

# **Electronic Logbook (eLog)**

# **Installation Instruction**

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# **List of Abbreviations**

AIS Automatic Identification System
BAM Bridge Alert Management

CCRP Consistent Common Reference Point EPFS Electronic Position Fixing System

ESD Electrostatic Discharge

IMO International Maritime Organization INS Integrated Navigation System

LWE Lightweight Ethernet VDR Voyage Data Recorder





# Introduction

# **Preliminary Remarks**

The present manual is a description and reference book only. It is intended to answer questions and to solve problems in the quickest possible manner.

Read and follow the instructions and notes in this manual before operating the equipment.

For this purpose, refer to the table of contents and read the corresponding chapters thoroughly.

If you have any further questions, contact us under the following address:

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Errors can hardly be avoided in the documentation despite all efforts. Therefore, we appreciate any remarks and suggestions.

Subject to alterations.

# Safety

#### **General Safety Regulations**

The following safety symbols are used in this manual:



#### **WARNING!**



Warning statements indicate a hazardous situation that, if not avoided, could result in minor, moderate or serious injury, or death

Consequence

· Preventive action

# **CAUTION!**



Caution statements indicate a hazardous situation that, if not avoided, could result in material damage

Consequence

· Preventive action

#### Note

Notes indicate information considered important but not hazard-related.

## **General Safety Instructions**

## NARNING!



Danger due to nonadherence to general rules and regulations

Risk of death or serious injury and material damage

- · Observe all national and regional rules and regulations.
- Observe all general rules and regulations that are specified for the work area.
- Observe all instructions that are placed on the components or described in related documentation.

## **WARNING!**



Danger due to improper operation and use for other than the intended purpose

Risk of serious injury and material damage

- Use the product only for the intended purpose.
- Perform operation steps according to this manual.
- Do not make any product modifications without authorization.

#### **WARNING!**



#### Danger due to voltage-regulated devices

Risk of death or serious injury that is caused by electrical shock

- Switch off voltage supply if the wires have damaged insulation.
- Only skilled electricians must perform work on the electric system.
- · Keep moisture away from live parts.
- Keep the system closed.
- Do not attempt to bypass or disable fuses.

## **Electrostatic Discharge**

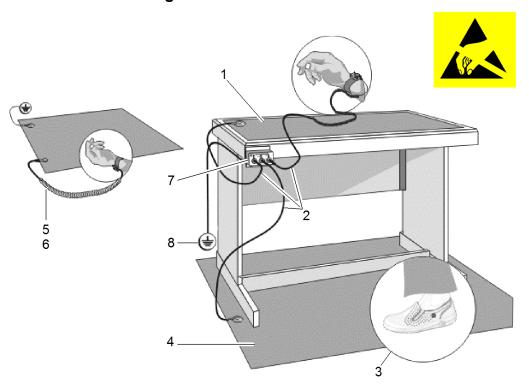


Fig. 1: Electrostatic Discharge, Protected Area

- 1 Table Mat
- 2 Ground Cord
- 3 Dissipative Shoes
- 4 Floor Mat
- 5 Wrist Band
- 6 Wrist Strap
- 7 Common Ground
- 8 Ground Point

Any product which is labeled as shown is electrostatic sensitive.

If proper *Electrostatic Discharge (ESD)* precautions are not taken, handling or working on this product results in damage. Every action must be done under *ESD* protection.

The product and all electronic parts of the product are susceptible to *ESD*. The product must be handled with *ESD* protection especially when removing the covers, touching the connectors or handling the product components.

All *ESD* sensitive parts must be packed in metallized protective bags during shipping and handling outside any . *ESD* protected spare parts packages must not be opened / closed out of an .

All necessary equipment for these protective measures can be supplied (on special order) by Raytheon Anschütz.

## **Safety Instructions for Installation**

# ⚠ WARNING!



Danger due to maintenance and service by unskilled personnel

Risk of serious injury and material damage

- Keep all unskilled personnel away from the working area.
- Perform all maintenance and service only by skilled personnel.

## **WARNING!**



### Danger due to electrical current

Risk of death or serious injury that is caused by electrical shock

- Switch off voltage supply before starting work.
- Secure against switching on again.
- · Perform work on the electric system only by skilled electricians.

# **CAUTION!**



#### Hazard due to wrong disposal of harmful substances

Risk of environmental damage that is caused by wrong disposal

- Observe all national and regional disposal rules and regulations.
- Observe all disposal instructions that are placed on the components or described in related documentation.

