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**EPC PM Nautic**  
**Installation Manual**  
English

*MAEN971, 2009-01*

## EPC PM Nautic Installation Manual

# Foreword

The EPC PM Nautic series consists of enhanced Panel IPCs, compatible with the toughest of maritime environments. Shock and vibration resistant and functional throughout comprehensive temperature changes, the series features a robust hard-disk drive, fanless CPU and Windows XP as the standard operating system.

The series also offers the option of modifying a number of its features, affording a customized version with a flash-memory, fanless chassis and Windows XP embedded.

The rugged EPC PM Nautic series provides an open platform solution that can be utilized with the customer's choice of software to meet the demands any marine environment with high performance reliability that's built to last.

This manual describes each model and gives instructions on installation, operation and service.

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Please read the entire installation manual prior to installing and using this equipment. Only qualified personnel may install, operate or repair this equipment. Elektronik-Systeme Lauer GmbH & Co. KG is not responsible for modified, altered or renovated equipment. Because the equipment has a wide range of applications, users must acquire the appropriate knowledge to use the equipment properly in their specific applications.

Persons responsible for the application and the equipment must themselves ensure that each application is in compliance with all relevant requirements, standards and legislation in respect to configuration and safety. Only parts and accessories manufactured according to specifications set by Elektronik-Systeme Lauer GmbH & Co. KG may be used.

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# 1 Safety Precautions

Both the installer and the owner and/or operator of the EPC must read and understand this installation manual.

## 1.1 Nautic Approvals and Certificates

The EPC PM Nautic series are certified according to the following list:

Model	CE	LR	BV	GL	DNV	ABS	RS	CCS	KR	EN 60945
EPC PM 1500t/ 1500 Nautic	X			X			X	X*	X*	X**
EPC PM 1700t/ 1700 Nautic	X	X	X	X	X	X	X	X*	X*	X**
EPC PM 1900t/ 1900 Nautic	X	X	X	X	X	X	X	X*	X*	X**
EPC PM 2100t/ 2100 Nautic	X	X	X	X	X	X	X	X*	X*	X**
* In progress										
** For bridge applications										

Approval/Certificate	Abbreviation
Conformité Européene	CE
Lloyd's Register	LR
Bureau Veritas	BV
Germanischer Lloyd	GL
Det Norske Veritas	DNV
American Bureau of Shipping	ABS
Russian Maritime Register of Shipping	RS
China Classification Society	CCS
Korean Register of Shipping	KR

## 1.2 General

- Read the safety precautions carefully.
- Check the delivery for transportation damage. If damage is found, notify the supplier as soon as possible.
- Do not use the EPC in an environment with high explosive hazards.
- The supplier is not responsible for modified, altered or reconstructed equipment.
- Use only parts and accessories manufactured according to specifications of the supplier.
- Read the installation and operating instructions carefully before installing, using or repairing the EPC.
- Never allow fluids, metal filings or wiring debris to enter any openings in the EPC. This may cause fire or electrical shock.
- Only qualified personnel may operate the EPC.
- Storing the EPC where the temperature is lower/higher than recommended in this manual can cause the LCD display liquid to congeal/become isotopic.
- The LCD display liquid contains a powerful irritant. In case of skin contact, wash immediately with plenty of water. In case of eye contact, hold the eye open, flush with plenty of water and get medical attention.
- The figures in this manual serves an illustrative purpose. Because of the many variables associated with any particular installation, the supplier cannot assume responsibility for actual use based on the figures.
- The supplier neither guarantees that the EPC is suitable for your particular application, nor assumes responsibility for your product design, installation or operation.

## 1.3 During Installation

- The EPC is designed for stationary installation on a plane surface, where the following conditions are fulfilled:
  - no high explosive risks
  - no strong magnetic fields
  - no direct sunlight
  - no large, sudden temperature changes
- Install the EPC according to the accompanying installation instructions.
- Ground the EPC according to the accompanying installation instructions.
- Only qualified personnel may install the EPC.
- Separate the high voltage, signal and supply cables.
- Make sure that the voltage and polarity of the power source is correct before connecting the EPC to the power outlet.
- Peripheral equipment must be appropriate for the application and location.
- The controlling transformer has to comply with EN60742.

## 1.4 During Use

- Keep the EPC clean.
- Emergency stop and other safety functions may not be controlled from the EPC.
- Do not use too much force or sharp objects when touching the keys, touch screen etc.

## 1.5 Service and Maintenance

- Only qualified personnel should carry out repairs.
- The agreed warranty applies.
- Before carrying out any cleaning or maintenance operations, disconnect the equipment from the electrical supply.
- Clean the display and surrounding front cover with a soft cloth and mild detergent.
- Replacing the battery incorrectly may result in explosion. Only use batteries recommended by the supplier.

## 1.6 Dismantling and Scrapping

- The EPC or parts thereof shall be recycled according to local regulations.
- The following components contain substances that might be hazardous to health and the environment: lithium battery, electrolytic capacitor and display.



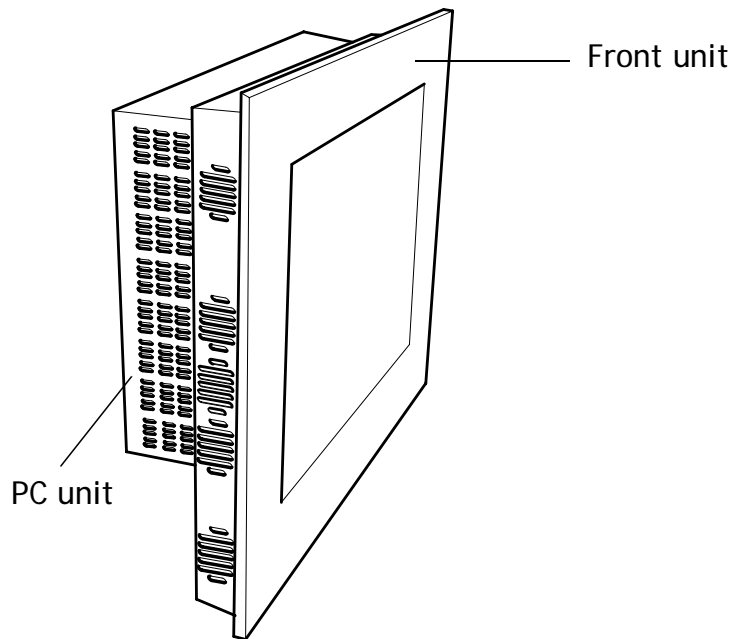
## 2 Supplied Equipment

Part	Description
CD; operating system	CD with operating system.
CD; driver software	Driver software CD for all pre-installed components such as mother board, touch screen, keyboard etc.
Power cable	Standard power cable (European or US standard) for units with 230 V AC power supply. Length: approximately 3.0 m. 24 V DC units are delivered without cable.
Installation manual	This manual describes specific information about Elektronik-Systeme Lauer products only - not about third party components. <b>Note:</b> Separate documentation of third party components is included on the enclosed driver software CD + as printed documentation.
Mounting kit	8 x M6x25 screws

## 3 Description of Parts

### 3.1 EPC PM Nautic

The EPC PM Nautic consists of a **Front Unit** and a **PC Unit**. These are installed in the same way independent of the display size.






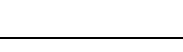


## 3.2 Display

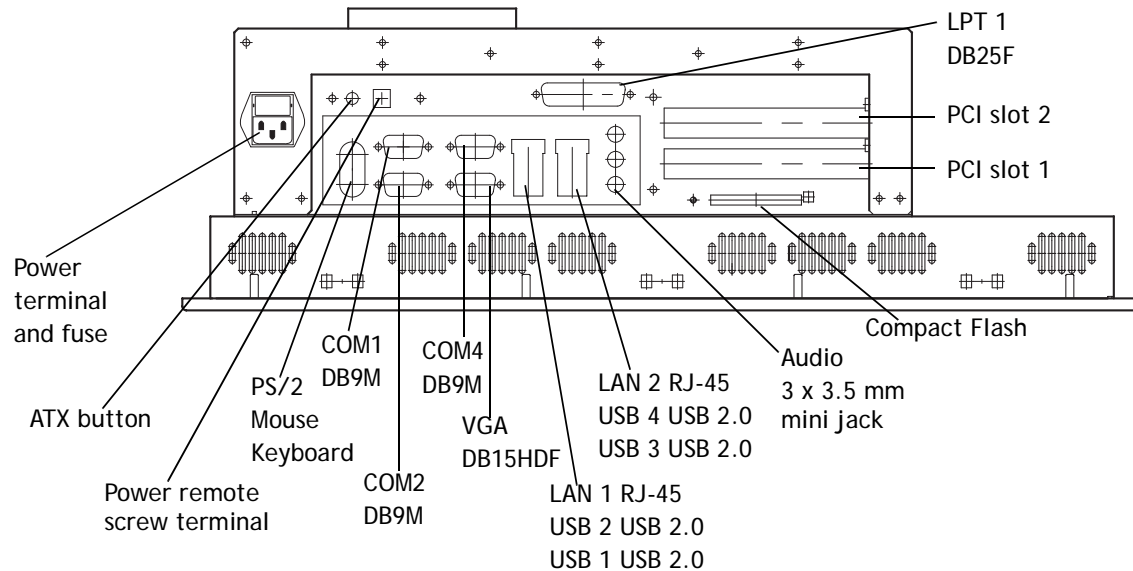
Display sizes 15", 17", 19" and 21" are available.



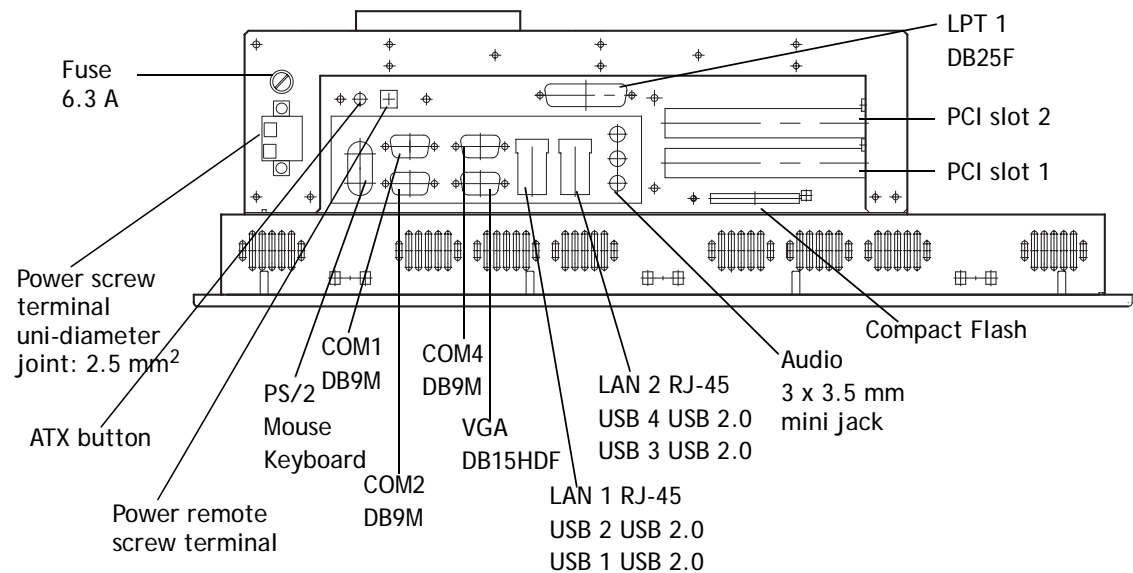
The front includes a USB-port, a power button and a dimmer button. The buttons are explained below:

Button	Instruction	Description
	Press the power button for longer than 1 second	Turns the monitor off
	Press the power button again	Turns the monitor on
	Press - (brightness down) on the dimmer button	Makes the display darker
	Press + (brightness up) on the dimmer button	Makes the display brighter
	Keep the power button pressed and at the same time press - (brightness down) on the dimmer button	Auto configuration of the monitor
	Press the power button and keep it pressed, and at the same time press + (brightness up) on the dimmer button	Changes video input (DVI/VGA)

### 3.3 Communication Ports 230 V AC

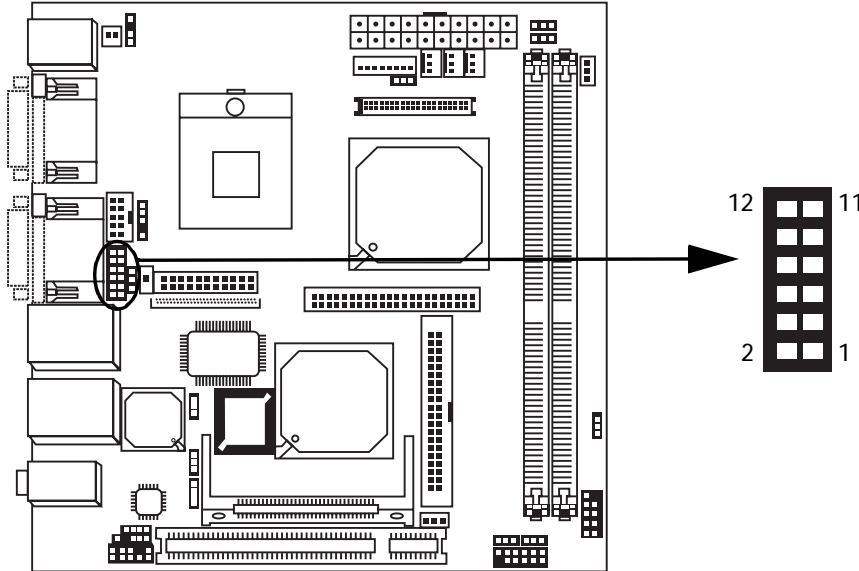


### 3.4 Communication Ports 24 V DC



## 3.5 Configuration of COM4

The default setting of the COM4 port is RS232, but it can be also be configured as RS485 or AUX using jumpers.



Jumper positions	Description
1-3, 2-4, 7-9, 8-10 On	RS232 (default setting)
3-5, 4-6, 7-9, 8-10 On	RS485
9-11 (12 V), 10-12 (5 V) On	Auxiliary power

When configured as RS485, the pins are assigned at half-duplex according to below:

Pin number	Description
Pin 1	RX/TX+
Pin 2	RX/TX-
Pin 5	Ground
Pin 9 (optional)	+5 V (auxiliary power supply)

## 3.6 Motherboard

The EPC PM Nautic has 2 DIMM slots for main storage and 2 PCI-slots. Further details on the motherboard can be found in a separate manual, included in the delivery.

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**Note:**

The quality of the memory module may influence the system stability. When updating the memory module, or adding a second one, please only use memory modules cleared by Elektronik-Systeme Lauer. Memory modules are electrostatic sensitive components. Relevant protective measures (earth) have to be considered during assembly/disassembly. ESD-protective measures are to be considered when opening and working on the appliance.

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## 3.7 Assembly

A free space of 100 mm, for air circulation, has to be provided around the appliance, to dissipate the heat generated during operation.

The EPC PM Nautic is assembled with hexagon nuts (included in the supplied mounting kit).

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**Note:**

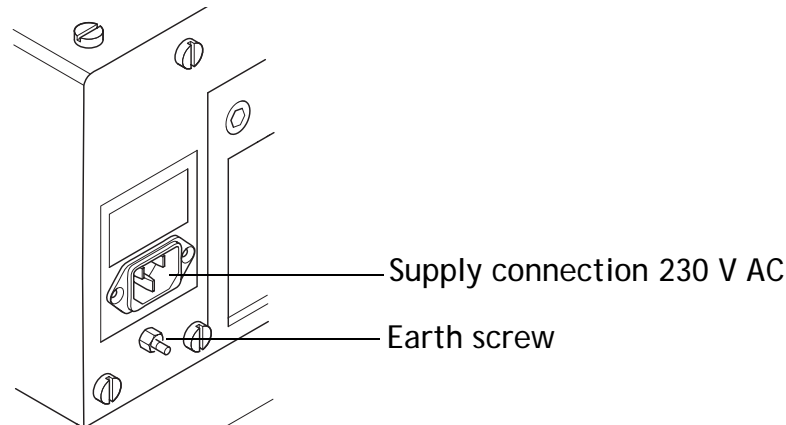
Possible risk of damage to the appliance!  
Protection class IP65 for the front panel is only guaranteed with a perfect fitting seal. Pay attention to the torque when fixing the front panel.

