

WIRELESS CHAIN-  
RODE COUNTER  
WITH WINDLASS  
AND THRUSTER  
REMOTE CONTROL  
FOR VESSELS

HARPOON ELEKTRONIKA D.O.O.

# USER AND INSTALLATION MANUAL

BR1, BR2, BR3 SYSTEMS



**HARPOON**  
elektronika



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## 1. Description

The wireless chain counter system consists of:

- Wireless handheld Remote unit
- Base unit:
  - BR1 (chain counter, windlass control)
  - BR2 (chain counter, windlass, bow thruster, deck lights, pump)
  - BR3 (chain counter, windlass, bow & stern thruster, deck lights, pump)
- Windlass sensor and magnet
- \*Optional (at extra cost): BRS wireless windlass sensor for quick installation – solves the installation problem where it is not possible to route a sensor cable from the windlass to the base unit.



BR system can support up to 4 wireless handheld remote controls.

### 1.1. List of Material

BR1 system	<ul style="list-style-type: none"> <li>· BR1 Remote unit</li> <li>· BR1 Base unit</li> </ul>	<ul style="list-style-type: none"> <li>· Satin blue lanyard</li> <li>· Magnet cylinder for windlass gypsy, diameter 8mm, height 5mm</li> <li>· Reed switch (sensor) for windlass - universal</li> <li>· 3 x (AAA) Batteries (1,5V)</li> <li>· Screws for fixing Base unit 2 pcs</li> <li>· User Manual (English), available also at <a href="http://www.harpoon.si">www.harpoon.si</a></li> </ul>
BR2 system	<ul style="list-style-type: none"> <li>· BR1 Remote unit</li> <li>· BR2 Base unit</li> <li>· *Option - BRS wireless windlass Sensor</li> </ul>	
BR3 system	<ul style="list-style-type: none"> <li>· BR3 Remote unit</li> <li>· BR3 Base unit</li> <li>· *Option - BRS wireless windlass Sensor</li> </ul>	

## 2. Important Safety Warnings

### 2.1. Terms of Use

- The manufacturer is not liable for any damage or injury caused by the user due to their use or inability to use the product correctly.
- Use of BR1, BR2, or BR3 is permitted only at the owner's or captain's own risk, regardless of circumstances, cause, or consequences.
- If you do not agree with this or if your local laws do not allow the exclusion of incidental or consequential damages, you must return the product unused and in its original packaging to the seller within 8 days, where you will receive a refund.

### 2.2. Warnings During Installation and Use

BR1, BR2, and BR3 products must be installed and used in accordance with the instructions. Failure to follow the instructions may pose a risk to health and life, cause damage to the vessel, or affect the reliability of the device's operation.

#### **WARNING: Ensure safe use**

- **The device must only be operated by an adult with proper knowledge and experience in handling an anchor winch, bow and stern thrusters, and other equipment connected to the Boat-Remote. Use of the device by children is not permitted.**
- ALWAYS CHECK BEFORE USE that using the device is safe. Ensure that there are no persons in the water or near moving parts and the anchor chain. Be aware that some persons may be outside your field of vision!
- Incorrect use of the device is dangerous and may result in life-threatening situations.
- Installation must be carried out precisely and professionally by a qualified electrician.

#### **WARNING: Water intrusion into the device**

Although the BR1 and BR3 Remote controllers exceed the IP67 protection standard, and the BR1 Base meets IP65, exposure to running water, pressure washing, or submersion may cause device malfunction. The manufacturer does not cover such damage under warranty. In case any of these situations occur, follow the instructions for action if the device falls into water. Detailed maintenance instructions can be found at the end of the manual.

#### **WARNING: Device Cleaning**

- DO NOT wipe the display with a dry cloth or paper, as this may cause scratches.
- DO NOT use abrasive, acidic, solvent-based, or ammonia-based cleaners.
- DO NOT use high-pressure cleaning.

#### **WARNING: Exposure of the Device to Sunlight**

Store the device in a cool, shaded place to avoid the harmful effects of UV rays, which can significantly shorten the lifespan of the keypad, display, seals, and housing.

## WARNING: Power Supply Protection

During installation, ensure that the device's power supply is protected by an appropriate fuse.

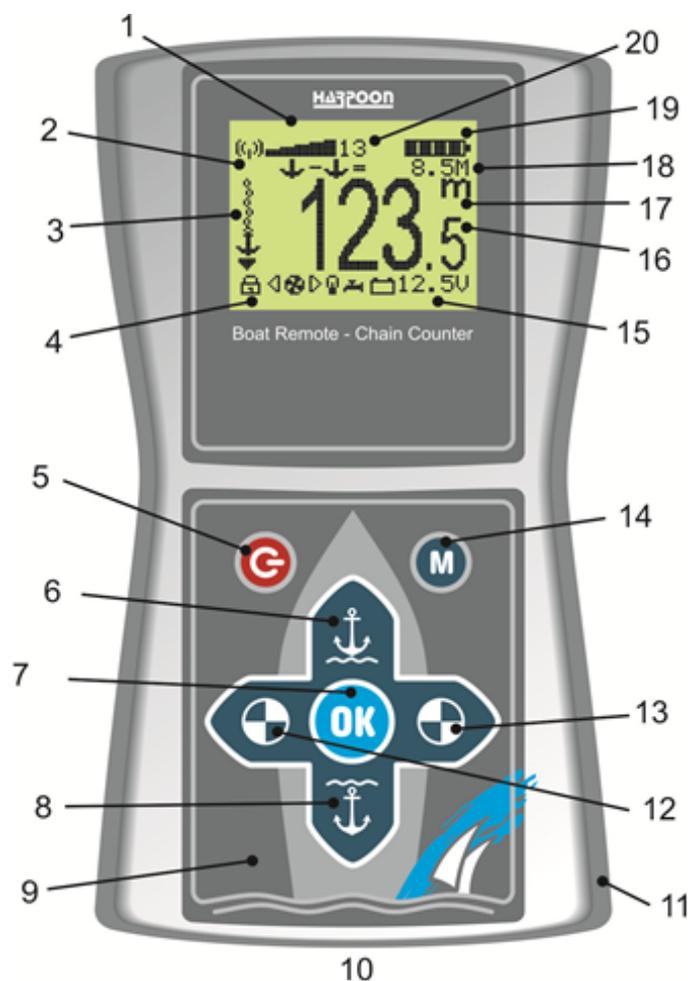
## Waste Disposal

Products must be disposed of in accordance with the WEEE (Waste Electrical and Electronic Equipment) directive, which governs the recycling of electrical and electronic waste.

Products can be returned to the point of sale or directly to the manufacturer for proper disposal, for which you will receive a certificate of disposal. Disposal of our products is free of charge.

## 3. Display and Keypad Contents

1. Graphic LCD display, LED backlight, direct sunlight viewable
2. Signal strength indicator
3. Animated symbols
4. Status
5. ON/OFF and Emergency
6. Anchor UP
7. AUX functions and Confirmation
8. Anchor DOWN
9. Embossed illuminated keys
10. ABS enclosure with sealed battery compartment
11. Anti skid rubber protection
12. Left (and Bow thruster with BR2 system)
13. Right (and Bow thruster with BR2 system)
14. Menu and Quick reset (hold 3sec)
15. Windlass accu voltage
16. Chain length
17. Units (m, ft, rev.)
18. Tandem anchor distance and reports
19. Battery indicator
20. Channel (2-13)



\* BR Handheld Remote control

\*\* BR3 Handheld includes Stern thruster buttons

### 3.1. Functions on the Keypad



#### Power ON/OFF Button

To turn on the device, press and hold the button. Power-on is indicated by two short beeps. To turn off, press the button briefly. Power-off is indicated by a long beep.

- After powering on, a safety warning will appear on the screen. Check whether it is safe to operate the remote, and confirm by pressing the OK button. Only then will you be able to operate the remote control.
- If the message “Keyboard Error! Release button xy” appears after startup, release the indicated button and continue.
- If no button was pressed during power-on but the message still appears, the remote must be sent in for service. In this case, a safety feature will prevent the remote from being used until the error is resolved.
- If you suspect abnormal operation, immediately turn off the remote by briefly pressing the OFF button and check the cause.
- After ten minutes of inactivity, the BR remote will automatically shut down.
- If multiple remotes are included in the system, the one closest to the base has priority. Only one remote can be used at a time.

#### IMPORTANT:

- For EMERGENCY SHUTDOWN, press (briefly or hold) the ON/OFF button. All outputs on the base will be immediately turned off.
- In the event of a keyboard error, turn off the remote, remove the batteries, and send it for service.



#### MENU Button

- Press to enter menu
- Hold 3 seconds for quick counter reset to 0.0m



#### LIFT the ANCHOR (UP)

Windlass will lift anchor as long as you press »UP«. Chain counter will decrement chain – rode length.

#### IMPORTANT:

- When »UP LIMIT« is reached, windlass will stop even if you keep pressing »UP«. To continue, release »UP« button and carefully lift remaining distance to dock the anchor. By default this limit is set to 1,5m before anchor park position.
- Limit can be set in: [Menu](#) → [Settings](#) → [Up Limit](#)



## LOWER the ANCHOR (DOWN)

Windlass will lower the anchor as long as you press »DOWN«. Chain counter will increment chain – rode length.

### IMPORTANT:

- When »DOWN LIMIT« is reached, windlass will stop even if you keep pressing »DOWN«. To continue, release »DOWN« button and lower remaining length of chain - rode. By default this limit is set to 30 m.
- Limit can be set in: [Menu](#) → [Settings](#) → [Down Limit](#)



## BOW THRUSTER, left / right

Press momentarily for lateral movement of vessel.

### IMPORTANT:

- To gain control of bow thruster by BR you must enable Bow Thruster on original control panel first! For safety operation of Bow Thruster see manufacturer's manuals.



## QUICK FUNCTIONS

Press »OK« to enter quick function selection. See LCD for functions. Select quick function by pressing a corresponding button (up, down, left, right). Press »OK« for EXIT without selection or wait until counter in lower right corner on LCD counts down to 0.0 m.



