USER MANUAL

HT 216 / HT 416 - Maritime Rack Computers

HT 216 xxx-Ayyy
HT 416 xxx-Ayyy

xxx=standard or customized
yyy=configuration dependent

Please visit www.hatteland-display.com for the latest electronic version of this manual.
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## Contents of package

### This product is shipped with:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS-CABLE EU</td>
<td>1 pcs of power cable European Type F “Schuko” to IEC. Length 1.8m</td>
<td>EUR TYPE F</td>
</tr>
<tr>
<td>80099</td>
<td>1 pcs of power cable US Type B plug to IEC. Length 1.8m</td>
<td>US TYPE B</td>
</tr>
<tr>
<td>MEDIA STD01</td>
<td>Documentation and Driver DVD for factory installed components like mainboard, IDE, network etc. Note: To use this DVD disc you will need an external USB CD/DVD drive or provide means of getting contents copied over via USB memory stick/network to the operating system. You can alternatively download the drivers from our website <a href="http://www.hatteland-display.com">www.hatteland-display.com</a></td>
<td>Menu and Driver browser for Microsoft® Windows®</td>
</tr>
<tr>
<td></td>
<td>1 pcs of cable relief bracket including screws.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test Reports papers: 1 pcs of Product Declaration 1 pcs of Computer Checklist 1 pcs of Burn-In Test Certificate</td>
<td></td>
</tr>
</tbody>
</table>

### Package may also include: (based on accessories/options ordered)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| HT 00215 OPT-A1 | Recovery Kit (USB Flash)  
For reverting back to factory/customized installations.  
**Note:** Only applicable for factory delivered units with HDD/SSD hardware.                                                                                     |              |
| HT 00250 OPT-A1 | Mounting rails kit  
2 x 20 inch long ball bearing sliding rails. 19 inch Rack compatible.                                                                                                                                                                                                 |              |
|            | For computers that include 3rd party hardware; the package / accessories box may also include additional CD / HW / Information from 3rd party supplier(s).                                                                                                                                                                                                 |              |
General
About this manual
The manual contains electrical, mechanical and input/output signal specifications. All specifications in this manual, due to manufacturing, new revisions and approvals, are subject to change without notice. However, the last update and revision of this manual are shown both on the frontpage and also in the “Revision History” chapter at the end of the manual.

Furthermore, for third party datasheet and user manuals, please see dedicated Documentation and Driver DVD delivered with the product or contact our sales/technical/helpdesk personnel for support.

About Hatteland Display
Hatteland Display is the leading technology provider of specialized display and computer products, delivering high quality, unique and customized solutions to the international maritime, naval and industrial markets.

The company represents innovation and quality to the system integrators 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.

www.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 Displays, Computers and 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.

Contact Information

<table>
<thead>
<tr>
<th>Head office, Vats / Norway:</th>
<th>Sales office, Frankfurt / Germany:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hatteland Display AS</td>
<td>Hatteland Display GmbH</td>
</tr>
<tr>
<td>Åmsosen</td>
<td>Werner Heisenberg Strasse 12,</td>
</tr>
<tr>
<td>N-5578 Nedre Vats, Norway</td>
<td>D-63263 Neu-Isenburg, Germany</td>
</tr>
<tr>
<td>Tel: +47 4814 2200</td>
<td>Tel: +49 6102 370 954</td>
</tr>
<tr>
<td>Fax: +47 5276 5444</td>
<td>Fax: +49 6102 370 968</td>
</tr>
<tr>
<td><a href="mailto:mail@hatteland-display.com">mail@hatteland-display.com</a></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sales office, Oslo / Norway:</th>
<th>Sales office, Aix-en-Provence / France:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solbråveien 20</td>
<td>Hatteland Display SAS</td>
</tr>
<tr>
<td>N-1383 Asker</td>
<td>ACTIMART, 1140 RUE AMPERE, BP 50 196</td>
</tr>
<tr>
<td>Norway</td>
<td>13795 AIX-EN-PROVENCE, CEDEX 3</td>
</tr>
<tr>
<td>Tel: +47 4814 2200</td>
<td>Tel: +33 (0) 4 42 16 47 57</td>
</tr>
<tr>
<td>Fax: +47 5276 5444</td>
<td>Fax: +33 (0) 4 42 16 47 00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sales office, San Diego / USA:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hatteland Display Inc.</td>
<td></td>
</tr>
<tr>
<td>11440 W. Bernardo Court, Suite 300</td>
<td></td>
</tr>
<tr>
<td>San Diego, CA 92127, USA</td>
<td></td>
</tr>
<tr>
<td>Tel: +1 858 753 1959</td>
<td></td>
</tr>
<tr>
<td>Fax: +1 858-408-1834</td>
<td></td>
</tr>
</tbody>
</table>

For an up-to-date list, please visit www.hatteland-display.com/locations
Computers introduction

Hatteland Display's range of type-approved 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 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 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.

Designed to perform in harsh environments...

Note: Some of the illustrations to the right may show pending / obsolete product and design. Please visit www.hatteland-display.com for current computers available.

Winner of Red Dot awards 2009 / 2007

In 2009 the Hatteland Display HT C01 standalone computer won a prestigious Red Dot Award with Honourable Mention distinction, successful detail solution.

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.

In 2007 the Hatteland Display Series 2 Display/Panel Computers range won the Red Dot Award for the overall design and modular backpack concept, which docks into the screen at the back, comprises either the typical display connections or a fully equipped panel computer. Even the computer backpack can operate on its own as a stand-alone computer.
Exploded View HT 216

General illustration
Exploded View HT 416
Product Labels (Examples)

Serial Number Label Placement and Layout (external)

Serial Number Label Nomenclature

AA XXX AAA-Axxx-XXXXXX NOMENCLATURE - A=Letters, X=Numbers
HT 216 STD-A111-000005 Example

| | | | | | | | | Serial Number, 7 digits
| | | | | | | | | Configuration ID (for components like memory, storage etc.)
| | | | | | | | | Power Input ID (A=90-264VAC)
| | | | | | | | | Installed Operating System ID / No Installed OS ID
| | | | | | | | | Abbreviation for Standard (ST) or reserved customer ID
| | | | | | | | | Electronics / Mainboard / Technology Revision ID
| | | | | | | | | Chassis Form Factor (2=2U, 4=4U)
| | | | | | | | | Manufacturer ID / Product Series ID

Revision Label

Operating System Serial Number Label Placement (external)

Label Size: 6cm x 2cm

Label Size: 7cm x 2.8cm

Note: This location also apply for HT 416 units.
Installation
General Installation Recommendations

Installation and mounting of computers

1. Units may be intended for various methods of installation or mounting (rack mounting, panel mounting, bracket mounting, ceiling/wall mounting); for details, please see the relevant mechanical drawings.