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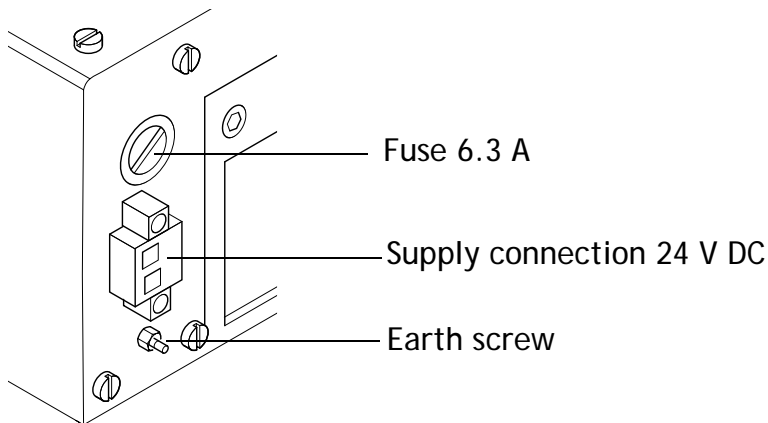
## 3.8 Power Supply

The EPC PM Nautic is available with 230 V AC or 24 V DC power system.

### 230 V AC



### 24 V DC



The power supply for 24 V DC is carried out via a double-pole connector (Phoenix MST BT 2,5/2).

The EPC PM Nautic is certified for the connection to protective grounded power supply according to EN60950. The controlling transformer has to comply with EN60742.

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#### Note:

Check the power supply system with the relevant data on the type plate.

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## 3.9 Earthing System

The following items have to be observed to guarantee a safe dissipation of electronic interference:

- Appliance and switch board have to be connected to the nearest possible central earthing point.
- Make sure of a possibly low inductive connection between appliance and switch board.
- All data cables connected to the appliance have to be of the shield type.
- The screens have to be earthed on both sides. A low ohm connection between the connected systems is essential. Avoid high equalizing currents through the cable screen due to voltage fluctuations.
- The earthing connection is to be carried out with min. 4 mm<sup>2</sup> cross section.

## 3.10 ATX Power Switch

Power packs, main boards and operation systems are used in the EPC PM Nautic , using up to date PC-technologies such as ATX and ACPI. Switching on the appliances is done in accordance with ATX specification via the ATX power switch (the red button next to the power supply).

Should a correct automatic booting not function then this can have the following reason:

In the BIOS settings, the option **PWRON After PWR-Fail** in the **Integrated Peripherals/Super IO Device** menu must be enabled, i.e. **On**. See also section [4.2 BIOS Settings](#).

The operating system must be ended correctly using the **Shut down** command from the operating system menu (Windows start menu), so that the operating system of the EPC is shut down. The EPC must not be switched off while with the operating system is still running.

The power pack now has to be separated from the power supply for a minimum of 15 seconds prior to a re-start. During the booting process the main voltage may not fall (not even for a short time) below the permitted value.

A manual actuation of the ATX power switch, i.e. to start the BIOS menu automatically to check and confirm correct settings, can be necessary if the system registers an error during shut-down or booting. This is not a malfunction but a safety feature.



## 4 Operation

### 4.1 Operating System

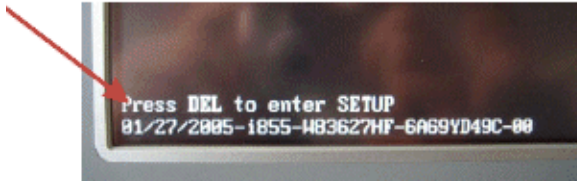
The EPC PM Nautic is delivered with Windows XP Professional, Multilingual (C: and D: NTFS).

The operating system and other programs installed on drive “C:”, while drive “D:” is a complete free partition which for example can be used for your data (beneficial for example for data back-up). Drive “E:” contains all data required for a new installation (drivers and operation system). This partition always uses a FAT 16 data system.

## 4.2 BIOS Settings

### Settings DFI-ACP G5M100N:

To start the setup: Switch on the EPC PM Nautic and press the [DEL] button, according to the first screen image.



Select the menu item **Load Optimized Defaults** and confirm the selected operation.

### Setting for the Mini-ITX Board DFI ACP G5M100N:

Select **Load Optimized Defaults** and make the following settings in the displayed menus.

Menu	Menu item	Setting
Standard CMOS Features	Date	Current date
Standard CMOS Features	Time	Current time
Standard CMOS Features	Check that all IDE-Devices (HD, CD and CF) are correctly recognized	
Advanced BIOS Features	First Boot Device	HDD-1
Advanced BIOS Features	Second Boot Device	HDD-0
Advanced BIOS Features	Third Boot Device	Disabled
Advanced BIOS Features	Boot Other Device	Disabled
Advanced BIOS Features	Boot up Floppy Seek	Disabled
Advanced Chipset Features	Panel Number	8: 1024x768 24(bit) 4: 1280x1024 48(bit) 4: 1280x1024 48(bit) 10: 1600x1200 48(bit)
Integrated Peripherals/ Super IO Device	PWRON After PWR-Fail	On
Integrated Peripherals/ Super IO Device	Serial Port 3 Use IRQ	IRQ4
Integrated Peripherals/ Super IO Device	Serial Port 4 Use IRQ	IRQ3

## 4.3 Important Items Regarding Software Installation

To carry out a successful re-installation you have to observe the following items:

- Use the supplied operating system CD for the setup.
- After the re-installation, install the chipset driver (from *E:\drivers\Chipset*) before installing other drivers.
- Install the graphic drivers (from *E:\graphic\operating system*).
- The picture refresh rate has to remain at 60 Hz, as the TFT displays do not have an electron beam for image formation, and therefore no improvement is achieved from a higher setting.

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**Note:**

Higher settings can even seriously damage the graphic board/display.

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- Install the touch screen drivers in accordance with the instructions.

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**Note:**

To avoid always having to re-start the installation procedure of the operating system, we recommend making an image of the new hard disk (using e.g. Norton Ghost, Drive Image etc.). Then you can always fall back on the operational image, if needed.

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**Note:**

After operating the system for the first time we recommend that you make start discs (emergency discs). These might be required to restore an operational system. Additionally, we recommend making backup copies of your own data and applications.

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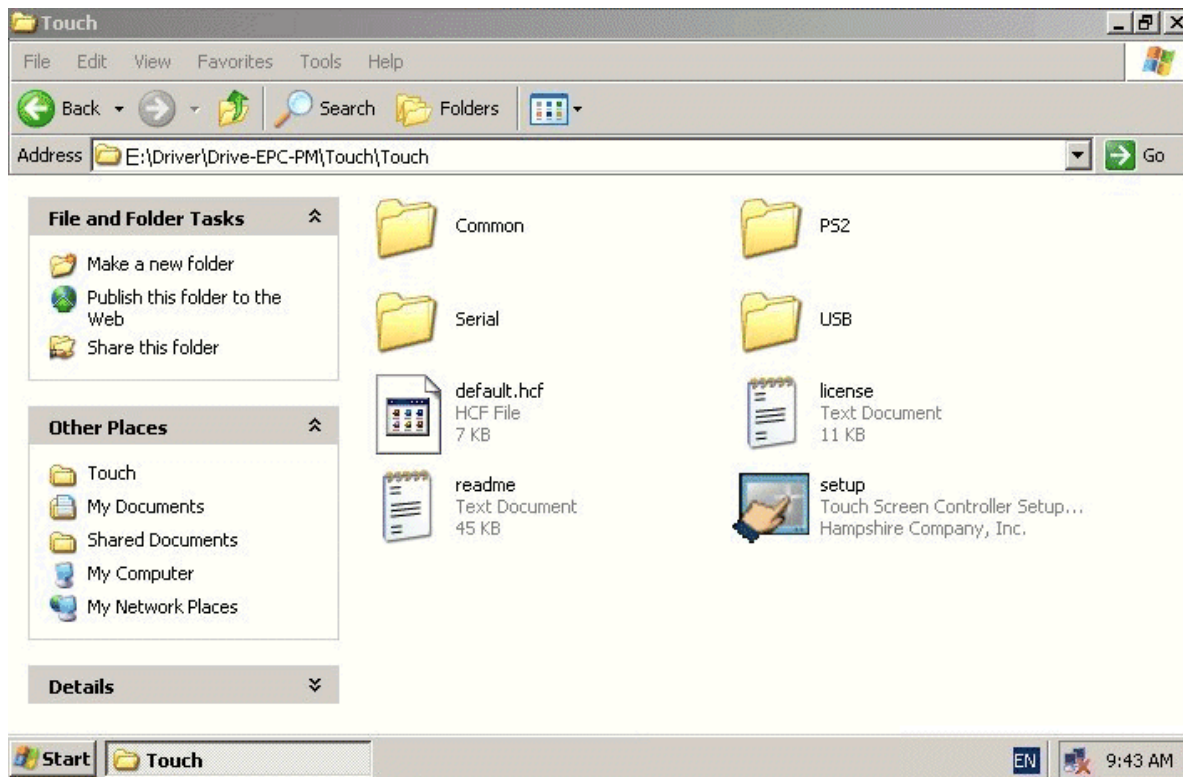
## 4.4 Touch Screen Installation

Technical data: (check the BIOS settings when re-installing)

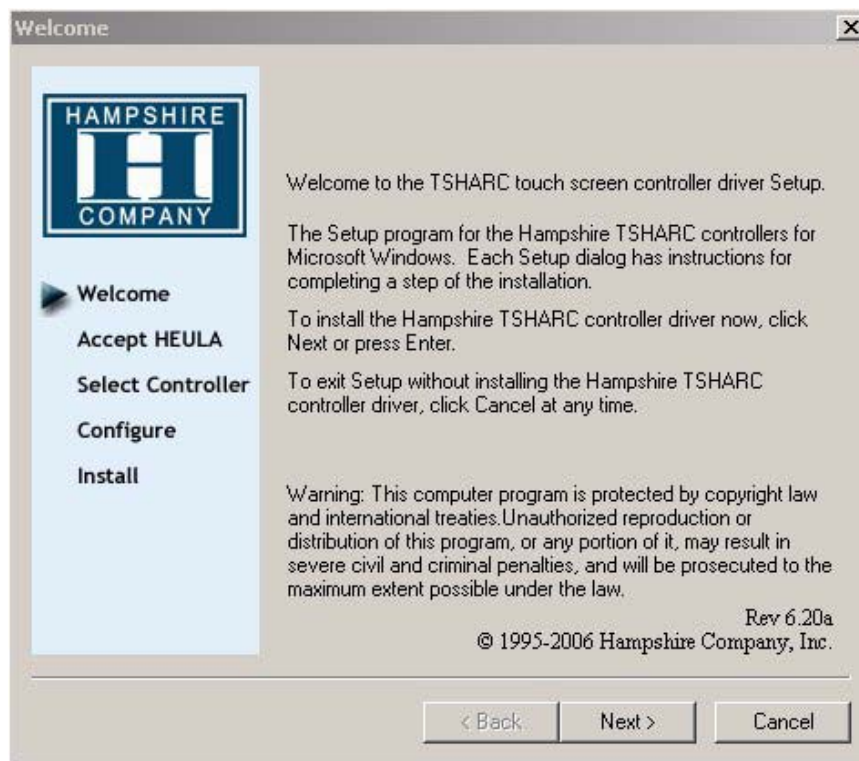
- Serial Tsharc 12 Touch-Controller
- Com 3 (check the BIOS settings)
- 3E8 hex
- IRQ 4
- 9600 bps

Perform the SETUP.EXE under:

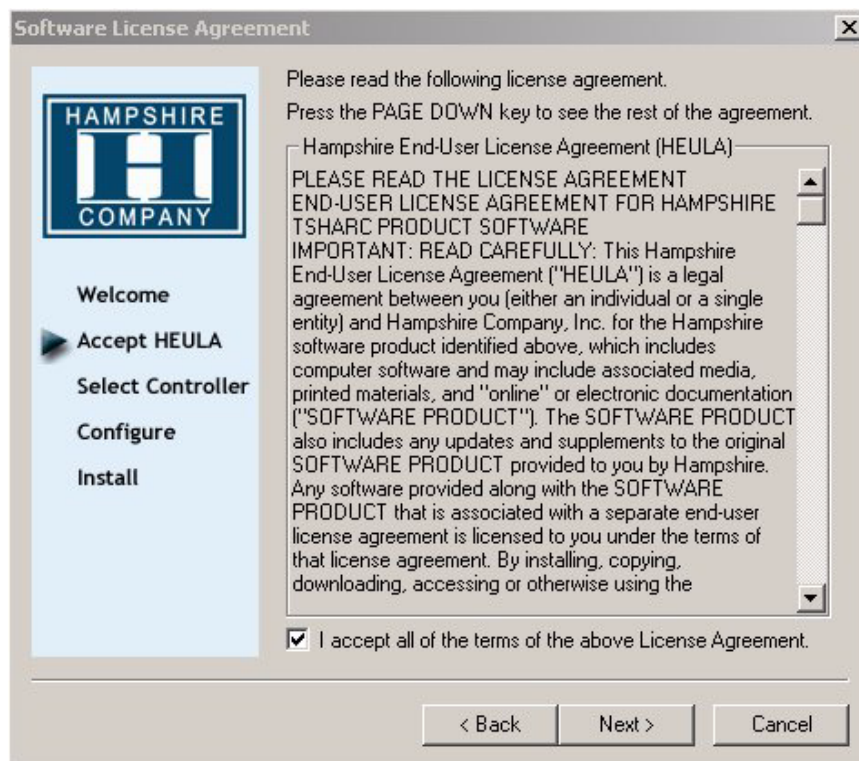
- *E:\Driver\Driver-EPC-PM\Touch\Touch*
- CD-ROM: (D:) *E:\EPC-PM\Touch*



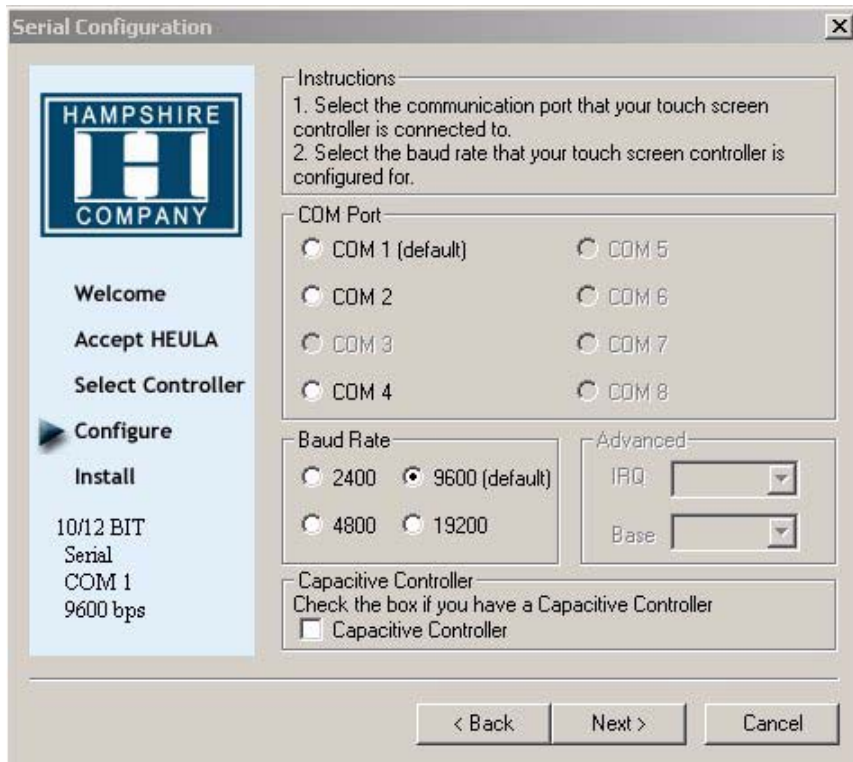
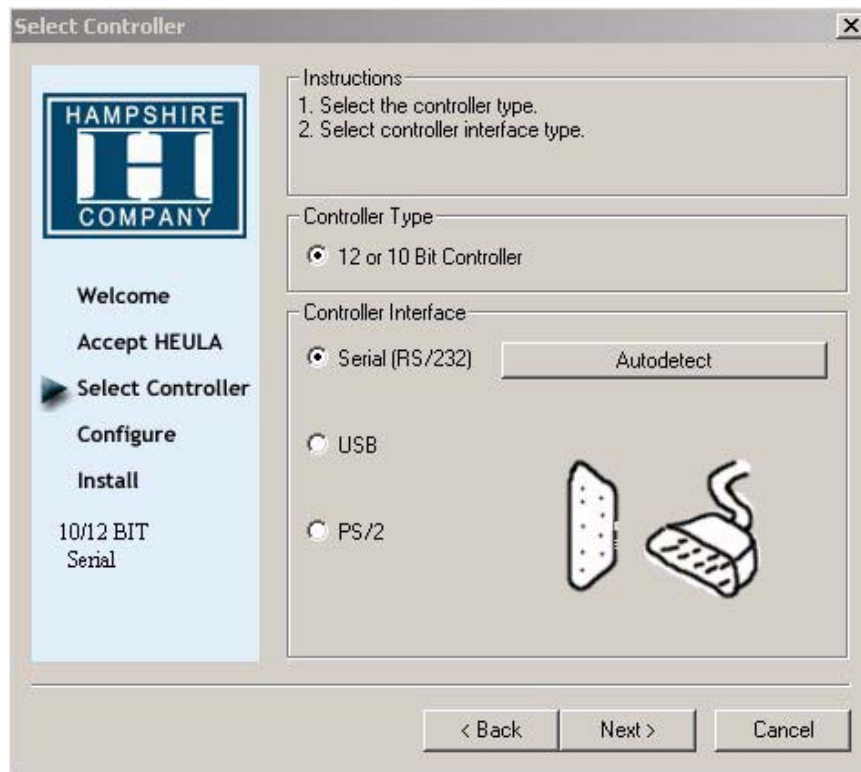
1. Follow the instructions on the screen and press **Continue**.



