Artemis Validator Operator's Guide

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Artemis Validator Operator's Guide
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FCC ID VYMVALIDATOR

FCC Warning Statement

This device complies with Part 15 of the FCC (USA Federal Communications Commission) rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Changes or modifications not expressly approved by the party responsible.

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

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Introduction and System Overview

Introduction

Welcome to the Artemis Validator Operator's Guide. It explains how to use the portable version of the Artemis Validator to confirm that an Artemis Mk5 or Mk6 position reference sensor is in working order.

The *System Overview* sets the Artemis Validator in the context of the Artemis system as a whole.

Note that whilst we endeavour to describe the functionality of the device correctly in this document, we do not guarantee that it exactly represents the version of the device that you are using.

System Overview

The Artemis microwave-based position reference system provides accurate positional data to marine Dynamic Positioning (DP) control systems. It enables automated approach and station keeping relative to another Artemis sensor on a rig or platform, or to another vessel.

The standard Artemis system includes:

• Two identical Antenna Units (or Sensors) configured, as a Mobile Station and a Fixed Station.

• The Artemis Control PC, a Windows-based marine specification computer, running the control software.

An alternative configuration - the Beacon system - involves the same components as the standard system except for a non-rotating Beacon Unit instead of a Fixed Station. A Beacon Unit does not provide an Azimuth measurement.

Antenna Units

The Mobile Station is mounted on the DP-Equipped vessel, ideally at the top of the main mast. The Fixed Station is installed on a fixed platform if absolute positioning is needed or on a moving platform or structure to provide relative positioning.

System Operation

In order to provide positional data to the vessel's DP system, the Artemis system needs to be "locked". In this state, the antennae of the Fixed and Mobile Stations are facing each other and automatically tracking by maintaining a continuous microwave link.

The distance between the sensors is obtained from the travel time of the microwave signal. The bearing of the Fixed Station, with respect to the centre line of the vessel is measured.

The Fixed Station measures the Azimuth and reports it to the Mobile Station.
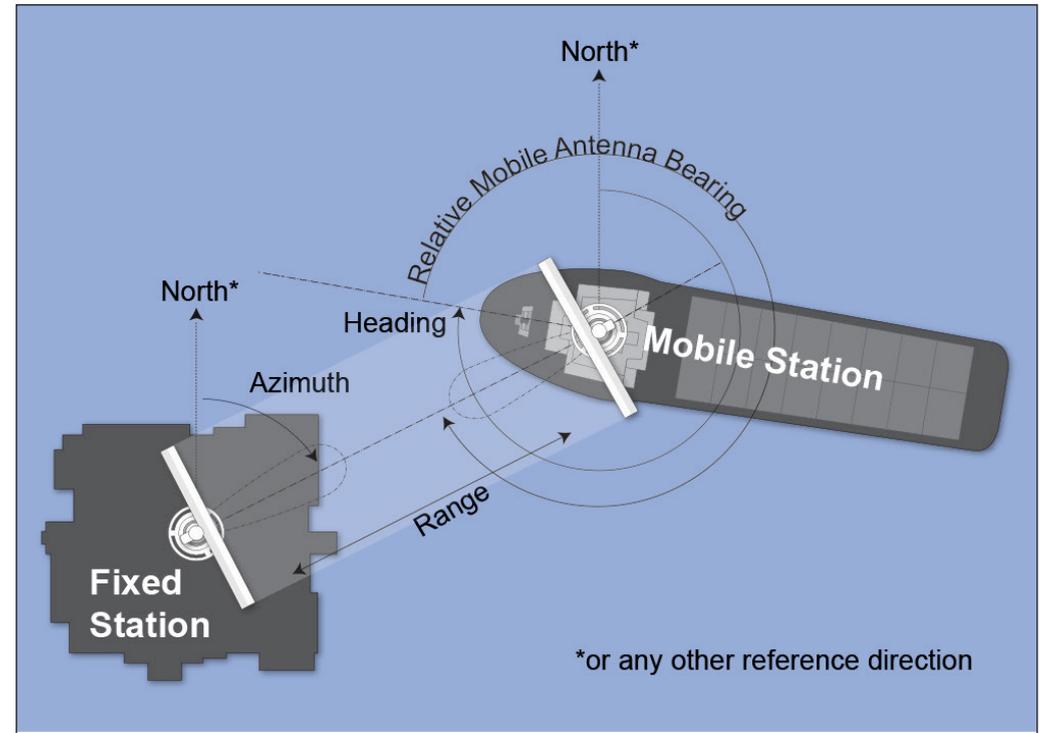
Layout of a Standard Artemis System

Artemis Validator

The Artemis Validator is a portable, battery powered Fixed Station simulator that can test an Artemis Mk5 or Mk6 sensor at distances of up to 300m.

The Artemis Validator can simulate different ranges at frequency pair and address code combinations to support validation of the operaton of a Mobile Artemis sensor.

User Interface

The user interface for the portable Artemis Validator consists of five buttons and an LCD display.

Start Up

Switch on the Artemis Validator by pressing the On/Off button.