# 1 General Information

# 1.1 Equipment Overview

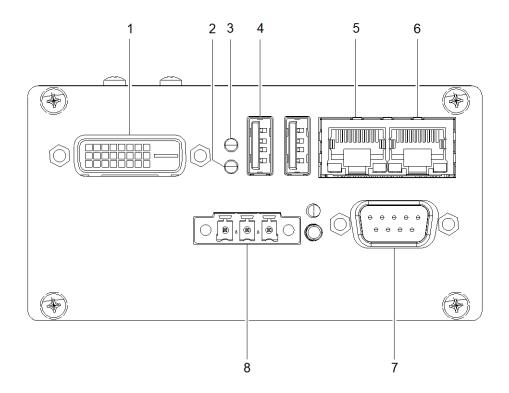


Fig. 2: Equipment Overview

- 1 DVI Port (Service Personnel Only)
- 2 Status LED 1, Green
- 3 Status LED 2, Red
- 4 USB Port (Not Activated)
- 5 Ethernet Port 1, Ship's Network or WIFI Router
- 6 Ethernet Port 0, LWE (IEC 61162-450) Network (VDR, BAM etc.)
- 7 Serial Port, AIS

A serial cable for the connection between the Electronic Logbook and the AIS is available from Raytheon Anschütz, see Tab. 1.

8 Voltage Supply, 24 V DC





## Danger due to voltage-regulated devices

Risk of death or serious injury that is caused by electrical shock

• The product may only be operated with power supplies which can be considered SELV circuits.

# 1.2 Purpose

Most of the required data for a vessel's logbook is available in the vessel's systems. The electronic logbook automatically collects, processes, stores and evaluates this data. Thereby it provides optimal assistance to the bridge personnel keeping records of the vessel's operation, while safely navigating the vessel without distraction.

The electronic logbook fully complies to and fulfills ISO 21745:2019 "Electronic record books for ships – Technical specifications and operational requirements".

The capabilities of the electronic logbook include:

- Electronic delivery of reporting data for easy and fail-safe data analysis and optimization of the vessel's operation
- · Correctness of recorded data is ensured
- · Recorded data cannot be tampered with
- · Source of manually entered data is recorded
- · Data is safe from data loss, for example from leakage and misuse
- Data is accessible for authorized personnel on the vessel and on shore
- · Storage of data for 3 years

#### Note

The electronic logbook requires an external time source which delivers a time in UTC.

# 1.3 Dependence on Peripheral Systems / Devices

The Anschütz eLog requires a position fix from AIS to work.

#### 1.4 Technical Data

Height 105 mm

Dimensions Width 52 mm

Depth 117 mm

Weight approx. 0.6 kg

Voltage Supply 24 V DC

Power Consumption 6 W

Operation Temperature -40 °C to +70 °C

# 1.5 Security

To ensure the safety of the vessel, its crew and its systems, the following security features have been implemented:

- The USB ports are electronically deactivated
- The backup files are electronically signed and are checked against the signature during import
- A detailed authorisation concept is implemented
- Logbook data can be transferred to shore regularly via the vessel's internet connection

# 1.6 Integration into an IEC 61162-450 (LWE) Network

The Anschütz eLog provides a *Lightweight Ethernet (LWE)* IEC 61162-450 ed. 2 interface at network port 0. The IEC 61162-450 interface can be used to

- Send logbook data to the VDR
- · Connect the Anschütz eLog to the CAM-HMI of the bridge
- · Read navigational data from sensors

The Anschütz eLog listens to the transmission groups NAVD, TGTD, TIME, NETA and accepts the sentences GGA, GGL, GNS, HDG, HDT, MHU, MMB, MTA, MTW, MWD, MWV, RMC, ROT, SRP, THS, VBW, VDO, VHW, VLW, VTG, ZDA.

Alert communication (according to IEC 62923-1/-2) is per default performed on transmission groups BAM1 and CAM1.

Error logging for IEC 61162-450 error counters is provided by syslog messages.

The maximum input data rate of the Anschütz eLog is defined as following:

- The Anschütz eLog is capable of processing 200 datagrams per second, which are intended for the equipment
- Furthermore, the Anschütz eLog can receive 1000 datagrams per second, which the equipment does not process
- At 100 intended datagrams per second, the equipment is able to receive 500 additional datagrams per second, which it does not process

The Anschütz eLog offers SSH access to the equipment on UDP port 22 as an ONF for maintenance purposes. The equipment creates no ONF data traffic during normal operation.

# 1.7 List of Optional Equipment and Spare Parts

Tab. 1: Optional Equipment

Description	Equipment Number
Dual band Wi-Fi Router	2013250
Serial Cable WN220-101-6,0	1503699

Tab. 2: Spare Parts

Description	Equipment Number
Electronic Logbook	4006517

# 2 Installation

# 2.1 Installation Requirements

The electronic logbook shall be interfaced to relevant sensors in accordance with recognized international standards.

