SeaWire
WHEREVER YOU ARE

PRO

User Guide
SeaWire Pro 5G

UserGuide_SeaWirePro5G_Rev.1.01

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This manual is applicable to the following solution/product:

Item name	Manufacture part no.	Coverage
SeaWire Pro 5G	SWP-5G	Worldwide 5G and LTE-A coverage

Record of revisions

Rev.	Description	Release Date	Initials
1.00	First publication	January, 2025	NFP
1.01	LED description	April, 2025	NFP

Table of Contents

Introduction

Thank you for purchasing SeaWire Pro. The SeaWire Pro makes it possible to extend the reach of mobile networks in coastal areas with an automatic directional turning antenna. The SeaWire Pro solution is a configuration of 2x automatic turning directional antennas (SeaWire RouDem) and a 19" Control Unit "BDU".

Safety information

Read, follow, and keep these instructions.

	WARNING - Product installation To ensure the correct performance of this equipment, it is strongly recommended that professionals with expertise, properly trained, and likewise authorized within the industry complete the installation.
	WARNING – Do not disassemble Do not disassemble or modify this equipment.
	WARNING – Input Power The input voltage range is 100-240 VDC.
	CAUTION – Contains li-ion batteries The product contains li-ion batteries. Must not be opened or replaced by unauthorized buddies.

Required information for the reader

IMPORTANT: Text marked 'Important' provides essential information to the reader and is key information for the user for the equipment to work properly. Damage to the equipment can occur if instructions are not followed.

Package Content

Item	Quantity
SeaWire RouDem 5G	2
Mounting Bracket	2
Below Deck Unit (BDU)	1
BDU Power Cable 100-240V	1
Screws M4x16mm	10
Unbraco 4 Key	1
Unbraco 2.5 Key	1
Privacy Policy	1
User Guide	1
Registration Information	1

Requirements

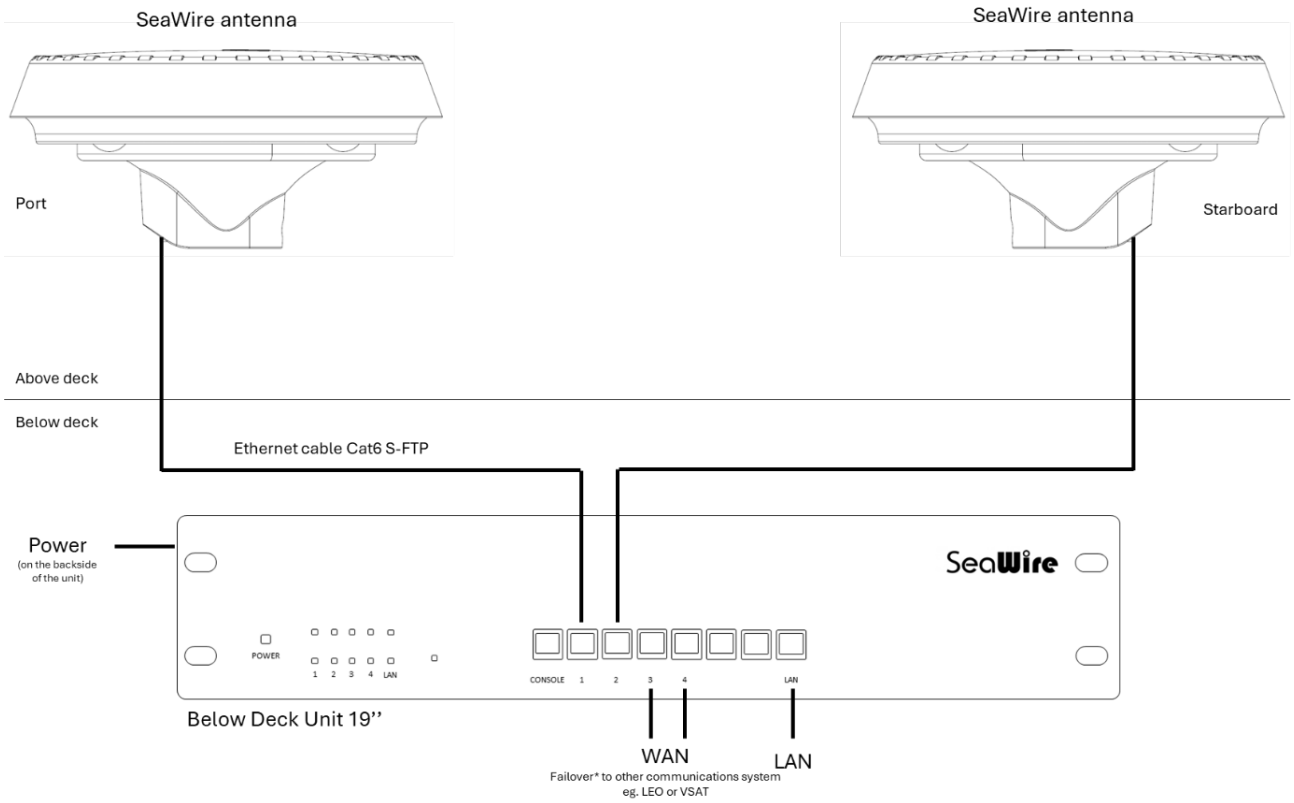
- **Data subscription**
  To receive data via the SeaWire Pro solution you must have a subscription with a data provider. Each antenna needs a subscription.

- **Cable(s)**
  The package content **DOES NOT include cables for cable run installations**. To install SeaWire Pro one must follow these cable specifications when purchasing cables for installation:

Network cable type	S/FTP CAT7, UV- and water resistant, double shielded, grounded
Connector 1	RJ45 (male), CAT7 FTP, grounded
Connector 2	RJ45 (male), CAT7 FTP, grounded
Length	The length of the cables depends on the location for installation. In the System Configuration section, you will find an overview of the set up. Max. length is 100m

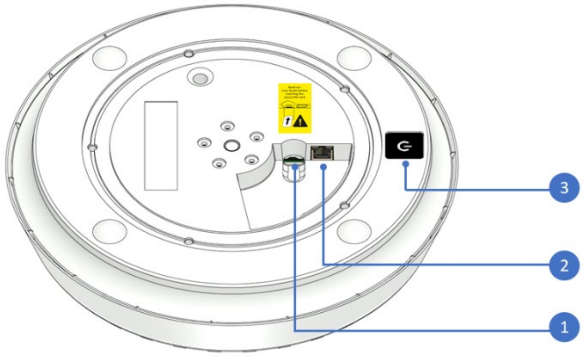
- **Mounting**
  Depending on the vessel, mounting accessories can vary. The mounting should take place at the highest spot possible and where possible with a good 360° view with the longest possible distance to other radiocommunication systems. The Mounting Bracket interfaces to a pole of Ø38mm/1.5” (outer diameter). Read more about the mounting in Installation of the SeaWire RouDem section, step 3.