**AUTO UP/DOWN**



Select quick functions by pressing »OK« and press »UP« for automatic lifting of the anchor or press »DOWN« for automatic descent of the anchor. Windlass will operate without holding the button! AUTO function is active when LOCK symbol is present on LCD. (Shown right)



### IMPORTANT:

- Press any button to cancel AUTO UP/DOWN function and stop windlass!
- Keep remote unit in hand with thumb ready to momentarily press any button.
- AUTO function will end when »UP LIMIT« or »DOWN LIMIT« is reached.

**OK >  LIGHT ON/OFF (available with BR2 and BR3 model)**

Select quick functions by pressing »OK« and press BULB SYMBOL. Highlighted symbol means »Light ON«. Repeat to switch the light OFF.

During normal operation in bottom row the bulb symbol is indicating »Light ON«.

**OK >  WATER PUMP (available with BR2 and BR3 model)**

Select quick functions by pressing »OK« and press WATER TAP symbol. Highlighted symbol means »Pump ON«. Repeat to switch the pump OFF.

During normal operation in bottom row symbol the water tap symbol is indicating »Pump ON«.

**IMPORTANT:**

- When handheld unit is switched OFF, Light and Water pump output will automatically switch OFF too.

## 4. SETUP – handheld unit



Press »M« (Menu) to enter the menu mode.

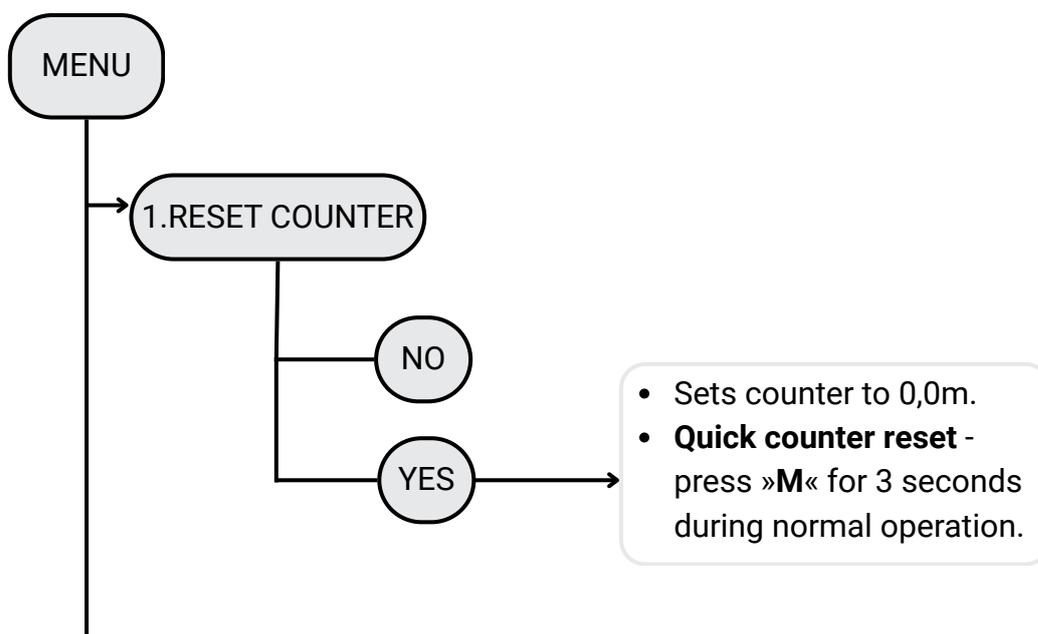
Use the arrow keys (up, down, left, right) to navigate.

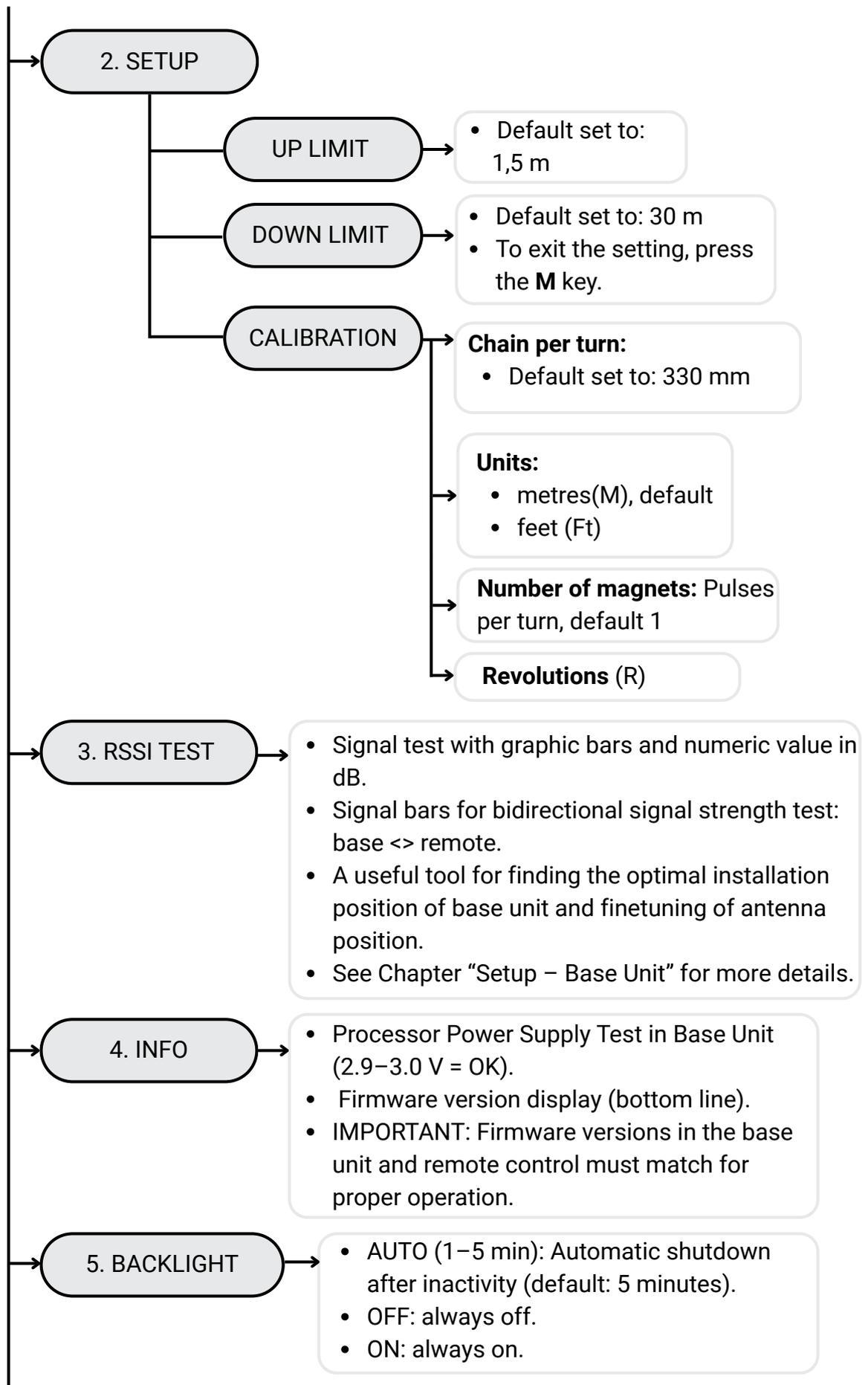
Press »OK« to confirm and save changes.

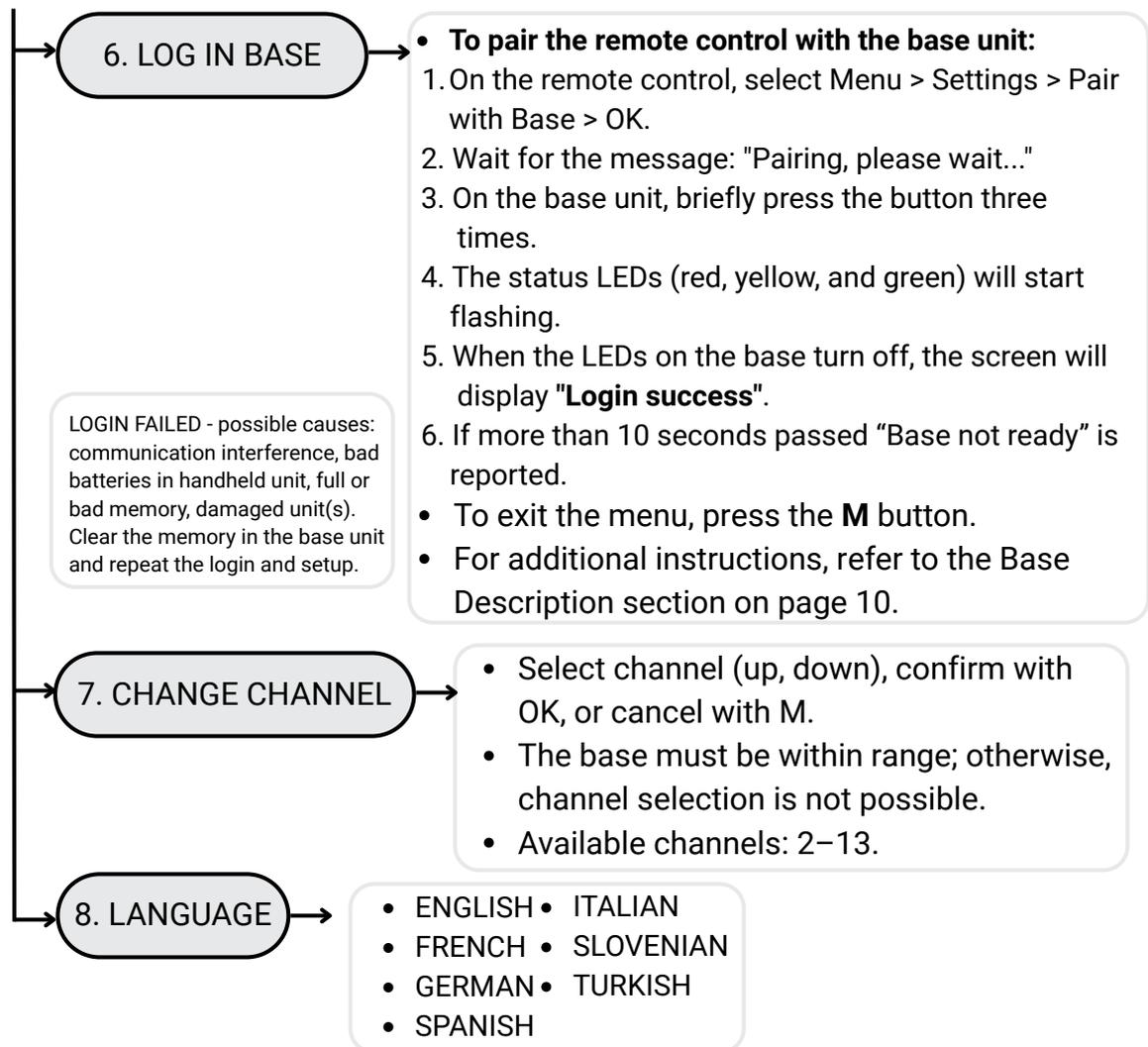
Use »M« or the »Back« symbol to cancel and exit without saving.



