AHD 1310 F
Panel PCs with Touchscreen and Foil Front



Operation Manual

Read this manual before beginning any work!

Valid for all devices produced after 2015

CE UK CA

Dok-ID: PaB-1491 V2, approved: 2026-11-11, WeA

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Change History

for Operation Manual AHD 1310 F

Date	Version	Reason for Change	Page	Author
02/08/2016	AHD_1310_F_DOK_EN_V1_20160208.docx	Translation from original German version	n.a.	Pasuki, Bahram (PaB)
11/11/2026	AHD_1310_F4_DOK_EN_V2_20261111	New model 2015	n.a.	Patzke, Jens (PaJ)

1 General Information

1.1 About this Manual

Read this manual carefully before beginning any work! It is part of the product and must be kept in the product's immediate vicinity so that it is always available to the personnel.

Include this manual when handing the product over to third parties.

This manual gives important product handling instructions. On the following pages, this manual describes the Panel PCs with Touchscreen and Foil Front AHD 1310 F **produced 2015 and later** with the Item number 16348 and , since July 2025, with the item number 24478.

This manual gives specific information, if further and more detailed documentation is available for individual components or functions.

Adhering to all product safety and handling instructions for the product and all connected components is a prerequisite for safe operation.

In addition, the local accident prevention and general safety regulations for the device's area of operation must be observed.

The illustrations in this manual are intended to demonstrate the contents more clearly. They are not necessarily drawn to scale and can vary from the actual product in minor details.

This operating manual is to be understood as a single unit. It is not permitted to use excerpts from this manual as standalone documentation without referring to the entire document.

1.2 Explanation of Symbols

1.2.1 Warnings

In this manual, warnings are marked with symbols. The warnings are introduced by signal words indicating the degree of danger.

It is important to heed these warnings and act with caution to avoid accidents, personal injury, and property damage.



DANGER!

… indicates an imminently hazardous situation that can result in death or severe injury, if not avoided.



WARNING!

… indicates a potentially hazardous situation which can result in death or severe injury, if not avoided.



CAUTION!

… indicates a potentially hazardous situation that can result in minor or light injury, if not avoided.



CAUTION!

… indicates a potentially hazardous situation that can result in equipment damage, if not avoided.

1.2.2 Tips and Recommendations



NOTICE!

… indicates useful tips and recommendations and information for efficient and error-free operation.

1.3 Illustrations

Illustrations in this document may deviate slightly from actual devices, without this being pointed out separately.

In particular, illustrations of declarations of conformity may deviate from the current status.

1.4 Limitation of Liability

All information and instructions in this manual have been compiled in consideration of current norms and regulations, the state of technology, and our knowledge and experience of many years.

The manufacturer is not responsible for damages due to:

- Noncompliance with the instructions in this manual
- Unintended use
- Employment of untrained personnel
- Unauthorized modifications
- Technical modifications
- Use of unauthorized spare parts
- Device and system configurations created by the user or third parties

The actual scope of delivery may vary from the explanations and illustrations in this manual in case of customized models, special ordering options, or the latest technical improvements.

In addition, the agreed upon obligations in the delivery contract, the general terms and conditions, the manufacturer's delivery terms and the legal regulations current at the contract signing are in force.

We reserve the right to make changes to improve the device's service properties and to further develop the product.

1.5 Copyright and Nondisclosure

This operation manual is a confidential document. It is intended only for those persons working with the product. It is not permitted to hand this manual over to third parties without the manufacturer's prior written permission.



NOTICE!

The information, texts, drawings, illustrations, and other representations in this manual are protected by copyright laws and are subject to industrial property rights. Any misuse is subject to prosecution.

It is not permitted to duplicate this manual in any type or form – even in excerpts – or use and/or communicate its contents without the manufacturer's written permission. Contraventions are liable to compensation. We reserve other rights.

1.6 Spare Parts



WARNING!

Danger of injury due to incorrect spare parts!

Improper or defective spare parts can lead to damages, malfunctions, or total failure as well as impair safety.

Therefore:

- Only use the manufacturer's original spare parts.

Order spare parts from contracted vendors or directly from the manufacturer. See page 2 for the address.

1.7 Warranty Terms

The warranty terms can be found in the General Terms and Conditions (GTC) of the manufacturer's sales documents.

1.8 Customer Service

Our customer service department is available to assist you with technical information.

Information about the responsible contact person is always available via telephone, fax, e-mail, or the Internet. Refer to page 2 for the manufacturer's address.

In addition, our staff is always interested in new information and experiences resulting from the use of the product which can be used to further improve our products.

2 Safety

This section gives an overview of all important safety aspects for the personnel's optimal protection and safe and error-free operation.

Not adhering to the handling and safety instructions in this manual can lead to significant hazards.

2.1 Operator's Responsibilities

This product is intended for commercial use. Therefore, its operation is subject to legal workplace safety regulations.

In addition to the workplace safety instructions in this manual, the current safety, accident prevention, and environmental protection regulations for the product's place of use must be observed. Especially:

- The operator must keep himself informed about the legal workplace safety regulations and through a risk assessment determine any additional hazards resulting from the specific working conditions at the product's place of use. He must implement these in the form of operating instructions for the product's use.
- During the product's entire period of operation, the operator must verify that his operating instructions comply with current regulations and revise them, if necessary.
- The operator must clearly regulate and define areas of responsibility for installation, operation, regular checks, and cleaning.
- The operator must ensure that all employees handling the product have read and understood this manual.
  In addition, he must train the personnel in regular intervals and inform them about any dangers.

Furthermore, the operator is responsible for always keeping the product in perfect working condition.

2.2 Personnel Requirements

2.2.1 Qualifications



WARNING!

Danger of injury due to insufficient qualification!

Insufficient qualification can lead to significant personal injury and equipment damage.

Therefore:

– Only allow qualified personnel to do any work.

This manual designates the following qualifications for various areas of activity:

- **Trained Person**
  has been trained by the operator through an instruction for the assigned tasks and has been informed about possible hazards from improper execution.
- **Specialist**
  can execute the assigned tasks and recognize and avoid potential hazards independently, based on his professional education, knowledge, and experience as well as knowledge of the norms and regulations relevant to the situation.
- **Electrician**
  can work on electrical systems and independently identify and avoid potential hazards, based on his professional education, knowledge and experience, as well as knowledge of the norms and regulations relevant to the situation.
  The electrician has been trained for the specific workplace in which he is active and knows the relevant norms and regulations.

Only those persons who can be expected to do their work reliably are allowed as personnel. Persons, whose ability to act is reduced by for example drugs, alcohol, or medication are not allowed.

- Observe the local age and profession specific regulations when selecting the personnel.

2.2.2 Unauthorized Persons



WARNING!

Danger for unauthorized persons!

Unauthorized persons who do not meet the requirements described in this manual do not know the workplace hazards.

Therefore:

- Keep unauthorized persons out of the work area.
- When in doubt, approach persons and remove them from the work area.
- Discontinue any work while unauthorized persons remain in the work area.

2.3 Intended Use

The Panel PC AHD 1310 F has been developed and constructed exclusively for the purpose described here:

As desired by the user, the integrated control-relevant systems of the vessel are visualized on the Panel PC AHD 1310 F and can be controlled from the touchscreen or external control devices.

With the integrated buttons alarms can be acknowledged and frequently used settings can be made.



WARNING!

Danger due to unintended use!

Any use other than and/or beyond the product's intended use can lead to hazardous situations.

Therefore:

- Only use the product as intended.
- Strictly adhere to all instructions in this manual.
- Especially avoid the following unintended use:
  - Using a supply voltage other than the one specified

Any claims for damages resulting from unintended use are excluded.

The operator is solely responsible for any damages resulting from unintended use.



WARNING!

Danger due to improper operation of the device!

Device failure or malfunction can lead to personal injury or equipment damage in the overall system.

Therefore:

- Although the device itself is not especially dangerous, the effects of failure or malfunctions on the overall system must be considered.
- Always discontinue using the devices when they develop smoke or abnormal heat.

3 Function and Structure

3.1 Function

The Panel PCs with Touchscreen and Foil Front AHD 1310 F are used for visualizing the ship's data and devices. They can be used to control visualized devices and acknowledge alarms.

AHD 1300 F must be used with a device with an internal device DPU Core (AHD 11), for example a Data Processing Station AHD-DPU 9 or a Panel PC AHD 12XX over which the connection to the ship's Böning system is established. For displaying the data of the Böning system AHD 1310 F contains a project-specific graphical configuration (visualization). The data to be displayed are set up in the system configuration of the connected AHD-DPU 9 or AHD 12XX.

On delivery, the data and devices which can be visualized and controlled on AHD 1310 F are set up as desired by the customer. This includes setting up how these data and devices are visualized on AHD 1310 F, and the structure and function of the pages shown on the displays. Every relevant area of the ship can be displayed on a separate display page. This makes every visualization unique.

AHD 1310 F can process visualizations from an external video source which the user can select with a button.

The basic functions of AHD 1310 F are accessible with buttons on the device front. Buttons for acknowledging incoming alarms eliminate the need for a separate alarm panel. Incoming alarms are signaled acoustically and optically.

In addition to the capacitive touchscreen, AHD 1310 F can also be operated with for example the Display Control Unit with Rotary Push Drive AHD-DC RS.