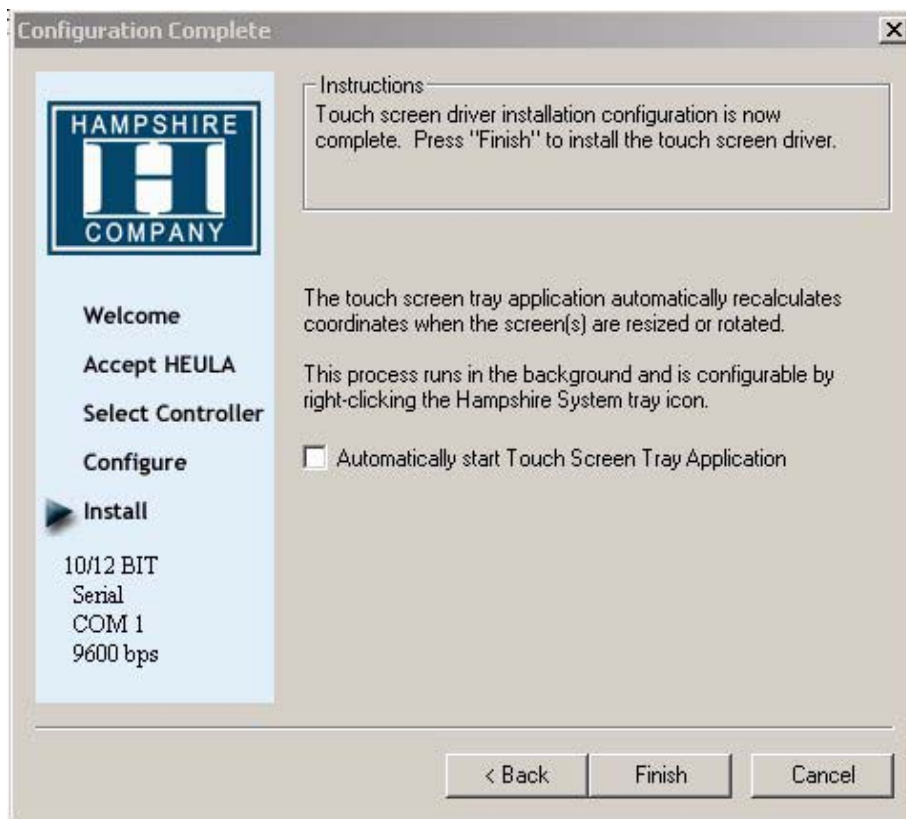
2. Accept the license provisions.



3. Select **Autodetect** or manually select the technical connection data.



4. Press **Finish** and follow the instructions for a re-start.



5. After a re-start of the operating system you will find *Hampshire Control Panel* among the programs.
6. Calibrate the touch screen with your finger or with a rounded pointed touch pen.

## 4.5 Graphic Board Installation

After finalizing the Windows installation (chip set driver) and re-starting the system, close the installation window for the automatic driver search of the graphic board driver.

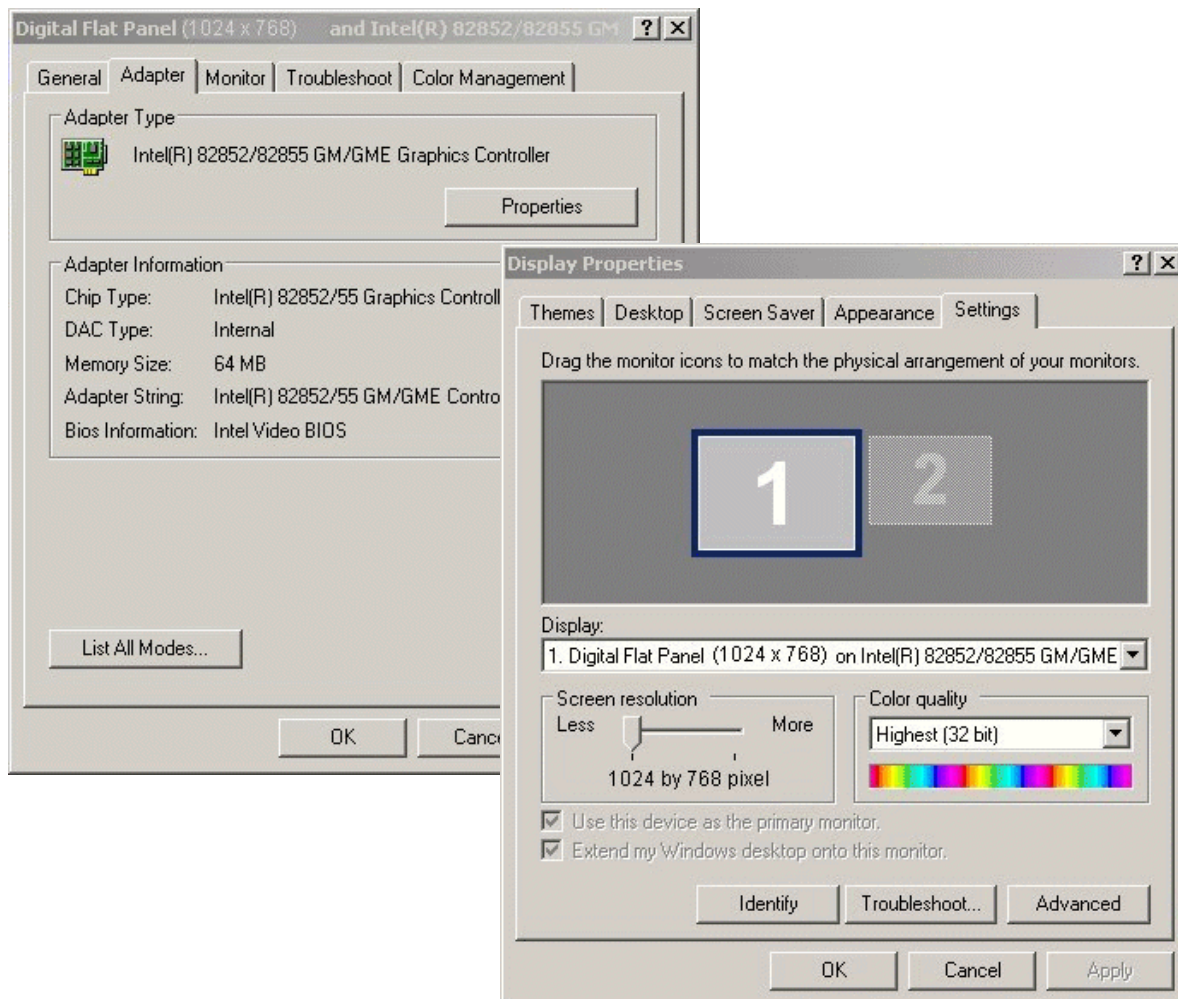
The graphic driver is located on the delivered Driver CD or on partition *E:\EPC-PM\Grafic*.

1. Run **Setup.exe** from the **Utilities** directory.

### Note:

The grafic driver will be installed twice.

2. After finishing the installation and re-starting the EPC PM Nautic the following entries are available under the **Display** icon in the Control Panel, or in the display properties.





## 4.6 Installation of LAN-/Network Card

To install the LAN-/network card(s) follow the below instructions:

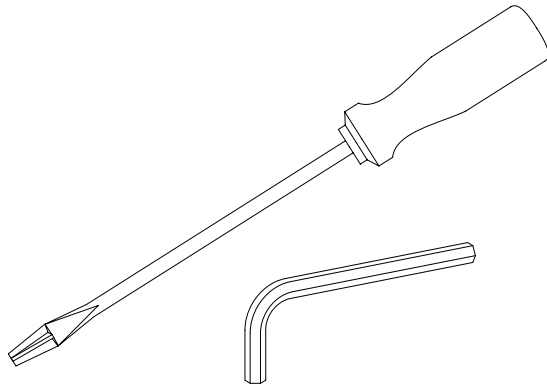
- After installing the operating system and the chip set driver, the system automatically creates a link to a network connection. You will find the relevant icon (Network icon) in the right hand lower task bar.
- To install the second network card, open the EXE-file from the drive directory: *Drive E:\Driver\EPC-PM\LAN*.
- Confirm each installation step and re-start the EPC PM Nautic at the end of the installation.
- After the re-start two new network icons appear in the right hand side lower task bar.
- You can now configure both network cards to your own requirements (IP-address etc.) via the system control.
- Via the MS-DOS window, under **Start/All Programs/Accessories/Command prompt**, you can set a “connection PING” to test your connections to the server and other PC’s.  
(for example: **C:\ping 192.168.5.100**).



## 5 Service

### 5.1 Introduction

#### 5.1.1 Tools



You can carry out the disassembly and assembly with an 2.5 mm Allen key and a Phillips head screwdriver, size 3.

#### 5.1.2 Preparation

Disconnect the appliance from the power supply.



**Attention! Deadly Peril!**

Make sure that your electrostatic pad does not damage the front panel of the EPC PM Nautic.

#### 5.1.3 Opening the EPC PM Nautic

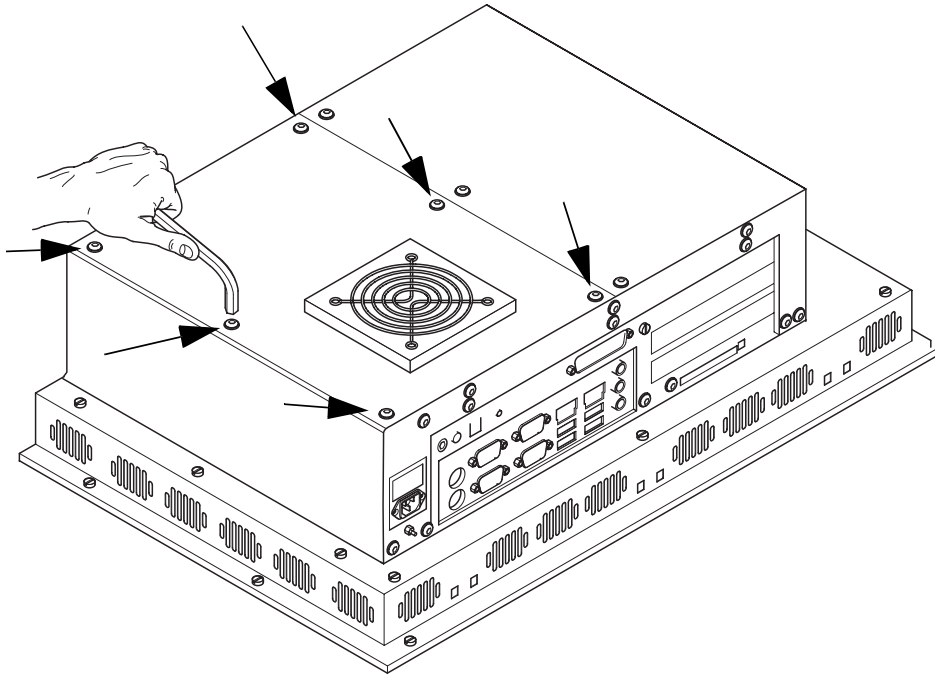
All operations to the opened EPC PM Nautic may only be carried out by authorized personnel. Only the expansion of hardware with memory and plug-in-cards is permissible within the defects liability period.

**Note:**

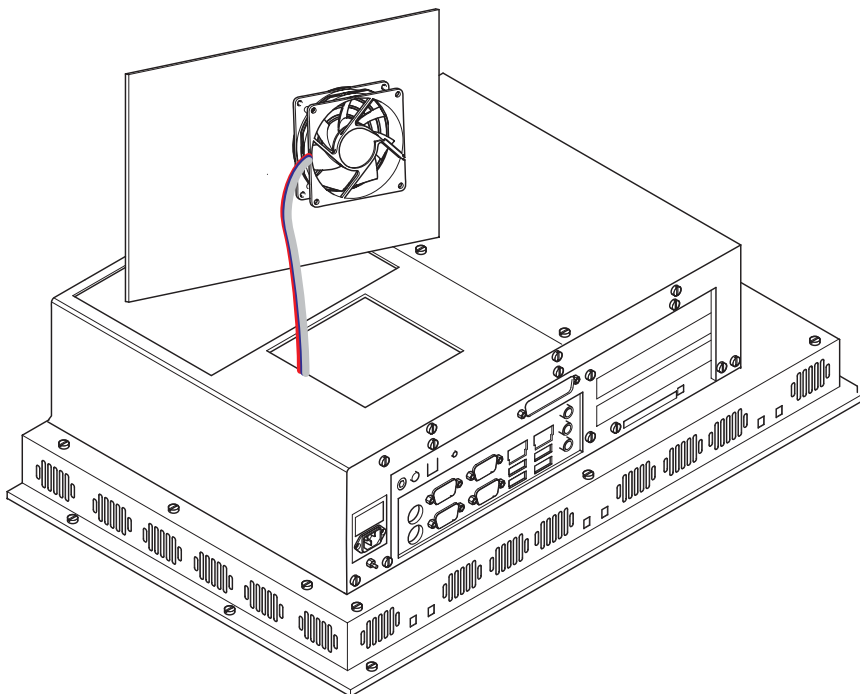
Inside the appliance there are electronic components which can be destroyed by electrostatic charges. Therefore cautionary measures have to be taken from the moment the appliance is opened. These can be found in the guidelines for electrostatic endangered components (EGB-guidelines).

