



MARITIME LINE

Displays and Computers 2009/2010 rev. 1



ALWAYS INNOVATING

A CLASSIC REDESIGNED

Hatteland Display is committed to the appliance of technology so that we may provide only the highest quality marine displays and computers. We lead the way in screen bonding technology, color calibration, solid state storage and many other solutions that ensure our products can enhance operation and safety at sea.

Our Maritime Line displays and computers are used in everything from chartplotters and entertainment systems right through to the most sophisticated integrated bridge, ECDIS and automation systems. In fact, our fully tested and type approved Maritime Line products can be found right across the worldwide commercial, naval, cruise and yacht markets.

We are chosen for our innovation, our high quality design and manufacture and dedication to the ethos of Form Fit, Function. Whether your requirement is large or small, custom or COTS we are also a proven and trusted supplier, dedicated to ensuring our ability to deliver.



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TESTING / TYPE APPROVALS

All Hatteland Display Maritime Line products are tested and type approved to the required standards by the major classification societies. We also provide dedicated ECDIS calibration which enables us to deliver type approved ECDIS displays straight from the factory to you.

All products are type approved or in application for Type Approval by the following major classification societies:

ABS	American Bureau of Shipping
BV	Bureau Veritas
ClassNK	Nippon Kaiji Kyokai
DNV	Det Norske Veritas
GL	Germanischer Lloyd
KR	Korean Shipping
LRS	Lloyd's Register of Shipping
RS	Russian Maritime Register of Shipping

To ensure the above mentioned type approvals, the products are tested by independent institutions according to the following standards, where applicable:

EN61174 (IEC1174) Bundesamt für Seeschifffahrt und Hydrographie (BSH)

EN60529 (IP66) (Valid for console mounted displays and panel computers)

EN60529 (IP22) (Valid for Series 1 products with water cover and for Series 2 displays and panel computers)

EN61162 (IEC1174) Maritime navigation and radio communication equipment and systems.

EN60945 4th

IACS E10







DISPLAYS SERIES 1

With our dedication to innovation, we took our de facto industry standard Series 1 displays and set about improving them. The result is the Series 1 redesign, a new generation of innovative, rugged marine displays designed for any navigation and automation application, including ECDIS.

Although the new Series 1 offers a clear improvement on performance, functionality and value, we have ensured that it adheres to the Hatteland Display ethos of Form, Fit, Function, so you can harness the many innovative features, without making changes to your existing solutions.

Series 1 displays feature 0-100% dimming, and can provide unmatched sun and night vision. All sizes can benefit from Hatteland Display's sophisticated Optical Bonding, which eliminates condensation and dust, and reduces reflection by over 90%. Together with advanced anti-glare coatings, bonding enables you to see your display in bright sunlight without the need for extensive backlighting, which can cause overheating and a shorter product life cycle.



Series 1 introduces a number of signal input/output options, which can be increased by using the HATTELAND® Multifunction Cable. Further customized cables are available to ensure that you can interface everything you need to with the greatest of ease.

All Series 1 models are built to last and designed to be reliable in harsh environments, while providing the performance and flexibility you expect. They are perfectly suited to use aboard a wide range of vessels including commercial ships, workboats, coast guard boats and navy ships.

TYPE APPROVED

ECDIS COMPLIANT

NEW CONNECTIVITY

NEW FUNCTIONALITY

FORM, FIT AND FUNCTION

SUPERIOR BONDING TECHNOLOGY



A new generation of innovative, rugged marine displays...



10 INCH



JH 10T06 MMD

15 INCH



JH 15T17 MMD

17 INCH



JH 17T02 MMD

19 INCH



JH 19T14 MMD

**19 INCH
For automation applications**



JH 19T14 STD

20 INCH



JH 20T17 MMD and JH 20T03 MMD

23 INCH



JH 23T12 MMD

27 INCH - Widescreen



JH 27T11 MMD Widescreen

22 INCH & 26 INCH WIDESCREEN IS COMING!

DISPLAYS SERIES 1

SPECIFICATIONS

	JH 10T06 MMD	JH 15T17 MMD	JH 17T02 MMD
TECHNICAL DATA			
TFT Technology	Active Matrix TFT/LCD, Thin Film Transistor, RGB Vertical Stripe	Color Active Matrix TFT/LCD, a-Si TFT Active Matrix	a-Si TFT (Thin Film Transistor) Active Matrix, PVA (Plus Viewing Angle)
Viewable Image Size & Active Area	10.4 inch - 211.2 (H) x 158.4 (V) mm	15.0 inch - 304.1 (H) x 228.1 (V) mm	17.0 inch - 337.92 (H) x 270.336 (V) mm
Native Resolution & Pixel Pitch	640 x 480 - 0.33 (H) x 0.33 (V) mm	1024 x 768 - 0.297 (H) x 0.297 (V) mm	1280 x 1024 - 0.264 (H) x 0.264 (V) mm
Response Time & Contrast Ratio	20 ms (typ) - 300:1 (typ)	25 ms (typ) - 400:1 (typ)	10 ms (typ) - 1500:1 (typ)
Light Intensity	350 cd/m ² (typ)	250 cd/m ² (typ)	280 cd/m ² (typ)
View Angle	+/- 40 deg. [Up/Down] +/- 70 deg. [Left/Right]	+/- 85 deg. [up/down/left/right] @ CR >10	+/- 89 deg. [up/down/left/right] @ CR >10
Max Color Output	262,144 (6-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)
Sync. Signal Auto-detect	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green
Synchronisation Range	31,5 kHz to 91,1 kHz (H) 60 Hz to 85 Hz (V)	15,0 kHz to 91,1 kHz (H) 60 Hz to 85 Hz (V)	31,5 kHz to 91,1 kHz (H) 60 Hz to 85 Hz (V)
Native Resolution and Hz	640 x 480 (VGA 4:3) @ 60 Hz	1024 x 768 (XGA 4:3) @ 60 Hz	1280 x 1024 (SXGA 5:4) @ 60 Hz
Detectable Resolutions	640 x 350 / 640 x 480	640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 / 1600 x 1200	640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024
Video Input Option	YES onboard (PAL/SECAM/NTSC)	YES via HATTELAND® Multifunction Cable	YES onboard (PAL/SECAM/NTSC)
Supported Video Signals	SVHS & COMPOSITE INPUT	SVHS & COMPOSITE Compatible	SVHS & COMPOSITE INPUT
Product Features	PIP (Picture In Picture) Hotkey Functionality Dimmable 0-100%	PBP (Picture By Picture) PIP (Picture In Picture) HATTELAND® Multifunction Connector Hotkey Functionality Dimmable 0-100%	PIP (Picture In Picture) Hotkey Functionality Dimmable 0-100%
Power Input & Power Consumption	STD AC IEC 115/230VAC - 50/60Hz or 12-24 VDC 18.7W (typ 230Vrms) - 19.0W (typ 24VDC) 60W (Max)	STD AC IEC 115/230VAC - 50/60Hz or 24 VDC 100W (Max)	STD AC IEC 115/230VAC - 50/60Hz or 24 VDC 38.0W (typ 230Vrms) - 37.2W (typ 24VDC) 60W (Max)
MECHANICAL DATA			
User Controls & Activity	Power On/Off (push button) Brightness Control Mode Status LED On Screen Display control (OSD/OSM)	Power On/Off + On Screen Display Menu (push button) Brightness Control Hotkeys (left/right - push buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off (push button) Brightness Control 2 x hotkeys Mode Status LED On Screen Display control (OSD/OSM)
Connectors	DVI IN: 1 x DVI-D 24P (Female) RGB IN: 1 x HD D-SUB 15P (Female) Comp. Video IN: 1 x RCA Phono Connector S-VHS IN: 1 x 5p SVHS Connector	DVI IN: 1 x DVI-I 29P (Female) RGB IN: 1 x HD D-SUB 15P (Female) RGB OUT: 1 x HD D-SUB 15P (Female) Multifunction: 1 x D-SUB 160p (Female) USB I/O: 1 x Type B (female) AC Power Out: 1 x Std IEC outlet	DVI IN: 1 x DVI-I 29P (Female) RGB IN: 1 x HD D-SUB 15P (Female) Comp. Video IN: 1 x RCA Phono Connector S-VHS IN: 1 x 5p SVHS Connector COM1 I/O: 1 x 9P DSUB
Models Dimensions & Weight	339.00 (W) x 256.00 (H) x 68.00 (D) mm 339.00 (W) x 268.00 (H) x 178.00 (D) mm (w/brackets) Approx 3,5 kg	412.00 (W) x 345.00 (H) x 73.28 (D) mm 412.00 (W) x 376.00 (H) x 179.00 (D) mm (w/brackets) Approx 7 kg	460.00 (W) x 400.00 (H) x 72.00 (D) mm 460.00 (W) x 462.40 (H) x 217.80 (D) mm (w/brackets) Approx 9 kg
Factory Mounted Options	12-24 VDC Power Solution Touchscreen	24 VDC Power Solution Resistive or Capacitive Touchscreen Keypad only or Keypad+Potmeter+Buzzer controls Optical Bonding Technology Speaker / Buzzer	24 VDC Power Solution Touchscreen Remote Control [RS232/485] External Power Relay Video Buffer
Additional Accessories	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor	Bracket (tilt up/down) Rotary Bracket (left/right) VESA Bracket Sun Visor Water Cover 19" Rack Adapter Frame 17" CRT Adapter Frame Multifunction Cable Options: 1 x RS-232 COM + 3 x BNC Video In or 1 x RS-232 COM+3 x BNC Video In+1 x COM Touch	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor VESA Bracket 19" Rack Adapter Frame
ENVIRONMENTAL DATA			
Operating Temperature	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
Storage Temperature	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
IP Rating	EN60529 (IP66) [Applies for flush mounting]	EN60529 (IP66) [Applies for flush mounting]	EN60529 (IP66) [Applies for flush mounting]
Compass Safe Distance	Standard: 100cm - Steering: 70cm	Std: TBD - Steering: TBD	Standard: 80cm - Steering: 50cm
TYPE APPROVAL & TESTING			
Note: Some of the Type Approvals could be pending. Please check our website for the latest status.	EN60945 3 rd (IEC945 3 rd) GL - Germanischer Lloyd ABS - American Bureau of Shipping BV - Bureau Veritas LRS - Lloyd's Register of Shipping DNV - Det Norske Veritas ClassNK - Nippon Kaiji Kyokai RS - Russian Maritime Register of Shipping	EN60945 4 th (IEC945 4 th) ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th (IEC945 4 th) ABS - American Bureau of Shipping GL - Germanischer Lloyd BV - Bureau Veritas LRS - Lloyd's Register of Shipping RS - Russian Maritime Register of Shipping ClassNK - Nippon Kaiji Kyokai DNV - Det Norske Veritas

