Systems
Devices
Monitoring and
Control Technology

for Ship Automation
Commercial Shipping Catalogue
Visit www.boening.com for detailed information on our systems and products, latest news, exhibition dates and much more.

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Contents

Company profile .................................................. 2
Integrated alarm, monitoring and control system ........ 4
Marine displays and computers ......................... 28
Navigation lights monitoring and control systems .......... 32
On duty / engineer call system ......................... 38
CCTV video surveillance system ...................... 42
Engine monitoring systems .................................. 52
Engine start / stop system .................................. 56
Diesel engine monitoring and safety systems .......... 60
Stand-by pumps and compressors controls .......... 66
Bow thruster control ......................................... 68
Door Access System Mini D.A.C.S. ...................... 70
DATADIS Data Acquisition & Distribution System .... 72
Operation panels ................................................. 74
Bridge Module System ......................................... 78
Communication software ..................................... 80
Reference list .................................................... 82
Device Index ...................................................... 84
Contact information ............................................. 88
For over 30 years, Böning Automationstechnologie GmbH & Co. KG has developed and manufactured devices and equipment for ship automation for commercial ships and yachts. Generally speaking, the systems are assembled from serial components to suit every ship type perfectly meeting their respective demands. Working closely together with our customers, we create solutions providing maximum safety and comfort for serial ships and individual constructions. Böning Automationstechnologie GmbH & Co. KG’s scope of delivery includes all functional elements of a signal chain. We offer not only sensors and the subsequent data capture and processing, but also display units, displays, control panels and control units for actuators. Our portfolio includes complex monitoring and control systems for diesel engines, pumps, valves, and bow thrusters as well as high quality displays with integrated touchscreen technology to visualize the entire system.

Böning increasingly features applications in the area of luxury and mega-yachts. Upon customer request, we custom-tailor solutions for monitoring and controlling on-board systems, including integrated bridges, access controls and door monitoring systems, trim tab control, search lights, as well as navigation and signal lanterns. Safety-relevant systems are type approved by the international classification societies.
Control Systems for Ship Automation

The enterprise’s cornerstone was set with the establishment of the Engineering Office Böning in 1977. In 1996, we became the Engineering Office Böning GmbH, renaming the company to Böning Automationstechnologie GmbH & Co. KG in 2003. From the onset, one of the enterprise’s main focal points was the development and production of ship automation devices and systems. The current state of development is based on many years of experience garnered from our consistently implemented strategy: problem solving through working with our customers.

Böning Automationstechnologie GmbH & Co. KG’s headquarters are located in Ganderkesee in the Greater Bremen area. In recent years, our office and production areas have grown to more than 2500 m². Currently more than 20 engineers work on developing our products. In addition, 90 skilled personnel ensure the flawless execution of our products in the production, distribution, purchasing, and administrative departments.

Since the company’s founding in 1977, the above listed systems have been installed in more than 1,000 ships. Today, the company equips several hundred yachts and commercial ships globally with monitoring and control systems every year. In addition, we are a key electronics supplier for MAN Truck & Bus AG in Nürnberg.

Böning Automationstechnologie GmbH & Co. KG has branch offices in Croatia and Brazil. The company is globally active through international distribution and service partners as well as regular participation in the industry’s most important trade fairs. We currently pursue further partnerships in the process of international expansion.

Our company is certified in accordance with DIN EN ISO 9001:2008.
Integrated alarm, monitoring and control system

Today, alarm and display systems occupy an important position on ships. The skipper needs to keep an eye on a constantly growing number of diverse systems. Böning Automationstechnologie’s compact monitoring systems contribute to operational safety by visualizing all relevant data at a glance.

The modular, decentralized system monitors, controls and visualizes the conditions of ship data and systems necessary for safe operation.

This includes, for example: Main engines and generators, Display of the power management system’s data, tanks, Fire, bilge, service, and transfer pumps, Bilge alarms, Doors and hatches, Monitoring and control of navigation lights, Integration of CCTV cameras, Conning page

Monitored data are compiled according to customer specifications, and this can be expanded to nearly any number.

Depending on their significance, changes in conditions, as well as pre and main alarms are signaled by various means. Thus, some changes in conditions are signaled optically only, while others are reported by a short acoustic signal. Through this, attention is directed to a change in condition when the helm is manned. When critical operation conditions are reached, alert messages are signaled acoustically by a whistle and optically by flashing of the measuring point.

By reporting GPS data through a serial interface, the “ground speed” is made available to the system. Depending on this speed, some of these reports trigger alarms when a predefined speed is exceeded. During harbor operation, these parameters are displayed as status messages, but during sea operation they are monitored as alarms.
The significance of individual measuring points and the display or reporting of changes in condition and alarms is indicated and can be adjusted individually by the customer. All relevant ship data are read and processed by decentralized data stations and are afterwards transmitted by redundant CAN bus lines. The measured data are displayed by display systems with 6.5”, 8.8”, 15” or 19” screen diameters. All display systems can be read with ease by daylight as well as in darkness and are also suitable for outdoor use. A standardized, glare-free nighttime-use design with automatic dimming increases ease of operation. The system is controlled via touchscreen or alternately via trackball or rotary key panel.

In addition to visualization, the following basic components are available for data acquisition and control:

- AHD-SAS 15 data station for the acquisition of 15 analog sensors
- AHD-PS 15 data station for the acquisition of 15 binary sensors
- AHD-PS 30 data station for the acquisition of 30 binary sensors
- AHD-PS 47 data station for the acquisition of 47 binary sensors
- AHD-882 centralized data distribution and/or stand-by alarm system
- AHD-R101 relay station with 15 outputs
- AHD-DPU central processing unit with 6x CAN-Bus and 28 I/O channels
- AHD-UCC CAN converter
- AHD-UIC communication module Mod-Bus/NMEA (RS422/RS484/serial)

As a manufacturer, we offer a robust technology, developed specifically for maritime use. Our products have already been installed on more than 2,000 commercial ships, often through well-known OEM partners, and they meet all standards of the leading classification societies. We offer a complete system – from sensor, to data processing tier, to front end – “Made in Germany” by a single manufacturer.


**AHD-DeviceConfig - Configuration software**

The configuration software AHD-DeviceConfig is a tool for configuring consistently and as a complete system all alarm, monitoring, control and display devices of the Böning Automationstechnologie GmbH & Co. KG, that are connectable to the system own CAN-Bus network. Basis for the configuration is normally a measuring point list, provided by the customer for a specific project, where the parameters to be configured are defined for each measuring point, i.e. based on the technical specification of applied sensor system.

These individually specified measuring point lists, which in general already exist as a software file, can be transferred comfortably into the configuration software AHD-DeviceConfig. The required quantity and kind of alarm, monitoring, control and display devices can easily be determined and registered by means of these basic data.

On the basis of this system design, the configuration software generates all required configuration parameter for each measuring point and marks corresponding register cells by colour in the internal measuring point list.

By this, the user immediately recognizes, where a data entry is still required respectively where data have to be determined and entered.

As all measuring points (input and output channels) are hold in a table, data can easily be filtered and sorted in order to inspect and change similar channels. Parameter fields can be turned on and off to show only the data of interest. Different view settings that contain filter settings, sort order, field order, visible fields, column size etc. can be stored.

Once the configuration is done, it can be transferred to the system by one button. The whole configuration can be read back from the system in case you work on a system and don't have the configuration file with you.

For diagnostic purposes, all configured measurands can be inspected online.

Additionally, AHD-DeviceConfig is used for performing the firmware update of all devices that are provided with CAN-Bus connector.
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Additionally, AHD-DeviceConfig is used for performing the firmware update of all devices that are provided with CAN-Bus connector.

**Visualisation examples for 19” displays**

Today’s large vessels have implemented lots of different systems that require being monitored and controlled. As almost every system comes with an own control panel and display, the number of such devices on a bridge rapidly grows to a point where the operator may lose the overview. Especially when regarding safety aspects, this can lead to damages and accidents.

The display systems by Böning Automationstechnologie GmbH bundle all information gathered across the entire vessel and visualize the information on the bridge on various displays. The operator has now just to switch between the different pages on a display to get access to all needed data.

A menu page shows all pages available in the system with the possibility to directly access the desired page. Every page shows the most important engine data in special rows, granting the operator knowledge about the vessel status at any time. Various displays are operated simultaneously, visualizing all kind of system data. And still the operator can select the pages he needs for the very moment – for each single display independent and with just a push of a button.

Just as it is in your car: Visualizing engine data with round display instruments and additionally with digits, the display provides information on the engine status for the operator in the most common visualization methods.

When under way, the vessel’s operator needs a general overview of critical system information. Showing main engine data, alarms, navigation lights status, speed, range and other information, the operator is able to see at a glance the most important values.

Most advanced technology requires according display instruments. A digital visualization in bar graphs is state-of-the-art, giving the operator all required information. The value itself is not the most important, but crossing critical limits is. The operator sees with the first sight all those values beyond default, as they are indicated by according colours (yellow for Warning, red for Alarm).
A vessel requires fuel, water, oil and further resources, most of them in tanks. Also slop and sewage water has to be collected in separate tanks. Bar graphs are the most adequate method to visualize tank filling states, informing the operator when a value is beyond default.

As the fuel used in vessel engines needs to be processed in advance, the transfer of the raw fuel to the daily tanks is an important task to ensure that there is sufficient processed fuel available at any time. The visualization covers the complete system, also transfer systems for sewage and slop water.

Clearing the bilge water was a hard job to do in the past, mostly performed manually. Today electric pumps have taken over, either separately or automatically switched on. The visualization gives status reports for each pump in the different sections of the vessel.

Batteries are the “life insurance” for the case the power supply from generators fails. Therefore the current battery status is a “must-know” for the operator. On this page information about DC voltage and current values as well as alarm conditions and malfunctions is displayed.
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Integrated alarm, monitoring and control system
Visualisation examples for 19" displays

Keeping the energy balance aboard a vessel is essential for functionality and safety. Failure of the generators leads to subsequent system failures, and in the worst case to a NUC situation. Thus monitoring the generator states is an important part of the bridge crew’s duties. A logical and easily visible display facilitates the task.

International shipping regulations require a constant supervision of the navigation light system. A visualization on a display offers many advantages compared to mechanical displays used up to now, providing information about from lamp status, error indications and many more. In combination with the navigation light monitoring system by Böning Automationstechnologie GmbH the operator has a comfortable, reliable and type approved system at his disposal.

Keeping the energy balance aboard a vessel is essential for functionality and safety. Failure of the generators leads to subsequent system failures, and in the worst case to a NUC situation. Thus monitoring the generator states is an important part of the bridge crew’s duties. A logical and easily visible display facilitates the task.

Knowing what happens aboard the vessel or in the near surrounding may be important. Cameras in selected positions monitor areas and sections aboard a vessel. Comfortably controlled from then bridge, the display shows the selected section of the vessel. In addition up to four camera pictures can be displayed simultaneously – for a maximum security.

Conventional bridges have the many displays for position, wind gauge and other similar information widely spread all over the panels. Visualizing these data on one single page facilitates the work for the operator and – what is most important – gives the possibility to react immediately if an emergency situation arises.
All events that occur during a specified period of time are displayed in a table. The operator has a continued overview of all events. The display allows scrolling in the table, to switch between current and older events and even between the event pages – with only one single push of a button.

In case of a failure the operator has to be informed immediately and with as many information regarding the failure as possible. A key feature of the visualization system is the presentation of alarms with according information on a special page. The operator can now inform the according crew members for finding the root cause for the alarm and removing this cause.

As all technical equipment also the visualization comes with a comprehensive help page, providing information such as user manuals, troubleshooting and other items needed for the operation of the system.

Containing information about the settings of the system, this page is useful for the global operation of the ship.
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The visualization systems by Böning Automationstechnologie GmbH are designed for serving on vessels around the world. A broad range of settings allows the configuration of the visualization system according to operator’s demands and requirements.

Lighting control and monitoring from a central point is not only comfortable, but also efficient. In case of a failure the operator has to be informed immediately and with as many information regarding the failure as possible. A key feature of the visualization system is the presentation of alarms with according information on a special page. The operator can now inform the according crew members for finding the root cause for the alarm and removing this cause.

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### Integrated alarm, monitoring and control system

Alarm and visualization systems take an important place on modern ships. The volume of information is constantly increasing. It is therefore of great importance to collect data carefully for diagnostic purposes.

The Böning Automationstechnologie GmbH has taken up this challenge by developing a modular and decentralized ship alarm and control system for professional use.

The following visualization examples are designed for display units AHD 880 TC. Graphics are created by “AHD Display Designer” software package. It allows creating customized visualization pages.

Böning Alarm & Monitoring System is defined as a combination of systems which are interconnected in order to allow centralized access to sensor information or command/control from workstations, with the aim of increasing safe and efficient ship’s management by suitably qualified personnel.

The Böning Alarm & Monitoring System is prepared to work with and to integrate other Böning devices as well as other manufacturers’ systems, such as generator and power supply systems. It consists of visualization units on several locations that are able to receive all the information from the sensors of the ship through a connection with the CAN Bus Network.

Behind the screens, the ship alarm system data stations receive and transmit data for the sensors and actuators, and communicate with each other via CAN Bus network, a high-speed data network, designed to connect electronic units, largely applied in the automotive, aero and maritime industry.

### Visualisation examples for 8.8” displays

Starting the system will bring up the menu page, containing direct links to various pages in the system. The items on the pages and the page designs are freely selectable, according to customer requirements. The number of subpages is also selectable for each page. The top of each page contains basic items, such as time, page name and an alarm indicator, informing the operator about alarms for a fast response.

General information about the engines states are displayed on the engine page, as for example engine speed, oil pressure, coolant temperature and other engine-related data.

The generator system data shows the status of generators and power supply.

A vessel's tanks for fuel, water, grey and black water require permanent and accurate monitoring, and a visualisation helps the operator to take appropriate measurements in time when a tank has reached default limit values.
International shipping regulations require a constant supervision of the navigation light system. A visualization on a display offers many advantages compared to mechanical displays used up to now, providing information about from lamp status, error indications and many more. In combination with the navigation light monitoring system by Böning Automationstechnologie GmbH the operator has a comfortable, reliable and type approved system at his disposal.

Monitoring doors and hatches from one or more central points increases safety aboard the vessel.

Transferring liquids from one tank to another is conveniently easy with a clear visualisation of the systems involved. The pumps and valves page is designed according to the vessel's requirements.

Being informed about what is happening aboard the vessel is a main duty of the operator. Remote controlled cameras in selected areas of the vessel help increasing the security. The CCTV system consists of various cameras, sending their pictures to the control panel. Additional features as for example recording functions can contribute to a convenient operation.

With a comfortable switching of lights from a central point the operator can easily switch on or off lights in predefined areas, increasing security aboard the vessel.

The visualization gives status reports for each bilge pump in the different sections of the vessel, combined with according alarms when default limits are reached.

In case of a fire time is critical. Therefore a fast and precise localisation of the fire helps operator and fire guards to take adequate measurements. The display shows the exact point where the fire is registered.

Providing information about the throttle system, this page returns the commands given to the engines by the throttle system, ensuring that the selected speed is actually provided by the engines.
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Providing information about the throttle system, this page returns the commands given to the engines by the throttle system, ensuring that the selected speed is actually provided by the engines.

At a glance: all necessary information regarding position, speed and heading.

An alarm page provides a list of all currently active alarms and warnings, including text message, the value and the time the alarm was triggered.

This page includes general information as for example vessel characteristics, configuration and similar items. Freely selectable, the owner can decide what this page should display.

With settings the display is adapted to the operator demands, such as language and correct time and date. Giving way to the page “Advanced Settings”, the operator can view and set other items such as Measuring points or receive information about the visualisation system itself.
**AHD 1219 F** Art. No. 14067 / **AHD 1219 G** Art. No. 14059

19“ LCD colour display panel PC

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![AHD 1219 F](image)

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>60 W</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>454 mm x 384 mm x 115 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 66 front/IP 20 back</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 10.0 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +55°C (-30°C...+70°C at interior console temp. of max.+45°C)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C… +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR (in progress)</td>
</tr>
</tbody>
</table>

Sunlight readable 19“ LCD colour display panel PC for console or panel installation as central presentation platform of alarm and monitoring systems. Components exclusive of movable parts (hard discs, fans) and with passive cooling system, thereby insusceptible to shock and noiseless.

AHD 1219 G features a bonded touch screen.

Resolution: SXGA 1280(H) x 1024(V) Pixels; luminous intensity: approx. 1000 cd/m²; best readability at all ambient light conditions; LED backlight manually or automatically controllable.

Processor: 1.3 GHz Dual Core, RAM 2 GB, internal memory 4 GB.

Interfaces: 6 x CAN, 1 x RS232, 2 x LAN, 2 x USB 2.0, 1 x DVI-D, 1 x VGA, 1 x Video IN (BNC, PAL 50 Hz), Digital IN (4 x optocoupler), Digital OUT (5 x relay output)

Also available with white glass front.

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**AHD 1215 F** Art. No. 14066

15“ LCD colour display touch panel PC

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![AHD 1215 F](image)

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>50 W</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>384 mm x 324 mm x 115 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 66 front/IP 20 back</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 10.0 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +55°C (-30°C...+70°C at interior console temp. of max.+45°C)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C… +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR (in progress)</td>
</tr>
</tbody>
</table>

Sunlight readable 15“ LCD colour display touch panel PC for console or panel installation as central control and presentation platform of alarm and monitoring systems with operation via touch screen.

Resolution: XGA 1024(H) x 768(V) Pixels; luminous intensity: appr. 1400 cd/m²; best readability at all ambient light conditions; LED backlight manually or automatically controllable; display optically bonded; components exclusive of movable parts (hard discs, fans) and with passive cooling system, thereby insusceptible to shock and noiseless.

AHD 1215 G features a bonded touch screen.

Resolution: SXGA 1280(H) x 1024(V) Pixels; luminous intensity: approx. 1000 cd/m²; best readability at all ambient light conditions; LED backlight manually or automatically controllable.

