

installation and user manual

MAR GE V2

Table of Contents

1. Product definition	3
1.1. Purpose	3
1.2. Main parts included in the MAR GE V2	3
1.2.1. Before installing MAR GE V2 beacon	3
1.2.2. Inventory	4
1.3. Dome	5
1.4. Interface box	5
1.5. Interfaces	6
1.5.1. Mechanical interfaces	6
1.5.2. Electrical interfaces	7
2. Installation/Removal	8
2.1. Typical installation	8
2.2. Tools and material required	9
2.3. Installation procedure	9
2.3.1. Mounting location for dome	9
2.3.2. Dome installation	10
2.3.3. Interface box installation	12
2.3.4. Routing path for the cables	13
2.3.5. Dome connection	13
2.3.6. Interface box connection	13
2.3.7. Check of installation	17
2.4. Transmitter removal	17
3. Operation	18
3.1. Switching on	18
3.2. Data transmission	18
3.2.1. GPS fixes	18
3.2.2. Fishing messages	18
3.2. Assistance signal	18
4. Technical Characteristics	19
5. Troubleshooting	20
5.1. Self-test	20
5.2. Troubleshooting guide	20

1. Product definition

1.1. Purpose

The MARGEV2 beacon is designed to track fishing vessels by satellite within the framework of a monitoring program. The MARGEV2 beacon is compatible with many applications such as:

- monitoring of fishing vessels, data entry and transmission of captures
- monitoring of merchant vessels
- monitoring of mooring light buoys.


The MAR GE- V2 beacon is composed of a data collecting and positioning transmitter (via Argos satellites) and a GPS receiver (via GPS satellites). The advantage of combining these two satellite systems is to obtain automatically the beacon position anywhere in the world. The integration of all the elements in a single sturdy, watertight block ensures that the beacon withstands harsh sea conditions.

 **IMPORTANT**
Read this manual completely before beginning the installation of MARGEV2.

1.2. Main parts included in the MARGEV2

1.2.1. Before installing MARGEV2 beacon

Make sure that all the items listed in the following paragraph are included in the box and that they have not been physically damaged during shipment.

 *Report any missing or damaged items to CLS.*

1.2.2. Inventory

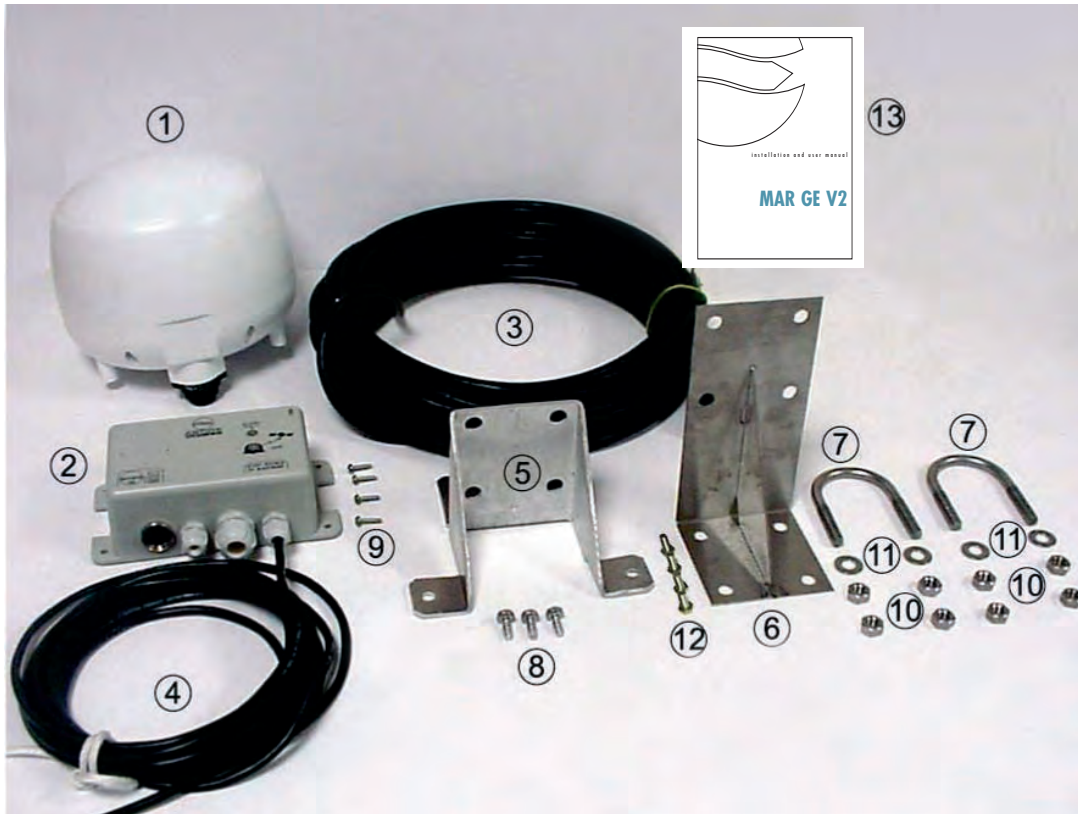


Figure 1 
Contents of MAR GE V2
shipping Box

Main parts of MARGE V2 beacon set are:

-
- (1) A dome assembly.
 - (2) An interface box.
 - (3) A dome/interface connection cable.
 - (4) A power supply cable.
 - (5) U shape bracket.
 - (6) L shape bracket.
 - (7) Two U-bolts.
 - (8) Three screws (A4 E-jot for plastic) for dome bracket.
 - (9) Four screws (A2 E-jot for plastic) for interface box fastening.
 - (10) Eight nuts (M8 A4) for U-shape, U-bolts and L-shape brackets.
 - (11) Four flat washers (M8 A4) for U-shape, U-bolts and L-shape brackets.
 - (12) Four screws (M8 A4) for U-shape and L-shape brackets.
 - (13) An installation and user manual.
-

1.3. Dome

The dome houses the Argos/GPS acquisition and transmission circuitry.



Figure 2: MAR GE V2 Dome

1.4. Interface box

The interface box is an interface between the dome, the optional keypad terminal and the power supply.



Figure 3: Interface box

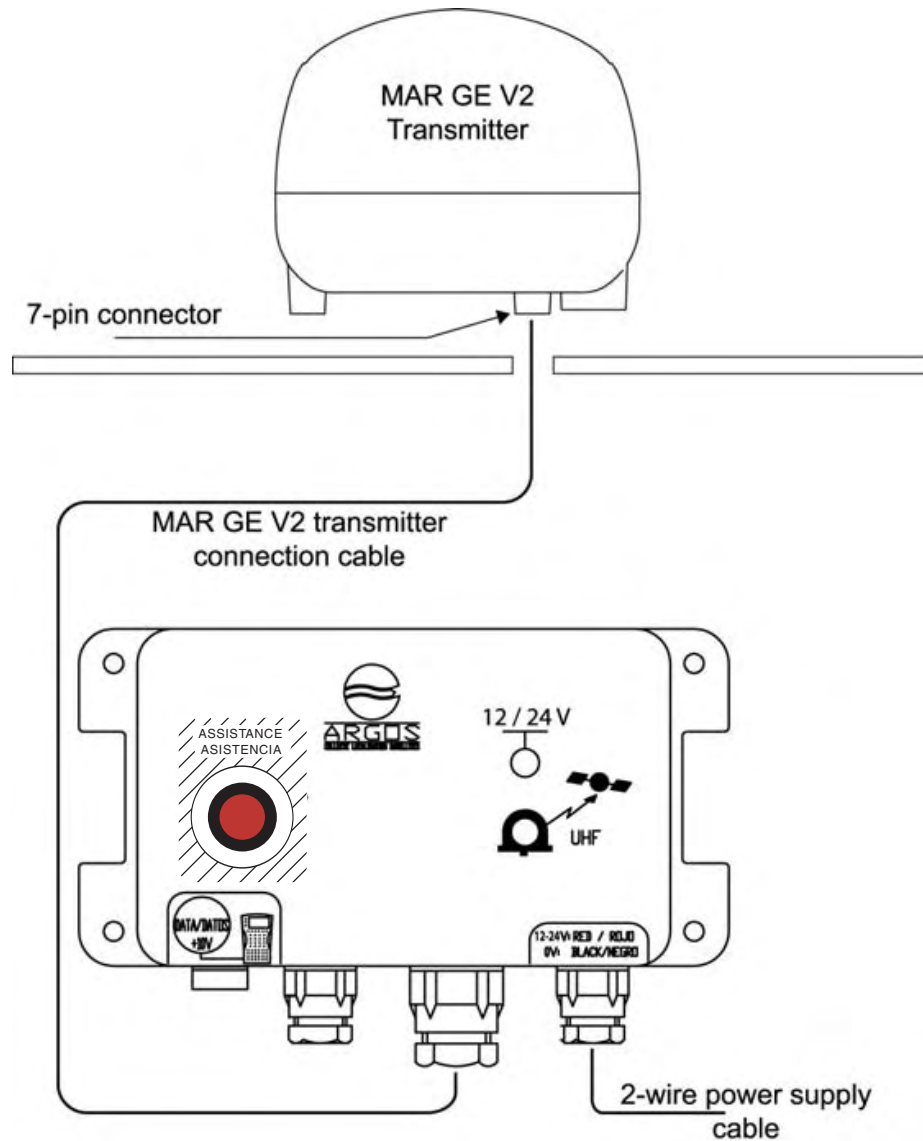
To fulfill these interface functions, the interface box is fitted with:

- (1) a LED to monitor the power supply
- (2) a LED to monitor the Argos transmission
- (3) an output to connect a seven-wire cable to the dome
- (4) a 12/24 VDC power input
- (5) an input/output used as data link interface and to supply a keypad terminal with power.

1.5. Interfaces

The dome can be fixed thanks to vertical and horizontal mounting brackets. A support is supplied with the optional keypad terminal. Links and connections between MARGEV2 transmitter, interface box, keypad terminal and power supply are performed thanks to electrical and data link interfaces.