## 5.2 Changing the Fan

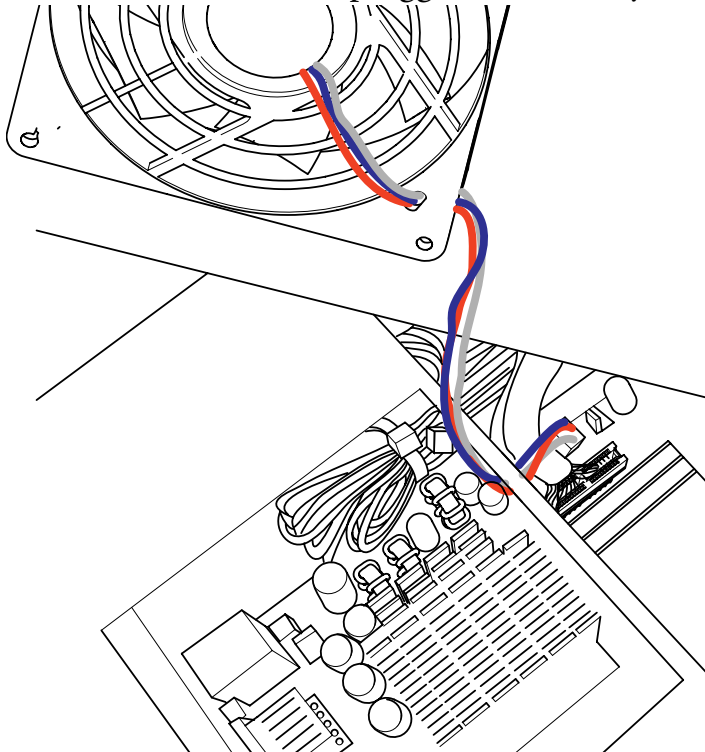
1. To change the fan you have to remove the left hand part of the rear enclosure. To open the enclosure, remove the six (6) marked screws with an Allen key.



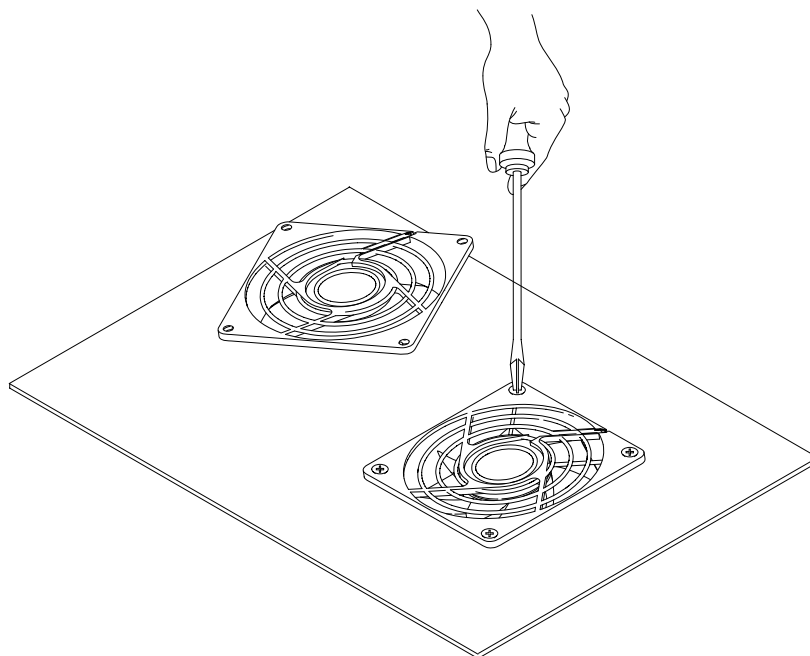
2. Lift the enclosure and pull out the fan cable, according to the picture below.



3. Note the correct location of the cable prior to pulling the cable out so that the new fan can be plugged in correctly. Unplug and remove the fan.



4. Remove the protective cover of the fan and remove the fan with a Phillips head screw driver.

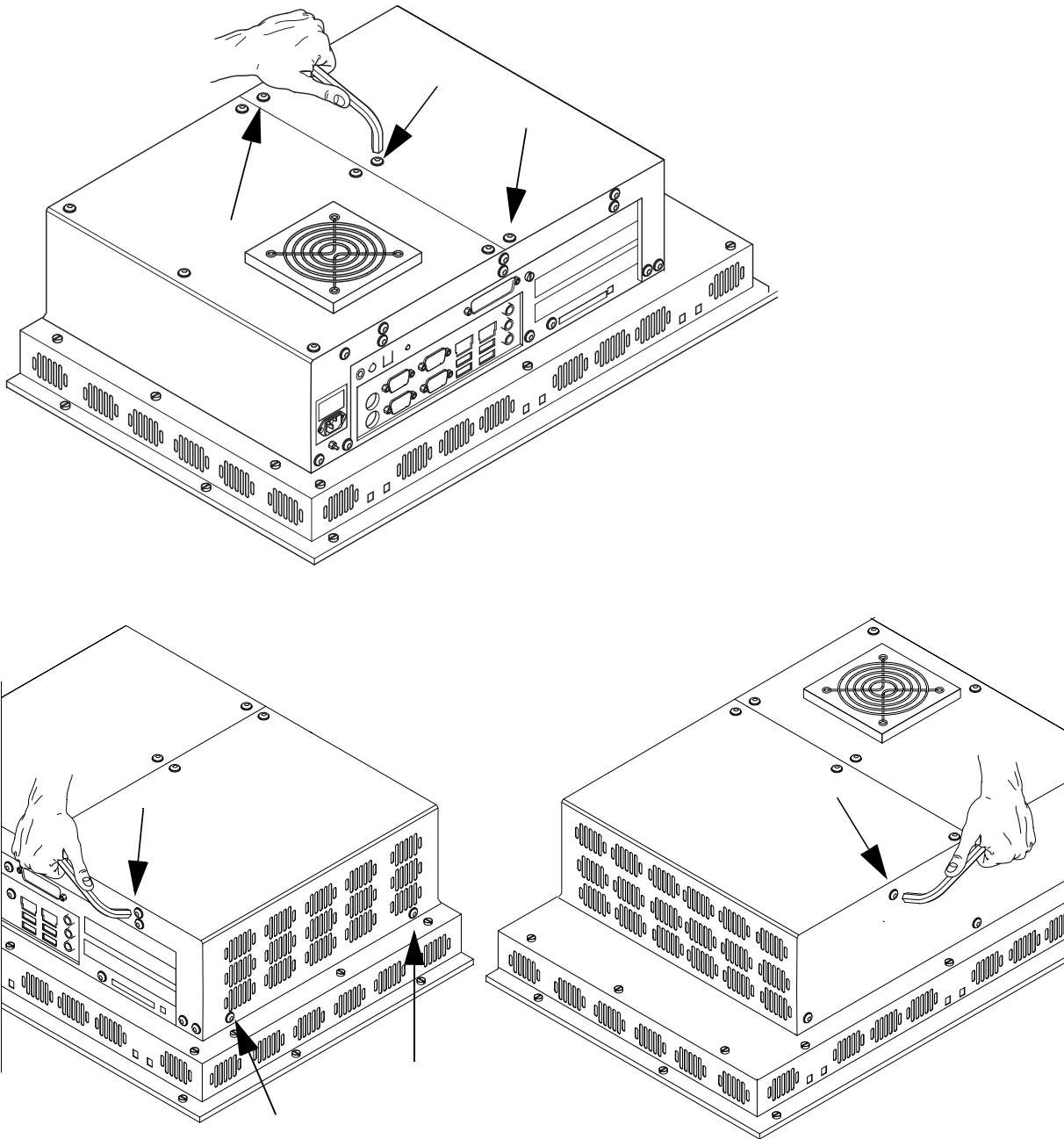


5. After changing the fan, assemble the appliance in the reverse order.

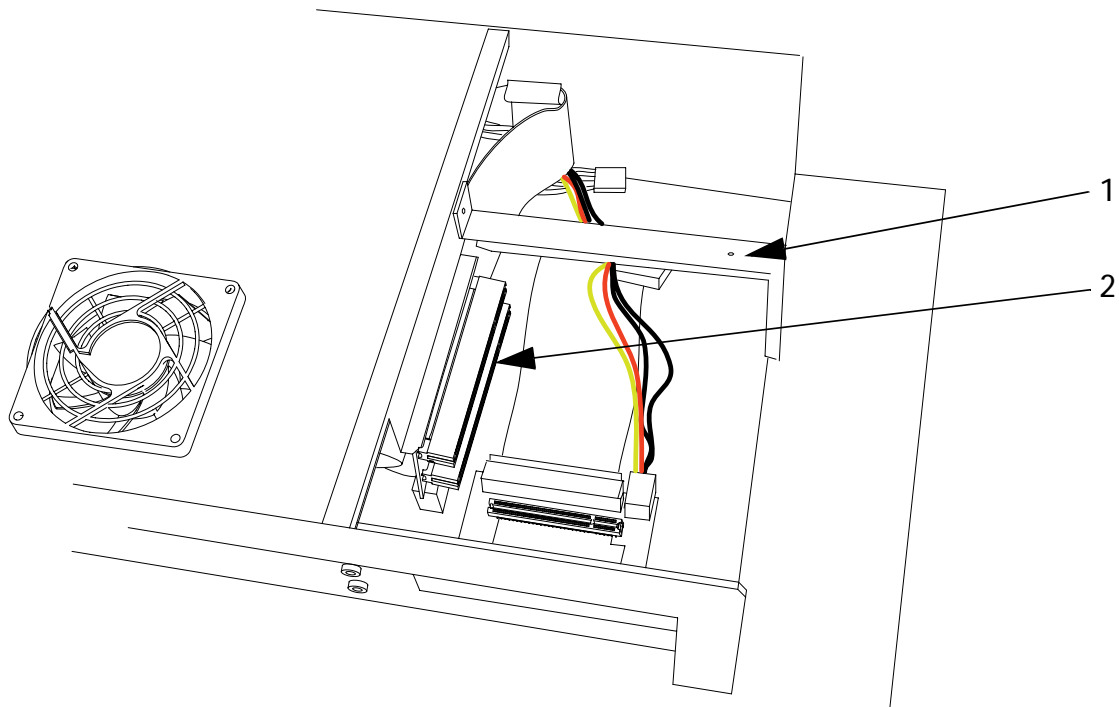
## 5.3 PCI-board Installation

To install a PCI-board the right hand side part of the rear enclosure has to be removed.

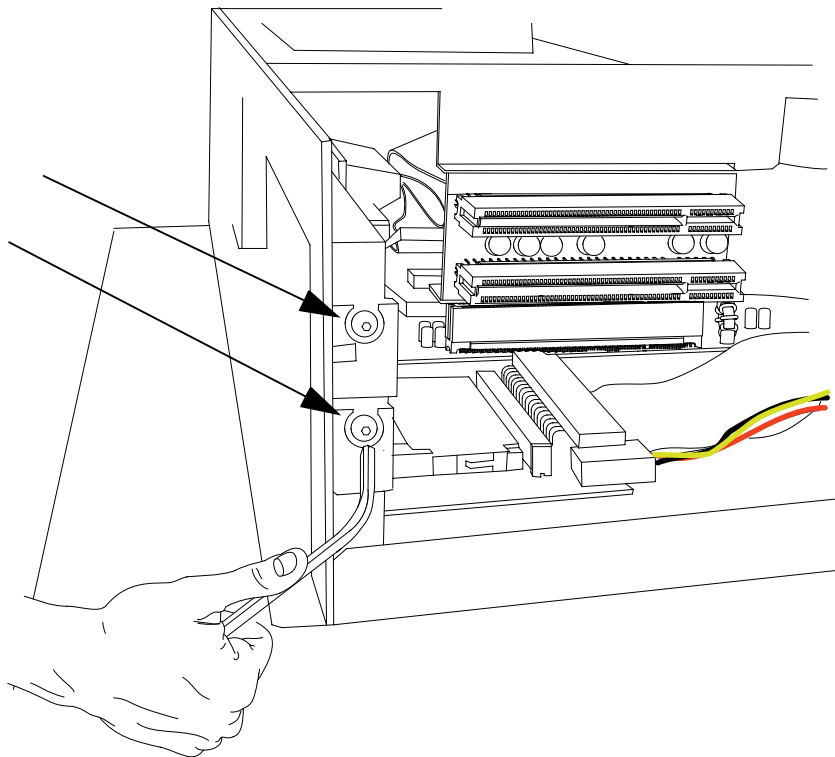
1. To open the enclosure remove the marked seven screws with an Allen key. After removing the screws the enclosure can be easily removed.



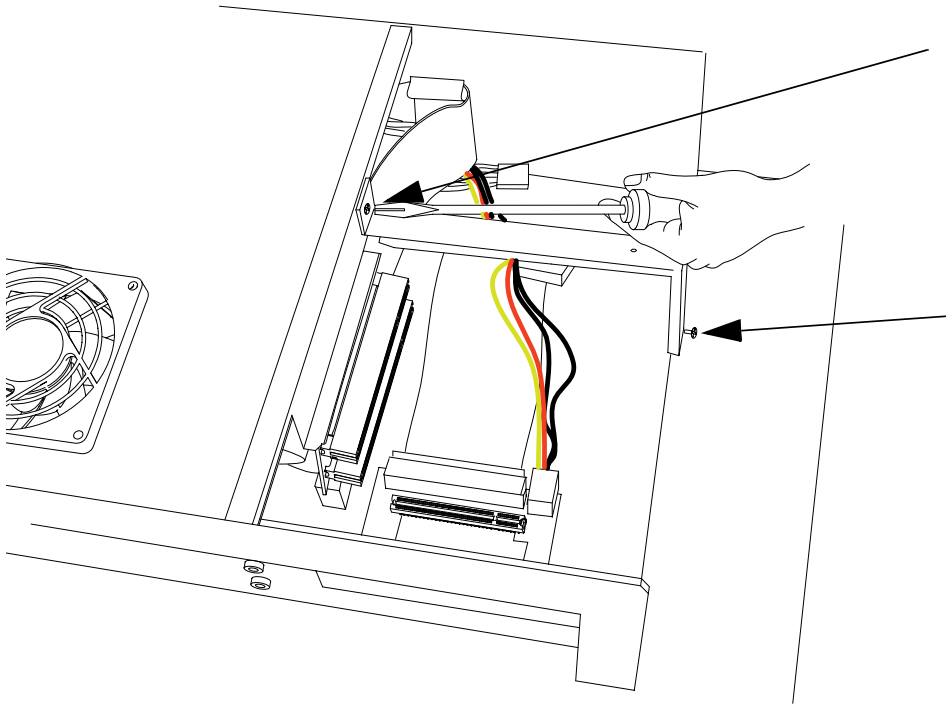
The picture of the opened appliance below shows the board holder (1) and the 2 PCI-slots (2).



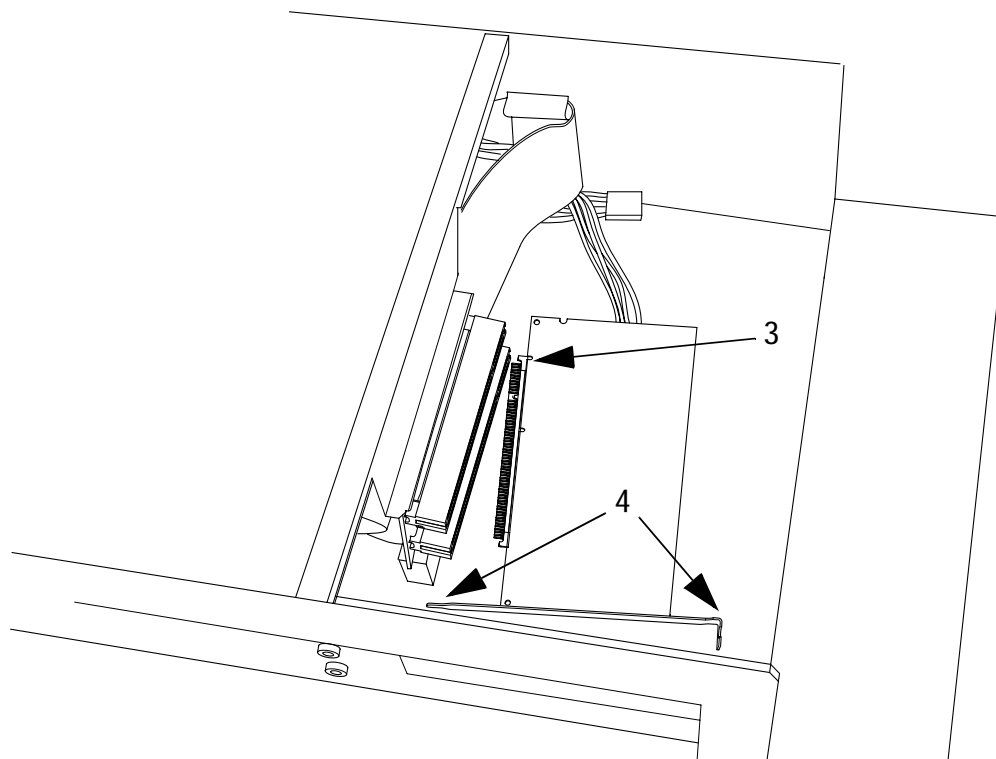
2. Remove the cover of the desired slot to insert your PCI-board, by removing the screw and pulling out the cover.