### MENU STRUCTURE OVERVIEW







## 5. Calibration of chain/rode counter

Sensor on windlass is detecting revolutions of windlass gypsy. Length of chain/rode deployed (winched) per revolution has to be adjusted to achieve accurate chain counter reading.

### 5.1 Setting the number of pulses per winch revolution

#### Setup Procedure:

1. Go to the menu: MENU > SETTINGS > CALIBRATION.
2. Select NUMBER OF MAGNETS (default is 1 pulse per revolution).
3. Set the appropriate number of pulses per one turn of windlass gypsy.
  - One pulse per revolution is standard for the majority of windlasses on the market..

### 5.2 Setting the chain length per turn

#### Setup Procedure::

1. Go to the menu: MENU > SETTINGS > CALIBRATION > CHAIN PER TURN
  - Default values: **METRES – 330 mm, feet – 12,9 in.**
  - If the measurement unit is set to revolutions, this setting is ignored.

### 5.3. Calculate value of »CHAIN PER TURN«

You need to calculate chain length per one turn and enter value in »CHAIN PER TURN«.

#### CALCULATION PROCEDURE

<p><b>1. Measure the number of revolutions.</b></p>	<ul style="list-style-type: none"> <li>• Mark gypsy with duct tape and count revolutions while lowering or lifting anchor with BR handheld or anchor windlass switch.</li> <li>• Lower the chain using the BR1 remote control or the original switch.</li> <li>• You can count revolutions also with BR handheld.</li> </ul> <p>Select: <b>MENU &gt; SETUP &gt; UNITS &gt; REVOLUTIONS &gt; Exit from menu.</b></p>
<p><b>2. Reset the counter</b></p>	<ul style="list-style-type: none"> <li>• Set chain on starting position.</li> <li>• Reset counter by pressing »M« for 3 seconds.</li> <li>• If the chain skips while lowering, measure the number of pulses while lifting.</li> </ul>
<p><b>3. Lower or lift anchor chain/rode</b></p>	
<p><b>4. Calculate value of »chain per turn«</b></p>	<ul style="list-style-type: none"> <li>• <b>Example 1:</b> You measured 31 revolutions for a 10 m chain length. <b>Calculation:</b> <math>10,000 \text{ mm} \div 31 \text{ rev} = 322.5 \text{ mm} \rightarrow</math> enter 323 mm</li> <li>• <b>Example 2:</b> You measured 154 revolutions while retrieving 50m of chain. <b>Calculation:</b> <math>50,000 \text{ mm} \div 154 \text{ rev} = 324.6 \text{ mm} \rightarrow</math> enter 325 mm</li> </ul>
<p><b>5. Enter the calculated value.</b></p>	<ul style="list-style-type: none"> <li>• Go to the menu: <b>MENU &gt; SETTINGS &gt; CALIBRATION &gt; CHAIN PER TURN – enter value (in mm)</b></li> </ul>
<p><b>6. Select measurement units.</b></p>	<ul style="list-style-type: none"> <li>• Select the desired units. For »metres« select (default setting): <b>MENU &gt; SETUP &gt; CALIBRATION &gt; UNITS &gt; METRES &gt; OK and Exit from menu.</b></li> </ul>

### IMPORTANT:

Chain should run smooth and without skipping. If not, counter can't be accurate and automatic stop safety function will not stop at the same chain length every time.

### Counter Reset – Description

The counter can be easily reset by pressing and holding the “M” button for 3 seconds, or via the selection menu. It is recommended to reset the counter when the anchor touches the water surface or the anchor holder. The accuracy of the counter depends on how precisely the chain follows the gypsy (chain wheel). For an accurate chain length display, the chain must not skip during lowering or retrieval.

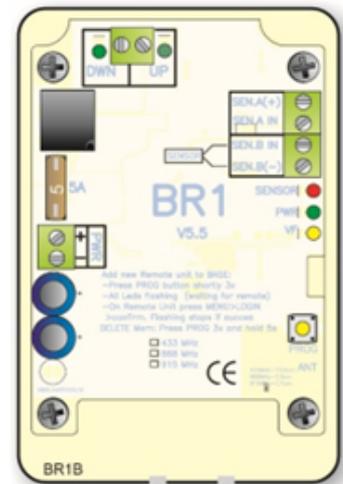
Contact your windlass installer to fit guide hardware that prevents chain skipping.

## 6. BR1 Base Unit – Description

The base unit communicates wirelessly with the remote control and transmits commands to the winch via relays. The input for the anchor winch sensor, oriented toward the remote, provides data on chain length and direction. For clearer operation, the base unit is equipped with **status LEDs**:

- LD1 **yellow** – **VF**, wireless communication status
- LD2 **green** – **PWR**, power supply status
- LD3 **red** – **SENSOR**, sensor signal monitoring
- LD4 **green** – **UP**, up
- LD5 **green** – **DWN**, down

- **LED1** - VF flashes when the base receives a signal from the remote control.
- **LED2** **PWR** indicates the presence of power. When powered on and in standby (sleep) mode, the LED briefly blinks twice every few seconds. When the remote is active, the LED remains constantly ON.
- **LED3** - **SENSOR** LED flashes each time the magnet passes the sensor. While the winch is operating, the LED should flash once per revolution.
- **LED4** - **UP (Anchor Up)** – LED is ON when the upper button on the remote is pressed to raise the anchor. It remains ON as long as the button is pressed, and must turn OFF once the button is released. When raising the anchor using the existing UP switch on the boat, the UP LED must flash! This signal wakes the BR1 base from sleep mode and the counter starts counting.
- **LED5** - **DWN (Anchor Down)** – LED is ON when the lower button on the remote is pressed to lower the anchor. It remains ON as long as the button is pressed, and must turn OFF once the button is released. When lowering the anchor using the existing DOWN switch on the boat, the DWN LED must flash! This signal also wakes the BR1 base from standby and starts the counter.



**PROG**  Button for registering the remote control to the base unit and clearing the memory. See the chapter “Base Settings” for detailed instructions.

A **5A fuse** protects the windlass control output. If the fuse blows, the green PWR LED will not light or blink. The fuse is a mini automotive type (5A).

**IMPORTANT:**

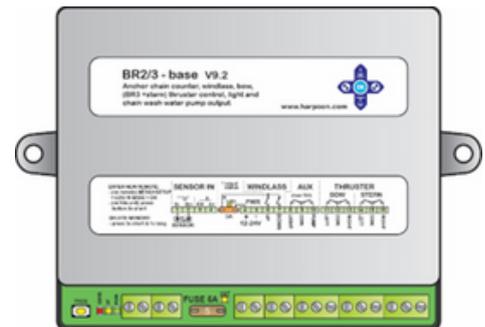
After 20 minutes of inactivity, the base enters sleep mode, indicated by occasional short blinks of the green PWR LED on the base. In sleep mode, the power consumption is significantly reduced to only 4 mA. The base wakes up with any winch activity or when the remote is turned on.

Note: Waking the base takes a few seconds—wait briefly after turning on the remote for the base and remote to pair.

## 7. BR2 and BR3 base unit – description

The base communicates wirelessly with the remote control and transmits commands to the winch via relays. The sensor input, oriented toward the remote, sends data on chain length and direction. For clearer operation, the base unit is equipped with status LEDs.

- LD1 **yellow** – **VF**, wireless communication status
- LD2 **green** – **PWR**, power supply status
- LD3 **red** – **SENSOR**, sensor signal monitoring
- LD4 **green** – **UP**, up
- LD5 **green** – **DWN**, down



- **LED1** - **VF** flashes when the base receives a signal from the remote control.
- **LED2** - **PWR** indicates the presence of power. When powered on and in standby (sleep) mode, the LED briefly blinks twice every few seconds. When the remote is active, the LED remains constantly ON.
- **LED3** - **SENSOR** LED flashes each time the magnet passes the sensor. While the winch is operating, the LED should flash once per revolution.
- **LED4** - **UP (Anchor Up)** – LED is ON when the upper button on the remote is pressed to raise the anchor. It remains ON as long as the button is pressed, and must turn OFF once the button is released. When raising the anchor using the existing UP switch on the boat, the UP LED must flash! This signal wakes the BR1 base from sleep mode and the counter starts counting.
- **LED5** - **DWN (Anchor Down)** – LED is ON when the lower button on the remote is pressed to lower the anchor. It remains ON as long as the button is pressed, and must turn OFF once the button is released. When lowering the anchor using the existing DOWN switch on the boat, the DWN LED must flash! This signal also wakes the BR1 base from standby and starts the counter.

**PROG**  Button for registering the remote control to the base unit and clearing the memory. See the chapter “Base Settings” for detailed instructions.

A **5A fuse** protects the windlass control output. If the fuse blows, the green PWR LED will not light or blink. The fuse is a mini automotive type (5A).

## 8. SETUP - base unit BR1, BR2, BR3

### 8.1. The program settings

#### 1. ADD a new handheld unit to base:

- Enter **MENU > SETUP > LOG IN BASE > OK > “Logging in base. Please wait...”**
- Press the button on base unit 3 times shortly within a 10 second period.
- Status LEDs are **blinking**. LEDs goes off when “**Login success**” is reported. If 10 seconds passed and “**Base not ready**” is reported. Repeat Log in Base.
- Press »**M**« to exit from Menu.
- LOGIN FAILED - can be caused by communication interferences, bad batteries in handheld unit, full or bad memory, damaged unit(s). Clear memory in Base unit and repeat login and setup.