Figure 4 ➔
Connections between
sub-assemblies



1.5.1. Mechanical interfaces

Mounting brackets

These interfaces are used to fix the dome on the ship upper deck (*Refer to 2.3.2. Dome installation*).

1.5.2. Electrical interfaces

MAR GE connection cable

This interface is used to connect the MARGEV2 transmitter to the interface box. This is a 15-meter, seven point cable with a 7-pin connector at one end and seven wires at the other.

Two-wire power supply cable

This interface is used to supply the interface box with 12/24 volts 2 A DC power. The red wire is connected to + 12/24 V, the black wire is connected to 0 V.

2. Installation/Removal

2.1. Typical installation

The figure below shows an example of typical installation of MARGEV2 on a fishing vessel. The dome assembly is mounted outside on the vessel, the interface box is mounted in the wheelhouse. These two assemblies are interconnected by a cable. The junction box must also be connected to a source of vessel DC power using a power cable (provided). The interface box can be connected to an external terminal device to enter data into the MARGEV2. This connection is made using a serial interface cable.

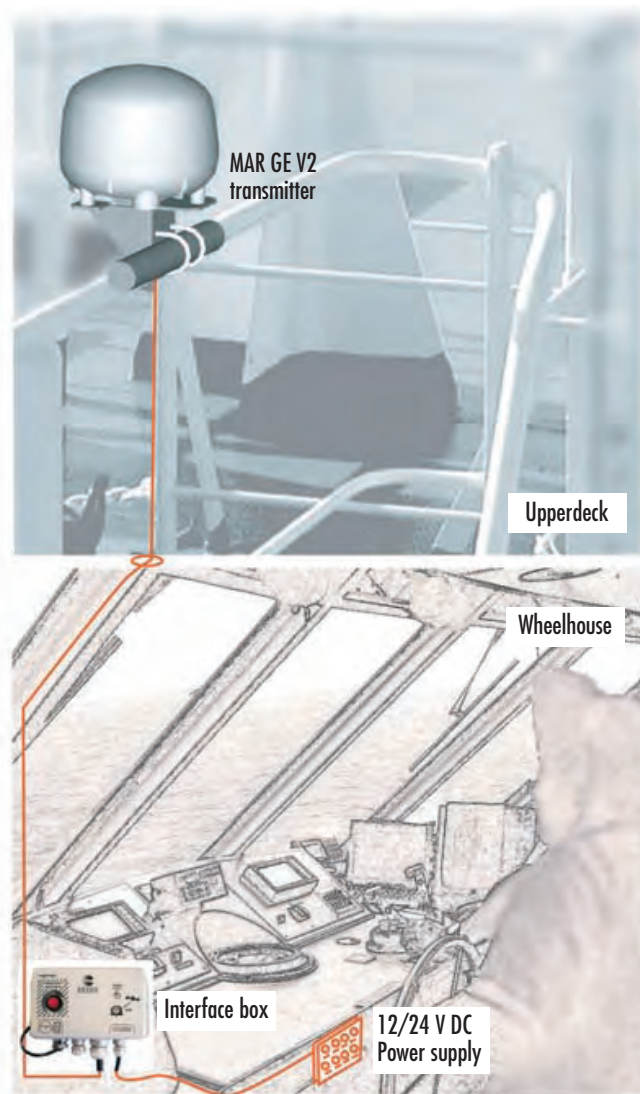


Figure 5  Example of typical installation


2.2. Tools and material required

MARGEV2 can be installed using standard hand tools such as 13 mm flat wrench, flat and cross-head screwdrivers.

2.3. Installation procedure

To install the MARGEV2:

- (1) Select the mounting location for the dome
- (2) Install the dome
- (3) Select the mounting location for the interface box
- (4) Install the interface box
- (5) Route the cables
- (6) Connect the dome/interface cable to the dome
- (7) Connect the dome/interface cable to the interface box
- (8) Connect the 12/24 V DC power supply to the interface box
- (9) Check the installation.

 Please follows these guidelines to install the dome in a good and appropriate location.

2.3.1. Mounting location for dome

The dome can be installed either on a mast, a rail, a vertical surface or an horizontal surface (*Refer to 2.3.2. Dome installation*).

The mounting location for the dome should be located:

- on the upper deck of the ship
- with a clear view of the sky, as unobstructed as possible
- away from direct wave impact or submergence
- where it will be safe from damage during routine fishing vessel operations on deck
- at least three meters (ten feet) from any satellite communication equipment.

The mounting location for the dome should not be located:

- on the top of high masts (to prevent swingings)
- close to radar antennas
- in areas subjected to vibrations, shocks or impacts
- in areas subjected to the heat from engine and engine exhaust and by corrosive chemicals found in an engine exhaust.

2.3.2. Dome installation

The MARGEV2 is supplied with a hardware designed to provide a variety of installation configurations. This hardware is composed of:

- U-bolts, screws, nuts and washers
- U-shaped mounting bracket
- L-shaped mounting bracket.

Mounting options

U-shaped mounting bracket and U-bolts are used to mount the dome on either vertical or horizontal rail and mast arrangements.