To connect mobile devices (smartphone, tablet), a Wi-Fi router must be connected to ethernet port 1. A Wi-Fi router is available as an option from Raytheon Anschütz, see Tab. 1.

## 2.2 Installation Procedures

### 2.2.1 Mechanical Installation

#### Requirements

#### **Safety Conditions**



### **WARNING!**



## Danger due to nonadherence to safety instructions

Risk of death or serious injury and material damage

- Observe all general safety instructions.
- Observe all safety instructions for installation and maintenance.

### About this task

The Anschütz eLog is mounted to a 35 mm DIN rail.

#### **Procedure**

- 1. Hook the upper side of the device into the DIN rail.
- 2. Press the lower side of the device to the DIN rail until it latches.

## Close Up

Connect the cables, see chapter 2.2.2.

### 2.2.2 Electrical Installation

### Requirements

#### **Required Conditions**

The eLog is installed, see chapter 2.2.1.

#### **Safety Conditions**





### Danger due to nonadherence to safety instructions

Risk of death or serious injury and material damage

- Observe all general safety instructions.
- · Observe all safety instructions for installation and maintenance.

## ♠ WARNING!



#### Danger due to voltage-regulated devices

Risk of death or serious injury that is caused by electrical shock

 The product may only be operated with power supplies which can be considered SELV circuits.

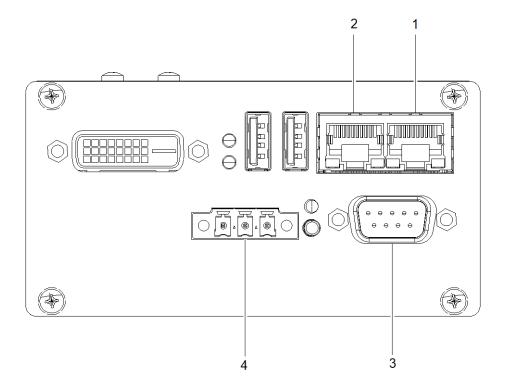


Fig. 3: Electrical Installation

- 1 Ethernet Port 0, LWE (IEC 61162-450) Network (VDR, BAM etc.)
- 2 Ethernet Port 1, Ship's Network or Wi-Fi Router
- 3 Serial Port, AIS
- 4 Voltage Supply, 24 V DC

- 1. Connect the ethernet cable of the Wi-Fi router (option) or the vessel's LAN to ethernet port 1.
- 2. (Optional) connect the ethernet cable of the IEC 61162-450 network (BAM, VDR etc.) to ethernet port 0.

3. Connect the RS485 plug from the AIS to the serial port. (A serial cable is available from Raytheon Anschütz, see chapter 1.7.

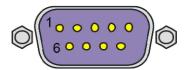


Fig. 4: RS485 plug, PIN Allocation

1	n.c.	6	GND
2	D+ (brown) to AIS Tx-B / Tx+	7	D- (blue) to AIS Tx-A / Tx-
3	GND	8	n.c.
4	n.c.	9	n.c.
5	n.c.		

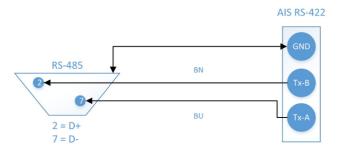


Fig. 5: RS485 Connection to AIS

4. Connect the voltage supply (24 V DC).

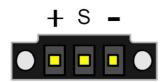


Fig. 6: Voltage Supply, PIN Allocation

PIN	Description	
+	+934 V DC	
S	Control Input (034 V DC)	
-	GND	

## Close Up

Follow the initial setup procedure, see chapter 2.2.3.

## 2.2.3 Initial Setup

#### Requirements

#### **Required Conditions**

- The eLog is electrically connected, see chapter 2.2.2.
- · The power supply is switched on.
- The status LED S1 is permanently green. (Note: If status LED S1 is not permanently green, check the power supply of the device.)

#### **Procedure**

- 1. Open the web browser on a PC connected to the vessel's LAN and open the adress 192.168.0.249. Alternatively, open the Anschütz eLog App (with the mobile device connected to the optional Wi-Fi router).
  - ► The *device name selection page* opens. This page opens once on every device that has not been used with the eLog before.