#### 2. DELETE MEMORY

*Deleting all settings and paired remote controls.*

##### Deleting:

- Press PROG  button on base shortly 3 times
- The LEDs will start flashing
- Hold PROG button for 5 seconds
- LEDs will go ON for 2 seconds. Memory is erased.

#### 3. EXIT SETTINGS

(Used after procedures 1 or 2)

##### Cancel:

- Briefly press the yellow button on the base.
- Or wait 5 minutes for automatic exit – settings remain unchanged.

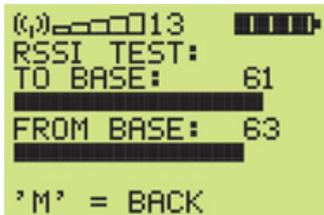
### 8.2. Antenna

The antenna is a rigid wire, 165 mm in length, located on the base unit. The antenna must not be shortened, extended, or otherwise modified. Its length is calibrated and has a direct impact on range, transmission quality, and system reliability. The antenna must not be fastened with plastic ties to other cables or run parallel to metal surfaces.

For metal and carbon vessels, we recommend to connect temporary power supply to base unit with longer wires to find the best position of base unit. Metal and carbon hull acts as farraday cage and blocks the signal.

For test of communication quality use "RSSI test" function on handheld unit. The longer the bar, the better the signal is. The value in dB is just opposite, the lower the value, the better the signal is.

To select the next display item in the menu, see the chapter "Settings on the Remote – RSSI Test" on page 7.



## 9. Windlass sensor installation

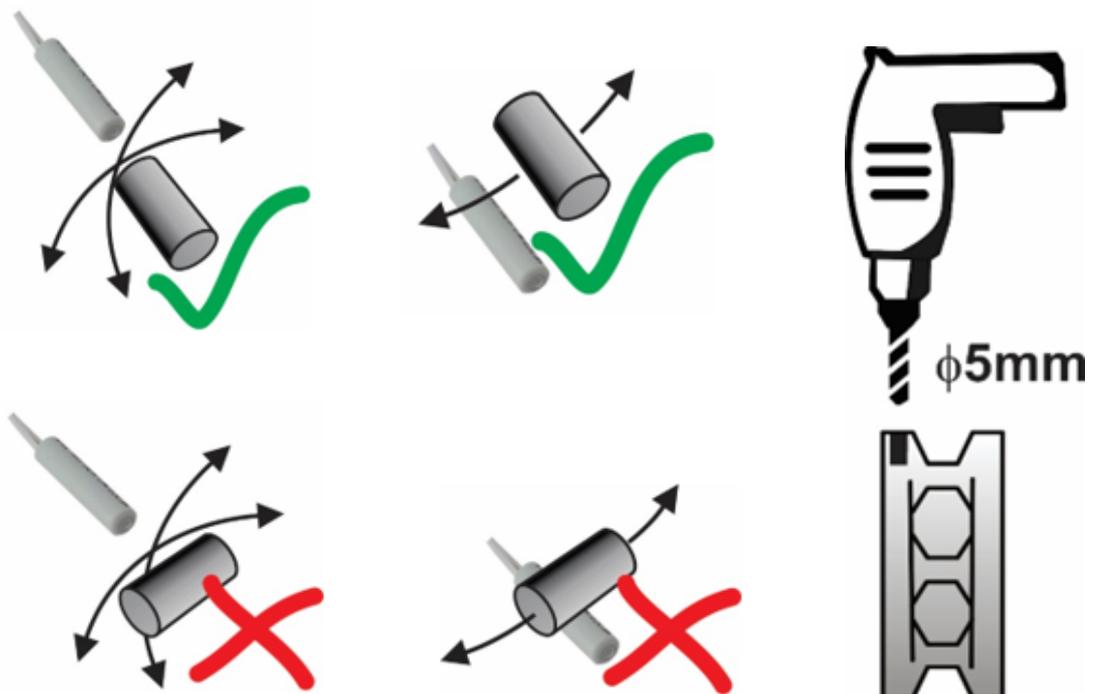
1. **DISCONNECT POWER BEFORE STARTING INSTALLATION!**
2. **REMOVE THE CHAIN FROM THE GYPSY BEFORE STARTING INSTALLATION!**

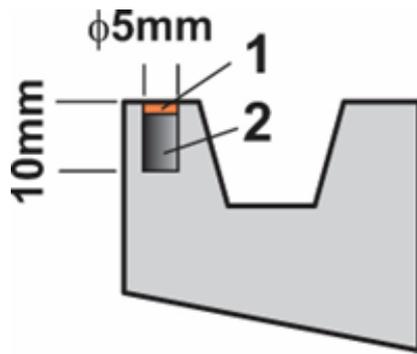
If your windlass is not yet equipped with the sensor then use universal sensor included.

### MAGNET

- Drill 5 mm (diameter) hole, 10 mm deep into windlass gypsy. It is normally made of brass and is easy to drill. Mark position with smaller drill first.
- Insert magnet and cover it with epoxy. If you do not cover (protect) the magnet with enough epoxy it will rust and decay in short time.
- N/S pole orientation is not influencing sensing distance.

Images of sensor and magnet positioning relative to gypsy rotation:



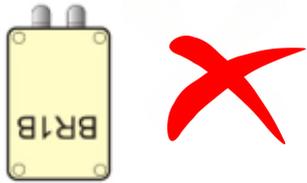


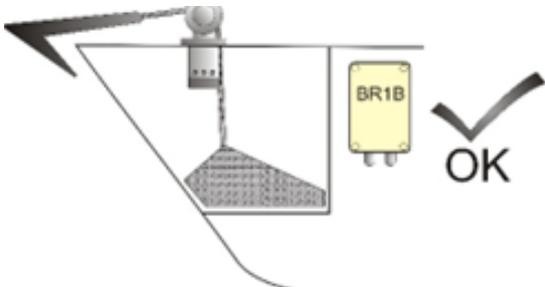
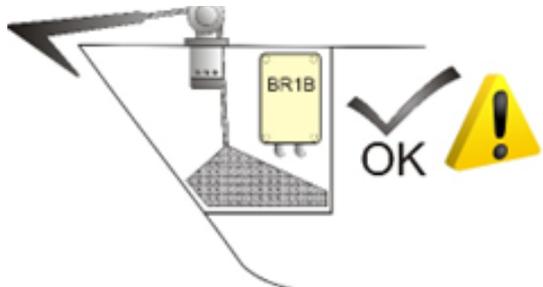
1. Epoxy glue (min 1mm), 2. Magnet, 3. Sensor

### SENSOR

Universal holder for sensor installation is not available. You will need to use your own technical skills to position the sensor within the magnetic field range. The orientation of the sensor must comply with the instructions above. For installation, you can use a standard 7mm nylon cable gland. Secure the gland, insert the sensor, adjust the distance, and tighten the cap to fix the sensor in place.

### 10. BR1 base unit - installation

CORRECT (connections oriented down)	INCORRECT	INCORRECT
		

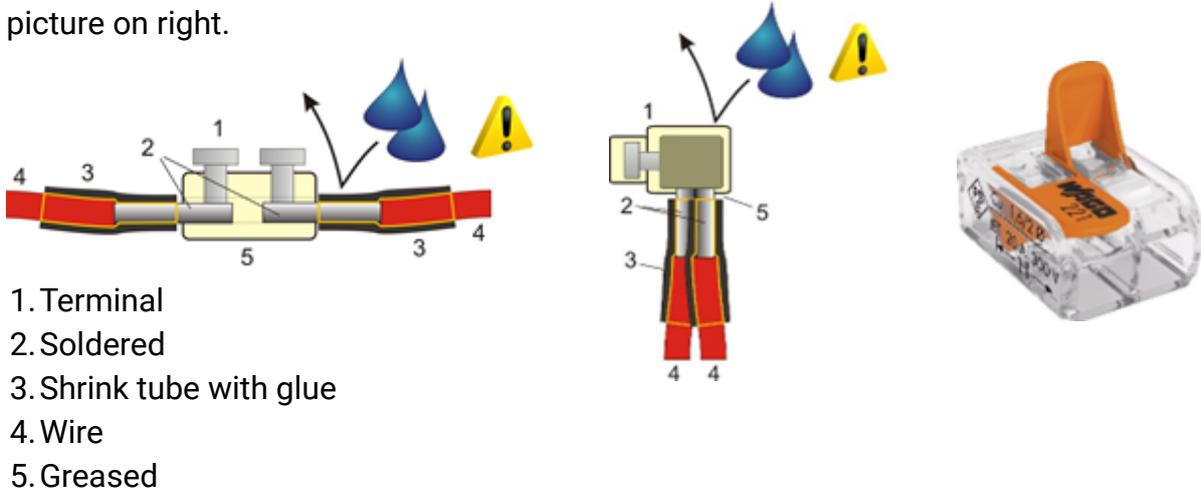
	
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It is **recommended** to install the unit outside the chain locker, preferably in the first cabin or next to the winch contactor.

Installation inside the anchor locker should only be considered as a last resort. Due to moisture, all connections must be waterproof!

## WATER PROTECTED CONNECTIONS

**ALWAYS** make connections in protection box (IP65). Make watertight connections if a protective enclosure is not used. Use shrink tube with glue on each wire separately. See picture on right.