High luminosities ensure good readability even in strong sunlight. When cruising at night, automatic dimming with adjustable minimum brightness ensures that AHD 1310 F works glare-free. Overheating protection reduces the screen brightness at high temperatures to prevent equipment damage and decrease energy consumption. The overheating protection is indicated with corresponding warnings.

AHD 1310 F was developed specifically for maritime use. Because it contains no mechanical components, such as hard disks and cooling fans, it is impact resistant and prevents distracting background noises.

3.2 Structure

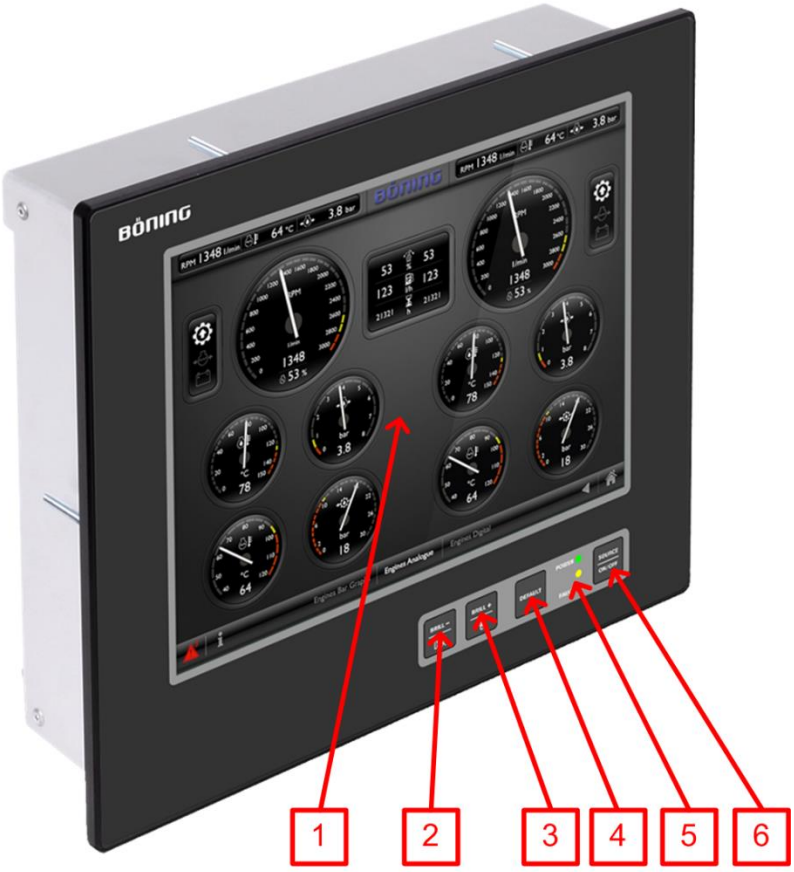


Illustration 1: Structure

1. Visualized ship data and touchscreen
   On delivery, this section of the screen is configured according to the customer's wishes for visualizing the ship's data and controlling devices. Therefore, it is different for each AHD 1310 F.
   The touchscreen is used to control devices, acknowledge alarms and operate the visualization.
2. BRILL -/ACOUSTIC ACKNOWLEDGEMENT Button
   This button is used for reducing the screen brightness and for acknowledging incoming acoustic alarms.
   If there is no unacknowledged acoustic alarm or if the alarm cannot be acknowledged on the Panel PC, pressing the button reduces the screen's brightness.
3. BRILL +/OPTICAL ACKNOWLEDGEMENT Button
   This button is used for increasing the screen brightness and for acknowledging incoming optical alarms.
   If there is no unacknowledged optical alarm or if the alarm cannot be acknowledged on the Panel PC, pressing the button increases the screen's brightness.

4. DEFAULT Button
   A short press resets the screen brightness to its default value.
   When an external video source, that is another video source than the visualization of the Böning system, has been selected, version information of the software is shown.
   A long press puts the device in configuration mode.
5. LEDs
   The Power LED indicates whether the device is switched on.
   The Fault LED indicates device or software errors, see the section “FAULT LED” on page 55.
   The brightness sensor (LDR) for automatic brightness control is in the middle between the LEDs.
   To ensure correct dimming, the sensor must not be covered.

SOURCE / ON/OFF Button
A short press changes the video source.
CVBS is available.
Pressing the button longer than 5 seconds switches the screen on or off.
If the button is pressed 5 seconds more, the buzzer and the button illumination are tested.
The button signals errors messages of the Monitor Control Unit (MCU) by flashing, see the section “

6. Error Codes of the MCU” on page 59.

The use of the buttons is described in detail in the section “Operation with Buttons” on page 46.

The device’s connectors are on its rear side, see the section ”Connections” on page 29.

3.3 Mechanical Structure

In one compact unit, AHD 1310 F, designed for console and wall mounting, contains all processor-controlled electronics and standardized plug connections for the interfaces.

All the pluggable device connections are on the device’s rear side making it possible to install the device quickly and safely.

The passive cooling system eliminates the need for fans and air vents, resulting in the greatest possible degree of tightness. The device’s front side has the ingress protection IP56 and its rear side IP20.

Because the device contains no mechanical components such as hard disks, it is insensitive to shock.

The device was developed specifically for maritime use.

3.4 Device Electronics

The central component of AHD 1310 F is a microprocessor. It sends the ship’s data to be visualized with their graphic presentation to the screen and sends commands received from the touchscreen into the monitored system.

A flash disk is used for saving all necessary data.

AHD 1300 F has an internal voltage control that provides the required supply voltages. Therefore, the supply voltage fed by the device’s external power supply can range from 18 V DC to 32 V DC (24 V DC +30% / -25%).

NOTICE!

At undervoltage (V_{in} < 18 V) all panel PCs and displays in the control bus except the device with the lowest ID are automatically switched off. The remaining device, for example the one with the ID “1”, remains switched on to enable emergency operation. If the voltage drops below 14 V, this device is switched off too.

For increased operational safety, all communication interfaces are galvanically isolated.

3.5 Software

The relevant current software versions of the device are displayed on the display page “Settings,” subpage “Software Information” of the visualization of the Böning system.

This information is also shown when pressing the DEFAULT button briefly when an external video source, which is another video source than the visualization of the Böning system, is shown.

3.6 Viewing Angle

The display on the screen of AHD 1310 F can be viewed best from above and below at an angle of less than 89° to the vertical plane of the screen and from the sides, at an angle of less than 89°.

Up to an angle of 89° the contrast ratio is ≥10:

$$Contrast\ ratio = \frac{Luminance\ white}{Luminance\ black}$$

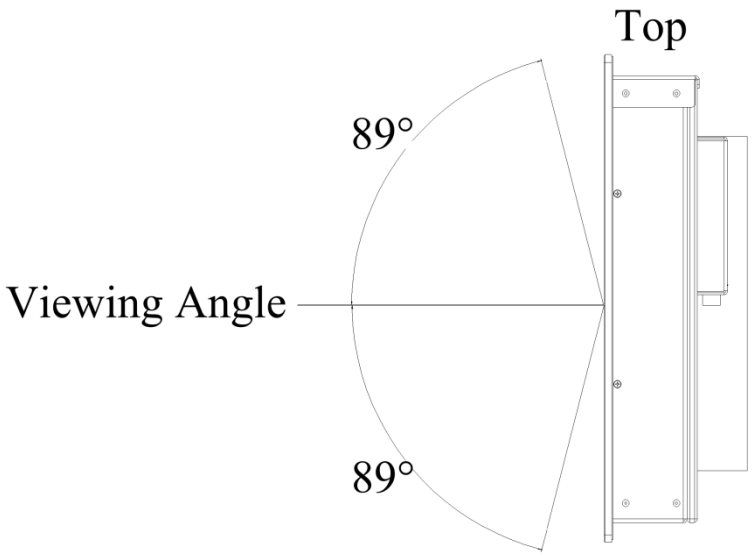


Illustration 2: Viewing angle in degrees from above/below

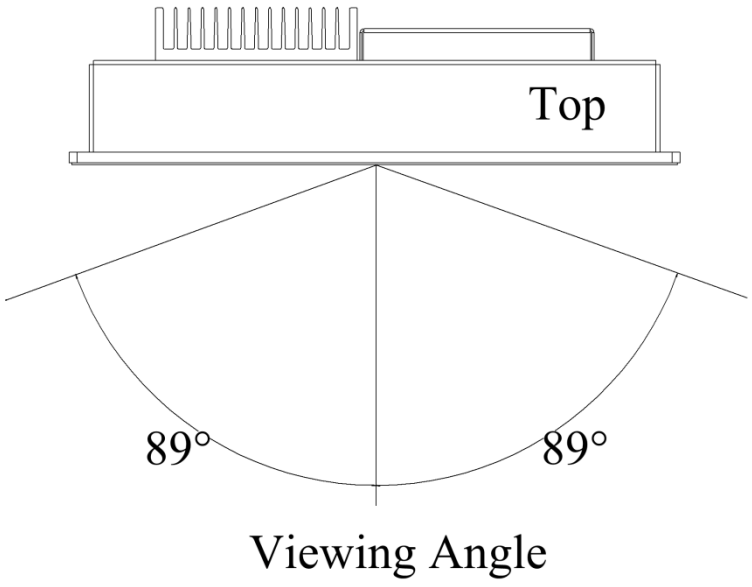


Illustration 3: Viewing angle in degrees from the side

3.7 Interfaces

3.7.1 CAN

The CAN interface to the control bus is used for the remote control with operating panels.