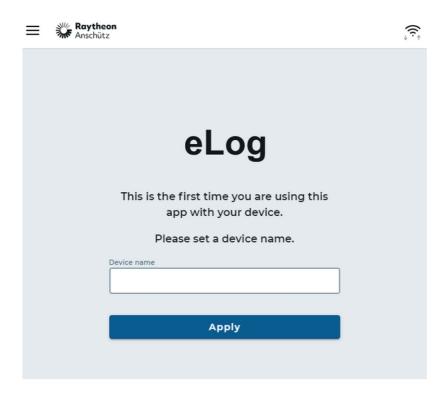


Fig. 7: Device Name Selection Page

 Type in a unique name to identify the currently used device and select the softkey Apply. (Use for example Smartphone, Tablet, Office PC or similar.)

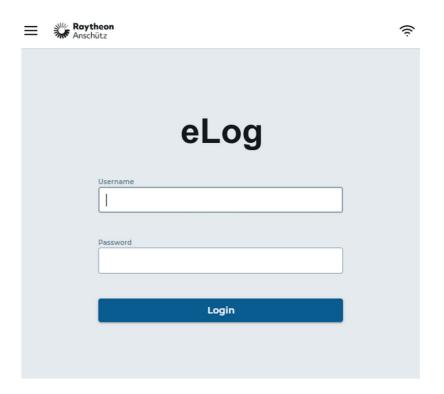


Fig. 8: Menu: Login Page

3. Type in the initial credentials: username admin, password password.

#### Note

Note: Change the password for the administrator as soon as possible.

- 4. Set up users and groups, see chapter 3.1.
- 5. Configure the interfaces, see chapter 3.2.

# 3 Configuration & Maintenance

The Electronic Logbook can be configured in the menu Settings.

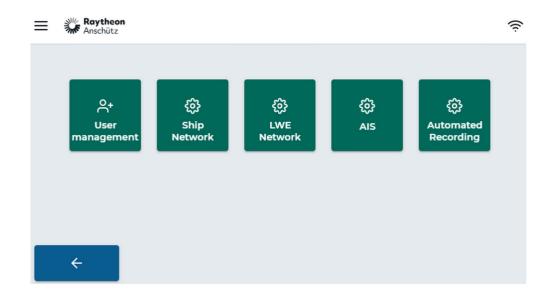


Fig. 9: Menu Settings

# 3.1 User Management

## 3.1.1 User Roles

Every user must be assigned to a user role for full functionality. Three user roles are available on the eLog:

User Role	Description	
Viewer	Restricted user with the following rights:  • Display logbook data	
Operator	Regular user with the following rights:  Create logbook records  Display logbook data  Export logbook data  See the system status	
ChiefMate	User with extended rights in addition to the operator rights:  • Approve logbook records	



User Role	Description	
Master	User with extended rights in addition to the operator rights:  • Approve logbook records	
Administrator	Advanced user with the following rights:  Configuration of the system User management Software updates	
Service	Advanced user with the following rights:  Configuration of the system User management Software updates	

## 3.1.2 Create New User Profile

### Requirements

• You must be logged in as an administrator.

- 1. In the main menu select the softkey **Settings**.
  - ► The menu Settings opens.
- 2. Select the softkey User Management.
  - ► The menu *User Management* opens.

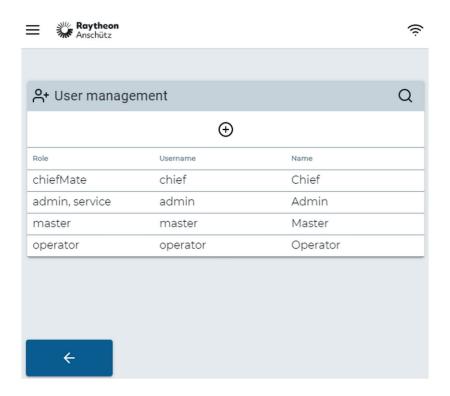


Fig. 10: Menu: User Management

3.



► The menu Add User opens.

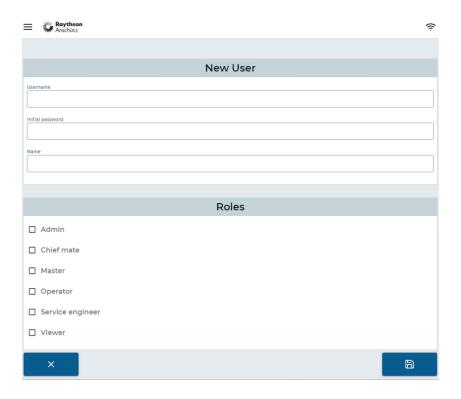


Fig. 11: Menu: Add User

- 4. Fill out the form with Username, First Name and Last Name.
- 5. Select the desired user roles for the user.
- 6. Select the soft key **Safe** 
  - ▶ The user is created and the menu *User Management* opens.

## 3.1.3 Delete a User Profile

## Requirements

• You must be logged in as an administrator.