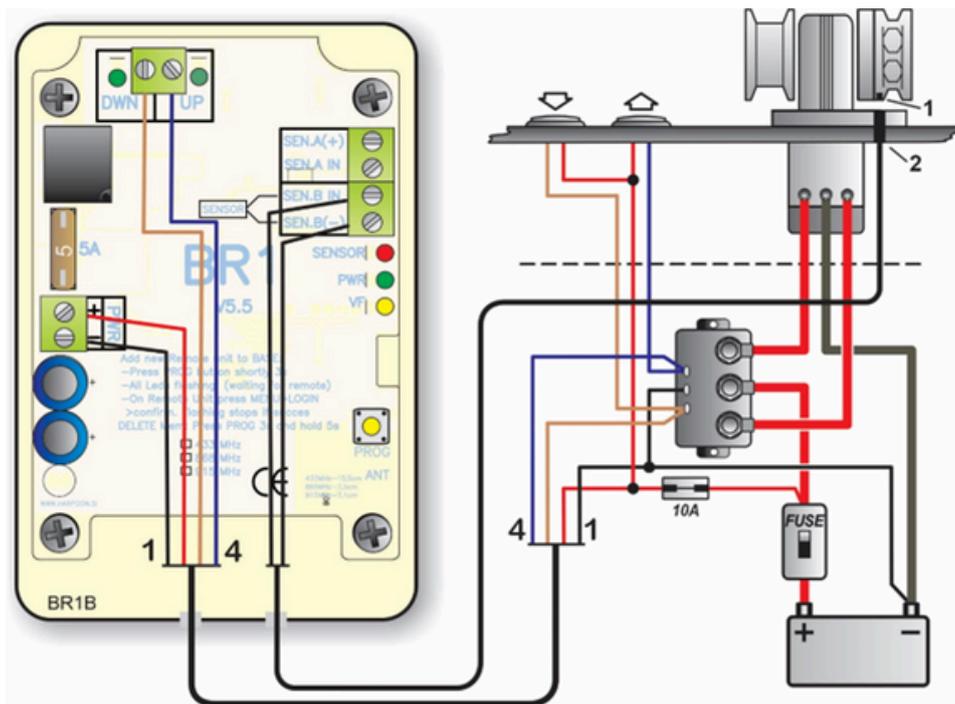
1. Terminal
2. Soldered
3. Shrink tube with glue
4. Wire
5. Greased

**Recommendation:** Dip the wire in grease, twist it, and use Wago spring clamps filled with grease to prevent the entry of water and moisture. The best protection is provided by Krown anti-corrosion spray oil, which should be generously applied to the connection after assembly. Mount the clamp with the closed side facing upward. Krown spray oil is an ideal protection for connections and all mechanical parts of the winch. Wago clamps are available at all electrical supply stores. Multi-wire and thicker conductor versions are also available.

### IMPORTANT

- **Both installation methods are correct for the BR1, but special care must be taken when installing it in the anchor (chain) locker. In this environment, it is crucial to ensure precise and high-quality waterproof connections to prevent corrosion and system failure. Moisture – especially salty marine humidity – can damage electronic components if it enters the housing. Water can also seep in through cable glands if cables are too thin. Filling the gland with silicone is recommended.**
- **When installing BR1 Base in the chain locker, always use an additional IP65-rated enclosure. Ideally, place the entire base and all connections inside this enclosure to protect against continuous moisture and occasional water ingress. Most issues stem from poor installation in this area.**
- **The BR2 and BR3 bases should never, under any circumstances, be installed in the chain locker or engine compartment unless mounted inside an additional IP65 water-protected box.**

## 11. Installation of the BR1 base in chain locker



1.Magnet, 2. Sensor

This is the simplest and quickest way to install the BR1 Base on vessel, but you need to make high quality connections for trouble free and safe operation.

Connect the ground wire (black) directly to the windlass motor only as a last resort. Most problems occur due to poor connections on windlass ground wires or because they are undersized.

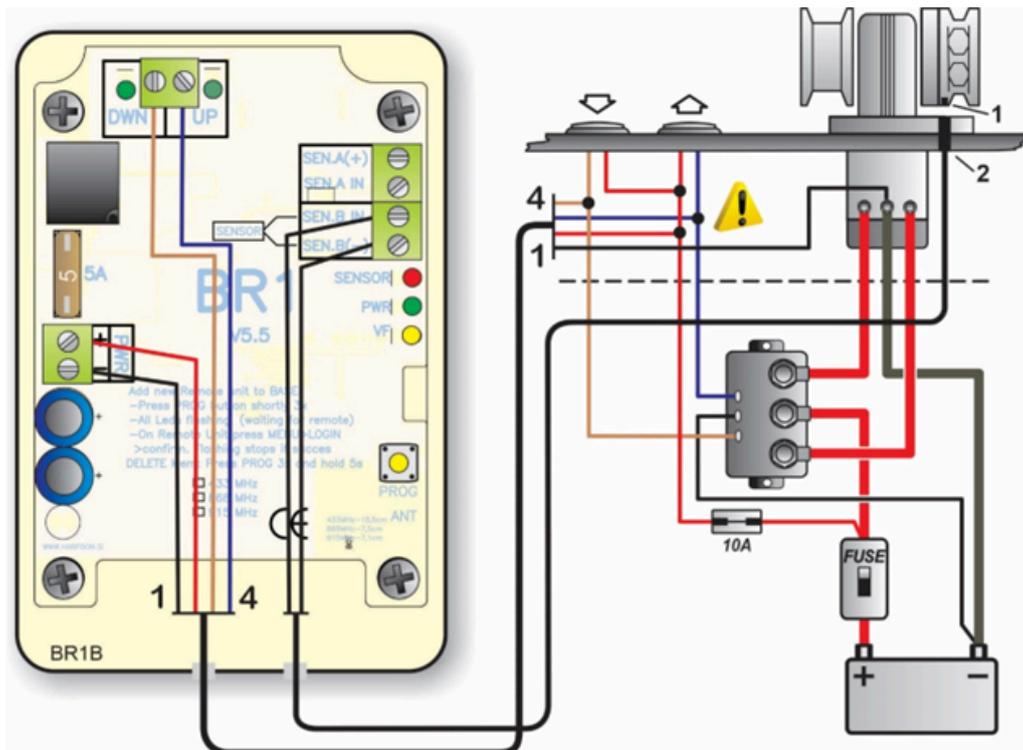
Complete all three connections marked with an exclamation mark on scheme in separate IP65 box and use connection method which will prevent water to penetrate and corrode wires and contacts.

BR1 Base enclosure is made to IP65 standard (running water and dust resistant). Before fixing the cover check that gasket is in place. With time gasket loses elasticity and water protection becomes lower. It is recommended to prime gasket with vaseline before closing cover. Tighten cover screws gently.

### IMPORTANT

- Only two cables may enter BR1\_Base! (Cable for power & control and cable for sensor)
- Before installation disconnect power!
- Verify with instrument that the windlass power is really disconnected.
- BR1 Base enclosure must be oriented vertically with connections oriented down.
- For metal and carbon vessels check range before fixing BR1 Base.
- Do not use high-pressure water cleaning on or near the base unit.

## 12. Installation of the BR1 base in front cabin



1. Magnet, 2. Sensor

It is recommended to install BR1\_Base unit inside vessel in dry place.

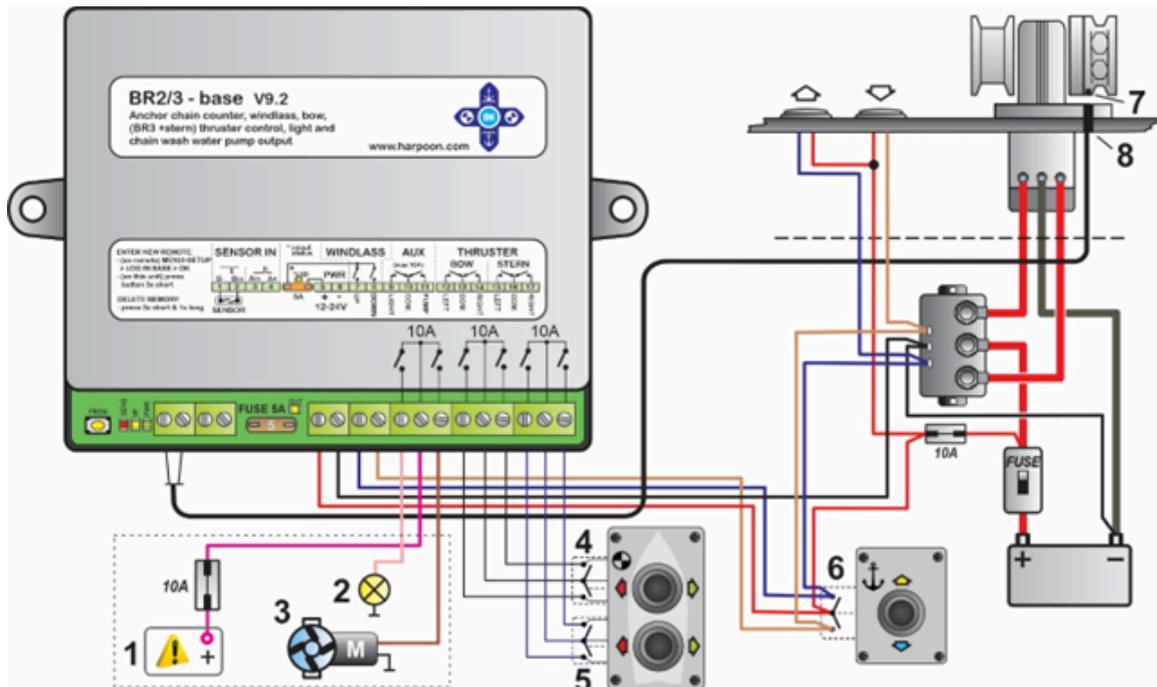
Make connections at the windlass contactor where you will find all necessary wires.

### IMPORTANT

- Before installation, disconnect the power supply to the anchor winch and bow thruster.
- Remove the chain from the gypsy before installation.
- Use a voltmeter to verify that the power is truly disconnected.
- BR1 Base enclosure must be oriented vertically with connections oriented down.
- For metal and carbon vessels check range before fixing BR1 Base.
- 99% of installation errors are caused by connecting to a “virtual” positive or negative. This error manifests itself as the base resetting when the up or down command is activated, with the remote showing “base out of range”... and it will not operate. Find the correct power source, because under load the voltmeter may show ground (or +) through the coil winding of a contactor, for example, which is incorrect.



