DATASHEET

HATTELAND TECHNOLOGY
an EMBRON Company

Manufacturer:	**Hatteland Technology AS**
Product:	**23.8 inch Smart Monitor (MPA)**
Type:	**HD 24T30 MxA-y0A-0zPJzI**
	where x = P (Standard) or E (ECDIS Calibrated)
	y = M (Multi-Power) or A (Single Power) and z = configuration

|	
Last Revised:	**05 Jan 2023**
Revision#:	**13**

Smart Monitor (MPA) - Series E

Features:

The HATTELAND® Smart Monitors have a cost-effective architecture with easy installation, which enables tangible cost savings for maritime technology manufacturers and systems integrators. It is an all-in-one solution for diverse maritime applications based on ARM CPU with an open Android™ platform where any app from Google Play can be installed. HATTELAND® Smart Monitors have a slim design and PoE support.

The HATTELAND® Smart Monitors are based on the Series E family and configured as a Marine Panel Computer (MPA). The unit 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. This is a Solid State Fan-less Construction - No Moving Parts, Embedded light sensor, Buzzer and Aluminum Chassis. The unit supports multi-format video decoders including H.264/H.265/VP9 up to 4k & 2k @60fps (HW), H.264/MVC/VP8 encoders by 1080p@30fps and high-quality JPEG encoder/decoder (HW), typical use case such as running thin client app to control your VM's (like VMware Horizon Client) and VMS app to access your surveillance cameras.

In addition there are options such as factory mounted Projected Capacitive Touch Screen (Multitouch, USB interface), Optical Bonding, variations of CPU, Storage Devices, operating systems and prepared for WiFi and Bluetooth antennas. By factory default the unit is ECDIS Compliant.

FRONT VIEW
SIDE VIEW
BACK VIEW
BOTTOM VIEW
TOP VIEW
PANEL CUT OUT
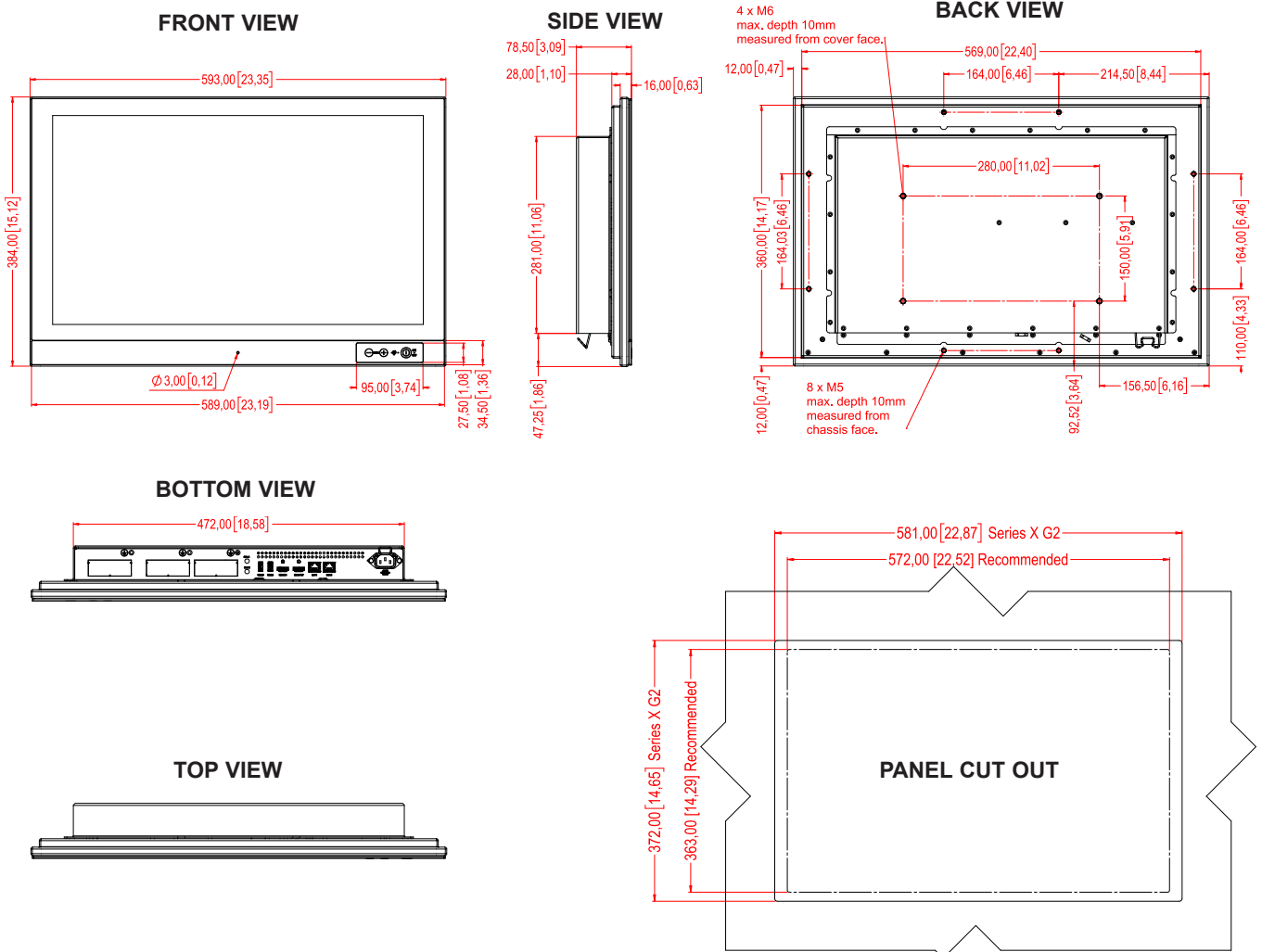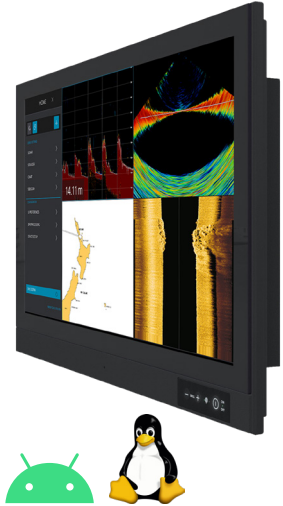
Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