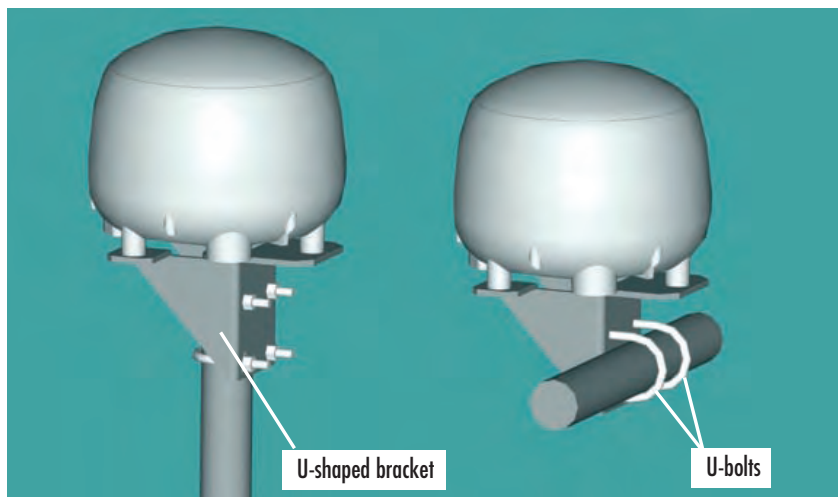


Figure 6 ➔
Mounting the dome
on a mast or rail

L-shaped mounting bracket, in addition to U-shaped bracket, is used to mount the dome on either a vertical or horizontal flat surface.

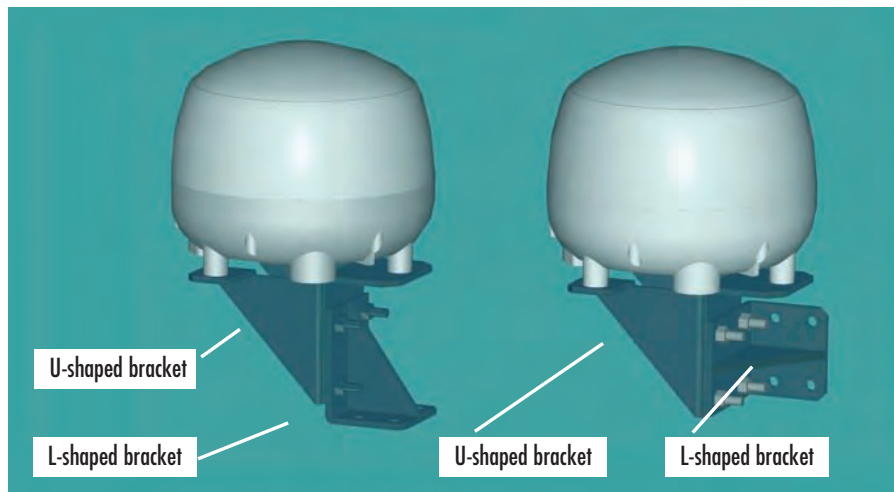


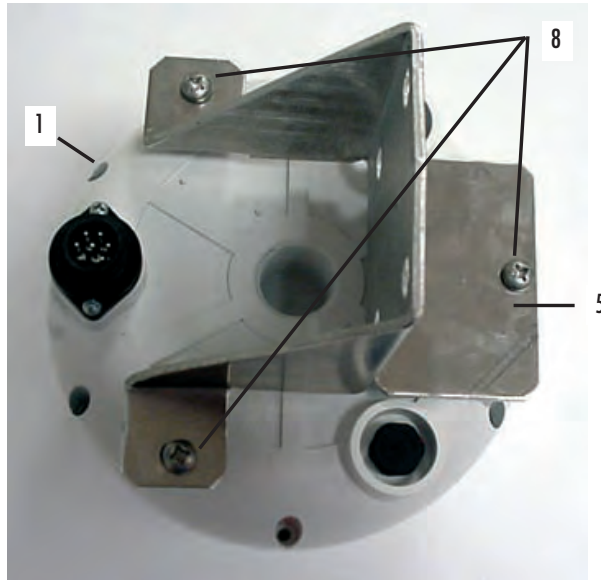
Figure 7 ➔
Mounting the dome on a
horizontal or vertical surface

Mounting brackets, U-bolts and screws should be well tighten to ensure that the dome does not vibrate free when the vessel is underway.