3. Remove the board holder by unscrewing the two screws marked below.

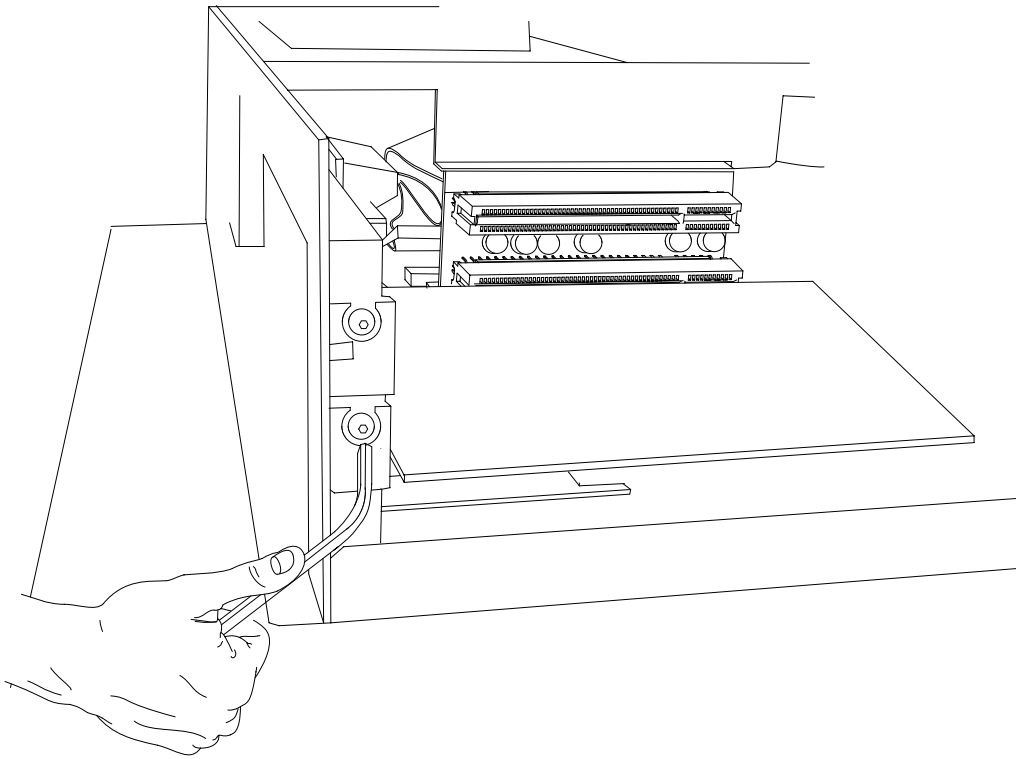


4. Insert the PCI-board, if necessary bend the slot bracket a little bit. Please ensure a correct fit at the rear edge (3) of the slot and make sure the metal bracket goes into the groove (4).

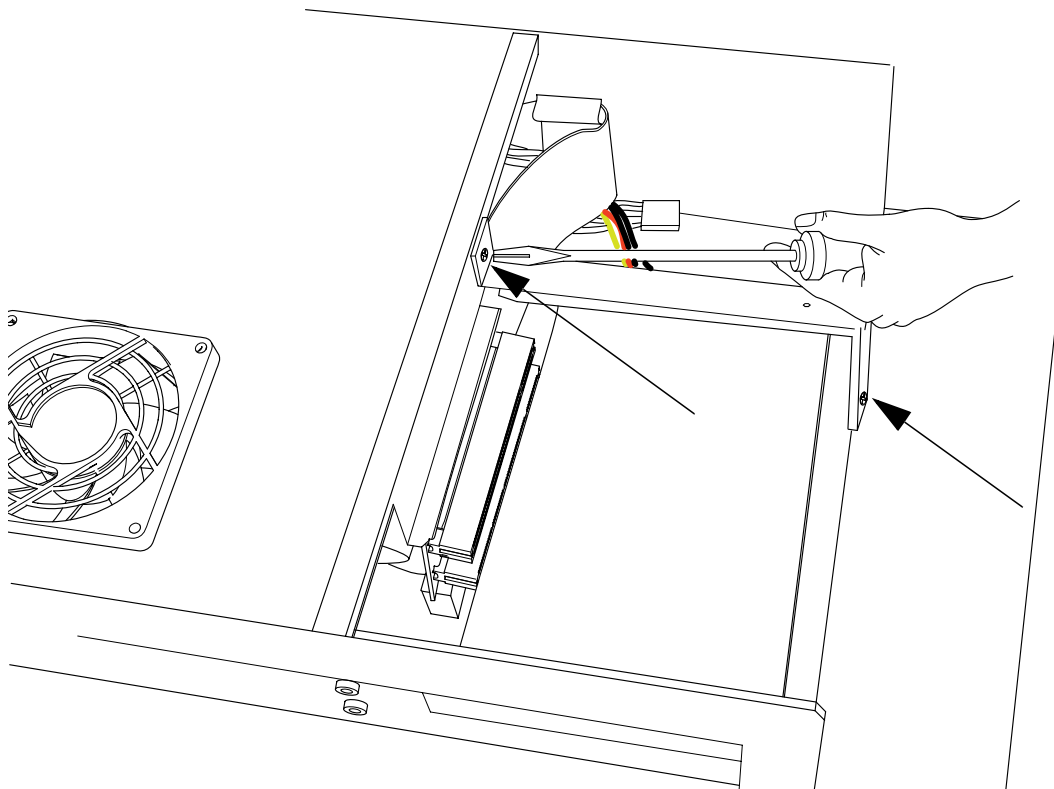




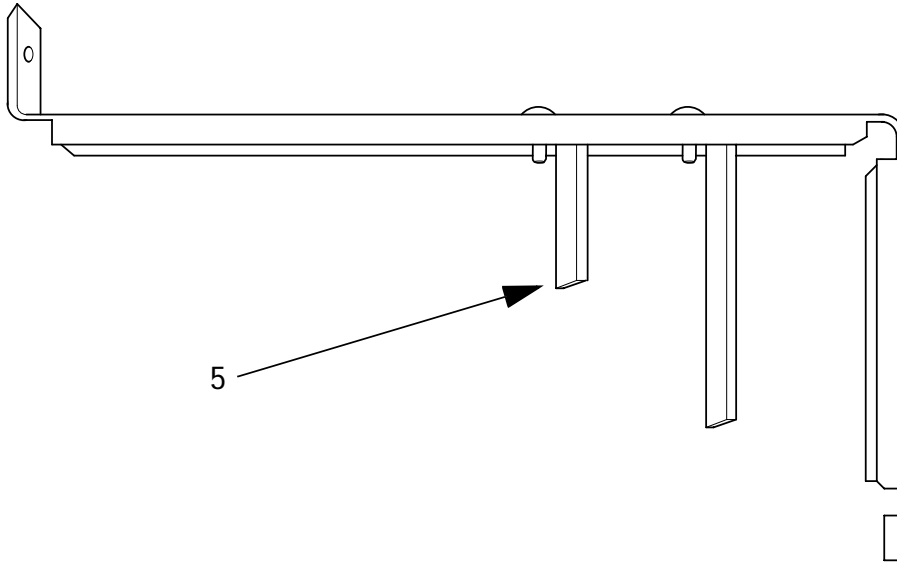
5. Mount your PCI-board and make sure to properly tighten the screw.



6. Re-assemble the board holder and tighten the two screws properly.



7. To ensure an optimal use of the board holder, we recommend that you put wide boards in the lower slot and narrow boards in the upper. This way the support can be used in the correct way.



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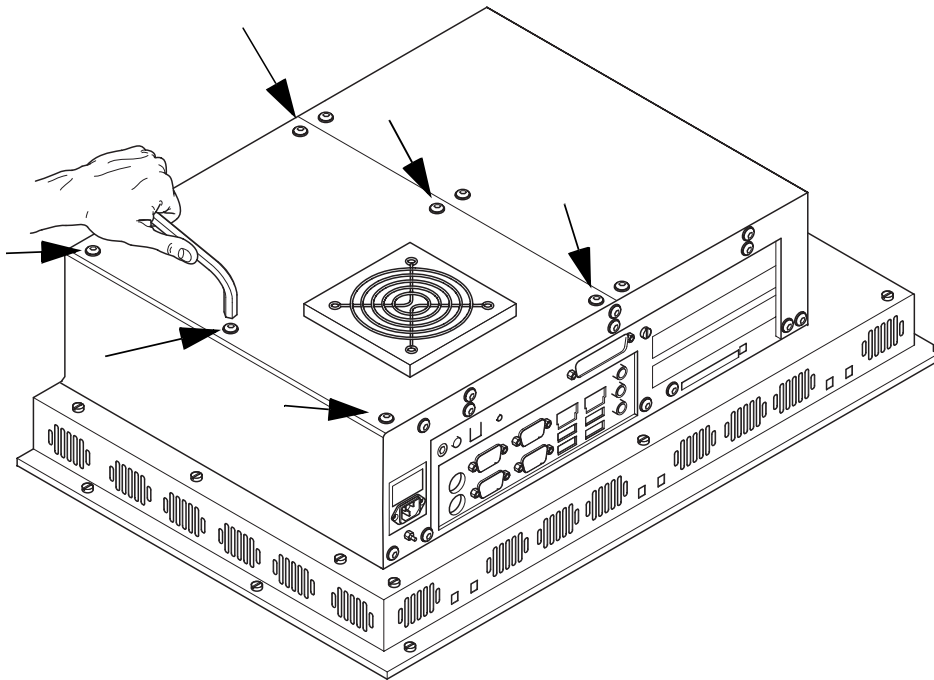
**Note:**

If two wide boards are used, the short support (5) can be removed.

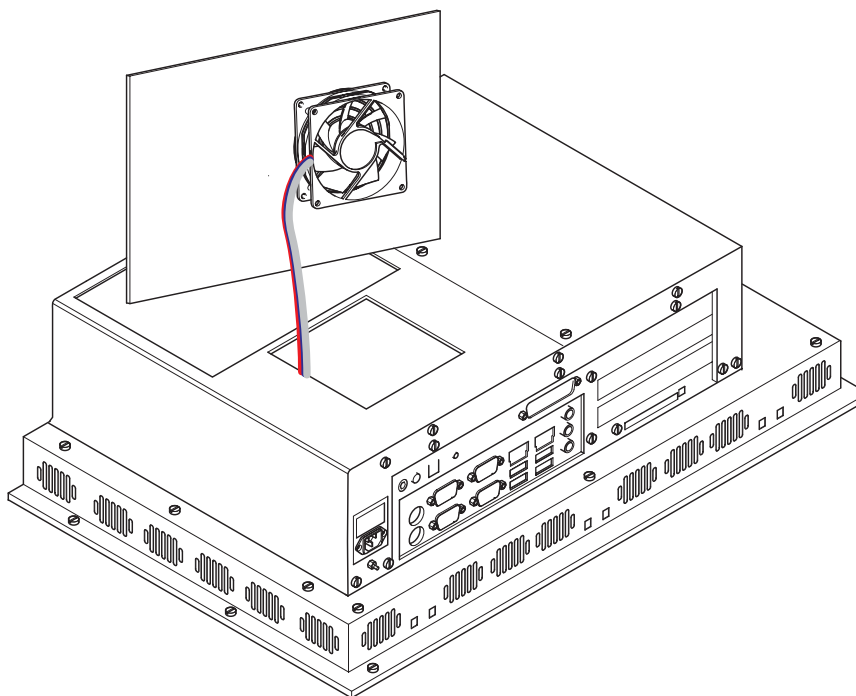
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## 5.4 Memory Module

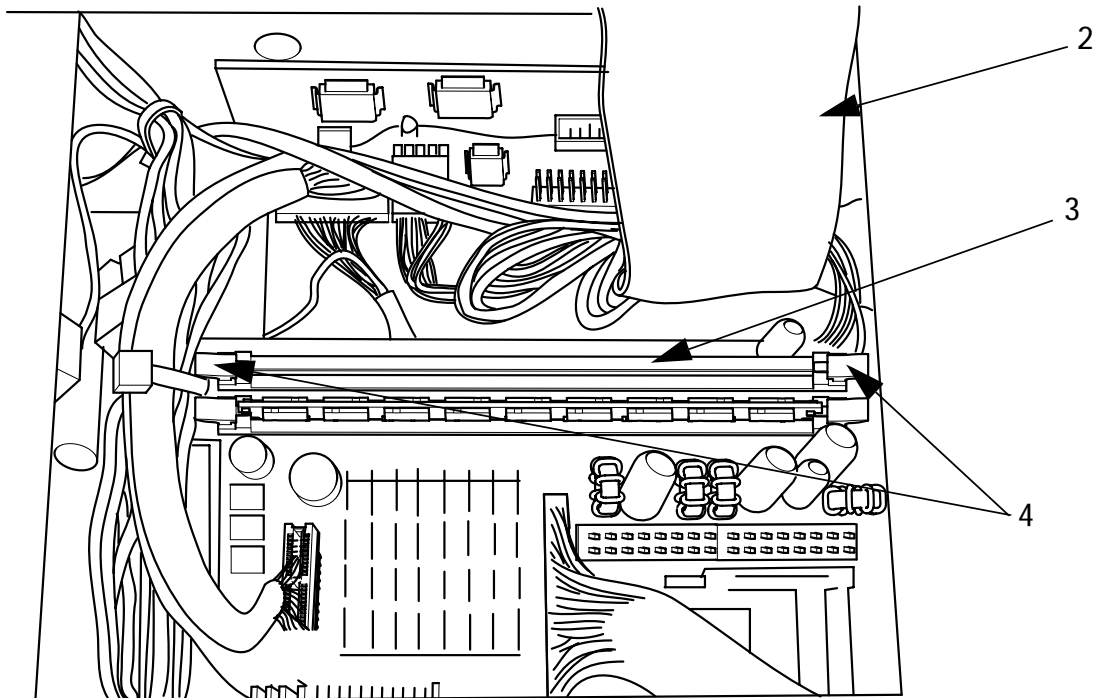
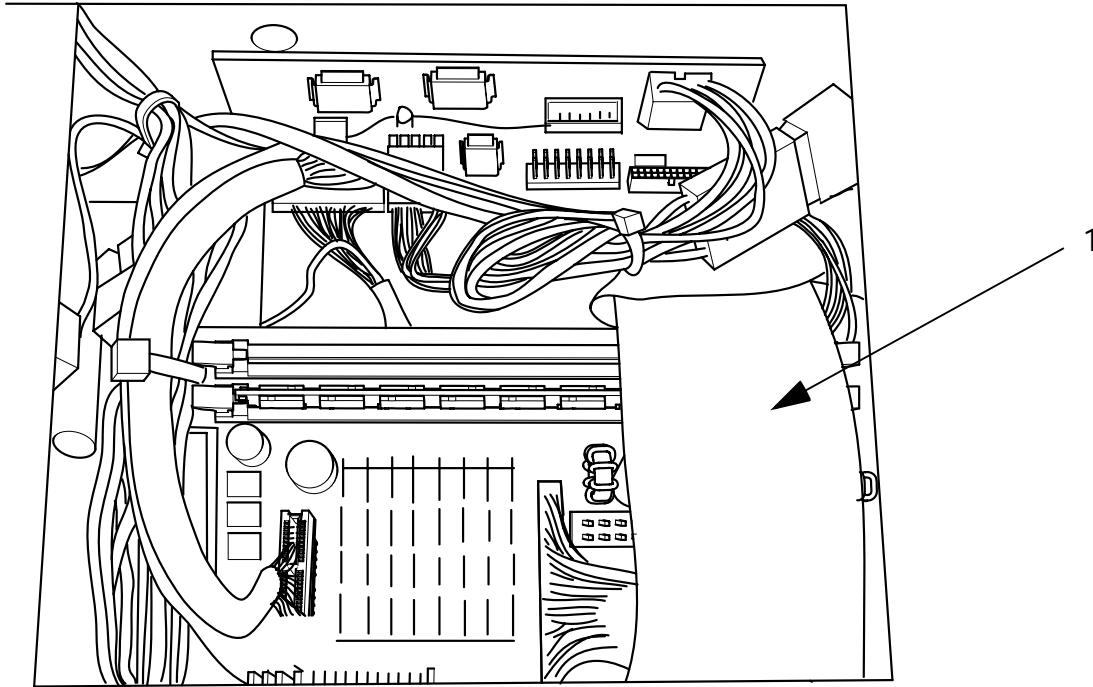
1. To change or expand the memory card you have to remove the left hand part of the rear enclosure. To open the enclosure, remove the six (6) marked screws with an Allen key.