- 1. In the main menu select the softkey **Settings**.
  - ► The menu Settings opens.
- 2. Select the softkey **User Management**.
  - ► The menu *User Management* opens.

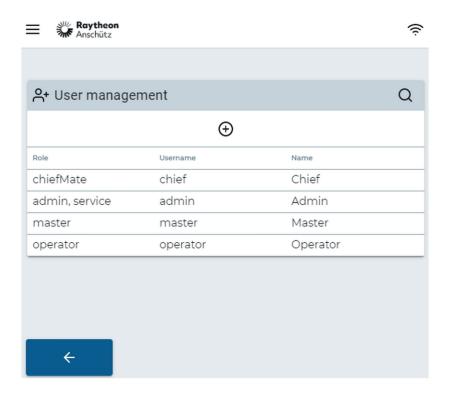


Fig. 12: Menu: User Management

- 3. Select the user from the user list.
  - ► The menu *User Details* opens.

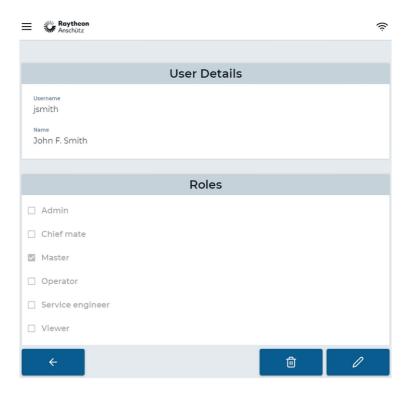


Fig. 13: Menu: User Details

4. Select the softkey **Delete** 

- ▶ The dialog Confirm to delete user appears.
- 5. Select the softkey Confirm.
  - ▶ The user is deleted and the menu *User Management* opens.

## 3.1.4 Assign User Role

#### Requirements

· You must be logged in as an administrator.

- 1. In the main menu select the softkey **Settings**.
  - ► The menu *Settings* opens.
- 2. Select the softkey User Management.
  - ► The menu *User Management* opens.

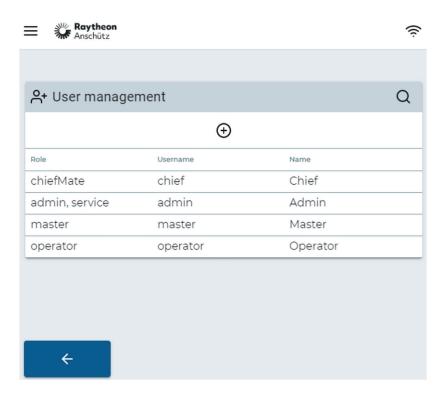


Fig. 14: Menu: User Management

- 3. Select the user from the user list.
  - ► The menu *User Details* opens.

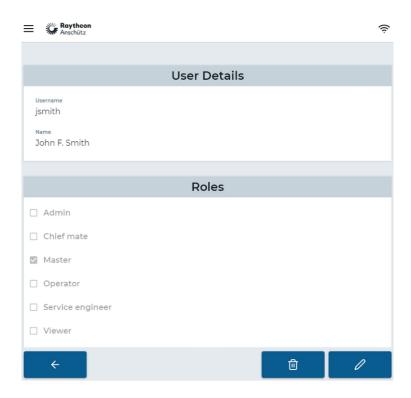


Fig. 15: Menu: User Details

- 4. Select the softkey **Edit User** 
  - ► The menu *Edit User* opens.

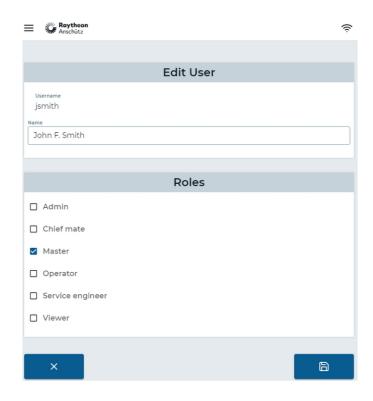


Fig. 16: Menu: Edit User

- 5. Select the desired roles from the list.
- 6. Select the softkey **Safe** 
  - ▶ The user is assigned to the roles and the menu *User Management* opens.

# 3.2 Interface Management

#### 3.2.1 Configure Network Interfaces

## 3.2.1.1 Configure LWE Network

#### Requirements

· You must be logged in as an administrator.

#### About this task

The eLog is able to send logbook data to the VDR and alerts to the CAM-HMI via IEC 61162-450 Ed. 2 communication on *ethernet port 0*.

- 1. In the main menu select the softkey **Settings**.
  - ► The menu Settings opens.
- 2. Select the softkey LWE Network, see Fig. 9.
  - ► The menu LWE Network opens.