The CAN bus can also be used for brightness control, see the section “Brightness Control” on page 50 and for controlled shut-down at undervoltage.

3.7.2 RS-232

For internal service purposes.

3.7.3 LAN

2 x LAN: For connection to the ship’s Böning system via a Data Processing Station AHD-DPU 9 or a Panel PC AHD 12XX.

3.7.4 USB

2 x USB: These interfaces can be used to connect, for example external storage media for service purposes or a mouse or a keyboard for operating the display.

3.7.5 Video

1 x Video IN for connecting a Video Distribution Control Unit AHD-VDCU or an external camera.

NOTICE!

The device may be configured to process NTSC signals.
In this case, PAL cannot be processed. It is only possible to process either PAL or NTSC.

When using an NTSC-PAL converter for integration an NTSC camera, not that only PAL-50 is supported.

NOTICE!

AHD 1310 F with the item number 24478 has a DisplayPort output for connecting an additional monitor, that can be enabled on request.

3.8 Configuration

For the operation of AHD 1310 F the connected AHD-DPU 9 or AHD 12XX must contain a system configuration for accessing the ship's Böning system. Additionally, a separate configuration (visualization) is required for the graphical display of system data on the connected display and for controlling devices on the display.

Only a trained specialist may modify the system configuration and the visualization.

If required, contact the manufacturer or an authorized representative.

3.8.1 System Configuration

The processing of ship data is configured with DeviceConfig and saved in the Data Processing Station AHD-DPU 9 or the Panel PC AHD 12XX with which AHD 1310 F is connected.

In this system configuration basic settings for the display of ship data, data processing and the sending of commands received from AHD 1310 F are set up.

This includes the capture of device data, processing these data, setting alarm limits, settings for data display and the control of devices with, for example the visualization on displays.

NOTICE!

The configuration stored in the AHD-DPU 9 or AHD 12XX cannot be changed during operation, for example on the ship's panel PCs. It is only possible to select configured settings, for example a language with the corresponding unit system, on the vessel's panel PCs or other control devices.

If it is necessary to change the configuration, contact the manufacturer or an authorized representative.

3.8.2 Visualization

AHD 1310 F contains the configuration files created with AHD-Display Designer 2.0 for the display of data and controlling the ship on the device's screen.

The visualization is saved in AHD 1310 F.

3.9 Application Example

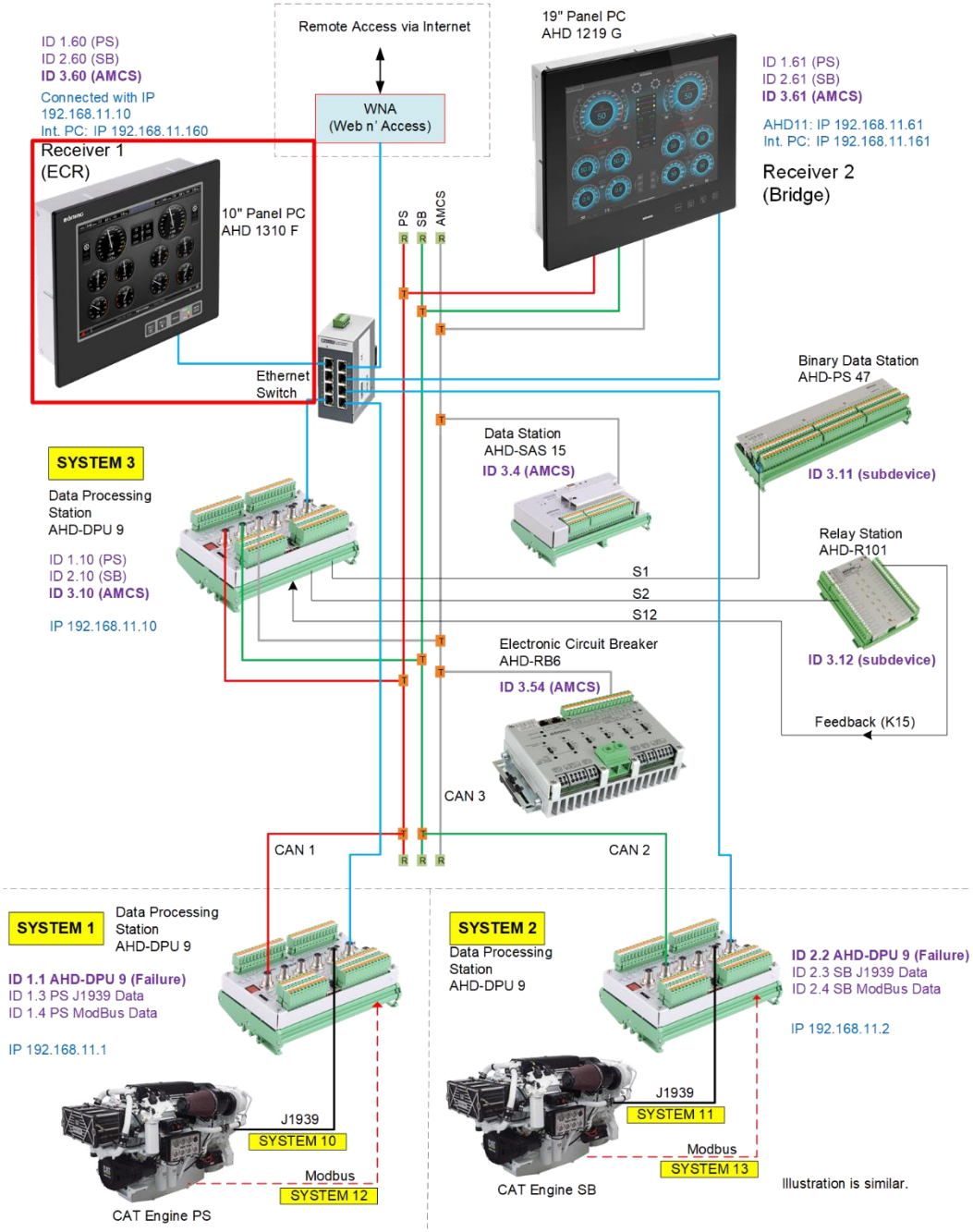


Illustration 4: Application example

The AHD 1310 F marked with a red frame in Illustration 4 is connected over Ethernet with the Data Processing Station AHD-DPU 9 with the device address 10. This AHD-DPU 9 contains all engine data and data of the Böning system, for example those of a data station AHD-SAS 15 and an electronic circuit breaker AHD-RB6, required for visualization on the AHD 1310 F. From the AHD 1310 F the AHD-DPU 9 receives commands and forwards

them over the CAN bus to the appropriate devices, for example the AHD-RB6.

4 Technical Information

4.1 Technical Data

Description	Value/Unit/Type
General Data	
Dimensions, W x H x D	280 x 240 x 93 mm
Required installation depth	At least 140 mm When installed, the distance between the device's cooling elements and a wall must be at least 70 mm.
Panel cutout, W x H	260 x 220 mm
Maximum wall thickness	20 mm When installing in thicker walls, a corresponding recess must be shaped.
Weight	Appr. 7 kg
Environmental Data	
Operating temperature	-30°C…+45°C Active cooling of the installation space recommended for high interior console temperature.
Storage temperature	-50 °C…+85 °C
Required minimum distance to magnetic compass	Steering compass: 0.60 m Standard compass: 1.00 m
Ingress protection	Front side: IP56 Rear side: IP20
Electrical Data	
Power supply	24 V DC (-30% / +25%)
Power consumption	Appr. 45 W (24 V DC)
Electronic Data Processing	
Processor	Item 16348: 2.0 GHz Quad Core Item 24478: Intel Atom CPU

Description	Value/Unit/Type
Operating system	Item 16348: Windows® Embedded Standard 7 Item 24478: Windows 10 LTSC
Interfaces	
	1 x CAN (DeviceNet, 5-pin, Lumberg, plug)
	1 x RS-232 (D-sub, 9-pin, plug) for internal diagnosis
	2 x LAN (RJ45, 10/100 Mbit, socket)
	2 x USB (Socket A)
	1 x Video IN (PAL, 50 Hz, BNC, socket) Item 24478: 1 x DisplayPort output for connection of an additional monitor. Enabled on request.
Display	
Screen size (Diagonal)	10’’ (254 mm)
Resolution	1024 x 768 Pixel (H x V, max., XGA)
Aspect ratio	4:3
Luminance	1000 cd/m²
Contrast	600:1
Viewing angle	Horizontal: -89° / +89° vertical: -89° / +89°
Approvals	
Classification societies	ABS, CRS, DNV, LR, RINA

CAUTION!

Too high or too low temperatures may damage the device!

Ensure that the device's housing temperature does not exceed or fall below the permissible temperature range!

The temperature at the installation site must therefore be lower or higher than the device's housing temperature.

If necessary, an appropriate temperature control system must be installed.