2. Lift the enclosure and pull out the fan cable, according to the picture below.

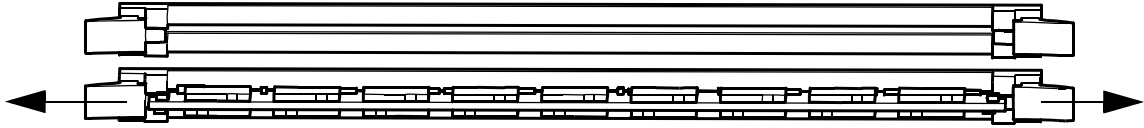


- Put the enclosure to one side and you have a free view of the slots. Pull out the ribbon cable (1) and move it to the top, according to arrow (2).



- The picture above shows one free (3) and one occupied slot. If a memory expansion is carried out the memory module is positioned vertically and pushed into the slot, the fixing brackets (4) shall snap shut.

5. To change a memory board, push the holding brackets outwards simultaneously according to the below picture. The memory board is now loose and can be removed.



6. To mount a new memory board, center it into the slot, and push it firmly but gently down until the holding brackets snap shut.
7. Bend back and plug in the ribbon cable.
8. Subsequently plug in the fan cable and reposition the enclosure.
9. Re-fix the enclosure.



## 6 Technical Data

The EPC PM 1500t/1700t/1900t/2100t Nautic models have touch screens; the EPC PM 1500 g/1700 g/1900 g/2100 Nautic g models have an antireflective glass.

Parameter	EPC PM 1500t Nautic/1500 Nautic g	EPC PM 1700t Nautic/1700 Nautic g	EPC PM 1900t Nautic/1900 Nautic g	EPC PM 2100t Nautic/2100 Nautic g
Size, W x H x D, complete with front plate	412 x 351 x 157 mm	430 x 390 x 157 mm	483.2 x 444 x 157 mm	534 x 481 x 157 mm
Mounting depth	145 mm (245 mm including clearance)			
Front panel seal	IP65			
Rear panel seal	IP20 according to DIN EN 60529			
Weight	8.5 kg	10.7 kg	13 kg	18.5 kg
Processor	Intel Celeron-M 1.3 GHz			
Cache/PCI Clock	512 KB level 2 cache, 400 MHz Bus			
System chipset	Intel 82855GME			
BIOS	Award 2 MBit Flash, supports ACPI			
RAM	1024 MB DDR-SDRAM, max. 2 GB			
Mass storage	Hard disk 2.5" Automotive 40 GB			
Graphics chip	Intel 82855GME (Integrated/250 MHz)			
IDE controller	1 x IDE port, Ultra DMA33/66/100			
Serial ports	2 x RS232; 1 x RS232/RS485			
Parallel port	1 x LPT1			
Ethernet	2 x 10/100 Mbps			
USB ports	5 x USB (4 x USB on rear side, 1 x USB on front side) 2.0 480 Mbps			
Extension slots	2 x PCI up to 220 mm length			
Compact Flash ports	1 x internal (optional) and 1 x external (Compact flash, type II)			
Keyboard/mouse	2 x PS/2			
VGA	For external monitor			

*Technical Data*

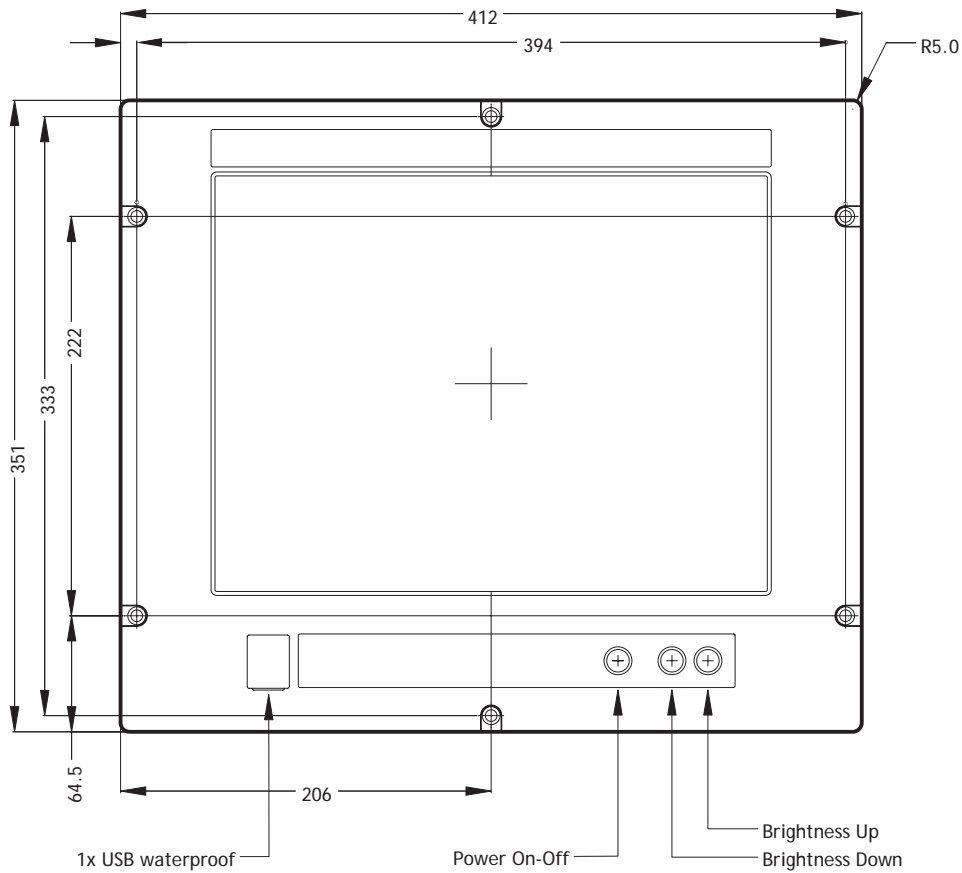
Parameter	EPC PM 1500t Nautic/1500 Nautic g	EPC PM 1700t Nautic/1700 Nautic g	EPC PM 1900t Nautic/1900 Nautic g	EPC PM 2100t Nautic/2100 Nautic g
Audio ports	Line in/out, mic in			
Power consumption at rated voltage	80 VA			
Fuse	1 AT (230 V) or 6.3 AT (24 V)			
Power supply options	115-230 V AC $\pm$ 15%. 1 A max (switch on peak 30 A).			
	24 V DC $\pm$ 15%. 3 A max (switch on peak 15 A).			
Active area of display	304.1 x 228.1 mm	337.9 x 270.3 mm	376.3 x 301.1 mm	432 x 324 mm
Pixels	1024 x 768	1280 x 1024		1600 x 1200
Pixel pitch (RGB)	0.297 x 0.297 mm	0.264 x 0.264 mm	0.294 x 0.294 mm	0.270 x 0.270 mm
Max. number of colors	16.7 million			
View angle (up/down/left/right) (typical)	+ 50/-60/75/75 ° $\pm$ 89 °			
Light intensity (typical)	250 cd/m <sup>2</sup>			300 cd/m <sup>2</sup>
Contrast ratio	450:1	1500:1	1000:1	
Response time	6 ms/19 ms	15 ms/10 ms	13 ms/7 ms	16 ms/12 ms
Display technology	TN	PVA	SPVA	
Touch screen technology	Resistive*			
Touch screen resolution	4096 x 4096 points*			
Ambient temperature	0 ° to +55 °C			
Relative ambient humidity	30% to 90% non-condensed			
Storage temperature	-20 ° to +70 °C			
Relative storage humidity	10% to 90% non-condensed			

\* Only applies to EPC PM 1500t/1700t/1900t/2100t



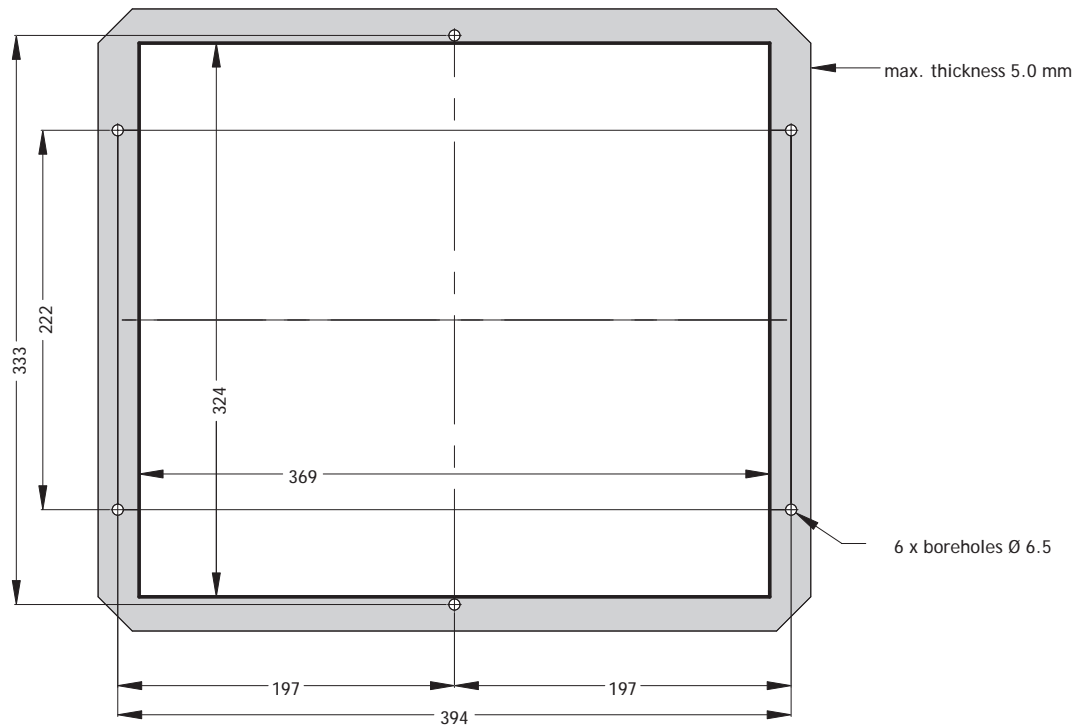
# 7 Drawings

## 7.1 EPC PM 1500t/1500 Nautic Front View



## 7.2 EPC PM 1500t/1500 Nautic Cut Out Drawing

Cut out dimensions: 369.0 x 324.0 mm.

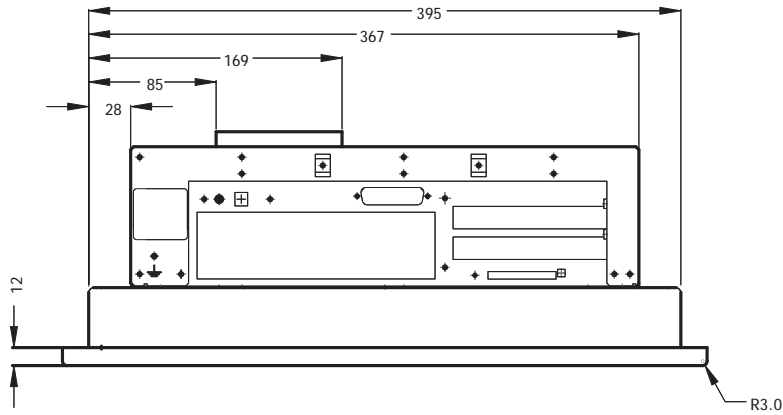


Mounting method: 6 x M6x25 V2A-screws DIN 6912. Screws and o-ring seals are included.

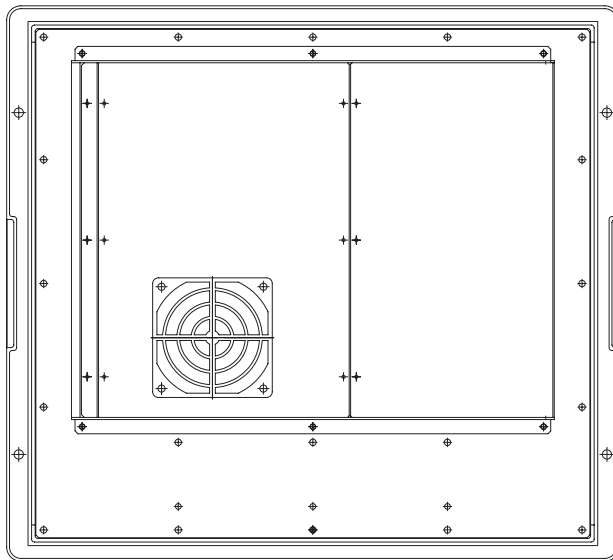
Max. 5 mm thick mounting frame.