Processor: 1.3 GHz Dual Core, RAM 2 GB, Flashdisk 4 GB.

Interfaces: 6 x CAN, 1 x RS232, 1 x COM, 2 x USB 2.0, 1 x DVI-D, 1 x VGA, 1 x Video IN (BNC, PAL 50 Hz), Digital IN (4 x optocoupler), Digital OUT (5 x relay output)

Also available with white or black glass front (AHD 1215 G).
AHD 880 TC  Art. No. 11413  
8.8” touch screen colour display

Sunlight capable, transflective 8.8” LCD colour display for console or panel installation with operation via touchscreen; multiple screens for tabular and graphical presentation of data inclusive alarm table with all currently existing alarms.

Resolution: 640(H) x 240(V) Pixels; luminous intensity: 250 cd/m²; transflective; best readability at all ambient light conditions; automatic backlight control

Compact and robust housing with integrated alarm buzzer

Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>20 W</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>270 mm x 130 mm x 79 mm</td>
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<tr>
<td>Degree of protection</td>
<td>IP 66 front / IP 55 back</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 2.2 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR</td>
</tr>
</tbody>
</table>

Interfaces: 3 x CAN, 1 x Video In (Composite Video, PAL 50 Hz), 1 x RS232 (GPS), 1 x Remote (Optocoupler input for remote control), 1 x binary input, 2 x relay output contact 40 V DC/1A

AHD 651  Art. No. upon request  
6.5” colour display

Sunlight capable, transflective 6.5” LCD colour display for console or panel installation with operation via integrated keyboard; multiple screen pages for tabular and graphical presentation of data inclusive alarm table with all existing alarms, push button for audible and visual alarm acknowledgement; automatic backlight control; compact and robust housing with integrated alarm buzzer

Resolution: 400(H) x 240(V) pixels; luminous intensity: 200 cd/m², transflective; best readability at all ambient light conditions;

Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>20 W</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>210 mm x 130 mm x 95 mm</td>
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<tr>
<td>Degree of protection</td>
<td>IP 67 front / IP 55 back</td>
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<tr>
<td>Weight</td>
<td>approx. 1.5 kg</td>
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<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR</td>
</tr>
</tbody>
</table>

Interfaces: 2 x CAN (with in- and output plug connector), 1 x RS232 (GPS), 1 x Remote (4 x optocoupler for remote control), 1 x binary input, 2 x relay output contact 40 V DC/1A
Group tableau for group alarm messages; microprocessor controlled device for console, panel or switchbox installation with terminal block for profile rail installation as connection module; each text field illuminated by two block LED (red, green or yellow) with automatic dimming.

Control unit available in versions for 16, 24, 32, 40, 47 group alarm messages. Custom-specific group tableaus according to control unit outputs.

Specifications

<table>
<thead>
<tr>
<th>Power supply:</th>
<th>24 V DC (+30%/-25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption:</td>
<td>200 mA</td>
</tr>
<tr>
<td>Dimension (W x H x D):</td>
<td>192 mm x 144 mm x 66 mm</td>
</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 44 front / IP 20 back</td>
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<tr>
<td>Weight:</td>
<td>approx. 1.0 kg</td>
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<td>Operating temperature:</td>
<td>-25°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-30°C … +85°C</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, CRS</td>
</tr>
</tbody>
</table>

individual measuring point text (only text) on common film negative, unused fields shaded deep black; integrated alarm buzzer, acknowledgment via binary input; suitable for indoor installation

Interfaces: 3 serial inputs (TTY) for acquisition of group messages i.e. from up to 3 alarm- and indication units Kompakt EDA 47 or from central unit AHD 882, 4 serial outputs, 4 binary inputs, 2 relay outputs (50 V DC/1A)

Display operating panel for operation of Böning 15" to 19" colour displays with integrated PC and monitor; compact unit for installation in consoles or control panels resp. for integration into the arm rest of the pilot chair; comfortable control of display menus and visualization by means of trackball as well as operating push buttons in the front panel of the device

Specifications

<table>
<thead>
<tr>
<th>Power supply:</th>
<th>24 V DC (+30%/-25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption:</td>
<td>40 mA</td>
</tr>
<tr>
<td>Dimension (W x H x D):</td>
<td>70 mm x 130 mm x 74 mm</td>
</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 65 front / IP 10 back</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 0.3 kg</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>

operating elements illuminated and automatically dimmed; control of single or multiple displays (in combination with operating panel AHD-DC)

Interfaces: 1 x CAN (Control CAN, connection to CAN 5 of displays resp. CAN of monitors)
### AHD-DRM R  
Art. No. 13281  
Control panel for displays

Display operating panel for operation of Böning 15” to 19” colour displays with integrated PC and monitor; compact unit for installation in consoles or control panels resp. For integration into the arm rest of the pilot chair; comfortable control of display menus and visualisation by means of ergonomic rotary push drive as well as operating push buttons in the front panel of the device.

### Specifications

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>40 mA</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>70 mm x 130 mm x 86 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 66 front/ IP 10 back</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.3 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>

### AHD-DRM R  
Art. No. 13281  
Control panel for displays

Display control panel to operate Böning 15” to 19” colour displays with integrated PC and monitor; compact unit for console or panel mounting or integration into the armrest of a helm chair; central control of up to eight display units of a panel with selection the signal source and usage of the display menus and the visualization of control buttons in the front.

### Specifications

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>40 mA</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>70 mm x 130 mm x 66 mm</td>
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<tr>
<td>Degree of protection</td>
<td>IP 66 front/ IP 10 back</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.3 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>
Remote control unit for 6.5” colour displays AHD 650, AHD 651 as well as 8.8” colour displays AHD 880 TC and AHD 880 E

Compact housing for console or panel installation with 5 illuminated operating push buttons, which allow operation of all display functions except switching on and off; connection via 8-pole plug connector (plug) on rear side of the unit.

**AHD-SAS 15**  Art. No. 11663
Data station for analogue and binary sensors

Data station for acquisition, processing and monitoring of analog and binary measuring values (current, voltage, resistance, thermo couples, contacts etc.); microprocessor-controlled unit with base plate for bulkhead installation; 15 input channels individually equipped with pluggable analog modules; connection of binary data stations for max. 94 additional binary inputs.

**Specifications**
- Power supply: 24 V DC (+30% / -25%)
- Current consumption: 520 mA
- Dimension (W x H x D): 216 mm x 116 mm x 53 mm
- Degree of protection: IP 20
- Weight: approx. 0.7 kg
- Operating temperature: -30°C ... +70°C
- Storage temperature: -50°C ... +85°C
- Approvals: GL, LR, DNV

Applicable as independently operated alarm and monitoring system

Interfaces: 2 x CAN (CAN1 plug connector, CAN2 terminal list), 2 x serial input, 2 x serial output, relay outputs (horn, common alarm, 2 x freely configurable), alarm acknowledgement input

Also available for wall installation (Art. No. 10786).
**AHD-PS 47 Art. No. 10864**  
Data station for binary sensors

Binary data station for decentralized acquisition of binary signals (contacts, transistors, proximity switches etc.); conversion into a serial output signal; electronic unit with profile module housing for profile rail installation;

47 optocoupler inputs for binary signals with status LED indication; 3 optocoupler outputs for serial transmission of output signals with status LED indication (S1: two-pole, galvanically isolated, S2: emitter, plus-switching, S3: open-collector, minus-switching)

---

**Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
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<tr>
<td>Current consumption</td>
<td>50 mA</td>
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<tr>
<td>Dimension (W x H x D)</td>
<td>281 mm x 90 mm x 53 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 10</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.5 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR, DNV</td>
</tr>
</tbody>
</table>

connection via pluggable terminal list with cage clamp terminals

Integrated test button for testing of input circuits for short to earth/ground

---

**AHD-PS 30 Art. No. 10375**  
Data station for binary sensors

Binary data station for decentralized acquisition of binary signals (contacts, transistors, proximity switches etc.); conversion into a serial output signal; electronic unit with profile module housing for profile rail installation;

30 optocoupler inputs for binary signals with status LED indication; 3 optocoupler outputs for serial transmission of output signals with status LED indication (S1: two-pole, galvanically isolated, S2: emitter, plus-switching, S3: open-collector, minus-switching)

---

**Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>30 mA</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>193 mm x 90 mm x 53 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 10</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.35 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR, DNV, CRS</td>
</tr>
</tbody>
</table>

connection via pluggable terminal list with cage clamp terminals;

Integrated test button for testing of input circuits for short to earth/ground
Binary data station for decentralized acquisition of binary signals (contacts, transistors, proximity switches etc.); conversion into a serial output signal; electronic unit with profile module housing for profile rail installation;

15 optocoupler inputs for binary signals with status LED indication; 3 optocoupler outputs for serial transmission of output signals with status LED indication (S1: two-pole, galvanically isolated, S2: emitter, plus-switching, S3: open-collector, minus-switching)

**Specifications**
- **Power supply:** 24 V DC (+30%/-25%)
- **Current consumption:** 25 mA
- **Dimension (W x H x D):** 113 mm x 90 mm x 53 mm
- **Degree of protection:** IP 10
- **Weight:** approx. 0.2 kg
- **Operating temperature:** -30°C … +70°C
- **Storage temperature:** -50°C … +85°C
- **Approvals:** GL, LR, DNV, CRS

Connection via pluggable terminal list with cage clamp terminals;
Integrated test button for testing of input circuits for short to earth/ground

Universal CAN converter for acquisition and conversion of data from communication protocols of external CAN bus networks into Böning AHD-SAS CAN bus network; CAN bus networks galvanic isolated, microprocessor-controlled unit with a rugged aluminium housing for wall mounting; listen only NMEA 2000® certified products

Interfaces: 1 x CAN (AHD-SAS network), 1 x CAN to external systems

**Specifications**
- **Power supply:** 24 V DC (+30%/-25%)
- **Current consumption:** 55 mA
- **Dimension (W x H x D):** 140 mm x 82 mm x 44 mm
- **Degree of protection:** IP 56
- **Weight:** approx. 0.45 kg
- **Operating temperature:** -30°C … +70°C
- **Storage temperature:** -50°C … +85°C
- **Approvals:** GL, LR

Adaptable external data protocols: NMEA 2000®, SAE J1939
Engines: Caterpillar, Cummins, MAN, MTU, Scania, Volvo
Generators: Onan, Kohler, Fischer Panda
Charger: Mastervolt
Various: Auto anchor, Offshore Systems, Dometic Air Condition, Furuno, Bosch Rexroth BODAS
Also applicable as repeater unit on long distances in AHD-SAS CAN bus network
Relay station with 15 relay outputs; serially controlled by data stations or control devices; microprocessor controlled device unit with profile module housing for profile rail installation in consoles, panels or switchboxes; suitable for cable reduction in systems separated by open ground and for realization of measuring transducers by serial-parallel data conversion

**Specifications**

- **Power supply:** 24 V DC (+30%/-25%)
- **Current consumption:** 350 mA
- **Dimension (W x H x D):** 112 mm x 146 mm x 48 mm
- **Degree of protection:** IP 10
- **Weight:** approx. 0.55 kg
- **Operating temperature:** -30°C … +70°C
- **Storage temperature:** -50°C … +85°C
- **Approvals:** GL, LR, DNV

15 relay outputs with potentialfree change-over contacts 230 V AC/DC, 3A with status LED indication (activated with engaged relay); 2 optocoupler inputs for serial transmission of control signals with status LED indication; connection via pluggable terminal list with screw terminals

Protocol converter for reactionless acquisition and conversion of analog and binary measuring point data from external systems with Modbus RTU communication protocol into Böning AHD-SAS Can bus network; cyclic acquisition of up to 100 Modbus data packets; configurable data processing; microprocessor-controlled unit with profile module housing for profile rail installation; redundant system available with combination of two devices (Master/Slave)

**Specifications**

- **Power supply:** 24 V DC (+30%/-25%)
- **Current consumption:** 85 mA
- **Dimension (W x H x D):** 135 mm x 130 mm x 55 mm
- **Degree of protection:** IP 20
- **Weight:** approx. 0.35 kg
- **Operating temperature:** -30°C … +70°C
- **Storage temperature:** -50°C … +85°C
- **Approvals:** GL, LR

Interfaces: 2 x RS485 (galvanically isolated), 1 x CAN (AHD-SAS), 1 x Rs232, 1 x LAN
- **Engines:** MAN, MTU, Volvo, ComAp, SymAp
- **Charger:** Mastervolt, Victron Energy (DC power); Deif (AC power)
- **Fire Monitoring:** Kentech, Consilium
- **Lighting control:** Cantalupi
- **Stabiliser:** ABT, Sleipner, Trac
- **Generator:** CAT
- **Various:** Maxwell
The AHD-RB6 is an electronic circuit breaker (ECB) for six channels with CAN-Bus connection for connecting, controlling and monitoring of electrical loads up to 16 A / 24 V DC per channel.

Optionally 4 channels on each card can be connected to 2 channels increasing the switching capacity to 28 A for each double channel.

The maximum current can be separately adjusted for each channel to 6.3 A, 10 A or 16 A, providing according protection for all cables with corresponding dimensioning. The maximum current on the main input is 96 A. The current of each channel is measured separately, enabling the AHD-RB6 to be used for example as a power management device. The recorded current values can be evaluated over CAN bus and visualized on displays and monitors. Each channel can be manually controlled with an override switch, ensuring safe operation even with a failure of the electronic system or a CAN bus failure.

Pos. 1: ON (Override function, the controller is switched to bypass; the output is switched on (hardware), even with failure of the electronic system).

Pos. 2: AUTO (the output is switched and supervised by the controller).

Pos. 3: OFF (Override function, the controller is switched to bypass, the output is switched off and secured from being switched on over the CAN bus).

The switches 2 and 6 incorporate an additional switching position (SL 1 / SL 5) for connecting channels 1 / 2 and 5 / 6 for increased output currents (Slave operation). For this the 2-pole output 1/5 and the 4-pole output 2/6 are bridged with cables (4 mm²). The load can be connected to the 4-pole terminal.

Features:
- Switching Range up to 16 A per channel / 28 A for connected channels (Slave channel)
- Operating voltage 24 V DC (-30% / +25%)
- Switching voltage 24 V DC
- 6 channels output; 6 channels input for light switches, float switches or other contacts, independently configurable

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Power consumption:</td>
<td>220 mA</td>
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<tr>
<td>Dimension (W x H x D):</td>
<td>219 mm x 125 mm x 70 mm</td>
</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 20</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 1.6 kg</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>-30°C… +70°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-50°C… +85°C</td>
</tr>
<tr>
<td>Maximum load:</td>
<td>6x16A = 96A / 24V DC</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR (in progress)</td>
</tr>
</tbody>
</table>

Each channel can separately be configured for dimming of lighting, where a different dimming value can be assigned to each channel over CAN bus (display) or by pushbutton.

If a pushbutton is used for dimming, a short pressing of the button switches the lighting on or off, while pressing and holding the button activates the dimming function (dimming from bright to dark or from dark to bright, respectively).

Two AHD-RB6 in a row can serve as security switches: This is best explained in a short example. Channel 1 of the first circuit breaker controls a cooler fan. If this channel is switched off, channel 1 of the second circuit breaker, controlling the backup cooler fan, is automatically switched on, ensuring a constant cooling.
The AHD-DPU is a central data station for all signals and data generated on a ship. With the AHD-DPU for example various sensor data as well as ship alarm system messages can be acquired, processed and made available within a ship system over the Böning SAS bus. In addition status reports such as standby duties or alarms can be processed and logged. The event logging memory is capable of storing up to 16500 entries. The information is visualised on up to seven displays for each AHD-DPU over Ethernet connection. Various interfaces facilitate the integration into the ship infrastructure. The AHD-DPU is able to perform mathematical and logical operations (PLC functionality).

Central unit for integrated ship alarm, monitoring and control systems; microprocessor controlled device for profile rail installation; 18 serial input channels for decentralized connection of external data stations and processing devices for up to 846 measuring points; processing of binary status data and analog limit values with alarm, display and control management; 16 serial output channels for distribution of processed data to external display and control units (i.e. groups, cabin alarm tableaus, relay units)
**AHD-CUC**  
Art. No. 13291  
CAN-USB Converter

CAN-USB for control of external PC-systems, whose video sources are connected to Böning colour displays for visualization; configurable assignment of operating elements of devices of the Böning AHD-SAS CAN bus network (i.e. AHD-DC, AHD-DRM R, AHD-DRM T) to mouse and keyboard commands of the external PC; conversion and transmission of control commands via standard USB interface of external PC; configurable assignment of operational video source of external PC with automatic detection on selection with preconfiguration for up to 10 colour displays.

### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply:</strong></td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td><strong>Current consumption:</strong></td>
<td>30 mA</td>
</tr>
<tr>
<td><strong>Dimension (W x H x D):</strong></td>
<td>93 mm x 125 mm x 89 mm</td>
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<tr>
<td><strong>Degree of protection:</strong></td>
<td>IP 20</td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td>approx. 0.25 kg</td>
</tr>
<tr>
<td><strong>Operating temperature:</strong></td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td><strong>Storage temperature:</strong></td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>

Interfaces: 1 x CAN (AHD-SAS, Control CAN bus), 1 x USB; Supports Windows XP© (support for Windows 7© in preparation)

**Integrated alarm, monitoring and control system**

Given that the reception is good, the system forwards the alarm via the GSM modem to the predefined telephone number.

Before using the system the operator has to set the telephone number, the PIN of the SIM card and then to activate the system, for example when the ship is not under way and only a small crew is aboard.

The configuration of the system can be performed on the Settings Page. When activating the button “SMS Alarming”, a configuration page appears where all necessary settings can be done.

**AHD-AMU**  
Alarm and Messenger Unit  
Art. No. upon request  

The AHD-AMU Alarm and Messenger Call System is an additional alarming system for integration into the ship alarm and monitoring system, including a quad band GSM modem and a suitable mobile telephone antenna.

It is connected via serial line to a visualization unit to the Böning alarm system and transmits clear text status information to a mobile phone number at arising of an alarm in order to inform a captain, skipper or owner about the incident.

