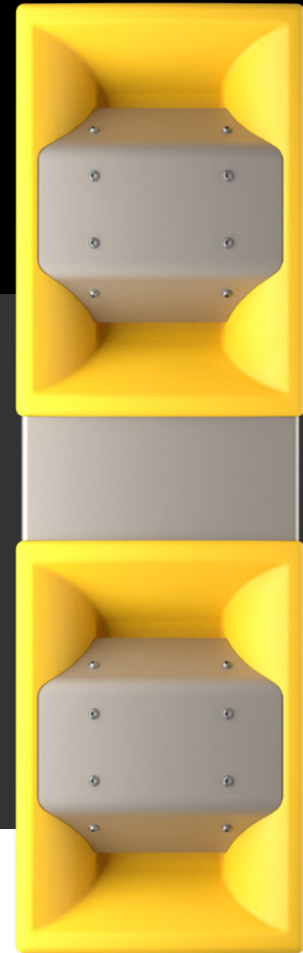
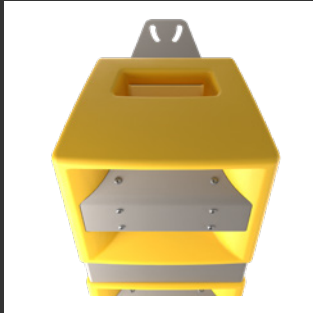




DATASHEET

SEAMARK NAI FOG SIGNAL

- 2 nautical mile (NM) range
- Directional sound output
- 96 hours of battery backup integrated (optional) with battery management system
- Levelling sensor, water ingress detection and compression driver monitoring
- Sound level control for test mode
- Standard NAI bus interface for power supply and communication
- Bluetooth interface for commissioning & testing

The SeaMark fog signal is a compact and lightweight device consisting of 2 units. The modular design allows for easier installation as each unit can be mounted onto a standard railing independently, removing the need for a mechanical lifting aid. Each unit produces a 0.5 NM sound output and when combined produces a 2 NM range. The sound output is limited to $\pm 50^\circ$ (-6dB) in the horizontal plane to reduce energy consumption and eliminate interference caused by reflected sound waves from the structure on which it is mounted.

The fog signal satisfies IALA recommendation O-139^A and E-109^B. The fog signal is activated and deactivated on demand by a visibility meter connected to the NAI bus. An integrated GNSS (GPS primary, GLONASS secondary) unit ensures synchronised blast patterns independently from the network. A levelling sensor assures accurate installation whilst compression driver monitoring allows for detailed monitoring and optimised maintenance.

^AIALA Recommendations O-139, "The Marking of Man-made Offshore Structures"

^BIALA Recommendations E-109 - Recommendation On The Calculation Of The Range Of A Sound Signal

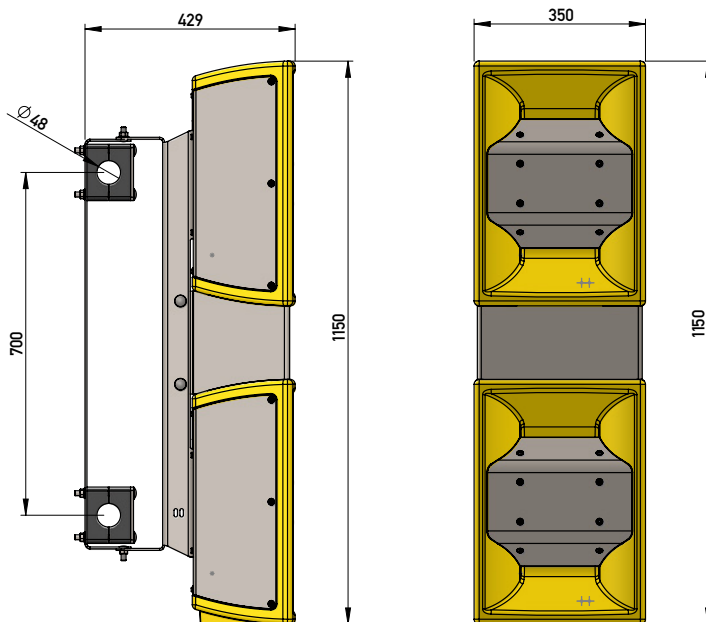
The NAI bus supplies power, sets the blast code and transmits status and error messages to the central NAI controller with a SCADA interface. Each device can be connected to Bluetooth for rapid commissioning, testing and diagnostics.

The integrated 96 hours battery backup (optional) makes

use of Nickel Metal Hydride batteries with a lifetime of at least 15 years and eliminates the need for a centralised UPS. A smart charger allows for predictive battery maintenance further reducing the overall cost of ownership of the device.