# 7.3 EPC PM 1500t/1500 Nautic Outline Drawings

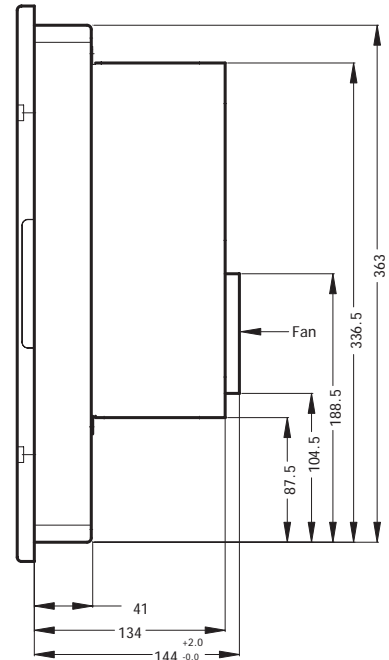
Bottom view



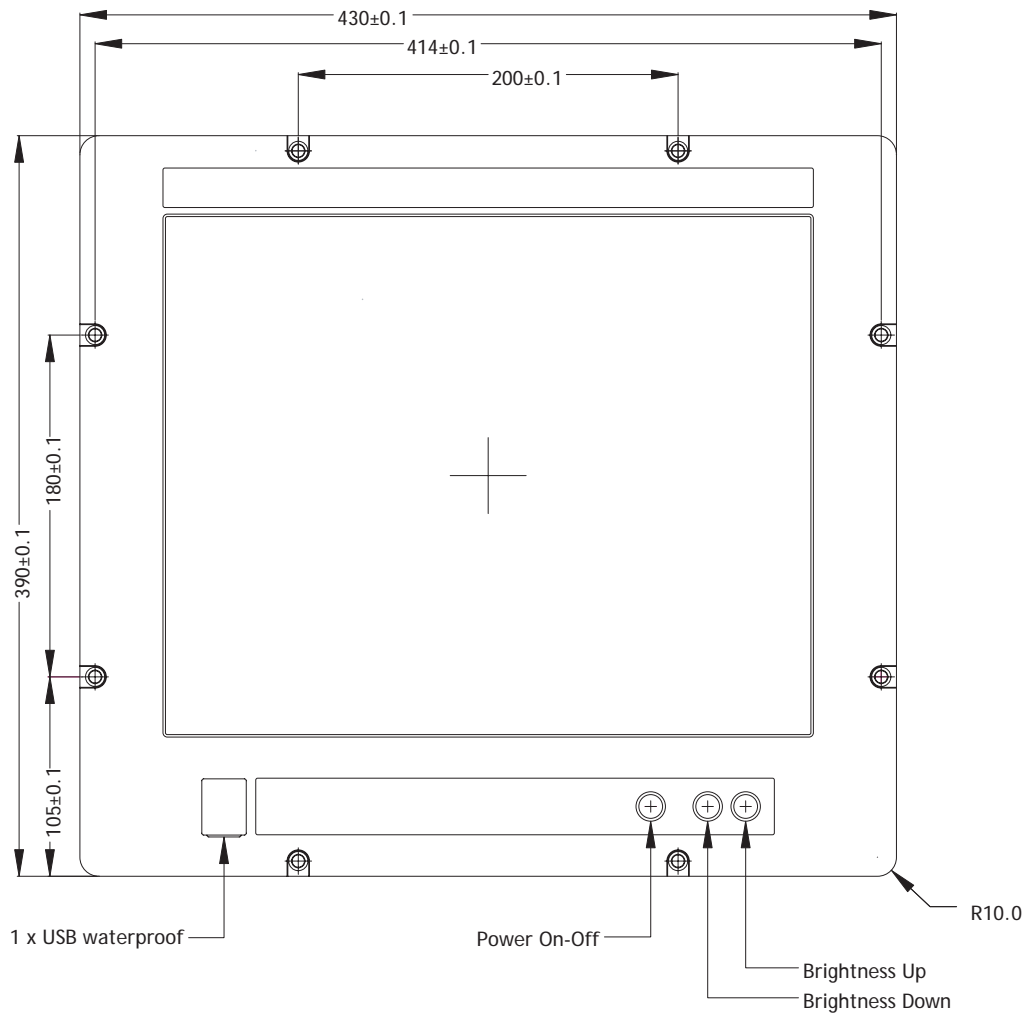
Rear view



Side view

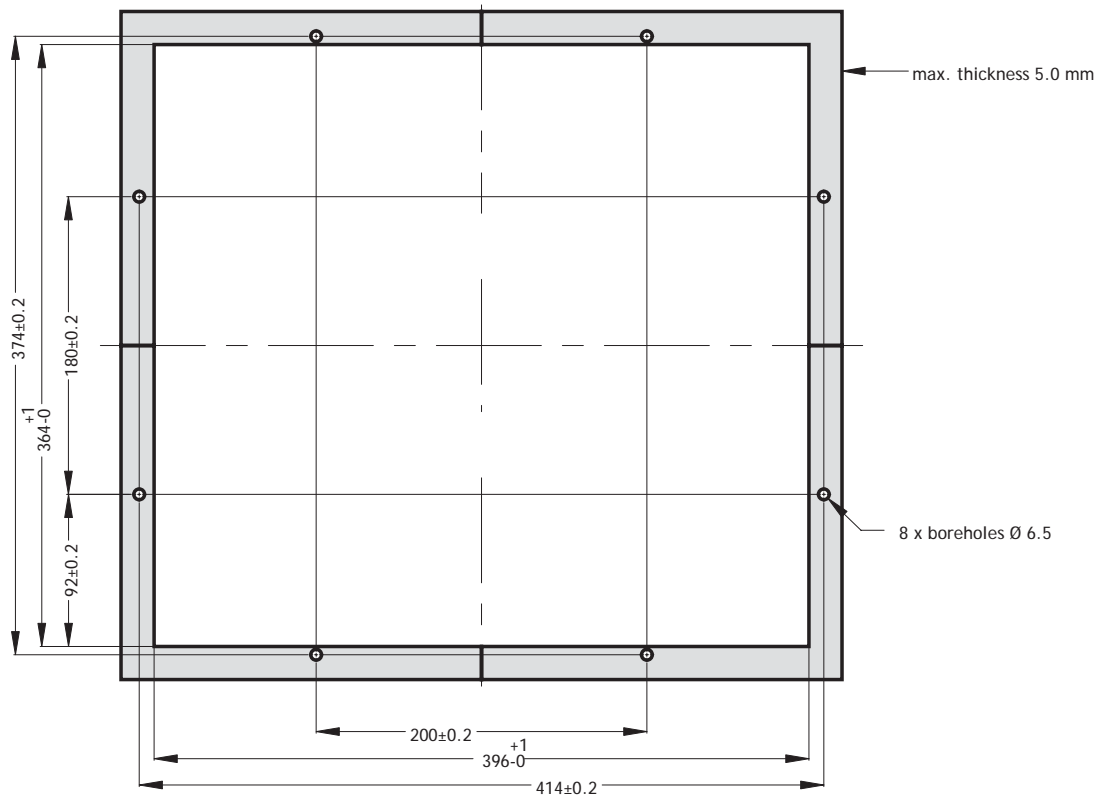


## 7.4 EPC PM 1700t/1700 Nautic Front View



## 7.5 EPC PM 1700t/1700 Nautic Cut Out Drawing

Cut out dimensions: 396.0 x 364.0 mm.

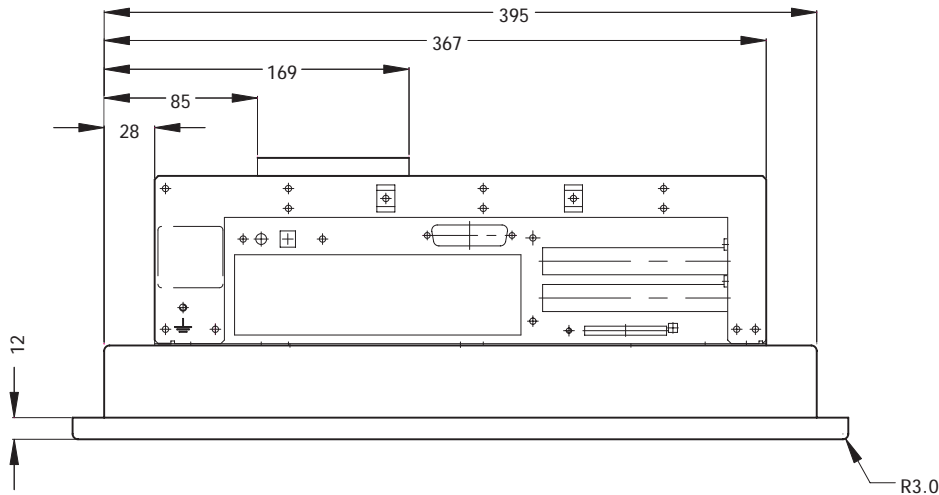


Mounting method: 8 x M6x25 V2A-screws DIN 6912. Screws and o-ring seals are included.

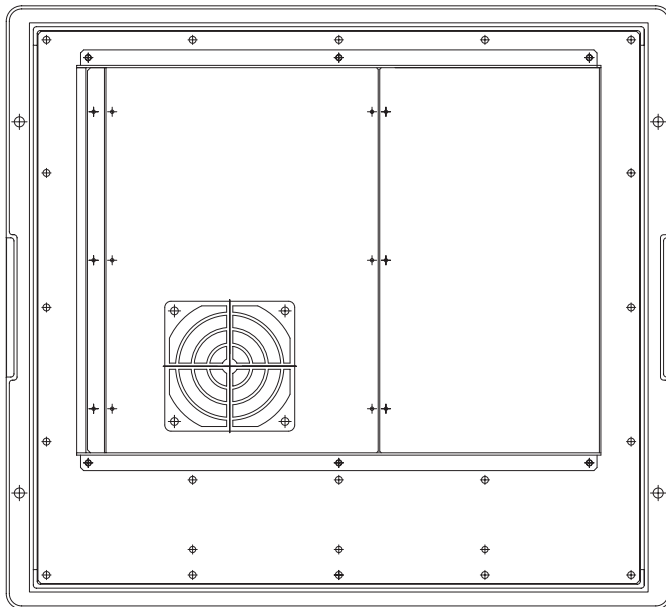
Max. 5 mm thick mounting frame.

# 7.6 EPC PM 1700t/1700 Nautic Outline Drawings

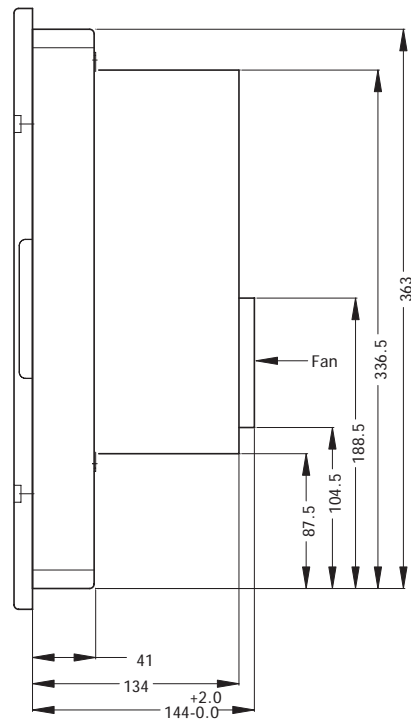
Bottom view



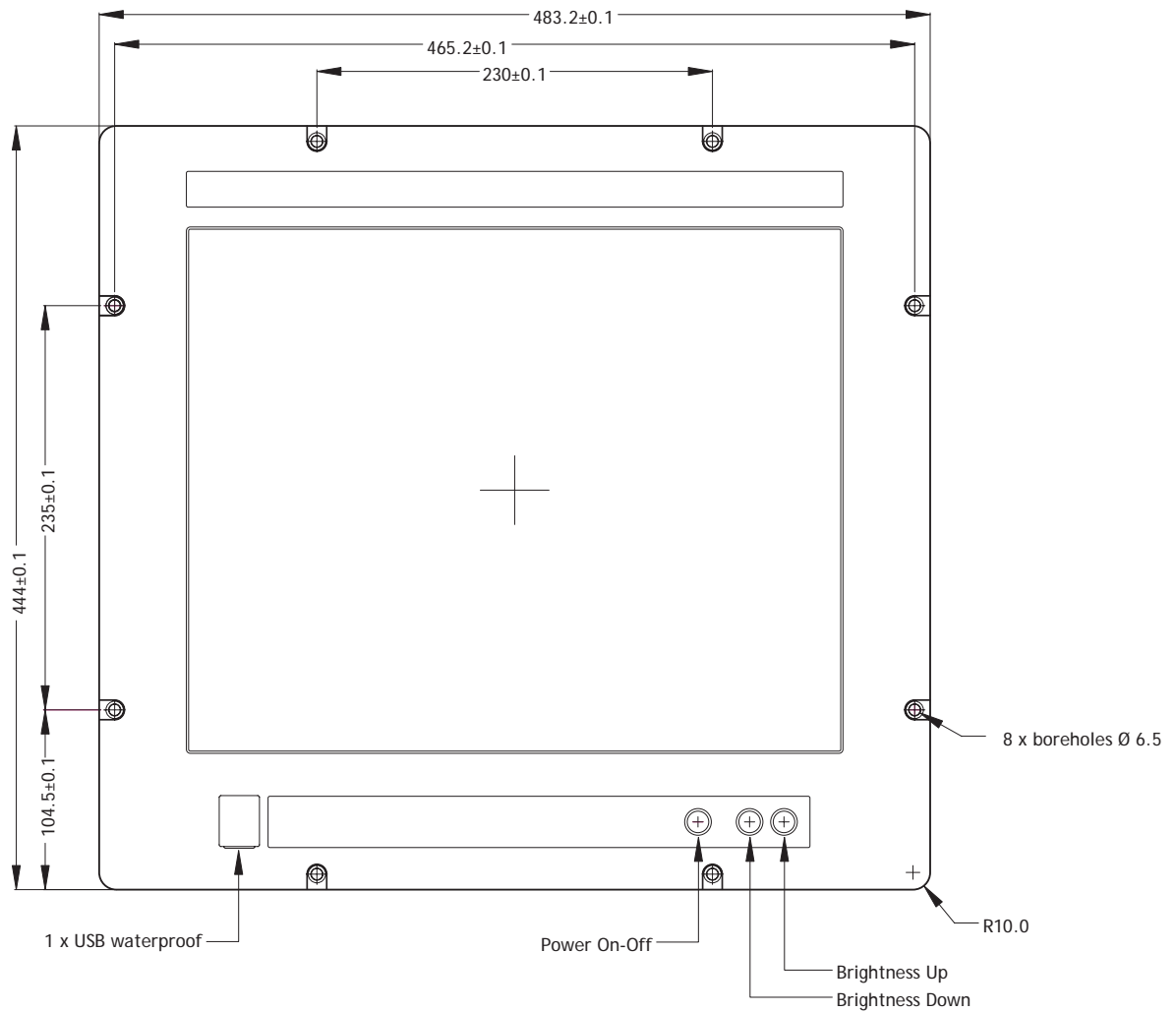
Rear view



Side view

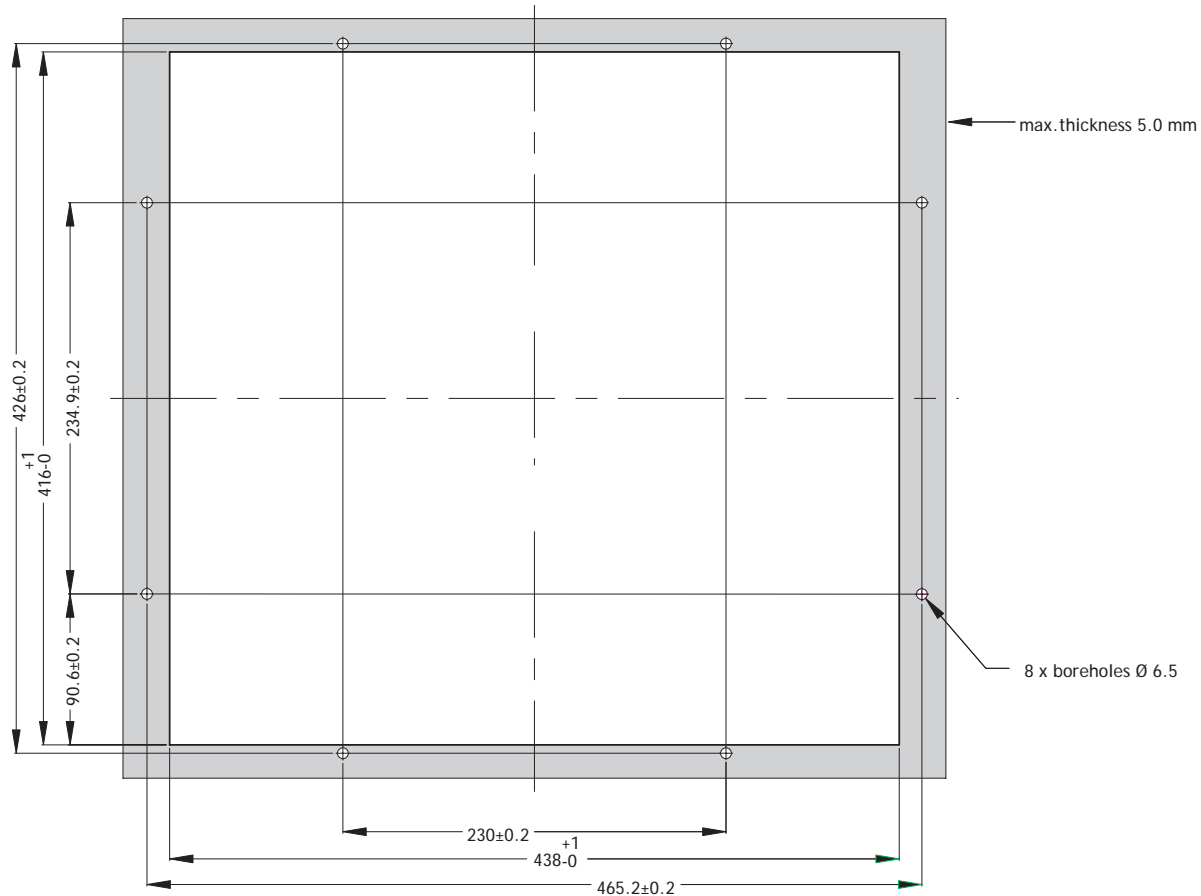


## 7.7 EPC PM 1900t/1900 Nautic Front View



## 7.8 EPC PM 1900t/1900 Nautic Cut Out Drawing

Cut out dimensions: 438 x 416 mm.