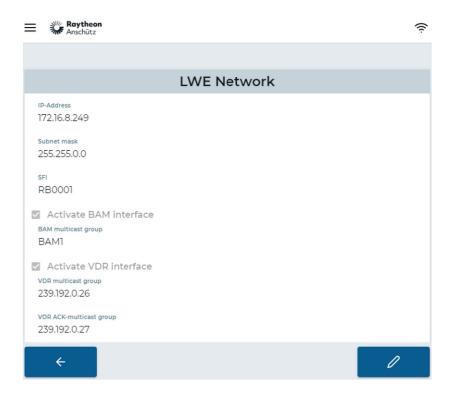


Fig. 17: Menu: LWE Network Overview



- 3. Select the softkey **Edit** 
  - ► The menu Edit LWE Network opens.

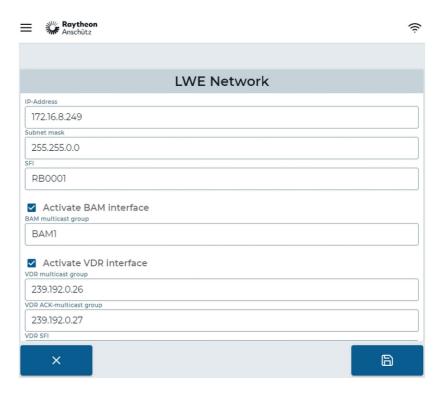


Fig. 18: Menu: Edit LWE Network

- 4. Adjust the settings according to the following table.
  - ► Tab. 3: LWE Network Settings

Element	Description	
Sets the IP address of the device in the LV work on Ethernet port 0. The default IP address 192.168.0.249.		
Subnet mask	Sets the subnet mask of the LWE network, the default value is 255.255.0.0.	
SFI	Sets the SFI for the eLog.  Select the system function id (SFI) for the eLog, which is used for IEC 61162-450 communication. The SFI is a two character talker identifier followed by a 4 digit instance number. The default value is <i>RB0001</i> .	
Activate BAM interface	Activates or deactivates the alert output.  Check the checkbox to activate publishing of system alerts as ALC and ALF sentences via <i>ethernet port 0</i> . If set to false, no alerts are published.	



Element	Description	
BAM multicast group	Selects the IEC 61162-450 transmission group.	
	Select the transmission group to publish alerts. The default value is <i>BAM1</i> . Alternatively, you may enter <i>BAM2</i> .	
Activate VDR interface	Activates or deactivates sending of logbook data to the VDR.	
	Check the checkbox to activate sending of logbook data to the VDR. If set to false, no data is sent.	
VDR multicast group	Selects the IEC 61162-450 transmission group of the VDR.	
	Select the transmission group to send logbook data to the VDR. The default value is 239.192.0.26.	
VDR SFI	Sets the SFI for the VDR.	
	Select the system function id (SFI) of the receiving VDR. The SFI is a two character talker identifier followed by a 4 digit instance number. The default value is <i>VR0001</i> .	
VDR source class	Sets the source class of the eLog.	
	Select the source class which is reported to the VDR when sending logbook data. Default value is Logbook.	
VDR device	Sets the device identificaton of the eLog.	
	Select the device identification (1-255) which is reported to the VDR when sending logbook data. Default value is 1.	
VDR channel	Sets the channel identificaton of the eLog.	
	Select the channel identification (1-255) which is reported to the VDR when sending logbook data. Default value is 3.	
Location	Sets the location attribute of the eLog.	
	Select the location attribute which is reported to the VDR when sending logbook data. Default value is <i>Logbook</i> .	
Activate Syslog	Activates or deactivates publishing of syslog messages.	
	Check the checkbox to activate publishing of syslog messages with the error counters defined for IEC 61162-450 communication. Default value is true. If set to false, no syslog messages are sent.	

5. Select the softkey **Safe** 

- ► The device reboots.
- 6. Close the browser window.

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► After approximately 3 minutes the electronic logbook can be used again. The changed settings are now active.

## 3.2.1.2 Configure Ship Network

#### Requirements

· You must be logged in as an administrator.

#### About this task

The network settings for *ethernet port 1* can be adjusted by the administrator depending on the vessel's network configuration.

- 1. In the main menu select the softkey **Settings**.
  - ► The menu Settings opens.
- 2. Select the softkey Ship Network, see #.
  - ► The menu Ship Network opens.