Mounting procedure

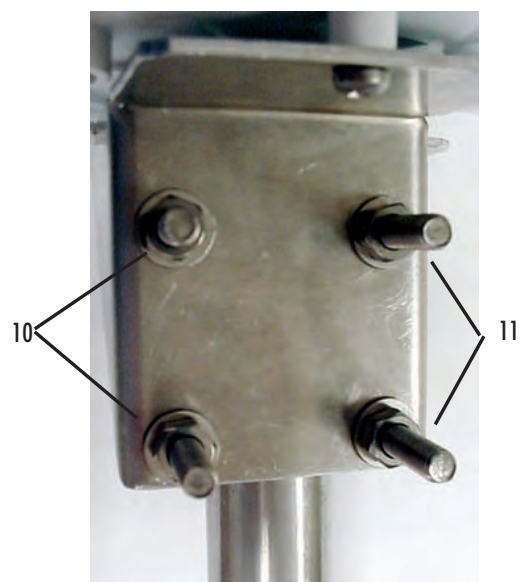
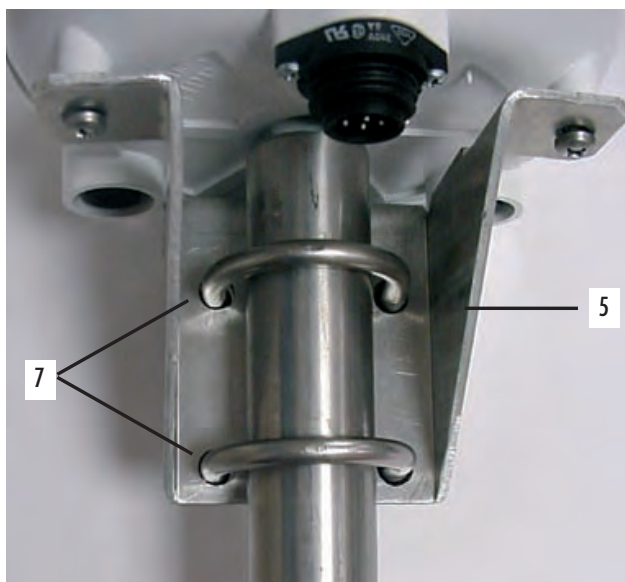
1. Fix the U-shape bracket (5) to the dome (1) using the 3 attaching screws (8).

➔ Note: Numbers in brackets match with numbers of parts listed figure 1.

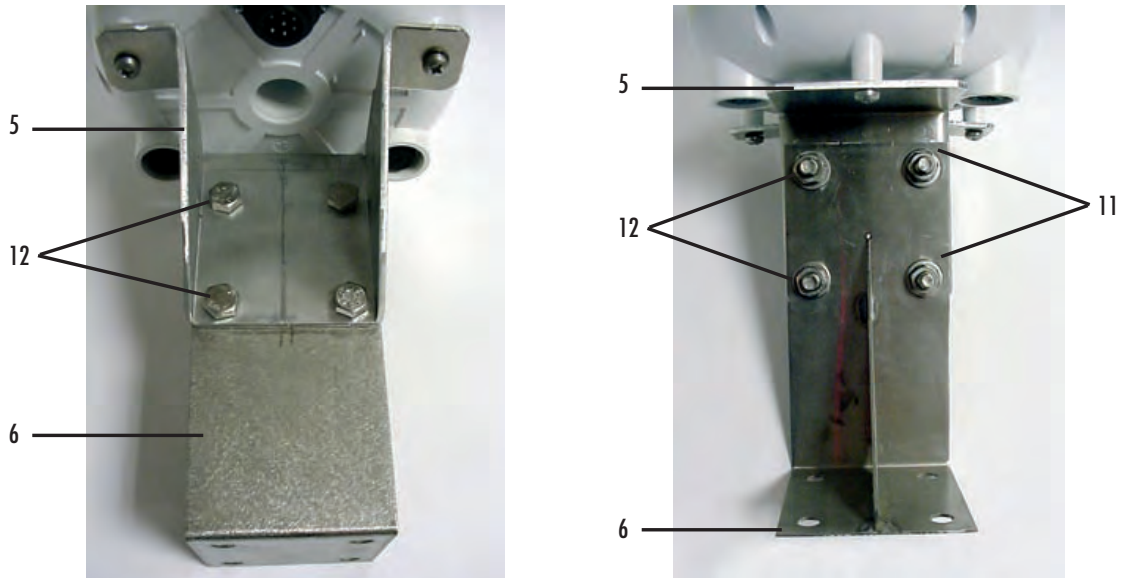


2. If the dome is to be mounted on a rail or a mast:

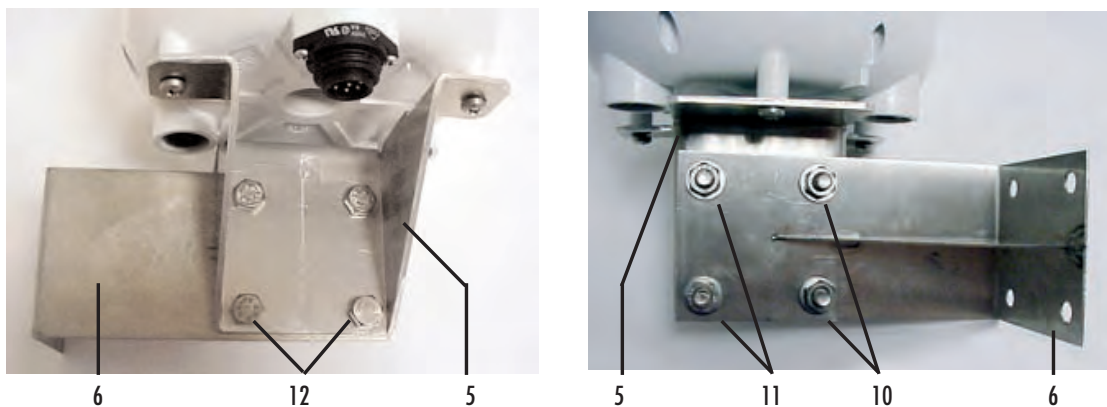
- pass the U-bolts (7) above the rail or the mast;
- insert them into the holes provided in the U-shape bracket (5);
- fix the U-bolts to the U-shape bracket using the four washers (11) and nuts (10).