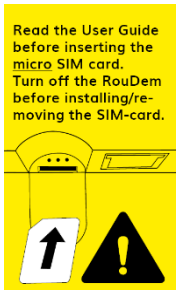
System Configuration



Hardware Overview

PORTS SEAWIRE ROUDEM

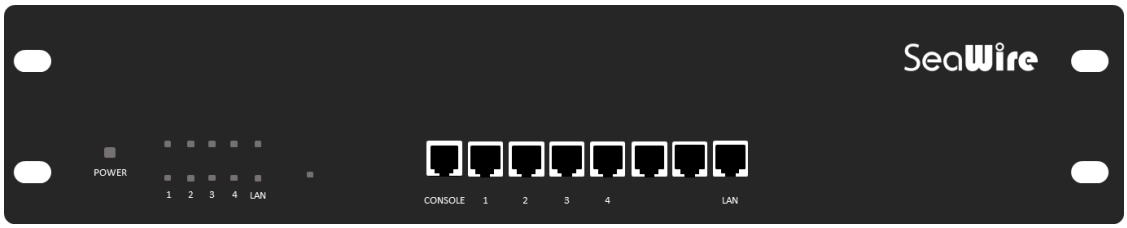




IMPORTANT: Read Step 1 in the section 'Installation of the SeaWire RouDem'

1 SIM card slot
The slot is a Micro-SIM slot used for the SIM card from the data provider. The SIM card slot is a click system
2 Ethernet port
RJ45 cable port
3 On/off button
Push button with LED

PORTS (BDU) BELOW DECK UNIT - FRONT PANEL



IMPORTANT: It is important that all SeaWire RouDems have different IP addresses. The SeaWire RouDem's comes with IP address 192.168.2.1 and 192.168.3.1.

CONSOLE port
RJ45 serial console port for Command Line Interface (CLI) management. Only use when you are advised to
Port 1 & 2
RJ45 ports reserved for the antenna(s)
Port 3 & 4
RJ45 ports reserved for WAN connection(s)
LAN port
The RJ45 port is for LAN connection

PORTS (BDU) BELOW DECK UNIT - BACK PANEL

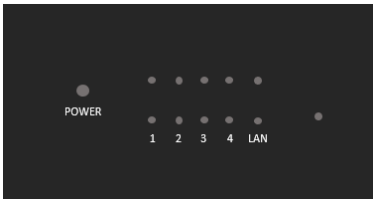
Note: there are additional ventilation holes in the bottom.

LED’s

SEAWIRE ROUDEM

The LED will blink blue when the antenna starts up. As soon as it's connected to the mobile network, the LED will change to a steady blue light.

BELOW DECK UNIT (BDU)



Power	
State	**Status**
White	Ready for use
Blue	Ready for use, connected to cloud
1, 2, 3, 4, LAN (bottom row)	
State	**Status**
Off	No Link
Amber/amber flashing	Link established/activity at 10/100 Mbps
Green/green flashing	Link established/activity at 1 Gbps
Unnamed internal LED indication	
Green/green flashing	Link established/link activity at 1 Gbps

Note: 1, 2, 3, 4, LAN (upper row) will not light.

Installation of the SeaWire Pro

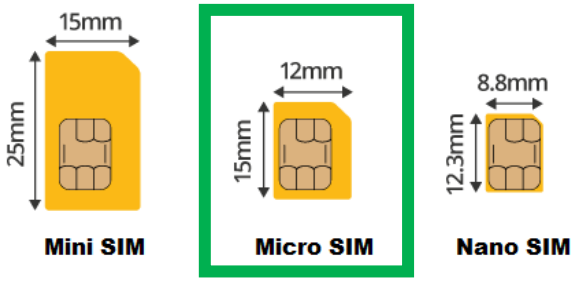
The SeaWire Pro solution is a configuration of 2x automatic turning directional antennas (SeaWire RouDem) and a Below Deck Unit (BDU). Repeat step 1-4 for each SeaWire RouDem.

STEP 1 – INSERTING THE MICRO-SIM CARD

Note: This step is only required if you are installing a physical SIM card. The hardware operates with an eSIM provided through our GlobalWire data subscription.

You find the SIM card slot at the bottom of the RouDem.

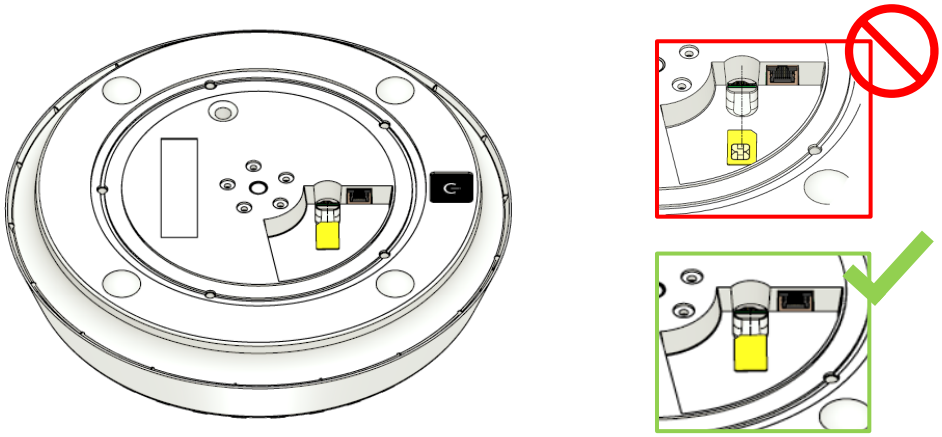
1. Carefully click out the SIM card in **Micro-SIM** format.



2. **IMPORTANT:** press on the top of the SIM card to make sure there is a smooth surface.

3. RouDem's SIM card slot is a click system. It is important that you do not use tweezers, pliers, or other tools to force the SIM card in/out. Use the click system to gently insert/remove the SIM card by using your fingers by clicking it into place and clicking it out. Any resistance other than the smooth pressure of the spring is a warning that something is not correct. When installing/removing the SIM-card the RouDem must be turned off.

4. **IMPORTANT:** Insert the SIM card with the angled corner facing the left and the gold area facing down. When it is placed correctly you will hear/sense a 'click'.



