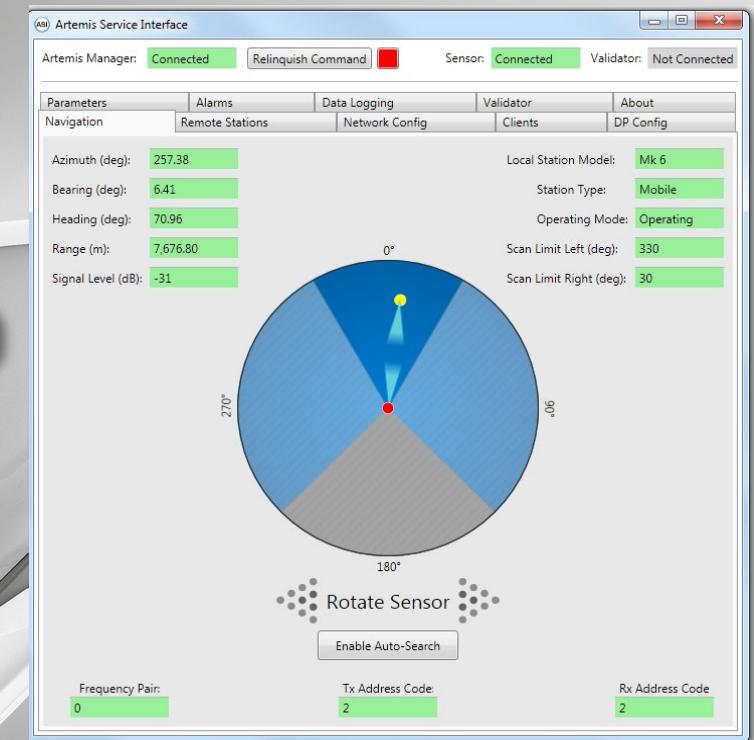


# Artemis Mk6 Installer's Guide

**GUIDANCE**  
**MARINE**  
Expert Positioning Technology



featuring Artemis  
Service Interface

## Artemis Mk6 Installer's Guide

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Guidance Marine Limited,  
5 Tiber Way  
Meridian Business Park  
Leicester  
LE19 1QP  
UK

Tel: +44 116 229 2600

**UK Support:**

+44 116 229 2665

(365 days a year, 08:00 - 20:00 hours UTC)  
[customerservices.uk@guidance.eu.com](mailto:customerservices.uk@guidance.eu.com)

**USA Support:** +1 504 305-1120

[customerservices.us@guidance.eu.com](mailto:customerservices.us@guidance.eu.com)

**Asia Support:** +65 6734 6365

[customerservices.sg@guidance.eu.com](mailto:customerservices.sg@guidance.eu.com)

**Web:** [www.guidance.eu.com/customer-support](http://www.guidance.eu.com/customer-support)

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# Document History

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94-0441-4-A	First release of Artemis Mk6 Installer's Guide	28/06/2016

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# Introduction

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Welcome to the Artemis Mk6 Installer's Guide. It explains how to install the Artemis control software onto a Type 3 Marine Processor or other type of computer, and how to use it to configure the Artemis system.

For instructions on how to use Artemis, please see the Artemis Mk6 Operator's Guide (Doc No. 94-0440-4).

The [System Overview](#) on page 6 provides an introduction to the Artemis system.

The [System Layout](#) section on page 8 describes possible arrangements of the system on board a vessel. [Installing the Sensors](#) on page 12 takes you through the installation of the Mobile Station, Fixed Station and Beacon, as appropriate.

The [Installing the Control PC](#) section on page 27 gives information for mounting a Marine Processor supplied by Guidance Marine and how to upgrade the Artemis control software, if required.

The [Configuring the Artemis System](#) section on page 30 explains how to configure the system for your vessel.

## FCC ID: **VYMARTEMIS**

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC 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.

**NOTE:** THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

# System Overview

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

The standard Artemis system consists of:

- Two identical Antenna Units (or Sensors), user-configurable as a Mobile Station and a Fixed Station.
- The Artemis Control PC, a Windows-based marine specification computer, running the control software.
- Artemis Client PC(s), optional computers used where more than one installation of the Artemis Dashboard software is required.
- Hand-held Operating Panel (or Pendant).

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

## Antenna Units

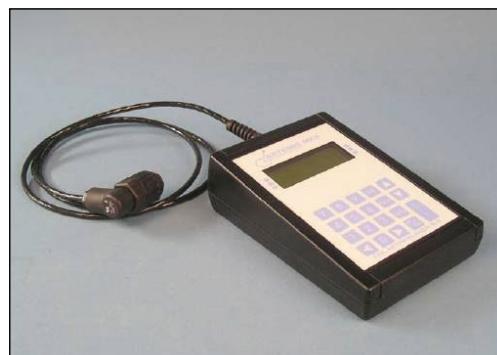
The Mobile Station is mounted on the DP-Equipped vessel, ideally at the top of the main mast. The Fixed Station is installed on a fixed platform if absolute positioning is needed or on a moving platform or structure to provide relative positioning.

## Hand-held Operating Panel (Pendant)

A hand-held unit that can be connected to a station or Beacon unit to read and set system parameters during installation. It can also be used to view positional data once the system is in operation. This is an optional diagnostic aid.



An Antenna Unit (Mobile or Fixed Station)



An Operating Panel

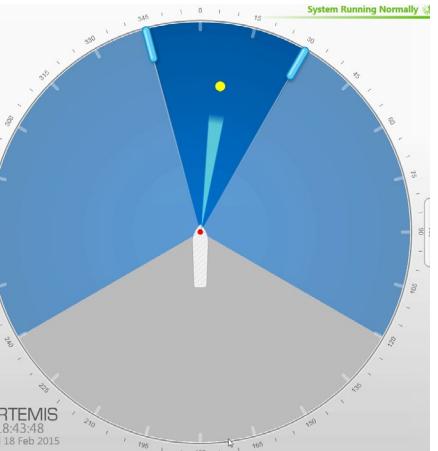
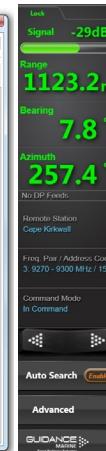
## Artemis Control Software

The following applications run on the Artemis Control PC, usually mounted on the bridge near to the controls of the vessel's DP system:

- **Manager** – This Windows service running on the Artemis Control PC can be configured to run automatically after the PC powers up. It provides a single point of control for an Artemis sensor through which the other components communicate.
- **Service Interface** – Used for system installation and maintenance, it allows network communications to be configured and parameters on an Artemis Station to be viewed and set. It displays the state of connected Artemis Dashboard(s) and can be used to take basic control of the station.
- **Dashboard** – Used to control and monitor normal system operation. Up to five instances of the Dashboard can run simultaneously on the Control PC and Client PCs, but only one of these can exercise control at any given time; the others can only be used to monitor the system.



Artemis Service Interface



Artemis Dashboard

## Explosion-Proof Antenna Unit/Beacon

An antenna unit or beacon can be made safe for operation in hazardous zone 2 conditions with the use of a pressurisation unit. This forces clean air into the housing of the antenna unit or beacon to prevent the ingress of explosive or flammable gases that might otherwise be ignited by electrical sparks. Contact Guidance Marine for details.

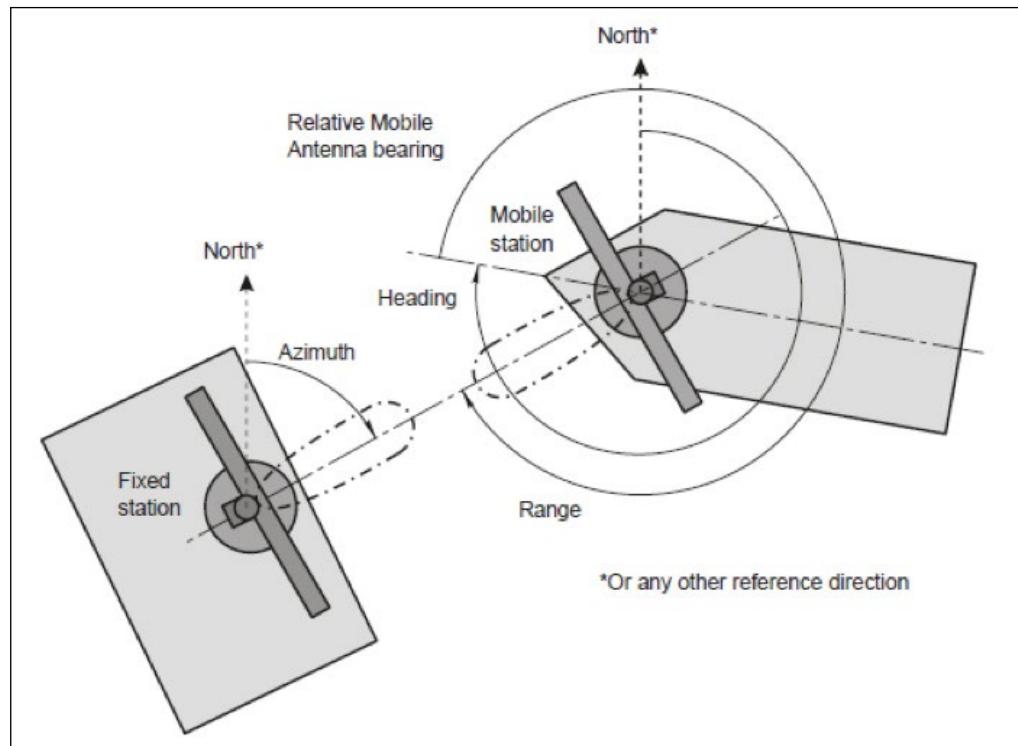
# System Overview (Continued)

## 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, measured by means of coded interruptions in the continuous wave. The bearing of the Fixed Station, with respect to the centre line of the vessel, is measured using a precision shaft encoder.

The Fixed Station measures the Azimuth and reports it to the Mobile Station. The Azimuth is the horizontal angle between a reference direction and the Mobile Station, with its vertex at the Fixed Station.



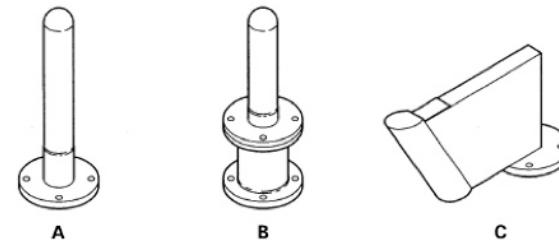
Layout of a Standard Artemis System

The beam width of an antenna unit (Fixed or Mobile Station) is approximately 2°.

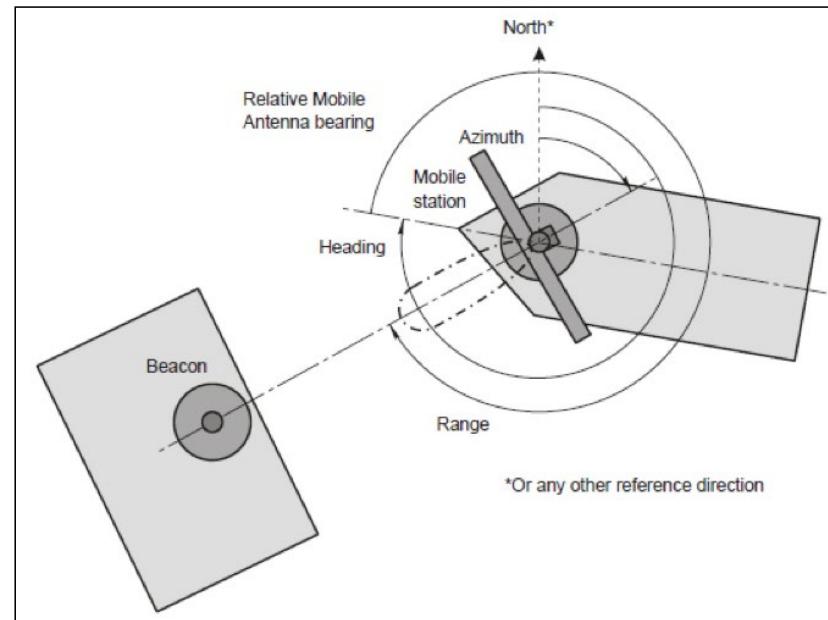
## Beacon Unit

Used instead of a standard rotating Fixed Station on a fixed platform for absolute positioning, or on a moving platform or structure for relative positioning. The antenna of a Beacon unit does not rotate, and three types of antenna are available for different situations:

- A. Omni directional antenna with 360° beam width
- B. Semi-omni antenna with waveguide, 100° beam width
- C. Horn antenna with 66° beam width



Different Types of Beacon Antenna



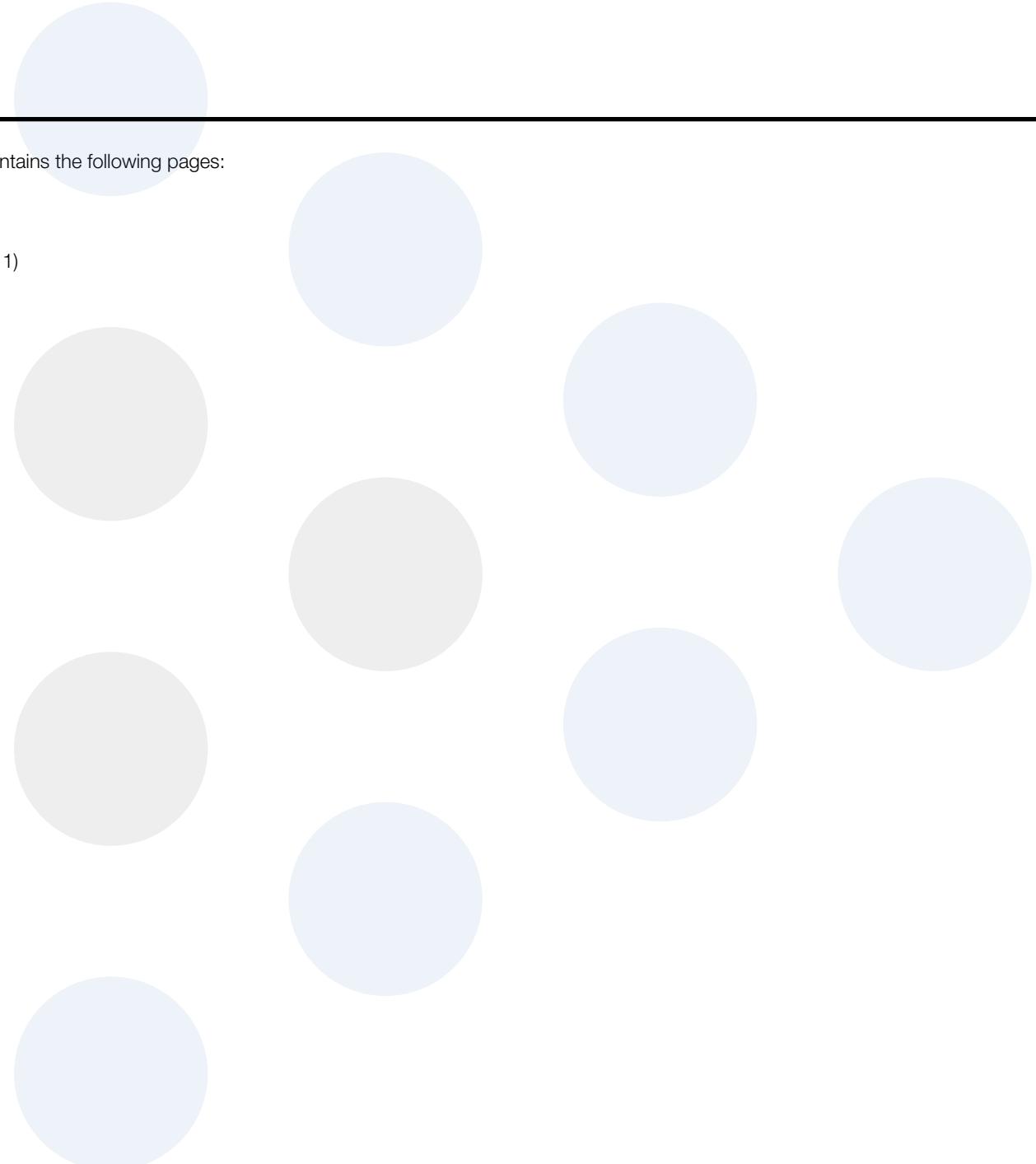
Layout of an Artemis Beacon System

# System Layout

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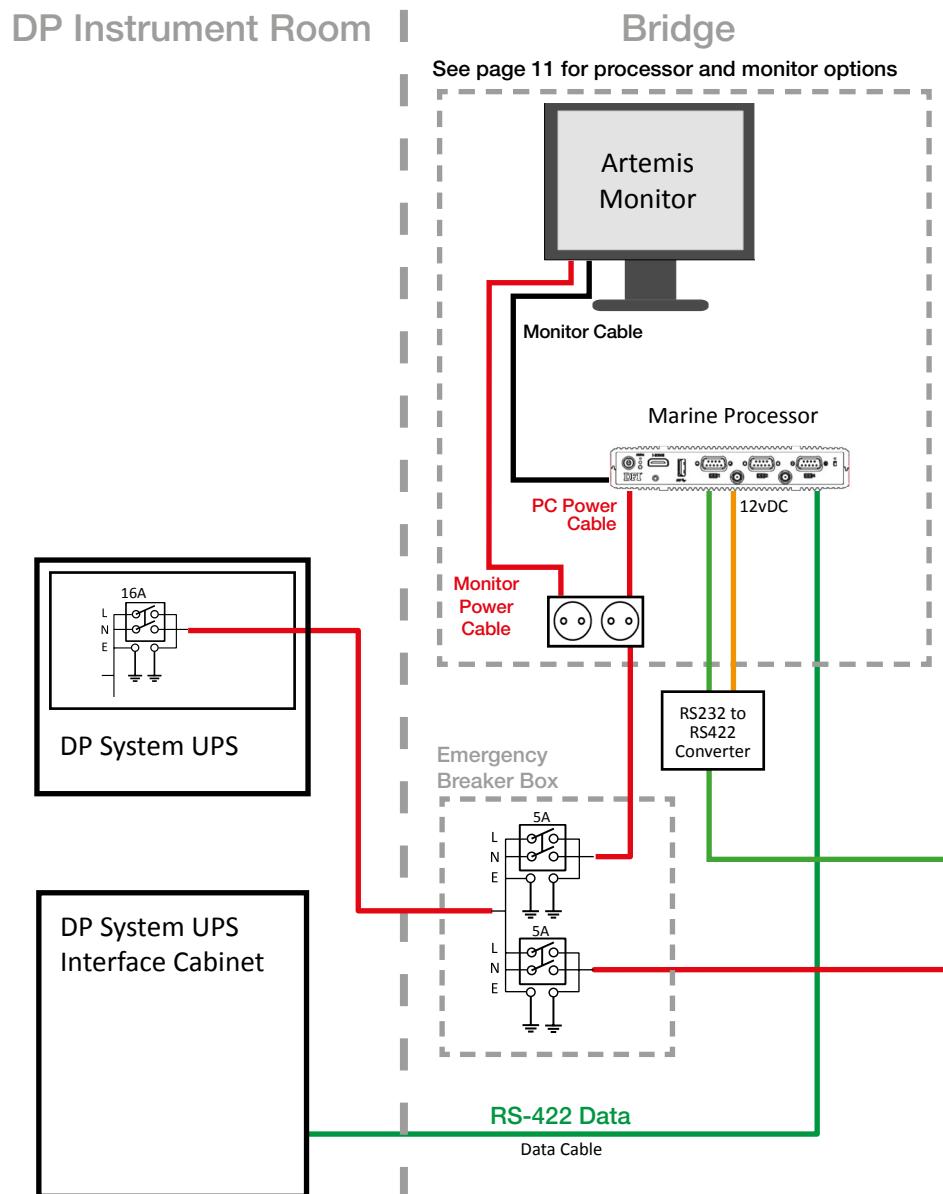
This section describes the possible layouts of the system on a vessel. It contains the following pages:

- [\*Cable Routing Diagram – Serial Communications\*](#) (page 9)
- [\*Cable Routing Diagram – Ethernet Communications\*](#) (page 10)
- [\*Cable Routing Diagrams - Processor and Monitor Options\*](#) (page 11)

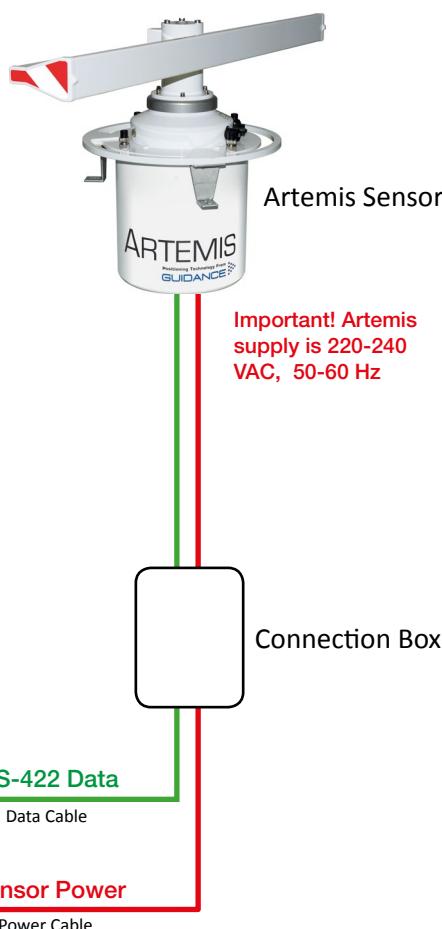


# Cable Routing Diagram – Serial Communications

DP Instrument Room



Mast

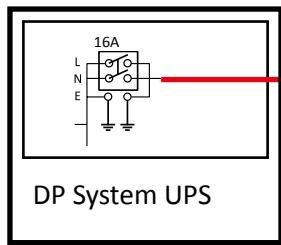


Link	Cable
Artemis Control	Green
DP Feed	Green
Power	Red
12V DC	Orange

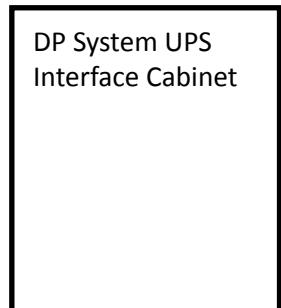
# Cable Routing Diagram – Ethernet Communications

DP Instrument Room

220-240V AC 50/60 Hz



DP System UPS Interface Cabinet



Bridge

See page 11 for processor and monitor options



Artemis Monitor

Monitor Cable

Marine Processor

PC Power Cable

Monitor Power Cable

Emergency Breaker Box

5A

5A

RS-422 Data

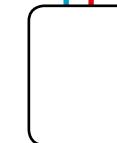
Data Cable

Mast



Artemis Sensor

Important! Artemis supply is 220-240 VAC, 50-60 Hz



Connection Box

Ethernet

Ethernet Cable

Sensor Power

Power Cable

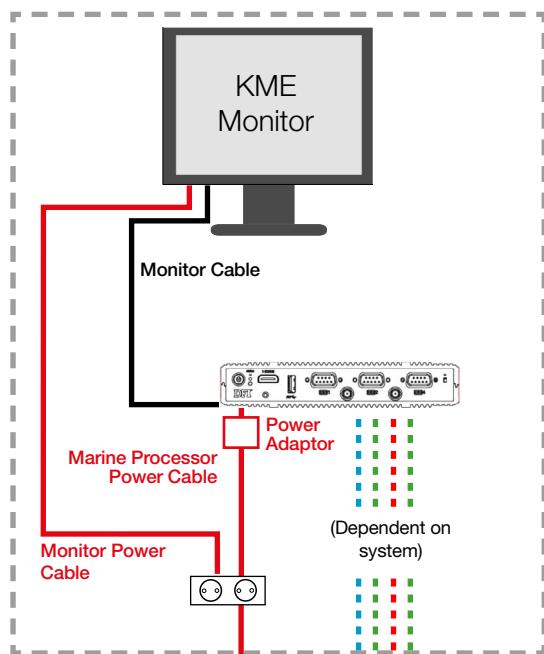
Link	Cable
Artemis Control	Blue
DP Feed	Green
Power	Red

Note: The Ethernet cable connecting the sensor to the Control PC should not exceed 90 metres in length. Please contact Guidance Marine if longer distances are required.

# Cable Routing Diagrams - Processor and Monitor Options

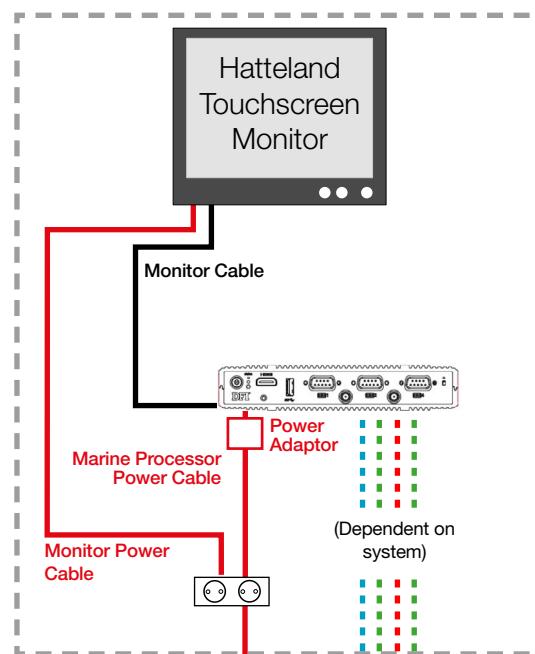
## Alternative Processor and Monitor Options

Any of the following configurations may be used (see pages 9 and 10)



**Processor:** Type 3 Marine Processor  
(Part Number 20-0209-2)

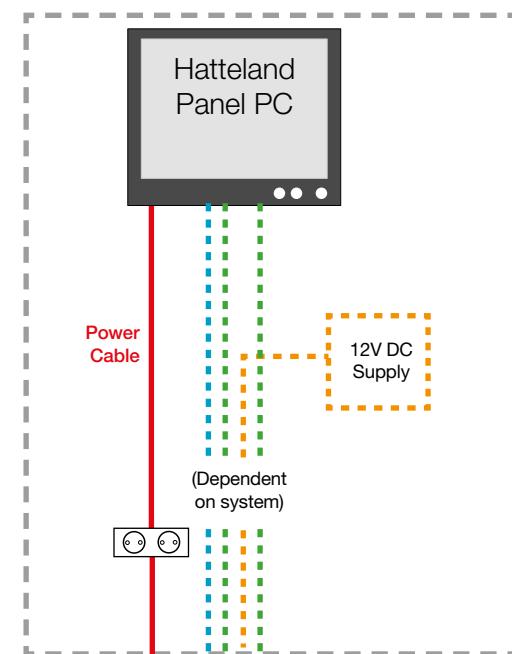
**Monitor:** 15" Desktop Monitor  
(Part Number 20-0115-1)



**Processor:** Type 3 Marine Processor  
(Part Number 20-0209-2)

**Monitor:** Hatteland Marine Touchscreen Monitor (Part Number 20-0211-4)

**Optional brackets:** Hatteland Mounting Bracket (Part Number 24-0259-4)  
Hatteland VESA Bracket for Wall or Ceiling (Part Number 24-0258-4)



**Processor and Monitor:** Hatteland Panel PC (Integrated PC and Touchscreen Monitor, Part Number 20-0182-1)

**Optional brackets:** Hatteland Mounting Bracket (Part Number 24-0259-4)  
Hatteland VESA Bracket for Wall or Ceiling (Part Number 24-0258-4)

**Note:** The Dashboard Communications port on the Hatteland Panel PC is COM2

# Installing the Sensors

---

This section explains how to install the Artemis sensors and contains the following pages:

- [\*General Considerations\*](#) (page 13)
- [\*Dimensions of Base Unit\*](#) (page 14)
- [\*External Connections to an Artemis Sensor\*](#) (page 15)
- [\*Installing a Mobile Station\*](#) (page 16)
- [\*Installing a Fixed Station\*](#) (page 19)
- [\*Installing a Beacon\*](#) (page 24)

# General Considerations

## Mounting Template

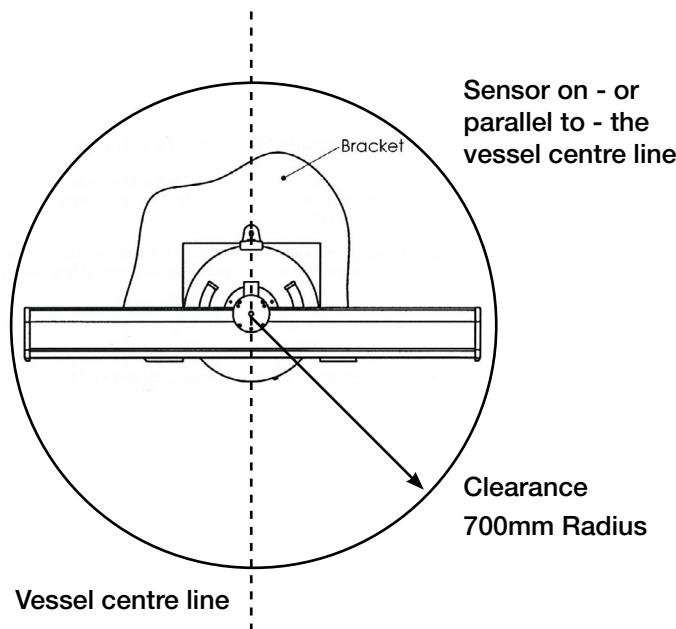
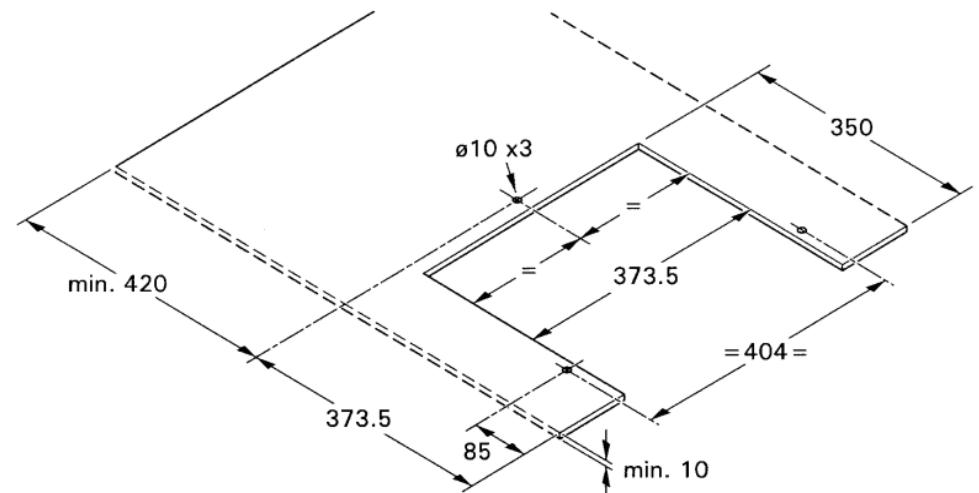
A U-shaped bracket suitable for mounting the sensor should have the dimensions shown on the right.

## Sensor Orientation

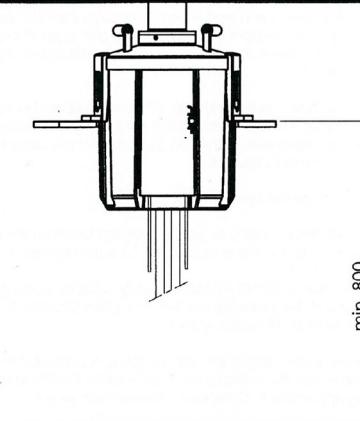
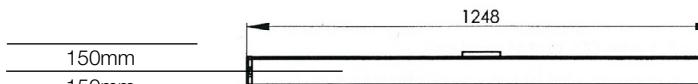
Where possible the sensor should be mounted on the centre line of the vessel. It is recommended that the centre connector and the rear mounting point be on - or parallel to - the centre line of the vessel (see below).

## Sensor Clearance

To facilitate 360° antenna rotation, a cylindrical space of 1400mm diameter with a vertical depth of 300mm around the centre of the rotating antenna should be free from any obstructions.

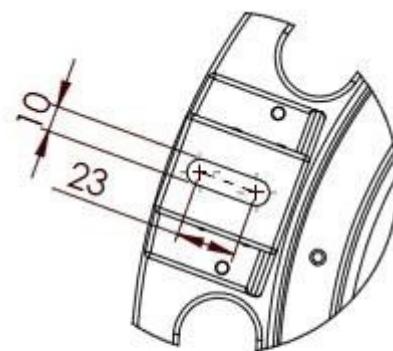
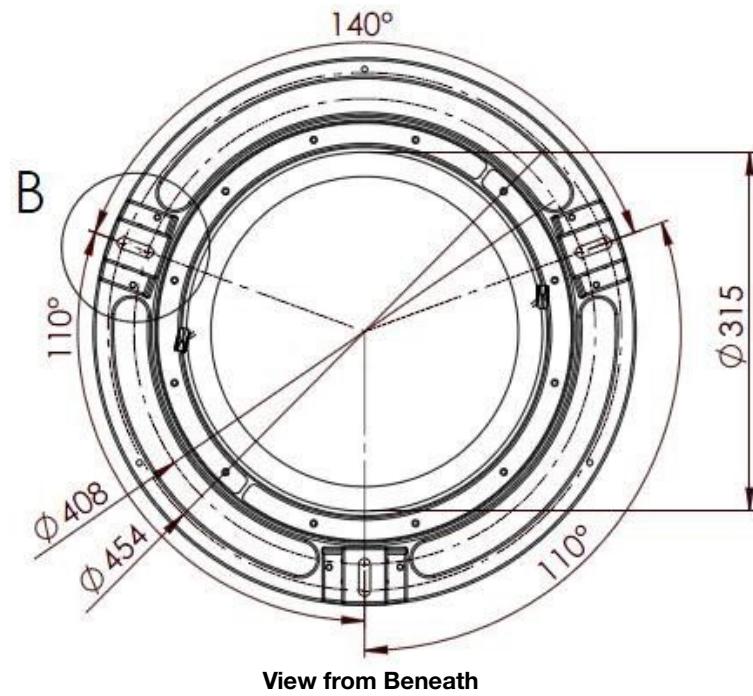
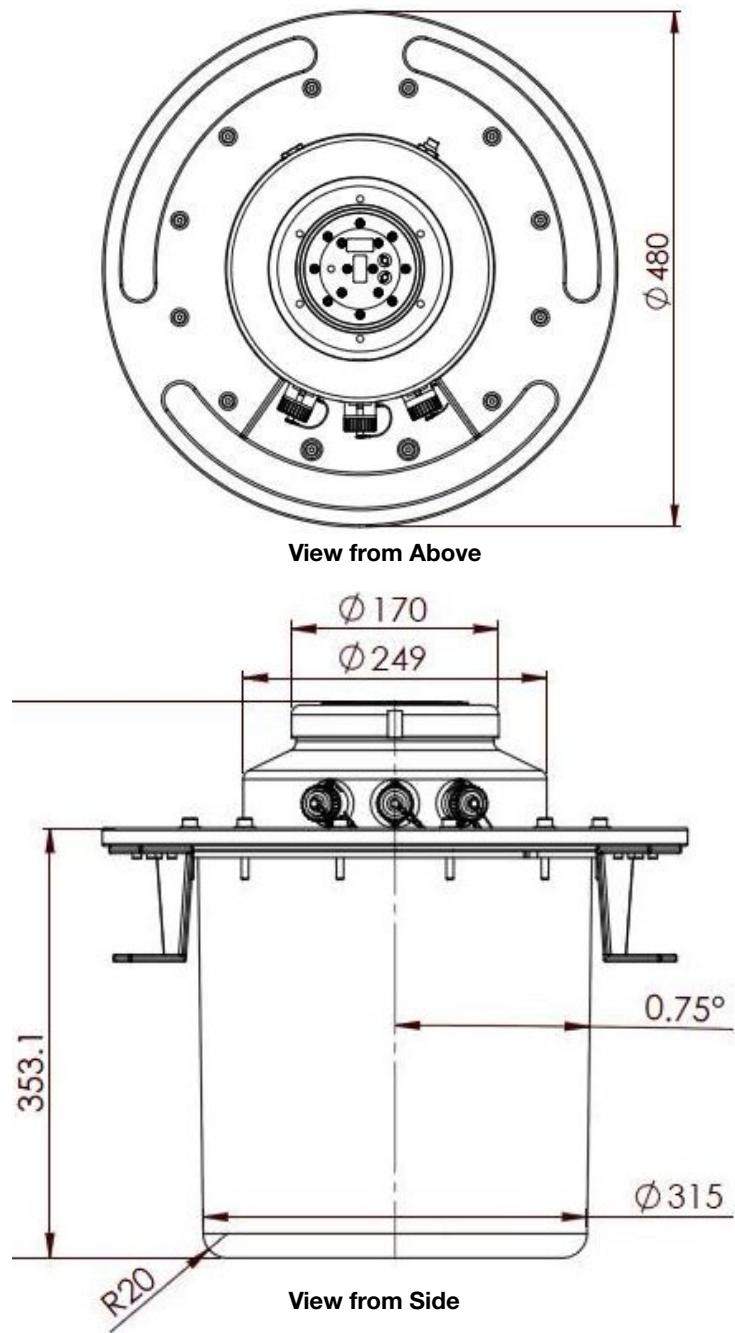