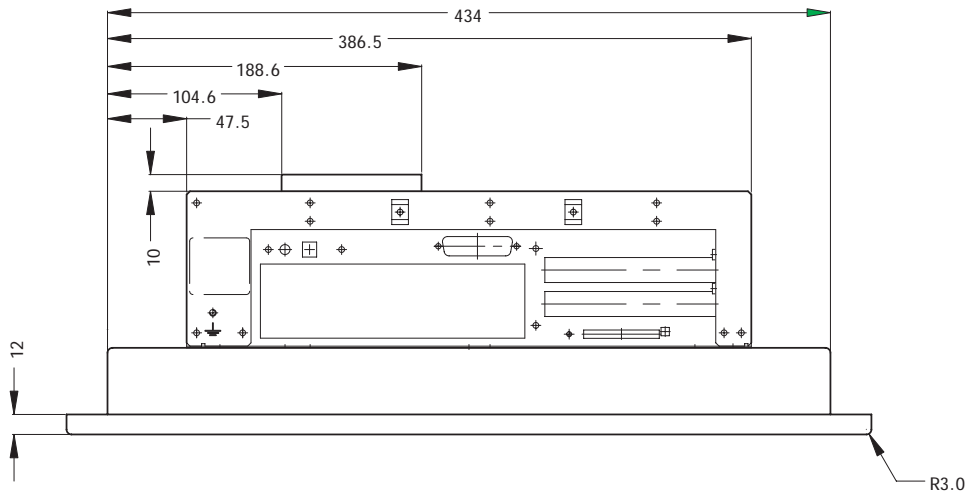
Mounting method: 8 x M6x25 V2A-screws DIN 6912. Screws and o-ring seals are included.

Max. 5 mm thick mounting frame.

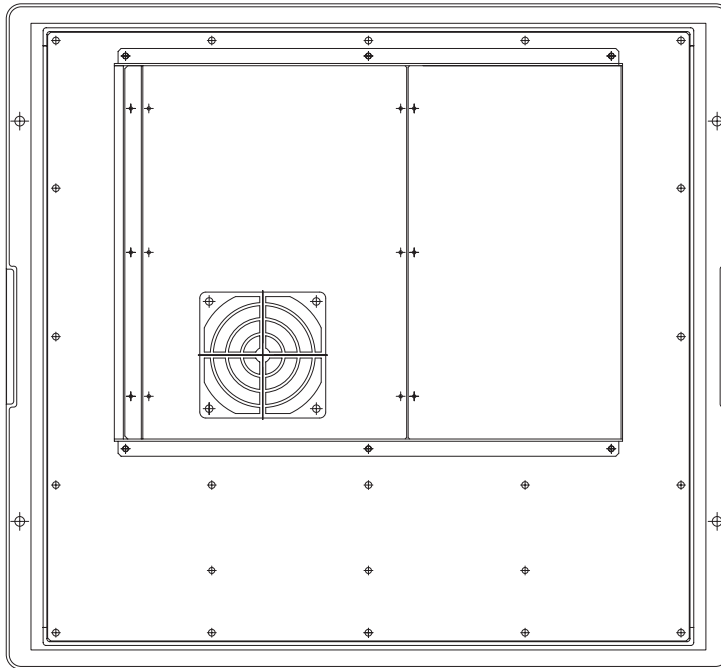


# 7.9 EPC PM 1900t/1900 Nautic Outline Drawings

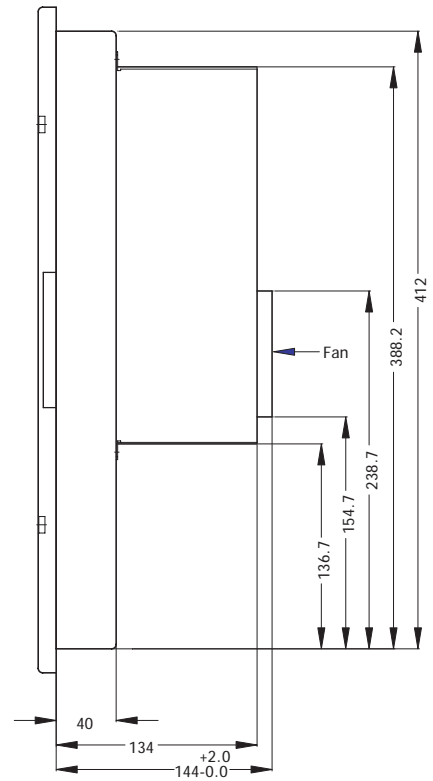
Bottom view



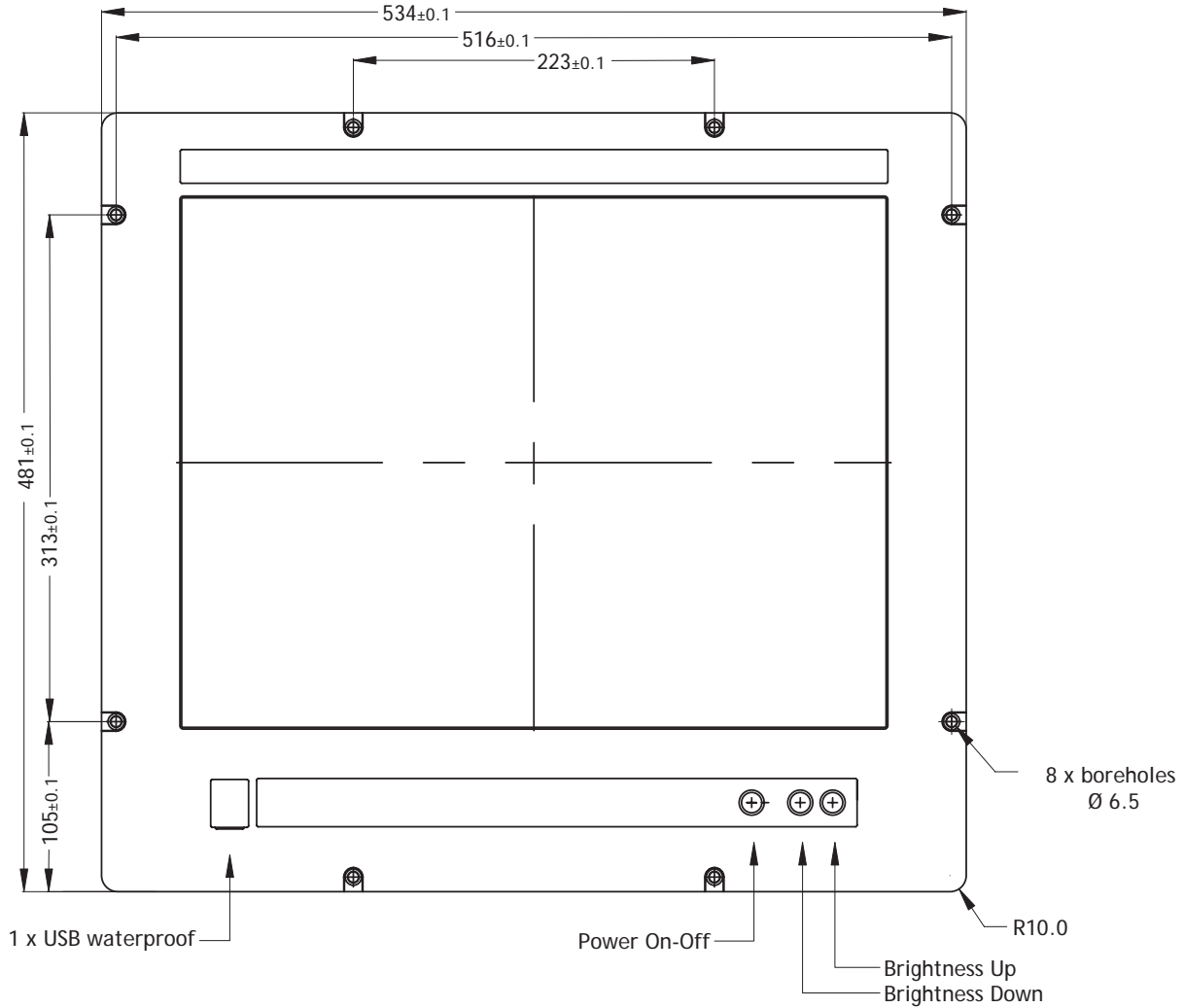
Rear view



Side view

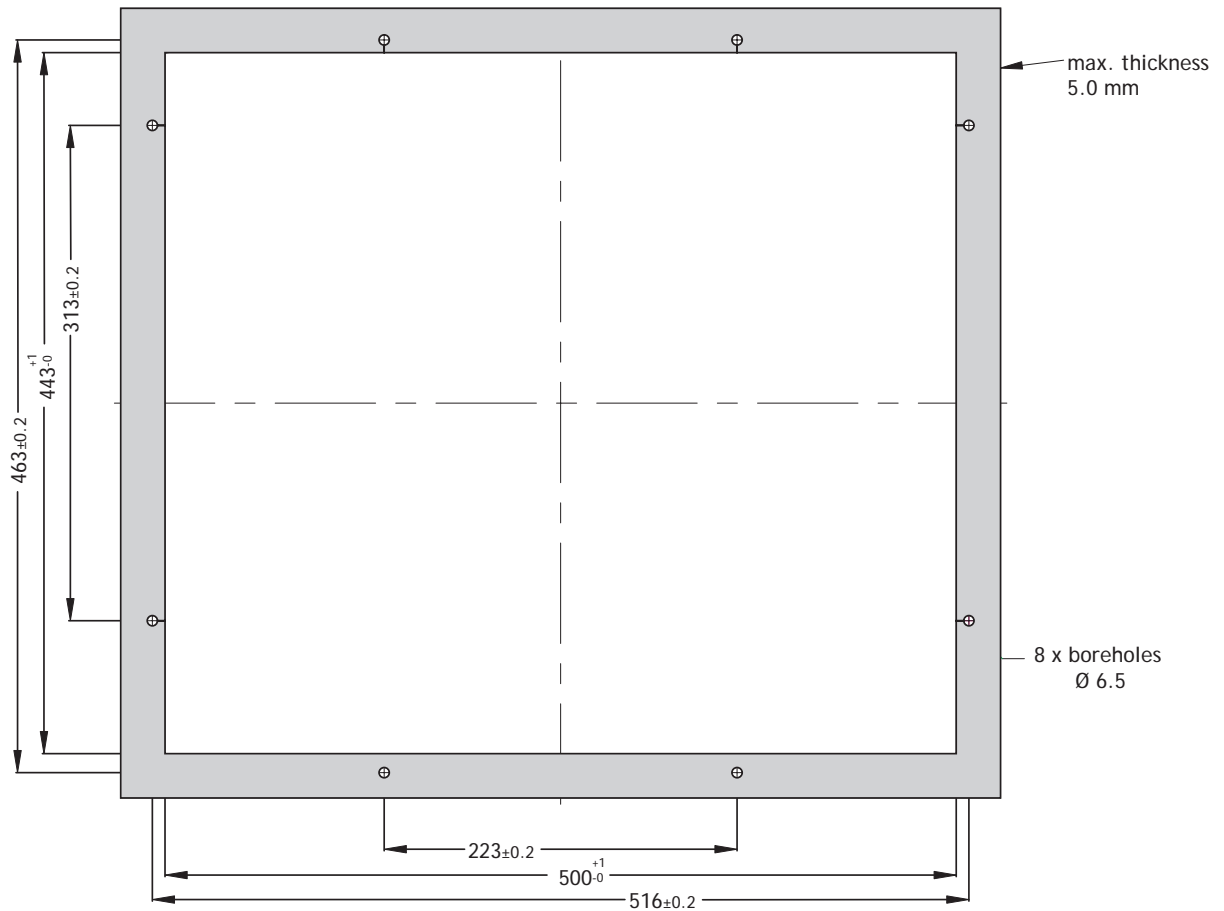


# 7.10 EPC PM 2100t/2100 Nautic Front View



## 7.11 EPC PM 2100t/2100 Nautic Cut Out Drawing

Cut out dimensions: 500 x 443 mm.

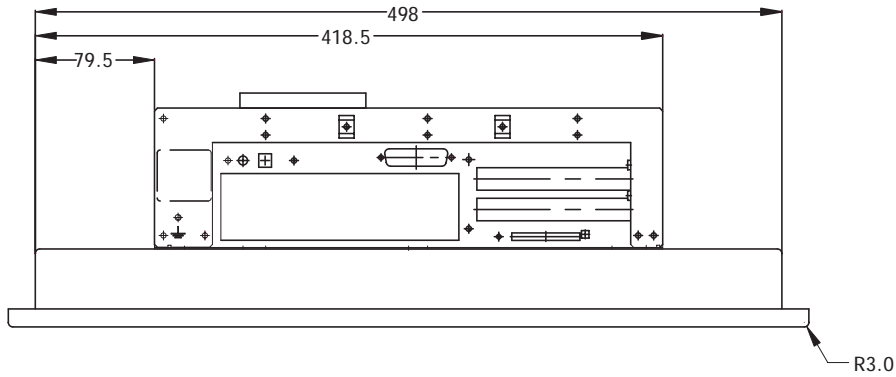


Mounting method: 8 x M6x25 V2A-screws DIN 6912. Screws and o-ring seals are included.

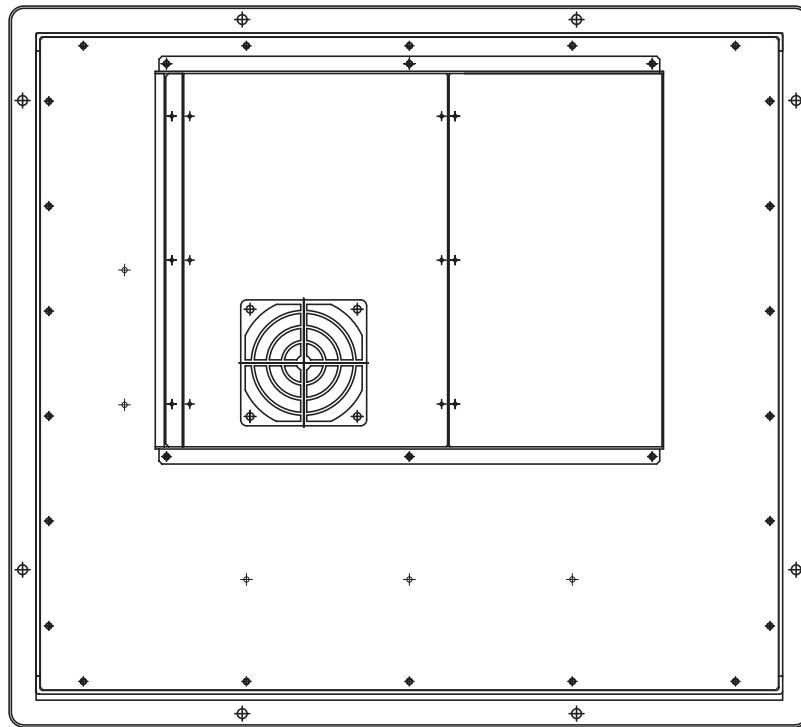
Max. 5 mm thick mounting frame.

# 7.12 EPC PM 2100t/2100 Nautic Outline Drawings

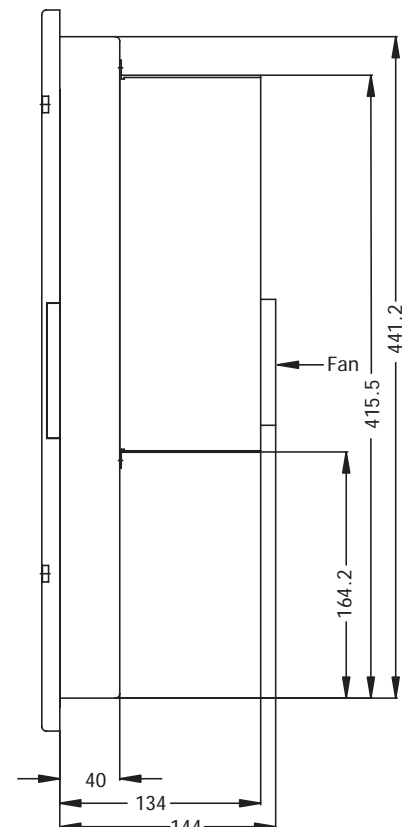
Bottom view



Rear view



Side view



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