## 14. Installation of the BR3 base at main helm



1. AUX Power supply 12-24V. If light or pump is already installed you MUST supply them with same power source as originally provided!
2. Light (recommended 50 W, maximum 100 W)
3. Deck water pump for chain and anchor cleaning
4. Bow thruster, connect parallel to existing joystick
5. Stern thruster, connect parallel to existing joystick
6. Windlass control; connect parallel to existing joystick. Connect ground on negative bus of same battery bank as used for windlass.
7. Magnet
8. Sensor

BR3 was designed for fast and simplest possible installation on any vessel. Connections are made to existing signals provided in more than 90% of vessels at main helm. The only wire which has to be installed extra if you install BR3 near main helm is windlass sensor wire. Sometimes installation of extra wire from chain locker is almost impossible especially if cables are sealed with sealing compound in glands between chain locker and forward cabin. Read more about BRS sensor (“wireless”) for easy and quick installation solution and for additional information.

### IMPORTANT

- Before installation disconnect power!
- Verify with instrument that the windlass power is really disconnected.
- Install BR3Base in dry place.
- For metal and carbon vessels check range before fixing BR2\_Base.
- The BR3 Base must not, under any circumstances, be installed in the chain locker unless it is installed in additional water protected enclosure IP65.

## 15. SENSOR INPUT with schematics

The chain length calculation is based on chainring pulses. Each turn of the chainring triggers a pulse. One turn of the chainring lowers approx. 33cm of the anchor chain. The sensor detects the passage of the chainring with the help of a magnet built into the chainring. The distance between the magnet and the reed sensor should be less than 10mm.

**To independently connect the BR system, use the sensor binding to input B, as indicated on the label on the device.**

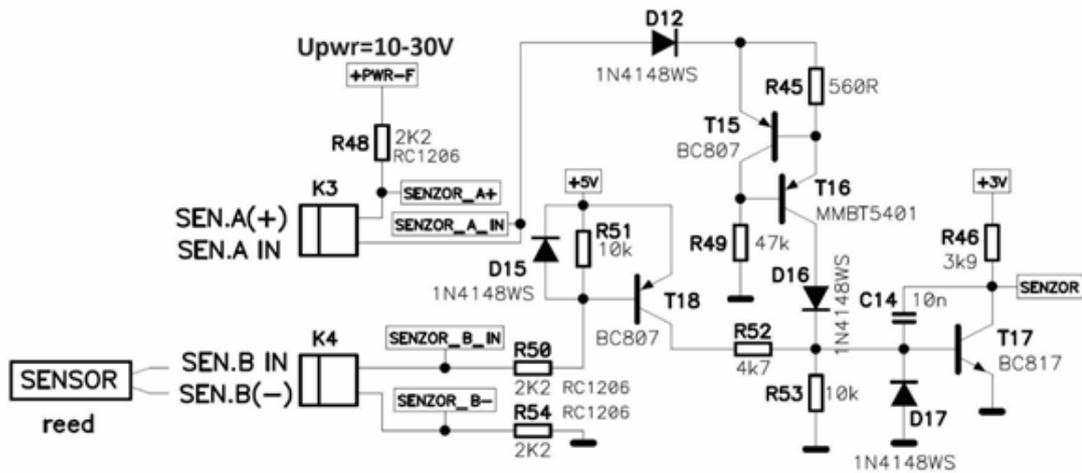
Newer BR models allow easy connection to all existing chain counter systems on the vessel. Our BR systems have two built-in sensor connection methods, namely for systems with positive (SEN.A IN) and systems with negative (SEN.B IN) pulse detection.

### **Connection to an existing counter system on a vessel:**

If you want to connect the BR system to the existing chain counter system on the vessel, first use a voltmeter to find out which of the two wires on the sensor gives the signal and what the signal is. The second wire always has a constant + or a constant -. Connect the wire on which the voltage changes when the sensor detects the passage of the chain.

- For a POSITIVE signal – connect the signal to SEN.A IN
- For a NEGATIVE signal – connect the signal to SEN.B IN
  
- Leave the second wire unconnected and check how well the BR detects the pulses for each turn of the chainring. If the counting direction is incorrect at this stage, it does not matter.
  
- Test the operation of the counter using the red LED on the base. As long as the pulse detection works well, you do not need to connect another wire.
  
- In case the BR base does not detect the pulse exactly, then connect another wire of the SAME INPUT to the sensor.
  
- Test the sensor input. When the magnet passes over the RED sensor, the LED flashes at the moment when the magnet leaves the sensor.

The attached diagram of the input will help experts in understanding and solving problems of connection to existing systems.

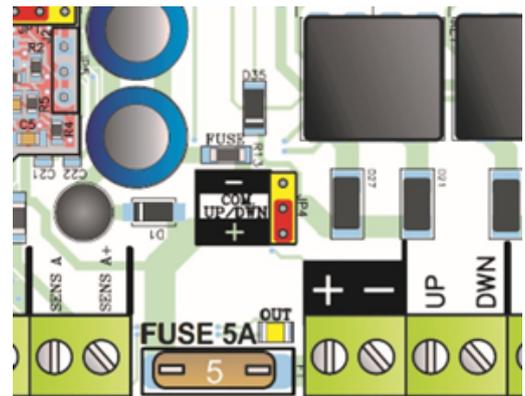


## 16. BR2, BR3 Base – jumper settings

**JP4 – OUTPUT POLARITY UP/DOWN (UP/DWN)**

**JP7 - VOLTAGE MEASUREMENT SOURCE**

**JP4** selects the polarity of the UP DWN command signal for the windlass contactor:  
**(+) & Com UP/DWN** - positive command - normal  
**(-) & Com UP/DWN** - negative command



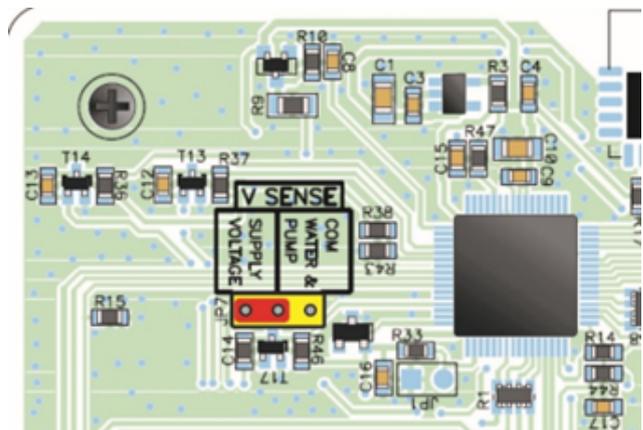
With jumper JP4, you can select the polarity of the output signal for the control of the windlass contactor.

Operating the winch contactor with a negative command (-) is not recommended. In such a case, we recommend that the connection be made by an experienced electrician. Very rarely, the windlass contactor is controlled by a negative command.

**JP7 selection of the measured voltage source:**

**“Supply Voltage”**– PWR power source, terminals No. 5 and 6, (preset)

**“Comon for Water & Pump”** - power supply for light and pump, clip no. 10



The measured battery voltage for the anchor winch is shown on the LCD display.

12.5V

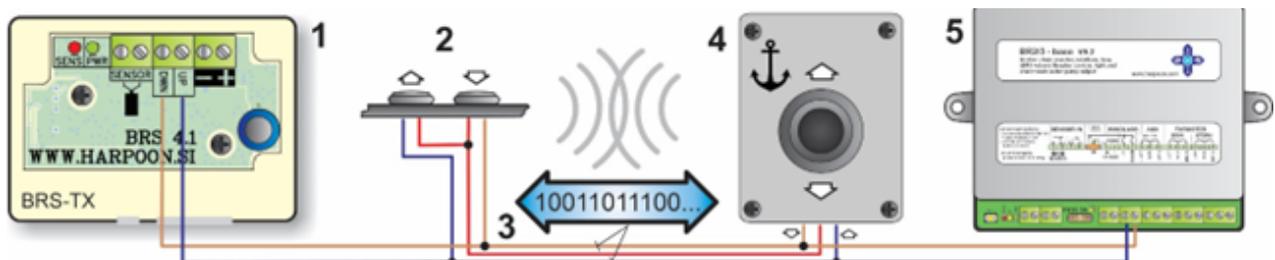
#### IMPORTANT

- Negative output selection should be used only if there is no other way to control windlass contactor with positive signal.
- Be aware that in this case BR Handheld will not count chain if operated from elsewhere than remote control.

## 17. BRS Sensor - Installation of the BRS in chain locker

The BRS sensor was developed for quick and easy installation on vessels where running a cable for the anchor windlass sensor is extremely time-consuming or even impossible. Next to every anchor windlass, there is always a manual control switch installed. The switches are usually foot-operated or connected to the console via a coiled wire in the anchor locker. We used these control wires to transmit the signal.

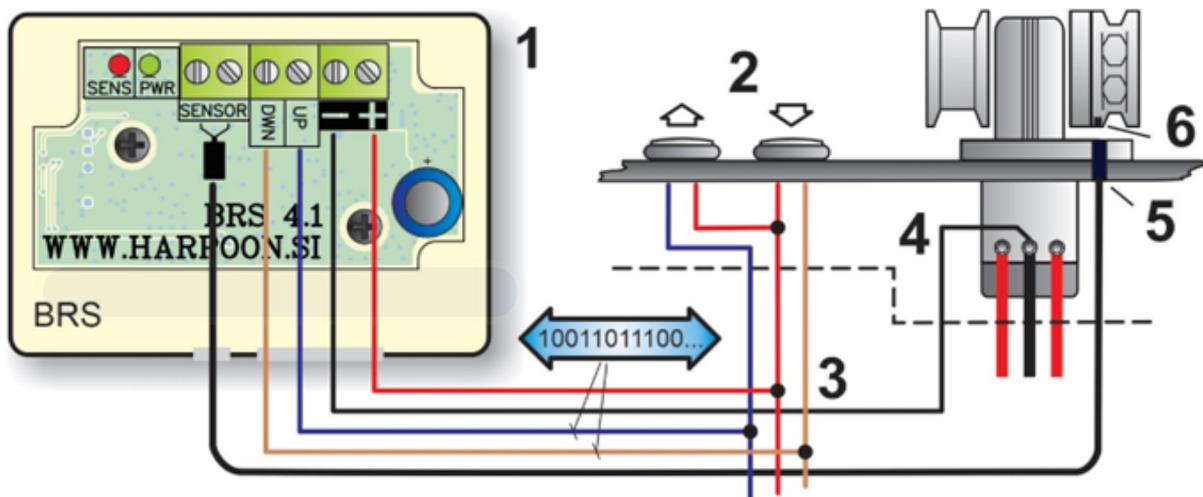
Illustration of the transmission of a modulated signal at 115 kHz over the existing conductors:



1. BRS-TX sensor module
2. Existing switches on the bow of the vessel to operate the windlass
3. Existing wire connection on the vessel to operate the windlass
4. Existing cockpit control panel and/or windlass contactor.
5. BR2, BR3 base in which the BRS-RX receiver module must be installed (instructions below)

A magnet is built into the chainring of the windlass, which emits a pulse signal at each turn. Sensor. (reed or hall) is connected to the sensor input in the BRS-TX transmitter module. The BRS-TX processes the signal and sends it "wirelessly" via the built-in modem over existing wires for manual anchor control and power wires.