4.2 Dimensions

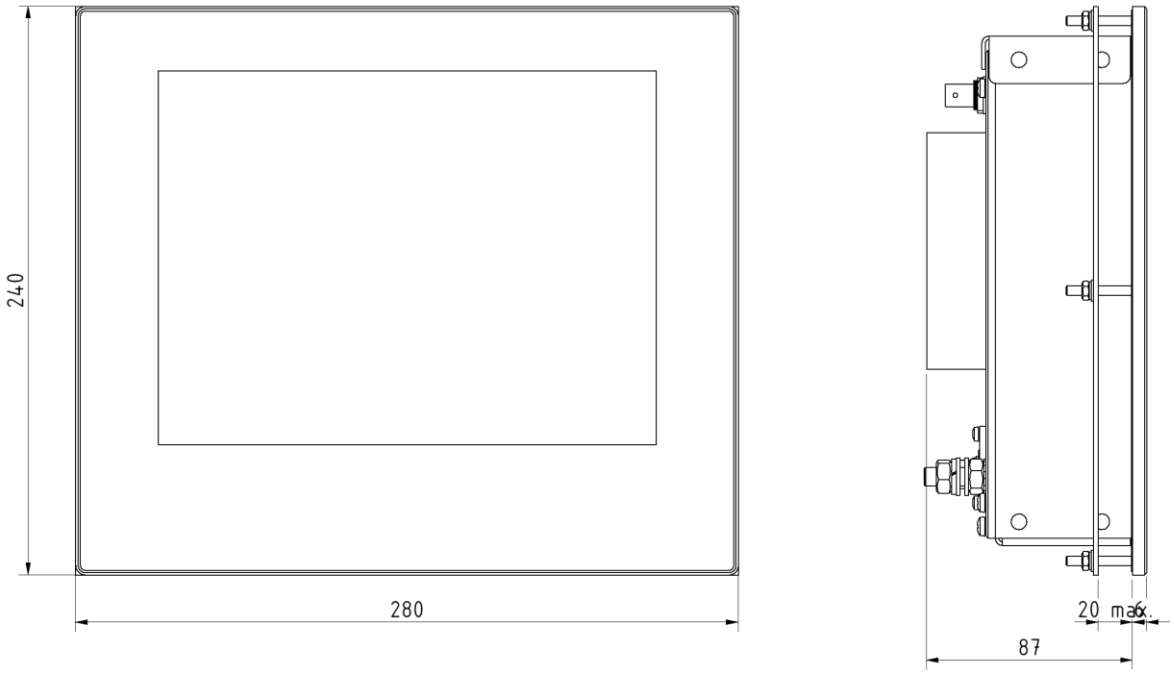


Illustration 5: Dimensions in millimeters

4.3 Panel Cutout

The panel cutout is shown in the following illustration:

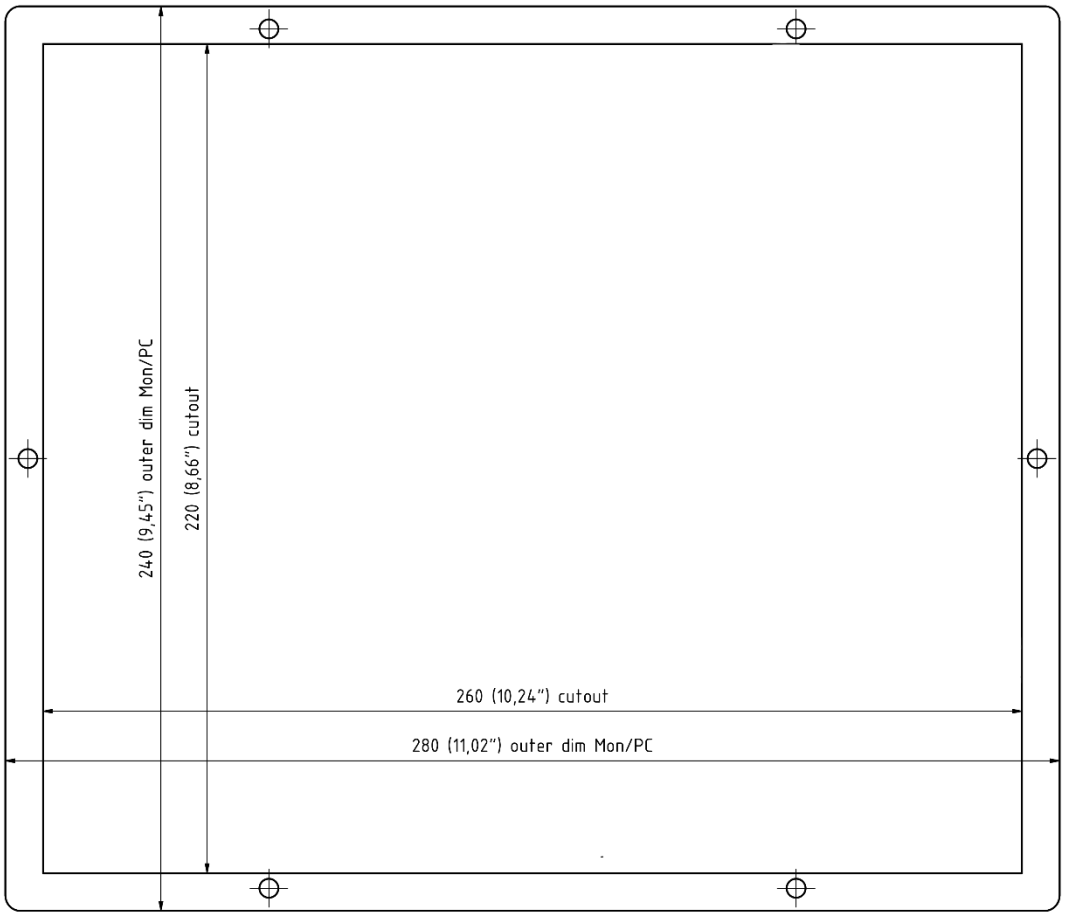


Illustration 6: Panel cutout

NOTICE!

When installing, the mounting aid included in the delivery must be used to mark the panel cutout and drill holes. For details, refer to the installation instructions included in the delivery.

4.4 Connections

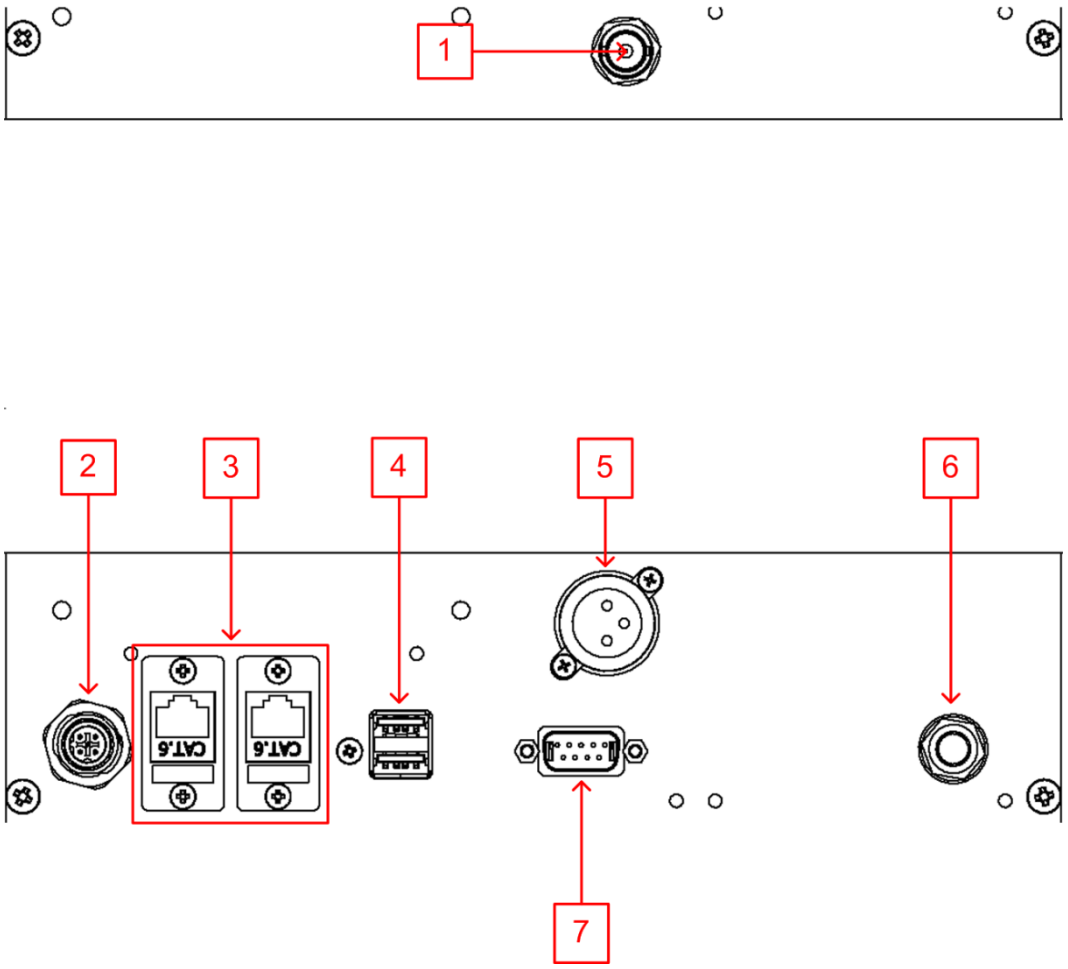


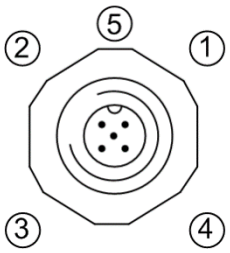
Illustration 7: Connections (Top view)