The data transmission of the information is performed by short message service (SMS). All kind of standard mobile telephones are supported. A special application (App) on the mobile telephone is not required.
The AHD-AMU Alarm and Messenger Call System is an additional alarming system for integration into the ship alarm and monitoring system, including a quad band GSM modem and a suitable mobile telephone antenna.

It is connected via serial line to a visualization unit to the Böning alarm system and transmits clear text status information to a mobile phone number at arising of an alarm in order to inform a captain, skipper or owner about the incident.

The data transmission of the information is performed by short message service (SMS). All kind of standard mobile telephones are supported. A special application (App) on the mobile telephone is not required.

Given that the reception is good, the system forwards the alarm via the GSM modem to the predefined telephone number.

Before using the system the operator has to set the telephone number, the PIN of the SIM card and then to activate the system, for example when the ship is not under way and only a small crew is aboard.

The configuration of the system can be performed on the Settings Page. When activating the button “SMS Alarming”, a configuration page appears where all necessary settings can be done.
AHD - SW I  Art. No. 10873
Spill warning gauge

Spill warning gauge for monitoring of one fuel tank with installed Böning ship alarm system; LED-scale for tank level display; acoustic and optic alarm signalling on impending fuel spilling; alarms are transmitted to ship alarm system; installation of several gauges per tank possible; automatic LED dimming

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Current consumption:</td>
<td>20 mA</td>
</tr>
<tr>
<td>Dimension (Ø x D):</td>
<td>100 mm x 39 mm</td>
</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 67 front / IP 31 back</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 0.4 kg</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>-10°C … +65°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-10°C … +65°C</td>
</tr>
</tbody>
</table>

AHD - SW II  Art. No. 10874
Spill warning gauge

Spill warning gauge for monitoring of portside and starboard fuel tanks with installed Böning ship alarm system; LED-scales for tank level display; acoustic and optic alarm signalling on impending fuel spilling; alarms are transmitted to ship alarm system; installation of several gauges per tank possible; automatic LED dimming

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Current consumption:</td>
<td>20 mA</td>
</tr>
<tr>
<td>Dimension (Ø x D):</td>
<td>100 mm x 39 mm</td>
</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 67 front / IP 31 back</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 0.4 kg</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>-10°C … +65°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-10°C … +65°C</td>
</tr>
</tbody>
</table>

Hydro-Static Level Transmitter for shipbuilding and offshore. Suitable for level measurement in ballast tanks, tanks for fuel and oil tanks and service and waste water tanks etc. as well as for ship trim/list and draft measurement.

Capacitive ceramic sensor

Material: 1.4571; optionally CuNiFe

Submersible or flange version

Nominal pressure ranges from 0 … 40 mbar to 0 … 20 bar (0 … 40 cmWC to 0 … 200mWC)

AHD-S 201

Hydro-static level transmitter

Art. No. upon request

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High overload capacity and chemical resistance</td>
<td></td>
</tr>
<tr>
<td>Small thermal effect, excellent linearity, good long term stability</td>
<td></td>
</tr>
<tr>
<td>Accuracy 0.25 % / 0.10 % FSO IEC 60770</td>
<td></td>
</tr>
<tr>
<td>Optional: EX-version (only for 4 … 20 mA / 2-wire)</td>
<td></td>
</tr>
<tr>
<td>Optional: cable protection; diaphragm of Al2O3 99.9 %; customer-specific versions</td>
<td></td>
</tr>
</tbody>
</table>

Approvals:

GL, DNV

Accessory for CAN bus interconnection of Böning devices, consisting of:

CAN-Terminal – CAN bus interface module. It includes a CAN bus connection feedthrough socket via 6-pin terminal strip (2 x CAN-H/CAN-L/CAN-Shield) and/or DeviceNet connectors (1x male/1x female). In addition, a switchable terminating resistor is integrated. The module housing is intended for rail mounting.

DeviceNet

CAN bus accessories

Art. No. upon request

DeviceNet-Drop cable, Cable endings with 5-pole plug connector (plug/socket), length: 0.3 / 2 / 10 / 15 / 25 / 55 (m); T-Piece for DeviceNet-Modules, cable endings with 5-pole plug connectors (plug/2 x socket); Termination Resistor provided with 5-pole plug connector (plug or socket)

Accessory for serial connections (not on picture), consisting of: Serial Data Cable, L = 15.0 m, cable endings with 4-pole plug connector Lumberg M12 (socket/socket); length: 15 / 20 / 25 (m)
### Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
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<tr>
<td>Current consumption</td>
<td>21 mA</td>
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<tr>
<td>Dimension (Ø x L)</td>
<td>39.5 mm x 132.5 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 68</td>
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<tr>
<td>Weight</td>
<td>0.65 kg (without cable)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-25°C ... +125°C / -25°C ... +80°C cable</td>
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<tr>
<td>Storage temperature</td>
<td>-40°C ... +100 °C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, DNV</td>
</tr>
</tbody>
</table>

High overload capacity and chemical resistance
Small thermal effect, excellent linearity, good long term stability

Accuracy 0.25 % / 0.10 % FSO IEC 60770
Optional: EX-version (only for 4 … 20 mA / 2-wire)
Optional: cable protection; diaphragm of Al2O3 99.9 %; customer-specific versions
Marine displays and computers

All displays in our product range have been designed with the target to provide the best possible platform for graphical interfaces fulfilling this premise. The main display functions are identical throughout the product range. Brightness is always automatically adapted to ambient lighting conditions, preventing glaring at night and ensure optimal readability in direct sunlight. Display housings are waterproof and flush-mounted for integration into consoles or switchboards.

Most displays can be operated via touch screen or remote controls, both especially designed for use in rough conditions. No moving mechanical parts are used, ensuring maintenance-free hardware that operates absolutely silent and is shock resistant. For a wider range of visualisation options, many displays come with video screen functionality to give the user access to external data sources.

Visualisation by Böning puts an end to confusing agglomeration on bridges and delivers only direct and definite information!
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Visualisation by Böning puts an end to confusing agglomeration on bridges and delivers only direct and definite information!

### Specifications

**AHD 1119 F**  
Art. No. 14070 / AHD 1119 G  
Art. No. 14063

19" LCD colour display

- **Power supply:** 24 V DC (+30%/ -25%)
- **Power consumption:** 50 W
- **Dimension (W x H x D):** 454 mm x 384 mm x 99.5 mm
- **Degree of protection:** IP 66 front / IP 20 back
- **Weight:** approx. 10.0 kg
- **Operating temperature:** -30°C … +55°C (-30°C...+70°C at interior console temp. of max. +45°C)
- **Storage temperature:** -50°C … +85°C
- **Approvals:** GL, LR (in progress)

Sunlight readable 19" LCD colour display for console or panel installation as presentation platform of alarm and monitoring systems.

Resolution: SXGA 1280(H) x 1024(V) pixels; luminous intensity: appr. 1000 cd/m²; best readability at all ambient light conditions; LED backlight manually or automatically controllable; AHD 1119 G features a bonded touch screen.

Interfaces: 2 x CAN, 1 x RS232, 1 x USB 2.0, 1 x DVI-D, 1 x VGA, 1 x Video IN (BNC, PAL 50 Hz)

### Specifications

**AHD 1119 G**

Also available with white glass front.

Also available as 1115 G with glass front.
**Black box computer system; robust design for console or panel installation with integrated powerful computer system as central data management and control and platform for alarm and monitoring systems with novel operation concept;**

max. resolution: XGA 1024(H) x 768(V) pixels for 15” display; / max. resolution: SXGA 1280(H) x 1024(V) pixels for 19” display;

components exclusive of movable parts (hard discs, fans) and passive cooling system, thereby insusceptible to shock and noiseless

**BIBS - Integrated Bridge System**

The BIBS Integrated Bridge System is designed as the central control and presentation platform, where all data existing in the system are processed and visualized. Therefore, 19” AHD 1219 colour displays with integrated PC (Panel Computer) are installed in bridge control console, which are controlled by a novel operation concept. By means of a control CAN bus, each AHD 1219 colour display (max. 8 displays) can be selected and operated centrally by an operating panel AHD-DC. Additionally, each AHD-DC unit is combined with an operating panel AHD-DRM T, which allows comfortable control of system menus and operating elements in graphical visualization by means of a trackball. AHD-DC and AHD-DRM T are installed as operating stations within the bridge control console. Anyhow, the units may also be fitted i.e. into the arm rest of the pilot chair.

The data of all connected systems are graphically formatted and visualized individually on colour displays with inclusion of ships graphics and general arrangement plans. Following functions are displayed and controlled:

- Furuno NAVNET 3D for navigation with sea charts and Radar (via DVI interface and integration of the Furuno control via CAN-USB converter AHD-CUC).
- Data visualization of main engines port and starboard (via separated engine CAN bus per engine).
- Interconnection with ship alarm and monitoring system, Tank monitoring system with continuous tank content measurement with hydrostatic tank level probes, Door monitoring of all relevant doors, hatches and flaps, alarm signaling depending of ship speed.
- Integration of CCTV camera control (video signal via video input of displays), Display and control of navigation and signal lights, Visualization of generator data and power management system from foreign manufacturers, Monitoring of fuse automats with remotely operated re-engagement, Interfacing of the fire detection system, Conning page with convenient presentation of all relevant, information like depth sounding progress and indication of roll and pitch movement of the ship, Visualization of windlass data with chain link counter and alarm function, Control of pumps and valves.

In order to comply with equipment requirements of classification societies, the BIBS Integrated Bridge System is completed by two additional 19” colour displays AHD 1119.

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**AHD 1200 Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>1.9 A</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>384 mm x 324 mm x 91.5 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 20</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 10.0 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30 °C... +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C... +85°C</td>
</tr>
</tbody>
</table>

**Interfaces:**

- 6 x CAN, 1 x RS232, 2 x LAN, 2 x USB 2.0, 1 x DVI-D In,
- 1 x DVI-D Out, 1 x VGA, 1 x Video IN (BNC, PAL 50 Hz),
- 1 x Rel_Out (5 x relay output), 1 x Opto_In
- (4 x optocoupler input)

Available as: AHD 1200 - 15 for 15” displays
AHD 1200 - 19 for 19” displays

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**Marine displays and computers**
Power supply: 24 V DC (+30% / -25%)
Current consumption: 1.9 A
Dimension (W x H x D): 384 mm x 324 mm x 91.5 mm
Degree of protection: IP 20
Weight: approx. 10.0 kg
Operating temperature: -30 °C … +70°C
Storage temperature: -50°C … +85°C

Black box computer system; robust design for console or panel installation with integrated powerful computer system as central data management and control and platform for alarm and monitoring systems with novel operation concept; max. resolution: XGA 1024(H) x 768(V) pixels for 15” display; max. resolution: SXGA 1280(H) x 1024(V) pixels for 19” display;

Components exclusive of movable parts (hard discs, fans) and passive cooling system, thereby insusceptible to shock and noiseless

The BIBS Integrated Bridge System is designed as the central control and presentation platform, where all data existing in the system are processed and visualized. Therefore, 19” AHD 1219 colour displays with integrated PC (Panel Computer) are installed in bridge control console, which are controlled by a novel operation concept. By means of a control CAN bus, each AHD 1219 colour display (max. 8 displays) can be selected and operated centrally by an operating panel AHD-DC. Additionally, each AHD-DC unit is combined with an operating panel AHD-DRM T, which allows comfortable control of system menus and operating elements in graphical visualization by means of a trackball. AHD-DC and AHD-DRM T are installed as operating stations within the bridge control console. Anyhow, the units may also be fitted i.e. into the arm rest of the pilot chair.

The data of all connected systems are graphically formatted and visualized individually on colour displays with inclusion of ships graphics and general arrangement plans. Following functions are displayed and controlled:

- Furuno NAVNET 3D for navigation with sea charts and Radar (via DVI interface and integration of the Furuno control via CAN-USB converter AHD-CUC), Data visualization of main engines port and starboard (via separated engine CAN bus per engine)
- Interconnection with ship alarm and monitoring system, Tank monitoring system with continuous tank content measurement with hydrostatic tank level probes, Door monitoring of all relevant doors, hatches and flaps, alarm signaling depending of ship speed, Integration of CCTV camera control (video signal via video input of displays), Display and control of navigation and signal lights, Visualization of generator data and power management system from foreign manufacturers, Monitoring of fuse automats with remotely operated re-engagement, Interfacing of the fire detection system, Conning page with convenient presentation of all relevant, information like depth sounding progress and indication of roll and pitch movement of the ship, Visualization of windlass data with chain link counter and alarm function, Control of pumps and valves

In order to comply with equipment requirements of classification societies, the BIBS Integrated Bridge System is completed by two additional 19” colour displays AHD 1119.

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**AHD 1200**

Multi-Protocol Data Concentrator

Art. No. upon request

**Specifications**

- Interfaces: 6 x CAN, 1 x RS232, 2 x LAN, 2 x USB 2.0, 1 x DVI-D In, 1 x DVI-D Out, 1 x VGA, 1 x Video IN (BNC, PAL 50 Hz), 1 x Rel_Out (5 x relay output), 1 x Opto_In (4 x optocoupler input)

**Available as:**
- AHD 1200 - 15 for 15” displays
- AHD 1200 - 19 for 19” displays

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**Marine displays and computers**

BIBS - Integrated Bridge System
The modular-designed AHD-DPS02 controls and monitors up to 42 navigation and signal lights on vessels. The system can be adapted to customer-specific requirements due to its modular construction, consisting of a basic module for 14 lights, up to 4 extension modules for 7 lights each and a control panel with individual design. The system is available in different versions matching all voltages common to vessels, e.g. 24 VDC, 115 VAC and 230 VAC as well as for conventional or LED lights.

The minimum configuration comprises a basic module for 14 lights and a standard control panel. Up to 42 channels can be controlled by one basic module. By applying additional basic modules, an arbitrary number of lights can be controlled and monitored.

The lights are controlled by means of a control panel with button and LED status lamps for each circuit. Depending on requirements, control panels can be supplied either in the standard size (144/192/288x144mm) or on customer demand. Additional control via touch screen display or PC is also possible (for example AHD 880 TC, AHD 1215F etc).

The lamp power is either drawn from main or separate supply that can be switched manually in case of power failure. Both voltages are supervised permanently.

Regardless of the selected power source, the internal electronics voltage is automatically generated from both supplies. When a lamp channel is switched off, both light contacts are separated from the power supply by means of relays. The lamp outputs are short-circuit proof and maintenance-free. Function of the lights is guaranteed, even in case of a failure of the electronic.

A collective alarm (opener) contact is available for integration within an alarm system. The basic module is designed with three interfaces for the connection of control panels. The standard control panel or custom variations can be connected via the serial interface.

The CAN bus or Modbus enables connection of complementary systems for enhanced visualization.
Operating unit for navigation and signal lights; compact design for console, panel or switchbox installation; individual operating push buttons for ON/OFF-switching of 14 navigation and signal lights in tabular design with integrated LED for status indication; additional LED indication for power supply and system failure as well as lamp life warning message (2000 hours remaining); automatic dimming of installed LEDs, adjustable; integrated alarm buzzer;

Operating unit for navigation and signal lights; compact design for console, panel or switchbox installation; individual operating push buttons for ON/OFF-switching of 21 navigation and signal lights in tabular design with integrated LED for status indication; additional LED indication for power supply and system failure as well as lamp life warning message (2000 hours remaining); automatic dimming of installed LEDs, adjustable; integrated alarm buzzer;
AHD-DPS02 B42  Art. No. 12382
Operating panel for navigation and signal light control and monitoring system DPS02, for 42 lamps

Operating unit for navigation and signal lights; compact design for console, panel or switchbox installation; individual operating push buttons for ON-/OFF-switching of max. 42 navigation and signal lights with integrated LED for status indication; additional LED indication for power supply and system failure as well as lamp life warning message (2000 hours remaining); automatic dimming of installed LED’s, adjustable; integrated alarm buzzer;

Specifications

- Power supply: 24 V DC (+30% / -25%)
- Current consumption: 800 mA
- Dimension (W x H x D): 288 mm x 144 mm x 64 mm
- Degree of protection: IP 20
- Weight: approx. 0.9 kg
- Operating temperature: -30°C … +70°C
- Storage temperature: -30°C … +70°C
- Approvals: GL, LR, RMRS, CRS

acknowledgement push button for audible alarm signaling with lamp test function; push button “Enable” for exclusive operation authorization of the unit; interfaces for connection to basic module AHD-DPS02 G14 and extension module AHD-DPS02 A07

All DPS02 Bx are available with 7 / 14 / 21 / 28 / 35 / 42 switches in customer-specific housings.