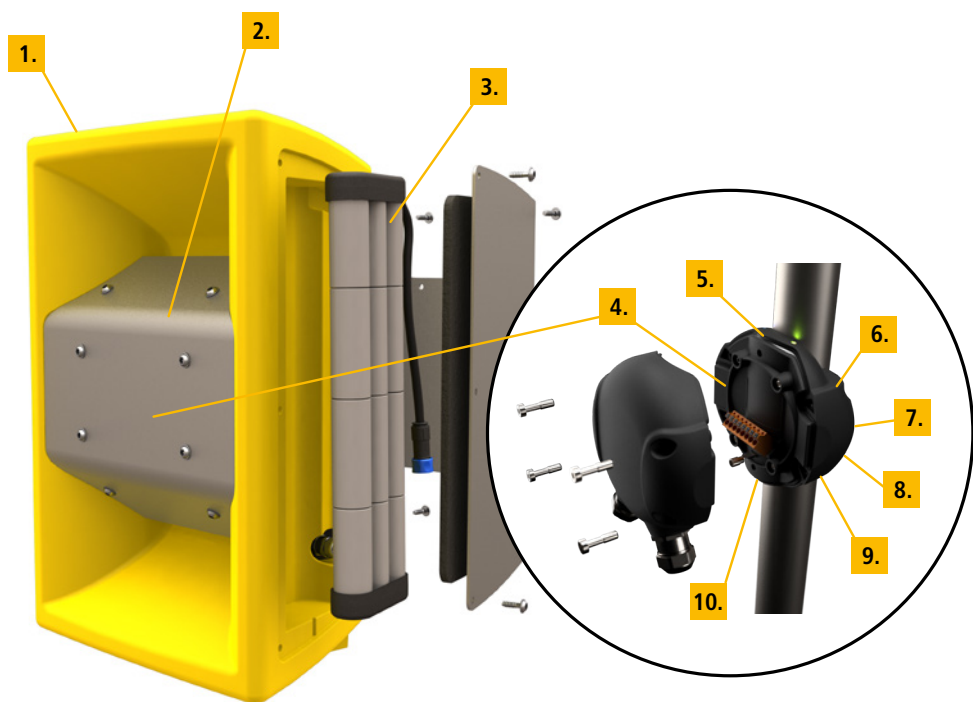
TECHNICAL DETAILS

Dimensions & Weight



Parameter	No UPS	Standard UPS
Dimensions of each unit (width x height x depth)	350 mm x 500 mm x 205 mm	350 mm x 500 mm x 205 mm
Dimensions of 2NM unit (width x height x depth)	451 mm x 1150 mm x 549 mm	451 mm x 1150 mm x 549 mm
Diameter of junction box	124 mm	124 mm
Weight of each unit including battery (if applicable)	16.1 kg	20 kg
Weight of 2 NM device including brackets, junction box and acoustic diaphragm, including battery (if applicable)	48.7 kg	56.5 kg

Components



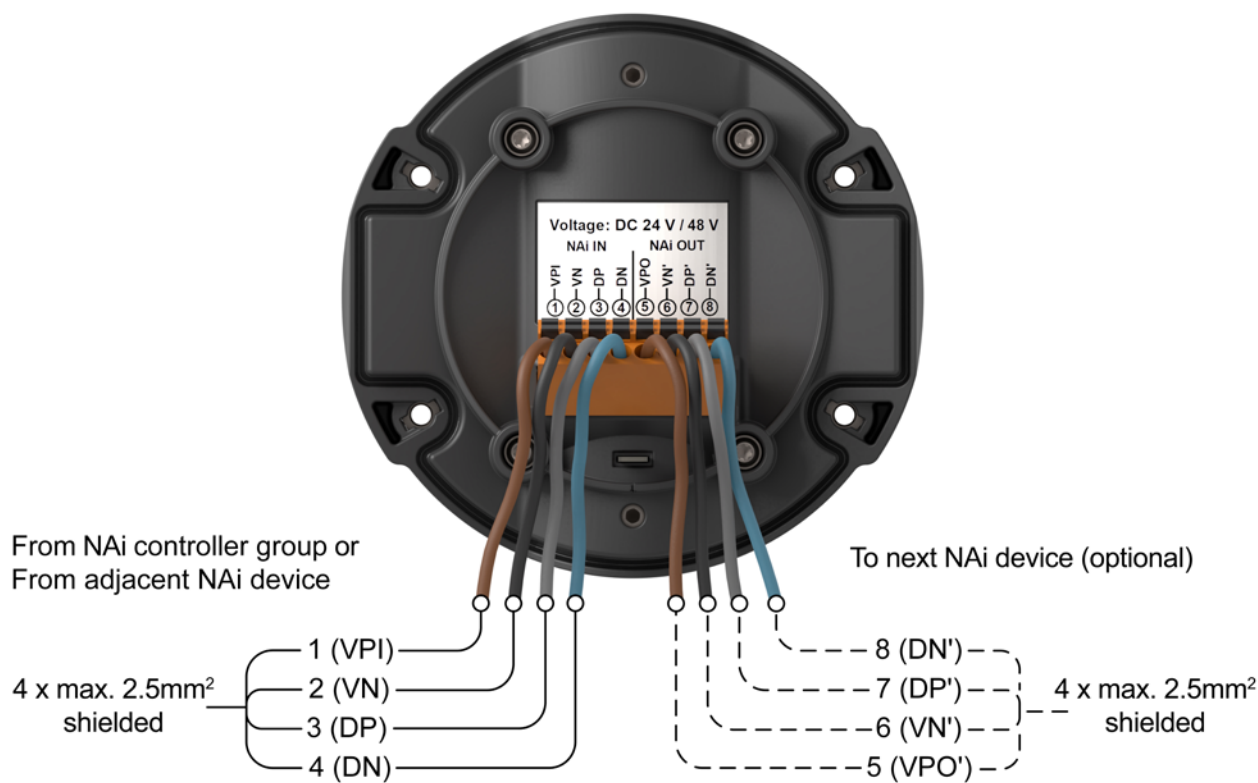
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|--|---|
| 1. Polyethylene body & 316 L stainless steel cover for <23 kg mass | 7. Integrated Bluetooth for device diagnostics & preventative maintenance |
| 2. Compression driver monitoring | 8. Integrated GPS |
| 3. Nickel metal hydride batteries for 15+ year life | 9. NAI bus for power, control & monitoring
Supply: DC 18 V to DC 58 V |
| 4. Water ingress detection | 10. Integrated lightning protection |
| 5. Smart charger for predictive battery maintenance | |
| 6. Levelling sensor | |