5. Check if the device is working with the purchased SIM card. Turn on the RouDem by pressing the on/off button. When the startup is complete, the green LED will light up continuously. It takes a few minutes.

PLEASE NOTE when removing/inserting a new SIM card it is important to restart the unit.

STEP 2 – PREPARING MOUNTING BRACKET AND CONNECTING THE ETHERNET CABLE

IMPORTANT: It is required to mount the mounting bracket to avoid humidity and dirt entering the RouDem.

1. Pass the cable through the cable gland.
    a. Unscrew the sealing nut and use a small tool such as an Allen key or a pen to get the seal out.
    b. Pass the cable through the body and the sealing nut, mount the seal on the cable and place the seal back into the claw.
    c. Screw on the sealing nut and make sure it is tightened **very tight**!

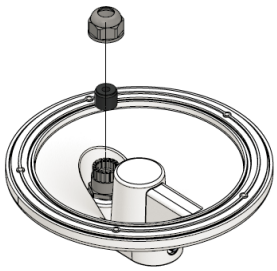
2. Connect the Ethernet cable to the Ethernet port in RouDem.

3. Affix the mounting bracket to the RouDem with the five screws using the supplied Unbraco 2.5 Key.

    IMPORTANT: it is important that the mounting bracket is secured with all five screws to maintain waterproofness.

4. Tighten the mounting bracket to a pole of Ø38mm/1.5” pole by tightening the two pinole screws with the supplied Unbraco 4 Key. It is not possible to state which torque the pinole screws should be tightened with, as it depends on the pole material.

❶ a



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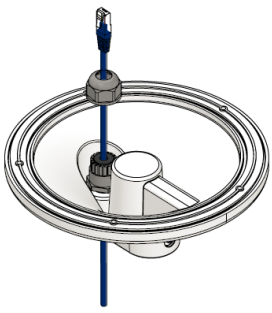

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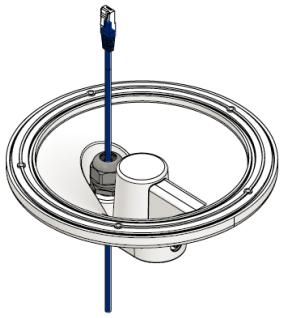

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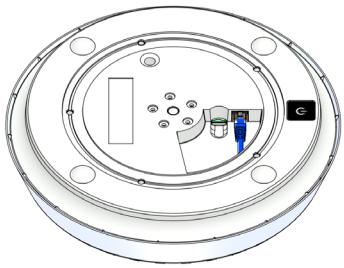

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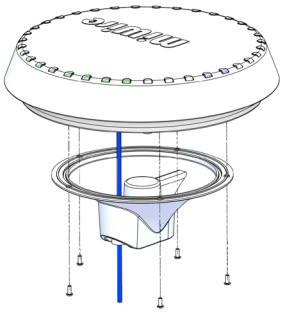

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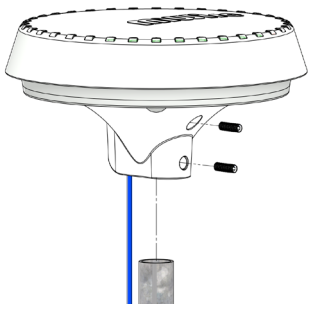


STEP 3 – INSTALLING THE SEAWIRE PRO

Before installing each SeaWire RouDem permanently you should determine the suitability of the location for installation.

Installation considerations:

- Install the RouDem above deck at the highest spot possible on a pole, a mast, or another appropriate platform with opportunity to accommodate a pole of Ø38mm/1.5''.
- Place the RouDem with the best 360° view possible. It is rarely possible to place RouDem where a complete 360° view is available, but as good as possible to obtain the best performance.
- The RouDem should always be installed in a horizontal position and upright.

- Install the RouDem away from radiocommunications antennas, radiotelephone equipment, radars, satellite, VHF's and GPS antennas to prevent electrical noise and interference.
- Install one RouDem on port side and the other RouDem on starboard side on the vessel to make up for blind spots.

! IMPORTANT INSTRUCTION !

Before permanent installation please check compass interference via the user interface. Read more about how to access the user interface on p. 12 in the user guide.

1. In the browsers' URL line type the IP address (192.168.X.1*) of the RouDem and press enter.
2. Sign in with username '**admin**' and password '**1234**'.
3. Go to the menu tab 'Compass & Map'.
4. Click on 'Calibrate'.
5. The task takes approx. 2 min. The value must be above 80. If the value is below 80, please reconsider placement and repeat the process. Please also read the installation considerations below.
6. Repeat this instruction for each antenna.

*Please see the specific IP address of the RouDem. It is stated on the label if it has not been manually changed.

STEP 4 – CABLE WIRING

Cable wiring considerations:

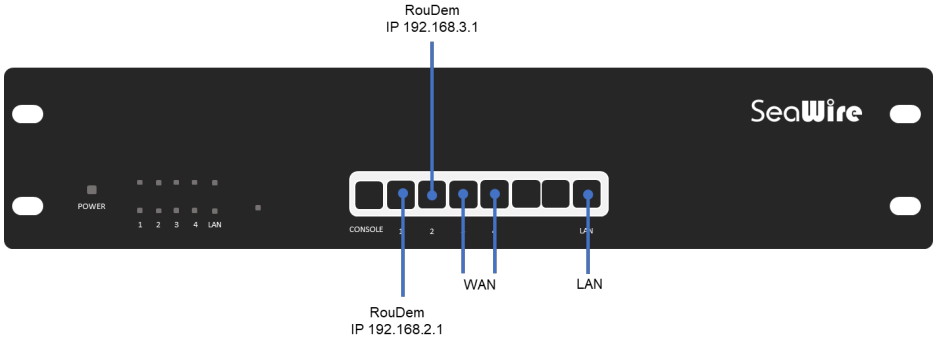
- Where possible avoid routing the cables near other electrical equipment and cables.
- If possible, all cable routing must be done in a cable duct.
- Do not apply any load to the connectors.
- Cable specification:

Network cable type	S/FTP CAT7, UV- and water resistant, double shielded, grounded
Connector 1	RJ45 (male), CAT7 FTP, grounded
Connector 2	RJ45 (male), CAT7 FTP, grounded
Length	The length of the cables depends on the location for installation. In the System Configuration section, you will find an overview of the set up. Max. length is 100m.