SPECIFICATIONS

JH 19T14 MMD	JH 19T14 STD	JH 20T03 MMD	JH 20T17 MMD
TECHNICAL DATA			
Active Matrix, Thin Film Transistor (TFT) MVA Premium™ Technology	Active Matrix, Thin Film Transistor (TFT) MVA Premium™ Technology	Active Matrix, Thin Film Transistor (Super-TFT)	Color Active Matrix TFT/LCD, a-Si TFT Active Matrix
19.0 inch - 376.32 [H] x 301.056 [V] mm	19.0 inch - 376.32 [H] x 301.056 [V] mm	20.1 inch - 399.36 [H] x 319.49 [V] mm	20.1 inch - 408.0 [H] x 306.0 [V] mm
1280 x 1024 - 0.294 [H] x 0.294 [V] mm	1280 x 1024 - 0.294 [H] x 0.294 [V] mm	1280 x 1024 - 0.312 [H] x 0.312 [V] mm	1600 x 1200 - 0.255 [H] x 0.255 [V] mm
12 ms [typ] - 900:1 [typ]	12 ms [typ] - 900:1 [typ]	25 ms [typ] - 300:1 [typ]	20 ms [typ] - 500:1 [typ]
300 cd/m ² [typ]	300 cd/m ² [typ]	250 cd/m ² [typ]	250 cd/m ² [typ]
+/- 85 deg. [up/down/left/right] @ CR >10	+/- 85 deg. [up/down/left/right] @ CR >10	+/- 85 deg. [up/down/left/right] @ CR >10	+/- 85 deg. [up/down/left/right] @ CR >10
16,777,216 (8-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)
Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green
15.0 kHz to 91,1 kHz [H] 60 Hz to 85 Hz [V]	15.0 kHz to 91,1 kHz [H] 60 Hz to 85 Hz [V]	31,5 kHz to 91,1 kHz [H] 60 Hz to 85 Hz [V]	15,0 kHz to 91,1 kHz [H] 60 Hz to 85 Hz [V]
1280 x 1024 [SXGA 5:4] @ 60 Hz	1280 x 1024 [SXGA 5:4] @ 60 Hz	1280 x 1024 [SXGA 5:4] @ 60 Hz	1600 x 1200 [UXGA 4:3] @ 60 Hz
640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 / 1600 x 1200	640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 / 1600 x 1200	640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024	640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 / 1600 x 1200
YES via HATTELAND® Multifunction Cable	None	YES onboard (PAL/SECAM/NTSC)	YES via HATTELAND® Multifunction Cable
SVHS & COMPOSITE Compatible	None	SVHS & COMPOSITE INPUT	SVHS & COMPOSITE Compatible
PBP (Picture By Picture) PIP (Picture In Picture) HATTELAND® Multifunction Connector Hotkey Functionality Dimmable 0-100%	Keypad button control Hotkey Functionality Dimmable 20-100%	PIP (Picture In Picture) Hotkey Functionality Dimmable 0-100%	PBP (Picture By Picture) PIP (Picture In Picture) HATTELAND® Multifunction Connector Hotkey Functionality Dimmable 0-100%
STD AC IEC 115/230VAC - 50/60Hz or 24 VDC 100W (max)	STD AC IEC 115/230VAC - 50/60Hz or 24 VDC 100W (max)	STD AC IEC 115/230VAC - 50/60Hz or 24 VDC 75W (typ 230Vrms) - 75W (typ 24VDC) 100W (Max)	STD AC IEC 115/230VAC - 50/60Hz or 24 VDC 100W (max)
MECHANICAL DATA			
Power On/Off + On Screen Display Menu (push button) Brightness Control Hotkeys (left/right - push buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off + On Screen Display Menu (push button) Brightness Control Hotkeys (left/right - push buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off (push button) Brightness Control 2 x hotkeys Mode Status LED On Screen Display control (OSD/OSM)	Power On/Off + On Screen Display Menu (push button) Brightness Control Hotkeys (left/right - push buttons) Mode Status Illuminated LED-Ring Indicator
DVI IN: 1 x DVI-I 29P [Female] RGB IN: 1 x HD D-SUB 15P [Female] RGB OUT: 1 x HD D-SUB 15P [Female] Multifunction: 1 x D-SUB 160p [Female] USB I/O: 1 x Type B [female] AC Power Out: 1 x Std IEC outlet	DVI IN: 1 x DVI-I 29P [Female] RGB IN: 1 x HD D-SUB 15P [Female]	DVI IN: 1 x DVI-I 29P Input RGB IN: 1 x HD D-SUB 15P [Female] Comp. Video IN: 1 x RCA Phono Connector S-VHS IN: 1 x 5p SVHS Connector COM1 I/O: 1 x 9P DSUB	DVI IN: 1 x DVI-I 29P [Female] RGB IN: 1 x HD D-SUB 15P [Female] RGB OUT: 1 x HD D-SUB 15P [Female] Multifunction: 1 x D-SUB 160p [Female] USB I/O: 1 x Type B [female] AC Power Out: 1 x Std IEC outlet
483.00 [W] x 444.00 [H] x 82.00 [D] mm 483.00 [W] x 509.60 [H] x 228.70 [D] mm (w/brackets)	483.00 [W] x 444.00 [H] x 82.00 [D] mm 483.00 [W] x 509.60 [H] x 228.70 [D] mm (w/brackets)	534.00 [W] x 481.00 [H] x 94.00 [D] mm 534.00 [W] x 541.50 [H] x 238.90 [D] mm (w/bracket)	534.00 [W] x 481.00 [H] x 87.00 [D] mm 534.00 [W] x 533.50 [H] x 231.90 [D] mm (w/bracket)
Approx 11,5 kg	Approx 11,5 kg	Approx 14 kg	Approx 15 kg
24 VDC Power Solution Resistive or Capacitive Touchscreen Keypad only or Keypad+Potmeter+Buzzer controls Optical Bonding Technology Speaker / Buzzer Color Calibrated models [ECDIS]	None	24 VDC Power Solution Touchscreen Remote Control [RS232/485] External Power Relay Video Buffer	24 VDC Power Solution Resistive or Capacitive Touchscreen Keypad only or Keypad+Potmeter+Buzzer controls Optical Bonding Technology Speaker / Buzzer Color Calibrated models [ECDIS]
Bracket [tilt up/down] Rotary Bracket [left/right] Sun Visor VESA Bracket 21 CRT Adapter Frame Water Cover Multifunction Cable Options: 1 x RS-232 COM + 3 x BNC Video In or 1 x RS-232 COM+3 x BNC Video In+1 x COM Touch	Bracket [tilt up/down] Rotary Bracket [left/right] Sun Visor VESA Bracket 21 CRT Adapter Frame Water Cover	Bracket [tilt up/down] Rotary Bracket [left/right] Sun Visor VESA Bracket	Bracket [tilt up/down] Rotary Bracket [left/right] Sun Visor VESA Bracket Water Cover Multifunction Cable Options: 1 x RS-232 COM + 3 x BNC Video In or 1 x RS-232 COM+3 x BNC Video In+1 x COM Touch
ENVIRONMENTAL DATA			
-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
EN60529 (IP66) [Applies for flush mounting]	EN60529 (IP66) [Applies for flush mounting]	EN60529 (IP66) [Applies for flush mounting]	EN60529 (IP66) [Applies for flush mounting]
Standard: 160cm - Steering: 105cm	N/A	Standard: 200cm - Steering: 135cm	Standard: 75cm - Steering: 35cm
TYPE APPROVAL & TESTING			
EN60945 4 th [IEC945 4 th] ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th [IEC945 4 th] ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 3 rd [IEC945 3 rd] LRS - Lloyd's Register of Shipping ClassNK - Nippon Kaiji Kyokai ABS - American Bureau of Shipping GL - Germanischer Lloyd DNV - Det Norske Veritas BV - Bureau Veritas EN61174 [IEC1174] - Bundesamt für Seeschifffahrt und Hydrographie [BSH] RS - Russian Maritime Register of Shipping	EN60945 4 th [IEC945 4 th] ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas

DISPLAYS SERIES 1

SPECIFICATIONS

	JH 23T12 MMD	JH 27T11 MMD WIDESCREEN
TECHNICAL DATA		
TFT Technology	Thin Film Transistor (TFT) MVA (Multi-domain Vertical Alignment) LCD Tech.	a-Si TFT (Thin Film Transistor) Active Matrix SPVA (Super Patterned Vertical Alignment) mode
Viewable Image Size & Active Area	23.1 inch - 470.4 (H) x 352.8 (V) mm	27.0 inch - 581.76 (H) x 363.6 (V) mm
Native Resolution & Pixel Pitch	1600 x 1200 - 0.294 (H) x 0.294 (V) mm	1920 x 1200 - 0.303 (H) x 0.303 (V) mm
Response Time & Contrast Ratio	20 ms (typ) - 500:1 (typ)	6 ms (typ) - 1000:1 (typ)
Light Intensity	250 cd/m ² (typ)	500 cd/m ² (typ)
View Angle	+/- 85 deg. [up/down/left/right] @ CR >10	+/- 89 deg. [up/down/left/right] @ CR >10
Max Color Output	16,777,216 (8-bit color)	16,777,216 (8-bit color)
Sync. Signal Auto-detect	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green
Synchronisation Range	15,0 kHz to 91,1 kHz (H) 60 Hz to 85 Hz (V)	15,0 kHz to 91,1 kHz (H) 60 Hz to 85 Hz (V)
Native Resolution and Hz	1600 x 1200 (UXGA 4:3) @ 60 Hz	1920 x 1200 (WUXGA 16:10) @ 60 Hz
Detectable Resolutions	640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 / 1600 x 1200	640 x 350 / 640 x 480 / 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 / 1600 x 1200 / 1920 x 1200
Video Input Option	YES via HATTELAND® Multifunction Cable	YES via HATTELAND® Multifunction Cable
Supported Video Signals	SVHS & COMPOSITE Compatible	SVHS & COMPOSITE Compatible
Product Features	PBP (Picture By Picture) PIP (Picture In Picture) HATTELAND® Multifunction Connector Hotkey Functionality Dimmable 0-100%	PBP (Picture By Picture) PIP (Picture In Picture) HATTELAND® Multifunction Connector Hotkey Functionality Dimmable 0-100%
Power Input & Power Consumption	STD AC IEC 115/230VAC - 50/60Hz or 24 VDC TBD (max)	STD AC IEC 115/230VAC - 50/60Hz 200W (max)
MECHANICAL DATA		
User Controls & Activity	Power On/Off + On Screen Display Menu (push button) Brightness Control Hotkeys (left/right - push buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off + On Screen Display Menu (push button) Brightness Control Hotkeys (left/right - push buttons) Mode Status Illuminated LED-Ring Indicator
Connectors	DVI IN: 1 x DVI-I 29P (Female) RGB IN: 1 x HD D-SUB 15P (Female) RGB OUT: 1 x HD D-SUB 15P (Female) Multifunction: 1 x D-SUB 140p (Female) USB I/O: 1 x Type B (female) AC Power Out: 1 x Std IEC outlet	DVI IN: 1 x DVI-I 29P (Female) RGB IN: 1 x HD D-SUB 15P (Female) RGB OUT: 1 x HD D-SUB 15P (Female) Multifunction: 1 x D-SUB 140p (Female) USB I/O: 1 x Type B (female) AC Power Out: 1 x Std IEC outlet
Models Dimensions & Weight	584.00 (W) x 534.00 (H) x 85.00 (D) mm 584.00 (W) x 577.00 (H) x 230.40 (D) mm (w/brackets) Approx 12,5 kg	660.00 (W) x 481.00 (H) x 101.50 (D) mm Approx 16,0 kg
Factory Mounted Options	24 VDC Power Solution Capacitive Touchscreen Keypad only or Keypad+Potmeter+Buzzer controls Optical Bonding Technology Speaker / Buzzer Color Calibrated models (ECDIS)	Keypad only or Keypad+Potmeter+Buzzer controls Optical Bonding Technology Speaker / Buzzer Color Calibrated models (ECDIS)
Additional Accessories	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor VESA Bracket Water Cover Multifunction Cable Options: 1 x RS-232 COM + 3 x BNC Video In or 1 x RS-232 COM+3 x BNC Video In+1 x COM Touch	Bracket Table/Foot Wall/VESA Bracket Multifunction Cable Options: 1 x RS-232 COM + 3 x BNC Video In or 1 x RS-232 COM+3 x BNC Video In+1 x COM Touch
ENVIRONMENTAL DATA		
Operating Temperature	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
Storage Temperature	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
IP Rating	EN60529 (IP66) (Applies for flush mounting)	EN60529 (IP66) (Applies for flush mounting)
Compass Safe Distance	Standard: 140cm - Steering: 105cm	Standard: 50cm - Steering: 30cm
TYPE APPROVAL & TESTING		
Note: Some of the Type Approvals could be pending. Please check our website for the latest status.	EN60945 4 th (IEC945 4 th) ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th (IEC945 4 th) ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas

ACCESSORIES SERIES 1 DISPLAYS

Also valid for panel computers
Series 1. See pages 20 to 24.