AHD-DPS02 BS  Art. No. 10945
Operating panel for navigation and signal light control and monitoring system DPS02, customer-specific design

Operating unit for navigation and signal lights; compact design for console, panel or switchbox installation; individual operating push buttons for ON-/OFF-switching of max. 35 navigation and signal lights with integrated LED for status indication; additional LED indication for power supply and system failure as well as lamp life warning message (2000 hours remaining); automatic dimming of installed LED’s, adjustable; integrated alarm;

Specifications

- Power supply: 24 V DC (+30% / -25%)
- Current consumption: 800 mA
- Dimension (W x H x D): 144 mm x 144 mm x 64 mm
- Degree of protection: IP 20
- Weight: approx. 0.5 kg
- Operating temperature: -50°C … +85°C
- Storage temperature: -50°C … +85°C
- Approvals: GL, LR, RMRS, CRS

acknowledgement push button for audible alarm signaling with lamp test function; push button “Enable” for exclusive operation authorization of the unit; interfaces for connection to basic module AHD-DPS02 G14 and extension module AHD-DPS02 A07

All DPS02 Bx are available with 7 / 14 / 21 / 28 / 35 / 42 switches in customer-specific housings.
**AHD-DPS02 G14** Art. No. upon request
Basic module for navigation and signal light control and monitoring system DPS02

Basic module for navigation and signal light control and monitoring system; supplies individually monitored and selectable via external selector switch; microprocessor-controlled unit with profile housing for carrier rail mounting; suitable for indoor installation.
Control and monitoring of 14 lamp circuits with relay output; channels short-circuit-proof and maintenance-free; replacement of fuses not required; alarm signaling at lamp failure, short circuit or wire breakage; lamp function remains operational at failure of electronics
Extendable to a total of 42 lamp circuits by connection of max. 4 extension modules AHD-DPS02 A07

**Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
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<tr>
<td>Current consumption</td>
<td>420 mA</td>
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<tr>
<td>Dimension (W x H x D):</td>
<td>324 mm x 126 mm x 76 mm</td>
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<tr>
<td>Weight:</td>
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<td>Operating temperature:</td>
<td>-30°C … +70°C</td>
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<td>Storage temperature:</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR, RMRS, CRS</td>
</tr>
</tbody>
</table>

Optional storage and monitoring of operating hours of each lamp circuit with remaining operating time warning (2000 h) and reset after replacement of lamp; Interfaces: CAN (plug connector), serial interface for connection of external operating units; optional communication modules AHD-DPS02 GC with CAN(2), RS422 or RS485 (Modbus) for operation via external alarm systems (AHD-DPS02 Com)
Available versions: 230 VAC (bulb and LED), 115 VAC (bulb and LED), 24 VAC (bulb and LED), 24 VDC (bulb), 24 VDC (LED)

**AHD-DPS02 A07** Art. No. upon request
Extension module for navigation and signal light control and monitoring system DPS02

Extension module for navigation and signal light control and monitoring system; microprocessor-controlled unit with profile module housing for profile rail installation; suitable for indoor installation
7 additional lamp circuits with relay output; power supply, control, monitoring and alarm signaling at lamp failure, short circuit or wire breakage via internal bus from basic module AHD-DPS02 G14

**Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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<td>Power supply:</td>
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<td>Degree of protection</td>
<td>IP 20</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 0.45 kg</td>
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<tr>
<td>Operating temperature:</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR, RMRS, CRS</td>
</tr>
</tbody>
</table>

Channels short-circuit-proof and maintenance-free; replacement of fuses not required; lamp function remains operational at failure of electronics;
Interfaces: serial interface for connection of external operating units; Available versions: 230 VAC (bulb and LED), 115 VAC (bulb and LED), 24 VAC (bulb and LED), 24 VDC (bulb and LED). Devices with different voltages can be used in the same circuit.
Sunlight capable, transflective 8.8” LCD colour display for console or panel installation with operation via touchscreen; multiple screens for tabular and graphical presentation of data inclusive alarm table with all currently existing alarms

Resolution: 640(H) x 240(V) Pixels; luminous intensity: 250 cd/m²; transflective; best readability at all ambient light conditions; automatic backlight control; compact and robust housing with integrated alarm buzzer

**AHD-880 TC**  Art. No. 11413
8,8” touch screen colour display

**Specifications**

- **Power supply:** 24 V DC (+30%/-25%)
- **Current consumption:** 20 W
- **Dimension (W x H x D):** 270 mm x 130 mm x 79 mm
- **Degree of protection:** IP 66 front / IP 20 back
- **Weight:** approx. 2.2 kg
- **Operating temperature:** -30°C … +70°C
- **Storage temperature:** -50°C … +85°C
- **Approvals:** GL, LR

**Interfaces:**
3 x CAN, 1 x Video In (Composite Video, PAL 50 Hz), 1 x RS232 (GPS), 1 x Remote (Optocoupler input for remote control), 1 x binary input, 2 x relay output contact 40 V DC/1A

**System application:**

**Example for ship alarm system**

Classified, decentralized ship alarm system with redundant CAN bus; incl. navigation light control and monitoring, data stations and converters for monitoring, processing and distributing of analog and binary engine data of a dual engine plant and ship data such as bilge alarms, tank gauging, doors and hatches status, relay outputs for pumps etc.
Sunlight capable, transflective 8.8" LCD colour display for console or panel installation with operation via touchscreen; multiple screens for tabular and graphical presentation of data inclusive alarm table with all currently existing alarms.

Resolution: 640(H) x 240(V) Pixels; luminous intensity: 250 cd/m²; transflective; best readability at all ambient light conditions; automatic backlight control; compact and robust housing with integrated alarm buzzer.

AHD-880 TC

Art. No. 11413

8,8" touch screen colour display

Power supply: 24 V DC (+30% / -25%)

Current consumption: 20 W

Dimension (W x H x D): 270 mm x 130 mm x 79 mm

Degree of protection: IP 66 front / IP 20 back

Weight: approx. 2.2 kg

Operating temperature: -30°C … +70°C

Storage temperature: -50°C … +85°C

Approvals: GL, LR

Specifications

Interfaces:
3 x CAN, 1 x Video In (Composite Video, PAL 50 Hz), 1 x RS232 (GPS), 1 x Remote (Optocoupler input for remote control), 1 x binary input, 2 x relay output contact 40 V DC/1A

Selector switch for the AHD-DPS02 system.

Switches between main and separate power supply to the AHD-DPS02 G14 module.

3 positions:
1 - main power
2 - separate power
0 - off

Selector Switch

Art. No. 8794

Selector switch for navigation and signal light control and monitoring system DPS02

36

Navigation lights monitoring and control systems

Classified, decentralized ship alarm system with redundant CAN bus; incl. navigation light control and monitoring, data stations and converters for monitoring, processing and distributing of analog and binary engine data of a dual engine plant and ship data such as bilge alarms, tank gauging, doors and hatches status, relay outputs for pumps etc.

System application:
Example for ship alarm system

37
On duty / engineer call system

The type-approved components of the duty and engineer call system are used on ships classified for operation with permanently or temporarily unmanned engine rooms. The system consists of the central unit AHD 882, duty call panel AHD-PS 15B for selection of the current duty call as well as the cabin alarm panels AHD-406 2, which report current alarms and are installed in the living and working areas of the duty personnel.

As part of the ship alarm system, the central unit AHD 882 can process and manage up to 940 measuring points. Inadmissible conditions, alarm and status messages are assigned to various alarm or display groups and passed on to up to five cabin alarm panels AHD-406 2. Additionally, the data, especially duty call status, are issued to the bridge.

For this, suitable display systems, such as the colour display AHD 1215TC can be controlled directly via CAN-bus. Communication occurs via 18 serial inputs, 16 serial outputs as well as 2 CAN-bus interfaces.

Through the on duty/engineer call panel AHD-PS 15B, the duty call status as well as the condition “engine room manned” can be selected via switches in the front. If no duty officer is selected after the engine room has been switched to unmanned status, an engineer call is sent to all cabins automatically after a configurable interval. The same applies when a raised alarm is not acknowledged in time. Additionally, the engineer call can be activated from a separate switch. All data and commands are sent serially to the central unit AHD 882.

The alerting at the cabin alarm panels AHD 406-2 occurs acoustically via an internal buzzer and optically via individual group-LEDs. The potential free whistle output is also activated. While the acoustic alarm can be acknowledged on each local panel, optical acknowledgement must occur from the central operating station of the ship alarm and monitoring system in the MKR. Additionally, two separate 24 V DC power inputs for engineer call and fire alarm are integrated. The legally required fire alarm can be implemented without any further components.
Cabin and mess room tableau for max. 16 group messages; applied in duty alarm/engineer call system on board of vessels, classified for all or temporarily unmanned machinery rooms; microprocessor controlled device for wall, console, panel or switchbox installation; low installation depth; 15 group messages, alarm signaling via LED indication and integrated alarm buzzer, local acknowledgement of audible alarm via acknowledge push button, acknowledgement of visual alarm only via operating station of ship alarm system; 1 failure message data communication with LED

On-duty/engineer call panel for use on board of vessels, classified for all or temporarily unmanned machinery rooms; Electronic unit for console, panel or switchbox installation; minimum installation depth; 15 optocoupler inputs for acquisition of position of toggle switches in front panel of the device, thereof currently in use: 1 input for selection „Engine room manned/unmanned“ 5 inputs for selection of on-duty via cabin and mess room tableaux 1 input für local manual activation of engineer call (Eng. Call ECR)
Central unit for integrated ship alarm, monitoring and control systems; microprocessor controlled device for profile rail installation; 18 serial input channels for decentralized connection of external data stations and processing devices for up to 846 measuring points; processing of binary status data and analog limit values with alarm, display and control management; 16 serial output channels for distribution of processed data to external display and control units (i.e. groups, cabin alarm tableaus, relay units)

### Specifications

- **Power supply:** 24 V DC (+30% / -25%)
- **Current consumption:** 125 mA
- **Dimension (W x H x D):** 216 mm x 125 mm x 71 mm
- **Degree of protection:** IP 10
- **Weight:** approx. 0.6 kg
- **Operating temperature:** -30°C ... +70°C
- **Storage temperature:** -50°C ... +85°C
- **Approvals:** GL, LR

Internal data buffer for storage of last 10,000 acquired messages, recallable with printer or service computer via RS232 interface

Interfaces: 2 x CAN, 1 x RS232, relay outputs (5 x group, 1 x alarm-, 1 x horn relay), 18 x binary/serial input, 16 x binary/serial output, 2 x alarm acknowledgement visual / audible
Central unit for integrated ship alarm, monitoring and control systems; microprocessor controlled device for profile rail installation; 18 serial input channels for decentralized connection of external data stations and processing devices for up to 846 measuring points; processing of binary status data and analog limit values with alarm, display and control management; 16 serial output channels for distribution of processed data to external display and control units (i.e. groups, cabin alarm tableaus, relay units)

AHD-882

Art. No. 10390

Central unit for alarm and monitoring systems

Power supply:
24 V DC (+30% / -25%)

Current consumption:
125 mA

Dimension (W x H x D):
216 mm x 125 mm x 71 mm

Degree of protection:
IP 10

Weight:
approx. 0.6 kg

Operating temperature:
-30°C … +70°C

Storage temperature:
-50°C … +85°C

Approvals:
GL, LR

Specifications

Internal data buffer for storage of last 10,000 acquired messages, recallable with printer or service computer via RS232 interface

Interfaces: 2 x CAN, 1 x RS232, relay outputs (5 x group, 1 x alarm-, 1 x horn relay), 18 x binary / serial input, 16 x binary / serial output, 2 x alarm acknowledgement visual / audible

Application example
CCTV video surveillance system

The closed circuit television (CCTV) has been established as a standard to increase the safety and comfort aboard of vessels, e.g. by surveillance of public and private spaces, unmanned machinery spaces, gangways, entrances and visual support at berthing maneuvers and many more.

The video control system AHD-VCS is designed for individual operation of up to 16 video cameras including control of pan, tilt and zoom functionality. The system components can easily be integrated into a Böning Ship Alarm System, using the already installed displays - no additional console space for separate monitors is required. Data communication is performed on the same CAN bus.

The presentation and control of real time video signals can performed anywhere on board either on touch screen displays with integrated operation facilities or alternatively on monitors or television sets with separate video control panels AHD-VCP. The quantity of connected control panels is not limited.

The main components of the system are: Video Distribution Control Unit AHD-VDCU (for 4, 8 or 16 cameras), Video Control Panel AHD-VCP and Touchscreen Colour Displays AHD 1215 TC (15") or AHD 880 TC (8.8") as well as Colour Display AHD 1219 (19") with appropriate separate operating units. The Video Distribution Control Unit AHD-VDCU processes the control signals for the cameras and distributes their video signals to connected displays.

Various models for standard and special applications are available. The robust cameras are specified to fulfill the maritime environment requirements, and have anti-vandalism protection. In general, they are controlled and powered by AHD-VDCU unit. In case of higher current consumption or non-standard supply voltages, the power supply is connected separately. (For further details see technical data). Optionally, the video control system can be extended with a video quad processor AHD-VCS Q 4-1, which allows quad display of four selected cameras on one screen. As a further option, a digital video data recorder AHD-VC VR8 is available with each 8 video in- and outputs, 320 GB internal hard disc (data compression according to MPEG-4 standard) and DVD-RW as well as various further functions.
Video cross bar as central distribution and control unit of an video system, either operating independently or integrated i.e. in a ship alarm system; operation either via CAN bus or RS485 by separate video control panel or operating elements on video visualization pages of connected colour displays; microprocessor-controlled device with housing for bulkhead installation; 4 camera inputs with RJ45 sockets for connection of video cameras with one standard CAT5 network cable for transmission of video signals, camera control signals and 12 V DC camera power supply.

**Specifications**

- **Power supply:** 24 V DC (+30% / -25%)
- **Current consumption:** 360 mA (plus max. 400 mA/camera when supplied via camera input)
- **Dimension (W x H x D):** 330 mm x 160 mm x 42 mm
- **Degree of protection:** IP 20
- **Weight:** approx. 1.2 kg
- **Operating temperature:** -30°C ... +55°C
- **Storage temperature:** -50°C ... +85°C

4 video outputs with BNC connectors for 75 Ohms coaxial cable (RG-59) for transmission of video signals i.e. to displays, monitors, TV-sets, video quad processors, video data recorders etc. (1 Vpp, 75 Ohms)

Interfaces: 1 x CAN (optionally redundant), 3 x serial inputs (i.e. for connection of binary data stations for add. control functions), 1 x RS232, 1 x RS485 (option)

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Video cross bar as central distribution and control unit of a video system, either operating independently or integrated i.e. in a ship alarm system; operation either via CAN bus or RS485 by separate video control panel or operating elements on video visualization pages of connected colour displays; microprocessor-controlled device with housing for bulkhead installation; 8 camera inputs with RJ45 sockets for connection of video cameras with one standard CAT5 network cable for transmission of video signals, camera control signals and 12 V DC camera power supply.

**Specifications**

- **Power supply:** 24 V DC (+30% / -25%)
- **Current consumption:** 360 mA (plus max. 400 mA/camera when supplied via camera input)
- **Dimension (W x H x D):** 330 mm x 160 mm x 42 mm
- **Degree of protection:** IP 20
- **Weight:** approx. 1.3 kg
- **Operating temperature:** -30°C ... +55°C
- **Storage temperature:** -50°C ... +85°C

8 video outputs with BNC connectors for 75 Ohms coaxial cable (RG-59) for transmission of video signals i.e. to displays, monitors, TV-sets, video quad processors, video data recorders etc. (1 Vpp, 75 Ohms)

Interfaces: 1 x CAN (optionally redundant), 3 x serial inputs (i.e. for connection of binary data stations for add. control functions), 1 x RS232, 1 x RS485 (option)
The video control panel AHD-VCP is designed for control of video cameras integrated in video control system AHD-VCS. The unit is connected to CAN-Bus and communicates with video distribution control unit AHD-VDCU to apply the camera control functions.

By configuration of AHD-VDCU, the video control panel AHD-VCP is attached to a specific video output channel of AHD-VDCU and by that to the specific display, monitor or television set, which is connected to this output.
Video quad processor with desk mount housing for integration in consoles or control panels; 4-channel colour quadrant divider for combination of 4 video input signals in a video output signal with quadrant presentation; preconfigured ready for use in video system AHD-VCS with video standard PAL 1024 x 625 pixels; 4 Video loop through channel (1 Vpp, 75), each with BNC connectors for video in- and output; 1 live monitor video output (1 Vpp, 75) with BNC connector, suitable for output of quadrant, full size- and auto sequence image presentation.

**Specifications**

- **Power supply:** 12 V DC
- **Current consumption:** max. 850 mA
- **Dimension (W x H x D):** 216 mm x 45 mm x 214 mm
- **Degree of protection:** IP 20
- **Weight:** approx. 2.5 kg
- **Operating temperature:** 0°C … +50°C
- **Storage temperature:** -10°C … +85°C

1 VCR in video input (1 Vpp, 75) with BNC connector for connection of video output of a video data recorder (playback input); 1 VCR out video output (1 Vpp, 75) with BNC connector for connection of video input of a video data recorder (recording output)

Interfaces (optional): 1 x RS232 (remote control), 4 x alarm inputs (NO/NC-contact, selectable), 1 x relay output (NO/NC-contact)

Digital video data recorder of Bosch Divar MR serie for desk or rack mounting in consoles or control panels; 8/16 channel full-duplex colour recording system in CIF, 2CIF or 4CIF resolution; MPEG-4 compression; PAL 704 x 576 pixels; hard disc capacity 500 GB (up to 4 hard discs, max. 2000 GB); internal DVD burner; 8/16 Video inputs (Composite Video 1 Vpp, 75, BNC, autom. termination) looped through to video outputs; 8/16 Video outputs (Composite Video 1 Vpp, 75, BNC); 2 Audio inputs and 1 audio output 1 Vpp; VGA monitor output (ana. RGB signal 800 x 600, monitor B multiple screen (VGA)

**Specifications**

- **Power supply:** 100…240 V AC 50/60Hz
- **Power rating / Current consumption:** max. 80 W (with one hard disc) max. 120 W (with four hard discs) max. 1.8 A
- **Dimension (W x H x D):** 355 mm x 88 mm x 362 mm
- **Degree of protection:** IP 20
- **Weight:** approx. 4.3 kg
- **Operating temperature:** 0°C … +40°C
- **Storage temperature:** -25°C … +85°C

Monitor output Mon-A & B full-size, full-size-sequence, multiple screen (VGA); spot/alarm; image frequency 8 channel 200 IPS (real-time per channel);

Interfaces: ETHERNET 10/100 Base-T, 1 x RS485 (PTZ-control), 2 x USB 2.0, 8 optocoupler inputs 5 VDC, 4 relay outputs (1 A, 30 VAC, 0.3 A 125 VAC), configurable NO/NC; PTZ-protocols BOSCH, Pelco D, Pelco P, Panasonic CS850, Samsung SCC, Ganz DSCP, Ganz P360V1, LG Multix, LG SD168, Kalatel Cyberdom
The motor dome camera AHD-VC 751 is a high resolution colour camera with remote controlled pan, tilt, zoom and focus function.

\[\frac{1}{4}\text{" Sony Super HAD CCD, 752 x 582 Pixels (PAL); 10x optical zoom with 10x digital zoom; high resolution (Colour: 520 TV-lines; B/W: 570 TV-lines); Intelligent pan/tilt control; 360° endless rotation; 0° … 180° tilting (Auto-Flip-mode); 0.05°/s … 360°/s pan/tilt speed}\]

The FlexiDome camera AHD-VC 731 is a high resolution colour camera with manually controlled pan, tilt function and VarioFocal lens.

\[\frac{1}{3}\text{" Interline Transfer CCD, 752 x 582 Pixels (PAL); high resolution (colour: 540 TV-lines; B/W: 570 TV-lines); 360° endless rotation; 0° … 90° tilting, +/- 90° Azimuth; VarioFocal lens F1.4/2.6 – 6.0 mm (47°h – 95°h)}\]

Vector-Drive-technology; changeable day/night function (ICR block filter); remote controllable by control panels or touch screen; OSD menu (7 languages); various surveillance functions; privacy masking zones; password protection; elegant, anti-vandal aluminium body with PC-dome cover for ceiling mounting
AHD-VC 720IR  Art. No. 12263
Infrared dome colour camera, manually controlled pan/tilt function

Infrared Dome Colour Camera, manually controlled pan/tilt function. The infrared dome camera AHD-VC 720 IR is a high resolution colour camera for fixed surveillance with manually controlled pan, tilt, zoom and focus function.