STEP 5 – POWERING THE ROUDEMS

1. Install the BDU in a 19” rack cabinet, plug in the power cable and power with 100-240VDC.

2. Connect the ethernet cables from the RouDems to the dedicated ports in the BDU. If the RouDems are not already turned on or turn on automatically as they are powered, turn the RouDems on by pressing the on/off button in the bottom of the RouDem. If you do not have access to the on/off button, please read the restart/reboot part in the troubleshoot section.



3. Optional: connect to local LAN/network equipment via the LAN port in the BDU.

Battery feature:

In the event of a power outage, the RouDem is battery-powered, providing a minimum of 1 hour of operation.

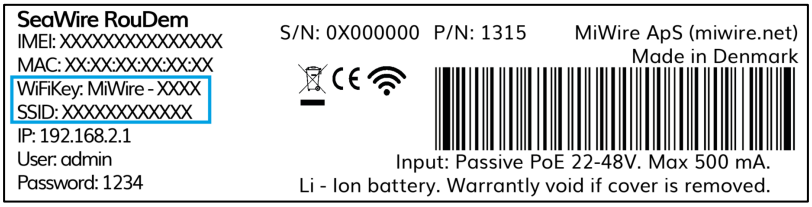
STEP 6 – CONFIGURATION OF INTERNET VIA SEAWIRE ROUDEM

Connect directly via RouDem's WiFi and/or connect with external network equipment.

WiFi

1. Select WiFi settings on a compatible device e.g., a computer, a smartphone, or tablet. The device will automatically search for available WiFi networks (make sure WiFi is on).

2. Choose the WiFi network with the name containing *MiWire*. The SSID (network name) and WiFi key. Find the information on the unit label, which is found under the RouDem, on the box or on the registration flyer.



PC and External network equipment

1. Connect the BDU to external network equipment e.g., a router, a switch or WiFi access points by using the LAN port.

STEP 7 – REGISTRATION

This step must be performed by the end-user of the product. When registering the RouDem you can receive the best service and support. Follow the instructions on the registration flyer.

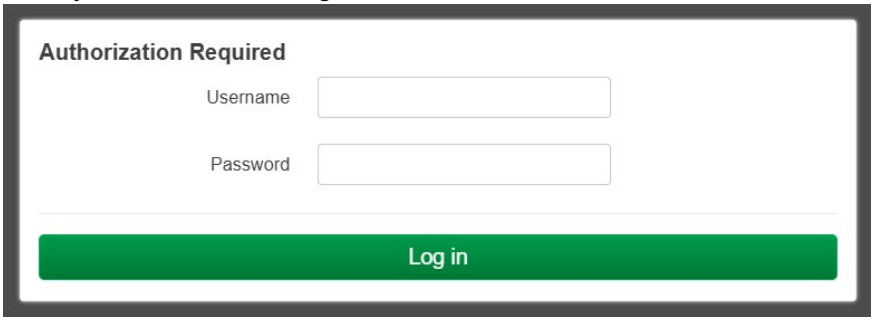
MiWire user interface

After installation of the SeaWire Pro solution has been performed, the system is fully operational. In this section there will be a description of system settings which are configurable from the Web Server/MiWire user interface.

MiWire user interface presents an overall status of the RouDem and allow the user to configure network related settings, get an overview SIM card information and perform device commands. You can only access the user interface if you are connected to a MiWire related network either by WiFi or cable.

1. Open MiWire user interface by entering 192.168.2.1 or 192.168.3.1 in a web browser. There is a web server for each RouDem. The user interface is optimized for Google Chrome.

2. Log in with Username: admin & Password: 1234 (**IMPORTANT:** for optimum security, we recommend changing the password). The system will always be delivered from the factory with this default log in.