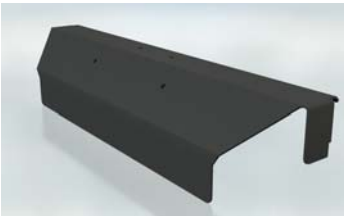
HATTELAND®
Multifunction cables



Mounting brackets



Rotary brackets



Water covers



Adapter frames CRT/TFT/RACK



VESA bracket





DISPLAYS SERIES 2

Series 2* displays stand out from the crowd in the first instance because of great visual design, but in order to create the ultimate range of marine displays we have ensured that operation and functionality are also state-of-the-art.

The introduction of Optical Bonding, a unique process developed at Hatteland Display ensures that Series 2 can provide the best clarity of any marine display. Optical Bonding virtually eliminates the problems of moisture and condensation, sunlight reflection and overheating, meaning that Series 2 displays offer unmatched viewing performance in all conditions.

A number of advanced features set Series 2 apart from the competition, including multiple connections and interfaces to ensure compatibility with a wide range of systems from chartplotters and radar through to tactile, user friendly input through the single navigator control on the front panel.

Series 2 displays also offer very flexible installation with a choice between bracket, flange and console models, which are designed to suit all types of helms and dashboards. These mounting solutions are also valid for panel computers. Read more about this on page 29.

TYPE APPROVED

ECDIS COMPLIANT

HIGH BUILD QUALITY

SUNLIGHT VIEWABLE

SUPERIOR BONDING TECHNOLOGY

***Winner of Red Dot Product Design Award 2007**

The Series 2 won a Red Dot Award in the 2007. The Design Zentrum Nordrhein Westfalen in Germany has been marking outstanding international product design with its famous and highly regarded dot since 1955. The Red Dot

Product Design Award is an annual international awards scheme where products from all industries are chosen for their innovative visual and industrial design.

To find out more visit www.red-dot.de.



reddot design award
winner 2007



BRACKET MODEL



FLANGE MODEL



CONSOLE MODEL



IP22 USER CONTROL



IP66 USER CONTROL

DISPLAYS SERIES 2



Great visual design...

12 INCH



HD 12T04 + HD MMD



15 INCH



HD 15T06 + HD MMD



19 INCH



HD 19T03 + HD MMD



DISPLAYS SERIES 2

SPECIFICATIONS

	HD 12T04 + HD MMD	HD 15T06 + HD MMD	HD 19T03 + HD MMD
TECHNICAL DATA			
TFT Technology	Color Active Matrix TFT/LCD, a-Si Thin Film Transistor (TFT)	Color Active Matrix TFT/LCD, a-Si Thin Film Transistor (TFT)	Color Active Matrix TFT/LCD, MVA Premium™ Technology
Viewable Image Size & Active Area	12.1 inch - 245.76 [H] x 184.32 [V] mm	15.0 inch - 304.1 [H] x 228.1 [V] mm	19.0 inch - 376.32 [H] x 301.056 [V] mm
Native Resolution & Pixel Pitch	1024 x 768 - 0.33 [H] x 0.33 [V] mm	1024 x 768 - 0.297 [H] x 0.297 [V] mm	1280 x 1024 - 0.294 [H] x 0.294 [V] mm
Response Time & Contrast Ratio	33 ms [typ] -- 600:1 [typ]	30 ms [typ] -- 350:1 [typ]	12 ms [typ] -- 600:1 [typ]
Light Intensity	400 cd/m ² [typ]	600 cd/m ² [typ]	450 cd/m ² [typ]
View Angle	+/- 45 deg. [Up] +/- 55 deg. [Down] +/- 70 deg. [Left/Right]	+/- 45 deg. [Up] +/- 55 deg. [Down] +/- 60 deg. [Left/Right]	+/- 89 deg. [Up/Down/Left/Right]
Max Color Output	16,777,216 [8-bit color]	16,777,216 [8-bit color]	16,777,216 [8-bit color]
Sync. Signal Auto-detect	Separate Sync. Composite Sync. Sync. On Green Auto Detect VGA -> UXGA	Separate Sync. Composite Sync. Sync. On Green Auto Detect VGA -> UXGA	Separate Sync. Composite Sync. Sync. On Green Auto Detect VGA -> UXGA
Synchronisation Range	See Complete table in user manual	See Complete table in user manual	See Complete table in user manual
Optimal Resolution and Hz	1024x768 [XGA 4:3] @ 60 Hz	1024x768 [XGA 4:3] @ 60 Hz	1280x1024 [SXGA 5:4] @ 60 Hz
Detectable Resolutions	640 x 350, 640 x 400, 720 x 400, 736 x 480, 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200	640 x 350, 640 x 400, 720 x 400, 736 x 480, 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200	640 x 350, 640 x 400, 720 x 400, 736 x 480, 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200
Video Input Option	YES [PAL/SECAM/NTSC]	YES [PAL/SECAM/NTSC]	YES [PAL/SECAM/NTSC]
Supported Video Signals	SVHS & COMPOSITE VIDEO	SVHS & COMPOSITE VIDEO	SVHS & COMPOSITE VIDEO
Product Features	Optical Bonding Technology Modular Backpack Technology Tactile Navigator PIP (Picture In Picture) Hotkey Functionality USB loophrough in front Serial Control Interface Slimmest Design Possible	Optical Bonding Technology Modular Backpack Technology Tactile Navigator PIP (Picture In Picture) Hotkey Functionality USB loophrough in front Serial Control Interface Slimmest Design Possible	Optical Bonding Technology Modular Backpack Technology Tactile Navigator PIP (Picture In Picture) Hotkey Functionality USB loophrough in front Serial Control Interface Slimmest Design Possible
Power Input & Power Consumption	STD AC IEC - 115/230VAC - 50/60Hz or 24 VDC Max 23W [Brightness @ 100%]	STD AC IEC - 115/230VAC - 50/60Hz or 24 VDC Max 35W [Brightness @ 100%]	STD AC IEC - 115/230VAC - 50/60Hz or 24 VDC Max 66W [Brightness @ 100%]
MECHANICAL DATA			
User Controls & Activity	Power On/Off (push button) Brightness Control (potmeter or 3 x buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off (push button) Brightness Control (potmeter or 3 x buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off (push button) Brightness Control (potmeter or 3 x buttons) Mode Status Illuminated LED-Ring Indicator
Connectors	DVI IN: 1 x DVI-I 29P [Female] RGB IN: 1 x HD D-SUB 15P [Female] Comp. Video IN: 1 x RCA Phono Plug S-VHS IN: 1 x 5 Pin SVHS Plug USB I/O: 1 x Type A (front) and 1 x Type B (rear) COM1 I/O: 1 x D-SUB 9p [female]	DVI IN: 1 x DVI-I 29P [Female] RGB IN: 1 x HD D-SUB 15P [Female] Comp. Video IN: 1 x RCA Phono Plug S-VHS IN: 1 x 5 Pin SVHS Plug USB I/O: 1 x Type A (front) and 1 x Type B (rear) COM1 I/O: 1 x D-SUB 9p [female]	DVI IN: 1 x DVI-I 29P [Female] RGB IN: 1 x HD D-SUB 15P [Female] Comp. Video IN: 1 x RCA Phono Plug S-VHS IN: 1 x 5 Pin SVHS Plug USB I/O: 1 x Type A (front) and 1 x Type B (rear) COM1 I/O: 1 x D-SUB 9p [female]
Models Dimensions & Weight	Bracket Version: [B0xx] 296.20 [W] x 252.20 [H] x 75.00 [D] mm [without bracket] 296.20 [W] x 307.39 [H] x 146.51 [D] mm [with bracket] Flange Version: [F0xx] 311.20 [W] x 267.20 [H] x 75.00 [D] mm Console Version: [C0xx] 337.20 [W] x 293.20 [H] x 75.00 [D] mm Approx 5 kg	Bracket Version: [B0xx] 344.20 [W] x 292.20 [H] x 75.00 [D] mm [without bracket] 344.20 [W] x 326.19 [H] x 153.35 [D] mm [with bracket] Flange Version: [F0xx] 359.20 [W] x 307.20 [H] x 75.00 [D] mm Console Version: [C0xx] 385.20 [W] x 333.20 [H] x 75.00 [D] mm Approx. 8 kg	Bracket Version: [B0xx] 416.20 [W] x 372.20 [H] x 75 [D] mm [without bracket] 416.20 [W] x 363.73 [H] x 167.05 [D] mm [with bracket] Flange Version: [F0xx] 431.20 [W] x 387.20 [H] x 75.00 [D] mm Console Version: [C0xx] 457.20 [W] x 413.20 [H] x 75.00 [D] mm Approx 9 kg
Factory Mounted Options	Touchscreen [not type approved] COM2: 1 x D-SUB 9P IP22 or IP66 user controls	Touchscreen [not type approved] COM2: 1 x D-SUB 9P IP22 or IP66 user controls	Touchscreen [not type approved] COM2: 1 x D-SUB 9P IP22 or IP66 user controls
Additional Accessories	VESA Bracket Console mounting bracket kit [only B models] Split Cable RS422/485	VESA Bracket Console mounting bracket kit [only B models] Split Cable RS422/485	VESA Bracket Console mounting bracket kit [only B models] Split Cable RS422/485 EN60945 Mounting Bracket
ENVIRONMENTAL DATA			
Operating Temperature	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
Storage Temperature	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
IP Rating	IP66 or IP22 [model dependent]	IP66 or IP22 [model dependent]	IP66 or IP22 [model dependent]
Compass Safe Distance	Standard: 70cm - Steering: 50cm	Standard: 70cm - Steering: 50cm	Standard: 135cm - Steering: 85cm
TYPE APPROVAL & TESTING			
	EN60945 4 th [IEC945 4 th] ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	NOTE: Covered within 12,19 inch test reports EN60945 4 th [IEC945 4 th] IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th [IEC945 4 th] ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas

ACCESSORIES SERIES 2 DISPLAYS

Also valid for panel computers
Series 2. See pages 26 to 28.