While the windlass is stationary, the BRS goes to sleep and reduces consumption to less than 1mA. BRS-TX can be permanently on.



1. BRS-TX module installed at the anchor windlass
2. Existing switches on the bow of the vessel to operate the windlass
3. Existing wire connection on the vessel to operate the windlass
4. Connection of mass for powering the BRS module.
5. Reed or hall sprocket rotation sensor
6. Magnet built into the chainring (see instructions for mounting the magnet)

### 17.1. Connecting the BRS

- **Mount the attached sensor on the anchor windlass and the magnet on the chain** (See instructions for mounting the sensor). If the windlass already has a built-in sensor, use the existing one.
- **Connect the sensor** to the SENSOR terminal in the BRS-TX transmitter module.

- **Connect the BRS power supply**

It is recommended that the BRS is powered from the same supply as the existing anchor windlass control switches as in the image above. The power supply for the existing switches already has a built-in fuse (it should have), so no additional fuse is needed.

If you connect the power supply directly behind the main switch of the anchor batteries, be sure to use an additional 5A fuse for fire protection of the installation.

- **Connect the guides for the control of the anchor windlass.**

Connect the up and down leads to the “UP” and “DWN” terminals in the BRS. If you interchange the guide with each other, it will not play a role in the counting. The counting direction depends only on the correct connectio to the BR2 or BR3 Base. You can find a detailed explanation and a diagram of the input for detecting the counting direction at the end of the instructions.

**BRS communicates with Base BR2 or BR3 through the existing anchor windlass control wires.**

## Communication via control lines

The BRS also transmits a modulated signal via power lines, but this signal is limited and very weak due to regulations. If the signal is too weak or if the power supply is from separate sources (different battery banks), there is a possibility that the communication between BRS and BR2 or BR3 will not work only via the power wires, so communication via control wires is recommended, such as this is described in the previous point.

Before completing the installation, test the operation - the quality of the communication. Connect and install in a high-quality and waterproof manner. See the installation chapter The BRS housing is made according to the IP65 standard and is resistant to high humidity (not running water or under pressure), so you can also mount it in the anchorage. Ensure that the housing gasket fits correctly. The edge of the housing must be lubricated with acid-free grease for greater water resistance if you have opened the base after a long time. Always close the lid all the way

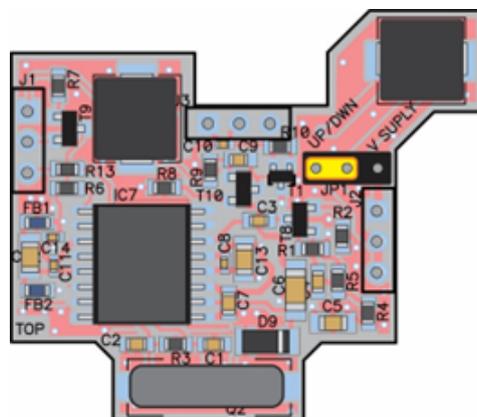
### IMPORTANT

- Only two cables may enter BRS! (Cable for power & control and cable for sensor)
- Before installation disconnect power!
- Verify with instrument that the windlass power is really disconnected.
- BRS enclosure must be oriented vertically with connections oriented down.
- Do not use high-pressure water cleaning on or near the base unit.

## 17.2. BRS-RX Receiver module for installation in BR2, BR3 base unit

To receive the signal from the BRS-TX module, it is necessary to install a BRS-RX receiver module in the BR2 or BR3 Base. BR1 does not have this option!

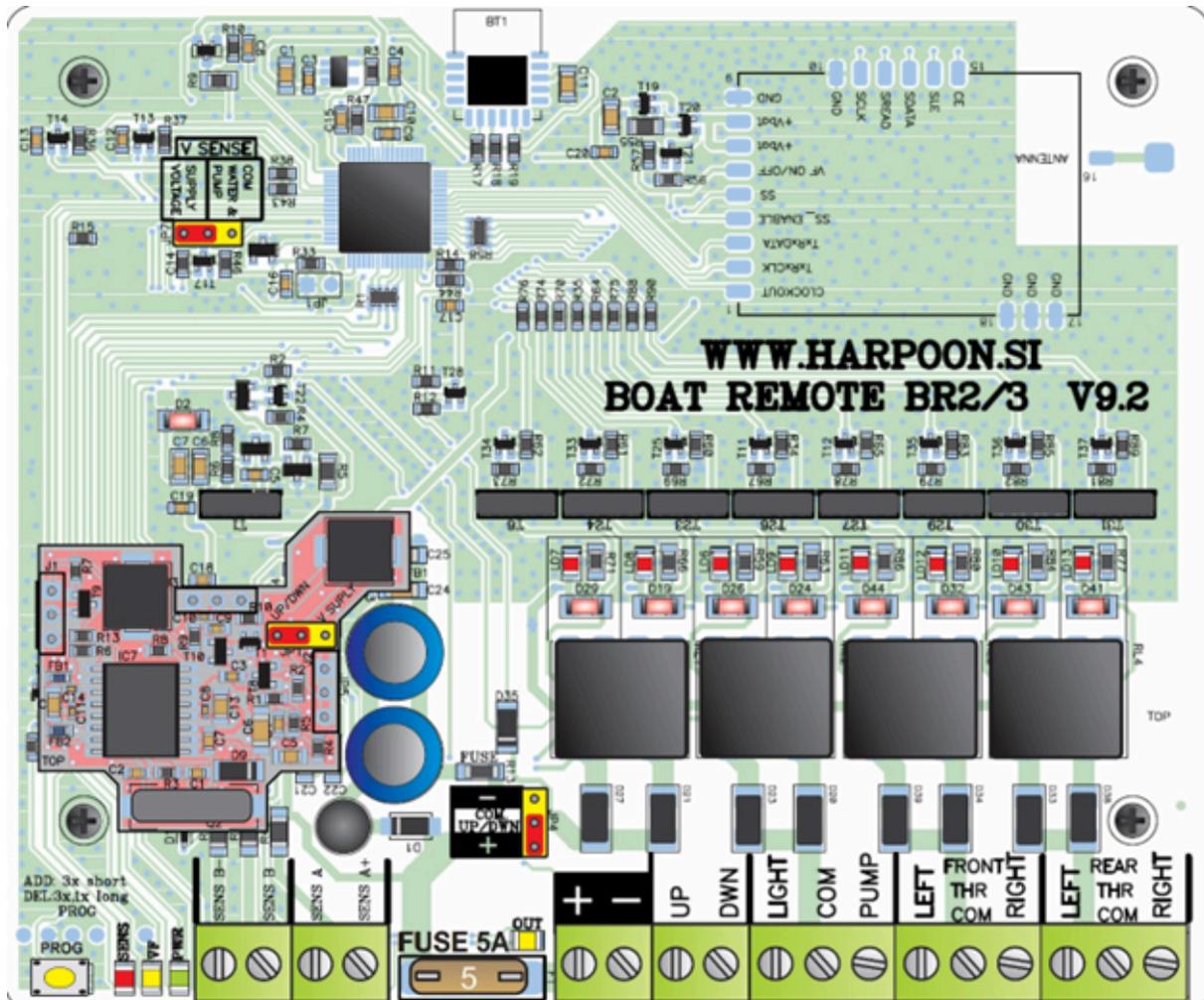
With jumper JP1 on the module, you can choose communication via control (UP/DWN) or power supply lines (V\_SUPPLY).



*BRS-RX module*

Open the BR2 or BR3 Base by unscrewing the four screws on the back and carefully open the cover. Be careful not to damage or pull out the antenna, which is routed through the hole on the upper right side.

Attach the BRS-RX modem to the printed circuit board as shown in the picture:



### IMPORTANT

- Switch off the power supply before installing the module!

## 18. Troubleshooting Instructions

**Before each procedure do the following:**

**DISCONNECT THE POWER SUPPLY BEFORE STARTING THE INSTALLATION!**

**REMOVE THE CHAIN FROM THE GYPSY BEFORE STARTING INSTALLATION OR TESTING!**

**AFTER INSTALLATION, CONNECT THE POWER SUPPLY AND TEST THE WINDLASS ROTATION DIRECTION!**

Many users get confused by the orientation of the remote control, button layout, and windlass rotation direction, so we emphasize again the following: Hold the remote control so that the logo or label is correctly oriented and readable. Only in this way will the use of the buttons and the windlass rotation direction match the expected functionality.

**UP – LIFTING** the anchor from the water

**DOWN – LOWERING** the anchor into the water



**If the windlass rotation direction does not correspond to the pressed button, swap the UP and DWN wires..**

You can also check the correct command for the windlass rotation direction on the BR1 base using LED 4 and 5 located next to the UP and DWN outputs. LED 4 and 5 FLASH when the windlass is operated with the existing switch on the vessel depending on the rotation command. The rotation direction **MUST MATCH** regardless of whether the windlass is operated with the remote control or the existing switch on the vessel!

Bow Thruster left-right will work when it is enabled/activated on the original controls. For a detailed description of the buttons, read the instructions on page 5.

### **1. RECEIVER BASE DOES NOT WORK AFTER POWERING ON**

After switching on the power:

- red LED lights up – EEPROM FAIL.
- yellow LED lights up – VF FAIL.
- green LED flashes – BASE OUT OF RANGE.