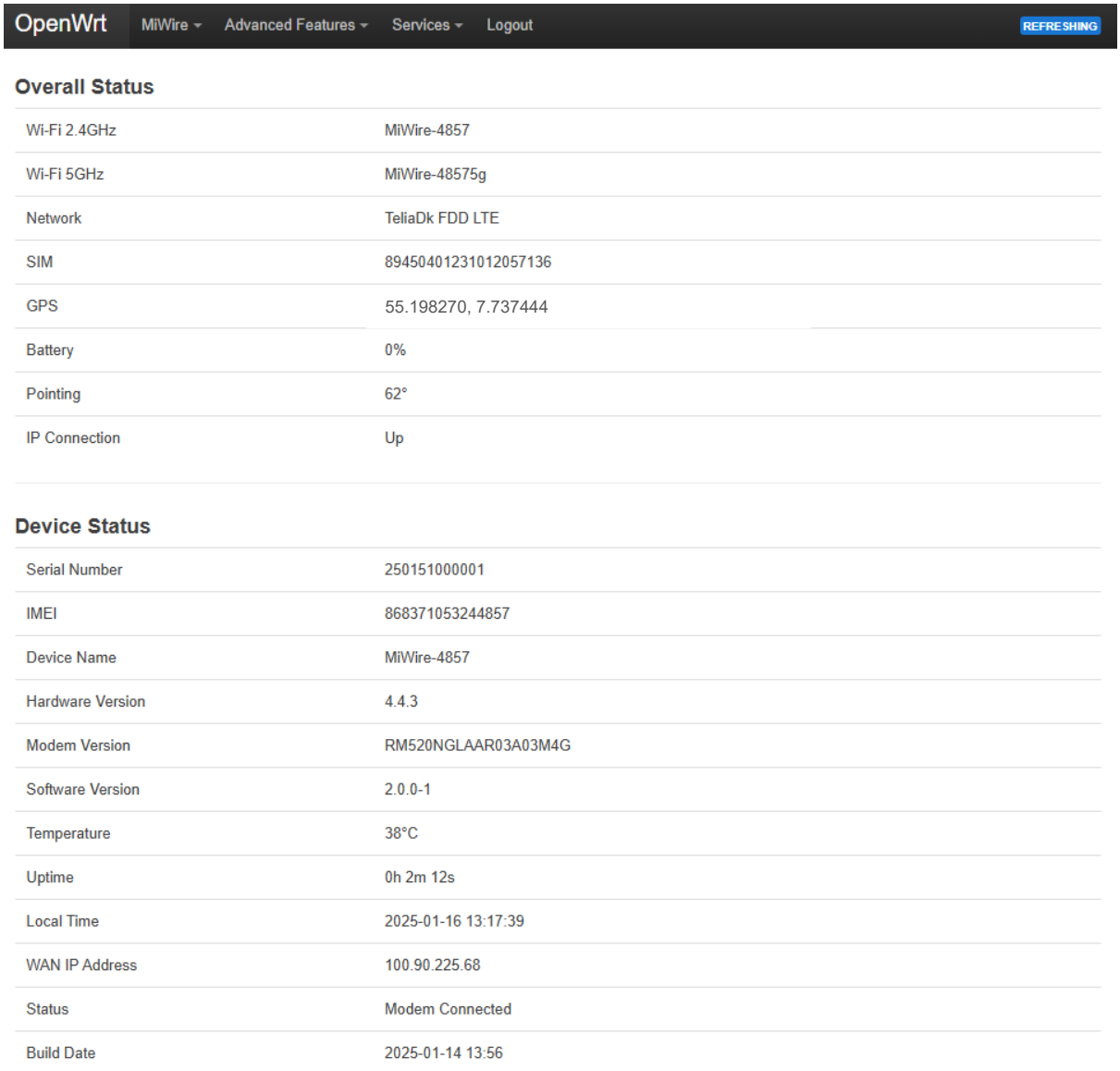


3. The menu bar at the top of the page consists of three dropdown menus: *MiWire, Advanced Features & Services.* In the following only the MiWire dropdown will be introduced. We do not recommend changing the settings if you are not familiar with the configurations parameters or have been trained or consulted with an expert.

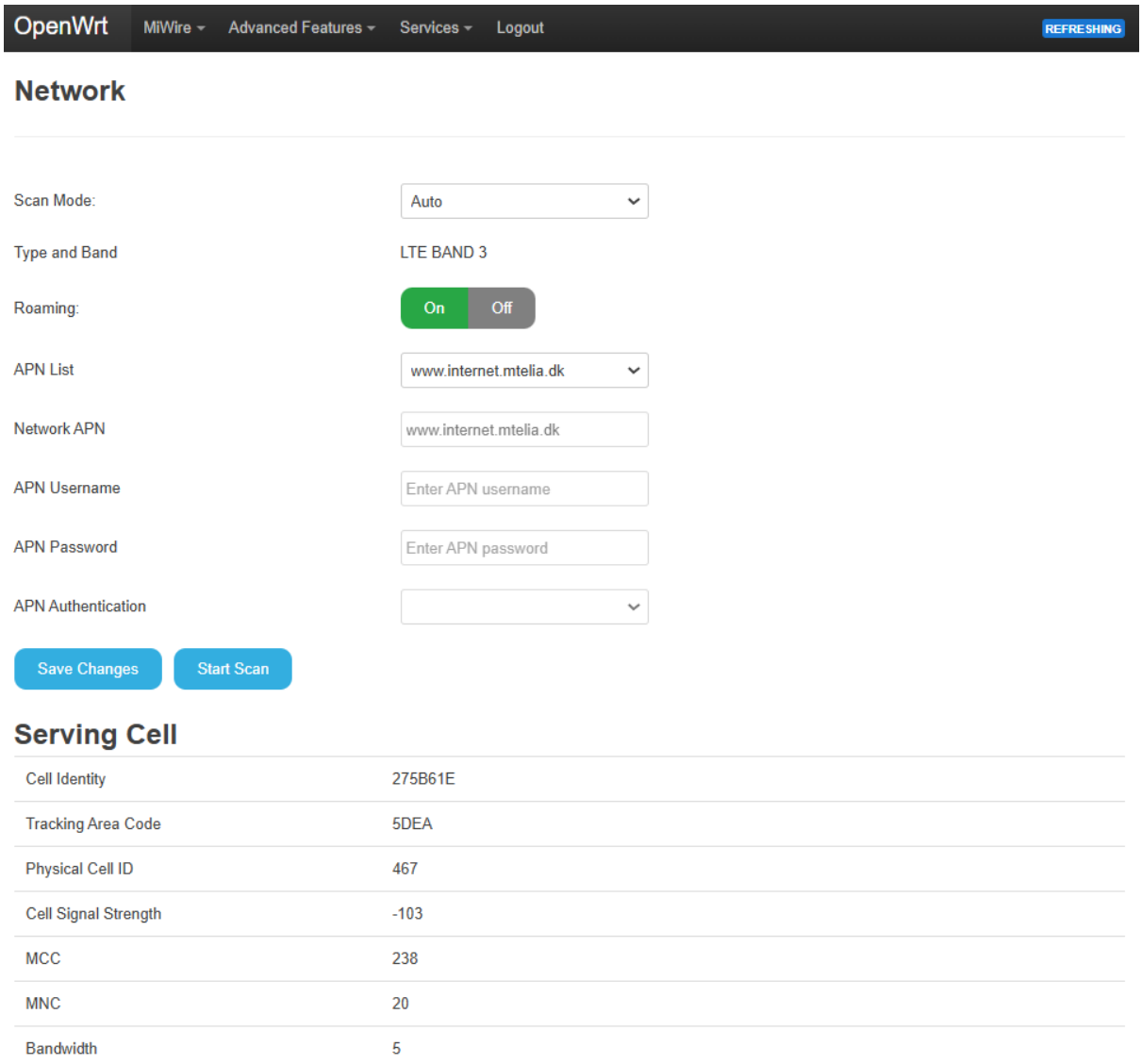
Status

The status page presents an overall status of the RouDem.

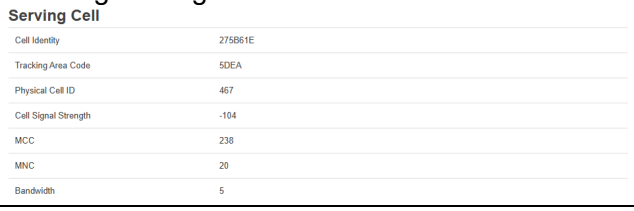
IMPORTANT: If there is no WAN IP Address shown it is most likely because the APN settings are incorrect. Go to the Network tab and set the correct APN settings according to the current operator. The information can usually be found by looking up the MCC and MNC on the internet. Read more about setting the APN in the Network tab, ‘MyDefinedAPN’.