Vertical  
Clearance  
of 300mm



All dimensions in mm  
**NOT TO SCALE**

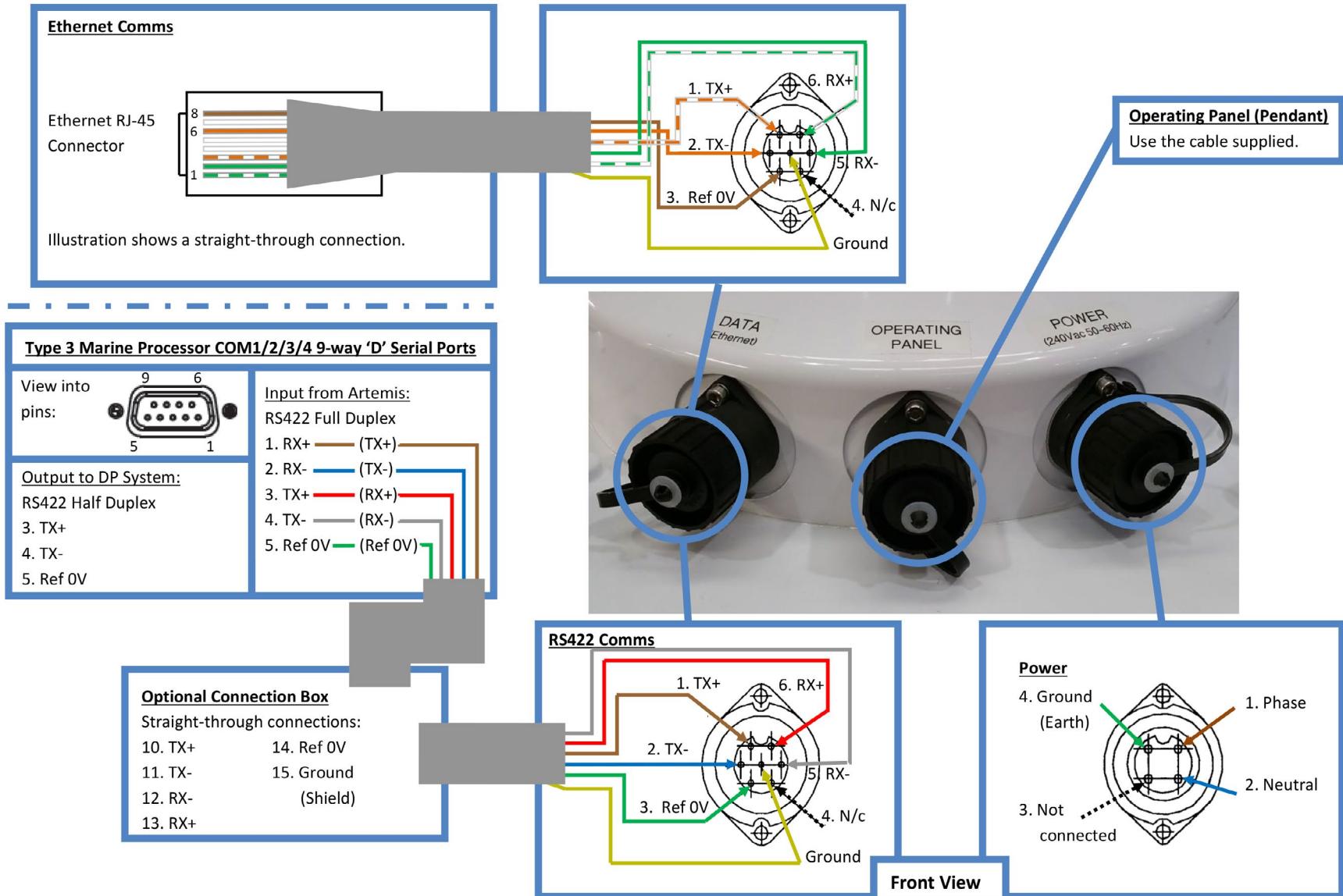
# Dimensions of Base Unit



Dimensions are expressed in mm

# External Connections to an Artemis Sensor

An Artemis sensor can communicate with the Control PC using either Ethernet or RS422. Refer to [Re-Configuring the Sensor Communications Type](#) on page 48 if you need to change from one type to the other.



# Installing a Mobile Station

## Site Requirements

When choosing a location for the Mobile Station:

- Avoid objects like masts, poles or even bigger structures in the direct vicinity or in front of the antenna; the Artemis positioning system requires free line of sight between the antennas of the two stations.
- Avoid mounting the antenna unit in a position in which its antenna is in the same horizontal plane as the ship's radar antenna.

For permanent installations the ideal mounting position is on top of the vessel's main mast. It is advised to fit a small platform directly under the mounting bracket to ease installation and service. The distance between the platform and the mounting bracket should be at least 0.8 m to be able to remove the bottom cover from the antenna unit.

For temporary installations other mounting positions can be considered.

If the system is used at short ranges, the Mobile Station and the Fixed Station or Beacon should be at roughly the same height. An exception here is a Beacon with a horn antenna. Since the horn antenna is looking down by 30°, the Beacon may be in a substantially higher position than a Mobile Station.

**! Do not mount the antenna unit too close to the mast. The antenna must be able to turn around freely without bouncing off the mast or other obstacles.**

## Mounting the Mobile Station

**! Take measures to prevent falling down from the mast or other heights. Use a safety harness.**

The antenna unit should be mounted:

- On a torsion-free stand or bracket.
- In a position where the antenna has preferably 360° around free line of sight.

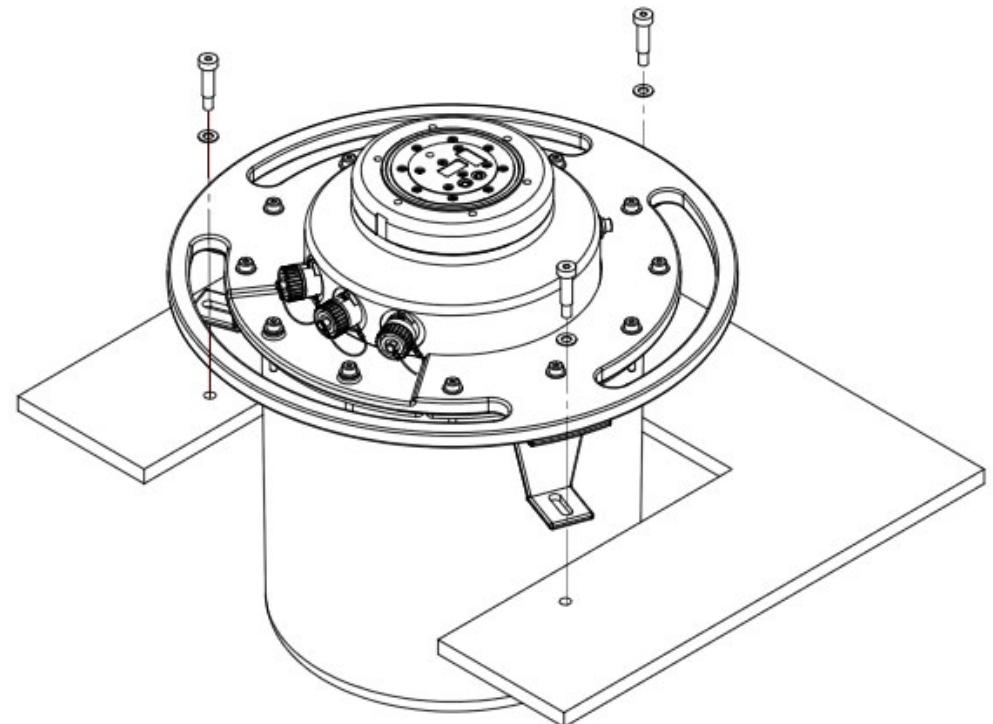
The antenna unit can be mounted in a 'U'-shaped bracket with three holes. The U-shape allows the unit to be slid in the bracket, rather than lowering it from above. In this way it takes less effort to install the antenna unit.

See [General Considerations](#) on page 13 for the dimensions of a 'U'-shaped mounting bracket.

**! To avoid damage to the antenna it is strongly recommended to mount the antenna unit in its bracket without the antenna, and mount the antenna afterwards.**

To mount the antenna unit in the bracket.

1. Slide the antenna unit in the mounting bracket.



**Note:** There is only one position in which the antenna unit fits in the bracket. This is the position where the connectors are facing when standing in front of the 'U'-shaped cut-out of the bracket.

2. Mount the antenna unit with three M8 bolts. Place a washer between the bolts' head and the mounting brackets of the unit. Use spring washers to secure the nuts. Preferably use stainless steel bolts, washers and nuts.

To Mount the antenna unit:

3. Position the antenna such, that the red mark on the antenna shaft of the antenna unit and the red mark on the flange of the antenna are aligned.

# Installing a Mobile Station (Continued)

- Mount the antenna with the six self-retaining M6 hexagon socket-head screws of the antenna, using a 5 mm hexagon key.

**Tightening the bolts if the antenna has not been properly positioned will damage the antenna flange of the antenna unit.**

## Closing the Vent

To avoid water from entering the antenna unit, the vent must be closed. This is done by turning the ventilation screw clockwise and tightening it with a 5 mm hexagon key.



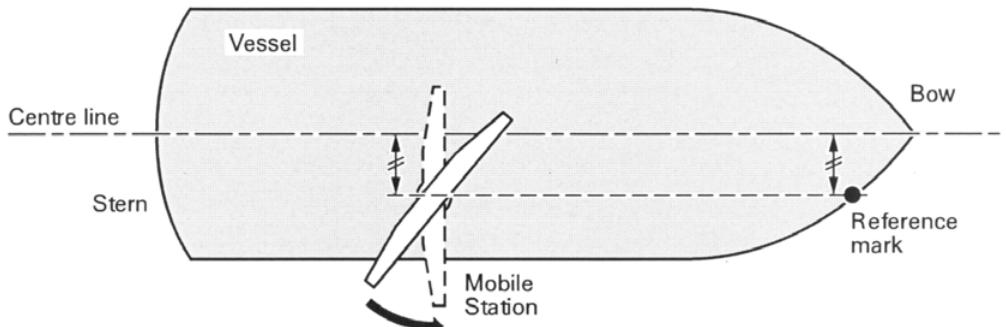
## Connecting the Antenna Unit

See [External Connections to an Atemis Sensor](#) on page 15

## Aligning the Mobile Antenna

The direction of the antenna mounted on the antenna unit is defined by the position of the main shaft of the antenna unit. Directly coupled to this main shaft is a precision shaft encoder which measures the actual position (angle) of the main shaft. The angle measured by the encoder should be related to a reference direction. To compute the vessel's heading from the angle of the Mobile antenna (the relative Mobile antenna bearing) and the azimuth as received from the Fixed Station, the Mobile antenna must be aligned with the centre line of the vessel.

If the Mobile Station is mounted at the centre line of the vessel, the bow or the stern can be used for alignment. The best alignment will be obtained when the reference object is far away. If the Mobile Station is installed off the vessel's centre line, the antenna must be aligned parallel to the centre line. In this case a reference mark must be defined (see below).

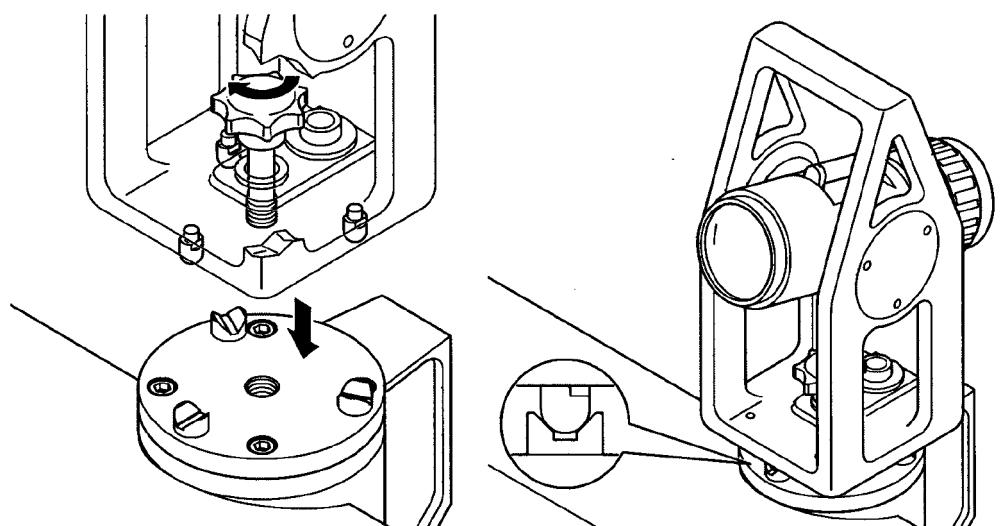


### Alignment of the Mobile antenna if the station is installed off the centre line

For the alignment the optional telescope is recommended. It is assumed that the station has been configured as a Mobile Station.

To align the Mobile antenna:

- If available, install the telescope on top of the antenna (see below).



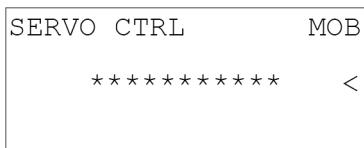
Mounting the optional telescope on top of the antenna

# Installing a Mobile Station (Continued)

2. Connect the operating panel to the antenna unit.
3. Switch the power to the Artemis Mobile station on and allow about 60 seconds for the station to start up.
4. Press Menu 1 (Operate) on the operating panel.
5. Turn the antenna roughly to the reference mark by making use of the **◀** and **▶** keys and the **0** key (to stop the antenna turning) of the operating panel.

Note: The rotational speed can be increased by pressing the **◀** or **▶** key twice in quick succession. This works only if the antenna is already turning.

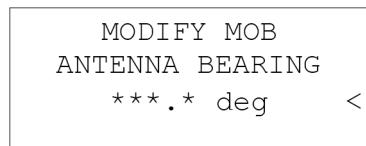
6. Press Menu 263 on the operating panel; the following display page appears:



7. Press Enter; the "<" starts blinking. Using the **▲▼** keys, select the value OPEN LOOP and press Enter to confirm.
8. Turn the antenna gently by hand until the telescope's vertical hairline is aligned with the reference mark.

**!Do not try to force the antenna by hand if it cannot be turned easily. This may damage the antenna and/or the turning mechanism. The antenna can only be turned by hand if the servo control mode is "OPEN LOOP" or if the operating mode (Menu 262) is IDL (idle) or STB (standby). In Configuration mode (Menu 5) the operating mode of the antenna unit is STB (standby) by default.**

9. Press Menu 231 on the operating panel; the following display page appears:



10. Press Enter; the cursor starts blinking.
11. Enter the bearing reference:
  - '0' if the antenna is aimed at the bow or at a reference mark near the bow of the vessel;
  - '180' if the antenna is aimed at the stern or at a reference mark near the stern of the vessel.
12. Press Enter; the bearing reference has now been set.
13. Press Menu 263 (Servo Control).
14. Press Enter; the "<" starts blinking. Using the **▲▼** keys, select the value NORMAL for the servo control mode and press Enter to confirm.
15. Press Menu; the Main Menu Mobile appears.

16. Disconnect the operating panel and replace the socket cap.
17. Remove the telescope from the antenna and store it in a safe place.

All other settings can be entered from the Artemis Service Interface running on the Control PC. If this PC is not (yet) available, these settings can also be entered from the operating panel.

# Installing a Fixed Station

## Site Requirements

When choosing a location for the Fixed Station:

- Avoid objects like poles or structures in the direct vicinity or in front of the antenna. Artemis requires line of sight between the antenna of the Fixed Station and the antenna of the Mobile Station.
- Avoid a relatively large land path in front of the Fixed Station.