SPECIFICATIONS

Note: All specifications are subject to change without prior notice!
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TFT Technology:
- LED Backlight Technology, TFT Active-matrix
- 23.80 inch viewable image size, Widescreen, Aspect Ratio 16:9
- AHVA, Normally black, RGB vertical stripe
- Projected Capacitive Touch Screen (Multitouch)

TFT Characteristics:
- Native Resolution : 1920 x 1080 (FHD)
- Pixel Pitch (RGB) : 0.274.5 (H) x 0.274.5 (V) mm
- Response Time : 14 ms (typ), G/G
- Contrast Ratio : 1000:1 (typical)
- Light Intensity : 250 cd/m² (typical)
- Viewable Angle : +/- 89 deg. (typical) (Up/Down/Left/Right)
- Active Display Area : 527.04 (H) x 296.46 (V) mm
- Max Colors : 16.7 millions (RGB 8-bit)

Computer Specifications:
- Supported OS : Android™ 8.1 see table below for factory options
- CPU/Processor : Rockchip RK3399, see table below for factory options
- Installed Storage : 32GB SSD eMMC, see table below for factory options
- Installed Memory : 4GB Dual channel DDR3L
- System Chipset : SoC
- Graphics Chipset : Mali-T864 GPU, supports
  OpenGL ES 1.1/2.0/3.0/3.1/3.2
  OpenCL 1.2 and DirectX 11.1
- Ethernet LAN : 2 x GB LAN
- Buzzer : Yes (according to EN60945), 75-85dB.
- Speaker : None
- WatchDog Timer : 3 x Watchdogs in SoC w/32bits counter width
- Other features : Support Trustzone Technology, Temperature sensor,
  Light sensor, RTC, Battery alarm, WakeOnLan,
  TPM2.0 in Linux

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

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:
- Operating AC/DC: Estimated 35W (typ) - 156W (max)
- Operating AC: Estimated 35W (typ) - 125W (max)

Available Computer Configurations:

Type	Description	Description Size/Specification
CPU Options	1 x Dual-core ARM Cortex-A72 MPCore processor 1 x Quad-core ARM Cortex-A53 MPCore processor	
Storage Options	1 x Micro SD	- Micro SD (internal)
	1 x SSD m.2	- 240GB, 480GB or 960GB
Software Support	Android™ - BSP 8.1 and later Linux - BSP Kernel 4.x and later OS None	- Native Android™ - SCOM

*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:593.00 [23.35"] x H:384.00 [15.12"] x D:78.50 [3.09"] mm [inch]
- VESA 280x150mm supported
- Approx weight: 7.7kg / 16.97lbs

Product Carton Size and Weight (Shipping):
- L:700.00 [27.56"] x W:185.00 [7.28"] x H:585.00 [23.03"] mm [inch]
- Approx weight: 12.0 kg / 26.46 lbs