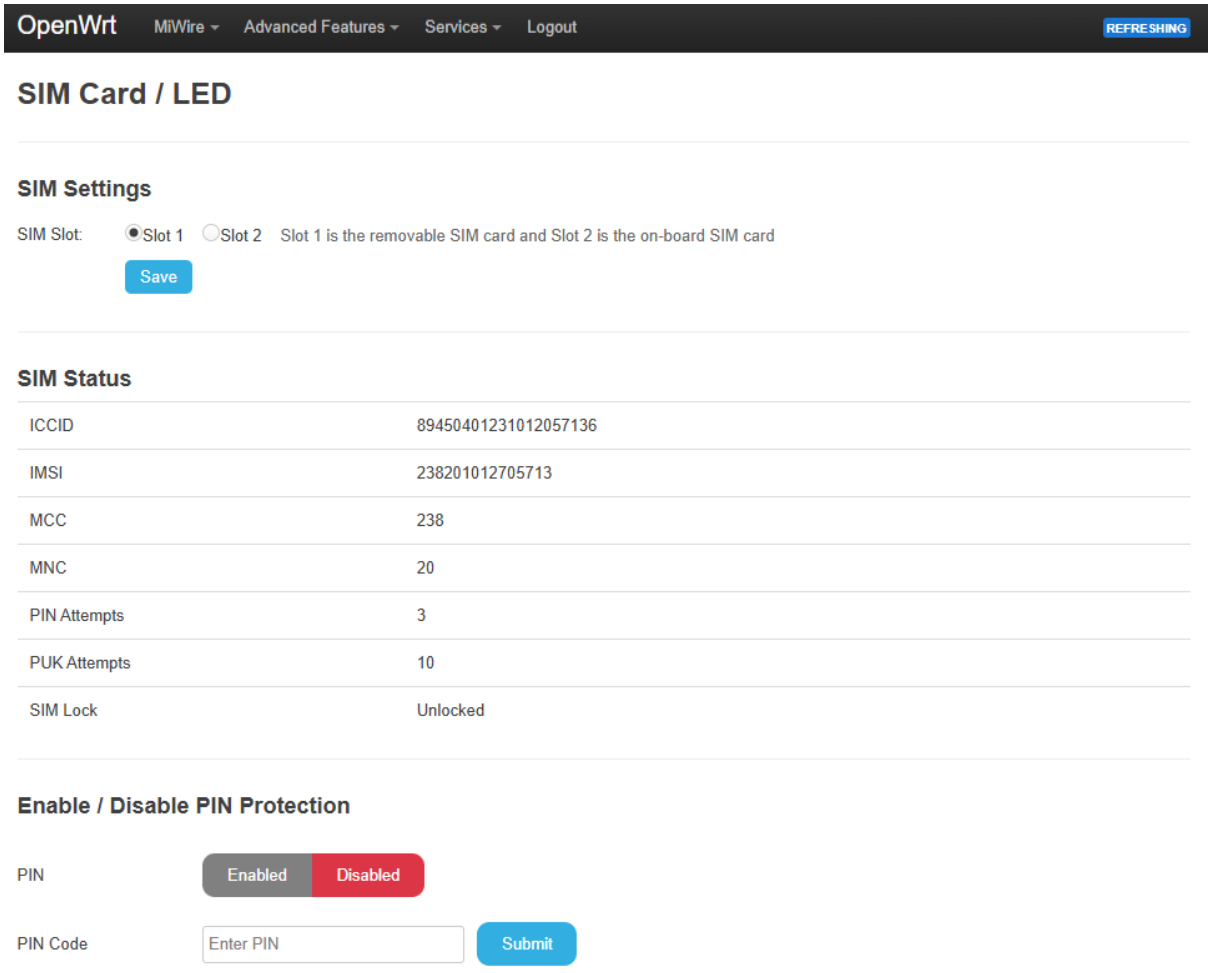
Network



Network operator	
Scan mode	Select between: **Auto (default)** 3G 4G 3G/4G 5G 4G/5G
Roaming	Turn Roaming **ON (default)**/OFF
APN List	Select between: **Internet (default)** MyDefinedAPN
Network APN	If you change the setting in the APN List to MyDefinedAPN you can enter the APN Network
APN Username	If you change the setting in the APN List to MyDefinedAPN you can enter the APN Username
APN Password	If you change the setting in the APN List to MyDefinedAPN you can enter the APN Password

APN Authentication	If you change the setting in the APN List to MyDefinedAPN you can change the APN Authentication to: None PAP CHAP Both
Serving Cell	Showing serving cell information 

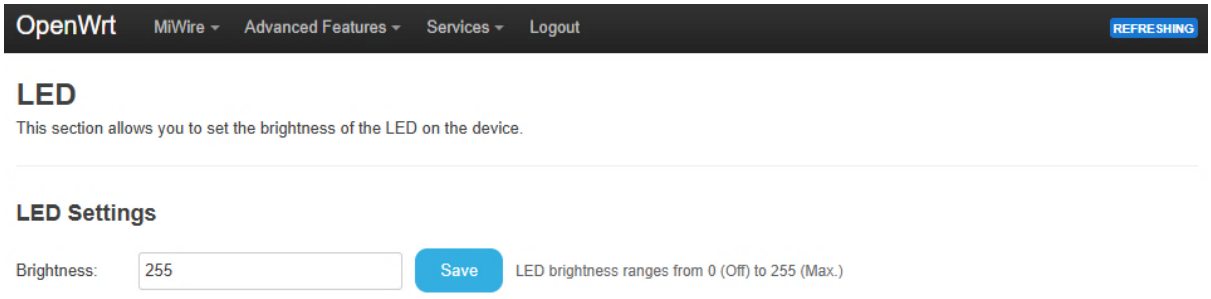
SIM



Status	ICCID (Integrated Circuit Card ID) IMSI (International Mobile Subscriber Identity) PIN Attempts PUK Attempts
Enable / Disable PIN Protection	
PIN	Enable or disable PIN. **Disabled (default).** For your convenience, we recommend disabling the PIN, as you will