Do not mount the antenna unit too close to any obstacles. The antenna must preferably be able to turn around freely without striking obstacles, which may damage the antenna. However, if the antenna cannot turn 360° around but can make a large enough sector to cover the work area, physical limits can be set to avoid contact with obstacles. These limits can be set with the operating panel. See [Setting Station Parameters with the Operating Panel](#) on page 21 for details.

**! The standard Artemis MK6 Fixed Station may not be installed in an explosion hazardous environment. For operation in a zone 2 hazardous environment, an optional pressurisation unit is available.**

## Influence of Antenna Heights

When choosing the height at which the Fixed Station is installed, the following aspects have to be considered:

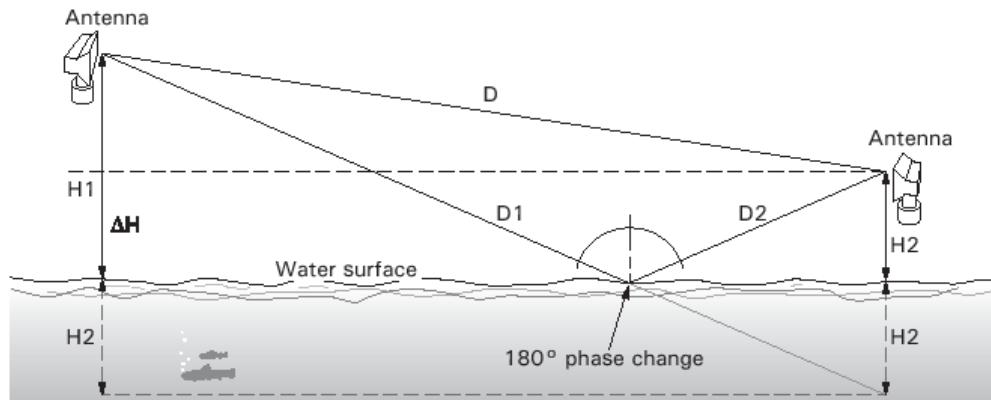
- The influence of the curvature of the earth when operating the system at long ranges. This is called the radio horizon. This influence tends not to be important for the Artemis Mk6 system because the maximum range of the system is generally less than the radio horizon, even with low antenna positions.
- Reflection of the microwaves off the surface of the water may cause interference with the direct signal. This can cause weakening or extinguishing of the signal. The positions at which this phenomenon is experienced are generally referred to as 'range holes', 'dip zones' or 'interference zones'

The position and width of these interference zones are dependent on:

- The antenna heights.
- The wavelength of the transmitted signal.

The strength of the interference depends on the distance between the transmitting and receiving antenna and the nature of the water surface. A smooth surface reflects the signal better than a choppy surface. The signal at the receiving antenna in the diagram below is extinguished when

$$D_1 + D_2 - D = n \lambda, \text{ where:}$$



**Reflection of microwaves against the water surface**

$D_1 + D_2 = \text{indirect path length.}$

$D = \text{direct path length.}$

$n = 1, 2, 3, \dots$

$\lambda = \text{wavelength.}$

Computer calculations show that the major interference zones are out of range of the Artemis system. They fall at a distance over 5 kilometres. Nevertheless, a general rule is that lower Fixed and Mobile Station positions are in favour, because:

- The interference zones fall closer and hence are easier to overcome because the signal strength is still relatively high.
- The interference zones are smaller than for higher antenna positions.

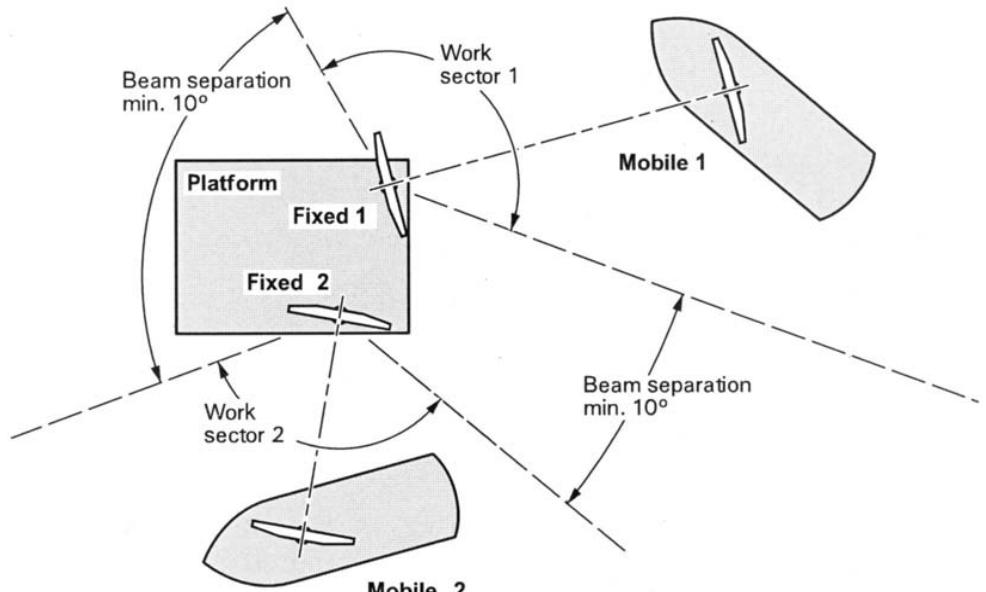
# Installing a Fixed Station (Continued)

## Operation of more systems in the same area

Operation of more than one system in the same area is possible in the following situations:

- Vessels have their own work sector and are not 'crossing' each other. See below.
- Vessels work in the same direction, but with different frequency pairs. See right.

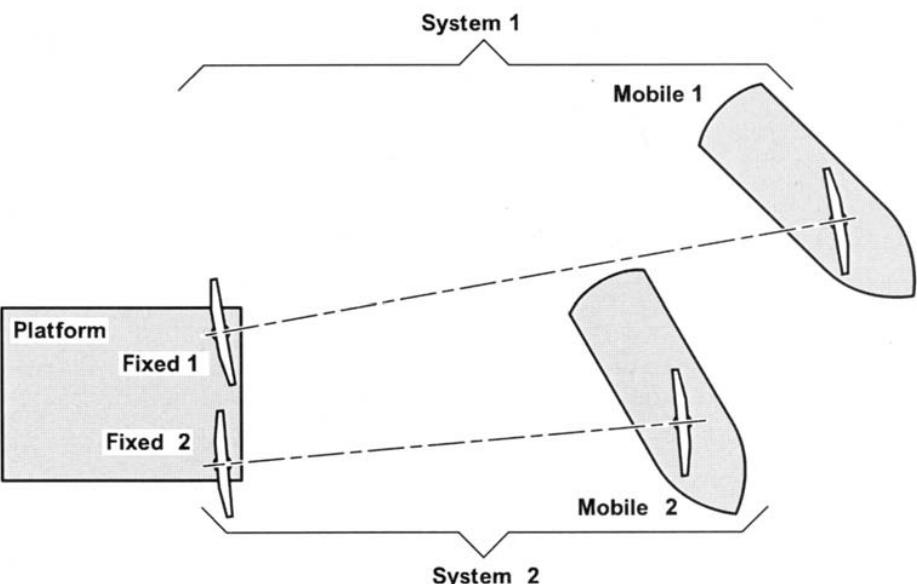
In the diagram below, the beam sectors do not come within 10° of each other and no interference will occur.



Two vessels using Artemis systems in different sectors

In the diagram to the right, the best combination of frequency pairs is pair 0 for system 1 and pair 1 for system 2, while these pairs give the largest difference between the frequencies of the Mobile Stations.

To avoid influencing each other, the two Fixed Stations should be located at least two metres from each other in the vertical plane and no more than six metres apart in the horizontal plane. The best position for two Fixed Stations working in the same direction is above each other with at least two metres difference in height.



Two vessels using Artemis systems working in the same direction

System 1			System 2		
Frequency pair	Frequency Mobile Station (MHz)	Frequency Fixed Station (MHz)	Frequency pair	Frequency Mobile Station (MHz)	Frequency Fixed Station (MHz)
0	9200	9230	1	9300	9270
2	9230	9200	3	9270	9300

Frequency separation of two Artemis systems

## Mounting the Fixed Station

See [Mounting the Mobile Station](#) on page 16.

## Closing the Vent

See [Closing the Vent](#) on page 17.

## Connecting the Antenna Unit

See [External Connections to an Artemis Sensor](#) on page 15.

# Installing a Fixed Station (Continued)

## Setting Station Parameters with the Operating Panel

- Station type
- Frequency pair
- Selective address code
- Physical end limits antenna
- Auto search scan limits antenna
- Reference azimuth
- Auto search
- Anti-icing
- Auto recovery
- Configuration protection
- Gyro compensation
- IP address

The quickest way to set these parameters is by going through the **configuration procedure**.

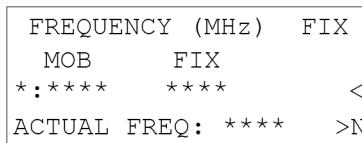
1. Switch the station on by switching the 230 VAC power to the antenna unit on.
- Note:** The ON/OFF switch on the operating panel is not functioning!
2. Wait about 60 seconds for the station to start up.
3. Press Menu; the MAIN MENU MOB, MAIN MENU FIX or MAIN MENU BCN appears.
4. Press 5 (CONFIG). The following page appears:



If the second line reads MOB or BCN:

5. Press Enter; the cursor (<) starts blinking.
6. Press the ▲ or ▼ key until it reads FIX.
7. Press Enter to acknowledge.

8. Press Next; the following page appears:

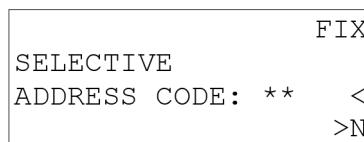


Where \*:\*\*\*\* \*\*\*\* can have the following values:

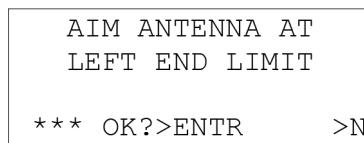
Frequency pair	Mobile	Fixed/Beacon
0	9200	9230
1	9300	9270
2	9230	9200
3	9270	9300

If the frequency pair showing is not the desired frequency pair:

9. Press Enter; the cursor (<) starts blinking.
10. Press the ▲ or ▼ key until the desired frequency pair shows.
11. Press Enter to acknowledge.
12. Press Next; the following page appears:



13. Press Enter; the cursor (<) starts blinking.
14. Using the numerical keys 0-9, enter the desired address code (0-63), i.e. the same address code the Mobile Station is set for and press Enter to confirm.
15. Press Next; the following page appears:



**Note:** If the antenna can rotate by 360°, this step can be skipped by pressing Next.

# Installing a Fixed Station (Continued)

16. Slowly and gently turn the antenna by hand counter clockwise to the point beyond which the antenna should not come, the so-called (physical) left end limit. Press Enter to set the left end limit, or press Next if no left end limit is to be set; the following page appears:

```
AIM ANTENNA AT  
RIGHT END LIMIT  
  
*** OK?>ENTR      >N
```

**! Do not force the antenna if it cannot be turned easily. This may damage the antenna and/or the antenna turning mechanism.**

The antenna can only be turned by hand if the servo control mode is OPEN LOOP or if the operating mode (Menu 262) is IDL (idle) or STB (standby). In Configuration mode (Menu 5) the operating mode of the antenna unit is STB (standby) by default.

Set the operating mode to STB manually (Menu 262) if the antenna cannot be turned by hand. Make sure to set the operating mode back to OPE (operate) afterwards.

17. Slowly and gently turn the antenna clockwise by hand to the point beyond which the antenna should not travel, the so-called (physical) right end limit.

**Note:** If the antenna can rotate 360° round, this step can be skipped by pressing Next.

18. Press Enter to set the right end limit, or press Next if no right end limit is to be set; the following page appears:

```
AIM ANTENNA AT  
LEFT SCAN LIMIT  
USE L/R KEYS  
*** OK?>ENTR      >N
```

19. Using the **◀** key and the 0 key to stop the antenna, turn the antenna to the left auto search scan limit of the antenna.

20. Press Enter to set the left auto search scan limit; the following page appears:

**Note:** The left auto search scan limit cannot lie beyond the configured left end limit. The antenna stops when the left end limit has been reached.

```
AIM ANTENNA AT  
RIGHT SCAN LIMIT  
USE L/R KEYS  
*** OK?>ENTR      >N
```

21. Using the **▶** key and the 0 key to stop the antenna, turn the antenna to its right auto search scan limit.

**Note:** The right auto search scan limit cannot lie beyond the configured right end limit. The antenna stops when the right end limit has been reached.

22. Press Enter to set the right auto search scan limit; the following page appears:

```
USE TELESCOPE TO  
AIM ANTENNA AT  
REFERENCE OBJECT  
OK?>ENTR      >N
```

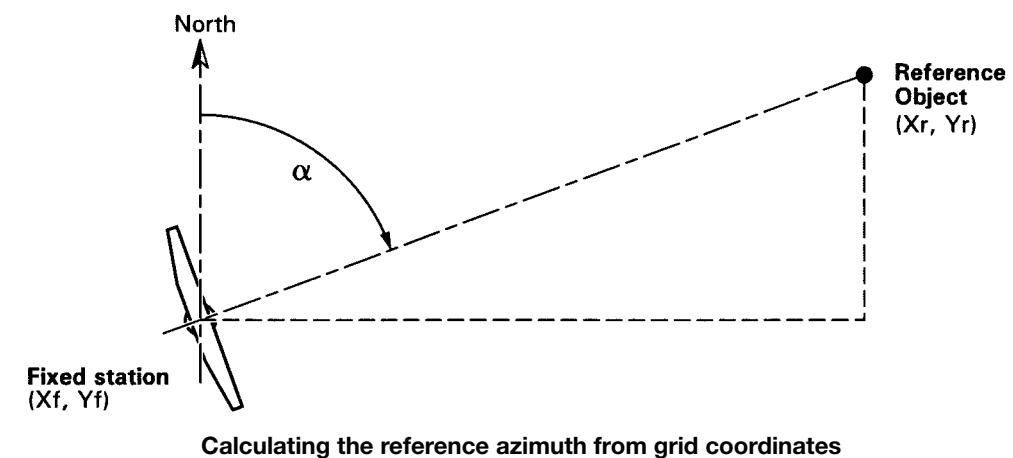
23. Press Next if no reference azimuth needs to be entered; the page at step 29 appears and continue from there. Otherwise:

24. If there is a suitable reference object of which the bearing with respect to north is known, and if the optional telescope is available, mount the telescope on the antenna.

**Note:** For absolute positioning it is important that the antenna unit is levelled, that an accurate reference azimuth is entered and that the exact position of the Fixed Station is known.

If the system is used for dynamic positioning, then relative positioning is generally all that is required. If use is made of a reference object: the further away this reference object is, the more accurate the referencing will be. The reference object should, however, still be visible with the telescope. If grid coordinates of the reference object and the position at which the Fixed Station is installed are known, then the reference azimuth  $\alpha$  can easily be calculated (see below). The reference azimuth  $\alpha$  is calculated as follows:

$$\alpha = \arctan \{(X_r - X_f)/(Y_r - Y_f)\}$$



# Installing a Fixed Station (Continued)

25. Slowly and gently turn the antenna by hand towards the reference object.
26. Look through the telescope and turn the antenna gently by hand until the telescope's vertical hairline is aligned with the reference object.
27. Press Enter; the following page appears:

KEY-IN
REFERENCE AZIM
*** . *** <
>N

28. Key-in the reference azimuth and press Enter; the reference azimuth has now been set.

**Note:** When pressing Enter the display may show a slightly different value for the last digit entered. This is caused by the fact that the resolution of the shaft encoder is 0.003° and so less than 0.001°.

29. Press Next; the following page appears:

AUTOSEARCH: OFF <
ANTI-ICING: OFF
>N

30. Press Enter; the cursor(<) starts blinking.

31. Press the ▼ key if the AUTO SEARCH mode is to be switched on; the word OFF changes to ON, and then press Enter to confirm. If AUTO SEARCH is to remain OFF, press the ▼ key until it reads OFF and press Enter.
32. Press the ▼ key to go to the parameter ANTI-ICING. ANTI-ICING is OFF by default.
33. Press Enter if automatic switching-on of the antenna heating is desired; the cursor starts blinking. Otherwise, press Next and continue with step 37.
34. Press the ▼ key; the word OFF changes to ON, and then press Enter to confirm.

**Note:** Setting the automatic switching-on of the antenna heating to ON for an explosion proof station will have no effect, i.e. will not switch the heating on. The antenna unit of an explosion proof station has no Anti-Icing Supply (AIS) module installed.

35. Press Next; the following page appears:

AUTO RCVERY: ON <
CONF.PRTCTED: ON
GYRO CMPSAT: OFF
>N

36. Press Enter if AUTO RECOVERY (default ON) is to be set to OFF (not recommended); press the ▼ key to change ON to OFF and press Enter to confirm.

37. Press the ▼ key; the cursor points at the parameter CONF.PRTCTED (configuration protected).
38. Press Enter if the change of settings by the counter station is allowed, then press the ▼ key to change ON to OFF and press Enter again to confirm. Otherwise, press the ▼ key to go to the parameter GYRO CMPSAT (gyro compensation).
39. Press Enter and then press the ▼ key to change OFF to ON if the measured azimuth is to be compensated by a gyrocompass, if for example the Fixed Station is installed on a semi-submersible and a gyrocompass is used to account for the rotation of the semi-submersible.

**Note:** The compensation of the azimuth by a gyrocompass requires that the antenna unit is connected to a control or client PC to which the gyrocompass can be connected.