2. Adequate ventilation is a necessary prerequisite for the life of the unit. The air inlet and outlet openings must definitely be kept clear; coverings which restrict ventilation are not permissible. The product might be without any ventilation aperatures which means pt.2 does not apply.

3. Exposure to direct sunlight can cause a considerable increase in the temperature of the unit, and might under certain circumstances lead to overtemperature. This point should already be taken into consideration when the bridge equipment is being planned (sun shades, distance from the windows, ventilation, etc.)

4. Space necessary for ventilation, for cable inlets, for the operating procedures and for maintenance, must be provided.

5. To further improve the cooling of the unit we recommend installing Cooling Fans underneath blowing upwards into the unit air inlet. This may be required in high temperature applications and also when there is reason to expect temperature problems due to non-optimal way of mounting.

6. The product should be properly grounded; a shorter and thicker cable gives better grounding. A 6mm² is recommended, but a 4mm² or even 2.5mm² can be used for this purpose.

7. Expose to heavy vibration and acoustic noise might under certain circumstances affect functionality and expected lifetime. This must be considered during system assembly and installation. Mounting position must carefully be selected to avoid any exposure of amplified vibration.

General mounting instructions

1. The useful life of the components of all Electronics Units generally decreases with increasing ambient temperature; it is therefore advisable to install such units in air-conditioned rooms. If there are no such facilities, these rooms must at least be dry, adequately ventilated and kept at a suitable temperature in order to prevent the formation of condensation inside the unit.

2. With most Electronic Units, cooling takes place via the surface of the casing. The cooling must not be impaired by partial covering of the unit or by installation of the unit in a confined cabinet.

3. In the area of the wheel house, the distance of each electronics unit from the magnetic standard compass or the magnetic steering compass must not be less than the permitted magnetic protection distance. This distance is measured from the centre of the magnetic system of the compass to the nearest point on the corresponding unit concerned. The exact distance is often mentioned in the specific product specifications.

4. Transportation damage, even if apparently insignificant at first glance, must immediately be examined and be reported to the freight carrier. The moment of setting-to-work of the equipment is too late, not only for reporting the damage but also for the supply of replacements.

5. The classification is only valid for approved mounting brackets provided by Hatteland Display. The unit shall be mounted stand-alone without any devices or loose parts placed at or nearby the unit. Any other type of mounting might require test and re-classification.
General Installation Recommendations

Cables
Use only high quality shielded signal cables. For RGB/DVI cables use only cables with separate coax for Red, Green and Blue.

Ferrites
On selected products, the ferrites prevent high frequency electrical noise (radio frequency interference) from exiting or entering the equipment. To verify if your product require this, please see the “Physical Overview” chapter in this manual. The ferrites are part of the contents of the package also specified in the “Contents Of Package” chapter early in this manual. **The ferrites must be mounted on specific cables to fully comply with the Type Approvals!**

The ferrites should be mounted (clipped in place on the cable as shown in illustration) as close as possible to the cable connector on the rear side of the computer product. Open up the ferrite, place the cable inside as shown in FIG1, and then gently close it until a click can be heard (FIG2).
General Installation Recommendations

Sliding Rails - HT 00250 OPT-A1

Suitable for use with 19 Inch rack mounting. Load rating up to 52kg, 9.6mm slide thickness. Lock-out. Front Disconnect. Optional enclosure mounting brackets. Note: Manufactured by 3rd party. Sliding rails representation below are simplified in terms of visual appearance.

1: Pull out the rails to extend it fully

2: Note the locations of suitable mounting holes on the 2U/4U cabinet for the sliding rails

3: Mount the rails on left and right side of the 2U/4U cabinet. You may need to align the entire slide construction to discover the suitable mounting holes. M4 screws are suitable (included in kit).

4: Mount the additional bracket kit into your 19 Inch rack if needed. Comes complete with brackets, gaskets and mounting screws.
Computer Upgrade Precaution Note

Users who need to open the computer to change PCI cards, install more memory, or set internal jumpers can do so without voiding the warranty. Before opening a unit’s housing to remove or touch a board, proper ESD measurements must be taken!

1. Operator should ground himself by using a wrist band.

2. The wrist band should be connected to ground via a ground cord.

3. A one megaohm resistor, installed in the wrist connection end of the ground cord, is a safety requirement.

4. Alternatively an Static-dissipative ESD work mat could be positioned at the workplace. The 3M™ 8501 Portable Field Service Kit is a good choice for this purpose.

All assisting persons who might come into contact with the endangered boards must also use the ESD equipment.
**Operation**

### Front area - HT 216 computer

The unit’s operational controls and air filter are located behind the lockable front hatch.

1: Showing unit with hatch closed and front lock.  
2: Press gently the front lock inwards and turn clockwise at the same time to unlock.  
3: Showing unit with hatch open to reveal both user controls and air filter. See next page for details.

### Front area - HT 416 computer

The unit’s operational controls and air filter are located behind the lockable front hatch.

1: Showing unit with hatch closed and front lock.  
2: Press gently the front lock inwards and turn clockwise at the same time to unlock.  
3: Showing unit with hatch open to reveal both user controls and air filter. See next page for details.
**Operation**

**HDD TRAY 1,2,3,4:**
Replaceable HDD tray bay which supports 3.5” SATA hard drives. The amount of HDD available and installed is configuration dependent. By factory default, 1 x HDD is installed. Any HDD should not be replaced or dismounted from the unit while the operating system is running and the computer unit is turned on. Doing so may cause loss of data or software crashes upon reboot.

**RESERVED:**
These D-SUB shaped blinded holes are reserved for future applications.

**POWER LED:**
The Power LED will illuminate static green when the computer unit is powered and turned on.

**Power Button:**
To turn ON the computer, press down button and release it immediately. The Power LED will illuminate green and any operating system installed will automatically boot. To turn OFF the computer, press down this button and hold it for 3 seconds. The operating system may require additionally tasks to be performed before computer shuts down and turns off the unit. You can also turn off the computer by using the operating system own "shut down" feature. Either to standby mode, hibernation or sleep is also possible from most operating systems.

**HDD LED:**
The HDD LED will illuminate red when there is read/write activity on any of the installed HDD in the HDD trays. When there is no HDD activity the LED will be off.

**MEDIA DRIVE:**
By factory default a DVD/CD-RW recorder/player is installed. The drive features an eject button, a read/write activity LED and a small hole to eject any media even if the computer unit is not powered on.

**AIR FILTER:**
The computer unit features an cleanable / replaceable air filter. This is located onto the front hatch as seen in the previous page. Clean this regulary (based on environmental factors) to allow the unit to continuously cool properly and to prolong the unit’s lifetime and the components inside.
Physical Connections

Connector area - HT 216 computer

Note: PCI slots may provide DVI-I or other functionality not visible in the general illustration below.