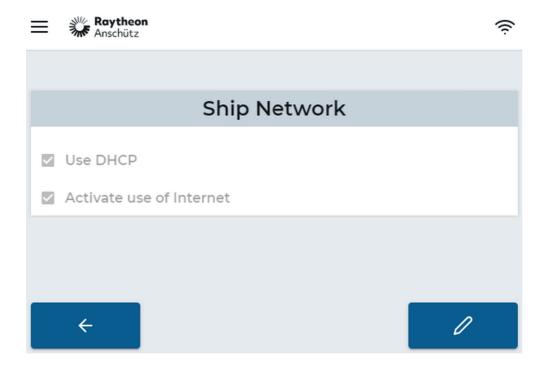


Fig. 19: Menu: Ship Network Overview

- 3. Select the softkey **Edit** 
  - ► The menu Edit Ship Network opens.

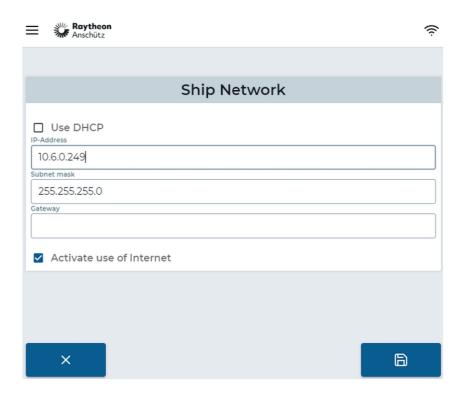


Fig. 20: Menu: Edit Ship Network

- 4. Adjust the settings according to the following table.
  - ► Tab. 4: Ship Network Settings

Element	Description
Use DHCP	The device uses DHCP to dynamically obtain an IP address in the ship network. This is the default behavior.
IP address	If DHCP is not use, this is the IP address of the device in the ship network. Please select a unique IP, which is different from the IP address in the <i>LWE</i> network.
Subnet mask	If DHCP is not in use, this is the subnet mask of the ship network. The default value is 255.255.255.0.
Gateway	If DHCP is not in use, this is the IP address of the gateway which connects the ship network to the Internet.
Activate Use of Internet	If deactivated (not advised), the eLog device will not attempt to connect to the logbook cloud services for cloud-based storage of logbook data or download of software updates.

- 5. Select the softkey **Safe** 
  - ► The device reboots.
- 6. Close the browser window.
  - ▶ After approximately 3 minutes the electronic logbook can be used again. The changed settings are now active.

# 3.2.2 Configure AIS

#### Requirements

• You must be logged in as an administrator.

#### About this task

The eLog is able to read IEC 61162-1/-2 data over a RS485 serial port.

#### **Procedure**

- 1. In the main menu select the softkey **Settings**.
  - ► The menu *Settings* opens.
- 2. Select the softkey **AIS**, see Fig. 9.
  - ► The menu AIS opens.

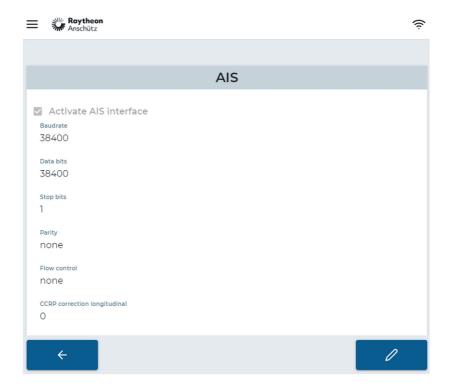


Fig. 21: Menu: AIS Overview

3. Select the softkey **Edit** 

► The menu *Edit AIS* opens.

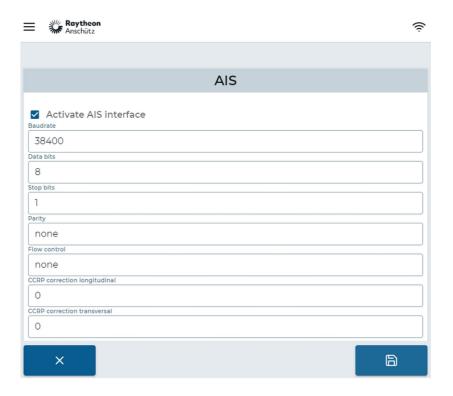


Fig. 22: Menu: Edit AIS

- 4. Adjust the settings according to the following table.
  - ► Tab. 5: AIS Settings (Serial Port Parameters)

Area / Element	Description	
	Activates or deactivates usage of data from the serial port.	
Activate AIS interface	Check the checkbox to activate usage of data from the serial port, especially AIS data. If set to false, the serial port is deactivated and the remaining pa- rameters in this table can be ignored.	
Baudrate	Sets the baud rate of the serial port.	
	Select the baud rate which is used by the sender of the serial connection. The default value is 38400.	
Data bits	Sets the number of data bits. The default value is 8.	
Stop bits	Sets the number of stop bits. The default value is 1.	
Parity	Sets the number of parity bits. The default is none.	
Flow control	Sets the type of flow control. The default is none.	