User Controls:
On front bezel IP66:
- Power On/Off, Brightness Control (-/+), Power LED, ECDIS LED
- Buzzer, 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
• IP-Rating Protection	: IP66 front - IP20 rear (EN60529). IP22=option
• Compass Safe Distance	: Standard: 50cm - Steering: 75cm

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
• HDMI IN (FHD 60Hz)	: 1 x 19p HDMI (female)
• HDMI OUT (UHD 60Hz)	: 1 x 19p HDMI (female)*
• USB2.0	: 1 x USB Type A
• USB3.0	: 1 x USB Type A
• Ethernet GBLan	: 2 x RJ-45
• Wifi Antenna	: 1 x SMA Coaxial RF connector (SMA1)
• Bluetooth Antenna	: 1 x SMA Coaxial RF connector (SMA2)
• AC Power IN	: 1 x Std IEC inlet
• If DC Power IN	: 1 x 2-pin Terminal Block 5.08

*Note, Android only support native resolution (FHD 60Hz)

Factory Options:
- Color Calibrated model (ECDIS)
- Optical Bonding Technology
- Without Projected Capacitive Touch Screen (Multitouch) model
- Android™ OS or Linux OS
- 2 x Factory mounted HT modules, with options of:
  - 1 or 2 x PCA200828-1: 4xCOM RS-422/485 isolated NMEA 4 channel
  - 1 or 2 x PCA100309-1: Dual Isolated RS-232, connector 2xDB9
  - 1 x ZIA0001310-B: CAN isolated 2 channel or 2 x 4 channel
  - 1 x ZIA0001310-SLCAN (1 x CAN isolated, 2 channel, socketCAN) module
  - 1 x PCA100297-1: Isolated Digital IO module,4 x OUT/4 x IN
  - 1 or 2 x PCA100298-1: LAN 10/100Mbps, 2 ports RJ45

Accessories:
- HD CMB SE1-B1 : 1 x Console Mount Kit. EN60945 Tested*
- HD TMB SE1-B1 : 1 x Table Mount Bracket. EN60945 Tested
- HD VED SX1-A1 : 1 x VESA Adapter, not 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

*Included in delivery

Prepared for:
- Wifi/Bluetooth external antenna (via SMA1/SMA2 connectors)

Android is a trademark of Google LLC. Google Play are the property of Google LLC

APPROVALS & CERTIFICATES
These products have been tested / type approved by the following classification societies:

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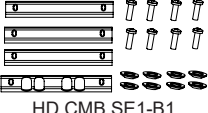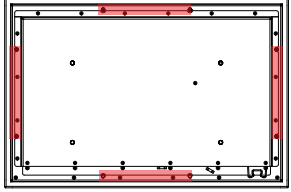
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Contents of Package

Note: Entries listed below are for Standard factory shipments. Customized factory shipments may deviate from this list.

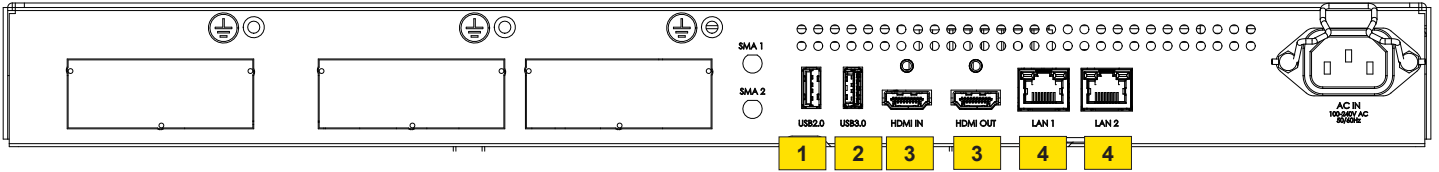| Item	Description	Illustration
TP52/TC01-1,8M	1 x Power Cable (Black) European Type F "Schuko" to IEC. Length 1.8m	EUR TYPE F IEC
TP11/TC01-1,8M	1 x Power Cable (Black) US Type B plug to IEC. Length 1.8m	US TYPE B IEC
	Test Reports papers: 1 x Product Declaration 1 x Computer Checklist 1 x BurnInTest Certificate	
HD CMB SE1-B1	Bracket Kit suitable for console/panel mounting which contains: 8 x 145 050x016 A4T (M5x16 Pan Head screw ISO 14583 Torx, A4) 8 x 9991041 (6.4 X 12 X 2.3 Washer DIN6319-C A4 SF) 3 x P025485#01 (Bracket A HD CMB SE1-B1) 1 x P025487#01 (Bracket B HD CMB SE1-B1) Suitable for panel thickness min: 2.00 [0.08] to max 40.00 [1.57"] mm [inch].	

