JRC

ALPHATRON Marine

Alphatron SSRS

Sound Reception System

Installation and Operation Manual

www.jrc.am

Contents

I Preface

The Alphatron SSRS sound reception system has been designed to make sound signals from other ships audible by personnel whilst they are in the fully enclosed bridge space. The system complies with all the latest applicable standards and has been tested with the most modern test instrumentation and detailed test procedures ensuring a top quality product.

All information contained in this manual has been verified for correctness however, no responsibility is assumed by Alphatron for inaccuracies. Alphatron does not assume any liability arising out of the application or use of the described product.

I.1 Revision History

Revision No.	Description	Date
V0.9	Preliminary	17 March 2016
V1.0	First Issue	28 April 2016
V1.1	Changed article nr.'s Cable Diagram	10 may 2016
V1.2	Changed Connection diagram	17 January 2020

I.2 Glossary

The Glossary contains a list of commonly used abbreviations and a list of applicable standards.

I.2.1 Abbreviations

Abbreviation	Meaning
CMOS	Complementary Metal-Oxide Semi conductor
ESD	Electrostatic Discharge
DDC	Display Dimming Control (sentence)
DHCP	Dynamic Host Configuration Protocol
HBT	Heartbeat (sentence)
HTTP	Hypertext Transfer Protocol
Hz	Hertz (unit of frequency)
IC	Integrated Circuit (system)
IEC	International Electrotechnical Commission
IMO	International Maritime Organization
IP	Internet Protocol (address)
ISO	International Organization for Standardization
kB/s	Kilobytes per second
kHz	Kilohertz
LED	Light-Emitting Diode
PCM	Pulse Code Modulation
PJTR	Jotron Proprietary Sentence
RMA	Return Material Authorization number

Abbreviation	Meaning
RTCP	Real-time Transport Control Protocol
RTP	Real-time Transport Protocol
SFI	System Function ID
SOLAS	Safety of Life at Sea
SPL	Sound Pressure Level
SRS	Sound Reception Signal (proprietary sentence)
VDC	Voltage Direct Current
VOL	Volume (proprietary sentence)

Table 1: Abbreviations

I.2.2 Standards

The Alphatron SSRS Display Unit has been verified, tested and meets the product standards as listed in *Table 2: Standards* on page 5

Standard	Description
ISO 14859:2012	Ships and marine technology - Sound reception systems:
IEC 60945:2002	Maritime navigation and radio communication equipment and systems - General requirements - Methods of testing and required test results.
IEC 61162:2010-1	Maritime navigation and radio communication equipment and systems – Digital interfaces - Part 1: Single talker and multiple listeners.
IEC 61162:2011-450	Maritime navigation and radio communication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection.
IEC 62288 Edition 2:2014	Maritime navigation and radio communication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results.

Table 2: Standards

The Alphatron SSRS Display Unit also fulfills the requirements as listed in *Table 3: Requirements* on page 5

Requirement	Description
SOLAS Chapter V - Safety of navigation - Regulation 19	Carriage requirements for shipborne navigational systems and equipment.
IMO Res. A.694(17)	General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids.
IMO Res. MSC.36(63)	Adoption of the international code of safety for high speed craft (1994).
IMO Res. MSC.86(70)	Adoption of new and amended performance standards for navigational equipment.

Requirement	Description
IMO Res. MSC.97(73)	Adoption of the international code of safety for high speed craft (2000).
IMO Res. MSC.191(79)	Performance standards for the presentation of navigation-related information on the shipborne navigational displays.

Table 3: Requirements

Note This product is also ship wheel-mark and type approval of marine products certified in accordance with Marine Equipment Directive (MED).

II Cautions

The following symbols are used in this manual regarding safety:

- Caution damage.
- This symbol is used to highlight information that if not followed can result in damage to a product or equipment.

- Warning injury / death
- This symbol is used to highlight information that if not followed can result in personal injury or death.

III Introduction

III.1 Product Description

The Alphatron SSRS sound reception system has been designed to:

- Receive and detect fog horn sounds from other vessels and pinpoint the direction of the signal source.
- Detect signals with a fundamental frequency ranging from 70 Hz to 820 Hz.

Detected horns are amplified and played through the speaker on the display unit and the direction of the signal source appears on the display, with an accuracy of +/- 10 degrees. The Alphatron SSRS has adaptive background noise canceling to filter out unwanted sounds through advanced digital signal processing. Multiple display units can share the same microphone unit through an Ethernet connection.

Part Numbers

For part numbers refer to *Spare Parts* on page 37

- Caution: Electrostatic Devices
- This equipment contains CMOS integrated circuits. Observe precautions for handling electrostatic sensitive devices. Electrostatic discharge (ESD) may damage this equipment.

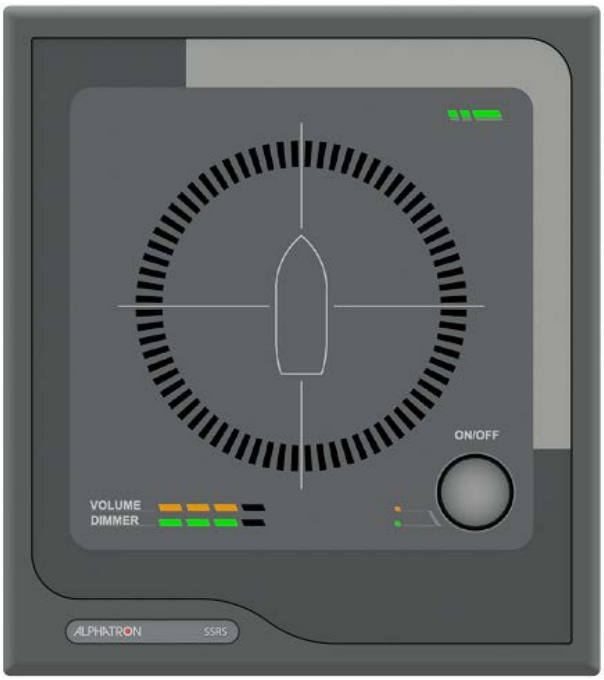

Figure 1: Product Image Display

Figure 2: Product Image Microphone

III.2 System Description

A sound reception system is an acoustical electronic navigational aid that enables an individual to hear sound signals from other ships like fog horns when standing inside a totally enclosed bridge space. This is to perform the look-out function as required according to the International Regulations for Preventing Collisions at Sea, 1972.

The system works by listening and detecting the direction of a fog horn. The Alphatron SSRS system is always listening for sounds on the outside of the ship and will only playback and display sounds once a horn has been detected. The ship's own horn can be suppressed by closing a closing contact on the Alphatron SSRS system, which will disable detection for the duration it is held closed.

Figure 3: Sound Reception System

1 Installation

1.1 Microphone Unit

Figure 4: Top Mounted

Figure 5: Side Mounted

1. Fasten the microphone with the attached mounting bracket to the ship, or remove the bracket and attach the steel tube by other means.

   Note The mounting bracket can be mounted to a ship by the top or the side.

   Note The "Fore" direction of the microphone unit is marked with an arrow and should be pointing towards the bow of the ship when installed.

   - Caution: Install the Microphone Unit in an appropriate location and ensure the following:
   - Install in a location far away from noise and any mechanical vibration sources.
   - Do not install the microphone next to a sound reflective source or obstacle that may block sound from entering the microphone unit in a straight line.
   - Install the microphone unit in a typical lookout position.

2. Wire the cables from the microphone unit to a junction box suited to the environment it is placed in.

   Note The cables are 3 meters long with flying leads.

3. Lay a cable from the junction box to the display unit. See *Figure 38: Cable Diagram* on page 43.
4. Terminate the cable in the 11 pin microphone connector at the back of the display unit when connecting the microphone to the display unit. See *Figure 36: Connection Diagram SSRA* on page 41

The cable must be shielded and contain at least 5 twisted pairs made of bare copper and have a lead core size of 0.25mm2 or larger when the cable length is up to 100m. If a longer stretch of cable is required (up to a maximum of 200 m), use a lead core size of 0.5mm2 or larger.

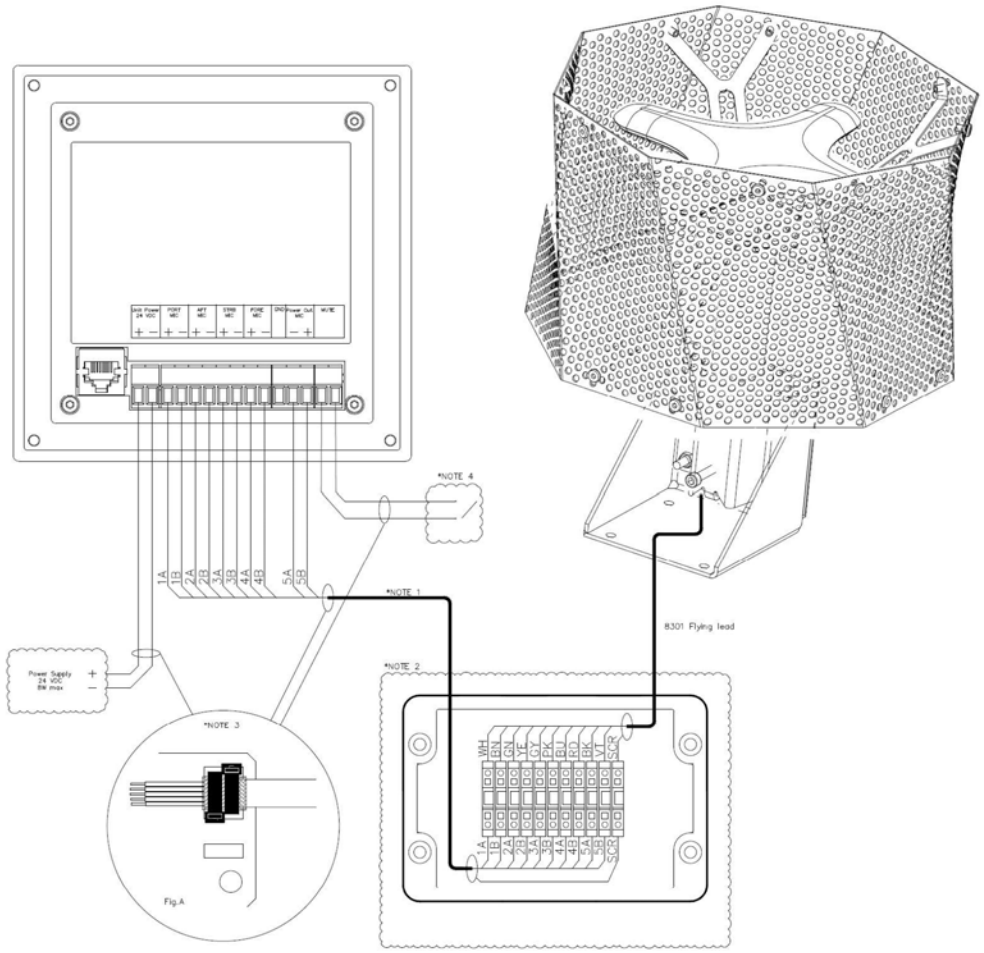

Figure 6: Wiring Schematic

WH	White	Port +
BN	Brown	Port -
GN	Green	Aft +
YE	Yellow	Aft -
GY	Grey	Strb +
PK	Pink	Strb -
BU	Blue	Fore +
RD	Red	Fore -
BK	Black	GND
VT	Violet	Vinn

Note Clarification of the notes in Connection Diagram: (*Figure 6: Wiring Schematic* on page 11).