The information display briefly displays the following:

```
Starting...
```

This is then replaced by the default top-level page:

```
Validator:
Range: 1000m
```

Menu Structure

The information display pages are arranged into a menu structure. The ▲ ▼ ▶ and ◀ buttons are used to navigate this structure.

At the top level of the menu structure, the first line of the display always reads "Validator:". Use the ▲ and ▼ buttons to scroll through the pages at this level. For example:

```
Validator:
Range: 1000m
```

▼

```
Validator:
Test Result
```

▼

```
Validator:
FPGA Version
```

The ▲ button takes you through the pages in reverse order.

If there is a sub-menu beneath a particular page, it is accessed by the ▶ button and the first line of this page is the same as the second line of the top-level page, e.g.:

```
Validator:
Range: 1000m
```

```
Range: 1000m
New:    1000
```

If there is no sub-menu, the ▶ button has no effect.

User Interface (Continued)

The full menu structure in order of scrolling is as follows:

Top-level Menu Option	Possible Values	Sub-Menu for Setting Modification	Description
Range	500-10000m in 100m steps	Yes	Simulated range between Artemis Validator and sensor
Ver	xx.xx.xx.xx	No	Version number of Artemis Validator firmware
Charger	Off, Trickle, Full	No	Battery charger status
Supply	On, Off	No	Battery charger connected
Save Settings	No, Yes	Yes	Allows settings to be saved to non-volatile memory
Address	0..63	Yes	Address code of the Artemis unit that is being validated
Freq Pair	F0, F1, F2, F3	Yes	Combination of frequencies transmitted by Artemis Validator and sensor

User Interface (Continued)

Modifying Settings

In general, the purpose of a sub-menu page is to allow you to modify a particular setting. The ▲ and ▼ buttons cause the "New" value to increase, decrease, scroll or toggle as appropriate, whilst the existing value remains the same on the top line. For example to change the validation range from 1000m to 1100m:

```
Validator:
Range: 1000m
```
▶
```
Range: 1000m
New:   1000
```
▲
```
Range: 1000m
New:   1100
```
▶
```
Validator:
Range: 1100m
```

The ▶ button confirms the choice, or takes you into a submenu.

The ◀ button cancels a choice and returns to the next menu level up.

Any modified settings keep their new values only until the Artemis Validator is turned off. If you want the new values to persist indefinitely, use the Save Settings menu.

Saving Settings

Scroll to the Save Settings menu page at the top level of the menu structure. Press ▶ to reach the sub-menu and use ▲ or ▼ to change the value to "Yes".

```
Validator:
Save Settings
```
▶
```
Save Settings:
New: No
```
▲
```
Save Settings:
New: Yes
```

Press ▶ to confirm changes:

▶
```
Please Wait
New: Yes
```
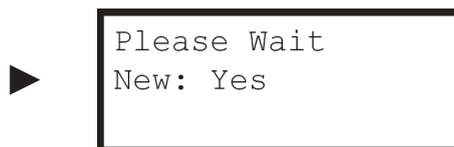
The settings are saved and the display returns to the top level of the menu.

User Interface Layout

Artemis Validator Range Setting

```
Validator:
Range: 1000m
```
▶
```
Range: 1000m
New:   1000
```
▲
```
Range: 1000m
New:   1100
```
▶
```
Validator:
Range: 1100m
```
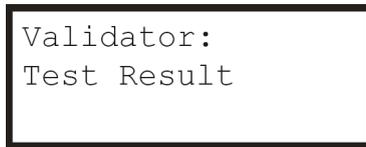
Artemis Validator Test Result

```
Validator:
Test Result
```

Press ▶ to display one of the following results. This section is not editable. One of these screens below is shown depending on the status of the Validator. Press ◀ to return to the menu.

```
Validator:
Passed Tests
```

```
Validator:
No Artemis
```

```
Validator:
No Comms
```

```
Validator:
Signal Level Low
```

Artemis Validator FPGA Version

```
Validator:
FPGA Version
```
▶
```
FPGA Version:
1.0.0.11
```

Artemis Validator S/W Version

```
Validator:
S/W Version
```
▶
```
S/W Version:
1.0.0.111
```

Press ◀ to return to the menu.

Press ◀ to return to the menu.

User Interface Layout(Continued)

Artemis Validator Charger

```
Validator:
Charger: <Status>
```

Press ► to display one of the following results. This section is not editable. One of these screens below is shown depending on the status of the Validator. Press ◄ to return to the menu.

```
Validator:
Charger:  Trickle
```

```
Validator:
Charger:  Full
```

```
Validator:
Charger:  Pwr Off
```

```
Validator:
Charger:  ???
```

When the status of the charger cannot
be determined

```
Validator:
Charger:  On
```

Artemis Validator Save Settings

```
Validator:
Save Settings
```

►

```
Save Settings:
New: No
```

▼▲

```
Save Settings:
New: Yes
```

Press ► to confirm your changes.

Artemis Validator Address

```
Validator:
Address:  63
```

►

```
Address:  63
New:      63
```

▼▲

```
Address:  63
New:      62
```

Press ► to confirm your changes.