Connector area - HT 416 computer

Note: PCI slots may provide DVI-I or other functionality not visible in the general illustration below.
Physical Connections

Power INPUT:
The internal AC power module supports both 115VAC/60Hz and 230/50Hz power input using a standard IEC European power plug. See specifications for more information.

LPT1 Parallel Port INPUT/OUTPUT:
Standard LPT1 Printer/Parallel (SPP/EPP/ECP) port using a D-SUB 25P Female connector. Fasten the cable to the connector using the provided screws on the cable housing itself.

Network INPUT/OUTPUT:
Supports 10/100/1000Mbps Ethernet (LAN). Suitable for twisted pair cables CAT.5E. Make sure the network cable connector "clicks" into the RJ-45 connector.

PCIe X16 (add2) Slot:
Supports Full Height and Full Length Profile card in one available slot. Cards is normally installed from factory. Please review the General Installation Recommendations chapter in this manual for more information. Additionally consult the 3rd party manual available on the attached documentation CD delivered with this unit.

PCI Rev2.3 Slots:
Supports Full Height and Full Length Profile card in two available slots. Cards is normally installed from factory. Please review the General Installation Recommendations chapter in this manual for more information. Additionally consult the 3rd party manual available on the attached documentation CD delivered with this unit.

PCIe X4 Slot:
Supports Full Height and Full Length Profile card in one available slot. Cards is normally installed from factory. Please review the General Installation Recommendations chapter in this manual for more information. Additionally consult the 3rd party manual available on the attached documentation CD delivered with this unit.

PS/2 Mouse and PS/2 Keyboard INPUTS:
Connect the PS/2 mouse cable to the PS/2 5P Connector (female).
Connect the PS/2 keyboard cable to the PS/2 5P Connector (female).
Physical Connections

**COM1 Serial Port INPUT/OUTPUT:**
Supports RS-232 using D-SUB 9P male connector. Fasten the cable to the connector using the provided screws on the cable housing itself.

**COM2 Serial Port INPUT/OUTPUT:**
Supports RS-422/RS-485 (electronically isolated) using D-SUB 9P female connector. Fasten the cable to the connector using the provided screws on the cable housing itself.

**RGB OUTPUT:**
Will output a signal from the computer for use with external display or monitor. Connects via a High Density D-SUB 15P Female connector. Fasten the cable to the connector using the provided screws on the cable housing itself.

**USB 9,8,7,6,5,4,2,0 INPUT/OUTPUT:**
Supports any USB1.1 (12Mbps) or USB2.0 (480Mbps) compliant peripherals. Drivers for most USB devices are usually included in operating system or on separate installation CD’s delivered with Third Party products. USB 1.1 devices will operate in USB 1.1 mode (12 Mbps).

**Audio INPUT/OUTPUT:**
All connectors are 3.5” Jack Stereo. AC’97 audio support. 7.1 channel. HD Audio. It can be configured via the operating system to act as 2-channel, 4-channel, 6-channel and 8-channel.

<table>
<thead>
<tr>
<th>Port</th>
<th>2-channel</th>
<th>4-channel</th>
<th>6-channel</th>
<th>8-channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Blue</td>
<td>Line In</td>
<td>Line In</td>
<td>Line In</td>
<td>Line In</td>
</tr>
<tr>
<td>Lime</td>
<td>Line Out</td>
<td>Front Speaker Out</td>
<td>Front Speaker Out</td>
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<tr>
<td>Pink</td>
<td>Mic in</td>
<td>Mic In</td>
<td>Mic In</td>
<td>Mic In</td>
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<tr>
<td>Gray</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Side Speaker Out</td>
</tr>
<tr>
<td>Black</td>
<td>-</td>
<td>Rear Speaker Out</td>
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<td>Rear Speaker Out</td>
</tr>
<tr>
<td>Yellow Orange</td>
<td>-</td>
<td>-</td>
<td>Center/Subwoofer</td>
<td>Center/Subwoofer</td>
</tr>
</tbody>
</table>
Specifications
Specifications - HT 216

TECHNICAL DESCRIPTION

Computer Specifications: (Standard model)
- System Chipset: Intel® Q965 / ICH8D0
- Graphics: Integrated VGA Chipset, Supports CRT interface
- Graphics Resolution: Max 2048 x 1536 @ 85Hz
- BIOS: AMI 8MB Flash
- PCI Slots: 2 x PCI Slots 32-bit, 3V and 5V Interface, Half Length and Low Profile
- PCIe-X1 Slots: 1 x PCIe X4, Half Length and Low Profile
- PCIe-X16 Slots: 1 x PCIe X16 (add2), Half Length and Low Profile (Graphic mode)
- Media Drive: 1 x Slim DVD-RW/CD-RW Dual Recorder/Player
- Parallel Port (LPT): 1 x Bi-Directional Centronics (SFP/ECP/EPF)
- Serial Ports: 1 x RS-232
- Serial Ports: 1 x RS-232/RS-422/RS-485** (electrical isolated)
- * Size indicated is the lowest size available/approved for current revision of data sheet. The unit will support increased disk space in future. Please contact sales for up-to-date status.
- Ethernet: 2 x 10/100/1000Mbps Gigabit LAN, Realtek RTL8111B
- USB Ports: 8 x USB 2.0 + 2 x internal USB2.0
- USB Ports: 8 x USB Type A
- Keyboard Port: Standard PS/2 mini DIN connector
- Mouse Port: Standard PS/2 mini DIN connector
- Audio: On-board Audio Controller, AC97 Codec (7.1 channels, HD Audio) Line In, Line Out, Mic In
- Speaker: On-board
- Power Manager: ACPI

Power Specifications:
- Power Supply Options: 115V230VAC - 50/60Hz
- Power Consumption - Operating: 100W (TYP)
- Power Consumption - Standby: 1 W
- Power Supply Options: 115&230VAC - 50/60Hz
- Power Supply Options: HT 216 STx-Axxx model (400W - Autorange)
- Power Supply Options: STD IEC

Available Models:
- HT 216 STD-A242 with:
  1 x Intel® Core™2 Duo Desktop CPU E6400 - 2.13GHz, 1066MHz FSB, 2MB L2 Cache
  2 x 1 GB installed (Dual Channel) DDR2 800/667MHz SDRAM, 240-pin DIMM
  1 x 500GB or more* 3.5" SATA, 7200 RPM, 8MB Cache
  1 x Microsoft® Windows® Embedded Enterprise (XP Professional Eng w/SP2c, 32bit)

- HT 216 STD-A228 with:
  1 x Intel® Core™2 Duo Desktop CPU E6400 - 2.13GHz, 1066MHz FSB, 2MB L2 Cache
  2 x 1 GB installed (Dual Channel) DDR2 800/667MHz SDRAM, 240-pin DIMM
  1 x 500GB or more* 3.5" SATA, 7200 RPM, 8MB Cache
  2 x Intel® 10/100/1000Mbps Ethernet (Teaming, Low Profile) - RJ45
  1 x Matrox PX90 LP PCI-Express, 128MB, Max 2048x1536 @ 85Hz with 2 x 29P DVI-I*
  1 x Microsoft® Windows® Embedded Enterprise (XP Professional Eng w/SP2c, 32bit)
  * If 1600x1200 resolution is used, DVI signals must be set to CVT-RB (Coordinated Video Timing-Reduced Blanking) mode manually.