3. If the dome is to be mounted on a horizontal surface: Fix the L-shape bracket (6) to the U-shape bracket (5) using the four screws (12) washers (11) and nuts (10) as shown below.



4. If the dome is to be mounted on a vertical surface: Fix the L-shape bracket (6) to the U-shape bracket (5) using the four screws (12) washers (11) and nuts (10) as shown below.



2.3.3. Interface box installation

The interface box is designed to be installed in the wheelhouse or any protected location, away from direct heat, dripping water and direct sunlight.

The interface box should be located:

- within reach of the vessel's 12/24V DC power supply using the provided cable (length 5 meters)
- within reach of the dome - interface box interconnection cable (length 15 meters max.).

The interface box should not be mounted on surfaces that are subject to high vibrations or shocks.

Mount the cover of the interface box in the chosen location using two appropriate screws (not supplied) according to the material to be drilled.



→ Note: the interface box will be fixed on its cover when connected (Refer to § 2.3.6).

2.3.4. Routing path for the cables

Run the cables in places where they will not be damaged by machinery or gear, avoiding sharp edges and hot surfaces. Do not run the cables through doorways or hatches that may later need to be closed.

2.3.5. Dome connection

Connect the dome/interface cable to the plug P1 of the dome. This plug is located below the dome assembly.



← Figure 8: Dome, view from below

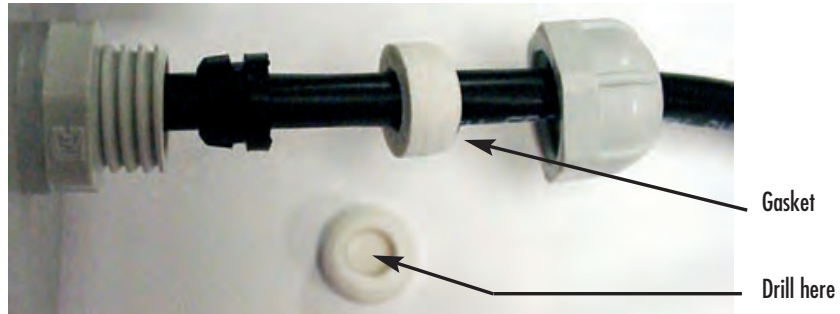
The circular connector of the dome/interface cable should be on the dome side, the terminals on the interface box side.

2.3.6. Interface box connection

The cable enters the interface box through compression glands. These glands are designed to keep moisture out of the junction box and to provide strain relief to the cables connections inside the box. These glands

must be carefully assembled by the installer. The glands nuts should be first tightened by hand then seated without over-tighten using a wrench.

Figure 9 
Gland assembly details



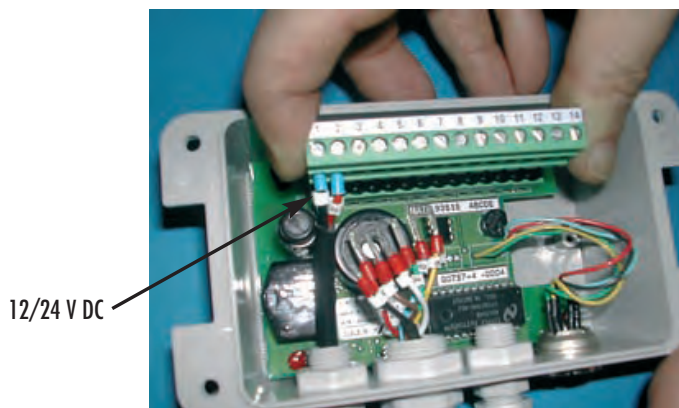
Drill the gasket on its center, then insert the cable into the compression glands as shown above.

Connection to dome/interface cable

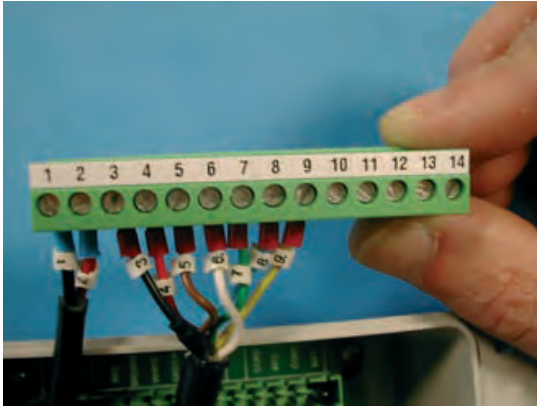
- Open the interface box.
- Remove and disassemble the gland of Dome/Interface cable input (Refer to Figure 3: Interface box).
- Insert the cable into the parts of the gland then into the housing of the interface box.