Otherwise:

40. Press Next; the following page appears:

IP ADDRESS *** . *** . *** . *** <
MAC ADDRESS ** : ** : ** : ** : ** : ** >N

41. Press Enter if you wish to change the IP address; the cursor (<) starts blinking.
42. Using the numerical keys 0-9, enter the required IP address and press Enter to confirm.
43. Press Next; the following page appears:

END OF FIX CONFIGURATION >M
-----------------------------------

44. Press Menu; the Main Menu Fix appears and the station goes into operation.

**Note:** If the servo control mode was set to OPEN LOOP or the operating mode was set to STANDBY during the configuration procedure, then the servo control mode (Menu 263) must be set back to NORMAL or the operating mode (Menu 262) must be set back to OPE (operate).

If the auto search function was switched on, the antenna will start scanning between the left and right auto search scan limits until the station picks up signal from a Mobile Station set for the same frequency pair and the same selective address code. The antenna will lock onto the antenna of the Mobile Station and azimuth and distance will be available at the Mobile Station.

If the parameter CONF.PRTCTED was set to OFF, Fixed Station parameters can be modified remotely from the Control PC connected to the mobile station, using the Artemis Service Interface.

If no other Fixed Station parameters need to be set or changed using the operating panel, the operating panel may now be disconnected.

**Screw the cap of the operating panel socket back on after disconnecting the operating panel.**

# Installing a Beacon

---

## Site requirements

When choosing a location for the Beacon:

- The foreground of the beacon must be free from obstacles like masts and poles.
- Avoid a relatively large land path in front of the beacon.
- The height of the beacon must preferably be the same as the height of the Mobile Station onboard the vessel. If the beacon is installed at a significantly higher position, the use of a beacon horn antenna type ATH-010B is recommended.

**! The beacon may not be installed in an explosion hazardous environment. For operation in a zone 2 hazardous environment, an optional pressurisation unit is available.**

## Mounting the Beacon

**! Take measures to prevent falling down from the mast or other heights. Use a safety harness.**

The beacon should be mounted:

- On a rigid stand or bracket.
- Ideally in a position where the antenna has a 360° clear line of sight if an omni-directional antenna is fitted. For the other antenna types a sector of approx. 140° clear line of sight, which should include the work area, is adequate.

The beacon can be mounted in a 'U'-shaped bracket with three holes. See [General Considerations](#) on page 13 for the required dimensions. The U-shape allows the beacon to be slid in the bracket, rather than lowering it from above. In this way it takes less effort to install the beacon.

To mount the beacon in the bracket:

1. Slide the beacon in the mounting bracket.
- Note:** There is only one position in which the beacon fits in the bracket. This is the position where the connectors are facing when standing in front of the 'U'-shaped cut-out of the bracket.
2. Secure the beacon with three M8 bolts. Place a washer between the bolts' head and the mounting brackets of the unit. Use spring washers to secure the nuts. Preferably use stainless steel bolts, washers and nuts.

To mount the antenna on the beacon:

1. Position the antenna such, that the red mark on the beacon and the red mark on the mounting flange of the beacon antenna are aligned.
2. Mount the antenna with the four self-retaining M6 hexagon socket-head screws of the antenna, using a 5 mm hexagon key.

**! Tightening the bolts if the antenna has not been properly positioned will damage the antenna flange of the beacon.**

## Closing the Vent

See [Closing the Vent](#) on page 17.

## Connecting the Beacon

See [External Connections to an Artemis Sensor](#) on page 15.

# Installing a Beacon (Continued)

## Setting Beacon Parameters with the Operating Panel

The setting of the following station parameters is described:

- Station type
- Frequency pair
- Selective address code
- Auto recovery
- Configuration protection
- IP address

The quickest way to set these parameters is by going through the configuration procedure.

1. Switch on the 230 VAC power to the antenna unit.

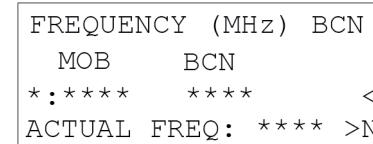
**Note:** The ON/OFF switch of the operating panel is not functioning!

2. Wait about 60 seconds for the station to start up.
3. Press Menu; the MAIN MENU MOB, MAIN MENU FIX or MAIN MENU BCN appears.
4. Press 5 (CONFIG). The following page appears:



If the second line reads MOB or FIX:

5. Press Enter; the cursor (<) starts blinking.
6. Press the ▲ or ▼ key until it reads BCN.
7. Press Enter to acknowledge.
8. Press Next; the following page appears:

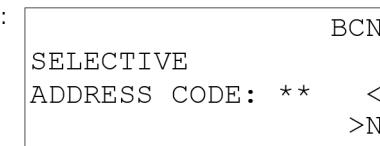


Where \*:\*\*\*\* \*\*\*\* can have the following values:

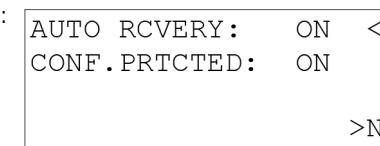
Frequency pair	Mobile	Fixed/Beacon
0	9200	9230
1	9300	9270
2	9230	9200
3	9270	9300

If the frequency pair showing is not the desired frequency pair:

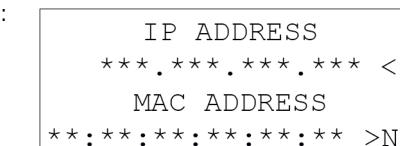
9. Press Enter; the cursor (<) starts blinking.
10. Press the ▲ or ▼ key until the desired frequency pair shows.
11. Press Enter to acknowledge.
12. Press Next; the following page appears:



13. Press Enter; the cursor (<) starts blinking.
14. Using the numerical keys 0-9, enter the desired address code (0-63), i.e. the same address code configured for the Mobile Station.
15. Press Enter to set the address code.
16. Press Next; the following page appears:



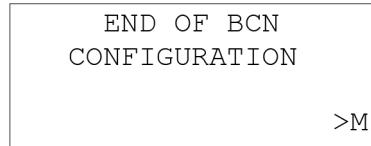
17. If AUTO RECOVERY (default ON) is to be set to OFF (not recommended): press Enter, press the ▼ key to change ON to OFF and press Enter to confirm.
18. Press the ▼ key; the cursor points at the parameter CONF.PRTCTED (configuration protection).
19. Press Enter if the change of settings by the counter station is allowed, then press the ▼ key to change ON to OFF and press Enter again to confirm.
20. Press Next; the following page appears:



# Installing a Beacon (Continued)

---

21. Press Enter if you wish to change the IP address; the cursor (<) starts blinking.
22. Using the numerical keys 0-9, enter the required IP address and press Enter to confirm.
23. Press Next; the following page appears:



24. Press Menu; the Main Menu BCN appears and the beacon goes into operation.

As soon as the Beacon picks up signal from a Mobile Station set at the same frequency pair and address code the antenna of the Mobile Station will lock onto the Beacon and distance to the Beacon will be available at the Mobile Station.

If the parameter CONF.PRTCTED was set to OFF, Beacon parameters can be modified remotely from the Control PC connected to the Mobile Station using the Artemis Service Interface.

If no other Beacon parameters need to be set or changed using the operating panel, the operating panel may now be disconnected.

**! Screw the cap of the operating panel socket back on after disconnecting the operating panel.**

# Installing the Control PC

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Before setting up the Control PC, refer to the relevant installation sheet(s) for dimensions and connection information:

For a Type 3 Marine Processor:

- **94-0465-4 Type 3 Marine Processor and Display Installation Sheet**

For a Hatteland Panel PC:

- **94-0466-4 Hatteland Panel PC Installation Sheet**

The following pages explain how to install the client software:

- *Installing Artemis Control Software onto a Type 3 Marine Processor* (page 28)
- *Installing Artemis Control Software onto other Types of Computer* (page 29)

# Installing Artemis Control Software onto a Type 3 Marine Processor

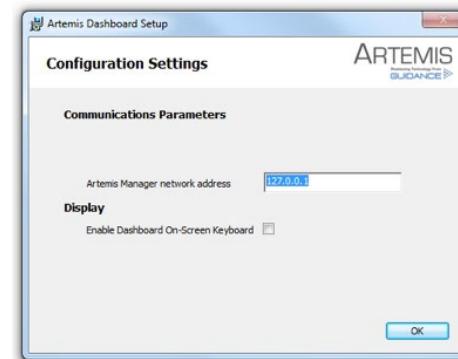
This section explains how to install the Artemis control software onto a Type 3 Marine Processor. If this Marine Processor has been supplied by Guidance Marine, it will have been shipped with the control software already installed. However, it may be necessary to upgrade the software with a newer version. If so, first uninstall the existing software.

## To Uninstall the Artemis Control Software

1. Click on Start > All Programs > Accessories > System Tools > Control Panel.  
*The Control Panel screen is displayed.*
2. Click on Programs and Features.
3. In the list of installed programs, right click on Artemis **Dashboard**  
(on a touchscreen monitor, touch and hold).
4. Click on the **Uninstall** option in the context menu.
5. Click on the **Uninstall** button on the Artemis Dashboard Setup window.
6. When prompted, click on the **Restart** button.  
*After the restart, the Artemis Dashboard Setup window reappears.*
7. When prompted, click on the Restart button.  
*The uninstallation process for the Dashboard is complete following the restart.*
8. Repeat steps 3..7 for the **Artemis Manager** and the **Artemis Service Interface**.

## To Install the Artemis Control Software

1. Locate the files **ArtemisDashboardSetup.exe**, **ArtemisManagerSetup.exe** and **ArtemisServiceInterfaceSetup.exe** on the USB memory stick on which they were supplied.
2. Double-click on the **ArtemisDashboardSetup.exe** file.  
*The Welcome screen is displayed.*
3. Click on the **Install** button.
4. When prompted, click on the **Restart** button.  
*The Welcome screen is displayed.*
5. If required, change any of the settings from the default values shown.
6. Click on the **OK** button
7. When prompted, click on the **Restart** button.  
*The installation process for the Dashboard is complete following the restart.*
8. Repeat steps 2..7 for **ArtemisManagerSetup.exe** and **ArtemisServiceInterfaceSetup.exe**.



# Installing Artemis Control Software onto other Types of Computer

---

This section explains how to install the Artemis control software onto a computer running Windows 7 that does not have a File-Based Write Filter. This PC should have the following installed:

- **Full .NET Framework 4.0 or later**
- **Visual C++2012 Redistributable (x86)**

If this PC has been supplied by Guidance Marine, it will have been shipped with the control software already installed. However, it may be necessary to upgrade the software with a newer version. If so, first uninstall the existing software.

## To Uninstall the Artemis Control Software

1. Click on Start > All Programs > Accessories > System Tools > Control Panel.  
*The Control Panel screen is displayed.*
2. Click on Programs and Features.
3. In the list of installed programs, right click on Artemis Dashboard  
(on a touchscreen monitor, touch and hold).
4. Click on the **Uninstall** option in the context menu.
5. Click on the **Uninstall** button on the Artemis Dashboard Setup window.
6. Repeat steps 3..5 for the **Artemis Manager** and the **Artemis Service Interface**.

## To Install the Artemis Control Software

1. Locate the files **ArtemisDashboardSetup.exe**, **ArtemisManagerSetup.exe** and **ArtemisServiceInterfaceSetup.exe** on the USB memory stick on which they were supplied.
2. Double-click on the **ArtemisDashboardSetup.exe** file.  
*The Welcome screen is displayed.*
3. Click on the **Install** button.
4. If required, change any of the settings from the default values shown.
5. Click on the **OK** button.
6. Repeat steps 2..5 for **ArtemisManagerSetup.exe** and **ArtemisServiceInterfaceSetup.exe**.

**Note:** The Manager and Service Interface programs should only be installed onto one computer in a system – the Artemis Control PC. The Dashboard may be installed onto multiple computers.

# Configuring the Artemis System

---

This section explains how to use the Service Interface program to set up the Artemis system.

It contains the following pages:

- [Using the Artemis Service Interface](#) (page 31)
- [Operational Overview](#) (page 32)
- [Adding and Selecting a Remote Station](#) (page 33)
- [Changing the Network Configuration](#) (page 34)
- [Configuring the DP Output](#) (page 35)
- [Configuring System Parameters](#) (page 36)
- [Information Tabs](#) (page 37)

The Service Interface is usually connected to the mobile station of an Artemis system, but it can also be connected to a fixed station or beacon. We will therefore use the term “local station” to refer to the antenna unit to which the Service Interface is connected and “Remote Station” to refer to the other unit, without implying which is mobile and which is fixed.

# Using the Artemis Service Interface

The Service Interface is a tool for configuring the Artemis system.

## To open the Service Interface

1. Ensure that the Antenna Unit is powered on and connected to the control computer.
2. Double-click on the Service Interface icon: 

(Alternatively, run from the Start menu:

Start > All Programs > Guidance Marine Ltd > Artemis > Artemis Service Interface)



## Screen Layout of the ASI

The upper part of the ASI window contains fields relating to communications, as follows:

**Artemis Manager** - The state of the connection between the ASI and the Artemis Manager ("Connected" or "Not Connected").

**Take Command / Relinquish Command** - This button allows the user to toggle the command mode of the ASI between In Command and Monitoring.

**In Command Indicator** - This red block symbol is visible when the ASI is In Command mode.

**Sensor** - The state of the connection between the Artemis Manager and the sensor ("Connected", "Not Connected" or "Unknown").

**Validator** - Shows whether an Artemis Validator unit is connected to the Manager ("Connected" or "Not Connected").

The remainder of the CSI screen is occupied by one of several tab areas.



# Operational Overview

## The Navigation Tab

The Navigation tab gives an overview of the operational state of the system: the direction in which the local unit is transmitting, whether it is locked to a Remote Station, and - if so – the detected position and signal level. It also shows the configured scan limits and end limits of the local station. If the system is not locked, it allows the user to search for the Remote Station either manually or automatically.

The Navigation tab contains the following fields and controls:

**Azimuth** - The horizontal angle of the Remote Station, relative to North or another reference direction.

**Bearing** - The horizontal angle of the Remote Station relative to the local station.

**Heading** - The direction of the vessel relative to the reference direction used to define Azimuth.

**Range** - The distance between the local and Remote Stations.

**Signal Level** - The strength of the signal received from the Remote Station.

**Local Station Model** – The version of the local Antenna Unit (e.g. Mk 6).

**Station Type** – Whether the local station is Mobile or Fixed.

**Operating Mode** –The current state of the local sensor (Operating, Standby or Idle).

**Scan Limit Left and Scan Limit Right** - These define the horizontal sector in which the local unit normally operates, and through which the antenna rotates when in Auto-Search mode (see below). The Scan Left Limit sets the anti-clockwise edge of this sector and the Scan Right Limit sets the clockwise edge, as represented by the dark blue area on the Bird's Eye View.

**Rotate Sensor** - Click on the left-arrowhead to move the antenna in an anti-clockwise direction (repeat as necessary). Click on the right-arrowhead to move clockwise.

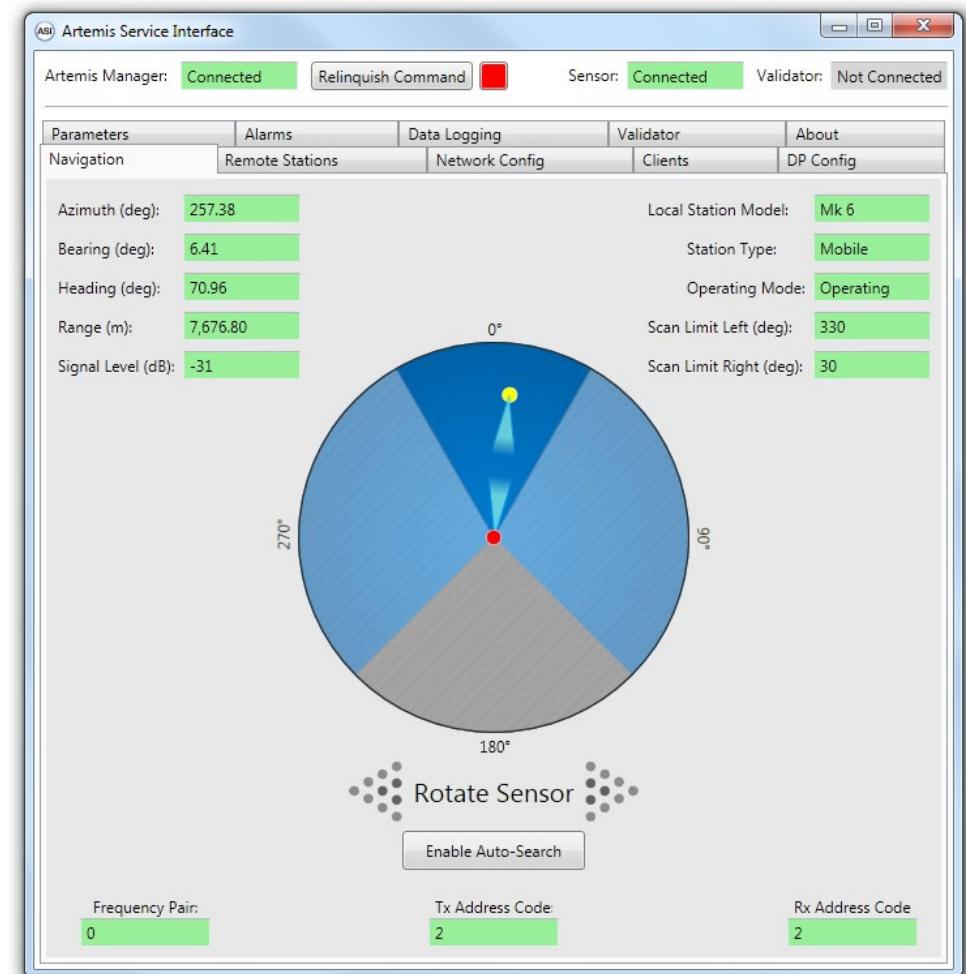
**Enable Auto-Search** - After clicking this button, the antenna rotates to and fro between the configured scan limits until it locks onto the Remote Station, or until **Disable Auto-Search** is clicked.