Available Accessories:
- HT 00215 OPT-A1 = 1 x Recovery Kit (USB Flash)
- HT 00250 OPT-A1 = 2 x 20" ball bearing sliding rail and mounting kit, for 19" Rack
- JH C01MF A-A = 1 x USB Cable 1m, Type A to Chassis mount receptacle

Operating System Typenumbers:
- HT 216 STD-Axxx = No OS
- HT 216 STD-Axxx = Microsoft® Windows® Embedded Enterprise (Win XP Pro Eng w/SP2c, 32bit)
- HT 216 STD-Axxx = Microsoft® Windows® Embedded Enterprise (Win Server 2003 Eng, 32bit)
- HT 216 STD-Axxx = Microsoft® Windows® Embedded Enterprise (Win Server 2008 Eng, 32bit)

For a full overview of typenumbers, please review the following link: www.hatteland-display.com/pdflink/ind100780-5.php

M E C H A N I C A L  D E S C R I P T I O N

Physical Considerations:
- 430.00 (W) x 460.80 (H) x 460.80 (D) mm (main chassis w/o handles etc)
- 16.93" (W) x 18.46" (H) x 18.14" (D) (main chassis w/o handles etc)
- Weight: 10 kg (approx)
- Power button, power led and HDD Led in front
- Black (EP0301-4040627) Heavy-duty steel 2U Rackmount chassis
- Power Consumption - Operating: 100W (TYP)
- Operating: Temperature -15 deg. C to +55 deg. C
- Operating: Temperature -20 deg. C to +60 deg. C
- Operating: Humidity up to 95%
- Operating: Humidity up to 95%
- Safety Considerations: Even although 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.

Environmental Considerations:

Compass Safe Distance: HT 216 STv-Axxx: Standard: 140cm - Steering: 80cm

APPROVALS & CERTIFICATES

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

- IEC 60945 4th (EN 60945:2002)
- DNV - Det Norske Veritas
- ABS - American Bureau of Shipping
- BV - Bureau Veritas
- GL - Germanischer Lloyd
- IACS E-10
- LRS - Lloyd's Register of Shipping

IND100129-109

24

INB100084-1 (Rev 15)
## Technical Description

### Computer Specifications: (Standard model)

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>System Chipset</td>
<td>Intel® Q965ICH8D0</td>
</tr>
<tr>
<td>Graphics</td>
<td>Integrated VGA Chipset, Supports CRT Interface.</td>
</tr>
<tr>
<td>Graphics Resolution</td>
<td>Max 2048 x 1536 @ 85Hz</td>
</tr>
<tr>
<td>BIOS</td>
<td>AM1 BMB Flash</td>
</tr>
<tr>
<td>PIC Slots</td>
<td>5 x PIC Slots 32-bit, 3V and 5V Interface, Full Height and Full Length</td>
</tr>
<tr>
<td>PIC-xL Slots</td>
<td>1 x PIC-x4, Full Height and Full Length</td>
</tr>
<tr>
<td>PIC-xL6 Slots</td>
<td>1 x PIC-x16 (add2), Full Height and Full Length</td>
</tr>
<tr>
<td>Media Drive</td>
<td>1 x Slim DVD-RW/CD-RW Dual Recorder/Player</td>
</tr>
<tr>
<td>Parallel Port (LPT)</td>
<td>1 x Bi-Directional Centronics (SPP/ECP/EPP)</td>
</tr>
<tr>
<td>Serial Ports</td>
<td>1 x RS-232</td>
</tr>
<tr>
<td>Serial Ports</td>
<td>1 x RS-232/RS-422/RS-485** (electrical isolated)</td>
</tr>
</tbody>
</table>

*Note: Size indicated is the lowest size available/approved for current revision of data sheet. The unit will support increased disk space in future. Please contact sales for up-to-date status.*

### Operating System

- HT 416 STD-A340 with:
  - 1 x Intel® Core™-2 Duo Desktop CPU E6400 - 2.13GHz, 1066MHz FSB, 2MB L2 Cache
  - 2 x 1 GB installed (Dual Channel DDR2 800/667MHz 512MB, 240-pin DIMM)
  - 1 x 500GB or more, 3.5" SATA, 7200 RPM, 8MB Cache
  - 1 x Microsoft® Windows® Embedded XP Professional Eng with SP2c, 32bit

- HT 416 STD-A244 with:
  - 1 x Intel® Core™2 Duo Desktop CPU E6400 - 2.13GHz, 1066MHz FSB, 2MB L2 Cache
  - 2 x 1 GB installed (Dual Channel DDR2 800/667MHz 512MB, 240-pin DIMM)
  - 1 x 500GB or more, 3.5" SATA, 7200 RPM, 8MB Cache
  - 2 x Intel® 10/100/1000Mbps Ethernet (Teaming, Low Profile) - RMS
  - 1 x Matrix PCIe-x16, 128MB, Max 2048x1536 @ 85Hz with 2 x 29P DVI-I*
  - 1 x Microsoft® Windows® Embedded Enterprise (XP Professional Eng with SP2c, 32bit)

*If 1600x1200 resolution is used, DVI signals must be set to CVT-RB (Coordinated Video Timing-Reduced Blanking) mode manually.