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Supported SCOM commands

Byte 2	Byte 3	Byte 4	ASCII	Description	I/O	Non-Volatile / Volatile
0x42	0x52	0x4C	BRL	Set LED Brightness	R/W	NV
0x47	0x4D	0x42	GMB	Buttons Minimum Brightness	R/W	NV
0x47	0x42	0x46	GBF	Keypad Brightness auto follow	R/W	NV
0x52	0x45	0x43	REC	Recall GDC	W	
0x54	0x47	0x50	TGP	Toggle GDC Power Button	W	
0x42	0x52	0x54	BRT	Set Backlight Brightness	R/W	V
0x42	0x52	0x55	BRU	Brightness user control	R/W	NV
0x42	0x52	0x49	BRI	Set Minimum Brightness	R/W	NV
0x42	0x52	0x4D	BRM	Set Maximum Brightness	R/W	NV
0x50	0x57	0x52	PWR	Turn Computer OFF	W	
0x53	0x4E	0x42	SNB	Serial Number Query	R	
0x54	0x59	0x50	TYP	Type/Model Number Query	R	
0x45	0x54	0x43	ETC	Elapsed Time Counter Query	R	
0x53	0x57	0x49	SWI	Read Main Firmware version	R	
0x43	0x53	0x49	CSI	Read Customer Service ID	R	
0x53	0x43	0x49	SCI	Store Customer Service ID	W	NV
0x54	0x4D	0x50	TMP	Temperature Sensor Query	R	
0x4C	0x49	0x53	LIS	Read Light Sensor	R	
0x43	0x42	0x52	CBR	COM baud rate	R/W	V
0x57	0x44	0x46	WDF	Software Watchdog Feed	W	
0x57	0x44	0x43	WDC	Software Watchdog Configuration	R/W	V

For more information about Message Commands and Queries:
https://www.hattelandtechnology.com/hubfs/pdfget/inb100018-7.htm

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PINOUT ASSIGNMENTS COMMON CONNECTORS

1 — 4-pin USB2.0 TYPE A

PIN 01	VCC +5V	Power
PIN 02	D-	Negative Data
PIN 03	D+	Positive Data
PIN 04	GND	Ground

2 — 9-pin USB3.0/3.1/3.2 TYPE A

PIN 01	VCC +5V	VBUS / Power - 900 mA, 4,5 W
PIN 02	D-	Negative Data
PIN 03	D+	Positive Data
PIN 04	GND	Ground
PIN 05	StdA_SSRX-	SuperSpeed Receive Negative Data
PIN 06	StdA_SSRX+	SuperSpeed Receive Positive Data
PIN 07	GND DRAIN	Ground for signal return
PIN 08	StdA_SSTX-	SuperSpeed Transmit Negative Data
PIN 09	StdA_SSTX+	SuperSpeed Transmit Positive Data

4 — 8-pin RJ45 10/100/1000Mbps LAN/Ethernet

PIN 01	D0P+	Differential Pair 0 (Positive)
PIN 02	D0N-	Differential Pair 0 (Negative)
PIN 03	D1P+	Differential Pair 1 (Positive)
PIN 04	D2P+	Differential Pair 2 (Positive)
PIN 05	D2N-	Differential Pair 2 (Negative)
PIN 06	D1N-	Differential Pair 1 (Negative)
PIN 07	D3P+	Differential Pair 3 (Positive)
PIN 08	D3N-	Differential Pair 3 (Negative)

3 — 19-pin HDMI Female

PIN 01	TMDS Data2+
PIN 02	TMDS Data2 Shield
PIN 03	TMDS Data2−
PIN 04	TMDS Data1+
PIN 05	TMDS Data1 Shield
PIN 06	TMDS Data1−
PIN 07	TMDS Data0+
PIN 08	TMDS Data0 Shield
PIN 09	TMDS Data0−
PIN 10	TMDS Clock+
PIN 11	TMDS Clock Shield
PIN 12	TMDS Clock−
PIN 13	CEC
PIN 14	Reserved (HDMI 1.0–1.3a) Utility/HEAC+ (HDMI 1.4+, optional, HDMI Ethernet Channel and Audio Return Channel)
PIN 15	SCL (I²C Serial Clock for DDC)
PIN 16	SDA (I²C Serial Data for DDC)
PIN 17	Ground (for DDC, CEC, ARC and HEC)
PIN 18	+5 V (min. 0.055 A)
PIN 19	Hot Plug Detect (all versions) HEAC- (HDMI 1.4+, optional, HDMI Ethernet Channel and Audio Return Channel