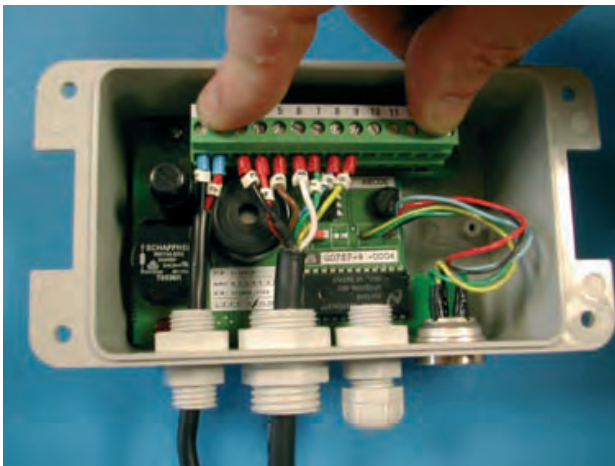
- Extract the upper part of the terminal strip.



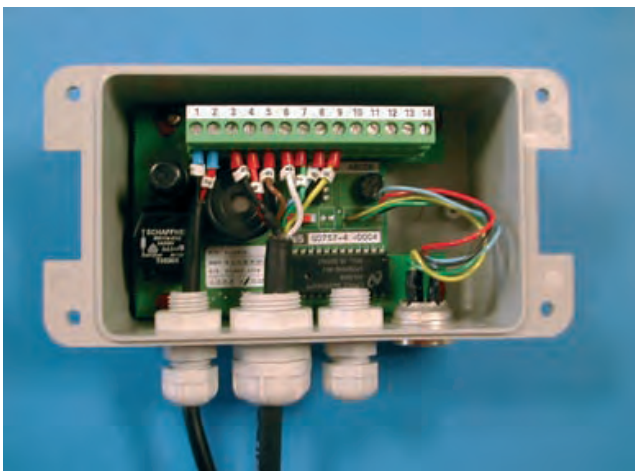
- Connect the terminals of the cable to the upper part of the terminal strip matching the correct colors to each terminal. Tighten the screws of terminal strip.



- Place back the connected upper part of terminal strip in its housing.



- Place back the gland and tighten.



- Close the interface box and put the protective cap onto the data input/output plug.



Connection of 24V DC power supply cable

If the 12/24 V DC power supply is not already connected perform the following procedure (refer to pictures of section 2.3.6)

- Remove and disassemble the gland of 24 VDC power supply input of the interface box (Refer to Figure 3: Interface box).
- Insert the power supply cable, terminals side, into the parts of the gland then into the housing of the gland.
- Connect the 2 terminals of the power supply cable to the terminal strip:
 - > 12/24V to red wire
 - > 0V to black wire.
- Tighten the corresponding screws of terminal strip.
- Place back the gland and tighten.
- The other end of the power cable should be connected to the DC power distribution panel of the vessel.
- Close the interface box.

Assembly of interface box

When connected, fix the interface box onto its cover using its four screws (9).



Figure 10 ➡
Interface box installation

2.3.7. Check of installation

Check of controls and indicators

At the vessel's DC power panel, turn on the circuit breaker or insert the fuse that powers the Interface box.

Within about 5 seconds, the green led "POWER ON" (Refer to Figure 3: Interface box) will light: The MARGEV2 is powered and operational.

If this led does not light:

Open the interface box and check that the DC power is being provided by measuring the DC voltage to the corresponding terminals:

- if this voltage is not present, check again the wiring connections to the vessel DC panel
- if this voltage is present and the green led still fails to light, check that the connections between interface box and dome are made properly
- if these connections are correct and the led still fails to light, consult the manufacturer.

The **red led** "UHF" (Refer to Figure 3: Interface box) will lit for about one seconds every 120 seconds.

Check of data transmissions

Leave the transmitter ON for at least 12 hours, then contact CLS to check the proper operation through satellites.

2.4. Transmitter removal

Before removing the transmitter:

- Switch-off the 24V DC power supply
- Disconnect the connector under the dome
- Disconnect the 24V DC power cable from the interface box
- Disconnect the other cables from the junction box.

3. Operation

3.1. Switching on

At the vessel's DC power panel, turn on the circuit breaker or insert the fuse that powers the Interface box.

3.2. Data transmission

3.2.1. GPS fixes

Once connected and switched on, the MARGEV2 transmitter is ready to:

- record GPS fixes within the hour, speed and heading of vessel
- generate messages
- transmit Argos messages

To prevent interception by a local receiver, all the messages sent by the transmitter are encoded.

3.2.2. Fishing messages (optional)

The transmitter regularly sends fishing messages acquired from the keypad terminal to satellites.

3.3 Assistance signal

3.2.1. To send an assistance signal

Press the assistance button **for at least 10 seconds** and wait for a **red LED quick flashes**.

When you press the assistance button two specific messages are sent at a 90-second interval to the fishing vessel monitoring centre. The first message contains the alarm information, the second the vessel's current location. The UHF Transmission LED flashes an SOS signal pattern and a buzzer sends an SOS pattern.