### Available Accessories:

- HT 00215 OPT-A1 = 1 x Recovery Kit (USB Flash)
- HT 00250 OPT-A1 = 2 x 20" ball bearing sliding rail and mounting kit for 19" Rack
- JH C01MF A-A = 1 x USB Cable 1m, Type A to Chassis mount receptacle

### Mechanical Description

### Physical Considerations:

- Operating: Temperature -15 deg. C to +55 deg. C
- Storage: Temperature -20 deg. C to +60 deg. C

### Environmental Considerations:

- Compass Safe Distance: HT 416 STx-Axxx Standard: 135cm - Steering: 90cm

### Approvals & Certificates

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

- IEC 60945:4th (EN 60945:2002)
- ClassNK
- DNV - Det Norske Veritas
- ABS - American Bureau of Shipping
- GL - Germanischer Lloyd
- LRS - Lloyd's Register of Shipping
- BV - Bureau Veritas
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Technical Drawings
Technical Drawings - HT 416

SALES DRAWING HT 416
HT 416 STD-xxxx, AC Power model shown in this drawing, but measurements generally apply for all HT 416 xxx-xxxx models

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

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Technical Drawings - Accessories
SLIDE RAIL with marked holes (A,B,C,D)

LEFT SIDE VIEW

RIGHT SIDE VIEW

DIMETRIC VIEW 2U

DIMETRIC VIEW 4U

SALES DRAWING HT 00250 OPT-A1 - Sliding Rails Mounting 2U/4U

Note: Sliding rails representation are simplified in terms of visual appearance. Based on 3rd party original drawn manufacturer illustration.
Appendixes
### Pinout Assignments - Common Connectors

**Note:** Not all connectors may be available on your specific product. This depends on the amount of additional hardware installed from factory, or customized solutions. These pin assignments are for the common connectors used. Connectors are seen from users Point Of View (POV).

#### RJ45 10/100 LAN
- **Use category 5 - twisted pair cable**
- **Pinout Assignments:**
  - Pin 01: TOP - Transmit Differential Pair (Positive)
  - Pin 02: DNM - Transmit Differential Pair (Negative)
  - Pin 03: RUP - Receive Differential Pair (Positive)
  - Pin 04: NC - Not Connected
  - Pin 05: DSN - Receive Differential Pair (Negative)
  - Pin 06: DTN - Differential Pair 1 (Positive)
  - Pin 07: D2N - Differential Pair 1 (Negative)
  - Pin 08: D3N - Differential Pair 2 (Positive)
  - Pin 09: D2N - Differential Pair 2 (Negative)

#### 4P USB TYPE A
- **Pin 1:** VCC +5V
- **Pin 2:** Negative Data
- **Pin 3:** Positive Data
- **Pin 4:** Ground

#### 4P USB TYPE B
- **Pin 1:** VCC +5V
- **Pin 2:** Negative Data
- **Pin 3:** Positive Data
- **Pin 4:** Ground

#### 2P DC Power Input on unit
- **Amphenol FCC17 D-SUB MALE**
- **Pin 1:** +24VDC
- **Pin 2:** Ground

#### 15P HD RGB VGA
- **Pin 01:** Red, analog
- **Pin 02:** Green, analog
- **Pin 03:** Blue, analog
- **Pin 04:** Reserved for monitor ID bit 2 (grounded)
- **Pin 05:** Digital ground
- **Pin 06:** Analog ground red
- **Pin 07:** Analog ground green
- **Pin 08:** Analog ground blue
- **Pin 09:** +5V power supply for DDC (optional)
- **Pin 10:** Digital ground
- **Pin 11:** Reserved for monitor ID bit 1 (grounded)
- **Pin 12:** DDC serial data
- **Pin 13:** Horizontal sync or composite sync, input
- **Pin 14:** Vertical sync, input
- **Pin 15:** DDC serial clock

#### 9P Serial COM RS-232
- This connector is commonly used for:
  - **Pin 01:** DCD - Data Carry Detect
  - **Pin 02:** DTR - Serial Tr or Receive Data
  - **Pin 03:** SOE - Serial Out or Transmit Data
  - **Pin 04:** DTN - Data terminal Ready
  - **Pin 05:** GND - Ground
  - **Pin 06:** DSR - Data Set Ready
  - **Pin 07:** RTS - Request to Send
  - **Pin 08:** CTS - Clear To Send
  - **Pin 09:** RI - Ring Indicate

#### 5P PS/2 MOUSE
- **Pin 1:** Mouse Clock
- **Pin 2:** Not Connected
- **Pin 3:** Mouse Data
- **Pin 4:** VCC +5V
- **Pin 5:** Mouse Clock

#### 5P PS/2 KEYBOARD+MOUSE Combined
- **Pin 1:** Mouse Clock
- **Pin 2:** Not Connected
- **Pin 3:** Mouse Data
- **Pin 4:** VCC +5V
- **Pin 5:** Keyboard Clock

#### 5P PS/2 KEYBOARD
- **Pin 1:** Keyboard Data
- **Pin 2:** Not Connected
- **Pin 3:** Ground
- **Pin 4:** VCC +5V
- **Pin 5:** Keyboard Clock

#### 5P S-VHS/S-VIDEO
- **Pin 2:** Ground (C)
- **Pin 3:** Y - Intensity (luminance)
- **Pin 4:** C - Color (chrominance)

#### RCA/BNC 1P COMP. VIDEO
- **Pin 1:** Video Signal
- **Ground Shield**

---

Note: The table above lists commonly-used RS-232 signals and pin assignments, however Serial Communication for Hatteland Display products may vary from product to product to support different end user systems. Please check additional pin assignments section in this manual for specific RS-232/RS-422/RS-485 pin assignments for your exact product.
Pinout Assignments - Common Connectors

### 25P Parallel

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STROBE</td>
</tr>
<tr>
<td>2</td>
<td>DATA1</td>
</tr>
<tr>
<td>3</td>
<td>DATA2</td>
</tr>
<tr>
<td>4</td>
<td>DATA3</td>
</tr>
<tr>
<td>5</td>
<td>DATA4</td>
</tr>
<tr>
<td>6</td>
<td>DATA5</td>
</tr>
<tr>
<td>7</td>
<td>DATA6</td>
</tr>
<tr>
<td>8</td>
<td>DATA7</td>
</tr>
<tr>
<td>9</td>
<td>ACK</td>
</tr>
<tr>
<td>10</td>
<td>BUSY</td>
</tr>
<tr>
<td>11</td>
<td>PE</td>
</tr>
<tr>
<td>12</td>
<td>SELECT</td>
</tr>
<tr>
<td>13</td>
<td>AUTO FEED</td>
</tr>
<tr>
<td>14</td>
<td>ERR#</td>
</tr>
<tr>
<td>15</td>
<td>INIT#</td>
</tr>
<tr>
<td>16</td>
<td>SLIN#</td>
</tr>
<tr>
<td>17</td>
<td>GND</td>
</tr>
<tr>
<td>18</td>
<td>GND</td>
</tr>
<tr>
<td>19</td>
<td>GND</td>
</tr>
<tr>
<td>20</td>
<td>GND</td>
</tr>
<tr>
<td>21</td>
<td>GND</td>
</tr>
<tr>
<td>22</td>
<td>GND</td>
</tr>
<tr>
<td>23</td>
<td>GND</td>
</tr>
<tr>
<td>24</td>
<td>GND</td>
</tr>
<tr>
<td>25</td>
<td>GND</td>
</tr>
</tbody>
</table>

Additional connector pinouts may be available in third party motherboard manuals, primarily for computers only. Please see manual/drivercd delivered with your product or own section in this user manual.