VESA bracket



BACKPACK MOUNT BRACKET for
Maritime Multi Computers (MMC)



SPLIT CABLE RS422/485
for Daisy Chain/Remote Control



CONSOLE MOUNT BRACKET (CMB)



CMB solution is only applicable
for B0xx models





PANEL COMPUTERS SERIES 1

All Series 1 panel computers are based around the high quality, rugged Series 1 displays. With a panel computer though, the displays come with a 'built-in' computer, instantly transforming them into navigation and automation powerhouses, ideal for a whole range of different systems and solutions.

Of course, with Series 1 panel computers you immediately get the benefits from the Series 1 displays, such as unmatched viewing clarity and long life, but with the additional flexibility of a computer. They follow the same form and fit as Series 1 displays too, making them an ideal match for common system design requirements or as a replacement computer.

The computer itself is specified to ensure that it is capable of running all marine applications, from ECDIS software through to engine monitoring and automation applications. It has power to spare too, so software developers can be sure that Hatteland Display Series 1 panel computers can handle the latest applications being designed for bridge and engine room systems in addition to other, more custom uses.

Series 1 panel computers offer the ultimate in convenience for systems integrators and boat builders. This is backed up by the inherent qualities of Series 1 displays and the flexibility of the powerful integrated computer. Series 1 panel computers are a single flexible solution, designed only for the marine environment and built to last.

COST EFFECTIVE

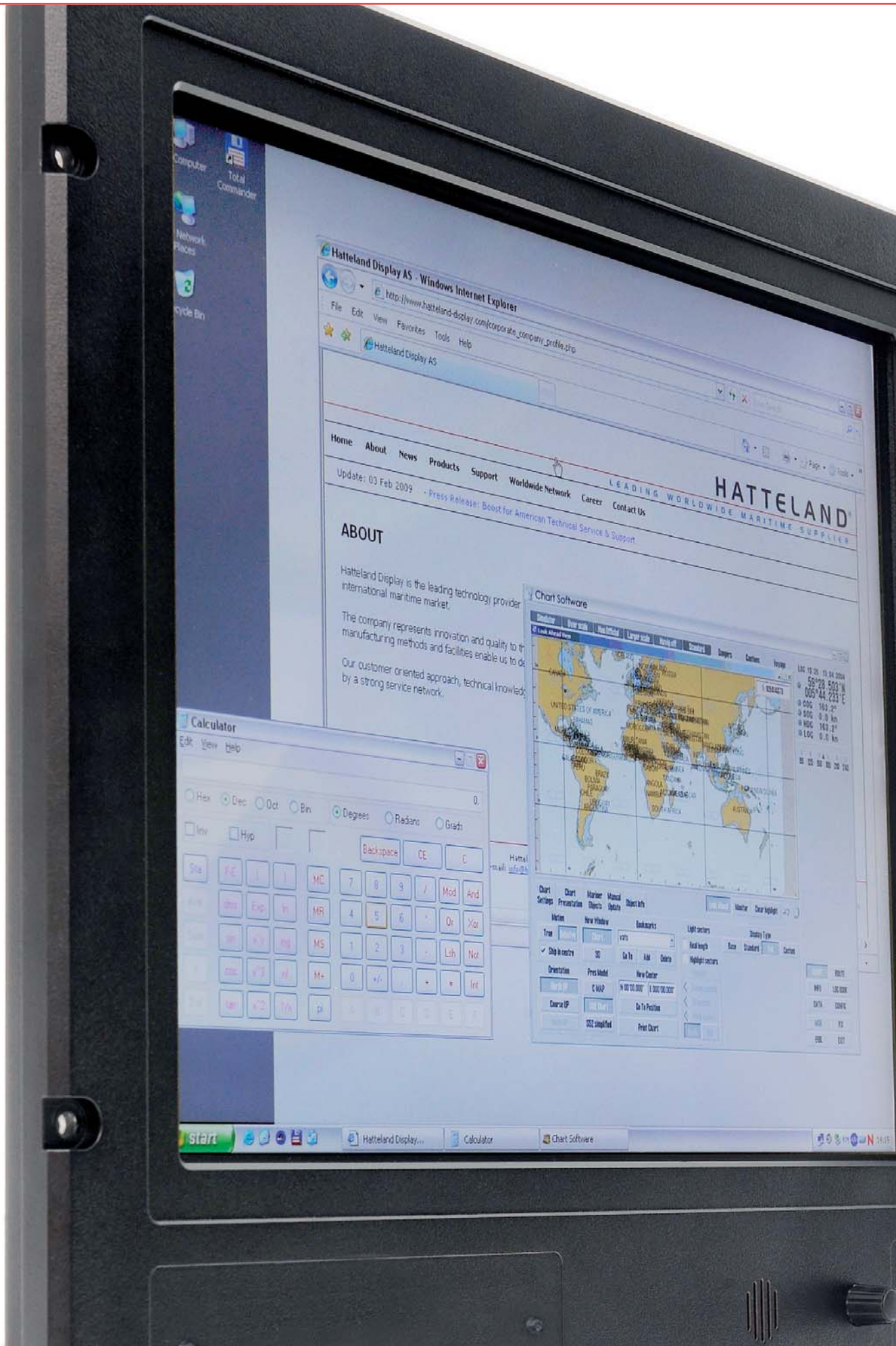
TYPE APPROVED

ECDIS COMPLIANT

FORM, FIT, FUNCTION

SUPERIOR BONDING TECHNOLOGY





A computer and display, all
in one...

15 INCH



JH 15T17 MMC

19 INCH



JH 19T14 MMC

PANEL COMPUTERS SERIES 1

SPECIFICATIONS

	JH 15T17 MMC	JH 19T14 MMC
TECHNICAL DATA - DISPLAY		
TFT Technology	Color Active Matrix TFT/LCD, a-Si TFT Active Matrix	Active Matrix, Thin Film Transistor (TFT) MVA Premium™ Technology
Viewable Image Size & Active Area	15.0 inch - 304.1 [H] x 228.1 [V] mm	19.0 inch - 376.32 [H] x 301.056 [V] mm
Native Resolution & Pixel Pitch	1024 x 768 - 0.297 [H] x 0.297 [V] mm	1280 x 1024 - 0.294 [H] x 0.294 [V] mm
Response Time & Contrast Ratio	25 ms [typ] - 400:1 [typ]	12 ms [typ] - 900:1 [typ]
Light Intensity	250 cd/m ² [typ]	300 cd/m ² [typ]
View Angle	+/- 85 deg. [Up/Down/Left/Right] @ CR >10	+/- 85 deg. [Up/Down/Left/Right] @ CR >10
Max Color Output	16,777,216 [8-bit color]	16,777,216 [8-bit color]
Native Resolution and Hz	1024 x 768 [XGA 4:3] @ 60 Hz*	1280 x 1024 [SXGA 5:4] @ 60 Hz
Detectable Resolutions	640 x 480 and up to 2048 x 1536 If above 800x600, desktop scrolling mode is used	640 x 480 and up to 2048 x 1536 If above 800x600, desktop scrolling mode is used
Power Input	STD AC IEC - 115/230VAC - 50/60Hz	STD AC IEC - 115/230VAC - 50/60Hz
Power Consumption	TBD [typ 230Vrms] - TBD [max]	TBD [typ 230Vrms] - TBD [max]
TECHNICAL DATA - COMPUTER		
Installed Operating System (OS)	None, please specify when ordering	None, please specify when ordering
Storage	30GB SSD [SATA 2.5"]	30GB SSD [SATA 2.5"]
Available Processors Options	Intel® Core™2 Duo L7400 - 1.5GHz, 4MB Cache, 667MHz FSB Intel® Celeron® M ULV 423 - 1.06GHz, 1MB Cache, 533MHz FSB	Intel® Core™2 Duo L7400 - 1.5GHz, 4MB Cache, 667MHz FSB Intel® Celeron® M ULV 423 - 1.06GHz, 1MB Cache, 533MHz FSB
Memory	2 x 1 GB 667MHz DDR2 Non-ECC CL5 DIMM	2 x 1 GB 667MHz DDR2 Non-ECC CL5 DIMM
System Chipset	Intel® 82945GME	Intel® 82945GME
On-board Graphics Chipset	Intel® 945GME Integrated	Intel® 945GME Integrated
Max Resolution / Max Hz	2048 x 1536 / 85Hz	2048 x 1536 / 85Hz
BIOS	Award BIOS, supports ACPI	Award BIOS, supports ACPI
PCI Slots	1 x Mini PCI	1 x Mini PCI
Speaker	None	None
Power Manager	ACPI	ACPI
Monitoring	Temperature, voltage and fan monitoring	Temperature, voltage and fan monitoring
MECHANICAL DATA		
User Controls & Activity	Power On/Off + On Screen Display Menu (push button) Brightness Control [rotary control] Mode Status Illuminated LED-Ring Indicator USB 2.0 Connector (behind hatch)	Power On/Off + On Screen Display Menu (push button) Brightness Control [rotary control] Mode Status Illuminated LED-Ring Indicator USB 2.0 Connector (behind hatch)
Visible I/O Connectors	10/100/1000 Ethernet I/O: 2 x RJ-45 COM1 I/O: 2 x DB9 [RS-232/422/485, opto-isolated] USB 2.0 I/O: 5 x Std. USB [1 in front, 4 in rear] Keyboard I/O: 1 x PS/2 Mouse I/O: 1 x PS/2 LPT I/O: 1 x DB25 Compact Flash I/O: 1 x Type I & II Compatible DVI/RGB OUT: 1 x 29P DVI-I or as RGB with adapter	10/100/1000 Ethernet I/O: 2 x RJ-45 COM1 I/O: 2 x DB9 [RS-232/422/485, opto-isolated] USB 2.0 I/O: 5 x Std. USB [1 in front, 4 in rear] Keyboard I/O: 1 x PS/2 Mouse I/O: 1 x PS/2 LPT I/O: 1 x DB25 Compact Flash I/O: 1 x Type I & II Compatible DVI/RGB OUT: 1 x 29P DVI-I or as RGB with adapter
Dimensions & Weight	412.00 [W] x 345.00 [H] x 73.28 [D] mm Approx 8 kg	483.00 [W] x 444.00 [H] x 82.00 [D] mm Approx 11 kg
Factory Mounted Options	Resistive Touchscreen Button Controls or Potmeter Controls Optical Bonding Technology Speaker / Buzzer Up to 4GB of memory	Resistive Touchscreen Button Controls or Potmeter Controls Optical Bonding Technology Speaker / Buzzer Up to 4GB of memory
Additional Accessories	Bracket (tilt up/down) Rotary Bracket (left/right) VESA Bracket Sun Visor Water Cover 19" Rack Adapter Frame 17" CRT Adapter Frame	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor VESA Bracket 21 CRT Adapter Frame Water Cover
ENVIRONMENTAL DATA		
Operating Temperature	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
Storage Temperature	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
IP Rating	EN60529 [IP66] [Applies for flush mounting]	EN60529 [IP66] [Applies for flush mounting]
Compass Safe Distance	Std: TBD - Steering: TBD	Std: TBD - Steering: TBD
TYPE APPROVAL & TESTING		
Note: Some of the Type Approvals could be pending. Please check our website for the latest status.	EN60945 4 th [IEC945 4 th] IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th [IEC945 4 th] IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas





PANEL COMPUTERS SERIES 2

Innovative is a word often used but rarely does it capture the essence of the product it's used to describe. With the Series 2 panel computer though, innovation is key.