1. Refer Cable and Connection Diagrams regarding supply of cables. The cable must be shielded with individual pairs and have a minimum 0.25mm2 core size.
2. A junction box is optional and can be supplied by Alphatron.
3. To comply with EMC requirements, all cable screens must be safely connected to chassis as shown in *Figure 6: Wiring Schematic* on page 11.
4. To mute signal to the Alphatron SSRA. A closing contact (NO) will mute the sound reception system while closed. Generally, this input is used by the ship's Typhoon system.

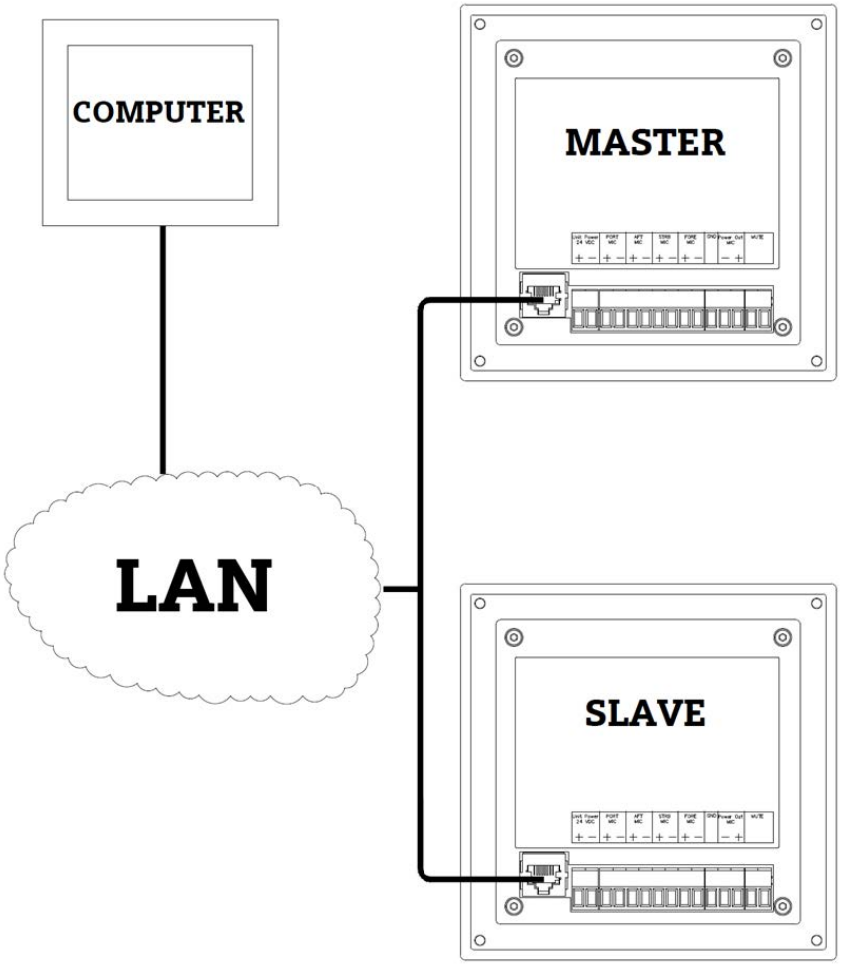

Figure 7: Ethernet Electrical Connections

The set up for the master/slave, web interface via a computer or connection to an IEC 61161-450 network is as shown above.

Note The cable must be a minimum of Cat. 5 S/UTP quality. Master/Slave can be connected directly together or via a LAN switch.

1.2 Display Unit

Install the display unit in such manner that incoming sounds signals and incoming sounds can be heard at all positions inside the bridge and are visible from the conning position.

Note Prior to fastening the unit to a console the power and microphone unit connectors must be connected, unless the device is used as a slave device to another display unit.

Figure 8: Place Frame on Cutout

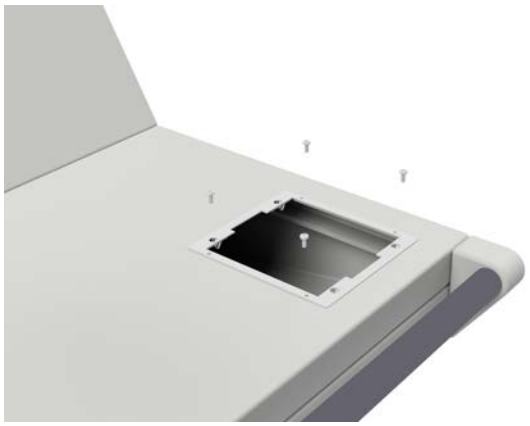

Figure 9: Screw Fix Frame

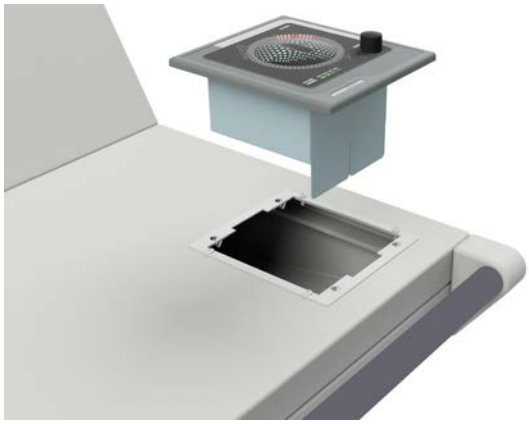

Figure 10: Place Display Unit

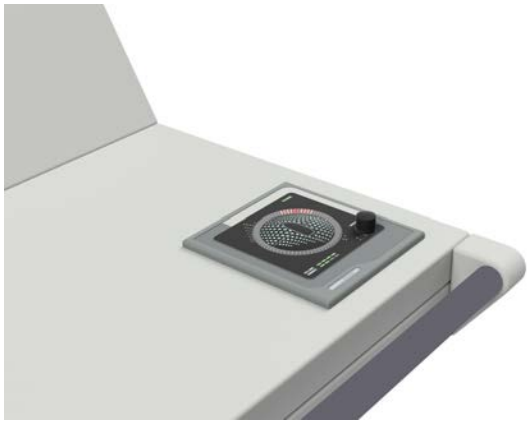

Figure 11: In Place

1. Mount the display unit in a bridge console, or similar structure.

   Note Plug in the Ethernet cable, if the network features of the display unit will be used.

2. Screw fix the frame with four screws to the cutout where the Display Unit is to be placed.

   Note Screws are provided.

3. Place the Display Unit into the cutout and firmly press down on the four corners.

   Note Snap-on clips are located on the back of the Display Unit, which fit exactly into the four holes provided in the mounting plate. See *Figure 35: SSRD Display* on page 40.

To remove the display firmly grip the panel with the tops of the fingers and pull backwards and up at the same time. Do not use screwdrivers as these will damage the display cover and paint work of the console.

The display unit has a mute closing contact, this can also be attached to the fog horn system on the ship. This contact suppresses detection when the contact is closed and begins again when it is open.

Advanced configuration options can be performed using the web interface.

2 Operation

2.1 Operational Modes

The Alphatron SSRS display unit has four different operational modes.

Figure 12: Normal Mode, Idle.

Press and hold the CONTROL rotary button for 5 seconds, to switch between modes.

Note Keep the button depressed to advance to the next mode. The mode will change every 5 seconds.

2.1.1 Normal Mode

When the Alphatron SSRS is first started it will start in the normal mode. When in this mode the unit will idle until a horn signal is detected. Detected horns are audible from the speaker and indicate the direction of the source of the signal.

Within the first 3 seconds of detection an 80 degree arch will light up in orange, while the center of the arch is lit in red. After having been on for 3 seconds the red light remains active. Multiple indications can be active at once. The indication pointer will remain for a configurable amount of time (7 seconds by default), after the detection is finished. The indication pointer configuration time can be altered within the web interface.

The light behind the CONTROL button is off when the unit is in this mode.

The volume and lighting can be adjusted. To adjust the volume or lighting, perform the following actions:

1. Press the CONTROL button until the option you wish to adjust is orange.
2. Rotate the CONTROL button to observe the volume or dimmer changes.

Note The active adjustment line is lit up orange and the inactive line is lit up green. This is also indicated by the lights on the left of the control button.

2.1.2 Manual Listening Mode

Figure 13: Selecting the Fore Microphone

Figure 14: Selecting the Aft Microphone

In the manual mode each of the four microphones can be listened to individually. In this mode the sound from the active microphone is audible through the speaker at all times.

To activate the manual listening mode, perform the following actions:

1. Press and hold the CONTROL button for 5 seconds when in the normal mode.
   When active the light around the CONTROL button appears green.
2. Rotate the CONTROL button to select the Fore microphone.

   Note Neither the volume nor dimmer row is lit orange when the microphone is selected.
3. Rotate the CONTROL button to select the Aft microphone.

   Note When the device first enters the manual listening mode it activates the 'Fore' microphone. The current active microphone is displayed on the indication ring with the active LEDs indicating the direction of the microphone that is active.

2.1.3 Calibration Detection Mode

Figure 15: No Offset (0°)

Figure 16: Offset 30°

Use the calibration detection mode to adjust the offset display. For example to adjust the offset of an incorrectly mounted microphone unit.

1. Press and hold the CONTROL button for 10 seconds.
   When the calibration mode is activated the light behind the CONTROL rotary button changes to orange.

   Note If the unit is in the manual listening mode, the CONTROL button only has to be pressed and held for 5 seconds.

2. Rotate the CONTROL button to calibrate the position, to add (right) or subtract (left) the offset for all detections.
   The current offset is indicated by the indication LEDs. A more precise offset can be set in the web interface.