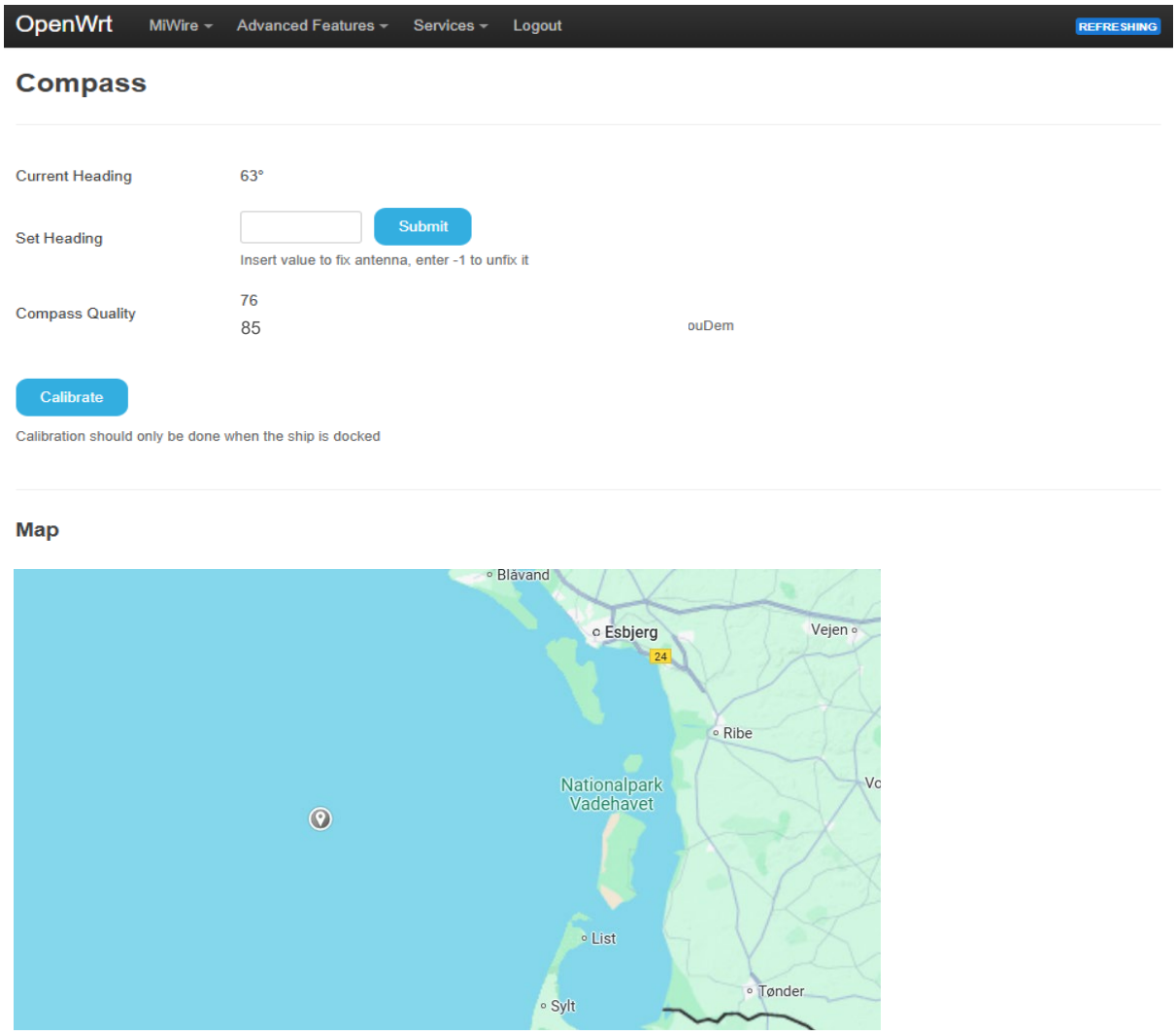
	otherwise need to enter the PIN every time the device is rebooted or updated.
PIN Code	Enter PIN code in this filed if it is required and press save
Change PIN Code	When enabling PIN code, you get an opportunity to change the PIN code.

LED Setting



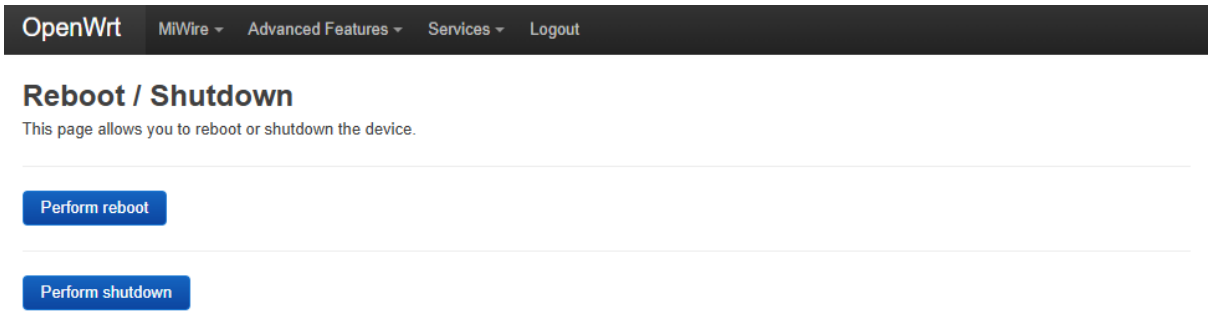
Brightness	Select a value between 0 (off) and 255 (max) to define the brightness of the external LED

Compass



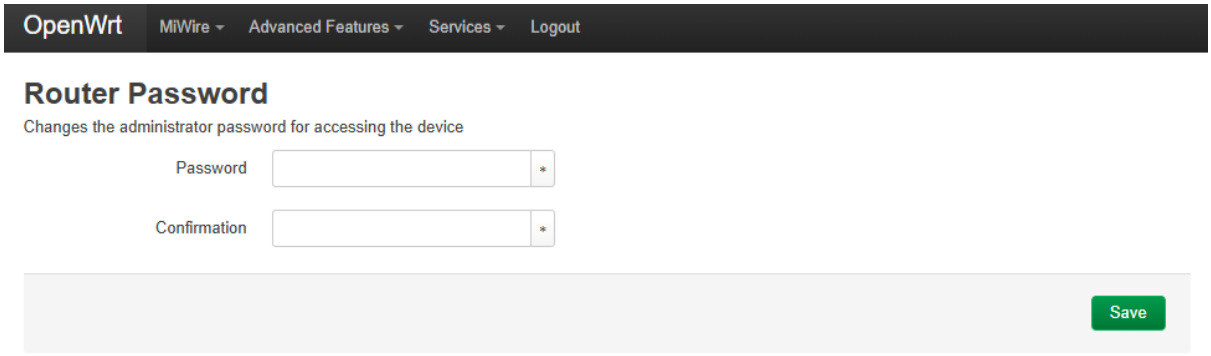
Current Heading	Shows the direction the antenna is pointing. Calibrate the antenna if needed
Set Heading	Enter value to fix antenna direction*, enter -1 to unfix it. Depending on the software version the heading will be reset if you reboot the device. *Not recommended for SeaWire.

Reboot/Shutdown



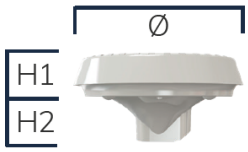
Device commands	
Reboot	You will lose connection to the device during reboot. It takes a few minutes for the device to reboot.
Shutdown	You will lose connection to the device if you shut it down. Power on the device manually, by pressing the button under the device, or by removing and re-inserting the cable in the PoE adapter three times.

Admin



Change Password	
New Password/Repeat Password	Change password for MiWire user interface.