When Series 2 is chosen as a panel computer you get all the benefits of the ultimate marine display, Series 2, but with added power and flexibility. The panel computer backpack replaces the Series 2 display interface backpack and plugs directly into the rear of the display, instantly transforming it into a powerful computer.

As part of the Hatteland Display philosophy of form, fit, function, the Series 2 panel computer backpack is the same dimensions as the interface backpack of the standard Series 2, so it is a simple plug and play exercise to upgrade to what is one of the most powerful, and definitely the most stylish marine computers on the market.

The Series 2 panel computer helped create the concept of the glass bridge and leads the way in both style and substance, making it the ideal marine computer for the discerning boat owner or systems integrator looking to give their solutions the edge both in high quality design or pure functionality.

TYPE APPROVED

ECDIS COMPLIANT

HIGH BUILD QUALITY

SUNLIGHT VIEWABLE

SUPERIOR BONDING TECHNOLOGY





PANEL COMPUTERS SERIES 2

SPECIFICATIONS

	HD 12T04 + HT MMC	HD 15T06 + HT MMC	HD 19T03 + HT MMC
TECHNICAL DATA - DISPLAY			
TFT Technology	Color Active Matrix TFT/LCD, a-Si Thin Film Transistor (TFT)	Color Active Matrix TFT/LCD, a-Si Thin Film Transistor (TFT)	Color Active Matrix TFT/LCD, MVA Premium™ Technology
Viewable Image Size & Active Area	12.1 inch - 245.76 (H) x 184.32 (V) mm	15.0 inch - 304.1 (H) x 228.1 (V) mm	19.0 inch - 376.32 (H) x 301.056 (V) mm
Native Resolution & Pixel Pitch	800 x 600 - 0.264 (H) x 0.264 (V) mm	1024 x 768 - 0.297 (H) x 0.297 (V) mm	1280 x 1024 - 0.294 (H) x 0.294 (V) mm
Response Time & Contrast Ratio	33 ms (typ) -- 600:1 (typ)	30 ms (typ) -- 350:1 (typ)	12 ms (typ) -- 600:1 (typ)
Light Intensity	400 cd/m ² (typ)	600 cd/m ² (typ)	450 cd/m ² (typ)
View Angle	+/- 45 deg. (Up) +/- 55 deg. (Down) +/- 70 deg. (Left/Right)	+/- 45 deg. (Up) +/- 55 deg. (Down) +/- 60 deg. (Left/Right)	+/- 89 deg. (Up/Down/Left/Right)
Max Color Output	16,777,216 (8-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)
Optimal Resolution and Hz	1024x768 (XGA 4:3) @ 60 Hz	1024x768 (XGA 4:3) @ 60 Hz	1280x1024 (SXGA 5:4) @ 60 Hz
Product Features	Optical Bonding Technology Modular Backpack Technology Tactile Navigator & Hotkey Functionality USB loophrough in front Serial Control Interface Slimmest Design Possible	Optical Bonding Technology Modular Backpack Technology Tactile Navigator & Hotkey Functionality USB loophrough in front Serial Control Interface Slimmest Design Possible	Optical Bonding Technology Modular Backpack Technology Tactile Navigator & Hotkey Functionality USB loophrough in front Serial Control Interface Slimmest Design Possible
Power Input & Power Consumption	STD AC IEC - 115/230VAC - 50/60Hz or 24 VDC Max 36W (Brightness @ 100%)	STD AC IEC - 115/230VAC - 50/60Hz or 24 VDC Max 35W (Brightness @ 100%)	STD AC IEC - 115/230VAC - 50/60Hz or 24 VDC Max 66W (Brightness @ 100%)
TECHNICAL DATA - COMPUTER			
Installed Operating System (OS)	Microsoft® Windows® XP Professional w/SP2	Microsoft® Windows® XP Professional w/SP2	Microsoft® Windows® XP Professional w/SP2
Available Processors Options	Intel® Pentium®M 1.1GHz, 1MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.6GHz, 2MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 400MHz FSB Intel® Celeron®M 600MHz, 512KB Cache, 400MHz FSB	Intel® Pentium®M 1.1GHz, 1MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.6GHz, 2MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 400MHz FSB Intel® Celeron®M 600MHz, 512KB Cache, 400MHz FSB	Intel® Pentium®M 1.1GHz, 1MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.6GHz, 2MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 400MHz FSB Intel® Celeron®M 600MHz, 512KB Cache, 400MHz FSB
Front Side Bus Frequency	400 MHZ	400 MHZ	400 MHZ
System Chipset	Intel® 855GME	Intel® 855GME	Intel® 852GM
BIOS	Award 2Mbit Flash BIOS	Award 2Mbit Flash BIOS	Award 2Mbit Flash BIOS
Graphic Chipset	Intel® Extreme Graphics2 with 2D/3D graphics	Intel® Extreme Graphics2 with 2D/3D graphics	Intel® Extreme Graphics2 with 2D/3D graphics
On-board Memory	From 512MB -> 1GB DDR333MHz ECC	1GB DDR333MHz ECC	From 512MB -> 1GB DDR333MHz ECC
Default Internal Storage	4GB 2.5" Flashdrive ATA-3	4GB 2.5" Flashdrive ATA-3	4GB 2.5" Flashdrive ATA-3
MECHANICAL DATA			
User Controls & Activity	Power On/Off + On Screen Display Menu (push button) Brightness Control (potmeter or 3 x buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off + On Screen Display Menu (push button) Brightness Control (potmeter or 3 x buttons) Mode Status Illuminated LED-Ring Indicator	Power On/Off + On Screen Display Menu (push button) Brightness Control (potmeter or 3 x buttons) Mode Status Illuminated LED-Ring Indicator
Connectors	10/100Mbps Ethernet I/O: 1 x RJ-45 10/100/1000Mbps Ethernet I/O: 1 x RJ-45 COM1 I/O: 1 x D-SUB 9p (female) USB I/O: 3 x USB2.0 Type A Keyboard I/O: 1 x PS/2 Mouse I/O: 1 x PS/2 Compact Flash: Type 1 & II Compatible External RGB OUT: 1 x HD D-SUB 15P (Female) Internal COM2 visible as Serial Control Interface	10/100Mbps Ethernet I/O: 1 x RJ-45 10/100/1000Mbps Ethernet I/O: 1 x RJ-45 COM1 I/O: 1 x D-SUB 9p (female) USB I/O: 3 x USB2.0 Type A Keyboard I/O: 1 x PS/2 Mouse I/O: 1 x PS/2 Compact Flash: Type 1 & II Compatible External RGB OUT: 1 x HD D-SUB 15P (Female) Internal COM2 visible as Serial Control Interface	10/100Mbps Ethernet I/O: 1 x RJ-45 10/100/1000Mbps Ethernet I/O: 1 x RJ-45 COM1 I/O: 1 x D-SUB 9p (female) USB I/O: 3 x USB2.0 Type A Keyboard I/O: 1 x PS/2 Mouse I/O: 1 x PS/2 Compact Flash: Type 1 & II Compatible External RGB OUT: 1 x HD D-SUB 15P (Female) Internal COM2 visible as Serial Control Interface
Models Dimensions & Weight	Bracket Version: (B0xx) 296.20 (W) x 252.20 (H) x 84.50 (D) mm (w/cooler & without bracket) 296.20 (W) x 307.39 (H) x 146.51 (D) mm (with bracket) Flange Version: (F0xx) 311.20 (W) x 267.20 (H) x 84.50 (D) mm Console Version: (C0xx) 337.20 (W) x 293.20 (H) x 84.50 (D) mm Approx 5 kg	Bracket Version: (B0xx) 344.20 (W) x 292.20 (H) x 84.50 (D) mm (w/cooler & without bracket) 344.20 (W) x 326.19 (H) x 153.35 (D) mm (with bracket) Flange Version: (F0xx) 359.20 (W) x 307.20 (H) x 84.50 (D) mm Console Version: (C0xx) 385.20 (W) x 333.20 (H) x 84.50 (D) mm Approx 8.5 kg	Bracket Version: (B0xx) 416.20 (W) x 372.20 (H) x 84.50 (D) mm (w/cooler & without bracket) 416.20 (W) x 363.73 (H) x 167.05 (D) mm (with bracket) Flange Version: (F0xx) 431.20 (W) x 387.20 (H) x 84.50 (D) mm Console Version: (C0xx) 457.20 (W) x 413.02 (H) x 84.50 (D) mm Approx 5 kg
Factory Mounted Options	Touchscreen (not type approved) IP22 or IP66 user controls Processor Type & Memory Amount	Touchscreen (not type approved) IP22 or IP66 user controls Processor Type & Memory Amount	Touchscreen (not type approved) IP22 or IP66 user controls Processor Type & Memory Amount
Additional Accessories	VESA Bracket Backpack Mount Bracket (use computer stand-alone) Console mounting bracket kit (only B models)	VESA Bracket Backpack Mount Bracket (use computer stand-alone) Console mounting bracket kit (only B models)	VESA Bracket Backpack Mount Bracket (use computer stand-alone) Console mounting bracket kit (only B models) EN60945 Mounting Bracket
ENVIRONMENTAL DATA			
Operating Temperature	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
Storage Temperature	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
IP Rating	IP66 or IP22 (model dependent)	IP66 or IP22 (model dependent)	IP66 or IP22 (model dependent)
Compass Safe Distance	Standard: 70cm - Steering: 50cm	TBD	Standard: 135cm - Steering: 85cm
TYPE APPROVAL & TESTING			
	EN60945 4 th (IEC945 4 th) IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	NOTE: Covered within 12,19 inch test reports EN60945 4 th (IEC945 4 th) IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th (IEC945 4 th) IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas

MOUNTING SOLUTIONS

For the Series 2 range, both displays and panel computers, we offer various mounting solutions to suit your bridge/console design needs including an elegant bracket model and a sleek flange model with minimal frame design. In addition, a front mountable console model for tight installations is available.