1. Video IN (PAL, 50 Hz, BNC, socket
2. CAN (Lumberg, 5-pin, plug)
3. 2 x LAN (RJ45, socket)
4. 2 x USB (Socket A)
5. Power supply (Plug)
6. Earthing (Bolt, M8)
7. RS-232 (Sub-D, 9-pin, plug)

4.4.1 Terminal Assignment

CAN

The pins are assigned as shown in the illustration:



Built-in plug (male)
1: Shield (not connected)
2: + (not connected)
3: - (not connected)
4: CAN High
5: CAN Low

Illustration 8: CAN: Pin assignment (Top view)

> *NOTICE!*
> *On the device, the CAN interface is labeled "CAN 7".*

Power Supply

The pins of the power supply are assigned as follows:

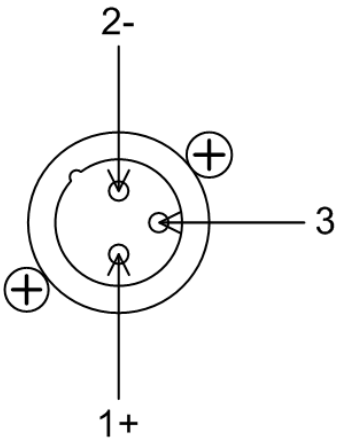


Illustration 9: Power supply: Pin assignment (Top view)

Pin 3 is not used.

4.5 Name Plate and Other Information

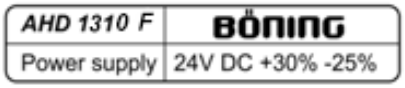


Illustration 10: Name plate

The name plate of AHD 1310 F (Illustration is similar) and other information is on the device's rear side and contains the following:

- Model designation of the device
- Power supply
- Manufacturer
- Conformity markings
- Serial number
  The two first digits of the serial number indicate the year of production.
  To obtain the exact date of production contact the manufacturer stating the complete serial number.

5 Transport, Packaging, and Storage

5.1 Transport Safety Instructions

5.1.1 Improper Transport

CAUTION!

Equipment damage due to improper transport!

Improper transport can cause significant equipment damage.

Therefore:

- Proceed with caution and heed the symbols and instructions on the packaging when unloading the packages during delivery and on-site transport.
- Remove the packaging only shortly before installation.

5.2 Transport Inspection

Upon receipt, the delivery must be checked immediately for completeness and damages during transport.

Proceed as follows when noticing external transport damages:

- Do not accept the delivery or accept it only with reservations.
- Note the extent of damages on the transport documents or on the deliverer's bill of delivery.
- File a damage claim.

NOTICE!

Claim any fault as soon as it is noticed. Damage claims can only be filed within their respective reclamation periods.

5.3 Packaging

5.3.1 About the Packaging

The individual parts are packaged according to the expected transport conditions. Only environmentally friendly materials are used for the packaging.

The packaging is intended to protect the individual parts until installation from transport damage, corrosion, and other damage. Therefore, the packaging must not be destroyed, and it may only be removed shortly before installation.

CAUTION!

Equipment damage due to electrostatic discharge!

When removing the device from its packaging or when packing the device, always observe protective measures against electrostatic discharges (ESD)!

These include the use of antistatic flooring or conductive mats, antistatic clothing made of cotton instead of synthetic fibers or animal hair, control of atmospheric humidity above 50%, and the use of, for example, grounding bracelets.

5.3.2 Handling the Packaging Materials

The packaging materials must be disposed of according to the current legal provisions and local regulations.

CAUTION!

Environmental damages duty to improper disposal!

Packaging materials are valuable resources and can often be reused or expediently reprocessed and recycled.

Therefore:

- Dispose of packaging materials in an environmentally friendly manner.
- Observe the local disposal regulations. If necessary, hire a specialist company for the disposal.

5.3.3 Storage

Store the packages under the following conditions:

- Do not store them outdoors.
- Store them in a dry, dust-free environment.
- Do not expose them to aggressive media.
- Protect them from sunlight.
- Observe the storage temperature, see the section “Technical Data” on page 25.
- Avoid mechanical shock.
- When storing longer than 3 months, regularly inspect the general condition of all parts and the packaging.

NOTICE!

In some cases, the packages contain instructions for storage which extend beyond the requirements listed in this manual. These must be observed accordingly.

6 Installation and Initial Startup

6.1 Safety

6.1.1 Personnel

- The installation and initial startup may only be carried out by specially trained personnel.
- Only electricians may work on the electrical system.

6.1.2 Basic Information



CAUTION!

Danger of injury due to improper installation and initial startup!

Improper installation and initial startup can result in personal injury and equipment damage.

Therefore:

- Ensure sufficient installation space before beginning work.
- Handle parts with exposed sharp edges carefully.
- Observe order and cleanness in the work area!
- Install the components professionally.

6.2 Installation

6.2.1 General Information

CAUTION!

Equipment damage due to electrostatic discharge!

During all work observe protective measures against electrostatic discharges (ESD)!

These include the use of antistatic flooring or conductive mats, antistatic clothing made of cotton instead of synthetic fibers or animal hair, control of atmospheric humidity above 50%, and the use of, for example, grounding bracelets.

CAUTION!

Equipment damage due to improper handling and selection of the installation location!

Installing the products in locations that do not meet the requirements of the technical specifications and improper handling can lead to system errors and equipment damage.

Therefore:

- Observe the devices' technical specifications when selecting the installation location.
- Only trained personnel may carry out the installation.
- Never install the devices in areas that are not of the required protection class.
- Never install the devices in extreme high or low temperature areas.
- Never install the devices on ceilings that cannot support their weight.
- Never bump or shake the devices vigorously.
- Install the devices in such a manner that unauthorized persons cannot access the interfaces used for the configuration.
- Install the devices in such a manner that the cooling system can function properly.

NOTICE!

When systems or replacement devices are shipped, the devices are delivered configured according to the project specifications. This includes setting the device address which is indicated on a label. If several devices of the same device type are installed into the system, it is imperative to install each configured device at its designated installation location.

Installing a device in a location where a device of the same device type with a different device address must be installed will result in system malfunction!

The project-specific configuration may be modified only by specially trained personnel.

If required, contact the manufacturer or an authorized representative for further information.

NOTICE!

When installing the device, observe the required minimum distance to the magnetic compass:

- *Steering compass: 0.60 m*
- *Standard compass: 1.00 m*

In exceptional cases, for example for smaller ships, a smaller distance may be chosen after consultation with the responsible shipping authority.

- *Steering compass: 0.40 m*
- *Standard compass: 0.60 m*

NOTICE!

When installing the device, make sure that its interfaces remain accessible!

6.2.2 Installation Requirements

- All required connecting cables are of the required type, equipped with connectors according to technical specifications and project drawings, led to the intended installation location, and are properly installed and stripped. Free cables are of sufficient installation length and are secured against short circuit and earth fault.
- The device is not connected to the supply voltage and switched off-circuit.

WARNING!

Danger of property damage and system malfunction due to missing earthing!

Earth before power-up!

Earth the device as described in the following section “Earthing.”

6.2.3 Earthing

CAUTION!

Equipment damage and system errors due to missing earthing!

Missing earthing of AHD 1310 F can lead to equipment damage and system errors.

Therefore:

– Earth the device during installation!
For earthing, use only the M8 bolt marked red in the following illustration!
For earthing use a cable with a 2 mm² cross-section.