   Note The default is a zero degree offset and a single tick with the CONTROL button will adjust the offset by 10 degrees.

2.1.4 LED Test Mode

To enter the LED test mode, perform the following actions:

1. Press and hold the CONTROL button for 15 seconds, when in normal mode.
   All LEDs on the display unit will light up when enabled, making any failed LEDs visible.

   Note If the manual listening mode is active, press and hold the CONTROL button for 10 seconds.

   Note If the calibration detection mode is active, press and hold the CONTROL button for 5 seconds.

2. Hold the CONTROL button depressed for another 5 seconds to return to normal operation..

   Note The LED test mode will automatically return to normal mode if the CONTROL button is not pressed or rotated for 30 seconds.

2.2 Network Operations

The Alphatron SSRS performs multiple network operations according to part 450 of the IEC 61162 standard. This includes inter-device communication and logging.

The transmission groups are mapped to the following multicast addresses and ports:

Transmission group	Address port combo:
MISC	239.192.0.1:60001
PROP	239.192.0.8:60008
USR1	239.192.0.9.60009
USR2	239.192.0.10.60010
USR3	239.192.0.11.60011
USR4	239.192.0.12.60012
USR5	239.192.0.13.60013
USR6	239.192.0.14.60014
USR7	239.192.0.15.60015
USR8	239.192.0.16.60016

Table 4: Transmission Groups

Note These transmission groups are defined in part 450 of the IEC 61162 standard.

Multiple IE 61162-450 sentences are sent and received by the Alphatron SSRS display device.

List of the applicable sentences:

- PJTR sentences (SRS proprietary sentences and VOL proprietary sentences)
- HBT sentences
- DDC sentences

Note For more information or clarification regarding these sentences, refer to IEC 61162-450.

2.2.1 PJTR Sentence

The PJTR sentence is a proprietary sentence that is used for communication between the master and slave Alphatron SSRS display units.

The first parameter of this sentence is the sentence code for our proprietary sentences. The remaining parameters depend on the sentence code that is sent.

The Alphatron SSRS has the following three proprietary sentences:

- Sound Reception Signal (SRS)
- Volume (VOL)
- Heartbeat (HBT)

2.2.1.1 SRS Proprietary Sentence

When a sentence code of the PJTR sentence is sound reception signal (SRS), the sentence is a detection notification. This sentence is sent from master units to the configured transmission group such that slaves can receive them.

The SRS sentence has three additional parameters:

Description	Type
Direction of the detection	An integer between 0° and 359° inclusive.
Score of the detection	Score with decimal point if needed.
Base frequency of the detected signal	Frequency with decimal point if needed.

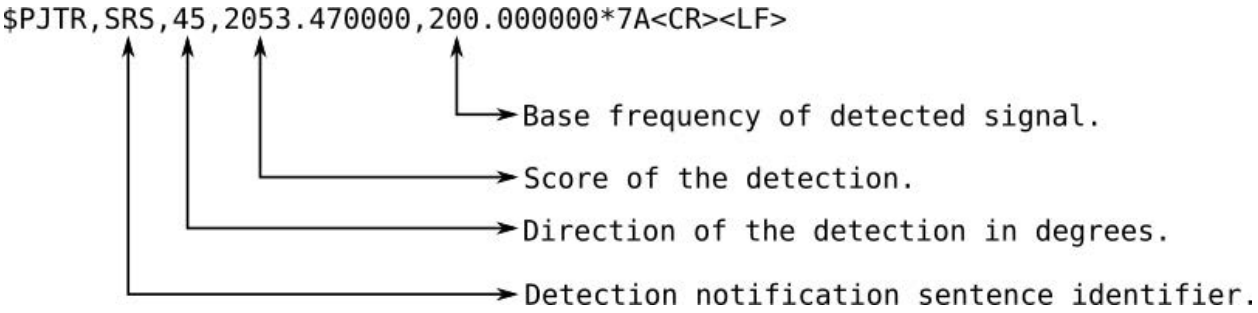

Figure 17: Example, SRS proprietary sentence

2.2.1.2 VOL Proprietary Sentence

When a sentence code of the PJTR sentence is volume (VOL), the sentence is a volume adjustment notification. This sentence is sent from both the master and the slave units when the volume is adjusted using the CONTROL button on the display unit. The sentence is sent on the configured transmission group. When an Alphatron SSRS display unit receives such a message it will automatically adjust the volume to match the volume of the device that sent the sentence.

The VOL sentence has one additional parameter:

Description	Type
New volume setting	An integer between 0 and 99 inclusive.

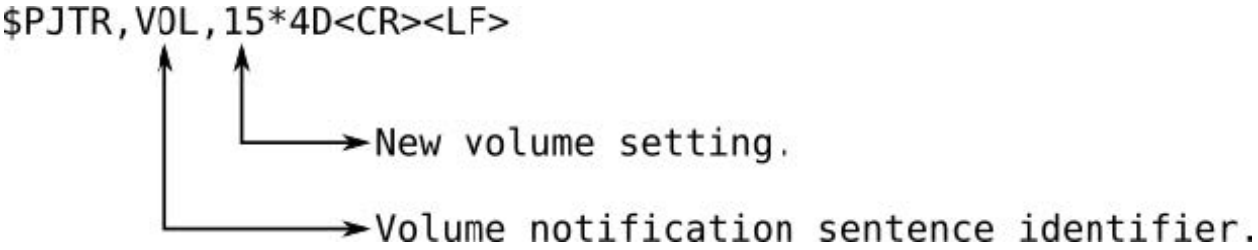

Figure 18: Example, VOL proprietary sentence

2.2.1.3 HBT Sentence

The Alphatron SSRS sends a heartbeat (HBT) sentence once every 60 seconds. This sentence is sent to the MISC transmission group. It is equal to the standard HBT sentence, except that it is sent as a parameter to the PJTR sentence.

Note Refer to IEC 61162-1 standard for more information regarding heartbeat sentence.

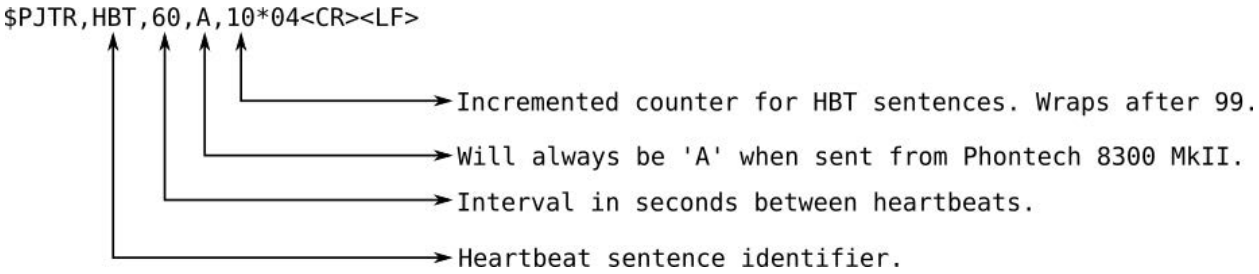

Figure 19: Example, HBT sentence

2.2.2 DDC Sentence

The Alphatron SSRS display unit listens for display dimming control (DDC) sentences sent from any other unit on the network, that sends on the MISC channel, or uses the same transmission group as configured in the web interface network settings.

When a DDC sentence is received, the display device will adjust the brightness to the new level received.

Two variants of the DDC messages are supported; one with and one without the sentence status parameter at the end of the sentence.

Note Refer to IEC 61162-1 standard for more information regarding the two variants and the DDC sentence.

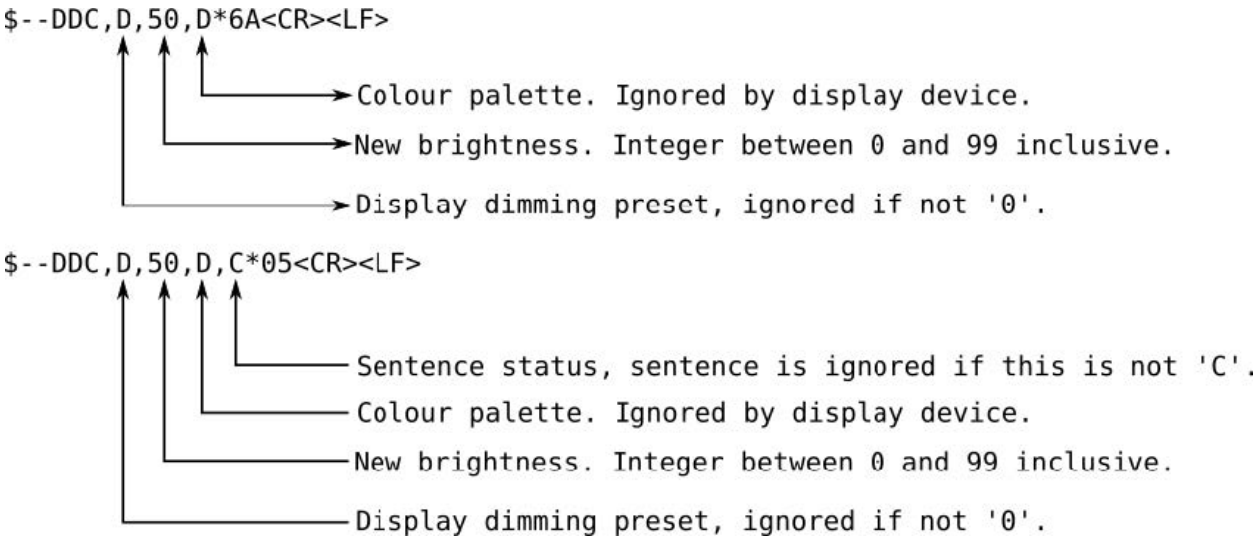

Figure 20: Example, DCC sentence

Note The two dashes before the DDC message represents the sender and can be any two upper case characters from A-Z.

2.2.3 Maximum Data Rates

These are the maximum data rates as required by 61162-450, section 4.3.2:

Description	Amount
Maximum received per second, intended for target	50/sec
Maximum received per second, not intended for target	2000/sec
Maximum received per second, not intended for target at 50% of the maximum load.	1000/sec

Table 5: Maximum Data Rates

2.3 Syslog Messages

When Syslog network logging is enabled, Syslog messages are sent to the network address specified in the web interface (see*Table 6: Syslog Messages* on page 20. Refer to the network settings for more information.