BRACKET MODEL

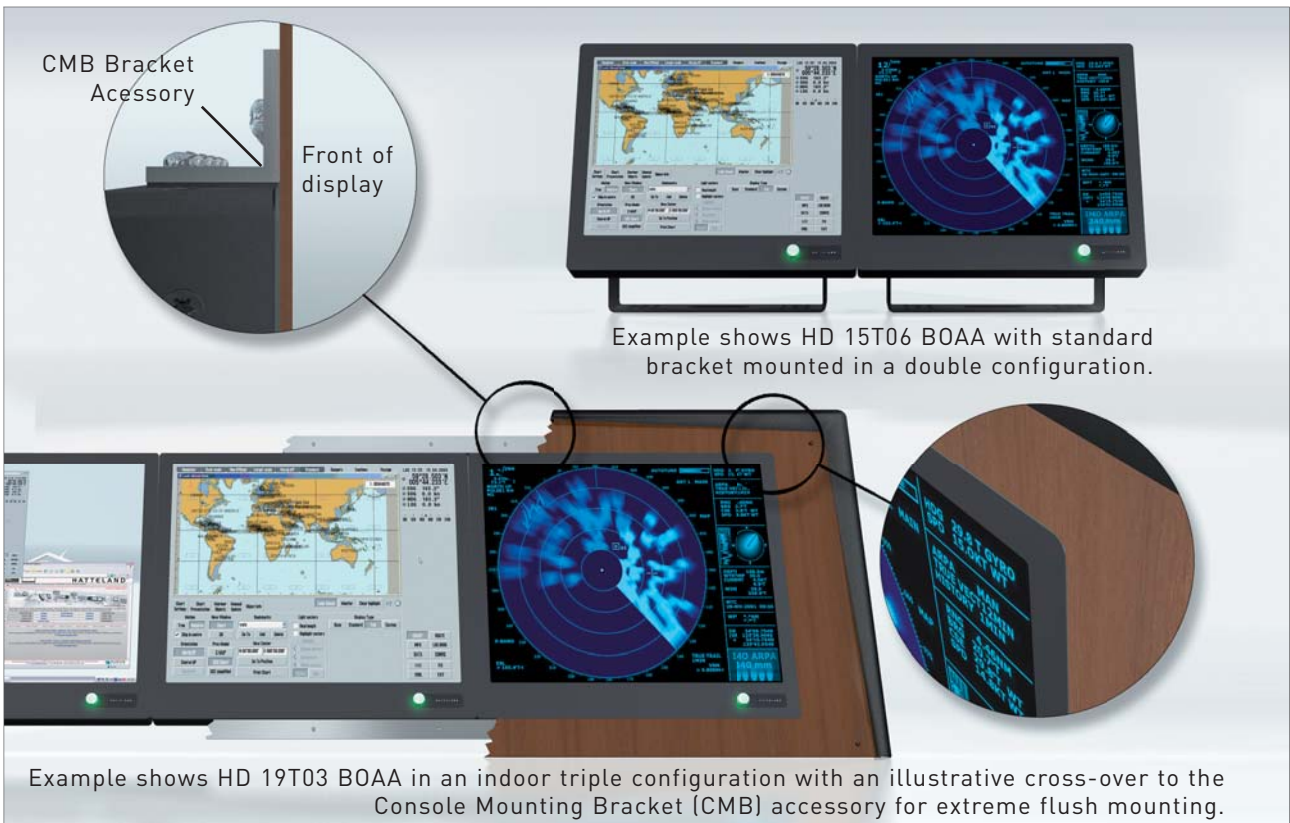
- Shipped with detachable bracket as standard
- IP22 or IP66 rated (from front) depending on the user control
- Extreme flush mounting achieved with CMB accessory
- Model secured from behind. No visible screws in front

FLANGE MODEL

- Shipped with factory mounted flange as standard (3mm in width)
- IP22 or IP66 rated (from front) depending on the user control
- Console mounting achieved with minimal frame
- Model secured from behind. No visible screws in front

CONSOLE MODEL

- Shipped with factory mounted flange as standard (16mm in width)
- IP22 or IP66 rated (from front) depending on the user control
- Console mounting for tight installations
- Model secured from front. Visible screws in front



Example shows HD 15T06 BOAA with standard bracket mounted in a double configuration.

Example shows HD 19T03 BOAA in an indoor triple configuration with an illustrative cross-over to the Console Mounting Bracket (CMB) accessory for extreme flush mounting.



COMPUTERS

Hatteland Display's range of type-approved marine computers* is designed to perform in harsh environments while providing the performance and flexibility you expect. We offer rack mount and black box/standalone computer solutions for every need. Our computers are used by system integrators, boat builders and end-users and can be found on all vessel types, all over the world.

If you are looking for a high quality marine computer for navigation, monitoring or entertainment solutions, Hatteland Display can fulfil your high expectations at a reasonable cost.

Our computer range covers all eventualities and requirements. We offer a wide range of processor choices, HDD and power options, and solid state technology, neatly engineered within industry standard form factors such as 19" rack mount, 2U, 3U and 4U.

We continually develop our marine computers portfolio to make the best use of emerging computer technology so you can be sure that your Hatteland Display computer offers the power needed to run modern applications, with the flexibility to be installed wherever you want, for any marine use.

*Winner of Red Dot Product Design Award 2009

The Hatteland Display HT C01 standalone computer won a prestigious Red Dot Award with Honourable Mention distinction. The Design Zentrum Nordrhein Westfalen in Germany has been marking outstanding international product design with its famous and highly regarded dot

since 1955. The Red Dot Product Design Award is an annual international awards scheme where products from all industries are chosen for their innovative visual and industrial design. To find out more visit www.red-dot.de.



reddot design award
honourable mention 2009





HT C01
Power and innovation



HT 216
2U Standard



HT 416
4U Standard



HT B06
Compact



HT B04
Compact ETX design



HT MMC
Ultra compact





reddot design award
honourable mention 2009

Designed
to perform in
harsh environments...

HT 404XE
4U Server



HT B07
Silent



HT B08
Silent and expandable



COMING 2009!

HT B18 - UPGRADED PERFORMANCE

With an enhanced cooling system, the new HT B18 is a high quality computer with a long operational life time. Highlights are: SSD Storage, no moving parts and no fans. All within a compact chassis.



SPECIFICATIONS

	HT C01 STD	HT 216 STD	HT 416 STD
TECHNICAL DATA			
Installed Operating System (OS)	Microsoft® Windows® Embedded Enterprise [XP Professional ENG w/SP2c, 32bit] or Option Dependent	Microsoft® Windows® Embedded Enterprise [XP Professional ENG w/SP2c, 32bit] or Option Dependent	Microsoft® Windows® Embedded Enterprise [XP Professional ENG w/SP2c, 32bit] or Option Dependent
Storage	Option Dependent	1 x 250GB 3.5" SATA 7200 RPM, 8MB Cache or Option Dependent	1 x 250GB 3.5" SATA 7200 RPM, 8MB Cache or Option Dependent
CPU / Processor & FSB Speed	1 x Intel® Core™2 Duo Desktop Processor E8400 3.0GHz, 1333MHz FSB, 6MB L2 Cache	1 x Intel® Core™2 Duo Desktop Processor E6400 2.13GHz, 1066MHz FSB, 2MB L2 Cache or Option Dependent	1 x Intel® Core™2 Duo Desktop Processor E6400 2.13GHz, 1066MHz FSB, 2MB L2 Cache or Option Dependent
Memory	2 x 1 GB Dual Channel DDR2 800/667MHz SDRAM, 240-pin DIMM	2 x 1GB Dual Channel DDR2 800/667MHz SDRAM DIMM or Option Dependent	2 x 1GB Dual Channel DDR2 800/667MHz SDRAM DIMM or Option Dependent
System Chipset	Intel® Q35 ICH9D0	Intel® Q965 ICH8D0	Intel® Q965 ICH8D0
On-board Graphics Chipset / Card	Intel® GMA3100 with 1 x HD DB15F (female) RGB/VGA OUT 1 x 29P (female) DVI-I	Integrated VGA with 1 x HD DB15F (female) RGB/VGA OUT or Option Dependent	Integrated VGA with 1 x HD DB15F (female) RGB/VGA OUT or Option Dependent
Max Resolution / Max Hz	2048 x 1536 / 75Hz	2048 x 1536 / 85Hz	2048 x 1536 / 85Hz
BIOS	Award	AMI 8MB Flash	AMI 8MB Flash
PCI Slots / PCIe Slots	<u>All slots are Full Height & Full Length profile:</u> 2 x PCI2.3 Slots, 3V and 5V Interface 1 x PCIe X16 (add2) 1 x PCIe X1	<u>All slots are Half Length and Low Profile:</u> 2 x PCI Slots 32bit, 3V and 5V Interface 1 x PCIe 4X 1 PCIe 16X (add2) (Graphic Mode)	<u>All slots are Full Height & Full Length profile:</u> 4 x PCI Slots 32bit, 3V and 5V Interface 1 x PCIe 4X 1 PCIe 16X (add2) (Graphic Mode)
Media Drive(s)	1 x DVD-RW/CD-RW Dual Recorder/Player Drive	1 x Slim DVD/CD-RW Recorder/Player Drive or Option Dependent	1 x Slim DVD/CD-RW Recorder/Player Drive or Option Dependent
Parallel Port (LPT female)	1 x DB25F Bi-Directional Centronics with ECP/EPP	1 x DB25F Bi-Directional Centronics with SPP/EPP/ECP	1 x DB25F Bi-Directional Centronics with SPP/EPP/ECP
Serial Port(s)	2 x DB9M RS-232 or Option Dependent	1 x DB9M RS-232 1 x DB9M RS-232/RS-422/RS-485 (elec. isolated) or Option Dependent	1 x DB9M RS-232 1 x DB9M RS-232/RS-422/RS-485 (elec. isolated) or Option Dependent
Ethernet Port(s)	2 x RJ45 10/100/1000Mbps - Intel® 82566DM 2 x RJ45 10/100/1000Mbps - Realtek RTL 8168C	2 x RJ45 10/100/1000Mbps - Realtek RTL8111B or Option Dependent	2 x RJ45 10/100/1000Mbps - Realtek RTL8111B or Option Dependent
USB Port(s)	8 x USB2.0 Type A (rear) 2 x USB2.0 Type A (front)	6 x USB2.0 Type A (rear) 2 x USB2.0 Type A (front) 2 x USB2.0 (Internal)	6 x USB2.0 Type A (rear) 2 x USB2.0 Type A (front) 2 x USB2.0 (Internal)
Firewire Port(s)	None	None	None
Keyboard & Mouse Ports	1 x PS/2 Keyboard 1 x PS/2 Mouse	1 x PS/2 Keyboard 1 x PS/2 Mouse	1 x PS/2 Keyboard 1 x PS/2 Mouse
Audio Port(s)	3 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) Realtek ALC888 7.1 channel, HD Audio	6 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) AC97 Codec, 7.1 channel, HD Audio	6 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) AC97 Codec, 7.1 channel, HD Audio
Video Port(s)	None	None	None
Miscellaneous Port(s)	None	None	None
Speaker	None	On-board	On-board
Power Manager	ACPI	None	ACPI
Monitoring / Watchdog	Temperature, voltage, fans with auto throttle WatchDog Reset: 1 sec-255 min & 1 sec. or 1 min/step	None	None
Power Input	STD AC IEC - 115/230VAC - 50/60Hz [300W]	STD AC IEC - 115/230VAC - 50/60Hz [400W Autorange]	STD AC IEC - 115/230VAC - 50/60Hz [400W Autorange]
Power Consumption	AC: Operating (TYP): 70W	AC: Operating (TYP): TBD	AC: Operating (TYP): TBD
MECHANICAL DATA			
Key Features	High Performance Replaceable Air Filter in front Service friendly	Heavy-duty steel 2U Rackmount chassis Removable air filter / Lockable front hatch door Supports 2 x 5 1/4" disk bays (one slim) Supports 4 x 3 1/2" disk bays Rear cable strain reliefs with grounding thread Rear PCI card support holder, fixed to chassis Cooling fans (High/Low Pressure, PSU, CPU & PCI)	Heavy-duty steel 4U Rackmount chassis Removable air filter / Lockable front hatch door Supports 6 x 5 1/4" disk bays (4 x 5 1/4" + 2 x slim, one used for air) Supports 4 x 3 1/2" disk bays Rear cable strain reliefs with grounding thread Rear PCI card support holder, fixed to chassis Cooling fans (High/Low Pressure, PSU, CPU & PCI)
Dimensions & Weight	345.00 (W) x 133.00 (H) x 390.00 (D) mm - 3U Approx 10kg	427.00 (W) x 88.90 (H) x 459.50 (D) mm - 2U Approx 10kg	427.00 (W) x 177.80 (H) x 459.50 (D) mm - 4U Approx 25kg
User Controls / Activity	On/Off Push Button, Reset Button Power LED / HDD LED	On/Off Push Button Power LED / HDD LED	On/Off Push Button Power LED / HDD LED
Factory Options	Automotive Removable HDD: 1 x 120 GB 2.5" SATA, 5400 RPM, 8MB Buffer 1 x Bluestorm Serial I/O card: 4 x COM Ports - Supports RS-232/422/485 Solid State Disk (SSD) 1 x 30 GB 2.5" SATA Graphics Card 1 x Matrox P690, PCIe x 16 / PCIe x 1 / PCI Low Profile	Intel® Core™2 Duo 1.8GHz, 2MB L2 Cache, 800MHz FSB 2 x 2GB Dual Channel DDR2 800/667MHz SDRAM DIMM 4 x 2GB Dual Channel DDR2 800/667MHz SDRAM DIMM 2-4 x 250GB HDD 3.5" SATA 1 x 16-128GB SDD 3.5" SATA 1 x Matrox P690, PCIe x 16 / PCIe x 1 / PCI Low Profile 2 x Intel® 10/100/1000Mbps (Teaming, Low Profile) 1 x Bluestorm Card - COM (Low Profile) Media for restoring of OS Image 19" Rails for rack installation Custom Specified Front as label	Intel® Core™2 Duo 1.8GHz, 2MB L2 Cache, 800MHz FSB 2 x 2GB Dual Channel DDR2 800/667MHz SDRAM DIMM 4 x 2GB Dual Channel DDR2 800/667MHz SDRAM DIMM 2-4 x 250GB HDD 3.5" SATA 1 x 16-128GB SDD 3.5" SATA Storage RAID Option with 0,1,5,10 Mode 1 x Matrox P690, PCIe x 16 / PCIe x 1 / PCI Low Profile 2 x Intel® 10/100/1000Mbps (Teaming, Low Profile) 1 x Bluestorm Card - COM (Low Profile) Media for restoring of OS Image 19" Rails for rack installation Custom Specified Front as label
Additional Accessories	19 inch Rack Kit (4U)	Backpack Mounting Bracket (for wall mount) Display unit (12,15 or 19 inch) = Panel Computer	None
ENVIRONMENTAL DATA			
Operating Temperature	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
Storage Temperature	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
Compass Safe Distance	Standard: 150cm - Steering: 95cm	Standard: TBD - Steering: TBD	Standard: TBD - Steering: TBD
TYPE APPROVAL & TESTING			
Note: Some of the Type Approvals could be pending. Please check our website for the latest status.	EN60945 4 th (IEC945 4 th) EN61162 IACS E-10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping BV - Bureau Veritas	EN60945 4 th (IEC945 4 th) IACS E-10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping BV - Bureau Veritas	EN60945 4 th (IEC945 4 th) IACS E-10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping BV - Bureau Veritas