User Interface Layout(Continued)

Artemis Validator Frequency Pair

```
Validator:
Freq Pair: F1
```
►
```
Freq Pair: F1
New:       F1
```
▲
```
Freq Pair: F1
New:       F2
```

Press ► to confirm your changes.

Operation

The purpose of the Artemis Validator is to test whether an Artemis sensor (Mobile Station) is in working order.

This involves configuring the device to imitate a fixed station that the sensor under test normally locks onto.

Configuration Procedure

1. Switch on the Artemis Validator.

2. Use the push button controls to navigate the menu system and set the Freq Pair and Address to the same values as the Artemis unti that is being validated (see *Modifying Settings* on page 7).

3. Optionally save the settings (see *Saving Settings* on page 9) for use next time.

Once the above steps have been carried out, the Artemis Validator can be used to test the Artemis sensor

Validation Procedure

4. Place the Artemis Validator with a clear line of sight to the sensor at a distance of between 10m and 300m.

5. Note the simulated range shown on the information display of the Artemis Validator.

6. Using the Artemis user interface aim the Artemis antenna towards the Artemis Validator.

7. Check that the range and bearing displayed are approximately correct (*see below).

8. For further validation, use the push button controls on the Artemis Validator to select a different simulated range.

9. Repeat steps 7 and 8 as required.

*Note: the range displayed on the Artemis User interface may not exactly match the Range as set on the Artemis Validator.

The Artemis sensor will report the sum of the Validator simulated range PLUS the actual range to the Artemis Validator.

The reported range approximates **R + S**

where:

R is the true range between the sensor under test and the Artemis Validator.

S is the simulated range configured on the Artemis Validator.

So for example, if the true range is 100m and the Artemis Validator is set to a simulated range of 1000m, the User Interface should show a range between 1095m and 1105m. If the sensor under test cannot lock onto the Artemis Validator (step 6), or if the range and bearing reported (step 7) are not reasonable values, then the Validation Procedure has failed.

Rechargable Artemis Validator

Switch the unit off when not in use to preserve the battery.

!**The Artemis Validator is water resistant.**
However, do not submerge the unit in water.

To Switch the Artemis Validator ON:

Press the ON/OFF button on the back of the unit.

Charging

The rechargeable Artemis Validator should be fully charged before use. A full charge takes approximately 24 hours.

!**DO NOT charge or use the Artemis Validator in an explosive atmosphere or other hazardous environment.**

The Artemis Validator will switch on whilst charging. It cannot be turned off while charging.

To Charge the Artemis Validator:

!**Note: Only use the supplied charger. Only charge at ambient temperatures of 0°C to +45°C.**

1. Switch off the Artemis Validator and remove the plate on the rear of the unit.

2. Connect the supplied mains charger (Part No. 21-0464; Input: **100–240VAC, 50–60Hz, 1.5A** Output: **24VDC, 2.5A, 60W)**.

3. When charging is complete, disconnect the power from the unit and place the rear plate back on.
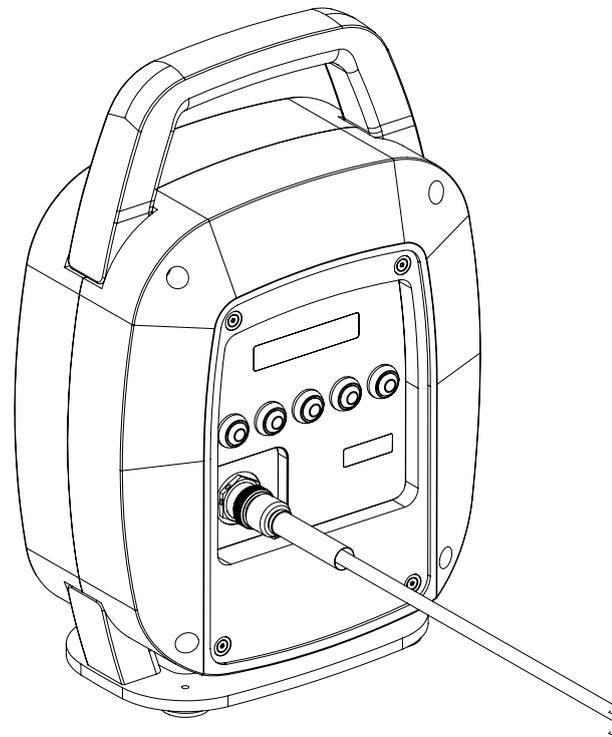
!**Do not open the Artemis Validator.**

If you experience any problems with the unit, please contact:

Guidance Marine Ltd
5 Tiber Way
Meridian Business Park
Leicester   **Tel:**   +44 (0) 116 229 2600
LE19 1QP
United Kingdom   **Email:** customerservices@guidance.eu.com

Dimensions

Diagram not to scale. Dimensions measured in mm.

Approx weight: 4.5 kg

220.5

336.5

117.5

64

272.5

252

115.5

117.5

84.8

58.7

29

143.2

220.5

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