**Frequency Pair** - The fixed and mobile stations each transmit at a given frequency within the 9200-9300 MHz band. These frequencies are selected as a pair and if two Artemis systems are to be used in close proximity they should be allocated different frequency pairs, in order to avoid interference.

**Tx Address Code** - The address code being transmitted by the local station (0-63).

**Rx Address Code** - The address code received from the Remote Station (0-63).

Note also that a grey area on the Bird's Eye View represents a sector into which the antenna cannot rotate due to a physical obstruction. This is configured by means of the parameters **End Limit Left** and **End Limit Right**.



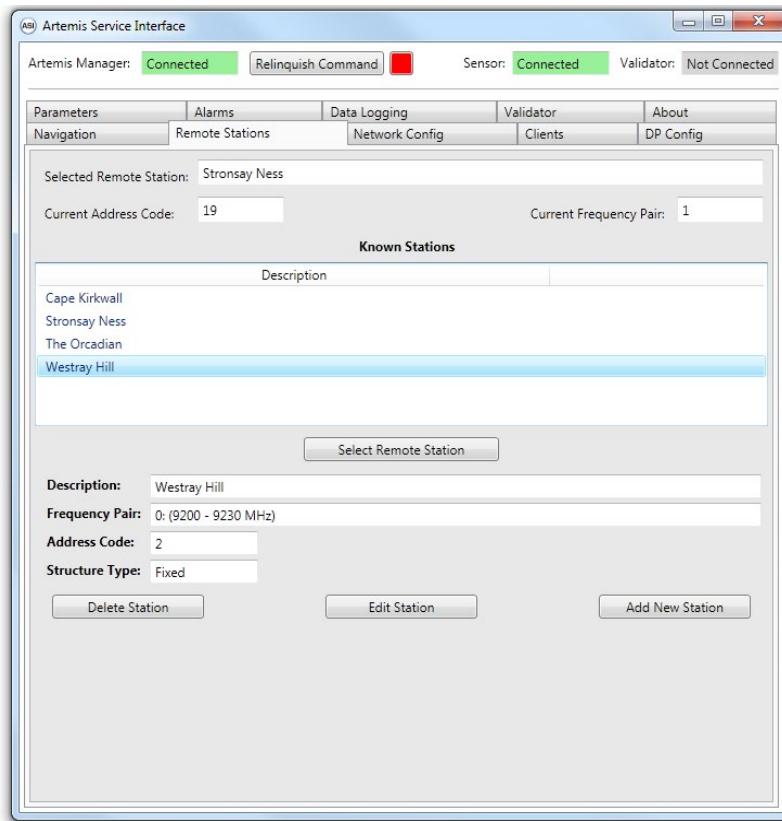
# Adding and Selecting a Remote Station

The Service Interface is used to maintain a list of Remote Stations which the local station may encounter. One of the Remote Stations is then selected to be “active”, which makes it the only station which the local station can lock onto.

## To Add a Remote Station

1. Click on the **Remote Stations** tab of the Service Interface.
2. Click the **Take Command** button if not already done.
3. Click on **Add New Station**.
4. Enter a name for the Remote Station in the **Description** field.
5. Select a **Frequency Pair**, **Address Code**, the model of the Remote Station and whether it is **Floating** or **Fixed**.
6. Click the **Add** button.

*The name of the new station is now included in the list of known Remote Stations.*



## To Select a Remote Station

1. Click on one of the entries in the **Known Stations** list.
2. Click the **Select Remote Station** button.

The name of the selected station now has a grey background.

## To Edit a Remote Station

1. Click on one of the entries in the **Known Stations** list.
2. Click **Edit Station**.
3. Change parameters as required.
4. Click **Apply** to save the changes or **Cancel** to discard.

## To Delete a Remote Station

1. Click on one of the entries in the **Known Stations** list.
2. Click **Delete Station**.
3. On the confirmation dialog, select **OK**.

# Changing the Network Configuration

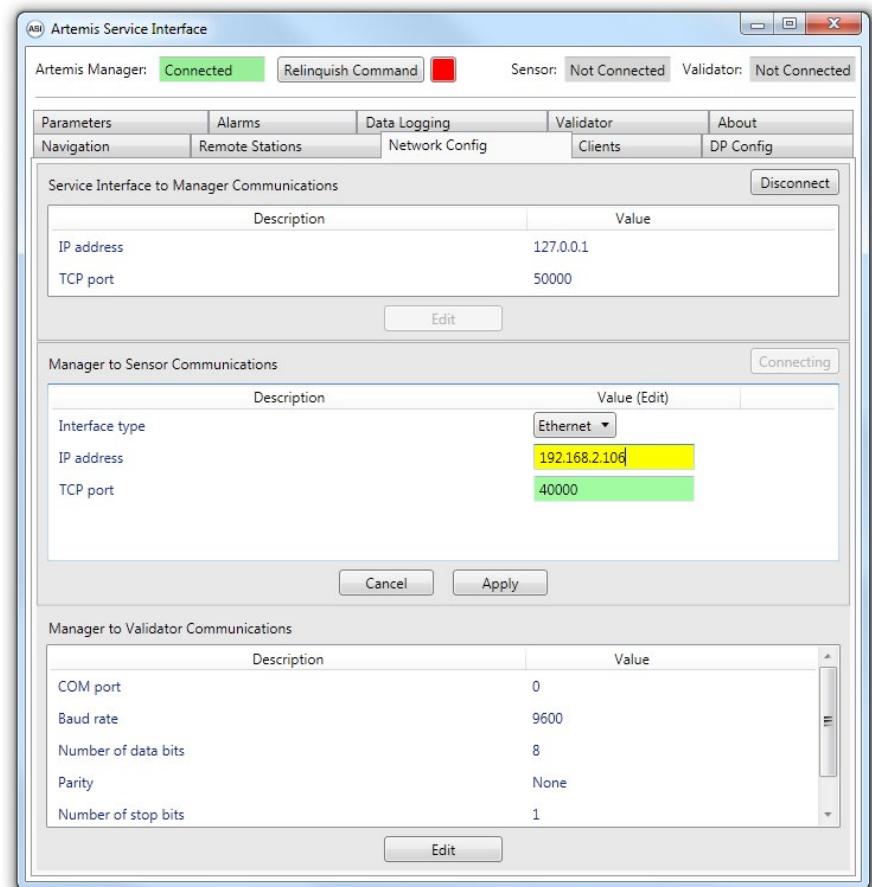
Three communication links can be configured from the Service Interface:

- Service Interface to Manager
- Manager to Sensor (Antenna Unit)
- Manager to Validator (when available)

## To Make Changes to the Network Configuration

1. Click on the **Network Config** tab of the Service Interface.
2. Click the **Disconnect** button for the type of communication that you wish to modify.
3. Click the **Edit** button.
4. Alter the settings as required.
5. Click **Apply** to save the changes or **Cancel** to discard.

*If the Manager is running on the same PC as the Service Interface, enter 127.0.0.1 as the IP address.*

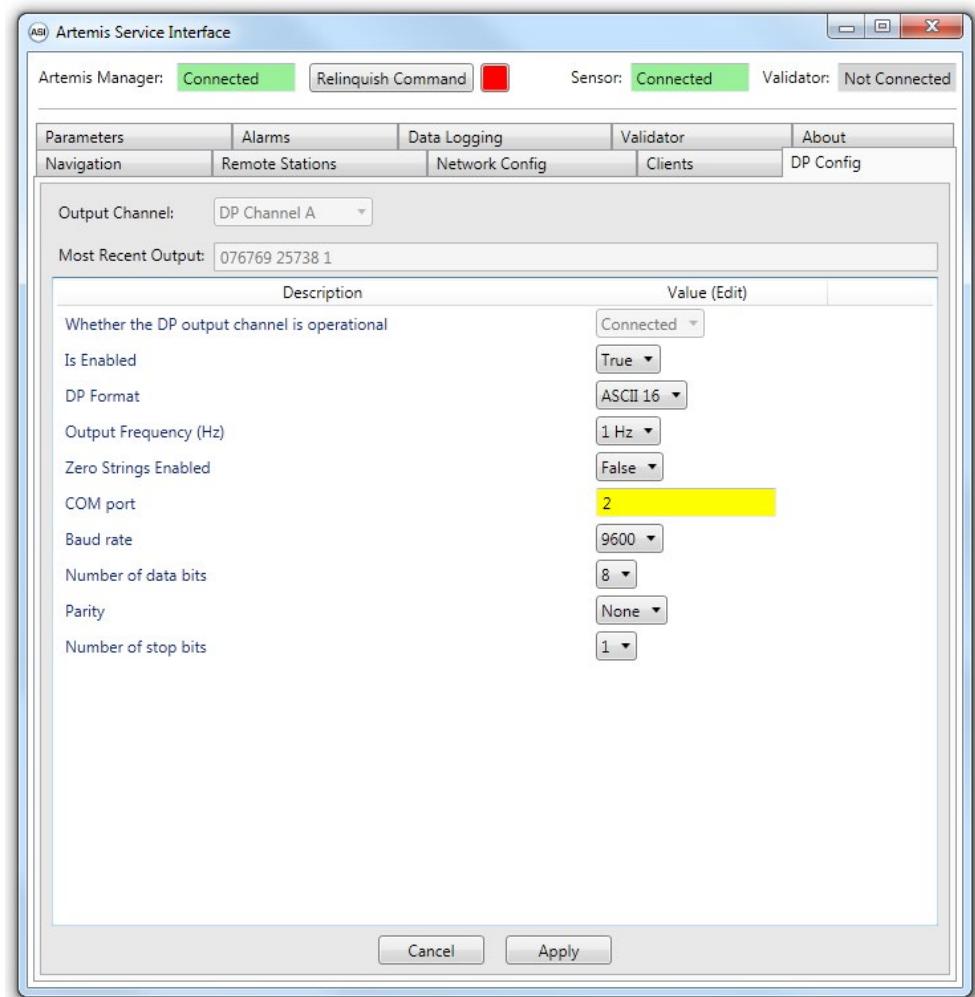


# Configuring the DP Output

The main purpose of an Artemis system is to provide positioning data to the DP (Dynamic Positioning) system of a marine vessel. The Service Interface can configure up to four DP output channels from the PC running the Manager service.

## To Configure a DP Output Channel

1. Click on the **DP Config** tab of the Service Interface.
2. Click the **Take Command** button if not already done.
3. Select Output Channel A, B, C or D.
4. Click **Edit**.
5. Click **Apply** to save the changes or **Cancel** to discard.



# Configuring System Parameters

The Parameters tab of the Service Interface displays a large number of settings and variables, which define how the system behaves and describe its current state. They are arranged in groups (Hardware, Operational, etc) and some of the parameters can be edited from the Service Interface.

## To Edit System Parameters

1. Click on the **Parameters** tab of the Service Interface.
2. Click the **Take Command** button if not already done.
3. Select the required **Parameter Group**.
4. Click **Edit**.
5. Change parameter values as necessary.

*Note the colour coding of the Value field:*

*Green - An editable parameter that has not been changed*

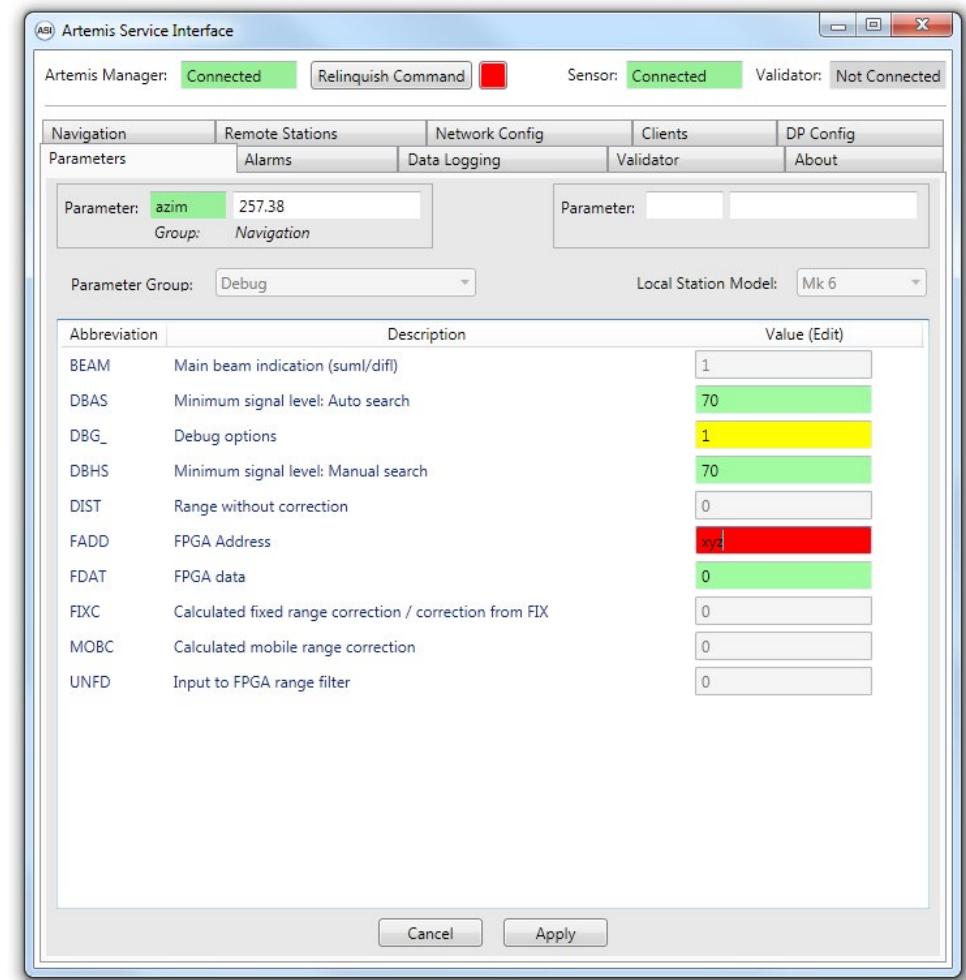
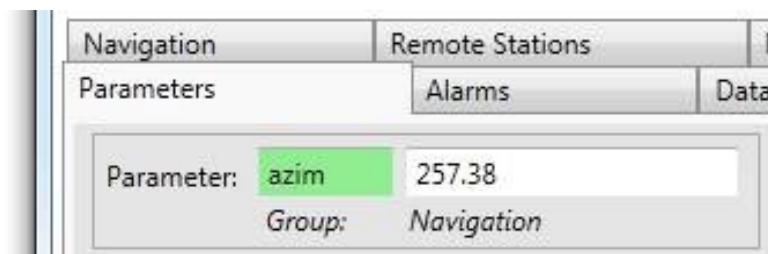
*Yellow- Changed to a valid value*

*Red – Changed to an invalid value*

*Grey – Parameter cannot be edited*

6. Click **Apply** to save the changes or **Cancel** to discard.

If, whilst editing parameters from one group, you wish to monitor one or two parameters from other groups, this can be done using the individual **Parameter** fields near the top of the page. Enter the abbreviation of the required parameter and its current value will be displayed alongside.

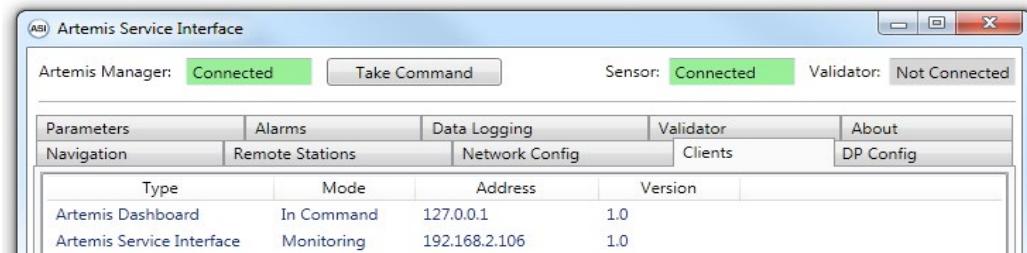


# Information Tabs

The Service Interface contains several tabs that contain read-only information about the Artemis system.

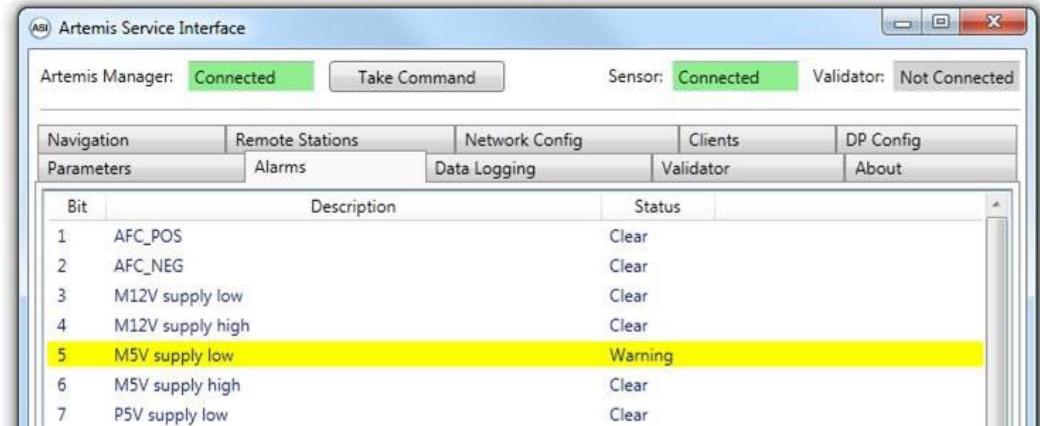
## The Clients Tab

This gives the IP Address and Version Number of the Service Interface itself and any Dashboards currently connected. It also shows which client – if any – has control of the local station.