(First pair the remote control with the base)

In all cases, service intervention is required in our service center. Replacement of the EEPROM memory chip or VF module in the base and/or remote control is required. **SEND BOTH THE BASE AND REMOTE TO OUR SERVICE CENTER.**

## 2. COUNTER DOES NOT COUNT

### • SENSOR TEST

On the base, the red LED "sensor" lights up at each magnet pass across the sensor or once per gypsy rotation. If your windlass has several magnets installed, this can be adjusted in the settings. See page 7.

- If the **LED LIGHTS UP** then proceed to the next point as the sensor is working and is correctly wired.
- If the **LED DOES NOT LIGHT UP** with each gypsy rotation:

1. Check if the terminals are tightened and if the wire has good contact.
2. Check whether the sensor input is working. With tweezers or a piece of wire, short the terminals at the sensor input connector.
3. If the red LED now lights up, the sensor input works. The fault is therefore somewhere between the terminal.
4. If the LED does not light up, the wire to the sensor may be shorted. Disconnect the wire and test again by shorting the terminals at the sensor input.
5. Check the contacts where the cable is connected to the sensor. The sensor must be soldered to the cable and protected with the supplied heat-shrink tubing to make the joint waterproof.

### • MAGNET TEST

If the magnet rusts, it loses magnetism and the sensor cannot detect it. Check the magnet with a screwdriver by bringing it close to the magnet on the gypsy. If you feel a slight pull, the magnet is functional. If the magnet is functional, it will slightly magnetize the screwdriver, which can then be brought close to the sensor for testing.

## 3. COUNTER DOES NOT COUNT IN THE RIGHT DIRECTION

**The UP/DWN command is incorrectly connected.** Swap the wires at the UP/DWN output. The windlass control output is connected in parallel with the existing switch(es) on the vessel. The base checks the signal on this output. If the anchor is raised or lowered with the existing switch, the counter will also measure the chain length in the correct direction. The displayed length increases when lowering the anchor into the water and decreases when raising it out of the water.

#### 4. REMOTE CONTROL DOES NOT TURN ON

- **BATTERY TEST**

The remote display shows the **battery charge level**. Replace the batteries in time and always check the contacts. When unscrewing the battery cover, be careful not to lose the screws.

Check the battery cover seal. If necessary, lubricate it with vaseline or hand cream. If the remote control is not used for a long time, **ALWAYS REMOVE THE BATTERIES!**

#### 5. REMOTE CONTROL DOES NOT CONNECT TO THE BASE

- Check if the BR receiver base is powered on.
- Check the fuse in the BR receiver base!
- Check the blinking of the green LED "PWR"; if it blinks occasionally, the power is OK..
- Turn off the base and the remote, **FIRST TURN ON THE BASE** then turn on the remote and wait 10 minutes. If they still do not connect, a factory reset and re-pairing of the remote with the base are required. See "Software Settings" on page 10.
- Check if the antenna is properly connected to the printed circuit board of the BR receiver base. The antenna can be damaged by vibration or excessive force. See the "Antenna" section on page 10.
- Check the software version on the remote and the base. On the remote, the software version is displayed after pressing the OK button on startup. The software version in the base is displayed in MENU > SETTINGS > CALIBRATION > INFO bottom line.

#### 6. WINDLASS DOES NOT RESPOND TO COMMANDS

- Check if the windlass is turned on at the main switch.
- Check the battery status for the windlass. (The voltage is also shown on the remote control).
- Read the message on the remote. You may have reached the length at which the windlass automatically stops.
- Check if the relay click can be heard from the BR receiver base each time a button is pressed to raise or lower the windlass on the remote. In the same way, check the other commands on the BR2 and BR3 receiver bases for the bow and stern thruster, as well as the output for the pump and anchor locker light, which can be controlled via the BR remote.

## 19. Maintenance

For better sealing of battery compartment we recommend to use Vaseline, especially after several years of use, when seal loses elasticity.

### **Instructions in the event of submersion in the water:**

- Instantly Turn off the device and remove the battery.
- Check that no water has entered the box.
- If necessary, dry the device and clean the circuit and contacts that came into contact with seawater using cleaning alcohol.
- Assemble the device, insert the batteries, and secure the battery cover.
- For improved water resistance, it is recommended to apply grease or hand cream to the seals.

## 20. Technical data

### **Wireless handheld remote: : model - BR1, BR2 in BR3 (V3.1)**

BR\_Handheld (7 buttons), BR3\_Handheld (9 buttons)

Display: LCD transfective, direct sunlight viewable

Resolution: 98 x 64 pixels

Back light: yes (smart)

Keypad: foil with perforated buttons, watertight, illuminated

Power: battery AAA x 3pcs (for one year of average use)

Power consumption: 41mA with back light, Standby: 33mA, (OFF-9uA)

Protection: IP65. Handheld remote unit is moisture resistant, allows operation with wet hands, in rain, survives water splash (not under pressure). Unit is made to be water resistant, but we do not guarantee to be watertight when submerged in the water. Please carefully follow battery replacement instructions for maximal water resistance.

Dimensions: 120mm x 70mm x 30mm (length, width, height)

Weight: 165g

### **Base: model - BR1\_Base**

Power supply: 12-24V, min 9V

Power consumption: With relay on: 87mA, Standby: 40mA, Sleep: 13mA

Outputs: 2 (UP, DOWN)

Output type: relay 20A, current limited with fuse 5A

Sensor input: reed switch or hall sensor

Dimensions: 120mm (140mm with glands) x 80mm x 42mm length, width, height)

Weight: 175g

### **Base: model – BR2 in BR3\_Base**

Power supply: 12-24V, min 9V

Power consumption: With relay on: 87mA, Standby: 40mA, Sleep: 13mA

Output: BR2B-6 outputs, BR3B-8 outputs

Output type: NO relay 20A, (UP and DOWN output protected with fuse 5A!)

Sensor input: reed switch or hall sensor

Protection level: IP 50

Dimensions: 120mm (140mm with glands) x 80mm x 42mm length, width, height)

Weight: 175g

**Communication: bidirectional**

Range: Wood or plastic hull: min 20m, Metal hull: min10m  
Number of channels: 13 channels (ch2-ch13 available for custom selection)  
Frequency: 434.040-434.790MHz  
IRF power (e.r.p.): 10mW  
Bandwidth: 25 kHz  
Standard: ETSI EN 300 220-3  
Communication speed: 8kbps  
FEC: 8 bit  
Coding: 32 bit (Unique ID code; 4,294,967,295 available)

## Warranty Certificate

Dear Customer,

We would like to thank you for purchasing our product and wish you much satisfaction in its use. If you require advice regarding installation or operation, you can send your questions in writing to [info@harpoon.si](mailto:info@harpoon.si). In case of unsatisfactory product performance, please first check the installation before contacting us.

Warranty Coverage:

HARPOON ELEKTRONIKA d.o.o. provides a one-year limited warranty from the date of purchase for all HARPOON products worldwide. This warranty covers defects in materials or workmanship under normal use and service. The manufacturer guarantees the availability of spare parts for at least 5 years after purchase.

Conditions and Limitations:

The warranty is subject to the following conditions:

Proof of purchase (receipt with date, place of sale, and mandatory serial numbers) is required. If the receipt does not contain the required information, a properly completed warranty card or the original manufacturer's warranty card must be provided.

Warranty repairs are performed only at the company headquarters. Within Slovenia, shipping costs for sending products under warranty to HARPOON ELEKTRONIKA are covered by the company. Repairs on parts installed in the vessel are not performed.

Repairs will be completed within 45 days from receipt. If the repair exceeds 10 days, the warranty period is extended for the repair duration. If a product cannot be repaired within 45 days, the customer may request a replacement with a new equivalent product.

HARPOON ELEKTRONIKA shall not be liable for any loss, damage, or claim resulting from:

Use of the products in applications for which they are not intended. Corrosion, wear and tear, improper installation, or improper use acts, omissions, or events beyond the reasonable control of HARPOON ELEKTRONIKA or the purchaser.

**Warranty Exclusions:**

This warranty will be void if:

- The product is neglected or not properly maintained
- Serviced, repaired, or modified by unauthorized persons
- The serial number is removed, altered, damaged, or unreadable
- Damage is caused by overvoltage, lightning, accident, misuse, negligence, vessel damage, mechanical damage, excessive or insufficient temperatures, modifications, corrosion, or water exposure
- Damage occurs due to incorrect connection or system faults to which the product is connected

The warranty does not cover:

- Consumables or parts subject to mechanical wear (e.g., fuses, batteries, keyboards)
- Labor outside business hours or increased labor costs due to the nature of the work
- System inspection, calibration, sea trials, or commissioning
- Any damage caused during installation or resulting from incorrect installation

Liability:

- HARPOON ELEKTRONIKA's liability is limited to repair or replacement of defective goods or parts, at the discretion of HARPOON ELEKTRONIKA.
- HARPOON ELEKTRONIKA shall not be responsible for shipping charges or installation labor associated with warranty claims.
- HARPOON ELEKTRONIKA is not liable for consequential damages to vessels, equipment, property, or persons due to use or installation.
- Determination of the suitability of the product for the intended use is the sole responsibility of the buyer.
- There are no warranties of merchantability or fitness for purpose beyond what is stated herein.

Safety:

The user of the vessel is always responsible for the safety of crew, passengers, and the vessel. Always use all available means to ensure safe operation. Operators must comply with navigation regulations, safety rules, and environmental standards.

Return Policy:

If you do not accept the conditions of this warranty, return the purchased goods in the original packaging to the seller within 8 days. The product must not be used in any way. Opening the packaging constitutes acceptance of the warranty terms.

Warranty Claims:

To make a warranty claim, contact HARPOON ELEKTRONIKA office or distributor. Proof of purchase and authorization from HARPOON ELEKTRONIKA will be required before any repairs.

Invoice number: \_\_\_\_\_ City: \_\_\_\_\_ Date: \_\_\_\_\_

Product: \_\_\_\_\_ Serial number: \_\_\_\_\_

Service description:

Date: \_\_\_\_\_

Signature and stamp of the seller:

E mail: [info@harpoon.si](mailto:info@harpoon.si), Web <http://www.harpoon.si>, HARPOON elektronika d.o.o., Hrastovec 14, 1236 Trzin