Specifications

SeaWire RouDem 5G	
Dimensions	Ø335mm x (H1)80mm/(H2)160mm 
Weight With mounting bracket without mounting bracket	 2.1 kg 1.8 kg
Networking Interface	10/100/1000 Mbps
Power Power method Battery	 AC/DC/POE 802.3af 100-240V max. 0.5A (powered via BDU) Lithium ion, rechargeable Min. 30 min. operational time
Environmental conditions Degree of protection Temperature operational Temperature storage Relative humidity Robustness	 IP66 -20°C ~ 80°C -40°C ~ 85°C 10%-100% (non-condensing) 0.5m/1.64ft drop on concrete
Mobile network Data network Region	 5G, 4G LTE, 3G Global
Frequency bands & MIMO 5G 4G LTE UMTS	 NSA: n1/ 2/ 3/ 5/ 7/ 8/ 12/ 13/ 14/ 18/ 20/ 25/ 26/ 28/ 29/ 30/ 38/ 40/ 41/ 48/ 66/ 70 DL 4 × 4 MIMO: n1/n2/n3/n7/n25/n30/n66/n38/ n40/n41/n48/n70 SA: n1/ 2/ 3/ 5/ 7/ 8/ 12/ 13/ 14/ 18/ 20/ 25/ 26/ 28/ 29/ 30/ 38/ 40/ 41/ 48/ 66/ 70 DL 4 × 4 MIMO: 1/n2/n3/n7/n25/n30/n38/n40/ n41/n48/n66/n70 UL 2 × 2 MIMO: n38/n41/n48 LTE-FDD: B1/ 2/ 3/ 4/ 5/ 7/ 8/ 12/ 13/ 14/ 17/ 18/ 19/ 20/ 25/ 26/ 28/ 29/ 30/ 32/ 66 LTE-TDD: B34/ 38/ 39/ 40/ 41/ 42/ 43/ 48 DL 4 × 4 MIMO: B1/B2/B3/B4/B7/B25/B30/B38 /B40/B41/B42/B43/B48/B66 WCDMA: B1/ 2/ 4/ 5/ 8/ 19
Antenna Automatic mechanical pointing Directional antenna Omnidirectional antenna	 Yes, rotary motor with infinite rotation 699 ~ 3700 MHz, gain 3.0-11.0 dBi 617 ~ 3800MHz, peak gain ≤ 3.6 dBi

GNSS	
GNSS technology	Fully integrated global navigation satellite system solution (GPS, GLONASS, BDS, Galileo and QZSS)
Bands	L1/L5
WiFi Standards	802.11 b/g/n, 2.4GHz
Max. Coverage outdoors	300m/984ft
Max. Datarate	300 Mbps
Interfaces	
LAN interface	
Connector type	1x RJ45 port
Data rate	10/100/1000 Mbps
Max. cable length	100 m (min. cat6 S-FTP, grounded)
SIM	
SIM card type	eSIM LPAd* 1x Micro-SIM 3FF slot*
WLAN access point	
WiFi standard	2.4 GHz, 400 Mbps
Frequency and max. data rate	5 GHz, 866.7 Mbps

*It is not possible to use both the eSIM LPAd and Micro-SIM simultaneously in the device.

Below Deck Unit (BDU)	
Dimensions	H 88mm (2U) x L 482mm x D 340mm
Weight	4.1 kg
Power Method	100-240VAC, 47-63Hz, 50W IEC 60320 C14 Inlet
Environmental conditions	
Temperature operational	0°C ~ +50°C
Relative humidity	Max. 90%
Interfaces	
Networking interfaces (std. config.)	4x WAN 10/100/1000 RJ45 ports (port 1, 2, 3 + 4) Port 1 + 2: SeaWire antennas Port 3: First failover (failover method: ping check) Port 4: Second failover (failover method: ping check) 1x LAN 10/100/1000 RJ45 ports (port LAN)
Networking interface (manual enabling)	Port 3 +4 can be configured from WAN to LAN Seamless failover method can be applied
Management interface	1x RJ45 serial port (consol port)
Features	
Load balancing	Weight control, route test, failover
DHCP	Yes
Firewall	Port forwarding, Nat, firewall policies
Users	User role: admin/operator
Configuration & management	Web, SSH, serial connection, SCP
VLAN	Yes
POE	2x 48V Active ~0.32A (port 1 + 2 standard) 2x 24V Passive 1A (port 3 + 4 manual enabling)
LED-indicators	Power, data ports

FAQ/Troubleshoot

The LED Light on the RouDem is Red	- **Check for PIN code requirement:** Access the MiWire user interface and check the status page. If prompted, enable the PIN code via the SIM page. - **Verify data subscription issues:** If the problem persists, contact your provider to resolve any subscription issues.
Unable to Access the MiWire User Interface	- **Verify connection:** Ensure your device is connected to the SeaWire Pro system via Wi-Fi or Ethernet. - **Check network configuration:** Confirm the device is set to automatically retrieve an IP address and DNS server address. - **Browser issues:** Restart your browser or try a different one. - **Try another device:** If possible, attempt access using a different device.
Restart/Reboot the Device	- **If the RouDem is accessible:** Press the on/off button to turn it off, wait for the LED to stop flashing, and then turn it back on. - **If the RouDem is Installed out of reach:** Use the MiWire user interface (192.168.2.1 or 192.168.3.1) to press "Reboot" on the Admin page. Alternatively, disconnect and reconnect the RouDem cable from the BDU three times in a row. On the third disconnection, the device will reboot after the LED flashes.
Factory Reset	**1. Hold the button:** Press and hold the button for **10-15 seconds**. **2. LED indicators during the process:** After **3 seconds**, the LED blinks at **0.2-second intervals**. Between **10-15 seconds**, it blinks at **2-second intervals**. **3. Release the button:** Release during the **10-15 second window** for a successful reset. **Important:** Holding the button for more than **15 seconds** cancels the reset process.

Service & Repair

If the product for some reason does not work as described or is broken, contact your dealer or distributor. Your dealer/distributor will have experience and will assist with further technical support and troubleshooting.

Before contacting your dealer/distributor, please identify the product. Find the serial number and IMEI number on the unit label, which is found under the RouDem, on the box or on the registration flyer. Alternatively log on MiWire user interface and read out the serial number or IMEI number.

If RouDem is offline it is a great help for the support if a TeamViewer session can be established through a PC and another internet connection with a cable from the PC to the BDU.

The product does not require any scheduled maintenance or service. Once a month the product checks for new software. If a new software version is available, then the unit will upgrade. You can also check for new software manually on the MiWire user interface.