Message ID	Message text	Additional information
SURV_AUDIO_FAILURE	Surveillance failed for audio channels: <Mask>	<Mask> is replaced with a bitmask in hex of the channels that have failed audio surveillance. Available channels: • 0x1 Fore • 0x2 Aft • 0x4 Starboard • 0x8 Port For example, 0xC indicates a failure of port and starboard microphones.
SURV_LED_FAIL	Bad health state of LED <LED id>	<LED id> is replaced with the ID of the LED that failed.
SURV_WDOG_NOT_ FEEDING	Not feeding watchdog because all required tests have not been passed: <Mask>	Message informing that the unit will restart due to a failing watchdog test. <Mask> is replaced with a bitmask in hex that identifies the failing test. Tests include: • 0x1 Audio surveillance test • 0x2 DSP surveillance test • 0x4 Display response surveillance test

Table 6: Syslog Messages

2.4 Audio Packet Stream

A proprietary audio packet stream is sent together with all other network traffic.

This stream contains the audio data from a detected fog horn signal. A master device sends the data to the multicast group at 239.192.0.65 on port 5004 and 5005. This audio packet stream is an RTP stream with RTP data on port 5004 and RTCP data on port 5005. The audio is sent as a single channel 24 bit signed PCM at a 24 kHz sampling rate. The RTP stream uses a packet size of 20 ms.

An audio stream is only sent when a fog horn is detected and stops when the detection ends.

The maximum bandwidth used by this stream is 96 kB/s, with approximately 50 packets per second.

2.5 Error Indicator

When an error is detected, the status LED on the Phontech 8300 MkII will light up orange.

Figure 21: Indicating an error has been detected.

Note For more information regarding potential failures or issues, refer to the tips explained under Troubleshooting. (*Troubleshooting* on page 35)

2.6 Detecting a Sound Signal

Figure 22: Sound Signal as it is Detected

Figure 23: Sound Signal 3 sec. after Detection

When the Alphatron SSRS detects a sound signal and determines the direction of the signal, the direction will appear on the display unit.

After 3 seconds the orange LEDs disappear and the red LEDs remain. The red LED indicator remains by default for 7 seconds or the configured amount of time.

Note The display timing (in seconds) can be adjusted from the web interface.

2.7 Detecting Multiple Sound Signals

The Alphatron SSRS is able to detect multiple sound signals simultaneous. One detection at 0˚ and another at 310˚.

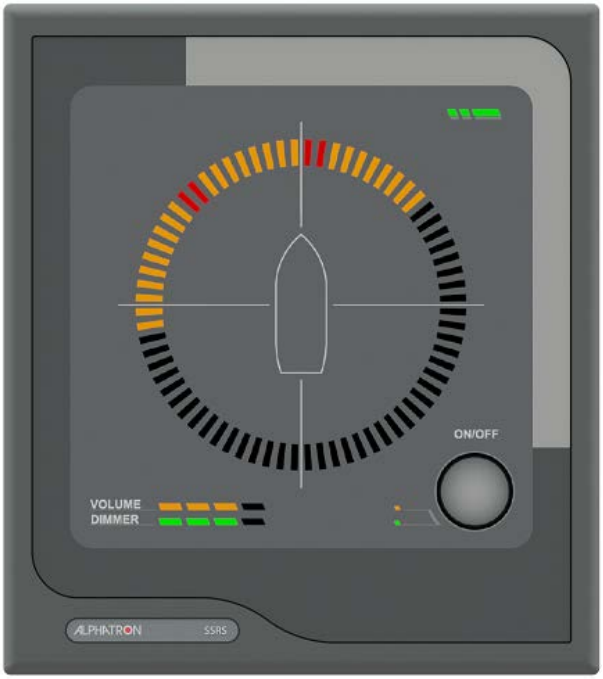

Figure 24: Detecting Multiple Sound Signals, 0° and 310°

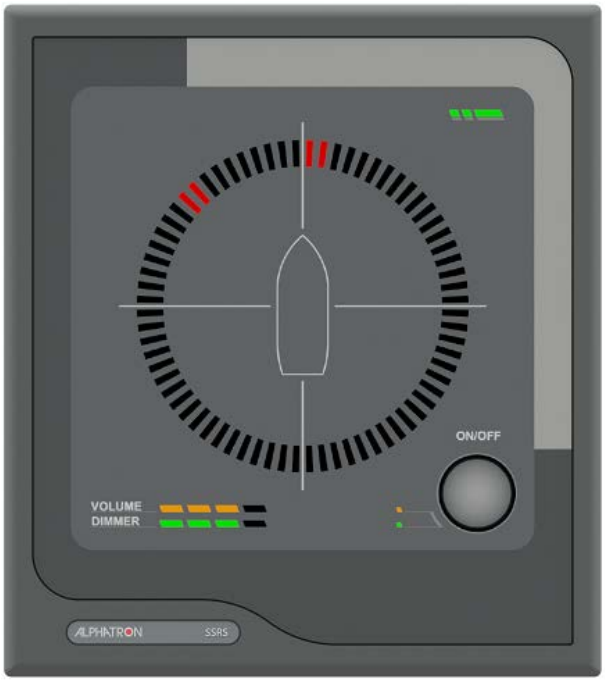

Figure 25: Detecting Multiple Sound Signals 3sec. after Detection

2.8 Adjusting Volume and Lighting

Both the volume and display lighting (LED's) of the Alphatron SSRS are adjustable.

Note An orange LED displays the active state. This is also indicated by the lights on the left of the control button.

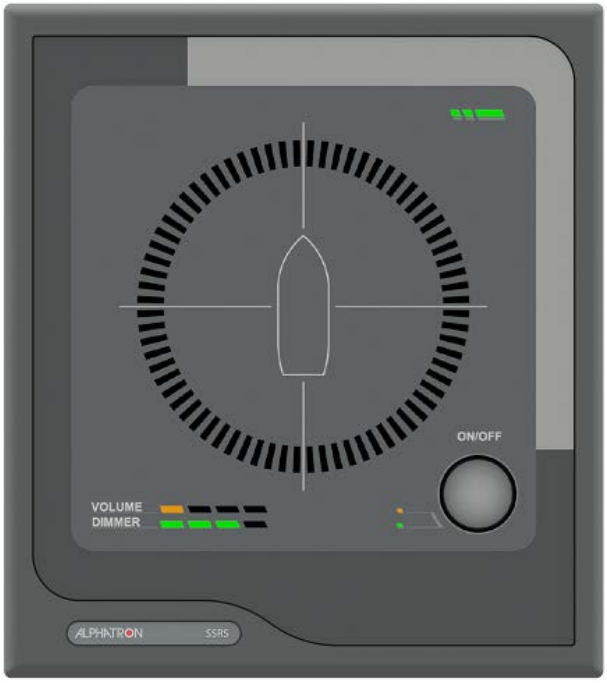

Figure 26: Volume Adjusting Mode

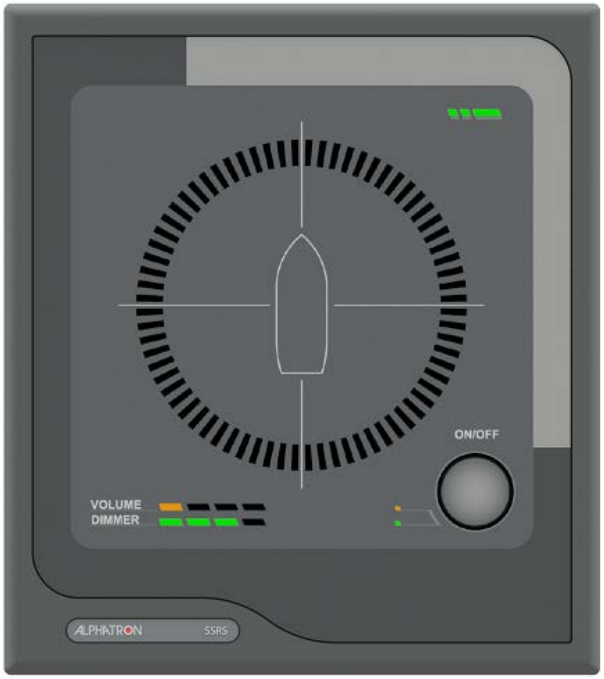

Figure 27: Dimming Adjusting Mode

To adjust the volume, perform the following actions:

1. Press and release the CONTROL button to select the volume adjust mode.
2. Rotate the knob clockwise to increase and counterclockwise to decrease the volume.

   INFO: To adjust the LED light intensity, do the following:
3. Press and release the control button to select the dimming adjust mode.
4. Rotate the knob clockwise to increase and counterclockwise to decrease the LED intensity.

Note The nominal viewing and listening distance is 0,8m.

2.9 Web Interface

The Alphatron SSRS has a web interface for logging and configuring the unit, this web interface also supplies information regarding the state of the unit.

1. Enter the Alphatron SSRS IP address into any web browser to access the web interface.

   Note The default IP address is: 172.31.0.100, with a netmask of 255.255.255.0.

   A prompt appears to enter user name and password the first time the web interface is accessed. The default user name and password are: admin / admin.
2. Click or hover with the mouse over the striped button to navigate between pages.

Note This button activates the navigation menu where you can access the pages. The active page is marked orange with a white arrow pointing to it.

Note Some changes require a reboot of the device, in this case, the web interface will display a message indicating that a reboot is necessary. This is done in Additional options and is explained under Maintenance.

2.9.1 Home Screen

The home screen is the first page shown when the web interface is accessed on the Alphatron SSRS. This screen displays the status of the unit.

Figure 28: Home Screen Status OK

The following information appears in the Status section of the screen:

Status	Notification colour	Text description
Normal	Green	Everything operating as normal
Error detected	Red	A message describing the error

Note If an error has been observed and attended to, then the ACKNOWLEDGE MESSAGES button can be pressed to clear the status led on the display (*Figure 29: Home Screen, Status Failed - Acknowledge Messages* on page 26).