Specifications

<table>
<thead>
<tr>
<th>Power supply:</th>
<th>Internal synchronization 12 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption:</td>
<td>6,0 W</td>
</tr>
<tr>
<td>Dimension Ø x H</td>
<td>120 mm x 96 mm</td>
</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 66 (for in- and outdoor application)</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 1.85 kg</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>-10°C … +50°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-10°C … +60°C</td>
</tr>
</tbody>
</table>

1/3” Sony Super HAD CCD
Manually operated Variozoom lens 4.0 – 9.0mm, DC
Min. light sensitivity 0.5/0.004 Lux
Manually operated 360° rotation
Manually operated tilting 10° … 90°
IR-LED reflector with up to 15m range

AHD-VC 710  Art. No. 13744
Bullet miniature colour camera, manually controlled pan/tilt function

Bullet miniature colour camera, manually controlled pan/tilt function. The bullet miniature camera AHD-VC 710 is a high resolution colour camera for fixed surveillance with manually controlled pan and tilt function. Anti-vandal aluminium die-cast body.

Adjustable socket for ceiling mounting  1/3” Interline Transfer CCD sensor, 752H x 582(V) pixels; resolution (colour: 550 TV-lines); light sensitivity < 0.2 Lux; Lens F2.0/3.6 mm (70°h); integrated preconfigured connection cable

Specifications

<table>
<thead>
<tr>
<th>Power supply:</th>
<th>12 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption:</td>
<td>140 mA</td>
</tr>
<tr>
<td>Dimension ( Ø x L):</td>
<td>approx. 19 x 55 mm</td>
</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 67/3m (DIN 40050)</td>
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<tr>
<td>Weight:</td>
<td>approx. 0.5 kg</td>
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<tr>
<td>Operating temperature:</td>
<td>-10°C … +50°C</td>
</tr>
</tbody>
</table>
**Specifications**

<table>
<thead>
<tr>
<th>Metric</th>
<th>AHD-VC 732</th>
<th>AHD-VC 760</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>230 V / 24 V AC +/−10%</td>
<td>24 V AC, 50/60 Hz</td>
</tr>
<tr>
<td>Current consumption</td>
<td>max. 4 W camera, 40 W heater</td>
<td>max. 4 W</td>
</tr>
<tr>
<td>Dimension Ø x L</td>
<td>approx. 154 mm x 460 mm</td>
<td>approx. Ø x L: 182mm x 460 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 66 (for in- and outdoor application)</td>
<td>IP 67 (for in- and outdoor application)</td>
</tr>
</tbody>
</table>
| Weight                    | approx. 8.0 kg incl. camera, approx. 2.1 kg (pan/tilt-support AS-42/V4A) | Camera appr. 8.0 kg
Pan/Tilt-Head: appr. 15 kg |
| Operating temperature     | -35°C... +50°C                  | -35°C... +50°C                  |

**AHD-VC 732** Art. No. upon request
Weatherproof colour camera, stainless steel design, manually controlled pan/tilt function

AHD-VC 732 is a high resolution colour camera fitted into a weatherproof and high-quality stainless steel casing with manually controlled pan, tilt function and VarioFocal lens.

**AHD-VC 760** Art. No. upon request
Weatherproof colour camera, stainless steel design, remote controlled pan/tilt function

AHD-VC 760 is a high resolution colour camera fitted into a weatherproof and high-quality stainless steel casing with additional remote controllable stainless steel pan/tilt-support and separate control cabinet for connections and power supply.

Weatherproof colour camera, remote controlled pan/tilt function. The camera AHD-VC 760 is a high resolution colour camera fitted into a weatherproof and high-quality stainless steel casing with additional remote controllable stainless steel pan/tilt-support and separate control cabinet for connections and power supply.

Camera features: 1/3” Interline Transfer CCD, 752 x 582 Pixels (PAL); high resolution (colour: 540 TV-lines; B/W: 570 TV-lines); VarioFocal lens F1.0/3.0 – 8.0 mm (36.2°h – 90.8°h); light sensitivity < 0.7 Lux with day/night function for increased sensitivity, OSD menu; casing of rust-proof steel AISI 316, suitable for high-corrosive environments; integrated thermostatically controlled heater; sun shield of V4A stainless steel; 2 HNA cable glands PG 13.5

**Specifications**

<table>
<thead>
<tr>
<th>Metric</th>
<th>AHD-VC 732</th>
<th>AHD-VC 760</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>230 V / 24 V AC +/−10%</td>
<td>24 V AC, 50/60 Hz</td>
</tr>
<tr>
<td>Current consumption</td>
<td>max. 4 W camera, 40 W heater</td>
<td>max. 4 W</td>
</tr>
<tr>
<td>Dimension Ø x L</td>
<td>approx. 154 mm x 460 mm</td>
<td>approx. Ø x L: 182mm x 460 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 66 (for in- and outdoor application)</td>
<td>IP 67 (for in- and outdoor application)</td>
</tr>
</tbody>
</table>
| Weight                    | approx. 8.0 kg incl. camera, approx. 2.1 kg (pan/tilt-support AS-42/V4A) | Camera appr. 8.0 kg
Pan/Tilt-Head: appr. 15 kg |
| Operating temperature     | -35°C... +50°C                  | -35°C... +50°C                  |
| Storage temperature       | approx. 0.1 kg                  | approx. 0.1 kg                  |

**AHD-VC 732** Art. No. upon request
Weatherproof colour camera, stainless steel design, manually controlled pan/tilt function

AHD-VC 732 is a high resolution colour camera fitted into a weatherproof and high-quality stainless steel casing with manually controlled pan, tilt function and VarioFocal lens.

**AHD-VC 760** Art. No. upon request
Weatherproof colour camera, stainless steel design, remote controlled pan/tilt function

AHD-VC 760 is a high resolution colour camera fitted into a weatherproof and high-quality stainless steel casing with additional remote controllable stainless steel pan/tilt-support and separate control cabinet for connections and power supply.

Weatherproof colour camera, remote controlled pan/tilt function. The camera AHD-VC 760 is a high resolution colour camera fitted into a weatherproof and high-quality stainless steel casing with additional remote controllable stainless steel pan/tilt-support and separate control cabinet for connections and power supply.

Camera features: 1/3” Interline Transfer CCD, 752 x 582 Pixels (PAL); high resolution (colour: 540 TV-lines; B/W: 570 TV-lines); VarioFocal lens F1.0/3.0 – 8.0 mm (36.2°h – 90.8°h); light sensitivity < 0.7 Lux with day/night function for increased sensitivity, OSD menu; casing of rust-proof steel AISI 316, suitable for high-corrosive environments; integrated thermostatically controlled heater, power consumption 40 W; Anti-glare shield of V4A stainless steel.

Interfaces: 2 HNA cable glands PG 13.5 with preconfigured camera multi-cable LEONI, L = 0.5m
The video signal converter AHD-VSC C is used for connection of standard AHD-VC cameras to video distribution and control unit AHD-VDCU by means of a CAT5 cable. The connection comprises transmission of video signal and control commands as well as power supply of camera. Conversion of standard video output signal of camera into a differential signal for increase of transmission quality. Transformation of 24 V DC power supply from video distribution and control unit AHD-VDCU to by default required 12 V DC power supply for the camera.

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>60 mA (24VDC)</td>
</tr>
<tr>
<td>Power output</td>
<td>12 V / 1A</td>
</tr>
<tr>
<td>Dimension (Ø x L)</td>
<td>35 mm x 35 mm x 85 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 20</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.1 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +55 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85 °C</td>
</tr>
</tbody>
</table>

Integration of RS485 data cable for transmission of camera remote control commands. Tubular protection box with preconfigured connection cable for camera connection and RJ45 connection socket for plug connection of CAT5 cable. Internal electronic circuits are molded-in to increase degree of protection.

The video signal converter AHD-VSC QC is used for connection of video quad-screen processor unit AHD-VCS Q4-1 to video distribution and control unit AHD-VDCU by means of a CAT5 cable. The connection comprises transmission of quad-screen video signal to AHD-VDCU unit as well as power supply for video quad-screen processor unit. Tubular protection box with preconfigured connection cable with BNC plug connector for connection of video monitor output of processor unit. Further preconfigured connection cable with plug connector for 12 V DC power supply of processor unit.

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>60 mA (24 V DC)</td>
</tr>
<tr>
<td>Power output</td>
<td>12 V / 1A</td>
</tr>
<tr>
<td>Dimension (Ø x L)</td>
<td>35 mm x 35 mm x 85 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 20</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.1 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +55 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85 °C</td>
</tr>
</tbody>
</table>

RJ45 socket for plug connection with straight CAT5 patch cable to last video input channel of video distribution and control unit AHD-VDCU. Transmission of quad-screen video output signal of processor unit to video distribution and control unit AHD-VDCU. Transformation of 24 V DC power supply from video distribution and control unit AHD-VDCU to by default required 12 V DC power supply for the processor unit. Internal electronic circuits are molded-in to increase degree of protection.
Portable thermal imaging cameras for maritime applications (no connection with video control system AHD-VCS).
The HM-Series are handheld shock-resistant thermal imaging cameras. They produce a crisp image in the darkest of nights and will dramatically increase your situational awareness. The HM-Series can be used on board of all types of vessels. Yachts, commercial ships, tug and tow boats, work boats, police and law enforcement boats will all benefit from the power of thermal imaging. Image sensor Focal plane array, Vanadium Oxide (VOx) Microbolometer, uncooled

**Specifications**

- **Power supply:** 4 x AA NiMH Accus (incl.), > 5h battery life
- **Current consumption:** n. a. (battery operation)
- **Dimension (L x W x H):**
  - 240mm x 85mm x 60mm (HM-224)
  - 265mm x 85mm x 75mm (HM-324 XP+)
- **Degree of protection:** IP 67
- **Weight:**
  - approx. 0.66 kg (HM-224)
  - approx. 0.97 kg (HM-324 XP+)
- **Operating temperature:**
  - 0°C … +50°C (HM-224)
  - -20°C … +60°C (HM-324 XP+)
- **Storage temperature:**
  - -20°C to +70°C (HM-224)
  - -40°C to +75°C (HM-324 XP+)

240 x 180 Pixels (HM-224), 320 x 240 Pixels (HM-324 XP+), spectral range 7.5 … 13.5 µm; field of view 24° (H) x 18° (V), 12° (H) x 9° (V) with 2X Extender lens; thermal sensitivity < 50 mK at f/1.0 and + 25°C; image frequency 8.3 Hz PAL / 7.5 Hz NTSC; internal LCD screen; image storage single image, standard JPEG (HM-324 XP+); video storage 9 Hz, full Frame, MPEG4, (appr. 8 s / MB) (HM-324 XP+); image polarity white-hot or black-hot, selectable

Interfaces: SD-card-slot for 1 GB SD-card, USB 2.0 (HM-324 XP+); video output PAL or NTSC Composite Video, RCA jack

Premium multi-sensor systems for maritime applications. The M-Series combine a thermal imaging camera with a low light camera. They produce a crisp, clear thermal imagery in total darkness and light fog or smoke. Packaged in a small, ultra-compact gimbal it is designed for the most demanding maritime applications.

The FLIR M-Series are perfect tools for night-time navigation, shipboard security, man overboard situations, anti-piracy and many other applications. The FLIR M-Series are the standard for maritime thermal imaging systems. Against which all others are compared.

**Specifications**

- **Power supply:** 12 V DC ... 24 V DC (-10% / + 30%)
  (Supply provided by customer)
- **Dimension Ø x H:**
  - 178mm x 279 mm
- **Degree of protection:** IP 66
- **Weight:** approx. 4.1 kg
- **Ambient temperature:** -25°C...+55°C

Combined thermal imaging and high-sensitive low light camera with controllable pan-/tilt-head; panning 360° continuous, tilting +/- 90°; image sensor focal plane array, vanadium oxide (VOx) microbolometer, uncooled; 640 x 480 pixels (thermal image M-626L), 320 x 240 pixels (thermal image M-320L, M-324XP); spectral range 7.5 … 13.5 µm; field of view 26° (H) x 20° (V) with 35 mm lens; thermal sensitivity < 50 mK at f/1.0 and + 25°C; low/day light camera (M-626L, M-320L) ½” interline transfer CCD
Gyro-stabilized multi-sensor thermal imager with Pan/Tilt for maritime applications. Powerful, multi-sensor, mid range thermal night vision system. It features two thermal imaging cameras and one daylight / low light camera. Ideal for navigation and situational awareness. Allows the user to zoom in onto objects that are very small or far away. Allow you to detect objects, which are the size of a human being, more than 2 km away. Objects floating in the water, the size of 2.3 x 2.3 meter, can be detected up to practically 6 km away, even in total darkness, through smoke, light fog and in the most diverse weather conditions.

The Voyager II can be connected to a radar system in a so-called “slew-to-cue” configuration. The Voyager II is able to identify and track radar targets by using the National Marine Electronics Association (NMEA) 0183 protocol. The NMEA 0183 protocol allows the camera to automatically point towards vessels and other objects that show up on the radar display and to track their movement. When enabled, this means that if the radar detects an object, the Voyager II will automatically turn in the right direction and follow the object, so that you can see what the blip on your radar screen really means.

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (-10% / + 30%)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 50 W nominal, max. 130 W max. 270 W with heaters</td>
</tr>
<tr>
<td>Dimension Ø x H</td>
<td>381 mm x 584 mm</td>
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<tr>
<td>Degree of protection</td>
<td>IP 66</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 20.4 kg</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-25°C ... + 55°C</td>
</tr>
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</table>

Voyager II, FLIR Systems Art. No. upon request
Gyro-stabilized multi-sensor thermal imager with Pan/Tilt for maritime applications
Engine monitoring systems

Modern engines are built with sophisticated control electronics. The engines’ operating condition is continually monitored by a multitude of sensors and provided by powerful interfaces, such as CAN-Bus (Controller Area Network) or Modbus. And every engine manufacturer has his own philosophy.

We have set ourselves the task of presenting the motor side data provided to the operator in a plain and clear manner. For this purpose, we developed special displays that meet the demands of maritime use. Thanks to full sunlight readability and waterproofing, display instruments can be used even on an open bridge.

In recent years, we developed several converters in-house that can adapt to various engine protocols.

Today, we are in the position to use the data of all major manufacturers, such as MAN, MTU, CAT, Volvo Penta, Cummins, Yanmar, and others.

While the products of other manufacturers are limited to visualizing merely an engine’s basic data, the measured values of a display by Böning Automationstechnologie GmbH & Co. KG go into great detail. For example, when an alarm is raised it is shown in clear text, because in such a case, a quick reaction can usually avert serious damage. Not only do we completely replace the original manufacturer’s display, our graphic visualizations clearly offer added value in comfort.

This system can operate independently, but it can also be combined with other Böning systems. The integration of the alarm system allows further comfort functions such as trip consumption indicator and calculation of remaining range. We offer convenient solutions for ships with one engine (e.g. sail boats) and the customary dual motorization as well as boats with three or four main engines. For this, we provide display systems with 15” and 19” screen diameter and touch screen or trackball operation. These visualization systems with embedded operating systems are very robust and space saving. They also have up to five integrated CAN-bus interfaces. The hardware is approved by leading classification societies, so that these devices are guaranteed to have a long life span.
Engine monitoring systems

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This system can operate independently, but it can also be combined with other Böning systems. The integration of the alarm system allows further comfort functions such as trip consumption indicator and calculation of remaining range.

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Sunlight readable 15" LCD colour display touch panel PC for console or panel installation as central control and presentation platform of alarm and monitoring systems with operation via touch screen.

Resolution: XGA 1024(H) x 768(V) pixels; luminous intensity: appr. 1400 cd/m²; best readability at all ambient light conditions; LED backlight manually or automatically controllable; display optically bonded; components exclusive of movable parts (hard discs, fans) and with passive cooling system, thereby insusceptible to shock and noiseless

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>50 W</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>384 mm x 324 mm x 115 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 66 front/IP 20 back</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 10.0 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C ... + 55°C (-30°C...+70°C at interior console temp. of max.+45°C)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C...+85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR (in progress)</td>
</tr>
</tbody>
</table>

Processor: 1.3 GHz Dual Core, RAM 2 GB, Flashdisk 4 GB.