Note: All housing components including the cable glands satisfy the IP67 degree of protection requirements according to IEC 60529. During connection and assembly, ensure that no moisture or dirt penetrates into the open socket.

	Size	For cable diameter	Key width
EMC Cable Gland ^B	M20 x 1.5	8.0 - 15.0 mm	24 mm

^B Typ: HELUTOP® MS-EP4

Electrical Connection



1	VPI	Power supply input (Positive)
2	VN	Power supply input (Negative)
3	DP	NAi data (Positive)
4	DN	NAi data (Negative)
5	VPO	Power supply output (Positive – to next device)
6	VP'	Power Supply output (Negative – to next device)
7	DP'	NAi data (Positive – to next device)
8	DN'	NAi data (Negative – to next device)

Electrical connection	Spring terminal block, max. 2.5 mm ²
Operating voltage VIN	DC 22.0 V to 48.0 V +25%/-15% (w/o UPS option) DC 24.0 V to 48.0 V +25%/-15% (w/ UPS option)
Power consumption (Peak, VIN = 48 V DC, without charging)	54 W
Power consumption (Peak, VIN = 48 V DC, charging)	65 W

Signal Specification

Signal output	134 dB @ 1 m
Output frequency	850 Hz
Nominal range	2 NM
Signal output horizontal angle	±35° (-3 dB); ±50° (-6 dB);

Environmental Conditions

Regulations	IEC 60945, device type 'exposed' IEC 61892-1:2019
Environmental temperature	-25 °C to +55 °C
Ambient temperature (storage / transport)	-40 °C to +70 °C
Humidity (operation / storage / transport)	95% r.h. up to 45 °C 70% r.h. for T > 45 °C
Atmospheric pressure (operation / storage / transport)	80 kPa to 108 kPa
Degree of protection (acc. to IEC 60529)	IP66

Electrical Safety

Regulations	EN 62368-1:2014/AC:2015 EN 62133-1:2017
Protection class	Class II

Mechanical Requirements

Regulations	EN 60945:2002, Category "Exposed"
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Reliability

IALA Category	1 ^D (assumed MTTR of 96 h)
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EMC Compliance

Regulations	EN 60945:2002, Category "Exposed" EN 61000-6-2:2005 EN 61000-6-4:2007/A1:2011 EN 62479:2011 ETSI EN 303 446-2 V1.2.0 (2019-03)	ETSI EN 301 489-19 V2.1.1 ETSI EN 301 489-17 V3.1.1 ETSI EN 301 489-1 V2.2.1 FCC Part 15
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Material

Housing	Polyethylene (colour: RAL1023)
Front plate and rear wall	Stainless steel 316 L / 1.4404

^D IALA Recommendation O-130 – Categorisation and Availability Objectives for Short Range AtoN

Ordering Information

Option Name	Product ID	Item Number	UPS Details
SeaMark NAI 2 NM Fog Signal	FS02-NAI	30291200	None
SeaMark NAI 2 NM Fog Signal with Standard UPS	FS02-NAI-UPS S	30293200	96 hours battery backup at end of life, 288 Wh (24 x NiMH F-cell), 15-year service life. For duty cycles up to 6.7%, e.g. 2s + [28s] blast