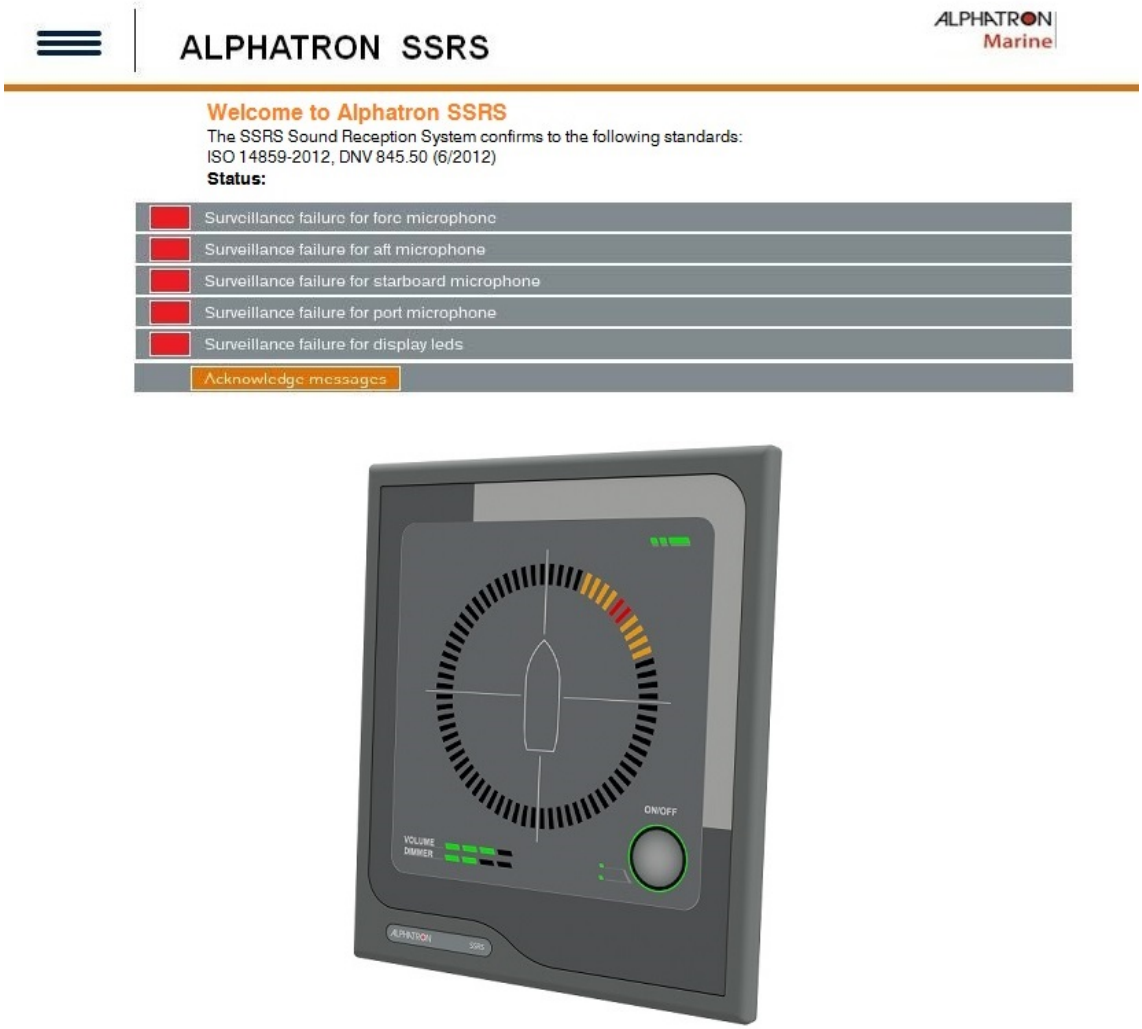

Figure 29: Home Screen, Status Failed - Acknowledge Messages

2.9.2 Network Settings

The following network settings can be configured:

Configurable network settings	Description:
Network address of the device (3 options)	**1.** Static - this option allows any static network address to be configured along with the applicable netmask and gateway. **2.** DHCP - this option will request the DHCP server for an address, either when the unit is started, or when a network cable is plugged in. **3.** IEC 61162-450 complaint static address - this option restricts the address to an address within the range of: 172.16.0.0 - 172.31.255.255. In this mode netmask is not configurable and forces the 255.255.255.0 configuration. The gateway is freely configurable with this option.
IEC 61162-450 settings	Configure the transmission group used for sending and receiving messages by selecting from the PROP or USR1-USR8 groups.
Syslog settings	The device logging over network can be enabled through the Syslog protocol. By enabling the Syslog network logging, the Alphatron SSRS will send information and error messages over the Ethernet network. Syslog messages can either be sent to the IEC 61162-450 compliant address (239.192.0.254:514), or a user can configure a custom server address by changing the IP address and port fields in the Syslog section. To change the messages that are logged, ensure the log level setting is changed in the same section. The options range from Debug to Emergency priority. When this is set, all messages at the selected level or higher will be sent to the Syslog server.

Note The default is an IEC 61162-450 complaint address of 172.31.0.100.

Note Prior to using the Alphatron SSRS on a IEC 61162-450 network to send sentences to other units, an SFI address must be configured. The configuration value for the address must start with SR and be followed by 4 digits, for example SR9999.

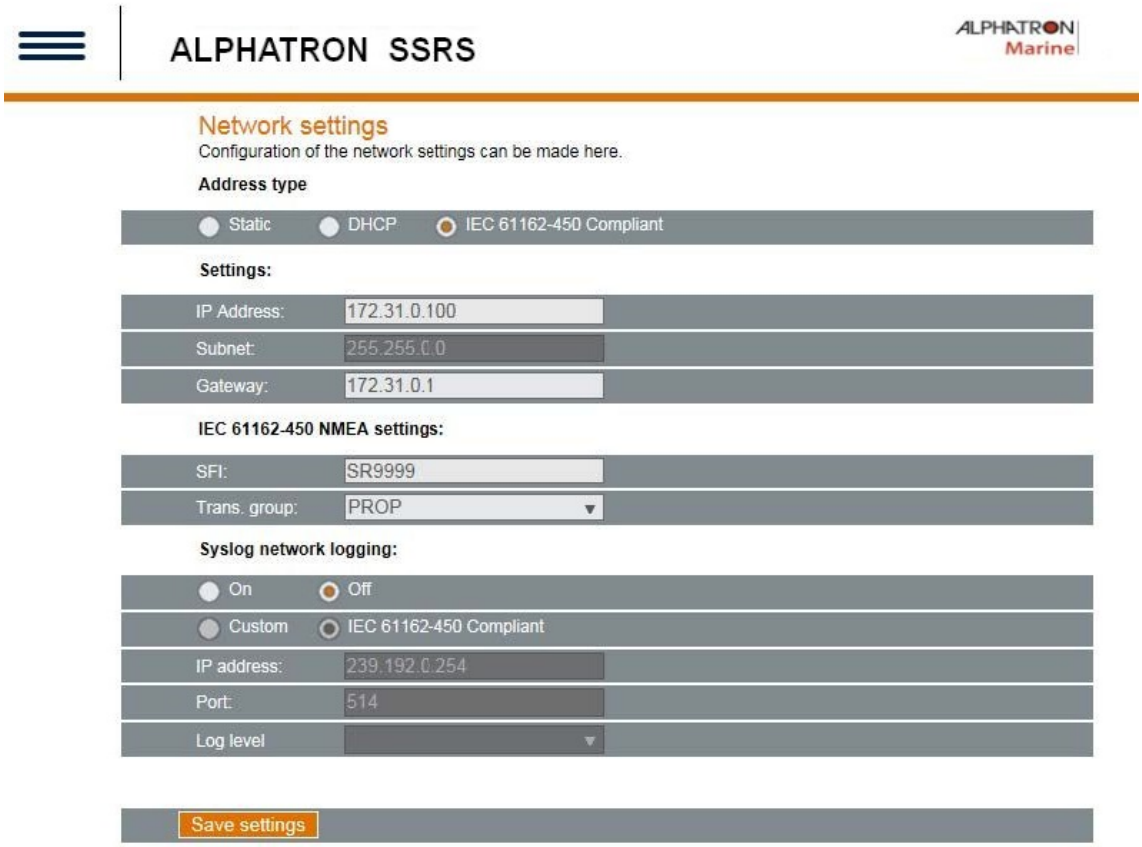

Figure 30: Network settings - overall configuration

To configure the network settings, perform the following actions:

1. Select the address type.
2. Enter the applicable settings.
3. Enter the applicable IEC settings.
4. Select the Syslog network options.
5. Click the Save settings button.

2.9.3 Audio Settings

The audio settings of the Alphatron SSRS allows the signal to noise ratio required to be adjusted, prior to a fog horn being detected. The default value is 2.25 is calibrated to handle a fog horn where the bulk of the energy lies between 700-2100 Hz from 0.5 nautical miles when a horn creates a 115 dB SPL sound level.

The signal to noise ratio configuration ranges from 2 to 6. The higher the values the stricter the Alphatron SSRS will be in detecting horns. Lower values will detect more horns, but are more susceptible to false detections.

To configure the signal to noise ratio, perform the following actions:

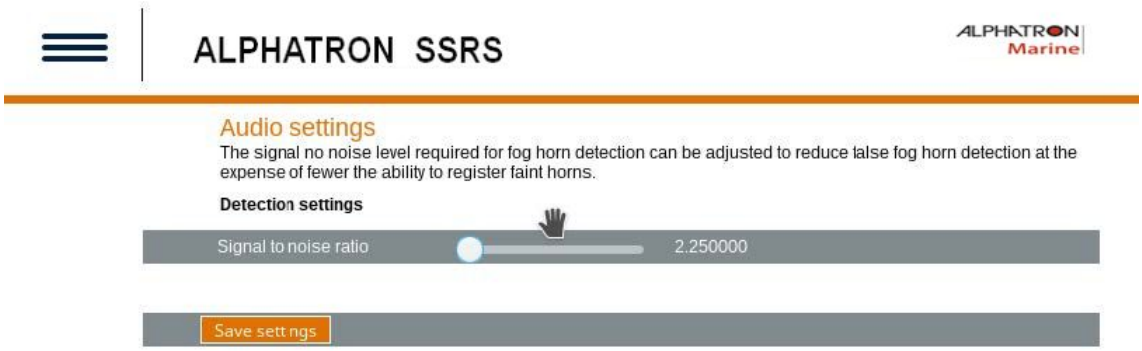

Figure 31: Audio settings - signal to noise ratio.

1. Use the slider, or manually type in a value.
2. Click the SAVE SETTINGS button.

2.9.4 System Log

The Alphatron SSRS has a logging feature that enables logging in several levels. The system log page displays a real time log of the system, in addition to previously generated messages.