Assistance calls override all other messages from the transmitter.

3.2.1. To cancel an assistance signal

Press the assistance button **for at least 10 seconds** and wait for **red LED quick flashes**.

4. Technical Characteristics

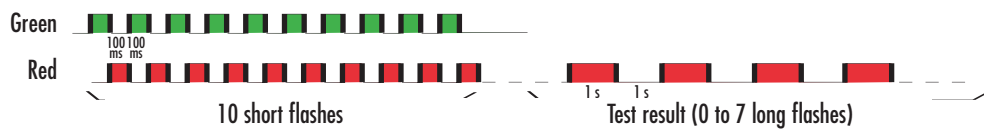
Argos Transmitter	Frequency: Argos II band (401.620 to 401.680 MHz) HF Power: 32dBm +/-0.5
GPS receiver	Channel: 12 Sensitivity: -152dBm Cold start: 35s Hot start: 8s Quick start: 3s
Battery	Voltage: 6V 2.5A Autonomy: 72h
Power supply	Range: nominal 12V-24V (operating between 9V to 50V) Current drain: <2A under 9V <1.5A under 12V <700mA under 24V
Mechanical	
Dome	diameter 165mm , height 135mm, weight: 1.450Kg
Junction box	150x110x60mm, weight: 0.480Kg (with power supply cable)
Cable	Dome to Junction box: 15m Power supply: 5m
Logical Input 1	10 to 40V AC/DC
Logical Input 2	Dry contact without voltage
Environmental	
Temperature	Operating temperature: -20 to +50°C Storage temperature: -25 à +70°C
EN60945 Compliant	Mechanical, environmental and EMC IP66 rated

5. Troubleshooting

This section is a guide that will assist in diagnosing and correcting most common problems with the MAR GE V2.

5.1. Self-test

When turning on the DC power supply, the MAR GE V2 carries out a self-test:



- Green and red leds blink alternately (100 ms each 100 ms) for 2 seconds then the test result is displayed by the red led maximum 20 seconds after.
- No long flash, test OK,
- 1 long flash (1 second) : impaired programming code.
- 2 long flashes (1 second each): ID code lost.
- 3 long flashes (1 second each): Converter PCB failure.
- 4 long flashes (1 second each): GPS receiver failure.
- 5 long flashes (1 second each): power or antenna VSWR failure.
- 6 long flashes (1 second each): clock / RTC failure.
- 7 long flashes (1 second each): other.

5.2. Troubleshooting guide

Symptom	Possible Causes	Check
1. Green power indicator does not light	No DC power supply or DC power < 9 V	<ul style="list-style-type: none"> • Check fuse, breaker or any switch from the source of DC power supply • Check voltage (> 9 V) at the interface box terminal strip: <ul style="list-style-type: none"> - between #1 (black = 0 V) & #2 (red); - between #3 (black = 0 V) & #4 (red): if different of the vessel power supply, check fuse of interface box.
	Dome is not functioning	<ul style="list-style-type: none"> • Check connection of dome to 15-meter cable. • Check connection of white wire to #6 of interface box terminal strip.
	Incorrect installation	<ul style="list-style-type: none"> • Review the installation procedure (installation manual).

Symptom	Possible Causes	Check
2. Red indicator UHF does not light (green led is on)	Dome is not functioning	<ul style="list-style-type: none"> • Check that no material obstructs the dome. • Check connection of circular connector to P1 of dome. • Check connection of green wire to #7 of interface box terminal strip. • Check transmitter: perform a self-test (Refer to § 6.1. Self-test).
3. No satellite transmission	Dome is not functioning	<ul style="list-style-type: none"> • Red led blinks at least each 120 sec.
	Dome not clear	<ul style="list-style-type: none"> • Check antenna: <ul style="list-style-type: none"> - clearview of the sky; - away from metal objects and equipment.
	Data have not been processed by CLS	<ul style="list-style-type: none"> • Wait at least 24 hours to get transmission results after a first power on.
4. No report of GPS positions	When first installed, the GPS receiver may require up to half an hour to load a new almanac and acquire its first fix. Thereafter, fixes should take less than 15 minutes.	<ul style="list-style-type: none"> • Wait sufficient time for GPS to acquire a position.
	Dome covered by snow, ice, etc.	<ul style="list-style-type: none"> • Clean the dome.
	Dome is not functioning	<ul style="list-style-type: none"> • Perform a self-test (Refer to § 6.1. Self-test).
5. No communication with keypad terminal (green led is on)	Dome not functioning	<ul style="list-style-type: none"> • Check connection of blue wire to #8 and yellow wire to #9 of interface box terminal strip. • Check connection of circular connector to P1 of dome. • Check keypad terminal link cable.
6. No 10 V power supply to keypad terminal	Dome not functioning	<ul style="list-style-type: none"> • Green power indicator is lit.
7. No buzzer when shifting to battery	Incorrect installation	<ul style="list-style-type: none"> • Check the microswitch inside the dome is correctly positioned. • Check connection of brown wire to #5 of interface box terminal strip.