### 24P DVI-D & DVI-I

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T.M.D.S. Data2 - (Digital - RED link 1)</td>
</tr>
<tr>
<td>2</td>
<td>T.M.D.S. Data2 + (Digital + RED link 1)</td>
</tr>
<tr>
<td>3</td>
<td>T.M.D.S. Data2/4 Shield</td>
</tr>
<tr>
<td>4</td>
<td>T.M.D.S. Data4 - (Digital - GREEN link 2)</td>
</tr>
<tr>
<td>5</td>
<td>T.M.D.S. Data4 + (Digital + GREEN link 2)</td>
</tr>
<tr>
<td>6</td>
<td>DDC Clock</td>
</tr>
<tr>
<td>7</td>
<td>DDC Data</td>
</tr>
<tr>
<td>8</td>
<td>Analog Vertical Sync (DVI-I only)</td>
</tr>
<tr>
<td>9</td>
<td>T.M.D.S. Data1 - (Digital - GREEN link 1)</td>
</tr>
<tr>
<td>10</td>
<td>T.M.D.S. Data1 + (Digital + GREEN link 1)</td>
</tr>
<tr>
<td>11</td>
<td>T.M.D.S. Data1/3 Shield</td>
</tr>
<tr>
<td>12</td>
<td>T.M.D.S. Data3 - (Digital - BLUE link 2)</td>
</tr>
<tr>
<td>13</td>
<td>T.M.D.S. Data3 + (Digital + BLUE link 2)</td>
</tr>
<tr>
<td>14</td>
<td>+5V Power (for standby mode)</td>
</tr>
<tr>
<td>15</td>
<td>Ground (for +5V and analog sync)</td>
</tr>
<tr>
<td>16</td>
<td>Hot Plug Detect</td>
</tr>
<tr>
<td>17</td>
<td>T.M.D.S. Data0 - (Digital - BLUE link 1) and digital sync.</td>
</tr>
<tr>
<td>18</td>
<td>T.M.D.S. Data0 + (Digital + BLUE link 1) and digital sync.</td>
</tr>
<tr>
<td>19</td>
<td>T.M.D.S. Data0/5 Shield</td>
</tr>
<tr>
<td>20</td>
<td>T.M.D.S. Data5 - (Digital - RED link 2)</td>
</tr>
<tr>
<td>21</td>
<td>T.M.D.S. Data5 + (Digital + RED link 2)</td>
</tr>
<tr>
<td>22</td>
<td>T.M.D.S. Clock Shield</td>
</tr>
<tr>
<td>23</td>
<td>T.M.D.S. Clock + (Digital clock + (Links 1 and 2)</td>
</tr>
<tr>
<td>24</td>
<td>T.M.D.S. Clock - (Digital clock - (Links 1 and 2)</td>
</tr>
<tr>
<td>25</td>
<td>Analog RED</td>
</tr>
<tr>
<td>26</td>
<td>Analog GREEN</td>
</tr>
<tr>
<td>27</td>
<td>Analog BLUE</td>
</tr>
<tr>
<td>28</td>
<td>Analog Horizontal sync</td>
</tr>
<tr>
<td>29</td>
<td>Analog Ground (return for RGB signals)</td>
</tr>
</tbody>
</table>

DDC = Display Data Channel /// T.M.D.S = Transition Minimized Differential Signal /// PIN C1,C2,C3,C4 = Only present on DVI-I connectors. NOTE: Connector shows a DUAL LINK design, but some units may not support it. Only products with 1920x1200 or more in resolution require / support DUAL LINK.
The unit can be configured for RS422 / RS485 communication via a DIP switch SW1. The switches are named DIP1-8. The DIP switch is located on the communication card mounted on the motherboard which are connected to the units 9P D-SUB Comports at the rear of the unit.

<table>
<thead>
<tr>
<th>Setting SW1</th>
<th>Timeout</th>
<th>Min. Baudrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1 DIP5</td>
<td>SW1 DIP6</td>
<td>SW1 DIP7</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
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<td>OFF</td>
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<td>ON</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

Pinout Assignments - HT 216/HT 416 Additional COM Ports

9P Serial COM RS422

| Pin 01 - TXD- | Transmit Data - |
| Pin 02 - RXD+ | Receive Data + |
| Pin 03 - TXD+ | Transmit Data + |
| Pin 04 - RXD- | Receive Data - |
| Pin 05 - GND  | Ground         |
| Pin 06 - N/C  | Not Connected  |
| Pin 07 - N/C  | Not Connected  |
| Pin 08 - N/C  | Not Connected  |
| Pin 09 - N/C  | Not Connected  |

9P Serial COM RS485 Full Duplex

| Pin 01 - TXD- | Transmit Data - |
| Pin 02 - RXD+ | Receive Data + |
| Pin 03 - TXD+ | Transmit Data + |
| Pin 04 - RXD- | Receive Data - |
| Pin 05 - GND  | Ground         |
| Pin 06 - N/C  | Not Connected  |
| Pin 07 - N/C  | Not Connected  |
| Pin 08 - N/C  | Not Connected  |
| Pin 09 - N/C  | Not Connected  |

9P Serial COM RS485 Half Duplex

| Pin 01 - Data- | Data Negative |
| Pin 02 - N/C   | Not Connected |
| Pin 03 - N/C   | Not Connected |
| Pin 04 - N/C   | Not Connected |
| Pin 05 - GND   | Ground       |
| Pin 06 - Data+ | Data Positive|
| Pin 07 - N/C   | Not Connected |
| Pin 08 - N/C   | Not Connected |
| Pin 09 - N/C   | Not Connected |

Appendix 36
Trouble-shooting

GENERAL TROUBLE-SHOOTING

CD-ROM FAILURE OR READ/Detection PROBLEMS?
If the product are operated/located in a area with extreme condensation, the CD/DVD-ROM drive may not work correctly due to condensation on the read head. Keep the product on for a while until it’s reached normal operating temperature, and retry accessing discs. Otherwise, consider using USB memory sticks or alternative storage devices.

NO CD-ROM AVAILABLE ON YOUR PRODUCT FOR INSTALLING DRIVERS/SOFTWARE?
Please use USB memory sticks, USB Floppy drive, USB CD-Rom Drive or alternative storage devices to transfer or install software on CD-ROM-less units. You may also download drivers from: http://www.hatteland-display.com/archive

RECOVERY/RESCUE IMAGE
The Recovery Kit (USB Flash) will attempt to restore the HDD/SSD partition back to factory default overwriting all current data available on the HDD/SSD device. The recovery image is located either on a hidden partition image located on the computer unit (HT/HM C01 with WinXP only) or it is included as a image on the USB Flash Kit for HT 216, HT 416, HT B17, HT B18, HT B21, HT B22 and HT/HM C01 (Win7 only) computer models. The recovery image file is not accessible from any operating system, only by the Recovery Kit (USB Flash) provided by Hatteland Display.