To view logs, perform the following actions:

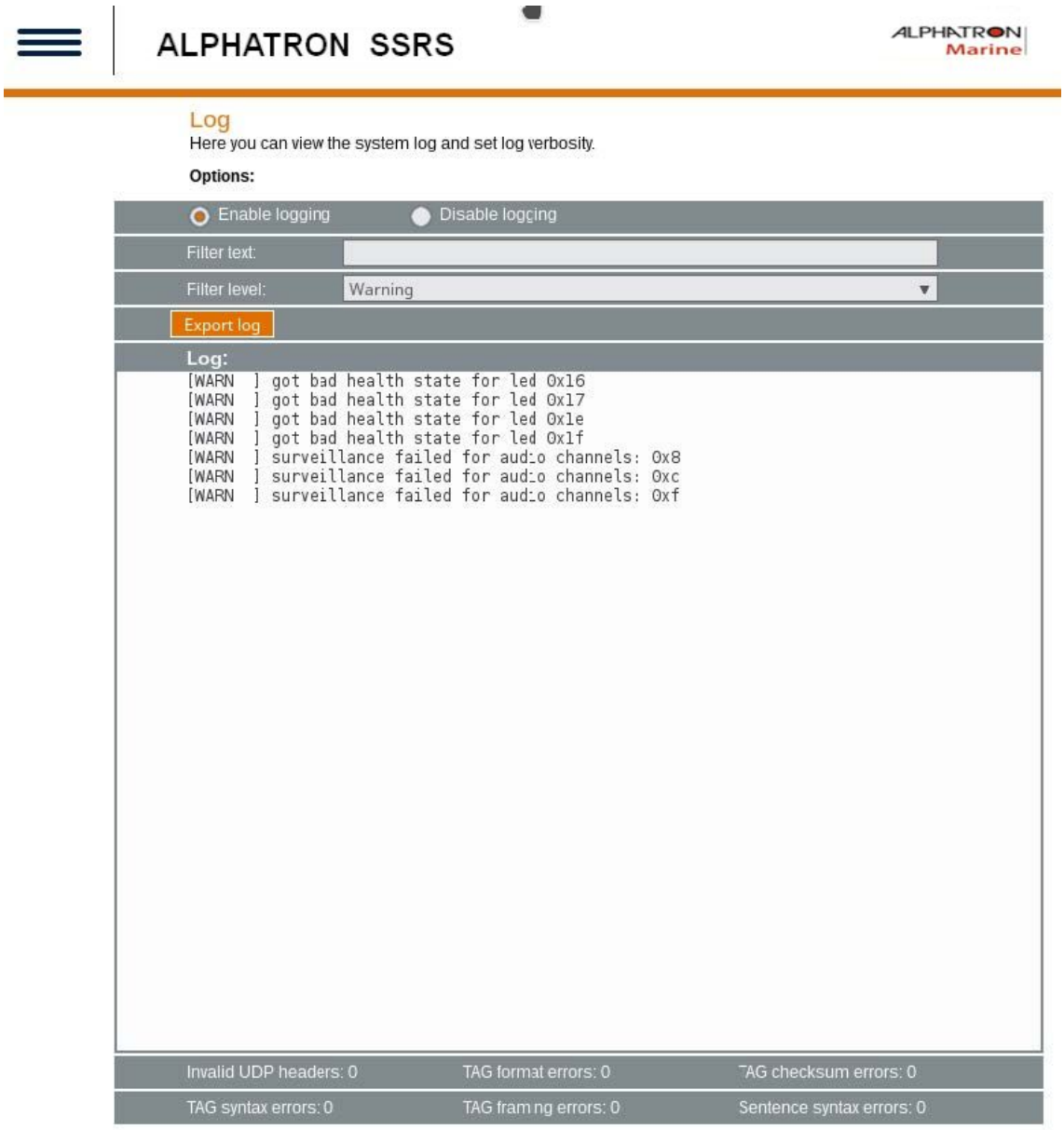

Figure 32: Event Logging

- To view logs click the Enable logging radio button.
  Log messages will appear in the Event Logging window.
- To search or filter a log use the Filter text or Filter level settings.
  Displays only log lines that contain a phrase or are as important as the given log level.

  There are counters recording the number of IEC 61162-450 sentence errors received. There are six different types:

Error types	Description
Invalid UDP headers	Packets that have been received but are lacking the required IEC 61162-450 UDP header.
TAG format	Format or structural error in the TAG block
TAG checksum	Checksum errors in the TAG block.
TAG syntax	Syntax error in the TAG block, such as illegal characters or fields.
TAG framing	Framing errors in the TAB block, such as missing begin and/or end characters.
Sentence syntax	Syntax errors in IEC 61162-450 sentences.

Note For more information regarding sentences and error types, refer to part 450 of the IEC 61162 standard.

- To export the log click the Export log button.

2.9.5 Additional Options

The additional options page contains configuration options that do not fall under any of the other categories.

Figure 33: Additional options

To adjust any of these options, perform the following actions:

1. Select the applicable option.
2. Enter the applicable information.
3. Click the SAVE SETTINGS button.

Options	Description
Detection direction: Fore	This is the default setting. If fore is selected, horns detected to the fore of the microphone unit will be displayed at the fore of the display unit.
Detection direction: Aft	If aft is selected, all horns detected will be offset by 180° in the display unit. Horns detected to the fore of the microphone. unit will be displayed at the aft of the display unit.
Master	This is the default setting. The master unit must be connected to the microphone unit. The master unit will transmit all detected signals to any slave units over Ethernet.
Slave	The slave unit can not be connected to the microphone unit, but will receive detections and sound from the master unit over Ethernet. There may be multiple slave units in an installation.
Alignment offset	Use this setting to add an offset to all detections in case the microphone unit has not been mounted accurately in the fore direction.
Pointer hold	Use this setting to adjust the length of time a detection is displayed, after the detection has ended. The default value is 7 seconds.

Note When working with a Master or Slave setup, all units must be:

1. Connected to the same network.
2. Configured with different IP addresses.
3. Use the same transmission group.

Note More information about the options may be viewed by clicking on the (?) question mark buttons next to the individual options.

The additional options page also offers the possibility to do the following maintenance:

- Firmware updates.
- Restore the unit to the factory defaults.
- Reboot the system.

To complete any of the additional maintenance options, do one of the following:

- To complete a Firmware update, click Update firmware.
- To restore the factory defaults, click Factory reset.
- To reboot the system, click Reboot.

2.10 Testing

Testing should be done as required.

2.10.1 Calibration and Testing

Testing of the operational functionality of the Alphatron SSRS is done using a fog horn.

Note The Alphatron SSRS automatically and continuously tests both the display and microphone unit. In the event there is an error, the error will be displayed by the LED's, in the web interface or in the syslog server (if configured).

Horn activity should be in 3 second bursts with at least 10 seconds between each burst.

Note If the microphone unit is not mounted correctly, the display unit can compensate for this by adding an offset to the detections. Check the calibration mode or additional options.

3 Specifications

Supply voltages	Nominal 24VDC
Maximum power consumption	8W
System power	4W
Dimensions (W/H/D)	160mm x 180 mm x 99mm. Refer drawing: *Figure 35: SSRD Display* on page 40
Weight	1.2 kg
Temperature operating	-15 to +55°C
Temperature storage	-15 to +55°C
Humidity	93% @ +40°C
Interfaces	100 Mbit Ethernet, Mute closing contact, Alphatron SSRS interface

Table 7: Product Specification Display Unit

Supply voltages	Powered by Alphatron SSRS+5VDC
Dimensions (W/H/D)	316mm x 338 mm x 316mm. Refer drawing: *Figure 34: SSRA Microphone Unit* on page 39
Weight	3.75 kg
Temperature operating	-25 to +55°C
Temperature storage	-25 to +70°C
Humidity	93% @ +40°C

Table 8: Product Specification Microphone Unit

4 Maintenance

All maintenance options for the Alphatron SSRS are completed in the Additional options page, web interface. The maintenance options are as follows:

- Upgrade or view the current version of Firmware.
- Perform a factory reset.

To upgrade Firmware, do the following:

1. Click the UPDATE FIRMWARE button.
2. Select the Firmware upgrade package in the dialog box.

When the Firmware upgrade is complete, the device will automatically restart.

To perform a factory reset, do the following:

1. Click the FACTORY RESET button.
2. Click Yes in the dialog box.

Note All configuration options will be reset to the factory default, including the network IP address setting. The default network IP address (172.31.0.100) must be entered manually in a web browser to regain access to the web interface.

If the original default address was not changed, the web interface will refresh automatically.

When the reset is complete, the device will automatically restart.

To reboot click the REBOOT button. The device will automatically restart.

4.1 Troubleshooting

When the Alphatron SSRS device detects a problem, the front status LED will switch from green to orange.

To get an indication of what may be wrong, do one of the following:

- Check the Syslog server if Syslog network logging is enabled.
- Check the web interface of the device.

Below are tips for solving the following potential failures or issues:

- Microphone surveillance failure.
- Led surveillance failure.
- Fog horn detection problems.
- Display device boot failure.

4.1.1 Microphone Surveillance Failure

If the signal coming from one or more of the microphones on the Alphatron SSRS microphone unit is malfunctioning, perform the following actions:

1. Check the cabling.

   Note The power leads should be connected to the display unit, left side of the Mute connection. A description of all the connectors is displayed on the back of the unit.

   If the web interface indicates that all microphones are down, then the problem may be with the power cable going to the microphone unit.

2. Check the individual microphone cabling.

   Note Do this when only 1 microphone has failed.

After checking restart or acknowledging the error message in the web interface. This should remove the current error indication.

3. Inspect the unit for physical obstruction of the failing microphone.

Note If no visible obstruction of the microphone can be found, consider the unit damaged. In this case, contact Alphatron support.

4.1.2 LED Surveillance Failure

When a LED failure is indicated start the LED test mode (*LED Test Mode* on page 16).

Note This should indicate which LED is failing.

If any of the red indicator LEDs have stopped working a fog horn detection might not be visible to the user, in this event contact Alphatron support.

Refer to the additional information under LED test mode.

4.1.3 Fog Horn Detection Failure

If the unit fails to detect a fog horn, perform the following actions:

1. Check to see if there are any microphone surveillance failure messages in the web interface.

Note Refer to the additional information under Microphone surveillance failure (*Microphone Surveillance Failure* on page 35).

2. Adjust the signal to the noise ration setting in the web interface.

Note Refer to the additional information under Microphone surveillance failure.

3. Do a factory reset.

Note Refer to the additional information under Microphone surveillance failure.

4.1.4 Display Device Boot Failure

If the Alphatron SSRS display unit fails to start when power is connected, press and hold the reset button on the back of the display unit for 10 seconds.

Note Power must be connected to the unit to recover the Firmware.

- Caution - corruption.
- If the Firmware starts the device properly, do a Firmware upgrade to ensure the primary Firmware is not corrupt.
- After upgrade, the device will restart with the primary Firmware loaded. The recovery Firmware can always be accessed by performing this step again.
- Refer to the additional information under Additional options (*Additional Options* on page 32).

4.2 Service

All services such as installation, maintenance or replacement must by done by an authorized Alphatron service agent.