Area / Element	Description	
CCRP correction longitudi- nal	Correction in forward direction in meters for the own ship position delivered by the AIS, in meters. Heading must be available for the correction. Typically, no correction is necessary for the AIS own ship position.	
CCRP correction transversal	Correction in starboard direction in meters for the own ship position delivered by the AIS, in meters. Heading must be available for the correction. Typically, no correction is necessary for the AIS own ship position.	

- 5. Select the softkey **Safe** 
  - ► The device reboots.
- 6. Close the browser window.
  - ► After approximately 3 minutes the electronic logbook can be used again. The changed settings are now active.

# 3.2.3 Configure Automated Recording

#### Requirements

· You must be logged in as an administrator.

#### About this task

The eLog is able to automatically record navigational data periodically.

- 1. In the main menu select the softkey **Settings**.
  - ► The menu Settings opens.
- 2. Select the softkey **Automated Recording**, see Fig. 9.
  - ► The menu Automated Recording opens.



Fig. 23: Menu: Automated Recording

- 3. Select the softkey **Edit** 
  - ► The menu Edit Automated Recording opens.

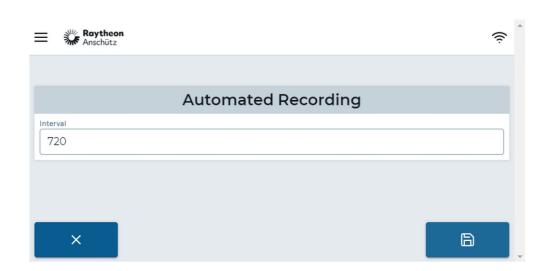


Fig. 24: Menu: Edit Automated Recording

4. Adjust the time interval in seconds to automatically create records.



► The default value is 3600 (1 hour).

5. Select the softkey **Safe** 

► The new settings are immediately active.

# 4 Troubleshooting Table

Tab. 6: Troubleshooting Table

No.	Failure	Possible Cause	Remedy
1	Data from AIS is not recorded.	Connection to AIS is broken.	Check the connection of the serial port 0 to the AIS, especially the correct assignment of the pins.
		Serial interface is not correctly configured.	Check that the vessel's network or the WiFi router assigned an IP ad- dress via DHCP or check that the static IP address of the eLog is cor- rect.
			Check that both the eLog and the end user device are connected to the same network.
			Check that the eLog can be reached in the network using ping.
2	Application does not load in browser.	Ethernet port 1 is not correctly configured.	Check that the vessel's network or the WiFi router assigned an IP ad- dress via DHCP or check that the static IP address of the eLog is cor- rect.
			Check that both the eLog and the end user device are connected to the same network.
			Check that the eLog can be reached in the network using ping.
		Vessel's network blocks the devices.	Check that the network settings of the vessel's network allow both the eLog and the end user device access to the network.
		Firewall settings block device.	Check on the end user device if firewall settings prevent access to the eLog.
		Wrong or missing power supply.	Check the status LEDs of the device. If no status LED is lit, check the power supply of the device.
		Boot error.	Check status LED 2. If it is permanently lit red, reset the eLog by pressing the reset button or interrupting the power supply.

No.	Failure	Possible Cause	Remedy
3	No alert data visible in IEC 61162-450 net- work.	BAM output is dis- abled.	Check the configuration if BAM output is disabled and activate it, if necessary.
		IP settings of Ethernet port 0 are wrong.	Check the IP settings of Ethernet port 0. They shall match the requirements of the IEC 61162-450 ed. 2 network.
		IEC 61162-450 configuration is wrong.	Check the configuration that the correct transmission group is set (BAM1 or BAM2).
4	No VDR data visible in IEC 61162-450 net- work.	VDR output is disabled.	Check the configuration if VDR output is disabled and activate it, if necessary.
		IP settings of Ethernet port 0 are wrong.	Check the IP settings of Ethernet port 0. They shall match the requirements of the IEC 61162-450 ed. 2 network.
		IEC 61162-450 configuration is wrong.	Check the configuration that the correct transmission group is set (by default 239.192.0.26). It shall match the settings in the VDR.  Check the VDR parameters (source class, location, device, channel, SFIs). They shall match the settings in the VDR.
5	No syslog messages are visible in IEC 61162-450 network.	Syslog output is disabled.	Check the configuration if Syslog output is disabled and activate it, if necessary.
		IP settings of Ethernet port 0 are wrong.	Check the IP settings of Ethernet port 0. They shall match the requirements of the IEC 61162-450 ed. 2 network.