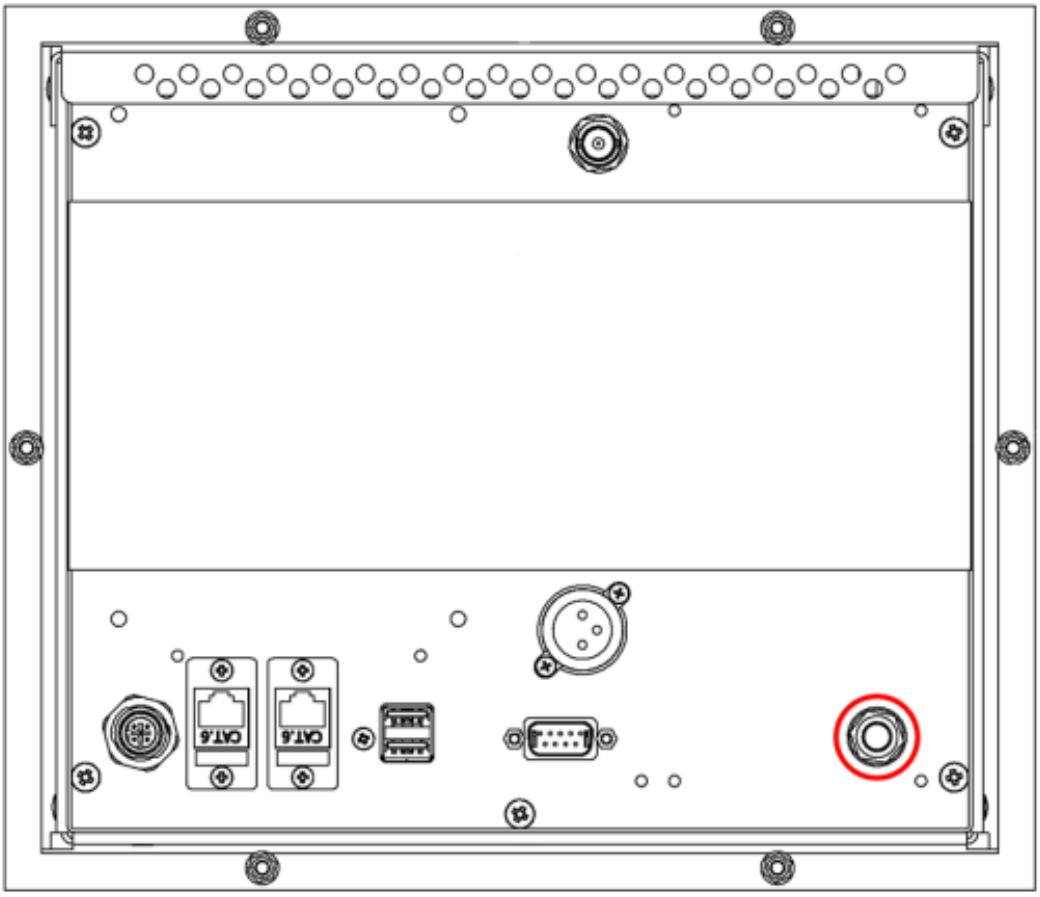


Illustration 11: Position of the earthing bolt

6.2.4 Installation Angle

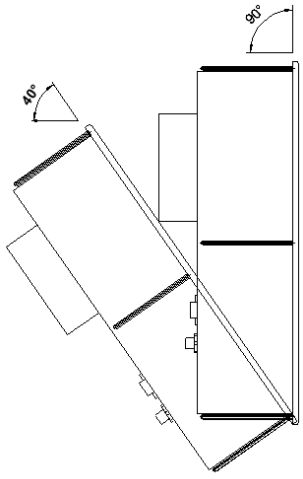


Illustration 12: Installation angle

NOTICE!

Observe the correct installation angle when installing AHD 1310 F!

The installation angle is 40° – 90° to the horizontal plane.

A smaller installation angle may reduce the visibility of the visualized data!

Observe the information about the viewing angle in the section “Viewing Angle” on page 20!

If the installation angle is smaller, it is imperative to provide external cooling to prevent overheating!

6.2.5 Cooling

CAUTION!

Equipment damage due to insufficient cooling!

Insufficient cooling of AHD 1310 F can lead to equipment damage and system errors.

Therefore:

- Install the device only in housings/panels with air vents.
- Choose an installation location that allows proper air circulation for cooling the devices.
  To ensure adequate cooling, the distance between the cooling element and the nearest housing/switch panel wall must be at least 70 mm.

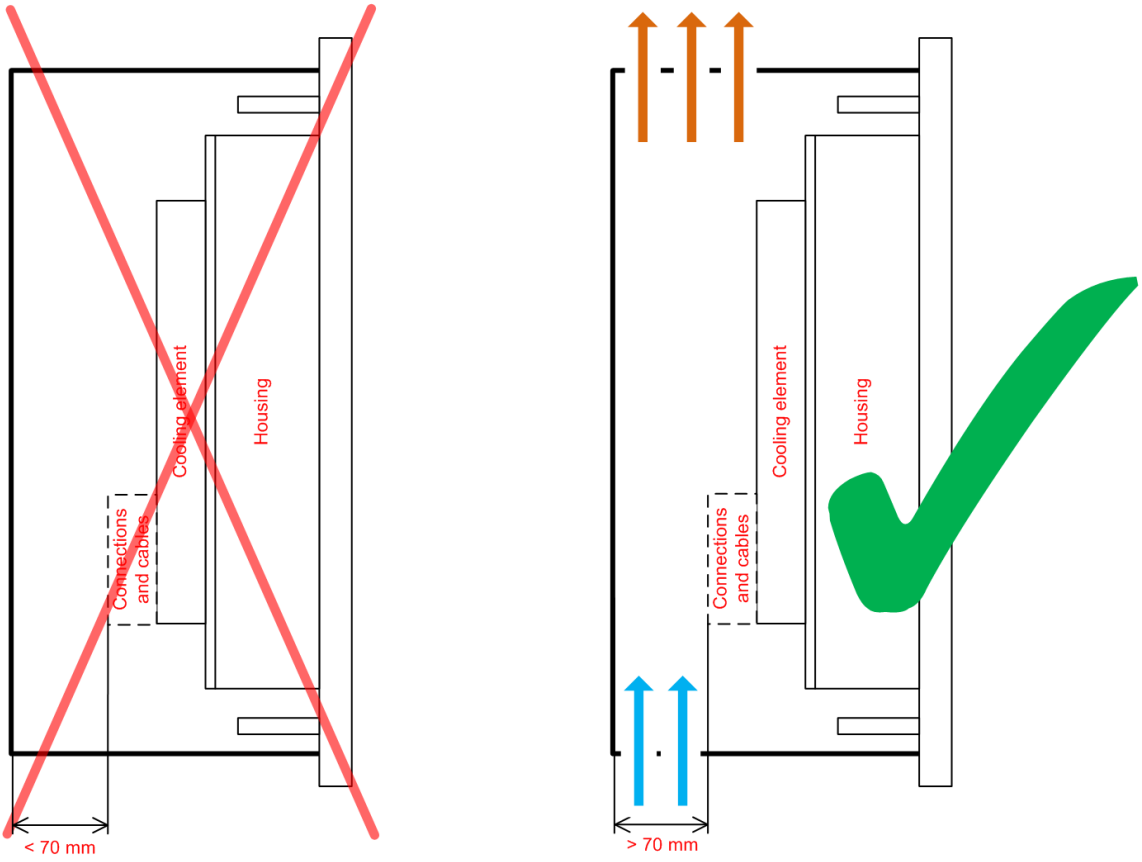


Illustration 13: Incorrect (left) and correct (right) installation in consoles

6.2.6 Correct Installation

CAUTION!

Equipment damage due to improper installation!

When installing the device, it is imperative to follow its installation instructions that are included in the device's packaging or that may be requested from the manufacturer.

In particular:

- Make sure that the surface is flat and straight so that the device does not warp and the gaskets seal properly!
- Always install the device straight, and do not tilt!
- Use the supplied mounting aid to mark the panel cutout and drill holes!
- Make sure that the bolts are not under tension or slanted (drill holes with the required precision)!
- Tighten the nuts to a maximum torque of 3 Nm (use torque wrench!).
- Tighten the screws evenly crosswise!

6.2.7 Installation

1. Install AHD 1310 F properly in the intended installation location according to technical, project drawings and its installation instructions.

NOTICE!

It is imperative to connect the device to a Data Processing Station AHD-DPU 9 or a Panel PC AHD 12XX that is configured for connection to the ship's Böning system!

NOTICE!

On delivery, AHD 1310 F is configured as specified in the project description.

This includes the integration of the ship's devices and the graphical visualization on the screen.

If the project specifications are changed, the configuration may have to be modified on-site by trained personnel.

For this, contact the manufacturer or an authorized representative.

2. Wire all the device's inputs and outputs according to technical drawings.

CAUTION!

Equipment damage due to incorrect cable connections!

Improperly connected cables can cause system errors and equipment damage.

Therefore:

- Always verify cable and wire designations before connecting them. Check for secure seating of the connecting wires in the terminals.
- To avoid short circuits, verify that all wires are connected in the terminal.
- Do not overtighten the terminals.
- When using pluggable terminal strips or plug connectors, it is imperative to ensure insertion in the correct socket and secure seating.

3. Test the system for earth/ground fault.

CAUTION!

System failure or malfunction!

During earth/ground fault, incorrect data can be transmitted and lead to overall system failure or malfunctions.

Therefore:

- Immediately correct any discovered earth/ground fault.

6.2.8 Software Update

NOTICE!

For devices configured in the factory, this step is generally not required.

If required, contact the manufacturer for more information about updating the software.

6.2.9 Configuration Transfer

NOTICE!

For devices configured in the factory, this step is only required when modifying the system configuration saved in the connected AHD-DPU 9 or AHD 12XX or the configuration of the visualization.

If required, contact the manufacturer for more information about transferring the system configuration and the visualization.

6.3 Initial Startup

6.3.1 Startup Requirements

- AHD 1310 F has been properly installed, and all required connections have been established.
- All external devices connected to AHD 1310 F have also been installed according to technical specifications and project drawings and are operational.

NOTICE!

For correct operation it is imperative to connect the device to a Data Processing Station AHD-DPU 9 or a Panel PC AHD 12XX that is configured for connection to the ship's Böning system!

- All required power supplies are available and error-free.
- AHD 1310 F and all connected external devices are not connected to the power supply or have been switched off-circuit.

WARNING!

Equipment damage and system malfunction due to messing earthing.

Earth before power-up!

Earth the device as described in the section "Earthing" on page 38!

6.3.2 Initial Startup

1. Establish the 24 V DC power supply for AHD 1310 F according to technical specifications and project drawings.
2. Establish the power supplies for all external devices connected to AHD 1310 F according to their operating instructions.
3. Check the power supplies.

> **CAUTION!**
>
> **Equipment damage due to incorrect voltage!**
>
> Connecting an incorrect supply voltage can lead to equipment damage.
>
> Therefore:
>
> – Review all relevant project documents and operation manuals of the devices used and verify their correct supply voltage and polarity before connecting them.