Interfaces: 6 x CAN, 2 x LAN, 1 x COM, 2 x USB 2.0, 1 x DVI-D, 1 x VGA, 1 x Video IN (BNC, PAL 50 Hz), Digital IN (4 x optocoupler), Digital OUT (5 x relay output)

Also available with white or black glass front (AHD 1215 G).
AHD 880 E  Art. No. upon request  
8.8” Touch screen single engine colour display

Sunlight capable, transflective 8.8” LCD colour display for console or panel installation with operation via touchscreen; graphical visualization adapted for a single engine (e.g. MAN, MTU, CAT and others); multiple instrument pages for presentation of most important engine data; alarm table with all currently existing alarms; emergency monitoring page for dual engine applications at failure of second engine display; instrument colour white.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
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<tr>
<td>Power consumption:</td>
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<td>Dimension (W x H x D):</td>
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<tr>
<td>Degree of protection:</td>
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<tr>
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<tr>
<td>Operating temperature:</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR</td>
</tr>
</tbody>
</table>

Sunlight capable, transflective 8.8” LCD colour display for console or panel installation with operation via touchscreen; graphical visualization adapted for two engines (e.g. MAN, MTU, CAT and others); multiple instrument pages for presentation of most important engine data; alarm table with all currently existing alarms.

AHD 880 F  Art. No. upon request  
8.8” Touch screen dual engine colour display

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
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<tr>
<td>Power consumption:</td>
<td>20 W</td>
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<tr>
<td>Dimension (W x H x D):</td>
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<tr>
<td>Degree of protection:</td>
<td>IP 56</td>
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<tr>
<td>Weight:</td>
<td>approx. 2.2 kg</td>
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<tr>
<td>Operating temperature:</td>
<td>-30°C … +70°C</td>
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<tr>
<td>Storage temperature:</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR</td>
</tr>
</tbody>
</table>

Sunlight capable, transflective 8.8” LCD colour display for console or panel installation with operation via touchscreen; graphical visualization adapted for two engines (e.g. MAN, MTU, CAT and others); multiple instrument pages for presentation of most important engine data; alarm table with all currently existing alarms.
AHD-UCC  Art. No. upon request
Universal CAN Converter

Universal CAN converter for acquisition and conversion of data from communication protocols of external CAN bus networks into Böning AHD-SAS CAN bus network, CAN bus networks galvanic isolated, microprocessor-controlled unit with a rugged aluminium housing for wall mounting; listen only NMEA 2000® certified products

Interfaces: 1 x CAN (AHD-SAS network), 1 x CAN to external systems

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>55 mA</td>
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<tr>
<td>Dimension (W x H x D)</td>
<td>140 mm x 82 mm x 44 mm</td>
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<tr>
<td>Degree of protection</td>
<td>IP 56</td>
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<tr>
<td>Weight</td>
<td>approx. 0.45 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>

Adaptable external data protocols: NMEA 2000®, SAE J1939

Engines: Caterpillar, Cummins, MAN, MTU, Scania, Volvo

Generators: Onan, Kohler, Fischer Panda

Charger: Mastervolt

Various: Auto anchor, Offshore Systems, Dometic Air Condition, Furuno, Bosch Rexroth BODAS

Also applicable as repeater unit on long distances in AHD-SAS CAN bus network

AHD-UIC  Art. No. upon request
Protocol Converter Modbus RTU

Protocol converter for reactionless acquisition and conversion of analog and binary measuring point data from external systems with Modbus RTU communication protocol into Böning AHD-SAS Can bus network; cyclic acquisition of up to 100 Modbus data packets; configurable data processing; microprocessor-controlled unit with profile module housing for profile rail installation; redundant system available with combination of two devices (master/slave)

Interfaces: 2 x RS485 (galvanically isolated), 1 x CAN (AHD-SAS), 1 x Rs232, 1 x LAN

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>85 mA</td>
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<tr>
<td>Dimension (W x H x D)</td>
<td>135 mm x 130 mm x 55 mm</td>
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<tr>
<td>Degree of protection</td>
<td>IP 20</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.35 kg</td>
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<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
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<td>Storage temperature</td>
<td>-50°C … +85°C</td>
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<tr>
<td>Approvals</td>
<td>GL, LR</td>
</tr>
</tbody>
</table>

Interfaces: 2 x RS485 (galvanically isolated), 1 x CAN (AHD-SAS), 1 x RS232, 1 x LAN


Charger: Mastervolt, Victron Energy (DC power); Deif (AC power)

Fire Monitoring: Kentech, Consilium

Lighting control: Cantalupi

Stabiliser: ABT, Sleipner, Trac

Generator: CAT

Various: Maxwell
Engine start / stop system

The AHD-EOP Engine Operation Panel lets you start and stop ship diesel engines conveniently and safely. Instead of conventional key mechanics and the consequential high wiring efforts, AHD-EOP features transponder technology that increases operational safety and simplifies wiring. Port and starboard engines are activated separately by introducing the transponder key in its socket, granting clearance to start.

The dual engine operation panel AHD-DEOP is a microprocessor-controlled device for convenient and safe start and stop of two ship main engines in combination with appropriate engine operation panels AHD-EOP.

As long as the transponder key is inserted, the engine remains ready for operation and can be started with any AHD-EOP or AHD-DEOP panel in the system. This is indicated on all panels by a LED. Pressing the Ignition key on the AHD-EOP or AHD-DEOP starts the according engine, pressing the Stop key stops the engine.

If the key is removed from the panel, the engine stops immediately. All AHD-DEOP are cascadable, making it simple to install additional units.
**AHD-EOP**  Art. No. 12030  
Engine Operation Panel for ship main engines, basic module

Engine operation panel; microprocessor-controlled basic module for installation in consoles or control cabinets for convenient and safe start and stop of one ship main engine. Release of engine operation by means of pluggable transponder key for increased protection against unauthorized operation; supplied without transponder keys; push buttons for ignition release, start, stop, as well as charge control LED and keyhole in front panel of the unit, illuminated and automatically dimmed; connection via two 8-pole connection sockets on rear side of the unit; cascadable, simple installation in further control stands.

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
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<td>Current consumption</td>
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<td>Dimension (W x H x D)</td>
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<td>Degree of protection</td>
<td>IP 66</td>
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<tr>
<td>Weight</td>
<td>approx. 0.5 kg</td>
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<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
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<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>

**AHD-DEOP**  Art. No. 11479  
Dual Engine Operation Panel for ship main engines, extension module

Dual engine operation panel; microprocessor-controlled extension module for installation in consoles or control cabinets for convenient and safe start and stop of two ship main engines in combination with appropriate engine operation panels AHD-EOP; release of engine operation by means of pluggable transponder key at appropriate engine operation panel AHD-EOP; push buttons for ignition release, start, stop and charge control lamp per engine in front panel of the unit, illuminated and automatically dimmed.

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Current consumption</td>
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<tr>
<td>Weight</td>
<td>approx. 0.40 kg</td>
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<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>

Compact design for installation in consoles, control panels or control cabinets; one engine operation panel AHD-EOP to be assigned for each ship main engine; connection directly to engine switch box or via adapter module; release of engine operation by means of pluggable transponder key; coding of transponder key by means of a master key; transmission of coding to further transponder keys is available; increased protection against unauthorized operation; automatic dimming of illumination.

Connection via two 8-pole connection sockets per engine on rear side of the unit; cascadable, simple installation in further control stands; compact design for installation in consoles, control panels or control cabinets; connection directly to engine operation panel AHD-EOP for each ship main engine by means of 8-pole connection sockets on rear side of the unit; AHD-DEOP units can be cascaded; simple installation in further control stands with reduced cabling demand; automatic dimming of illumination.
AHD-EOP K I  Art. No. 12214
Pair of transponder keys for Engine Operation Panel AHD-EOP

Pair of keys with transponder technology for release of start-stop operation of a ship main engine by means of engine operation panel AHD-EOP

Coding by AHD-EOP master key, code transferable to further keys; design housing in stainless steel with “Böning” logo can be plugged together and kept by integrated magnet for safe transportation.

Customer-specific logos available upon request.

AHD-EOP K II  Art. No. 12215
Pair of transponder keys for Engine Operation Panel AHD-EOP

Pair of keys with transponder technology for release of start-stop operation of a ship main engine by means of engine operation panel AHD-EOP

Coding by AHD-EOP master key, code transferable to further keys; design plastic housing, floating key with “Böning” logo; can be plugged together and kept by integrated magnet for safe transportation.

Customer-specific logos available upon request.

AHD-EST  Art. No. 13015
Emergency Stop operating panel

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>70 mA</td>
</tr>
<tr>
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<td>IP 66 front / IP 10 back</td>
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<td>Weight:</td>
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<tr>
<td>Operating temperature:</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-50°C … +85°C</td>
</tr>
</tbody>
</table>

Emergency Stop operating panel for Emergency Stop unit of diesel engines, device ready for panel or switchboard installation. Protection against unintended use; lockable rocker switch with integrated LED illumination, pluggable terminal strip; panels cascadable, wire break monitoring.
AHD-ORP  Art. No. 13116
Override Panel

Operating panel for use as type approved override device for main engines (man before machine); device ready for panel or switchboard installation; protection against unintended use; lockable rocker switch with integrated LED illumination; suitable for in- and outdoor installation; panels cascadable; wire break monitoring

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply:</strong> 24 V DC (+30% / -25%)</td>
</tr>
<tr>
<td><strong>Current consumption:</strong> 70 mA</td>
</tr>
<tr>
<td><strong>Dimension (W x H x D):</strong> 70 mm x 130 mm x 33 mm</td>
</tr>
<tr>
<td><strong>Degree of protection:</strong> IP 66 front / IP 10 back</td>
</tr>
<tr>
<td><strong>Weight:</strong> approx. 0.25 kg</td>
</tr>
<tr>
<td><strong>Operating temperature:</strong> -30°C … +70°C</td>
</tr>
<tr>
<td><strong>Storage temperature:</strong> -50°C … +85°C</td>
</tr>
</tbody>
</table>

AHD-EOP Adapter  Art. No. 11823
Transfer unit for ddaption to ship main engine

Module for profile rail installation with relay control outputs; individually adapted for interfacing the engine operation panel AHD-EOP with engine electronics; 8-pole plug connector for connection of engine operation panel AHD-EOP; terminal list for connection with engine terminal box

For MAN + MTU engines, other engines upon request.

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimension (W x H x D):</strong> 46 mm x 78 mm x 33 mm</td>
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<tr>
<td><strong>Operating temperature:</strong> -30°C … +70°C</td>
</tr>
<tr>
<td><strong>Storage temperature:</strong> -50°C … +85°C</td>
</tr>
</tbody>
</table>
Diesel engine monitoring and safety systems

With the new AHD 514 system components, Böning Automationstechnologie GmbH offers a compact monitoring system for ship main engines. All required inputs and outputs as well as corresponding monitoring and control functions are fully integrated. The system consists of a monitoring system with combined start/stop functionality, a safety system with integrated emergency stop unit, as well as a display and control unit with a 5.7" color display. The component design emphasizes ease of connectivity and serviceability. For the most part system components can be connected directly via their terminal strips, thus leading to a substantial material and installation expenditure, resulting in further savings. The system is classified according to GL and other major classification societies. The included PC-software allows for configuration. All required parameters can be adjusted for different user levels.

AHD 514 A Alarm System with Start/Stop Function

Compact microprocessor controlled unit in module housing for console, switchboard or control box installation on profile rails TS32/TS35. AHD 514 A includes a multitude of inputs and outputs, whose functions are for the most part configurable. Thus all necessary sensors, including engine speed as well as safety-relevant (redundant) sensors are recorded and processed. When a threshold value is exceeded, an alarm is raised. In case of overspeed, the engine is stopped automatically. Various operating conditions are transmitted via relay contacts. The diesel engine’s start and stop, as well as alarms and display of all data occurs via the display and control unit AHD 514 OP, which is connected via CAN bus. Alarms and events are logged internally and can be retrieved at a later point. A second remote control unit enables remote operation.
AHD 514 S Safety System with combined Emergency Stop System

Compact, microprocessor controlled unit in module housing for console, switchboard or control box installation on profile rails TS32/TS35. All safety functions prescribed by the classification societies, such as wire break monitoring of inputs and outputs, are integrated. The emergency stop circuit includes a separate 24 V DC feed, operating independently of other safety functions. When an emergency stop is triggered, it is transmitted directly to emergency stop output. When an alarm is raised, the safety relevant sensors activate the stop circuit. The alert occurs locally via LED as well as the display and control unit AHD 514 OP, which is connected via CAN-bus.

AHD 514 S Safety System

Art. No. 12972
Start/Stop-System with combined alarm system for propulsion diesel engines

Compact microprocessor controlled unit in module housing for console, switchboard or control box installation on profile rails TS32/TS35. Includes a multitude of configurable inputs and outputs. Integrated alarm and event log memory for logging of up to 10000 alarms and events. Recall of data via PC-Software.

Inputs:
1 speed input, galvanically isolated, 6 analog inputs (4 – 20 mA) / binary for status messages and alarm inputs, 6 analog inputs (Pt100/Pt1000) / binary for status messages and alarm inputs, 2 binary inputs, wire-breakage monitored, 8 binary inputs for control functions (remote start/stop, horn quit, overspeed test etc.), 2 binary inputs for fuse trip monitoring and charging alternator

AHD 514 OP Display and Control Unit

Built-in module with 5.7” color display and control keypad for local installation in the diesel engine’s control switchbox and/or as remote operating unit in bridge console (optional). All data produced are visualized on a high resolution, bright display (640x480 pixels, 500 cd/m2). The presentation is displayed clearly, distributed to several pages. Incoming alarms activate an internal buzzer and a notification message flashes red. Integrated pushbuttons enable start and stop, acknowledge alarm, reset function as well as switching between pages.

AHD 514 OP Display and Control Unit

Art. No. 12971
Start/Stop-System with combined alarm system for propulsion diesel engines

Built-in module with 5.7” color display and control keypad for local installation in the diesel engine’s control switchbox and/or as remote operating unit in bridge console (optional). All data produced are visualized on a high resolution, bright display (640x480 pixels, 500 cd/m2). The presentation is displayed clearly, distributed to several pages. Incoming alarms activate an internal buzzer and a notification message flashes red. Integrated pushbuttons enable start and stop, acknowledge alarm, reset function as well as switching between pages.

Specifications

<table>
<thead>
<tr>
<th>Power supply:</th>
<th>24 V DC (+30%/-25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption:</td>
<td>200 mA</td>
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<tr>
<td>Dimension (W x H x D):</td>
<td>239 mm x 128 mm x 48 mm</td>
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<tr>
<td>Degree of protection:</td>
<td>IP 20</td>
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<tr>
<td>Weight:</td>
<td>approx. 0.7 kg</td>
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<tr>
<td>Operating temperature:</td>
<td>-30°C … +70°C</td>
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<tr>
<td>Storage temperature:</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR, BV, DNV, ABS, RMRS, RINA, CRS</td>
</tr>
</tbody>
</table>

Outputs:
8 relay outputs (6 A), potential free for starter relay, engine control and alarm outputs, 2 transistor outputs (8 A), wire-breakage monitored and short circuit-proof for engine stop; 1 analogue output (4 – 20 mA / 1 – 5 V DC / 2 – 10 V DC)

Interfaces:
2 CAN Bus interfaces for data communication with AHD 514 S safety system and AHD 514 OP display and operation unit as well as external alarm system (on demand), 1 RS232 interface (9-pole Sub-D) for fault diagnostics / log read out / firmware-update, 1 serial input (optocoupler), i.e. for control inputs of external data station, 2 serial output (optocoupler), i.e. for external relay or display unit
Start/Stop-System with combined alarm system for propulsion diesel engines. AHD 514 S is a microprocessor-controlled device for starting and stopping of propulsion Diesel engines, assuming control of all required monitoring functions incl. automatic stop at overspeed with individual adaption to type series of different engine manufacturers. Two separated 24 V DC power supplies for emergency stop circuit and safety system. Suitable for indoor installation.

Inputs: 2 x binary, wire breakage monitored (emergency stop), 5 x binary, wire breakage monitored (stop criteria), 5 x binary( control inputs), 1 x engine speed input, galvanically isolated

AHD 514 OP is a 5.7” colour display with operating keys for control and tabular / graphical presentation of system and status data of AHD 514 propulsion. Diesel monitoring system on multiple visualization pages. 5.7” LCD colour display: luminous intensity 500 cd/m2; display resolution 640 (H) x 480 (V) pixels; colour depth 262144 colours. Automatic dimming of backlight. Control by means of 7 operating push buttons in front panel of the device incl. push buttons for starting and stopping of propulsion Diesel engine.

### Specifications

<table>
<thead>
<tr>
<th>AHD 514 S</th>
<th>Art. No. 12973</th>
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<tbody>
<tr>
<td>Safety System with combined emergency stop system for propulsion diesel engines</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply: 24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption: 110 mA</td>
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<tr>
<td>Dimension (W x H x D): 128 mm x 148 mm x 48 mm</td>
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<td>Degree of protection: IP 20</td>
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<tr>
<td>Weight: approx. 0.45 kg</td>
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<tr>
<td>Operating temperature: -30°C … +70°C</td>
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<tr>
<td>Storage temperature: -50°C … +85°C</td>
</tr>
<tr>
<td>Approvals: GL, LR, BV, DNV, ABS, RMRS, RINA, CRS</td>
</tr>
<tr>
<td>Outputs: 4 x relay (6 A), potential free (e.g. for horn, common alarm), 2 x transistor (8 A), wire breakage monitored, short circuit proof (solenoid / operating magnet, air flaps; stop from safety system), 1 x transistor (8 A), wire breakage monitored, short circuit proof (stop from emergency stop system), 1 x current output 4-20mA (for external speed indication), 10 x LED indications</td>
</tr>
<tr>
<td>Interfaces: 1 x CAN Bus (internal communication, configuration)</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>AHD 514 OP</th>
<th>Art. No. 12974</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display and Operation Unit for AHD 514 propulsion diesel monitoring system</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply: 24 V DC (+30%/-25%)</td>
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<td>Current consumption: 200 mA</td>
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<tr>
<td>Dimension (W x H x D): 144 mm x 144 mm x 50 mm</td>
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<td>Weight: approx. 0.5 kg</td>
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<td>Operating temperature: -30°C … +70°C</td>
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<td>Storage temperature: -50°C … +85°C</td>
</tr>
<tr>
<td>Approvals: GL, LR, BV, DNV, ABS, RMRS, RINA, CRS</td>
</tr>
<tr>
<td>Outputs: 1 x serial output (optocoupler)</td>
</tr>
</tbody>
</table>

The unit is installed in control cabinet of the propulsion diesel engine or optionally as a remote operating panel in external control stands (i.e. wheelhouse, MCR), cascadable with further AHD 514 OP unit as remote control unit.