Note Alphatron does not accept any responsibility for the dismantling or reassembling of an Alphatron SSRS that occurs externally from an Alphatron authorized facility and/or is handled by someone other than an authorized, trained and certified person.

4.3 Spare Parts

Keep the original packaging. If the Alphatron SSRS needs to be shipped for servicing, it is required to be shipped in the same packaging as when the product was first received.

Name	Description	Part Number
Alphatron SSRS BK	Complete SSRS system - Black Color Scheme	3299.0070
Alphatron SSRS GY	Complete SSRS system - Grey Color Scheme	3299.0072
Alphatron SSRD BK	Display SSRS - Black Color Scheme	3299.0074
Alphatron SSRD GY	Display SSRS - Grey Color Scheme	3299.0076
Alphatron SSRA	Separate Microphone Antenna	3299.0078

Table 9: Part Numbers

Note Ensure that all spare parts being fitted to the Alphatron SSRS are original spare parts manufactured or approved by Alphatron.

Any use of counterfeit spare parts will deviate from the product type approval certificates and will void the warranty.

4.4 Recycling and Disposal

The Alphatron SSRS is not to be disposed off as normal waste and must be handled in accordance with the applicable waste disposal regulations in the country where the equipment is used.

4.5 Test and Maintenance Records

Below is an overview of all test and maintenance activities.

Date	M/T*	Signature	Inspection
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Table 10: Test and Maintenance records