4. Switch on the power supply of AHD 1310 F and all connected external devices with the respective circuit breakers in the power distribution and the devices' switches according to their operation manuals.
5. When the power supply of AHD 1310 F has been established successfully, its POWER LED is lit green, the screen is switched on and shows the start page.
   A lit LED FAULT signals a device error, see the section "FAULT LED" on page 55.
6. Log any errors and functional deviations that may occur and take appropriate measures, referring to the errors described in the section "Errors" on page 54.
7. You may need to review the installed configuration and adjust it to meet the required operating conditions. Log the final configuration for the project documentation.

7 Operation

NOTICE!

The visualizations shown on AHD 1310 F and the available functions are project-specific.

Therefore, the following descriptions can only provide a description of generally available functions. For more detailed operation instructions consult the project specification or the project-specific documentation.

7.1 Switching the Panel PC On and Off

WARNING!

Equipment damage and system malfunction due to messing earthing!

Earth before power-up!

Earth the device as described in the section “Earthing” on page 38!

7.1.1 Switching On

NOTICE!

AHD 1310 F is one component of a ship alarm system with several connected external components.

For this reason, the power supplies for the complete system must be switched on to establish complete and error-free system operation.

AHD 1310 F has no switch for switching it on or off.

AHD 1310 F is switched on by switching its power supply on.

When switched on successfully, the device’s POWER LED is lit up.

A lit LED FAULT signals a device error, see the section “FAULT LED” on page 55.

The operating system and the installed software are operational after a short time, and the screen is powered on. If the screen has been powered on successfully, it shows the most recently opened visualization page.

NOTICE!

The device cannot be switched on for 5 seconds after it has been switched off!

7.1.2 Switching Off

NOTICE!

Switching the device off may trigger a device failure alarm in the Böning system.

AHD 1310 F has no switch for switching it on or off.

AHD 1310 F is switched off by switching its power supply off.

It is not necessary to shut down the built-in PC. Switching off AHD 1310 F does not damage the software or the saved configuration.

7.2 Switching the Screen On and Off

The screen is switched on or off with a long press on the SOURCE / ON/OFF button.

When the screen is switched off, the SOURCE / ON/OFF button continues to be lit.

Alarms continue to be signaled by the buzzer and by the buttons being lit and they can be acknowledged with buttons, see the section “Alarms and Alarm Acknowledgement” on page 49.

7.3 Operation with Buttons

Basic functions of AHD 1310 F are operated with buttons, independently of the project-specific operation with the visualization on the screen and with operating panels.

7.3.1 BRILL - / ACOUSTIC ACKNOWLEDGEMENT Button



Illustration 14: BRILL - / ACOUSTIC ACKNOWLEDGEMENT button

This button is used for acknowledging acoustic alarms and for reducing the display’s brightness.

During an unacknowledged acoustic alarm, the button is permanently lit red.

To acknowledge the acoustic alarm, press the button.

When there is no unacknowledged acoustic alarm or if the alarm cannot be acknowledged on the Panel PC, each button press reduces the screen’s brightness by 1%.

The set value is displayed as a bar and a number.

7.3.2 BRILL + / OPTICAL ACKNOWLEDGEMENT Button



Illustration 15: BRILL + / OPTICAL ACKNOWLEDGEMENT button

This button is used for acknowledging optical alarms and for increasing the display's brightness.

During an unacknowledged optical alarm, the button is permanently lit red.

To acknowledge the optical alarm, press the button.

When there is no unacknowledged optical alarm or if the alarm cannot be acknowledged on the Panel PC, each button press reduces the screen's brightness by 1%.

The set value is displayed as a bar and a number.

7.3.3 DEFAULT Button



Illustration 16: DEFAULT button

A short press on the DEFAULT button restores the default screen brightness.

If an external video source is selected, a short press displays version information of the device's software.

If the button is kept pressed for at least 3 seconds, the device is put in configuration mode. The screen displays a window for entering a password:



Illustration 17: Closing the window for password entry

The window can be closed by pressing the button marked red in Illustration 17.

If the correct password is entered, a visualization page is displayed on which the mode for brightness control and other device settings can be modified.

The mode for brightness control can be set with the button BRILL+ / OPTICAL ACKNOWLEDGEMENT, see the section “Brightness Control” on page 50.

7.3.4 SOURCE / ON/OFF Button

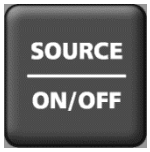


Illustration 18: SOURCE / ON/OFF button

The SOURCE / ON/OFF button is used for setting the source of the visualization and for switching the screen on and off.

A short press cycles through the video sources set for the device. When the last source has been reached, a short press selects the first one. If a source is not present, the device automatically switches to the next one.

Pressing the button for 5 seconds switches the device’s screen on or off. The button continues to be lit when the screen is switched off.

If the button is kept pressed for 5 more seconds, the buzzer and the button illumination are tested.

The button signals error messages of the Monitor Control Unit by flashing, see the section “

Error Codes of the MCU” on page 59.

7.4 Alarms and Alarm Acknowledgement

NOTICE!

Settings in the visualization may permanently disable the buzzer.

If the device is set up in the system configuration as a part of a watch duty system, the buzzer is only active, when the device is “on duty.”

In both cases, acoustic alarms continue to be signaled by lighting the BRILL - / ACOUSTIC ACKNOWLEDGEMENT button and in the visualization.

Alarms are signaled acoustically with the device’s buzzer and optically by illuminating the buttons BRILL- / BRILL + ACKNOWLEDGEMENT red and with messages in the visualization on the screen.

Alarms are acknowledged acoustically with the button BRILL- / ACOUSTIC ACKNOWLEDGEMENT and optically with the button BRILL+ / OPTICAL ACKNOWLEDGEMENT.

After acknowledgement, the respective button is lit white. Acoustic acknowledgment mutes the device’s buzzer.

Additionally, alarms can be acknowledged with buttons in the visualization.

NOTICE!

Incoming alarms are signaled on all visualization pages with a pop-up window at the screen’s bottom edge. The appearance, placement, and content are project-dependent. After optical acknowledgement, the window is closed on all pages including the alarm page.

7.5 Selecting the Video Source

Short presses of the SOURCE / ON/OFF button cycle through the video sources of AHD 1310 F in the sequence

- Böning visualization – VIDEO – Böning visualization.

When no external video source is present, the Böning visualization is displayed.

Depending on the project, the available video sources may also be selected with buttons in the visualization.

7.6 Setting the Image Format

The image format of AHD 1310 F can be set according to the properties of external video sources. For this, the display must be put in configuration mode.

Depending on the video source, not all formats listed below may be selected.

Four image formats can be selected:

- Format 1: Full screen (Default)
- Format 2: Letter box
- Format 3: Pillar box
- Format 4: Panoramic

7.6.1 Setting

1. Select the video source whose image format you want to set by pressing the SOURCE / ON/OFF button.
2. To activate configuration mode, keep the DEFAULT button pressed for at least 3 seconds.
   The DEFAULT button begins to flash green.
3. Press the BRILL- / ACOUSTIC ACKNOWLEDGEMENT button repeatedly until the desired image format is set.
   Always wait a short moment after pressing the button so that the software can process the commands.
4. To end configuration mode, keep the DEFAULT button pressed for at least 3 seconds.
   The DEFAULT button stops flashing.

NOTICE!

Depending on the selected video source, pressing the BRILL- / ACOUSTIC ACKNOWLEDGEMENT button may have no effect.

In this case, the button must be pressed until a supported image format for this video source has been set.

7.7 Brightness Control

NOTICE!

At higher temperatures, the screen brightness may be reduced automatically by the built-in overheating protection.

AHD 1310 F can be dimmed in 4 modes:

1. In Mode 1, the brightness is set automatically for each individual display with its built-in brightness sensor.

2. In Mode 2, the brightness is set automatically with the brightness sensors installed in the operating panels (AHD-DRM T/R, AHD-DC). The respective signal is sent from the operating panels to the Panel PC via the CAN bus.
3. In Mode 3, the brightness is captured by the brightness sensors of all displays and panel PCs in the CAN bus. The device uses the highest of these values.
4. In Mode 4, the brightness is set manually with the BRILL- / + / ACKNOWLEDGEMENT buttons.

7.7.1 Setting the Mode for Brightness Control

For setting the mode for brightness control, the device must be put in configuration mode.

To enter configuration mode, keep the DEFAULT button pressed for at least 3 seconds.

While the device is in configuration mode, the DEFAULT button flashes green and the BRILL+ / OPTICAL ACKNOWLEDGEMENT button flashes in turns green and twice white.

The set mode is indicated by the number of times the BRILL+ / OPTICAL ACKNOWLEDGEMENT button flashes green, before it flashes white twice again:

- 1 x green / 2 x white: Mode 1
- 2 x green / 2 x white: Mode 2
- 3 x green / 2 x white: Mode 3
- 4 x green / 2 x white: Mode 4

The mode is set stepwise by pressing the BRILL + / OPTICAL ACKNOWLEDGEMENT button:

- Mode 1 -> Mode 2 -> Mode 3 -> Mode 4 -> Mode 1…

The selected mode is indicated with the flash code explained above.

To accept the selected mode, keep the DEFAULT button pressed for at least 3 seconds. Configuration mode is ended.