Interfaces:
1 x CAN Bus (internal communication, configuration)
**AHD 414**  Art. No. 8765  
Start-Stop-Diesel control unit with integrated firing and overspeed monitoring  

Start-Stop-Diesel control unit; microprocessor controlled device for console, panel or switchbox installation; small and robust design; starting and stopping of a diesel engine via push buttons in front of the device or externally via remote start and stop inputs; adaption of control and monitoring on diesel engine by programming of engine-specific parameter: pre-glowing time, quantity and duration of start trials, frequency at ignition and overspeed, solenoid or operating magnet, stop trial, delay times, operation depending suppression of alarms (i.e. oil pressure); 4 binary inputs for alarm and status messages with status LED indication; 1 binary input for start blocking with status LED indication.

**AHD 414 A**  Art. No. 8721  
Alarm and safety system, 11 Binary Inputs  

Alarm and indication system; microprocessor controlled device for console, panel or switchbox installation; 10 binary inputs for alarm and status messages with status LED indication; 1 binary input for alarm blocking with status LED indication; 1 serial input (TTY) for project specific special functions; 1 serial output (TTY) for data transmission resp. additional control functions via relay station AHD-R 101.

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**Specifications**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>200 mA</td>
</tr>
<tr>
<td>Dimension (W x H x D):</td>
<td>144 mm x 144 mm x 62 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 44</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.65 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C ... +70°C</td>
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<tr>
<td>Storage temperature</td>
<td>-50°C ... +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR, BV, DNV, ABS, RMRS</td>
</tr>
</tbody>
</table>

Message for wire breakage, alarm inputs and stop circuit, stop by start failure, failure speed sensor; stop by overspeed, engine is pre-glowing, engine starts; override function for automatic engine stop (except overspeed), optionally; 1 bidirectional serial interface (TTY) for data transmission resp. remote control by second AHD 414 unit; integrated alarm buzzer, audible/visual alarm acknowledgement via acknowledge push button, alarm reset by reset push button; 2 relay outputs for starting and solenoid/operating magnet (max. load 20 A starting current, 10 A continuous current), 5 relay outputs for pre-glowing, message “ignition speed”, control of external horn, message “alarm system on” and common alarm (max. load 2 A each); connection via 22-pole pluggable terminal strip at rear side of device.

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**Specifications**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>100 mA</td>
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<td>Dimension (W x H x D):</td>
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<tr>
<td>Degree of protection</td>
<td>IP 44</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.65 kg</td>
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<tr>
<td>Operating temperature</td>
<td>-30°C ... +70°C</td>
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<tr>
<td>Storage temperature</td>
<td>-50°C ... +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL, LR, BV, DNV, ABS, RMRS</td>
</tr>
</tbody>
</table>

Each message programmable as alarm or indication; on-delay programmable between 1 and 99 s; integrated alarm buzzer, audible/visual alarm acknowledgement via acknowledge push buttons in front panel or externally via acknowledgement inputs; 1 horn relay, 3 freely programmable group relays, max. contact load each; 50 V AC/DC, 3 A, max. total load 50 V AC/DC, 5A; connection via 24-pole pluggable terminal strip at rear side of device.
AHD-SSP   Art. No. 13745
Multi-purpose Start-Stop-Panel

Multi-purpose Start-Stop-Panel with 3 push buttons and one switch.

Push Button functions: Start, Stop, Emergency Stop
Switch function: Override (ON-OFF)

Applicable for example for switching of an engine.
7 connectors with common feeding, emergency stop with additional potential-free contact and cover lid against unintended use.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
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<tr>
<td>Current consumption:</td>
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<tr>
<td>Dimension (W x H x D):</td>
<td>105 mm x 130 mm x 115</td>
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<tr>
<td>Protection class:</td>
<td>IP 44 front / IP 10 back</td>
</tr>
<tr>
<td>Weight:</td>
<td>app. 0.4 kg</td>
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<tr>
<td>Operating temperature:</td>
<td>-30°C ... +70°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-50°C ... +85°C</td>
</tr>
</tbody>
</table>
Application example including switchbox

Multi-purpose Start-Stop-Panel with 3 push buttons and one switch.

Push Button functions: Start, Stop, Emergency Stop

Switch function: Override (ON-OFF)

Applicable for example for switching of an engine.

7 connectors with common feeding, emergency stop with additional potential-free contact and cover lid against unintended use.
Stand-by pumps and compressor controls

Several AHD 408 components are available to control and monitor stand-by pumps and paired compressors. The devices are optimized for control panels and can be operated directly by front side switches. A sophisticated logic allows for direct control of the pumps or compressors, even in case of monitoring failure. Pump/compressor pairs or two attached pumps respectively are monitored. Automatic switching or selection occurs in critical cases, such as pressure drop. The device is delivered with optional front attachment to increase protection type.

Further features: all operating conditions and alerts displayed front side via LEDs, relay output for alarms, delay of power up after blackout, front side changeable text field.

Microprocessor controlled device for switch panel installation; controls two independently operating pump pairs; selection switch for main and stand-by pump front side; after activation, the stand-by pump builds up pressure, then it switches to the main pump; pressure drop is alerted, and the stand-by pump is automatically started. In case of a blackout all pumps are switched off and are restarted again after power restore after a predefined time; pressure and status of the pumps as well as blackouts and stand-by alarms are indicated; easy change of front text field. AHD 408E controls two independently operating pump pairs. After activation, the stand-by pump first builds up pressure. Afterwards, it switches to the main pump. Pressure drop is alerted, and the stand-by pump is automatically started. All switch and delay times can be programmed. The selection switches for both pumps can be accessed front side. Each pump can function as the main or stand-by pump, so that the work load can be evenly distributed.

### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tr>
<td>Power supply</td>
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<td>Current consumption</td>
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<tr>
<td>Dimension (W x H x D):</td>
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<tr>
<td>Degree of protection</td>
<td>IP 20 (front; with protection cover IP 54)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.9 kg</td>
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<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
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<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL</td>
</tr>
</tbody>
</table>

AHD-408 E  Art. No. 8783
Stand-by pump control for two electrically driven pairs of pumps, with black-out function
Microprocessor controlled device for switch panel installation; stand-by control for pump pairs with direct drive from engine and electrically operated stand-by pumps; mainly used for lubrication and transmission oils; controls stand-by pumps depending on oil pressure and speed of diesel engine. At low engine speed, the stand-by pump is automatically activated (normal operation). An alarm is raised at pressure drop or excessive engine speed, and the stand-by pump is also activated.

AHD 408A controls two independently operating pumps, attached to a diesel engine. Oil pressure and engine speed are recorded. At low engine speed, the attached pump is automatically selected during normal operation. An alarm is raised at pressure drop or excessive engine speed, and the attached pump is also activated. All switch and delay times can be programmed. Both pumps are activated by front side switches.

Specifications

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 V DC (+30%/-25%)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>80 mA</td>
</tr>
<tr>
<td>Dimension (W x H x D)</td>
<td>72 mm x 144 mm x 220 mm insertion depth 216mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 20 (front; with protection cover IP 54)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 0.9 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30°C … +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50°C … +85°C</td>
</tr>
<tr>
<td>Approvals</td>
<td>GL</td>
</tr>
</tbody>
</table>

Easy change of front text field. AHD 408A controls two independently operating pumps, attached to a diesel engine.

AHD 408K controls an electric pair of pumps as well as a pair of compressors. The control function of the paired pumps is equivalent to AHD 408E. The compressor pair is controlled via three pressure sensors. At low pressure, the main pump starts immediately. At medium pressure, the stand-by pump is also selected. At high pressure, all pumps are switched off. An alarm is raised when high pressure is not attained after a defined time frame. The selection switches for both pump pairs are accessible front side. Each pump can be used as a main or standby pump, so that the work load can be evenly distributed.

Relay output for pump and compressor contactors; potential free contacts, max. 250 V AC, 3 A. Common alarm and common alarm repetition, potential free contacts, max. 48 V DC/AC, 1 A; all connections on 24-pole terminal on rear side of the unit; inputs isolated from remaining electronics by means of optocouplers; text field in front panel of the unit for easy replacement; automatic start of stand-by pump in case of pressure loss with stand-by alarm.
Bow Thruster Control

The components AHD 501 and AHD 502 developed by Böning Automationstechnologie GmbH allow for complete control and monitoring of a bow thruster system with a three-phase asynchronous motor (slip-ring rotor) and attached fixed propeller. In addition to reversing contactors for both directions, power stages 70%, 85%, and 100% are directly selectable, while additional auxiliary stages avoid high starting currents.

The central control unit AHD 501 is installed in the bow thruster's power section or its control cabinet. Through it all safeties are controlled, all acknowledgements read, total current and engine temperature sensors recorded, and communication with the control units AHD 502 processed. All commands are received via CAN-bus on the helms, where current measurements, alarms, and switch conditions are sent back and displayed. All safety relevant criteria are monitored to ensure operational safety at all times. Depending on the malfunction and the degree of overload, the system reacts by reducing power or stopping. Additional features: ventilator control, oil level monitoring, monitoring of control voltage, 2-phase recording of motor current, input for direct-locking of 100% stage, USB diagnostic interface.

The control Unit AHD 502 allows for convenient bow thruster control and monitoring. Up to 3 identical control units can be deployed. Usually, the helms are located on the bridge and both nocks (Bb. And stb.). The control panel is optimized for console installation. Every stage can be accessed directly via a control key. Keys for display control, acknowledgement and emergency stop are also provided. The integrated 3.5” color display is dimmed automatically and shows clearly all important operational conditions, such as current power consumption, stage, and direction. Alarms are reported acoustically and visually. Additionally, potential free contacts for general alarm and connection to an external whistle are provided. Communication of the control units with one another and the central control unit AHD 501 takes place through separate CAN-lines. All required terminating resistors are integrated. The cabling expenditure is significantly minimized when compared to conventional control systems. Additional features: integrated “Power Request” key for performance requirement to power management with acknowledgement indicator, interface for external joystick controller, diagnostic and service function for display of system conditions, retrieval of alarm memory and programming of overcurrent threshold values, RS422 interface for direct control of a voyage data recorder in accordance with IEC-61162-1 (proprietary).
Control unit for bow thruster with fixed propeller, driven by three-phase-asynchronous motor

Control unit for bow thruster control for fixed propeller, driven by three-phase-asynchronous motor (slip-ring rotor); the control unit AHD 502 is a microprocessor-controlled device for operation and indication of measuring point data of power of a bow thruster, consisting of a three-phase-asynchronous motor (slip-ring rotor) with fixed propeller. Suitable for in- and outdoor installation. As a standard, control units are installed in wheelhouse control console (master control unit) and in wing control stands (slave control units) of the ship.

3,5" TFT-colour-display, transflective with backlight for display of all operating conditions and engine data.

AHD-501 Art. No. 12028
Central unit for bow thruster control for fixed propeller, driven by three-phase-asynchronous motor

Central unit for bow thruster control for fixed propeller, driven by three-phase-asynchronous motor (slip-ring rotor). The central unit AHD 501 is a microprocessor-controlled device comprising all required in- and outputs for control and monitoring of the power section of a bow thruster, consisting of a three-phase-asynchronous motor (slip-ring rotor) with fixed propeller. The central unit is installed in power section resp. in the control cabinet of the bow thruster. CAN-bus data communication with up to 3 control units AHD 502; direct control of direction, stage and interstage contactors including feedback monitoring.

Specifications
Power supply: 24 V DC (+30%/-25%)
Current consumption: 300 mA
Dimension (W x H x D): 192 mm x 144 mm x 41 mm
Degree of protection: IP 66 front/ IP 20 back
Weight: approx. 0.9 kg
Operating temperature: -30°C ... +70°C
Storage temperature: -50°C ... +85°C
Approvals: GL, LR

Automatic and adjustable illumination control; acoustical and visual signalization of all alarms; potential free contact outputs for common alarm and external horn ; integrated service menu for display of internal system condition, call of alarm log and programming of current limits; power request top power management system by means of push „Power Request“ with feedback signal input „Power Ready“ (controlled by master unit); integrated push button „Emergency Stop“, emergency stop function even available in case of system breakdown by means of direct termination Interfaces: CAN-BUS communication (3 x CAN); option: Optocoupler input for connection of binary data station AHD-PS15, RS422-interface to Voyage Data Recorder, data protocol acc. to IEC-61162-1 standard

AHD-502 Art. No. 12369
Control unit for bow thruster with fixed propeller, driven by three-phase-asynchronous motor

Control of 3 main stages (70%, 85%, 100%) and up to 6 interstages; fan control and monitoring; 2-phase monitoring of motor current (galvanically isolated) and of winding temperatures in the motor; monitoring of oil level at motor; check of contactor control voltage (circuit breaker); controllable direct-locking of 100-percent-stage; high rating of relay for contactor control; the demand of auxiliary contactors is only required in exceptional case; 3 integrated LED-status indications for power supply, failure and alarm; USB diagnostics interface for service, configuration and status messages. Most important parameters can be polled or configured at site.

Specifications
Power supply: 24 V DC (+30%/-25%)
Current consumption: 300 mA
Dimension (W x H x D): 118 mm x 126 mm x 56 mm
Degree of protection: IP 20
Weight: approx. 0.5 kg
Operating temperature: -30°C ... +60°C
Storage temperature: -50°C ... +85°C
Approvals: GL, LR
Door Access System MINI-D.A.C.S.

The modular, decentralized Mini Door Access Control System (Mini D.A.C.S.) is a SECURITY system for yachts and any kind of supply vessels, based on the Böning Maritec Engineering advanced Door Access Control System D.A.C.S. for Mega yachts.

The basic Mini D.A.C.S. system is designed for monitoring and access authorization for exterior and/or interior doors. The electronic door units are fitted in a connection box for ceiling mounting (CM) in the protected area and are combined with a 13.56 MHz RFID proximity reader (IP55/IP23), installed in the non-protected area. The CAN bus interface connects the electronic door units via twisted-pair shipboard cables to the visualisation display.

The Mini D.A.C.S. system is integrated into the standard Böning ship alarm, monitoring and control system as an extension. The displays of the system are provided with an additional visualisation page displaying the deck arrangement with indication of door status like open/closed/still-open, permanent unlocked, intruder, power and communication failure and sabotage (lid contact). Any change of door status is logged together with a timestamp, access booking with transponder key-fobs/cards with timestamp and card ID.

A “Shut-Off” contact for door power supply is used to release the doors automatically. External contacts (i.e. fire alarm contact) may be integrated additionally for the same function. The door status will be visualized on the display with specific colours: Door closed (green); Door open (yellow).

The D.A.C.S. components at a glance:
- Modular, decentralized Mini Door Access Control System (Mini D.A.C.S.)
- State-of-the-art CAN bus technology
- System also available in Ethernet PoE version
- Standard interface to the Böning visualisation units
- 13.56MHz RFID technology for contactless proximity reader
- Operated with vessel’s 24 V DC power supply
- Door Electronic Unit in waterproof connection box for ceiling mounting

Besides the products supplied by Böning Automationstechnologien GmbH & Co. KG (Electronic door Unit, Transponder Key Card Reader, I/O- units, ModBus/TCP unit, Alarm/Sabotage unit, Shut-Off unit), the system comprises Panic Locks, Drop Bolts, Proximity Switches, Keypads and Card Printers.
The D.A.C.S. Door Access Control System electronic door unit is a state-of-the-art stand-alone operating electronic board with integrated long distance proximity reader. It is powered by PoE and based on the latest microcontroller-technology. It is installed above the panic lock directly into an internal non-metallic door blade. The unit is connected to a panic lock, a ‘door closed’ proximity switch and an optional keypad for door surveillance & monitoring. Due to PoE only one LAN cable is necessary for power supply and data transmission.

The electronic unit can also be installed in a wall or ceiling mounted IP 54 connection box for steel doors. An external touchless proximity reader is located next to the door together with an optional keypad.

Interfaces/Connectors: Ethernet LAN with PoE (RJ45), External Reader No.1, External Reader No.2 or keypad, status contact “Door locked” and “Inner door handle used”, “Override” and “Shut-Off” function, lid-contact connection box.
DATADIS
Data Acquisition & Distribution System

The DATADIS® system is designed for continuous recording of nautical-, meteorological-, survey-, fishery and ship's data and their digital and/or graphical presentation, processing, recording and storage.

The DATADIS system has basically been developed for vessels in the fields of scientific research. When under way, the collected data has to be made available to scientists aboard the ship at any point of the ship without delay. The collected data is therefore processed by a main computer system on the bridge and distributed to various PCs or displays on the ship, making all scientifically relevant data available.

The data collected comprise water depth, windlass positions, meteorological data, position values and many more and can be stored, further processed, printed and displayed on each PC connected to the system.

Especially for the research in the fields of fishery the DATADIS offers a special module for collecting, analyzing and publishing of data for scientific purposes.
In the DataEdit mode client and work specific display- or print-formats can be created by using Drag & Drop of digital and analog display forms like:

- digital value with ID and unit of measurement
- beam and/or line diagram
- indication of direction i.e. by compass magnifier
- X-/Y-speed respectively thrust indication
- water-level indication and diagram (OPTION)
- analogous clock together with the respective sensor data.

The display size, the colouration and the in each case most valid indication of data can be changed! A multiple indication or cross-fade of data is also possible! For each displayed value the basic possible adjustments can be altered by a right mouse click.