Note that all files created after first time factory boot will be DELETED!

Restore from external USB recovery image (HT 00215 OPT-A1):
1: Insert the USB Flash media into the computer usb connector.
2: Restart the computer.
3: On the first screen that appear, press “Delete” or “F2” on the keyboard (depending on BIOS model) to bring up the BIOS setup screen.
4: Select “Advanced BIOS features” or “Boot” (depending on BIOS model).
5: Set “Harddisk boot priority” to “USB HDD” as number 1 or select “Hard Disk Drives”, then modify “1 st” to “USB: ....” depending on BIOS model.
6: Press F10 and then Enter on keyboard, or “F4” to save settings (depending on BIOS model).
7: Follow the on screen instructions that will be executed from the USB Flash media, such as;

8: After the restore operation is complete, remove the USB Flash Media and restart.

9: The computer is now restored to its original factory state.

10: If rescue failed, an error message will be displayed.
Declaration of Conformity

We, manufacturer, Hatteland Display AS, Åmsosen, N-5578 Nedre Vats, Norway

declare under our sole responsibility that the
JH MMD, JH MMC, JH STD, JH MIL, HM NMD, HM MIL, HM CMD, HT STD, HD MMD, HM MMD, HT MMC, HD MMC
and HT (computers) product ranges is in conformity with the following standards in accordance with the EMC Directive.

Low Voltage Directive 2006/95/EC
EN 60950:2006/A2:2013

EMC Directive 2004/108/EC
EN 55022:2010 / AC:2011 Class A
EN 55024:2010

Signature:........................................................
Frode Grindheim
Vice President Product Management
Nedre Vats, Norway

CE MARK FIRST AFFIXED DATE  (11 March 2010)

Declaration of Conformity

We, manufacturer, Hatteland Display AS, Åmsosen, N-5578 Nedre Vats, Norway

declare under our sole responsibility that the
JH MMD, JH MMC, JH STD, JH MIL, HM NMD, HM MIL, HM CMD, HT STD, HD MMD, HM MMD, HT MMC, HD MMC and HT (computers) product ranges is in conformity with

IEC 60945 4th (EN 60945:2002) and IACS E10 (where applicable)

This document was last approved, reviewed and found valid on
03 Jan 2014 by the signed participants as stated above.
Return Of Goods Information

Return of goods:
(Applies not to warranty/normal service/repair of products)

Hatteland Display referenced as “manufacturer” in this document.

Before returning goods, please contact your system supplier before sending anything directly to manufacturer. When you return products after loan, test, evaluation or products subject for credit, you must ensure that all accessories received from our warehouse is returned. This applies to cables, powermodules and additional equipment except screws or similar, user manual, datasheets or other written paper documents. Furthermore, the product must not have any minor / medium or severe scratches, chemical spills or similar on the backcover, front frame or glass.

This is needed to credit the invoice 100%. Missing parts will not be subject for credit, and you will not get total credit for returned product. You will either be charged separately or the amount is withdrawn from the credit. If you decide to ship the missing items on the after hand, you will get 100% credit for that particular invoice or items received at manufacturer incoming goods control. Please contact our service/sales department if additional questions.

Handling and packing units for return/credit

To prevent damage during shipping and transportation, respect the guidelines below.

Make sure you surround the product with the following material (whenever possible):

Use the original packaging from manufacturer, firm foam material, bubble wrap, lots of PadPack paper or foam chips/polyester wrapped in sealed plastic bags. Please make sure that the unit is protected with a surrounding plastic bag to prevent dust accumulation around the unit.

If you do not have the original packaging or are uncertain how to secure the unit properly, please consider seeking advice from nearby shipping or transportation offices, if in doubt!

Do not under any circumstances use loose foam chips, expanded polyester, clothes, cardboard with sharp edges/spikes, too little or nothing to secure the unit inside the box. Do not use cardboard boxes that are clearly too weak or not suitable for securing the unit properly during overseas shipment.
Terms Of Sale And Delivery

1) APPLICATION
The terms of sale and delivery apply for Hatteland Display.

2) PRICE
a) The price is per each, if nothing else has been stated, VAT not included. Price is based on the prices from our suppliers, current
custom rates, taxes, rate of exchange and international raw material prices. We reserve ourselves the rights to adjustments in case
of alternation on the above mentioned.

b) Included in the price is the supplier's standard packing. In case of re-packing/smaller quantities we reserve ourselves the right to
add an additional sum for warrantable packing according to CECC 0015 (Basic inspection for protection of electrostatic sensitive
devices)

3) VALIDITY
If nothing else has been stated in our quotation, the offer is valid for 30 days from the date of quotation.

4) PACKAGE QUOTATION
A package quotation means that all the components offered, must be ordered by us. If one component or more are removed from the
quotation, the prices given in the package quotation are not valid.

5) TERMS OF PAYMENT
Cash on delivery or payment in advance. Net granted for companies, schools and institutions only, according to agreement. In case of
too late payment 1.5% interest/month will be charged. Seller has mortgage rights in the goods delivered until the purchase price,
additional interests and charges have been paid in full. Accepted bill is not considered as payment until it has been honoured in full.

6) TIME OF DELIVERY
The quoted time of delivery is based on information from our suppliers. We disclaim any responsibility for the consequences of any
delay or cancellation from our suppliers. Belated delivery gives not solely the right for cancellation.

7) DELIVERY POINT OF TIME
Goods are considered delivered to customer when handed over to charterer.

8) FREIGHT / PACKING / FORWARDING FEE
Hatteland Display charge NOK 50,- in forwarding fee for orders below NOK 1000,-. Freight charge according to expenses for orders above NOK 1000,-. VAT not included.
For carriage arrangements organized by customers, a handling fee of NOK 200,- will be applied.

9) COMPLAINT
By receipt customer must check goods for obvious defects which have to be claimed within 8 days from receipt. Otherwise acceptance
of complaint can not be counted on.

10) WARRANTY / SERVICES
Time of warranty is calculated from our date of shipment, and applies to the extent that we are covered by our supplier's warranty
regulations. The warranty does no longer apply if:
   I) there has been encroached upon the goods without seller's consent
   II) terms of payment is not fulfilled
   III) the goods have been damaged due to unskilled treatment
   IV) components which are sensitive for static electricity have not been unpacked and treated in a secure way.
Minimum requirements: CECC 00015's standards for handling of such components. The warranty does not include fair wear and tear.