HT 404XE STD	HT B07CD STD	HT B08CD STD	HT B18 STD
TECHNICAL DATA			
Option Dependent	Option Dependent	Option Dependent	Microsoft® Windows® Embedded Enterprise (XP Professional ENG w/SP2c, 32bit) or Option Dependent
Option Dependent	1 x Compact Flash Type I & II Compatible or Option Dependent	1 x Compact Flash Type I & II Compatible or Option Dependent	1 x removable SSD/HDD 1 x internal SSD/HDD (2.5")
1 x Intel® Xeon 64Bit, Socket 604 3.0GHz, 800MHz FSB or Option Dependent	1 x Intel® Core Duo™ Processor Dual Core 1.66GHz, 667MHz FSB, 2MB L2 Cache	1 x Intel® Core Duo™ Processor Dual Core 1.66GHz, 667MHz FSB, 2MB L2 Cache	1 x Intel® Core™2 Duo Mobile Processor T7400 2.16GHz, 667MHz FSB, 4MB Cache
2 x 1 GB Dual Channel DDR2 800/667MHz SDRAM, 240-pin DIMM	Option Dependent	Option Dependent	2 x 1 GB Dual Channel DDR2 533/667MHz SDRAM, 240-pin DIMM
Intel® E7525 (Turwater)	Intel® 945GM/GME ICH7M	Intel® 945GM/GME ICH7M	Intel® 82945GME ICH7m
Yes, via Matrox P650, 128MB, PCIe X16 Dual Head Graphics Card 2 x 29P (female) DVI-I	Intel® GMA950 1 x 24P (female) DVI-D 1 x 29P (female) DVI-I	Intel® GMA950 1 x 24P (female) DVI-D 1 x 29P (female) DVI-I	Intel® GMA950 1 x HD DB15F (female) RGB/VGA
2048 x 1536 / 85Hz	2048 x 1536 / 85Hz	2048 x 1536 / 85Hz	2048 x 1536 / 85Hz
Phoenix 8MB Flash	Award	Award	Award 4MB Flash BIOS
1 x PCIe 16X [Used by Matrox P650] 1 x PCIe 1X 1 x 64bit 133MHz PCI-X (3.3v) 1 x 64bit 100MHz PCI-X (3.3v) 1 x 32bit 33MHz PCI (3v)	1 x MiniPCI-Express Socket	1 x MiniPCI-Express Socket 1 x PCI3.0 Slot 32bit, 3V and 5V Interface, Half Length Profile	2 x PCI (Full height, half length)
1 x DVD-RW/CD-RW Dual Recorder / Player 1 x 1.44MB 3.5" Floppy Drive	None	None	None
1 x Bi-Directional Centronics with ECP/EPP	None	None	None
2 x DB9M RS-232 Fast Uart 16550	1 x DB9M RS-232 (opto isolated) 1 x DB9M RS-232/RS-422/RS-485	1 x DB9M RS-232 (opto isolated) 1 x DB9M RS-232/RS-422/RS-485	1 x DB9M RS-232
1 x RJ45 10/100/1000Mbps Intel® 82545GM	2 x RJ45 10/100Mbps - Realtek RTL8100C-LF	2 x RJ45 10/100Mbps - Realtek RTL8100C-LF	2 x RJ45 10/100/1000Mbps - Marvell 88E8053
4 x USB2.0 Type A (rear) 1 x USB2.0 Type A (front)	4 x USB2.0 Type A	4 x USB2.0 Type A	4 x USB2.0 Type A
None	1 x IEEE1394 400Mbps	1 x IEEE1394 400Mbps	None
1 x PS/2 Keyboard 1 x PS/2 Mouse	1 x PS/2 Keyboard 1 x PS/2 Mouse	1 x PS/2 Keyboard 1 x PS/2 Mouse	1 x PS/2 Keyboard 1 x PS/2 Mouse
3 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) AC97 6 channel	3 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) AC97 ALC655, 6 channel, 8-ohm 2W) 1 x TOSLINK SPDIF	3 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) AC97 ALC655, 6 channel, 8-ohm 2W) 1 x TOSLINK SPDIF	3 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) Realtek ALC888, 5.1+2 CH Dual Audio Streams
None	1 x Composite RCA Out / 1 x SVHS S-Video Out	1 x Composite RCA Out / 1 x SVHS S-Video Out	None
None	1 x DB9M with 3 Digital IO channels	1 x DB9M with 3 Digital IO channels	None
On-board	On-board	On-board	None
APM/ACPI	APM/ACPI	APM/ACPI	ACPI
None	Temperature Monitoring WatchDog Timer 256 Segments	Temperature Monitoring WatchDog Timer 256 Segments	Monitoring CPU temperature, voltage, cooling fan status. Auto throttling control when CPU overheats Watchdog timer: Reset 1 sec. ~255 min and 1 sec. or 1 min./step
STD AC IEC - 115/230VAC - 47-63Hz (500W Redundant Autorange)	STD AC IEC - 115/230VAC - 50/60Hz (100W)	STD AC IEC - 115/230VAC - 50/60Hz (100W)	STD AC IEC - 115/230VAC - 50/60Hz (100W)
AC: Operating (TYP): TBD	AC: Operating (TYP): 35W	AC: Operating (TYP): TBD	AC: Operating (TYP): TBD
MECHANICAL DATA			
High Performance Server Secure Redundant Power Supply Heavy-duty steel 4U Rackmount chassis	Compact Form Factor Fanless and no moving parts inside Aluminium Cooling Chassis w/no apertures	Compact Form Factor HDD-Free Solution possible Fanless and no moving parts inside Aluminium Cooling Chassis w/no apertures	Compact Form Factor Heat Pipe Cooling Technology Interchangeable CPU HDD-Free Solution possible Fanless and no moving parts inside Aluminium Chassis w/no apertures
482.50 (W) x 177.80 (H) x 506.50 (D) mm - 4U Approx 25.5kg	268.00 (W) x 59.00 (H) x 310.00 (D) mm Approx 4kg	268.00 (W) x 100.00 (H) x 310.00 (D) mm Approx 5kg	268.00 (W) x 100.00 (H) x 310.00 (D) mm Approx 5kg
On/Off Push Button, Reset Button Power LED / 4 x HDD LED, 1 x Network LED	On/Off Push Button, Reset Button Power LED / HDD LED	On/Off Push Button, Reset Button Power LED / HDD LED	On/Off Push Button, Reset Button Power LED / HDD LED
Additional 1 x Intel® Xeon 64Bit, 3.0GHz CPU Up to 32GB DDR2/667MHz Registered ECC MEM 1 x Fiber Fast Network Card with ST Connector Raid Controller: Modes 0,1,4,5,10 supported - Max 4 ports	Up to 4GB - DDR2 667MHz Memory 2 x uDOC Int. Module (USB 2.0 Flash Disc) up to 4GB	Up to 4GB - DDR2 667MHz Memory 2 x uDOC Int. Module (USB 2.0 Flash Disc) up to 4GB 2 x 2.5" Flash SSD (32GB each), RAID 0 & 1 2 x 2.5" HDD, S-ATA, 5400 RPM 80GB or 120GB	TBD Please contact Hatteland Display for details
None	None	None	None
ENVIRONMENTAL DATA			
-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
Standard: 300cm - Steering: 220cm	Standard: 60cm - Steering: 30cm	Standard: TBD - Steering: TBD	Standard: TBD - Steering: TBD
TYPE APPROVAL & TESTING			
EN60945 4th (IEC945 4th) CENELEC/SC 31-7: EN 50016 EX-P IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping BV - Bureau Veritas LRS - Lloyd's Register of Shipping	EN60945 4th (IEC945 4th) IACS E-10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4th (IEC945 4th) IACS E-10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4th (IEC945 4th) IACS E-10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas

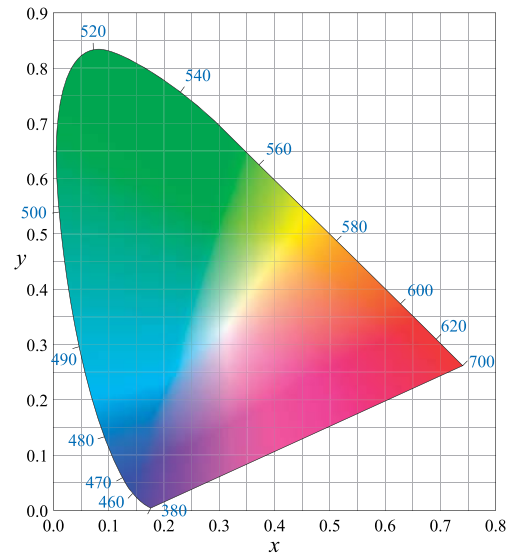
SPECIFICATIONS

	HT B06xM STD	HT B04xM STD	HT MMC
TECHNICAL DATA			
Installed Operating System (OS)	Option Dependent	Option Dependent	Microsoft® Windows® XP Professional w/SP2
Storage	Option Dependent	1 x Automotive Removable 40GB, 2.5" IDE, 4200 RPM, 2MB Buffer or Option Dependent 1 x Compact Flash Type I & II Compatible	1 x 4GB 2.5" Flashdrive ATA-3 1 x Compact Flash Type I & II Compatible
CPU / Processor & FSB Speed	Option Dependent	Option Dependent	Option Dependent
Memory	Option Dependent	Option Dependent	Option Dependent
System Chipset	Intel® 915GM, ICH6M	Intel® 82855GME or Intel® 852GM	Intel® 855GME or Intel® 852GM
On-board Graphics Chipset / Card	Intel® Graphics Media Accelerator GMA900 1 x HD DB15F RGB/VGA OUT or Option Dependent	Intel® Extreme Graphics2 with 2D/3D capabilities 1 x HD DB15F RGB/VGA OUT or Option Dependent	Intel® Extreme Graphics2 with 2D/3D capabilities 1 x HD DB15F RGB/VGA OUT
Max Resolution / Max Hz	2048 x 1536 / 85Hz	2048 x 1536 / 85Hz	2048 x 1536 / 85Hz
BIOS	Award 2Mbit Flash	Phoenix 2Mbit Flash	Award 2Mbit Flash
PCI Slots / PCIe Slots	2 x PCI2.2 Slots, 32bit, 3V and 5V Interface Half Length Profile	Option Dependent	None
Media Drive(s)	None	1 x 24x Slim CD-ROM Drive or Option Dependent 1 x Slim 1.44MB 3.5" Floppy Drive	None
Parallel Port (LPT female)	None	1 x DB25F Bi-Directional Centronics with SPP/EPP/ECP	None
Serial Port(s)	2 x DB9M RS-232	6 x DB9M RS-232/RS-422/RS-485 (fully isolated in RS-422/RS-485 mode)	1 x DB9M RS-232/RS-422/RS-485 + COM2 Internal (Serial Control Interface)
Ethernet Port(s)	1 x RJ45 10/100Mbps - Intel® 82562ET ICH6M 1 x RJ45 10/100/1000Mbps - Marvell 88E8053	1 x RJ45 10/100Mbps 1 x RJ45 10/100/1000Mbps - Intel® 82541GI	1 x RJ45 10/100Mbps 1 x RJ45 10/100/1000Mbps
USB Port(s)	4 x USB2.0 Type A	3 x USB2.0 Type A	3 x USB2.0 Type A (rear) 1 x USB2.0 Type A (front)
Firewire Port(s)	1 x IEEE1394 400Mbps	None	None
Keyboard & Mouse Ports	1 x PS/2 Keyboard 1 x PS/2 Mouse	1 x PS/2 Keyboard 1 x PS/2 Mouse	1 x PS/2 Keyboard 1 x PS/2 Mouse
Audio Port(s)	3 x 3.5mm Jacks (LINE IN/LINE OUT/MIC IN) AC97 ALC655, 6 channel 1 x Toslink SPDIF	Option Dependent	None
Video Port(s)	None	None	None
Miscellaneous Port(s)	None	None	None
Speaker	None	None	None
Power Manager	APM v1.2 and ACPI	APM v1.2 and ACPI 1.0a	None
Monitoring / Watchdog	System Temperature and Voltage status	Power supply, Fan and temperature supervision	None
Power Input Connection(s)	STD AC IEC - 115/230VAC - 50/60Hz (200W)	STD AC IEC - 115/230VAC - 50/60Hz (100W Autorange) or 24 VDC (screw terminal) (100W)	STD AC IEC - 115/230VAC - 50/60Hz or 24 VDC (screw terminal)
Power Consumption	AC: Operating (MAX) w/CPU @ 100%: TBD	AC: Operating (MAX) w/CPU @ 100%: TBD DC: Operating (MAX) w/CPU @ 100%: TBD	AC: Operating (MAX) w/CPU @ 100%: TBD DC: Operating (MAX) w/CPU @ 100%: TBD
MECHANICAL DATA			
Key Features	Intelligent fan/cooling design HDD-Free Solution possible Compact Form Factor Aluminium Chassis Mounting Brackets	Compact Form Factor Aluminium Chassis Mounting Brackets Removeable Hatch for replaceable HD Removeable hatch for Serial Config	Extreme Compact Form Factor Silent Processor Fans, no other moving parts Series 2 Backpack Computer Concept (to act as a panel computer)
Dimensions & Weight	290.00 [W] x 88.90 [H] x 223.00 [D] mm Approx 4kg	290.00 [W] x 87.90 [H] x 221.00 [D] mm Approx 3kg	260.00 [W] x 40.00 [H] 200.00 [D] mm Approx 1.8kg
User Controls / Activity	On/Off Push Button, Reset Button Power LED / HDD LED	On/Off Push Button, Reset Button Power LED / HDD LED	On/Off Push Button Mode Status LED / Power LED
Factory Options	Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 533MHz FSB Intel® Celeron®M 1.5GHz, 1MB L2 Cache, 400MHz FSB Intel® Celeron®M 1.7GHz, 1MB L2 Cache, 400MHz FSB 1 x DDR2 533MHz Non-ECC from 256MB to 1GB MEM 1 x uDOC Int. Module (USB 2.0 Flash Disc) up to 4GB 1 x SATA HDD 2.5" up to 120GB, 5400RPM, 8MB Cache Single or Dual DVI-D outputs	Intel® Pentium®M 1.1GHz, 1MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.6GHz, 2MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 400MHz FSB Intel® Celeron®M 400MHz, 512KB Cache, 400MHz FSB 1 x DDR 200/266/333MHz - from 256MB to 1GB MEM 1 x Dualhead GFX, 32MB w/1 x DVI-I + 1 x HD-15F D-SUB 1 x HDD up to max 80GB, 2.5", 5400RPM, 2MB Buffer 1 x DVD-RW/CDRW Rohs Compliant CD Drive 2 x PCI Slots or 1 x PC104 & 1 x PCI Slots or 2 x PC104 Slots (fully support half length cards) AC-97, 6 channel, 5.1 speaker w/LINE IN+LINE OUT+MIC	Intel® Pentium®M 1.1GHz, 1MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.6GHz, 2MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 400MHz FSB Intel® Pentium®M 1.8GHz, 2MB L2 Cache, 400MHz FSB Intel® Celeron®M 600MHz, 512KB Cache, 400MHz FSB 1 x DDR 333MHz ECC 512MB or 1GB MEM
Additional Accessories	None	None	Backpack Mounting Bracket (for wall mount) Display unit (12,15 or 19 inch) = Panel Computer
ENVIRONMENTAL DATA			
Operating Temperature	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%	-15 deg. C to +55 deg. C Humidity up to 95%
Storage Temperature	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%	-20 deg. C to +60 deg. C Humidity up to 95%
Compass Safe Distance	Standard: 125cm - Steering: 90cm	Standard: 75cm - Steering: 55cm	Standard: 25cm - Steering: 15cm
TYPE APPROVAL & TESTING			
Note: Some of the Type Approvals could be pending.	EN60945 4 th (IEC945 4 th) IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th (IEC945 4 th) IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas	EN60945 4 th (IEC945 4 th) IACS E10 ClassNK - Nippon Kaiji Kyokai GL - Germanischer Lloyd DNV - Det Norske Veritas ABS - American Bureau of Shipping LRS - Lloyd's Register of Shipping BV - Bureau Veritas

COLOR CALIBRATION FOR ECDIS DISPLAYS

With our extensive technical knowledge and dedicated color calibration facilities we can provide ECDIS approved displays. With the calibration, testing and approval side of your ECDIS business taken care of by Hatteland Display, you can be sure of the safety, compliance & compatibility and serviceability of your ECDIS solutions.

- Ensure compliance with IMO regulations – full type approved product or type approval support.
- We become your ECDIS partner – intrinsically safe ECDIS allowing you to concentrate on system development.
- Makes ECDIS retrofit and maintenance easy – computers or displays are interchangeable.
- Failsafe operation of your ECDIS is possible – alerts if a non-calibrated monitor is used.
- Sophisticated color laboratory – open to customers for own development.



OPTICAL TECHNOLOGY® BONDING

Optical bonding can greatly enhance the viewing performance, reliability and lifespan of marine displays. It is a process whereby the air gap between the front glass panel and LCD module is filled with a special compound to negate all of the problems related with marine use such as condensation, sunlight reflection, night vision and overheating.

Optical Technology is the division of Hatteland Display dedicated to the art of LCD optical bonding. It is the only such in-house facility of its kind at a marine display manufacturer, and it allows us to provide proprietary added value whilst ensuring the quality and integrity of our display products and technology.



ABOUT

Hatteland Display is the leading technology provider of maritime display and computer products. We deliver high quality, unique and customized solutions to the international maritime market.

The company represents innovation and quality to system integrators, ship yards and boat builders world wide. Effective quality assurance and investment in sophisticated in-house manufacturing methods and facilities enable us to deliver type approved and Mil tested products.

Our customer oriented approach, technical knowledge and dedication to R&D, makes us a trusted and preferred supplier of approved solutions, which are backed up by a strong service network.

CONTACT DETAILS

Head Office, Norway

Hatteland Display AS
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We have sales offices in Norway, Germany, USA and France.

To get an up-to-date list of our locations, please visit
www.hatteland-display.com/locations



hatteland-display.com You will find our website full of useful information to help you make an informed choice as to the right product for your needs.

You will find detailed product descriptions and specifications for the entire range on offer be it Series 1, Series 2, Computers & Panel Computers, Military solutions as well as the range of supporting accessories.

The site carries a wealth of information regarding our product testing and approvals in addition to company contact information for our various offices around the world, the global service centers and the technical help desk, all ensuring the best possible support wherever you, or your vessel, may be in the world.

Knowledge - Quality - Value

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