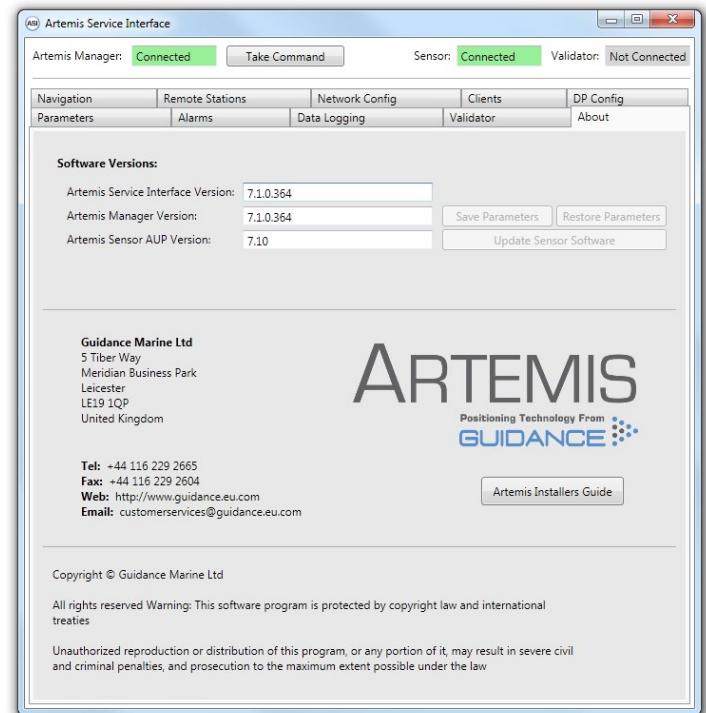
## The Alarms Tab

This contains a list of possible alarms and the current status of each:



## The About Tab

Contains version information for the Artemis Control Software, contact details for Guidance Marine Ltd and buttons for updating the software on the Antenna Unit and for opening an on-screen version of this Installer's Guide.



**Note: The Save Parameters, Restore Parameters and Update Sensor Software buttons are enabled only if there is a serial connection between the Artemis Manager and the sensor.**

# Configuring Artemis Dashboard

---

This section explains how to set up the Artemis Dashboard software.

It contains the following pages:

- [Start Up and Shut Down](#) (page 39)
- [Using the On-Screen Keyboard](#) (page 40)
- [Display Options](#) (page 41)

# Start Up and Shut Down

## Start Up

### To Start Artemis Dashboard

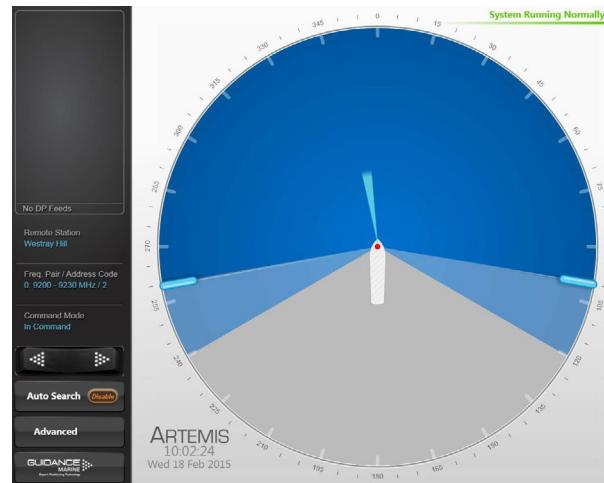
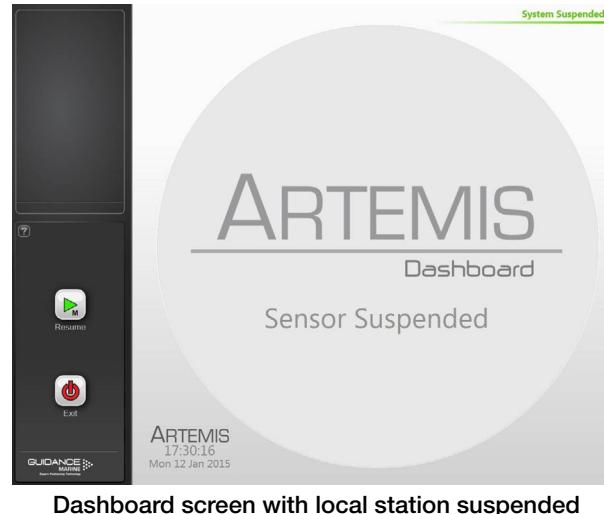
1. Ensure that the local station is powered on.
2. Double-click on the Artemis Dashboard icon. **(A)**  
(Or run the Artemis Dashboard application from:  
**Start > All Programs > Guidance Marine Ltd > Artemis > Artemis Dashboard**).
3. The Dashboard display screen will appear. If the sensor is currently suspended, the main part of the screen will be greyed out. Click on the Resume button in the side bar in order for the sensor to begin transmitting and for the results to be displayed on the screen. If the sensor was already transmitting, any Remote Station to which it is locked will be displayed straight away.

## Shut Down

### To Suspend, Exit or Reset Communications

Click on the Guidance button in the lower left corner of the screen. This reveals the Guidance Home Menu, which contains different sets of buttons depending whether the Dashboard is in command, and whether it is tracking a Remote Station. Buttons are explained below.

- **Disconnect** - Ceases communications between the local station and the Dashboard computer. The local station is unaffected and if tracking is in progress, it will continue.
- **Exit** - Closes the Dashboard without affecting the sensor.
- **Suspend** – Only available when the Dashboard is in command and the local station is not tracking a Remote Station. Places the local station into a ‘sleep mode’ in which it ceases to transmit. The Dashboard remains active and connected to the sensor ready for operations. This mode is suitable for use when travelling between locations.
- **Suspend and Exit** – Same as Suspend, except that it closes the Dashboard program.



# Using the On-Screen Keyboard

The Artemis Dashboard provides an On-Screen Keyboard (OSK), which allows text to be input using only a trackball pointer or touch screen.

## To enable the on-screen keyboard

The OSK will already be enabled if you selected this option during installation of the Dashboard. Otherwise, the OSK can be enabled and disabled by clicking **F11** or by clicking **Enable On Screen Keyboard/Disable On Screen Keyboard** on the Dashboard Hotkeys menu.

## To use the on-screen keyboard

Simply click on any text entry field and the OSK will pop-up ready for use:



Click on the necessary keys on the on-screen keyboard using your mouse or by tapping the touch screen.

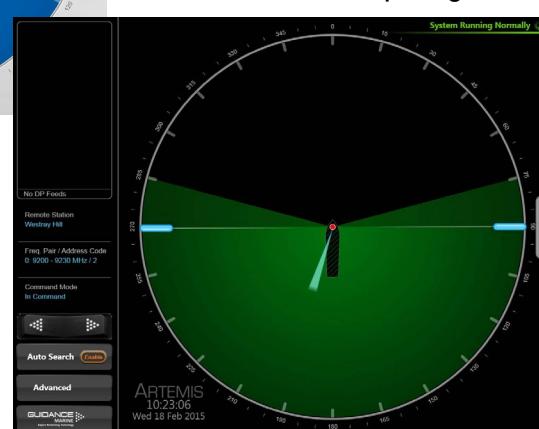
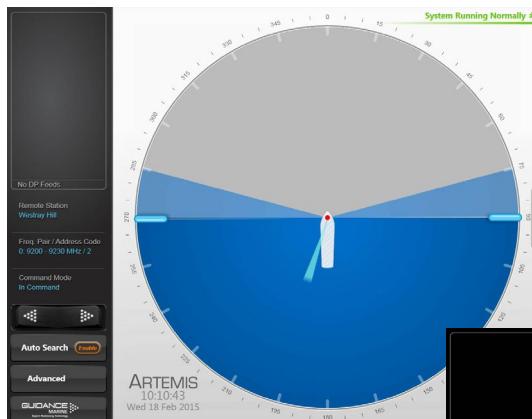
# Display Options

## Display View

To provide ample visibility during daytime operation and to limit glare during night shifts, the Artemis Dashboard offers two display modes: Day View and Night View. In either mode the brightness can be further adjusted by the Screen Brightness control.

### To Change the Day/Night View and Adjust Brightness:

1. If the Guidance Home Menu is open in the Side Bar, close it by clicking on the Guidance button.
2. Navigate to **Advanced > Display Options > Display Settings**.
3. Click on the **Day View** or **Night View** symbol.
4. Click on the left side of the **Screen Brightness** control to dim the screen and on the right to make it brighter.
5. Alternatively, use the keyboard shortcut **F6** or the **Day/Night Mode** button in the Dashboard Hotkeys menu to switch between Day View and Night View.



## Screen Layout Mode

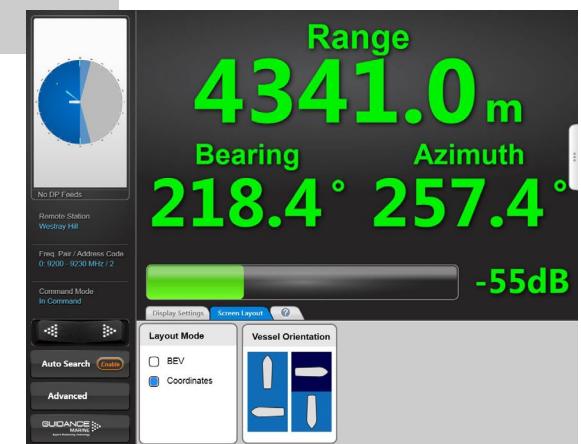
By default, the main area of the Dashboard screen contains the Bird's Eye View (BEV) and if the local and Remote Stations are locked, the positional coordinates are displayed in the upper part of the side bar. However, it is possible to swap these around so that the main area shows the coordinates in extra-large text and the side bar contains a miniature BEV.

### To Select the Screen Layout Mode:

1. Navigate to **Advanced > Display Options > Screen Layout**.
2. Select **BEV** or **Coordinates**.

OR

Click on the upper part of the side bar to toggle between the two layout modes.

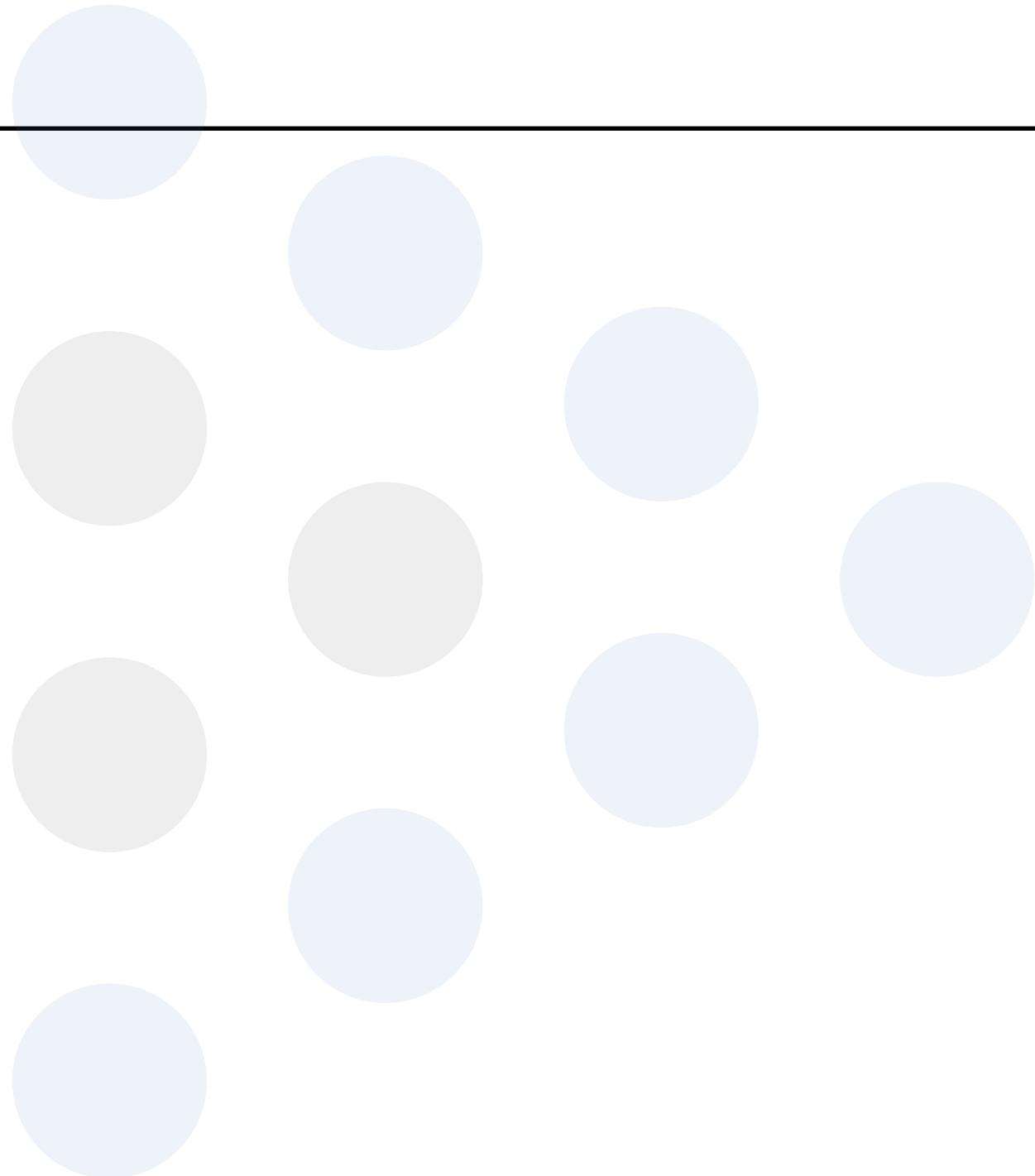


# Appendices

---

This section contains the following appendices:

- [\*DP Message Formats\*](#) (page 43)
- [\*Using the Operating Panel\*](#) (page 45)
- [\*Re-Configuring the Sensor Communications Type\*](#) (page 48)
- [\*System Specifications\*](#) (page 49)
- [\*Installation Checklist\*](#) (page 51)
- [\*Index\*](#) (page 53)



# DP Message Formats

---

## ADB

Byte	Bit 7-4	Bit 3-0
1	Azimuth x 100	Azimuth x 10
2	Azimuth x 1	Azimuth x 0.1
3	Azimuth x 0.01	Azimuth x 0.001
4	Range x 10000	Range x 1000
5	Range x 100	Range x 10
6	Range x 1	Range x 0.1
7	Bearing x 100	Bearing x 10
8	Bearing x 1	Bearing x 0.1
9	1111	1111

## BCD

Byte	Bit 7-4	Bit 3-0
1	Azimuth x 100	Azimuth x 10
2	Azimuth x 1	Azimuth x 0.1
3	Azimuth x 0.01	Azimuth x 0.001
4	Range x 10000	Range x 1000
5	Range x 100	Range x 10
6	0000	Range x 1
7	1111	1111

## ASCII-16

Character
1 Range x 10000
2 Range x 1000
3 Range x 100
4 Range x 10
5 Range x 1
6 Range x 0.1
7 Space
8 Azimuth x 100
9 Azimuth x 10
10 Azimuth x 1
11 Azimuth x 0.1
12 Azimuth x 0.01
13 Space
14 Ready (1 = data valid, 0 = data not valid)
15 Carriage Return (0x0Dh)
16 Line Feed (0x0Ah)

# DP Message Formats (Continued)

---

## ASCII-17

### Character

1	Range x 10000
2	Range x 1000
3	Range x 100
4	Range x 10
5	Range x 1
6	Range x 0.1
7	Space
8	Azimuth x 100
9	Azimuth x 10
10	Azimuth x 1
11	Azimuth x 0.1
12	Azimuth x 0.01
13	Azimuth x 0.001
14	Space
15	Ready (1 = data valid, 0 = data not valid)
16	Carriage Return (0x0Dh)
17	Line Feed (0x0Ah)

## ASCII-22

### Character

1	Range x 10000
2	Range x 1000
3	Range x 100
4	Range x 10
5	Range x 1
6	Range x 0.1
7	Space
8	Bearing x 100
9	Bearing x 10
10	Bearing x 1
11	Bearing x 0.1
12	Space
13	Azimuth x 100
14	Azimuth x 10
15	Azimuth x 1
16	Azimuth x 0.1
17	Azimuth x 0.01
18	Azimuth x 0.001
19	Space
20	Status (see below)
21	Carriage Return (0x0Dh)
22	Line Feed (0x0Ah)

Status: 0 = Range and/or azimuth not valid

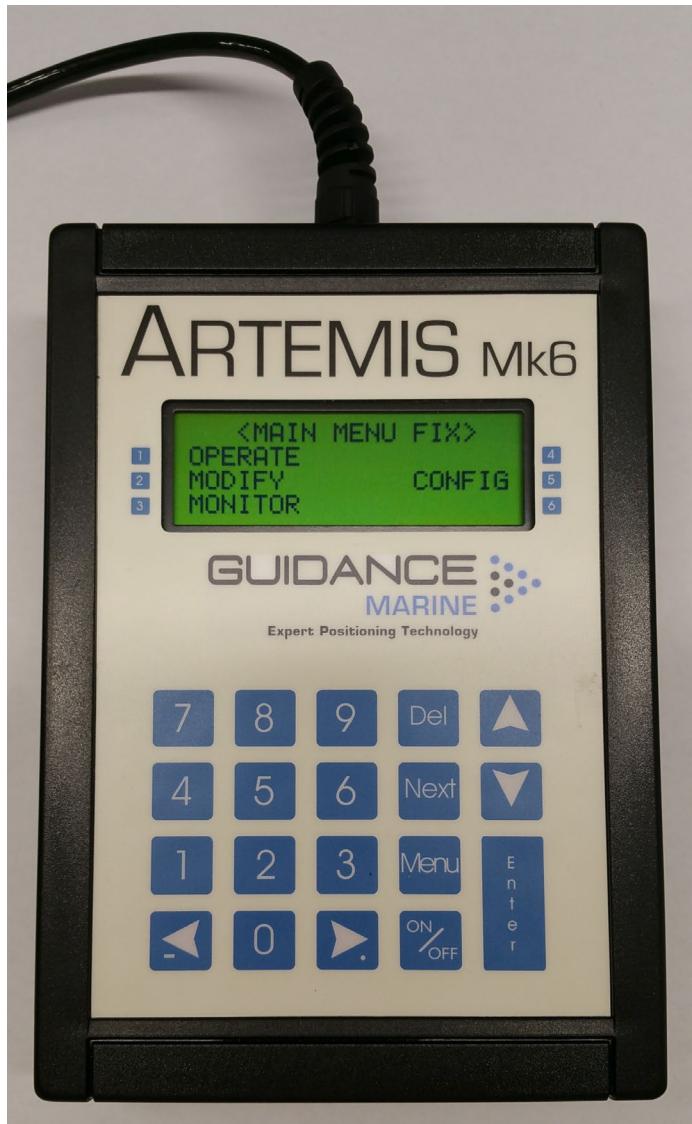
1 = Range, azimuth and bearing valid

2 = Range and bearing valid if mobile station locked to a Mk IV beacon.