In addition a chart display with/without world shore lines, track and noontime position and the respective possible adjustments and presentation modi can be selected e.g.:

- fixed chart section
- center always ships position
- true motion presentation with chart variation at 80% sailed surface
- automatic chart zooming when steaming towards a target point
- STATION-Display – center = target
- STATION-Display – ship = target
- STATION-Display – ahead bearing
- ships outline, variable reference point (mast/web beam/A-frame)
- indication of bearing/distance for a manual or automatic accepted waypoint
Operation panels

With increased automation on board a commercial ship, the amount of data that must be collected also increases. Their visualisation on a commercial ship’s bridge usually occurs via a multitude of different control units from various manufacturers. The skipper needs to constantly adjust to the manifold operating concepts of these instruments. In our view, harmonising the operation of commercial ships, especially from the bridge, is an important task which can contribute to the operational safety on board. Thus, we developed a multitude of control units with a unified layout and under consideration of the latest ergonomic viewpoints over the past few years.

All instruments include automatic dimming as well as a unified, glare-free design which facilitates reliable operation, even when cruising at night. Standardised installation dimensions simplify the bridge design significantly.

In addition to our selection of standardised control units, our development team is happy to assist you to fulfil your individual requests for panels, switchboards, and bridge modules. These can be executed through conventional key stroke operation, or they can be combined with modern touch screen glass panels.
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**Whistle operation panel**

AHD-WOP  Art. No. 11331
Whistle operation panel; microprocessor-controlled device for installation in consoles or control panels for operation and control of one or more ship whistles. Suitable for in- and outdoor installation; output of sound signals for maneuvering and warning as well as sound signals in restricted visibility according to “Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)” incl. amendments.

**Specifications**

- **Power supply:** 24 V DC (+30%/-25%)
- **Current consumption:** max. 60 mA
- **Dimension (W x H x D):** 70 mm x 130 mm x 38 mm
- **Degree of protection:** IP 66 front / IP 10 back
- **Weight:** approx. 0.25 kg
- **Operating temperature:** -30°C … +70°C
- **Storage temperature:** -50°C … +85°C

**AHD-WAOP K**  Art. No. 13224
Watch keeper alarm panel for monitoring of watch keeper, timer start/stop with key switch; configurable watch duty time of up to 30 minutes, protected by user code; 3 pre-alarms (blinking light, pre-alarm 1, pre-alarm 2), afterwards general alarm is raised (relay contact); integrated display, system settings via frontside pushbuttons (times, password), connectivity for up to 4 external “attention keys”

**Specifications**

- **Power supply:** 24 VDC (+30%/-25%)
- **Power consumption:** max. 40 mA
- **Dimension (W x H x D):** 70 mm x 130 mm x 72 mm
- **Degree of protection:** IP 65 front / IP 20 back
- **Weight:** approx. 0.4 kg
- **Operating temperature:** -15°C … +70°C
- **Storage temperature:** -50°C … +85°C
- **Approvals:** GL, LR, RMRS

**Interfaces:**
- 4 relay contacts for blinking light, pre-alarm 1 (buzzer), pre-alarm 2, general alarm, system error; quadruple connection for external attention keys with key lighting control
AHD-WAOP  Art. No. 13146
Watch alarm panel for control of watch standby

Watch alarm panel for control of watch standby; timer reset via mushroom button; adjustable watch duty time up to 12 minutes, protected by user code; 3 pre-warnings (blinking light, pre-alarm 1, pre-alarm 2), alarm is triggered afterwards (relay contact). pressing the mushroom button for 5 seconds triggers an emergency alarm. Integrated display, system settings via front keys (times, passwords), connections for up to 4 external “attention keys”, freely extendable by parallel connection

Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Power supply:</td>
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<tr>
<td>Current consumption:</td>
<td>max. $40 \text{ mA}$</td>
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<td>Dimension (W x H x D):</td>
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<tr>
<td>Degree of protection:</td>
<td>IP 65 front / IP 20 back</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. $0.4 \text{ kg}$</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>$-15^\circ\text{C} \ldots +70^\circ\text{C}$</td>
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<tr>
<td>Storage temperature:</td>
<td>$-50^\circ\text{C} \ldots +85^\circ\text{C}$</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR, RMRS</td>
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<tr>
<td>Interfaces:</td>
<td>- 2 inputs for external start/stop</td>
</tr>
<tr>
<td></td>
<td>- 4 relay outputs for blinking light, pre-alarm 1 (buzzer), pre-alarm 2, general alarm, system error, attention key (direct output mushroom contact)</td>
</tr>
<tr>
<td></td>
<td>- Quadruple connection for external attention keys with key lighting control</td>
</tr>
<tr>
<td></td>
<td>- RS 485 (time data, 2 pin)</td>
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</tbody>
</table>

AHD-GAP  Art. No. 12823
General Alarm Panel

Control of acoustic and optical signals in emergency situations. Triple redundant manual activation of the horn. Common mandatory signals such as “Abandon Ship,” “General Alarm,” and “Fire Alarm” already hard-coded and can be activated in selectable intervals. Activation of manual signals even without main or emergency power. General alarm sequence can be triggered by the externally connected AHD-WAOP (watch alarm unit).

Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
<td>$24 \text{ V DC } (+30%/-25%)$</td>
</tr>
<tr>
<td>Current consumption:</td>
<td>max. $60 \text{ mA}$</td>
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<tr>
<td>Dimension (W x H x D):</td>
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</tr>
<tr>
<td>Degree of protection:</td>
<td>IP 66 front / IP 20 back</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. $0.25 \text{ kg}$</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>$-30^\circ\text{C} \ldots +70^\circ\text{C}$</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>$-50^\circ\text{C} \ldots +85^\circ\text{C}$</td>
</tr>
<tr>
<td>Approvals:</td>
<td>GL, LR, RMRS</td>
</tr>
</tbody>
</table>

Installation in consoles in bridge and further control stands. Front panel surface coated with waterproof, UV resistant and durable plastic film. All controls designed for glare-free lighting use at night. Automatic adjusted to ambient light by built-in photo sensor. Interfaces:
- 3 x relay for acoustic and visual signal control app. contact load 250VAC/0.5A, 1 x relay for status display app. contact load 250VAC/0.5A
Watch alarm panel for control of watch standby

- **Power supply:** 24 V DC (+30% / -25%)
- **Current consumption:** max. 60 mA
- **Dimension (W x H x D):** 70 mm x 130 mm x 85 mm
- **Degree of protection:** IP 66 front / IP 20 back
- **Weight:** approx. 0.25 kg
- **Operating temperature:** -30°C … +70°C
- **Storage temperature:** -50°C … +85°C

**Specifications**
- **Power consumption:** 40 mA
- **Dimension (W x H x D):** 70 mm x 130 mm x 80 mm
- **Degree of protection:** IP 65 front / IP 20 back
- **Weight:** approx. 0.4 kg
- **Operating temperature:** -15°C … +70°C
- **Storage temperature:** -50°C … +85°C

**Interfaces:**
- 2 inputs for external start/stop
- 4 relay outputs for blinking light, pre-alarm 1 (buzzer), pre-alarm 2, general alarm, system error, attention key (direct output mushroom contact)
- Quadruple connection for external attention keys with key lighting control
- RS 485 (time data, 2 pin)

Control of acoustic and optical signals in emergency situations. Triple redundant manual activation of the horn. Common mandatory signals such as “Abandon Ship,” “General Alarm,” and “Fire Alarm” already hard-coded and can be activated in selectable intervals. Activation of manual signals even without main or emergency power. General alarm sequence can be triggered by the externally connected AHD WAOP (watch alarm unit).

**Glass Bridge Mimic Panel**

The Glass Bridge Mimic Panels by Böning Automationstechnologie GmbH & Co. KG are multiple touch screen displays arranged in a single housing for a safe and convenient operation and monitoring of ship systems such as navigation lights, exterior lights, watertight doors and smoke detectors. They offer the same performance as the Mimic Panels by Böning Automationstechnologie GmbH & Co. KG in a more modern way.

The Glass Bridge Mimic Panels are custom-made products, incorporating all required system controls in a detailed graphical visualisation and direct control by means of state-of-the-art touch screens.
The Bridge Module System AHD-BMS consists of a Bridge Top Module and a Bridge Base Module. Both modules can be ordered and applied separately. The Bridge Base Module can optionally be fitted with standard 19'' components. Depending on the application and customer demand, the number of cabinets can vary. The mounting angle of the end modules can also be adapted to the requirements on the bridge. The baseboard of the housings can optionally be illuminated by red light. This gives a maximum of security for the operator. The used red LED light does not affect other visual displays or the sight outside the ship, especially by night.

The modules are designed with a forced ventilation, ensured by ventilation grilles in the baseboard and in the upper rear part of the top modules. By this a constant cooling of the cabinets is ensured.
The Bridge Module System AHD-BMS consists of a Bridge Top Module and a Bridge Base Module. Both modules can be ordered and applied separately. The Bridge Base Module can optionally be fitted with standard 19'' components. Depending on the application and customer demand, the number of cabinets can vary. The mounting angle of the end modules can also be adapted to the requirements on the bridge. The baseboard of the housings can optionally be illuminated by red light. This gives a maximum of security for the operator. The used red LED light does not affect other visual displays or the sight outside the ship, especially by night.

The modules are designed with a forced ventilation, ensured by ventilation grilles in the baseboard and in the upper rear part of the top modules. By this a constant cooling of the cabinets is ensured.

**Features:**
- Seawater-resistant, powder-coated aluminium, colour RAL 7024 (other colours optionally available)
- Installation direction of doors as required
- Comfortable internal wiring due to according holes in side plates
- Height of Bridge Module Base according to customer requirements
- Easy access to interior due to movable and lockable display hatches
- Panel plates for various panels – ready for required cutout
- Mounting plates in the Bridge Top Modules for easy mounting of terminal blocks or smaller modules
- Freely selectable mounting angle for end modules

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**Development phase screenshots**

![Development phase screenshot 1](image1)

![Development phase screenshot 2](image2)

![Development phase screenshot 3](image3)

![Development phase screenshot 4](image4)
Communication software

AHD-COM – the solution for your internal communications!

With AHD-COM software, in-house conferences are now even more effective. Meetings and conferences can be held at the workplace – including the processing of documents and files.

- Maximum security: all data communications occur via in-house servers, and all data are AES 256-bit encrypted.
- Multipoint conferencing is possible with up to 10 participants. During telephone operation (without video), the number of participants can be expanded to virtually any number.
- Application sharing for easy collaboration and file transfers to other participants streamline the information exchange within the company.
- The integrated recording function makes taking minutes obsolete. Conference participants can focus completely on the topic at hand.
- Organization of participants into groups for easy and needs-oriented administration.
- 16 kHz sampling, speech optimized compression with a highly efficient H.264/AVC standard for video compression guarantee the highest sound and image quality.
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All Features at a Glance

- Multipoint-conferencing with up to 10 participants without a cost-intensive MCU server (Multipoint Control Unit)
- Use of hybrid technology (between peer-to-peer technology and client-server system)
- No additional special hardware required
- Application sharing for easy collaboration
- File transfer to other participants
- Recording and playback of video conferences
- Highest image quality due to H.264/AV (Advanced Video Coding) – video encoding standard
- Best sound quality due to 16 kHz sampling and speech optimized compression
- Integrated echo compensation
  (Windows XP/Vista/Windows 7)
- All data are AES 256-bit encrypted
- Conferences through firewalls and NAT routers
- Bitrate adjustable from 48 to 1440 kbit/s
- Easy division of participants into groups
- Self-administration of separate groups by group administrators
- “Secretary” function for selective availability
AB Yacht
Abacus Marine
Abati Yachts
Abeking & Rasmussen
ACTIVE DIESEL S.L.
Aguti Yachts
Almaritec
Alphatron
Arcadia Yachts
Art Of Kinetik
Arzanà Navi
Asterie Ltd.
Austin Parker
Azimut
Bandido Yachts
Baur & Quidas GmbH
Benetti Sail Division
BESI Armaturen
BIMAX
Bloom & Voss
Blue Game
Bodan Werft
Bosch Rexroth
Camuffo
Cant. Blu Martin
Cantiere Carnevali
Cantiere Casa
Cantiere CNM
Cantiere Nautico Crosena
Cantiere Nautico VZ
Cantiere Navale Aicon
Cantiere Navale Leonard
Cantiere Navale San Lorenzo
Cantiere SNO
Cantieri di Baia
Cantieri di Sarnico
Cantieri Navali di Fiumicino
CargoTec Finland Oy
Cayman Yachts (Tirreno)
Costruzioni Navali Tigliolo
Cranchi
Dalla Pietà
Della Pascqua
Delta Diesel S.L.
Detroit Shipyard
Dirks Elektrotechnik GmbH
Dockstavarvet AB
Dolphin (Ferretti)
Dominator Yachts
Draghetti
Drettmann
DSD-Hilgers
E + P Werftenservice
Elegance Yachts
ELNA Elektro-Navigation
Elslether Werft
Emder Schiffs- und Industrie-Elektrik GmbH
Engel & Meier
Entreprise Marine
ETP
Euronautica
Euroyachts
Fashion Yachts
Fassmer
Feretti Brazil
Ferretti
Fipa
Fleming Yachts, Inc.
Galeon Yachts
Gianetti
HORIZON Yachts
HSSB
Imtech Marine
INACE
Innovazioni & Progetti
Interschalt
JADE YACHTS
Jong Shyn Shipbuilding Co. Ltd
Kifarù
Kirgan Holding S.A.
Krause & Wilhelmi Elektro GmbH
Kröger Werft
Liman
Lindenberg Anlagen
Lübeck Yacht Trave Schiff GmbH
Lürssen Werft
MAN Nutzfahrzeuge AG
MAN Rollo B.V.
MANCRAFT AS
mas Motoren & Anlagen Service
MEC
MNP Group
Monte Carlo Yacht
MOTEC Ingenieros, S.L.
Motorenbau HATZ
MS "Eiland" GmbH & Co. KG
MTU Friedrichshafen GmbH
N. Sundin Dockstavarvet AB
Nanni Industries SA
National Dry Bulk Transport
NECKAR-BOOTSBAU Ebert GmbH
Neptun Werft / Meyer Neptun
Nessewerft
Overmarine
P+S Werften
Palmer Johnson
Paschy Cia., S.A.
Pendennis
PERI Yachts
Peters & Bey
Petzelberger Motoren Center
Premier Yards
Princess Yachts
Queens Yachts
R+S Stolze GmbH
Rajkot Diesel Machines TR. EST
Red Funnel
Riva (Feretti)
Rizzardi
SACS
SAM Electronics GmbH
SANTARPIA
Sea-Fire Marine
Sessa Marine
Shine Tech Services Limited.
SIA Marine Propulsion Systems
Siem Consub
Siemens AG
Sietas Werft
South Boats SP
Stadtwerke Konstanz
Stella Mare Astandoa
STN Schiffselektrik GmbH&Co.KG
Sunboats Consultoria, Negócios,
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Tung Hwa Ind co. Ltd
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Wärtsilä Deutschland GmbH
WESMAR
Wiechmann GmbH & Co.
WSA Kiel-Holtenau
XL Marine
Yacht-Elektronik
Zoller
AHD 406-2 ................. 39
AHD 408 A ................. 67
AHD 408 E ................. 66
AHD 408 E-K ............... 67
AHD 414 ................. 63
AHD 414 A ................. 63
AHD 501 ................. 69
AHD 502 ................. 69
AHD 514 A ................. 61
AHD 514 S ................. 62
AHD 514 OP ............... 62
AHD 650 R ............... 18
AHD 651 ................. 15
AHD 880 E ............... 54
AHD 880 F ............... 54
AHD 880 TC .............. 15, 36
AHD 882 ............... 23, 40
AHD 1115 F ............. 29
AHD 1119 F ............. 29
AHD 1200 ............... 30
AHD 1215 F ............ 14, 53
AHD 1219 F ............. 14
AHD-AMU ............... 25
AHD-BMS ............... 79
AHD-COM ............... 80
AHD-CUC ............... 24
AHD-DC ............... 17
AHD-DEOP .............. 57
AHD-DeviceConfig ..... 6
AHD-DPS02 B14 ........ 33
AHD-DPS02 B21 ........ 33
AHD-DPS02 B42 ........ 34
AHD-DPS02 BS ........ 34
AHD-DPS02 A07 ........ 35
AHD-DPS02 G14 ........ 35
AHD-PS 15 ............ 20
AHD-PS 15B ........... 39
AHD-PS 30 ............ 19
AHD-PS 47 ............ 19
AHD-DPU ............... 23
AHD-DRMT ............. 17
AHD-DRMR ............. 17
AHD-EOP ............... 57
AHD-EOP Adaptor ..... 59
AHD-EOP K I ........... 58
AHD-EOP K II ........... 58
AHD-EST ............... 58
AHD-GAP ............... 76
AHD-ORP ............... 59
AHD-R 101 ............ 21
AHD-R 86 .............. 22
AHD-S 201 ............... 27
AHD-SAS 15 ........... 18
AHD-SSP ............... 64
AHD-SW I ............... 26
AHD-SW II ............... 26
AHD-UCC ............. 20, 55
AHD-UIC ............... 21, 55
AHD-VDCU 4/4 ........ 43
AHD-VDCU 8/8 ........ 43
AHD-VDCU 16/16 ...... 44
AHD-VC 710 ............ 47
AHD-VC 720 IR ........ 47
AHD-VC 731 ............ 46
AHD-VC 732 ............ 48
AHD-VC 751 ............ 46
AHD-VC 760 ............ 48
AHD-VCP ............... 44
AHD-VCS Q4-1 ........... 45
AHD-VC VR8 ............ 45
AHD-VSC C ............... 49
AHD-VSC QC ............. 49
AHD-WAOP .............. 76
AHD-WAOP K ........... 75
AHD-WOP ............... 75
Compakt EDA 47 .......... 16
DACS Card Reader .......... 71
DeviceNet .............. 27
DACS Electronic Door Unit 71
DATADIS ............... 72
FLIR - HM Series .......... 50
FLIR - M Series .......... 50
FLIR - Voyager II .......... 51
Mimic Panel ............ 77
Mimic Panel - Glass Bridge 77
Selector Switch .......... 36
Visualization Examples ...... 7, 11, 53

84
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