7.7.2 Manual Brightness Control



WARNING!

Danger of property damage and personal injury due to poor readability!

Changing the brightness may reduce the visibility of data, especially at night.

NOTICE!

When dimming manually, the user is responsible for setting the appropriate lower limit for the brightness according to the ambient brightness!

For setting the brightness manually, Mode 4 must be set, and configuration mode must have been quit. In Mode 4 the brightness is initially set to its default minimum value (50%), which can be changed with the BRILL- /+ / ACKNOWLEDGEMENT buttons.

7.8 Testing the Buzzer and Button Illumination

To test the buzzer and the button illumination keep the SOURCE / ON/OFF button pressed for at least 10 seconds.

7.9 Screen Pages and Their Operation

The displayed visualizations are project-specific.

For more information, possibly also about the operation of AHD 1310 F with operating panels, refer to the project documentation.

8 Regular Checks and Cleaning

NOTICE!

User maintenance of the device is limited to external cleaning and inspection of the cable connections and the earthing.

The following checks must be carried out at least once a year:

- *firm connection of the cables in the terminals*
- *firm seating of the fastening screws*
- *earth connection*

Only use solvent-free, non-abrasive detergents for cleaning.

CAUTION!

Danger of injury due to dangerous voltages and other hazards!

Opening covers can expose you to dangerous voltages and other hazards.

Therefore:

- Never repair the device yourself.
- Do not remove the covers.
- In case of device malfunctions, contact the manufacturer or an authorized representative.

9 Errors

This section describes errors that may occur when operating AHD 1310 F, including information about causes, error recognition, and error correction.

9.1 Safety

9.1.1 Personnel

- Some work may only be carried out by specially trained personnel or the manufacturer. This is indicated in the description of the individual errors.
- As a rule, only electricians may work on the electrical system.

9.1.2 Basic Information



CAUTION!

Danger of injury due to dangerous voltages and other hazards!

Opening covers can expose you to dangerous voltages and other hazards.

Therefore:

- Never repair the device yourself.
- Do not remove the covers.



WARNING!

Danger of injury due to improper error correction!

Improper error correction can lead to severe personal injury and equipment damage.

Therefore:

- Do not repair the device yourself.
- Ensure sufficient installation space before beginning any work.
- Observe order and cleanness in the installation location! Parts and tools that are loosely stacked or lying about are accident sources.
- Observe correct installation procedures when parts have been uninstalled. Reinstall all mounting elements and observe torque limits.

9.1.3 In Case of Error

As a rule:

1. Determine the cause of the error.
2. Immediately inform a responsible party on-site.
3. Depending on the error type, have an authorized specialist correct it, or correct it on your own.
4. Correct the error by replacing or repairing the defective parts, for example cables, plugs, etc. or restarting the device.
5. If the error cannot be determined with the error table, a device defect cannot be excluded. Contact the manufacturer.

NOTICE!

Do not disassemble the device when sending it to the manufacturer!

Pack the device safely when sending it to the manufacturer!

If the device came into contact with hazardous substances, for example gray water, it must be professionally decontaminated before sending it in.

In this case, a declaration of decontamination must be enclosed stating the hazardous substances and certifying that the device was professionally decontaminated.

Returns without a required but not completed declaration of decontamination will not be processed.

9.2 FAULT LED

Error	Possible Cause	Diagnosis / Error Correction
Permanently ON	Internal device fault	Restart the device by switching its power supply OFF and ON. If the error persists, contact the manufacturer or an authorized representative.

9.3 Error Correction

The flash codes of the button “SOURCE / ON/OFF” are described in the section “Error Codes of the MCU” on page 59.

Status	Possible Cause	Diagnosis / Error Correction
LED POWER and buttons not lit. No visualization displayed.	Power supply failure.	Check the power supply.
No visualization displayed.	No connection to the video source.	Check the connection to the video source.
No visualization, button SOURCE / ON/OFF lit.	No error: Screen is switched off.	Switch the screen of with a long press on the button SOURCE / ON/OFF.
No current system data and alarms. Devices of the monitored system cannot be controlled.	Fault in the connection to AHD-DPU 9 or to AHD 12XX.	Check the connection to AHD-DPU 9 or AHD 12XX.
	Failure of AHD-DPU 9 or AHD 12XX.	Check the function of AHD-DPU 9 or AHD 12XX.
Incorrect processing and visualization of external data in spite of the device and the system being supplied with power and being connected.	Device is defective.	If the device does not function properly despite all efforts, contact the manufacturer or an authorized representative.
Brightness not adjusted automatically, see the section “Brightness Control” on page 50.	Brightness control is set to the mode “Manual,” see the section “Brightness Control” on page 50.	Change the mode for brightness control, see the section “Setting the Mode for Brightness Control” on page 51.
	Brightness sensor covered.	Remove the cover from the brightness sensor, see the section “Structure” on page 16.
	Faulty CAN connection to the devices from which the values for the brightness are received.	Check the connection to the devices. Check if the devices are switched on and if their brightness sensors are not covered.
	Device is defective.	If the error persists after changing the brightness control mode, checking whether the sensors are covered, and verifying the connection to other devices, the device may be defective. Contact the manufacturer or an authorized representative.
A device of the system is not visualized for the display of data or for control.	Device failure.	Check the device.
	No connection to the device.	Check the connection to the device.

Status	Possible Cause	Diagnosis / Error Correction
The failure of the device or of the connection to it is signalled as an alarm		
A device of the system is not visualized for the display of data or for control.	The configuration specifies that the device is displayed or controlled on the screen.	Select a panel PC or display on which the device is visualized.
Alarms are not signalled acoustically. On other devices alarms are signalled acoustically.	The configuration specifies that alarms are signalled acoustically on this device.	
	Buzzer is defective.	Check the buzzer, see the section “Testing the Buzzer and Button Illumination” on page 52.
	The configuration specifies that the device is part of a security monitoring system in which alarms are reported only when the device is “on duty.”	
Buttons not lit in spite of the device being switched on.	Failure of the button illumination.	Check the button illumination and the buzzer as described in the section “Testing the Buzzer and Button Illumination” on page 52. If the error persists, contact the manufacturer or an authorized representative.
Touchscreen without function.	Missing earthing.	Check the earthing.

9.4 Error Codes of the MCU

The Monitor Control Unit MCU shows its error messages as flash codes on the SOURCE / ON/OFF button.

The frequency of the green flashes indicates the error code. When several errors are active at the same time, the white LED flashes once to separate the respective codes.

When all errors have been signaled, the white LED flashes twice and the cycle begins again.

A short press of the SOURCE / ON/OFF button acknowledges the error, and the flashing stops.

A long press of the DEFAULT button displays the error code again, if errors are still present.

Number of Flashes	Explanation
1	Startup supply voltage too low
2	Waiting time after switching on the power supply too short (< 5 s)
3	Undervoltage during operation (V_{in} < 18 V) (See notice below)
4	Excess voltage during operation (V_{in} < 34 V)
More than 4	Internal device error. Contact the manufacturer or an authorized representative.

NOTICE!

At undervoltage (V_{in} < 18 V) all panel PCs and displays in the control bus except the device with the lowest ID are automatically switched off. The remaining device, for example the one with the ID "1", remains switched on to enable emergency operation. If the voltage drops below 14 V, this device is switched off too.

10 Disassembly

After the device has reached its end of life, it must be disassembled and disposed of in an environmentally safe manner.

10.1 Safety

10.1.1 Personnel

- Only specially trained personnel may disassemble the device.
- Only electricians may work on the electrical system.

10.1.2 Basic Information



CAUTION!

Danger of injury due to improper disassembly!

Stored residual energy, sharp parts, points, and edges on and inside the device or required tools can cause injury.

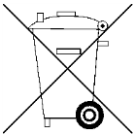
Therefore:

- Ensure adequate space before beginning any work.
- Proceed with caution when handling parts with exposed sharp edges.
- Observe order and cleanness in the workplace! Parts and tools that are loosely stacked or lying about are accident sources.
- Disassemble parts properly.
- When in doubt, contact the manufacturer.

10.2 Disassembly

- Before beginning disassembly, disconnect the device from the power supply and secure it against reconnection.
- Disconnect the cable connections and mark them, if necessary. Secure free wire ends against short circuit and earth/ground fault.
- Loosen the device mountings.
- Uninstall the device through appropriate measures.
- Clean the device for selection and disassemble it according to workplace safety and environmental protection regulations.

10.3 Disposal



In the absence of a return or disposal agreement, recycle the disassembled components:

- Scrap metals.
- Recycle plastic components.
- Dispose of the remaining sorted components according to their material properties.

CAUTION!

Environmental damages due to improper disposal!

Electrical scraps, electronic components, lubricants, and other auxiliary materials are subject to hazardous waste regulations and may be disposed of only by licensed specialist companies!

Your local authorities or specialized disposal companies can provide you with information about environmentally safe disposal.

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13 List of Abbreviations

A

ABS – American Bureau of Shipping

C

CAN – Controller Area Network

CRS – Croatian Register of Shipping

E

ESD – Electrostatic Discharge

L

LDR – Light-Dependent Resistor

LED – Light Emitting Diode

M

MCU – Monitor Control Unit

N

NTSC – National Television Systems Committee

P

PAL – Phase Alternating Line

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SHIP AUTOMATION

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