm [inch]
- VESA 200x200 supported. Additional spacers needed to get distance from CPU Cooler
- Weight: Approx. 4.3kg / 9.48lbs
Product Carton Size and Weight:
- L:530.00 [20.87"] x W:200.00 [7.87"] x H:540.00 [21.26"] mm [inch]
- Weight: Approx. 7.0kg / 15.4lbs

User Controls:
On front bezel IP66:
- Power On/Off, Brightness Control (-/+), Power LED, ECDIS LED
- Buzzer (75-85dB), Light Sensor

Environmental Considerations:

• Operating Temperature	: -15°C to +55°C
• Storage Temperature	: -20°C to +60°C
• Humidity	: Up to 95% (Operating / Storage)
• Shock - Vibration	: 5g/11ms - 0.7g (IEC 60945 / IACS E10)
• Air Pressure Maximum Altitude	: Operating: 4000m - Storage: 12912m
• Air Pressure Maximum Altitude (Bonded)	: Operating: 3000m - Storage: 3000m
• Humidity	: Humidity up to 95% (Operating / Storage)
• IP-Rating Protection	: IP66 front - IP20 rear (EN60529). IP22=option
• Compass Safe Distance	: Standard: 60cm - Steering: 35cm

Lifetime Considerations:
Even though 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.

Input/Output Connectors:

Connector	Rear
• DisplayPort (DP++) Out	: 2 x 20p DisplayPort (female)
• USB2.0	: 4 x USB Type A
• Ethernet GBLan	: 2 x RJ-45
• COM RS-232 & 422/485	: 1 x DB9M non-isolated (Change RS mode in BIOS)
• COM RS-232 (Internal)	: 1 x Internal Virtual COM (Software controlled)
• AC Power IN	: 1 x Std IEC inlet
• If DC Power IN	: 1 x 2-pin Terminal Block 5.08

Factory Options:
- Projected Capacitive Touch Screen (Multitouch,USB,Pen/Glove support)
- Optical Bonding Technology
- Variations of Storage, RAM Memory and Operating Systems.
- 1 x HT 00235 OPT-A1: 2W Amplified Audio out via DB9F

- Model with 1 x Diskbay with support for 2 x 2.5", no modules
- Model with 1 x Module, no Diskbay

Modules available (depending on base model above):
Review full configuration matrix in User Manual INB101505-1
1 x PCA200828-1: 4xCOM RS-422/485 isolated NMEA 4 channel
or 1 x PCA100309-1: Dual Isolated RS-232, connector 2xDB9M
or 1 x HTA2020002-AD1033: CAN isolated 2 channel or 2 x 4 channel
or 1 x HTA2020002-SLCAN (1xCAN isolated, 2 channel, socketCAN) module
or 1 x PCA100297-1: Isolated Digital IO module,4 x OUT/4 x IN
or 1 x PCA100298-1: LAN 10/100Mbps, 2 ports RJ45

Frame Grabber options (1 x supported via M.2 (PCIe x1) slot):
- HD550N1 SDI M2: 1 x SDI IN, 1920x1080@60/50fps
- HD550N1 HDV M2: 1 x HDMI IN+1 x VGA IN, 1920x1200p@60/50fps

Accessories:
- HD CMB SE1-A1 : 1 x Console Mount kit. EN60945 Tested*
- HD TMB SE1-A1 : 1 x Table Mount Bracket. EN60945 Tested
- JH C01MF A-A : 1 x USB Cable 1m, TypeA-Chassis mount receptacle
- HT 00262 OPT-A1: 4 x RS-422/RS-485 isolated, USB ext. module
- HT 00263 OPT-A1: 4 x RS-232 COM non-isolated, USB ext. module
- HT 00264 OPT-A1: 1 x CAN isolated, 2 channel, USB ext. module
- HT 00264 OPT-A2 : 1 x CAN isolated, 2 channel, socketCAN USB ext. module
- HT 00273 OPT-A1: 4 x Digital IN/OUT isolated, USB ext. module
- HT 00274 OPT-A1: 2 x LAN 10/100Mbps, RJ45, USB ext. module
- HT 00300 MSOS : OS options:
  https://www.hattelandtechnology.com/os

*Included in delivery

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

IEC 60945 4th (EN 60945:2002)	**IACS E10**	**EU RO MR** - Mutual Recognition	**ClassNK** - Nippon Kaiji Kyokai
CCS - China Classification Society	**KR** - Korean Register of Shipping	**BV** - Bureau Veritas	**ABS** - American Bureau of Shipping