# Using the Operating Panel

---

The operating panel (see below) consists of a 4 rows by 20 characters lighted liquid crystal display and a 19 keys (10 numerical keys and 9 function keys) keyboard.



In practice the operating panel is only connected to a station or beacon after installation, to set parameters which are easiest set from close to the station or beacon. The operating panel may also be used during service to check or alter the settings of Mobile and Fixed Stations and Beacons.

For a Mobile Station the operating panel is only useful for the alignment of the Mobile antenna with the centreline of the vessel. All other settings are more conveniently done using the Artemis Service Interface running on the Control PC.

Operator interaction between the keyboard and the display of the operating panel is via a menu structure. The menu structure is basically the same for the Fixed Station, Mobile Station and Beacon.

# Using the Operating Panel (Continued)

## Menu structure

At the top of the menu structure is the MAIN MENU. For a station configured as a Mobile Station it is called MAIN MENU MOB, for a station configured as Fixed Station MAIN MENU FIX, and for a Beacon it is called MAIN MENU BCN.

From the main menu a selection can be made from a maximum of six categories by keying-in the number adjacent to the category. The following display page types are distinguished:

- Menu pages
- Data pages
- Modify pages
- Instruction pages

## Menu pages

Menu pages display a number of categories the operator can choose from by keying-in the number shown adjacent to the categories. Apart from the Main Menu pages already referred to, there are several other menu pages. An example of such a menu page is given below.

<FIX LOCATION>			
1	ANT REF	PHYS LIM	4
2	SCANLIM (REL)	SETP	5
3	SCANLIM (NUM)		

**Example of a menu page**

In this example there is a choice of five categories. Pressing “1” selects the instruction page for the setting of the antenna (azimuth) reference. Pressing “2” selects the instruction page to set the auto search left and right scan limits by turning the antenna to these limits. Pressing “3” selects the modify page for the setting of the numerical values of the auto search left and right scan limits. Pressing “4” selects the instruction page to set the physical left and right limits of the antenna. Pressing “5” selects the modify page for entering an azimuth value the antenna should turn to (set point).

## Data pages

Data pages show Artemis data and /or parameters which cannot be changed, at least not through these pages. A particular category may contain more than one data page. For example: the category OPERATE in the Fixed Station menu structure contains three different data display pages. The first of these pages is shown below. Subsequent pages are selected by pressing the Next key.

DIST:	*****.*	mtr
AZIM:	***.***	deg
SGNL:	-**	
STAT:	M/* / * / ** *	

## Modify pages

Modify pages enable the operator to read and/or change the parameters shown on these pages. Some pages have a restricted number of values, from which a choice is made by pressing the ▲ and ▼ key until the required value is showing. Other parameters require a numerical value to be entered.

FREQUENCY (MHz)	FIX
MOB	FIX
* : ****	****
<	
ACTUAL FREQ:	****

**Example of a modify page (parameter value selection)**

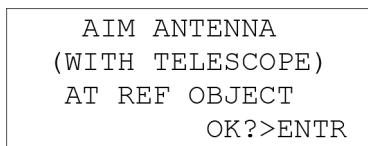
ADDRESS CODE	FIX
RECV'D FR MOB:	**
SENT TO MOB:	** <

**Example of a modify page (numerical input)**

# Using the Operating Panel (Continued)

## Instruction pages

Instruction pages instruct the operator to carry out a particular action. The Enter key is pressed to acknowledge that the action has been carried out.



Example of an instruction page

## Operating panel keys

The operating panel has the following keys:

- Numerical keys 0-9.
- Function keys Del, Next, Menu, On/Off and Enter.
- Arrow up (▲) and arrow down (▼) key.
- Arrow left and minus key (-◀) and arrow right and decimal point (▶.) key.

The numerical **0 key** has two functions:

- To enter the numerical value 0.
- To stop the antenna from turning after operating the arrow left (-◀) or arrow right (▶.) key.

The **Del key** has three functions:

- To step back to a higher level in the menu structure.
- To delete a character or a number of characters when in a modify page (back space function).
- Escape function.

The **Next key** is used to step through the different pages of categories which contain more than one data or modify page. These pages have '>N' displayed in the bottom right hand corner to indicate that more pages in the same category exist. An exception here is the Operate display pages which show the position data.

In Instruction pages the last instruction page also shows '>N' in the bottom right hand corner. In this case pressing Next causes a return to the (sub) menu page above.

Pressing the **Menu key** makes the operating panel display the station's or beacon's Main Menu. It can be pressed at any moment and acts as an escape key.

The **On/Off key** is not functioning and so does not act as an on/off switch.

The **Enter key** is used to:

- Enable new data to be entered or to enable selection of a value.
- To accept new data entered.

The **Arrow up (▲)** key is used to:

- Move the cursor '<' up if there are more parameters that can be chosen from.
- Step through possible parameter values in a modify page.

The **Arrow down (▼)** key is used to:

- Move the cursor '<' down if there are more parameters that can be chosen from.
- Step through possible parameter values in a modify page.

The **Arrow left (-◀)** key has the following functions:

- To turn the antenna counter clockwise (Mobile and Fixed Station only).

**Note:** Pressing twice in quick succession when the antenna is turning makes the antenna turn faster.

- To enter a minus sign when entering numbers.

The Arrow right (▶.) key has the following functions:

- To turn the antenna clockwise (Mobile and Fixed Station only).

**Note:** Pressing twice in quick succession when the antenna is turning makes the antenna turn faster.

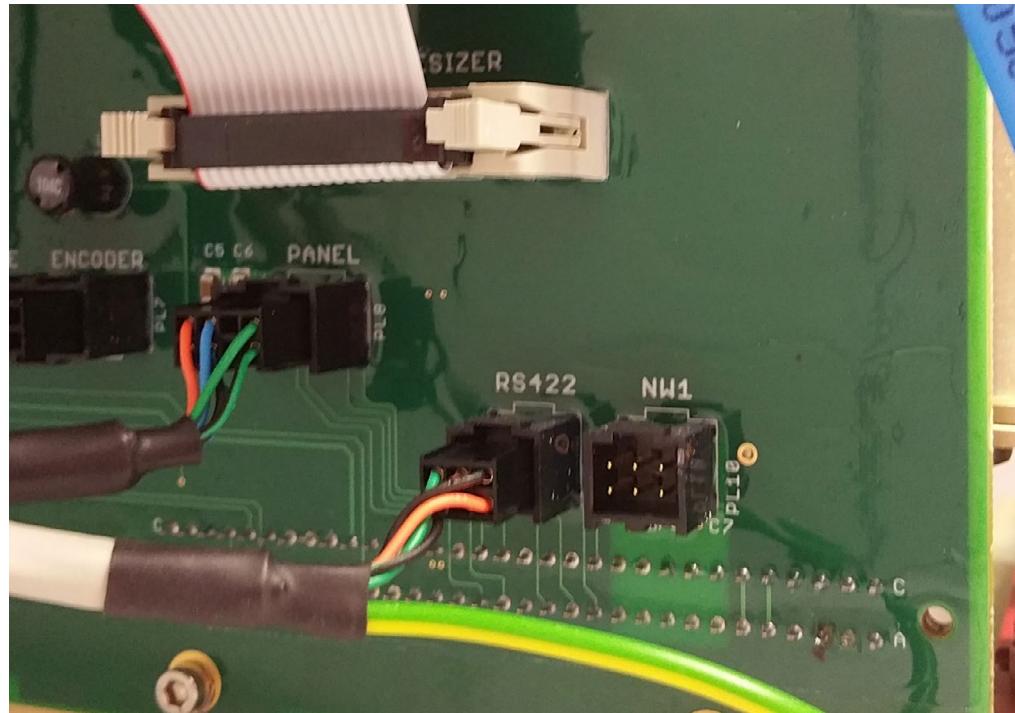
- To enter a decimal point when entering numbers.

# Re-Configuring the Sensor Communications Type

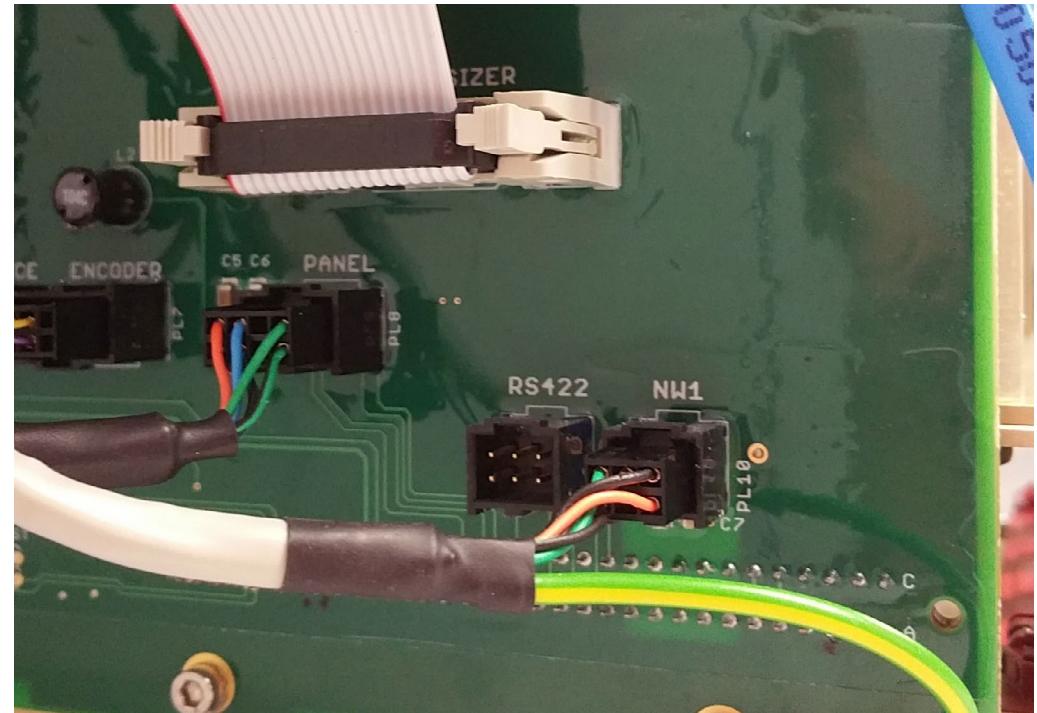
Whether the Artemis sensor communicates using Ethernet or serial RS422 is determined by the position of a cable connector in relation to the Interconnection board (ICB). In order to change from one type of communication to the other, proceed as follows.

- ! Ensure that the sensor is disconnected from the power supply before removing the cover.**
- ! Take electrostatic precautions prior to touching printed circuit boards.**

1. Disconnect the sensor from the power supply.
2. Remove the bottom cover.
3. Identify the data cable that runs from the external data socket down to the ICB.
4. Move its 6-way connector to the required pin header. Use the header to the left marked "RS422" for RS422 communications, and the header to the right marked "NW1" for Ethernet communications.



Sensor set to RS422 Communications



Sensor set to Ethernet Communications

# System Specifications

## Antenna Unit (Mobile and Fixed Station)

Frequency				
Frequency band		9200 - 9300 MHz		
Four fixed, user-selectable frequency pairs	Pair	Mobile Station	Fixed Station	
	0	9200 MHz	9230 MHz	
	1	9300 MHz	9270 MHz	
	2	9230 MHz	9200 MHz	
	3	9270 MHz	9300 MHz	
*Automatic frequency control on Mobile Station				

Connections	
Power supply cable	3 x 1.5mm <sup>2</sup> with screen; outside diameter 7 – 13mm
Ethernet cable	STP (Shielded Twisted Pair) outside diameter 4.5 – 10mm; connector RJ45 units with an EOR board have a 10MB connection
Keypad cable	STP (Shielded Twisted Pair) outside diameter 4.5 – 10mm
Overall absolute accuracy	0.02° standard deviation

Distance Measurement	
Range	10m – 10,000m
Display resolutions	0.1m
Data update rate	0.25s
Overall absolute accuracy	1m standard deviation

Environmental Conditions	
Temperature operating range	-20 °C to +55 °C
Storage temperature range	-40 °C to +70 °C
Weather protection antenna and Antenna Unit	IP66 (exposed conditions)
Safety	Machinery Directive 2006/42/EC
	EMC Directive 2004/108/EC
	Low Voltage Directive (LVD) 2006/95/EC
Resistance to corrosion	Suitable for salt water environment

Azimuth Measurement	
Range	360°
Display resolutions	0.1 on Dashboard 0.01 on Artemis Service Interface
Data update rate	0.25s
Overall absolute accuracy	0.02° standard deviation

Dimensions and Weights	
Antenna	1248 x 206 x 176.5mm/approx. 5kg
Antenna Unit	Ø 366 x 500mm/32.8kg
Re-usable container for Antenna Unit	520 x 650 x 590mm (l x w x h)
Re-usable container for Antenna	1320 x 250 x 220mm (l x w x h)

Power Requirements	
Supply voltage	220-240 VAC, 50-60 Hz
Power consumption	75 W

Supported DP Telegram Formats	
ADB, BCD, ASCII 16, 17, 22	
Custom strings may be available on request	

# System Specifications (Continued)

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## Beacon

General Specifications			
Frequency band	9200 - 9300 MHz		
Four fixed, user-selectable frequency pairs	Pair	Mobile Station	Fixed Station
	0	9200 MHz	9230 MHz
	1	9300 MHz	9270 MHz
	2	9230 MHz	9200 MHz
	3	9270 MHz	9300 MHz
Radiated power	100 mW max	100 mW max	100 mW max
Polarisation	Vertical	Vertical	Vertical
Range			
With omni directional antenna type AT-120	10m – 2,500m		
With semi omni directional antenna type AT-010	10m – 5,000m		
With horn antenna type ATH-010A	15m – 1,000m		
Supply voltage	220-240 VAC, 50-60 Hz	220-240 VAC, 50-60 Hz	220-240 VAC, 50-60 Hz

Guidance Marine reserves the right to alter or amend this published specification without notice.

# Installation Checklist

---

Artemis Sensor Serial No.	
Control PC Serial No.	
Shipping Line	
Vessel Name	
Installer	

## Mechanical

Check	Requirement	Checked (Initial)	Notes / Settings
Sensor	Line of sight to expected remote stations.		
	Required space around and below the sensor.		
	All external connections secure and waterproofed.		
	The sensor is not in close proximity to other sources of high power X-band and S-band radar.		
	Interface box correctly sealed and tightened (if fitted).		
	Sensor correctly secured to mounting.		
Control PC	Correctly located and fastened.		
	Cables correctly installed and fastened.		
	Correctly installed, routed to avoid power cabling.		
Cables	Cables fastened correctly.		
	Cables have service loops.		

## Electrical

Check	Requirement	Checked (Initial)	Notes / Settings
Sensor	Supplied by UPS (220-240 VAC, 50-60 Hz).		
	Cabling to control PC correctly wired.		
Control PC	Supplied by UPS (100-240 VAC, 50-60 Hz for Type 3 Marine Processor; 105-125 VAC or 220-240 VAC, 50-60 Hz for Hatteland Panel PC).		
	Sensor connection correctly wired.		
	DP connection correctly wired.		
Cables	Serial - capable of 38400 baud.		
	Ethernet – capable of 10Mbit/sec.		
System	System powers up and powers down correctly.		

# Installation Checklist (Continued)

## Artemis Parameters

Check	Requirement	Checked (Initial)	Notes / Settings
	DP string type as required by DP supplier.		Supplier:
	DP feed protocol correctly set (baud rate, stop bits etc).		
	Sensor communications set correctly per installation.		
	End limits set correctly.		
	Station type set correctly (Fixed, Mobile or Beacon).		
	Bearing offset set (mobile station only).		
	Azimuth reference set (fixed station only).		
	Protect configuration set.		
	Auto recovery set.		
	Remote station parameters entered as required.		

## Function and Acceptance

Check	Requirement	Checked (Initial)	Notes / Settings
	System operation confirmed with a remote station.		
	Artemis system enabled in the DP system and operational to the satisfaction of the captain.		
	Ship's crew introduced to the basic operation of the system and the Operator's Guide.		

Installation checked and approved by:

Printed: .....	Signature: .....	Date: .....
----------------	------------------	-------------

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Expert Positioning Technology