*M=Maintenance, T=Test

5 Drawings

5.1 SSRA Microphone Unit

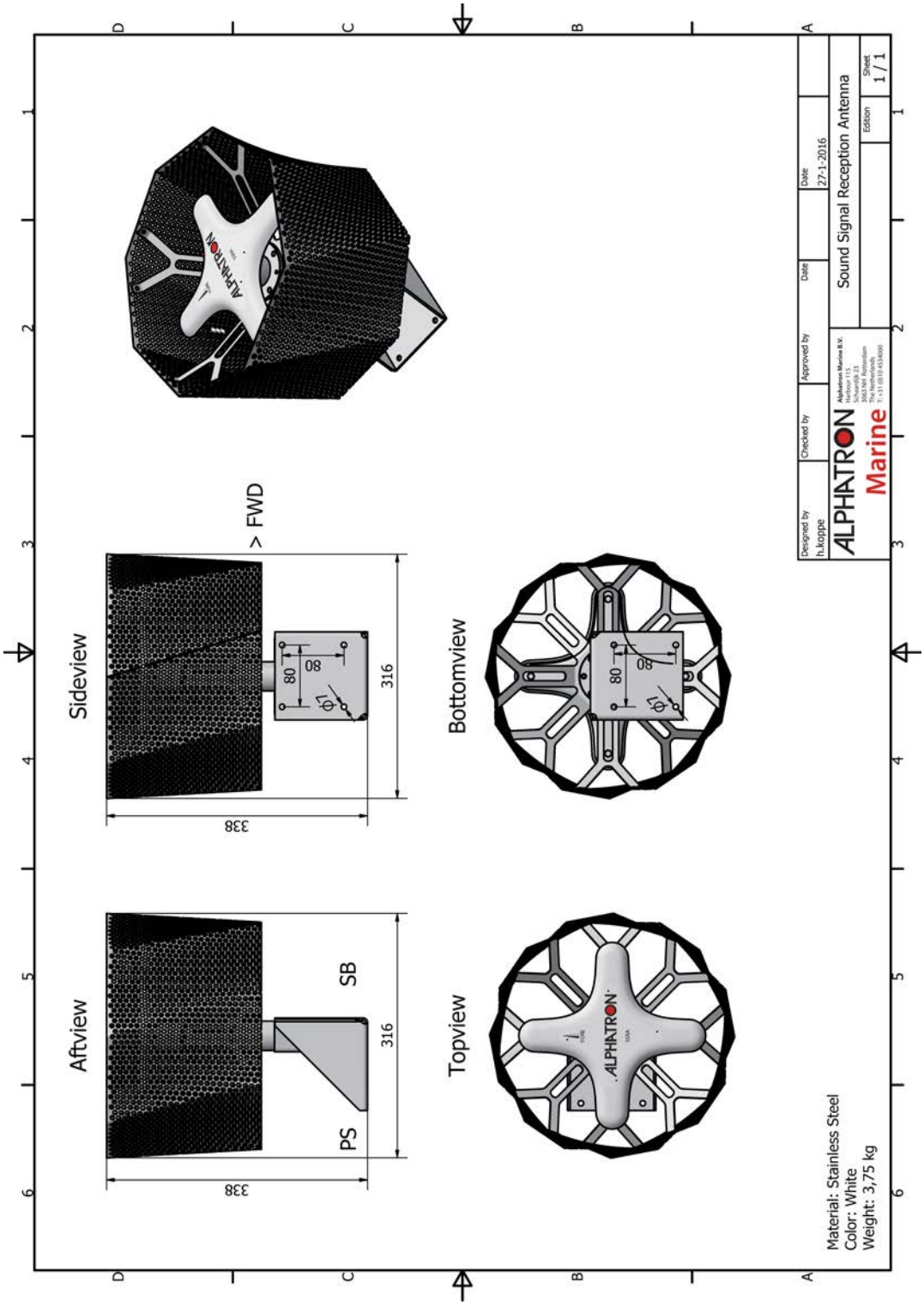

Figure 34: SSRA Microphone Unit

5.2 SSRD Display

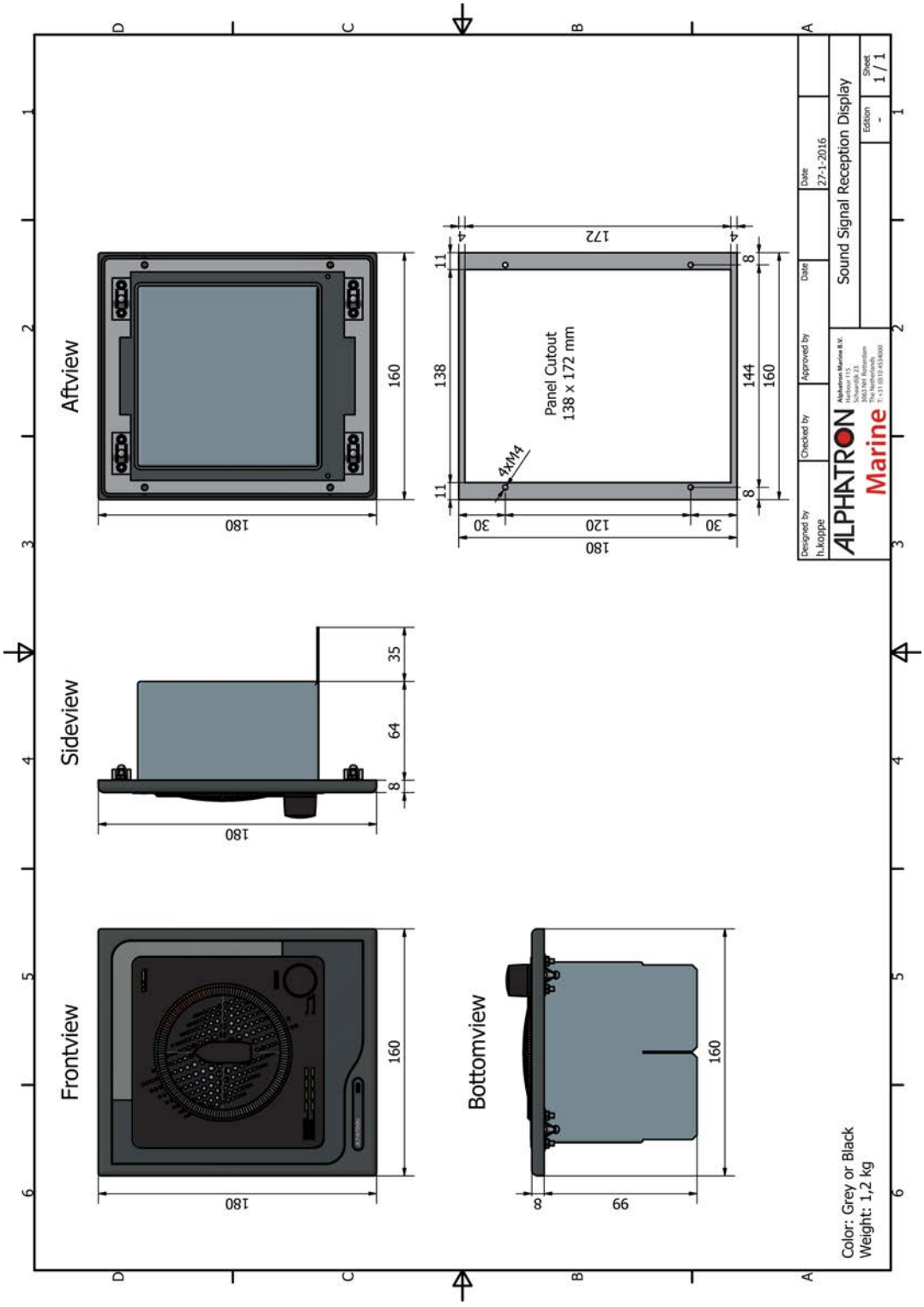

Figure 35: SSRD Display

5.3 Connection Diagram Microphone Unit

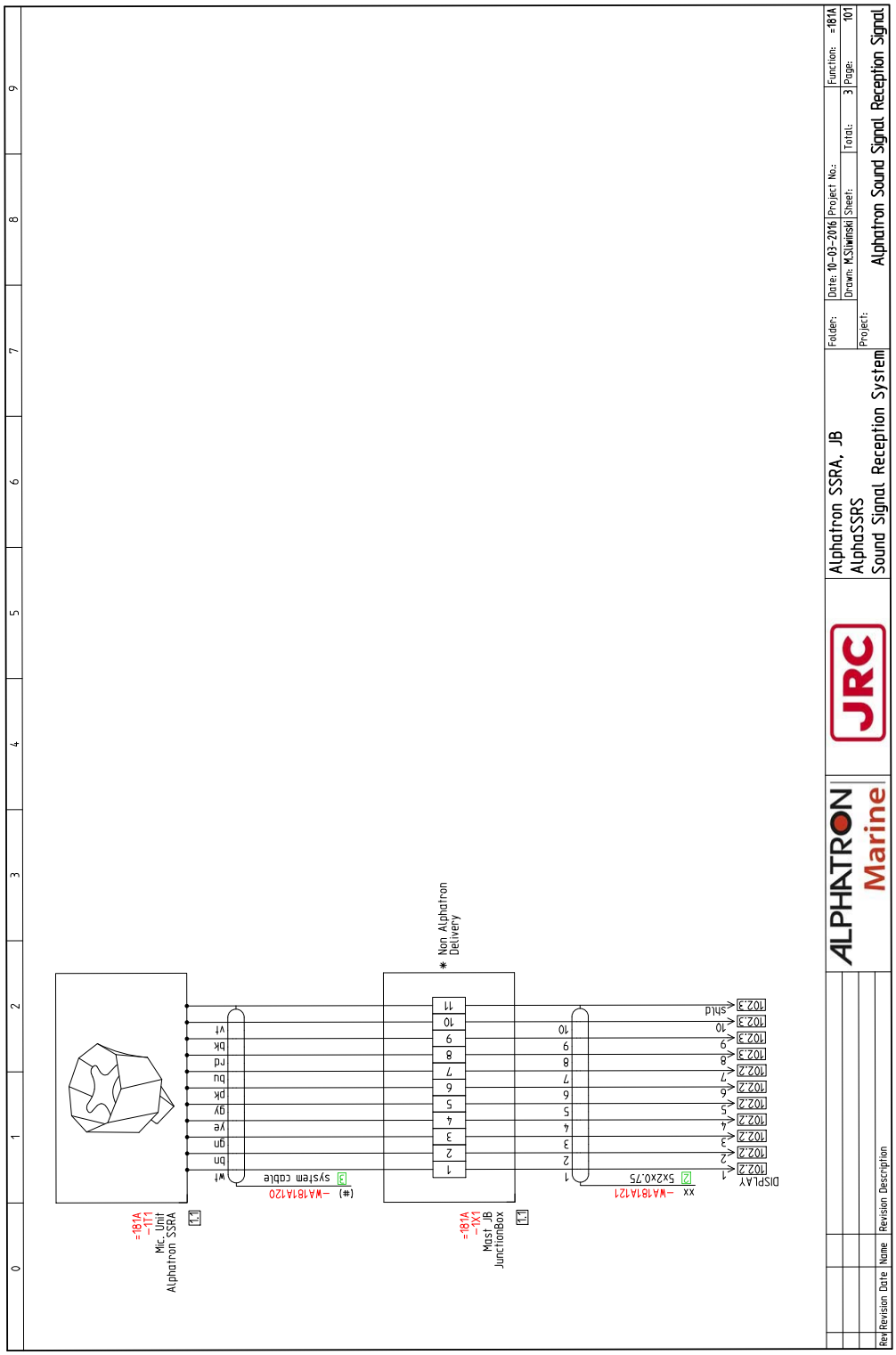

Figure 36: Connection Diagram SSRA

5.4 Connection Diagram Display

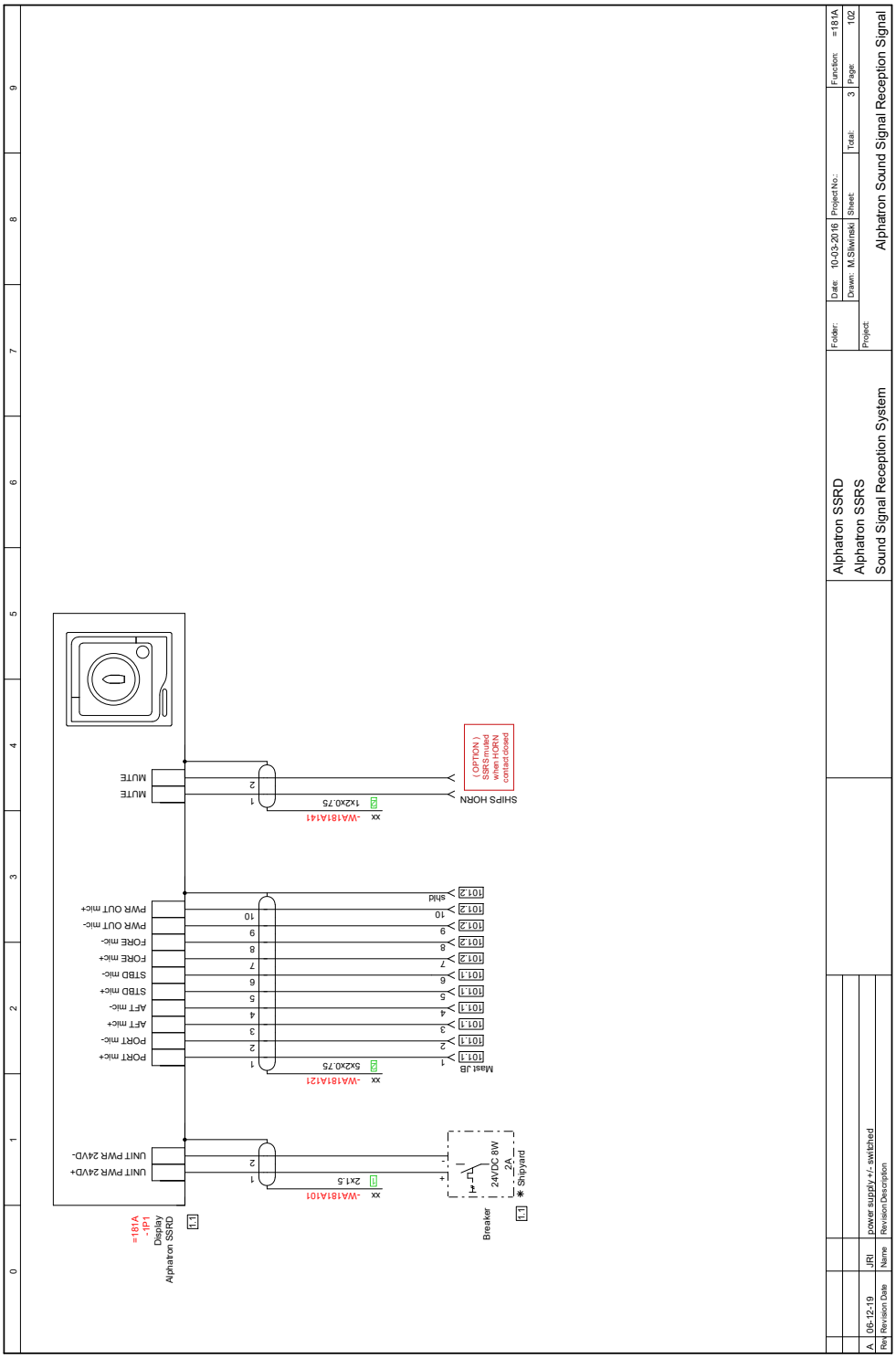

Figure 37: Connection Diagram SSRD

5.5 Cable Diagram

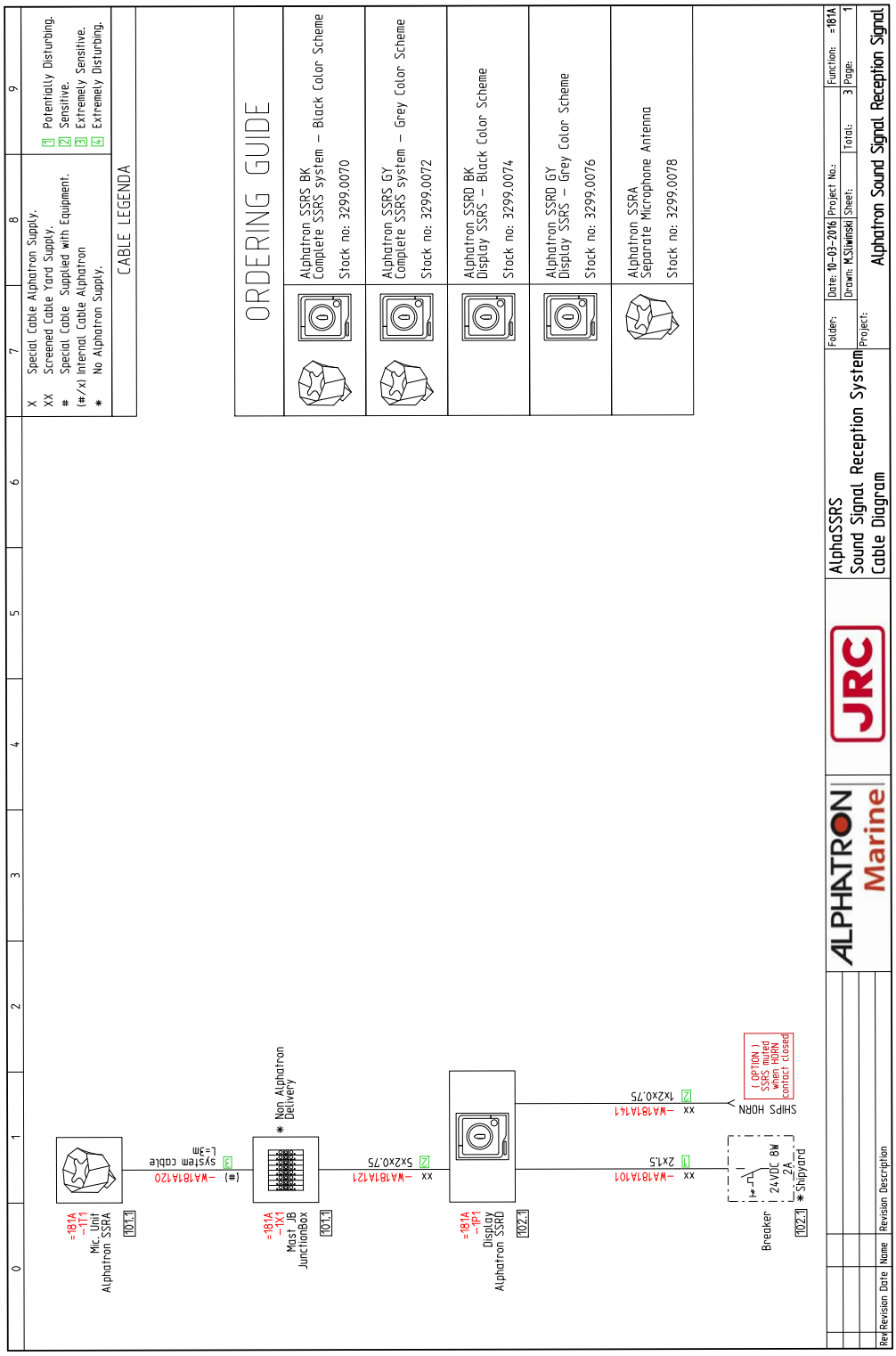

Figure 38: Cable Diagram

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