11) RESPONSIBILITY
Seller undertake to deliver faultless and functional capable goods according to existing technical specifications. Seller disclaim
responsibility for any damage or loss which directly or indirectly may be caused due to failure or defect with the delivered goods, if
carelessness from the seller can be limited up to the cost of the goods. The supplier's responsibility for defects with the supplied
goods do not include secondary damage or loss.
Terms

12) CANCELLATION / RETURN
Binding sales contract is concluded when we have confirmed customer's purchase order. Any disagreements in our order confirmation must be reported to seller within 6 days. The agreement can not be altered without our permission, after acceptance from our supplier. If goods are wanted to be returned, a Return No must be assigned from seller. Returned goods without a Return No will not be accepted. By return of stock listed goods, 20% return fee is charged. Returned goods are shipped on customer’s account and risk.

13) LOAN, RENT and DEMO
When borrowing of goods for demo/test, the date of return must be added to the document. If no date has been stated, date of return is two weeks from the date of the document. Before return, seller must be contacted for a Return No (RMA). Goods which have been sold with an agreed right of return within stated terms, shall also have a Return No. The Return No must be obtained before the stated date of return. Returned goods without a Return No, or which have not been packed in original packing, will not be accepted.

14) LIMITATIONS
If any of our suppliers claim limited delivery terms towards us, our terms of delivery will be restricted according to those.

15) SOFTWARE
Sold or borrowed software is not allowed to be copied or spread in other ways, without a written permission.

16) RE-EXPORT
Goods delivered from seller may be subject to special rules of exportation in their supplier’s native country. Buyer is responsible to obtain necessary permissions for further export/re-sale.

17) QUESTION IN DISPUTE
To settle any dispute the Karmsund Herredsrett is approved the legal venue.

INSTRUCTIONS FOR THE CONSIGNEE

1) CONTROL
Control the goods immediately by receipt. Examine the quantity towards the invoice/packinglist/shipping documents. Look for outward defects on the packing which may indicate damage on or loss of contents. Control the container and the seals for any defects.

2) SECURING EVIDENCE
When defects on the goods have been found, evidence must be secured, and seller must be informed. Call the transporter and point out the defects. Add a description of the defects on the goods receipt, the forwarder’s copy of the way-bill or on the driving slip.

3) RESCUE
Bound the damage. Try to restrict the damage and the loss. Seller will compensate expences incurred due to reasonable security efforts in addition to damage and loss.

4) COMPLAINT
Write immediately a complaint to the transporter or his agent. Forward immediately the complaint to the transporter or his agent, and hold the transporter responsible for the defects. The complaint must be sent at the latest:
   - for carriage by sea: within 3 days
   - for overland / air transportation within 7 days

5) DOCUMENTATION
For any claims the following documentation is required, and must be forwarded to the company or their agent: invoice, way-bill and/or bill of landing, and/or statement of arrival, inspection document, besides a copy of the letter of complaint to the transporter.
Notes

General Notes:

- License Terms for the installed OEM Operating System (OS) can be found on root of main boot device, (typically "C:\" partition).

- For certain computers, the on-board signal output (RGB, VGA, DVI) will be disabled if additional graphics card is installed and present in one of the PCI/PCIe slots. Please check “Physical Overview” in this manual to determine if your unit has the option for installing a additional graphics card in either PCI or PCIe slot.
## Revision History

Please note that references to page numbers may only be valid for the latest revision.

<table>
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<tr>
<th>Rev.</th>
<th>By</th>
<th>Date</th>
<th>Notes</th>
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<tr>
<td>0</td>
<td>SE</td>
<td>30 Apr 2009</td>
<td>Release for internal review.</td>
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<tr>
<td>2</td>
<td>SE</td>
<td>09 Jul 2009</td>
<td>Updated specifications page 22,23</td>
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<td>3</td>
<td>SE</td>
<td>27 Aug 2009</td>
<td>Revised info about USB recovery image and specs.</td>
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<tr>
<td>4</td>
<td>JE</td>
<td>10 Sep 2009</td>
<td>Added note about HDD/SSD future sizes (page 22,23)</td>
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<td>5</td>
<td>JE</td>
<td>17 Sep 2009</td>
<td>Revised PCI slots amount to 5 instead of 4 (page 23)</td>
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<td></td>
<td>SE</td>
<td></td>
<td>Added computer introduction page (page 9)</td>
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<tr>
<td>6</td>
<td>JE</td>
<td>30 Oct 2009</td>
<td>Minor text changes in Contents of Package (page 4)</td>
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<td>SE</td>
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<td>Revised specifications, add ABS Type Approval and removed LRS Type Approval (page 22,23)</td>
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<td>03 Dec 2009</td>
<td>Added BV and Nippon to Type Approved (23,23)</td>
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<td>21 Jan 2010</td>
<td>Added DNV Type Approved (page 22,23)</td>
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<td>JE</td>
<td>18 Mar 2010</td>
<td>Added GL Approval (page 24,25)</td>
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<td>AK</td>
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<td>Added MTBF value (page 24,25)</td>
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<td>10</td>
<td>ANK</td>
<td>07 Jan 2011</td>
<td>Added Installation chapter for HT 00250 OPT (page 16)</td>
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<td>JE</td>
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<td>Revised specifications, include HT 00250 OPT (page 24,25)</td>
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<td>SE</td>
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<td>Added HT 00250 OPT-A1 Sliding Rails Accessory drawing (page 32)</td>
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<td>11</td>
<td>JE</td>
<td>30 Mar 2011</td>
<td>Revised Contents of Package chapter (remove printed manual) page 5</td>
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<td>SE</td>
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<td>Revised specifications, added LRS type approval and Operating System ID (page 12, 28,29)</td>
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<td>12</td>
<td>JE</td>
<td>20 Jun 2011</td>
<td>Revised contents of package (added available accessories) page 5</td>
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<td>Revised specifications (RS-485, 19200 baud limitation note) page 24,25</td>
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<td>Revised Recovery Kit (USB Flash) HT 00215 OPT User Guide (page 37)</td>
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<td>MM</td>
<td>20 Mar 2012</td>
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<td>Revised comports (1 male/1 female), page 22,24,25</td>
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<td>Revised trouble-shooting text to difference between locations of Recovery Image, page 37</td>
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<td>Added FCC notice and logo, page 38</td>
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<td>JE</td>
<td>02 Apr 2014</td>
<td>General revision throughout manual regarding minor text changes.</td>
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<td>Removed information for DC Power Input (HT 216 and HT 416 does not support DC), page 15</td>
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<td>Revised Declaration of Conformity, page 38</td>
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<td>Added note for &quot;License Terms OEM OS&quot;, page 42</td>
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